CORNWALL COUNCIL

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Cornwall Planning for **Biodiversity** Guide

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Front cover: Biodiversity improvements undertaken at North Country as part of the Green Infrastructure for Growth project

With thanks to Adrian Spalding, Stephen Fitt, Catriona Neil, Jenny Stuart, Kim Jelbert and Steve Adams for their case studies.

This document was adopted on the 16th October 2018 by Cornwall Council and is a material consideration in planning decisions. It is supplementary to policies of the Cornwall Local Plan: Strategic Policies (2016). In light of the amended NPPF (2018) and the Council's emerging approach to calculating and securing Environmental/Biodiversity Net Gain, the document will be reviewed alongside engagement on the Council's approach to Net Gain and adopted in a revised form as a Supplementary Planning Document, forming part of a suite of adopted guidance designed to promote good practice in the built and natural environment in Cornwall.

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1. Introduction

1.1 Introduction

This Planning Document is designed to support planning decisions and to recognise the value the natural environment contributes to Cornwall's economy, cultural heritage and social value. It has been produced to support the Local Plan and to help deliver Environmental Growth on the ground in Cornwall, as set out by Cornwall's Environmental Growth Strategy. It aims to do this by setting out clear guidance for developers and planners on how to make space for biodiversity within new development.

This document helps supplement Local Plan Policies 22 and 23 and provides guidance on implementation of those policies.

It is designed to assist people who are submitting and determining planning applications in Cornwall to understand how to ensure that biodiversity is protected, conserved and enhanced as a consequence of development. It will also help to set the framework for delivering Cornwall's commitments for net gain for biodiversity and the environmental growth this will deliver. As this is currently a developing concept, this will be updated as the Council's Net Gain approach is determined.

The document sets out:

- The legislative framework governing how biodiversity considerations must be taken account of in the planning process.
- Why we need high-quality ecological information and to promote transparency and consistency in the quality and appropriateness of ecological information submitted to support planning applications and forward planning documents.
- How this information will be used by Cornwall Council.
- What applicants need to provide within their development proposals in order to adequately protect habitats and species.
- How applicants can provide enhancement for the environment within sites, allowing them to deliver environmental growth for Cornwall

This document therefore seeks to promote transparency and consistency in the quality and appropriateness of ecological information submitted with planning applications, and to promote environmental growth and ecological enhancement.

1.2 The Local Plan and this Biodiversity Guide

Cornwall Council is producing a suite of guidance Documents in support of the Local Plan: Strategic Policies (2010-2030). The Local Plan sets out a 20 year vision for growth in Cornwall. It identifies the quantity and broad location and key sites, for new housing, community facilities, shops and employment.

The Local Plan and associated Site Allocation Development Plan Document is made up of policies which form the basis for planning decisions. This Guidance Document sits under the Local Plan to provide additional information on biodiversity, and how this is an integral part of the development management process. It provides additional information around several of the Strategic Policies within the Local Plan, but with a main focus on Policies 22 and 23.

Policy 22 relates to Cornwall Council's strategy for mitigating impact on European Designated Sites within Cornwall, and sets out a framework for the delivery of this mitigation. Policy 23 provides Cornwall Council's policy statement relating to landscape and ecological assessment, aims and strategy. A separate SPD on European Designated Sites Recreational Impacts and Mitigation should be referred to for details on Policy 22.

This document also relates to the aim of Cornwall Council to deliver, more and better quality green infrastructure as set out in Policy 25 of the Local Plan. Good quality green infrastructure, including public open space and nature provision within development sites can make a valuable contribution towards the environment and liveability through the development process.

For full information on Policies 22, 23 and 25 see the Local Plan: http://www.cornwall.gov.uk/localplancornwall.

This document also helps to underpin the Environmental Growth Strategy for Cornwall in attempting to deliver more opportunities for environmental growth in Cornwall, and improving how space can be made for nature within our built environments. This document has therefore been designed to offer practical suggestions for environmental growth opportunities and give case studies of how this can be achieved.

2. Planning policy

2.1 National Policy

Cornwall Council, as the Local Planning Authority has a statutory obligation to consider impacts upon protected habitats and species resulting from development.

The National Planning Policy Framework (NPPF) sets out how development management and forward planning should operate alongside planning policies for England.

The NPPF aims to ensure sustainable development. This means planning carefully for growth, ensuring that what we do today does not make life worse for future generations. A key part of ensuring sustainable growth is protecting and enhancing our natural environment.

The NPPF is supplemented by information set out in Planning Practice Guidance.

Government circular 06/05 (Biodiversity and Geological Conservation) remains in force and places Statutory Obligations on Local Planning Authorities setting out how ecological surveys are considered within the planning application process. Paragraph 99 of the circular sets out the need for protected species surveys to be completed prior to planning permission being sought, and the reasons why surveys cannot be conditioned as part of a planning consent.

Circular 06/05 makes it clear that planning permission will not therefore be granted without all the required ecological surveys being submitted unless there are exceptional circumstances. What constitutes an exceptional circumstance is widely accepted and they are included within BS42020:2013. See the section about the British Standard on 9.2.4 for further detail

Supporting survey information is needed to allow an appropriate ecological assessment to be undertaken in support of:

- Effective decision-making
- Compliance with statutory obligations and policy requirements
- Achievement of desired outcomes
- Successful implementation of practical conservation and enhancement measures during development.

Effective decision-making over biodiversity provides:

- Certainty and clarity for developers, local planning authorities and other regulatory bodies;
- Sufficient information with which to identify and track cumulative biodiversity outcomes (e.g. net losses and gains arising from all planning decisions);
- Greater confidence for all stakeholders that decisions and proposed actions involving biodiversity conservation are transparent, fair, adequate and legally sound; and
- Reduced likelihood of legal challenge of decisions.

" Nothing is more vital than the future of our environment and the natural world. We are their custodians and must safeguard their future…" Michael Gove, Secretary of State for Environment, Food and Rural Affairs.

This document makes practical suggestions for including biodiversity within development sites. There are numerous other best practice documents available to assist with detailed design. These include the Town and Country Planning Association (TCPA) in partnership with the Wildlife Trusts document "Planning for a healthy environment: good practice for green infrastructure and biodiversity"

"The natural environment should be at the heart of all planning decisions and sets out the opportunities for enhancing the well-being of communities through green infrastructure and open space."

Dr Hugh Ellis , TCPA

2.2 Local Policy:

Site Allocations Development Plan Document (DPD) has been developed to support the Local Plan. This sets out site specific allocations for development in key settlements.

Neighbourhood Plans also form part of the development plan for the area and are an additional material consideration where they

have been adopted.

Cornwall Council is keen to promote the provision of Green Infrastructure delivery through the planning process and is producing a single source of information and guidance on Green Infrastructure as part of an emerging Built and Natural Environment Guide and Strategy. Additional guidance is being developed to help Neighbourhood Plans to plan for and deliver green infrastructure.

2.3 Permitted development

Some forms of development do not require planning permission.

However many forms of permitted development, particularly those relating to recreation, temporary uses of land (e.g. festivals), and some of the activities of statutory undertakers such as utility companies, can seriously affect biodiversity and geological features.

Other types of permitted development, such as loft conversions or the redevelopment of rural or agricultural barns and outbuildings have the potential to directly impact on protected species.

Permitted development rights do not override protected species legislation, and ecological assessment is still required to assess the impact on protected species, and the design of any mitigation and enhancement required.

The duty to protect sites being developed through Permitted Development lies with the land owner, as set out in the Habitats Regulations and Statutory Instrument number 596 (2015) "The Town and Country Planning (General Permitted Development) (England) Order 2015". The section of the statutory instrument relating to permitted development and biodiversity can be found on page 7, paragraph 3 of the following link: http://www.legislation.gov.uk/uksi/2015/596/pdfs/uksi_20150596_en.pdf

2.4 Related Environmental Supplementary Planning Documents (SPDs)

There are additional documents that sit alongside this Biodiversity Guide and these should be read with it. These include the European Designated Sites SPD, which sets out Cornwall Council's strategic approach to mitigating recreational impacts on European Designated Sites, and an emerging Built and Natural Environmental SPD. The emerging Built and Natural Environment SPD is being developed as part of PERFECT (www.cornwall.gov.uk/perfect), an Interreg Europe project designed to improve and increase the provision of green infrastructure in Cornwall. It will set additional vision and guidance on delivering environmental growth opportunities and design quality in Cornwall as part of creating healthy and sustainable environments in Cornwall.

3. Legislation and Standards

A brief summary of the environmental legislation in the UK is given below, but you can refer to appendix A for further information.

3.1 The Main Acts and Regulations are:

- Wildlife and Countryside Act 1981 (as amended)
- Protection of Badgers Act 1992
- Hedgerow Regulations 1997
- Countryside and Rights of Way Act 2000
- Natural Environment and Rural Communities Act 2006 (also referred to as the NERC Act)
- The Conservation of Habitats and Species Regulations 2017
- The Town and Country Planning Environmental Impact Assessment Regulations 2017

The Joint Nature Conservation Committee (JNCC) website has more information on this legislation.

These Acts and Regulations together provide differing levels of protection to a variety of sites, plants and animals (including the places inhabited by particular species of plants and animals), and geological features.

Section 40 of the NERC Act states that:

"Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. Where conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat".

Detailed information about the implications of the NERC Act for local authorities has been produced nationally.

3.2 European Protected Species

Commonly referred to as EPS, European Protected Species include, but are not restricted to bats, dormice, otters, western rustwort, shore dock, large blue butterfly, sand lizards and smooth snake. The last two of these species, sand lizards and smooth snake are only found in small pockets of Cornwall. A full list of EPS can be found listed on Annex IV(a) of the European Communities Habitats Directive.

In Britain protection of EPS is achieved through their inclusion on Schedule 2 of the Conservation and Habitats Regulations 2017, Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 12 of the Countryside and Rights of Way Act 2000 (HM Government, 1981, 2000 & 2010).

As a result of this statutory legislation it is an offence to:

- Deliberately capture, injure or kill an EPS;
- Intentionally or recklessly disturb an EPS in its place of rest/ breeding site;
- Intentionally or recklessly damage, destroy or obstruct access to a EPS place of rest/ breeding site (even if the EPS is not occupying the resting / breeding place at the time);
- Possess or sell or exchange an EPS (dead or alive) or part of an EPS.

3.3 Habitats of Principal Importance

Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act , which came into force on 1st Oct 2006, obliged the Secretary of State to publish "a list of habitats and species which are of principal importance for the conservation of biodiversity in England". The list was drawn up working with Natural England, as required by the Act.

The S41 list guides decision-makers such as councils and statutory undertakers, as to their duty under Section 40 of the NERC Act, to "have regard to the conservation of biodiversity in England" in day-to-day decisions.

There are currently 56 "habitats of principal importance" on the S41 list. These are the habitats in England that were identified in the UK Biodiversity Action Plan (UK BAP). The 'UK Post-2010 Biodiversity Framework', published in July 2012, succeeds the UK Biodiversity Action Plan. The Framework demonstrates how UK contributes to achieving Biodiversity Targets, and identifies the activities required to complement the country biodiversity strategies in achieving these targets.

These include many coastal habitats, some grasslands, woodlands, wetlands and hedges. For more information on protected sites please refer to the Joint Nature Conservation Committee website. For more contact The Environmental Records Centre for Cornwall and the Isles of Scilly (ERCCIS) 01872 273939 extension 213.

Information on designated sites is also available on the Cornwall Council mapping service or through Natural England's 'Magic" website. Locally designated sites, such as County Wildlife Sites are available on Cornwall Council's website. Full mapping information is available through the Local Records Office; the Environmental Records Centre for Cornwall and the Isles or Scilly (known as ERCCIS).

Cornish hedges are an integral part of the landscape and are commonly found on development sites. They are also a habitat of principal importance and it is very important they are retained in a sustainable manner on development sites. Specific guidance on hedges is included in Appendix D and should be read as part of this guidance.

3.4 Species of Principal Importance

There are also 943 species of principal importance included on the S41 list, again those from the UK BAP, which continued to priorities within the UK Biodiversity Framework after the 2010 review.

3.5 Schedule 9 Invasive Species

The Wildlife and Countryside Act 1981 is the principal legislation dealing with non-native species. All invasive species are listed under Schedule 9 of the Wildlife and Countryside Act 198. It is illegal to plant or otherwise cause to grow in the wild any plant listed in Schedule 9.

A number of invasive species are known to exist in Cornwall, including Japanese knotweed, Indian Balsam and Skunk Cabbage. The presence of invasive species needs to be considered during all development projects to appropriately remove and avoid spreading invasive species during construction works.

3.6 Natural England Licensing

Some protected species can only be surveyed for or disturbed following the granting of a licence by Natural England. A full list of species requiring such a licence is available on Annex IV(a) of the European Communities Habitats Directive, or through JNCC.

In Cornwall the most typical species you are likely to need a survey or disturbance licence for are badgers, bats, dormice, otters, barn owls, Western Rustwort, Shore Dock and less commonly water voles, sand lizards, smooth snake, marsh fritillaries, large blue butterflies and rare tree Plymouth Pear which are limited to small sites within the county. This list is intended as a guide only and is not exhaustive.

A good ecological consultant will be able to guide you in what licence applications may be required, and then apply and deliver them for you. You are likely to be asked for a copy of your method statement and any associated mitigation drawings which will be submitted in support of your licence application prior to determination of your planning application.

You should factor the timescales for any protected species licences required into your development timetable. Remember that many species can only be surveyed for, and then have mitigation work undertaken, in specific time periods throughout the year. A guide to suitable survey times is shown in figure 3 (page 15).

The protected species surveys you need for your planning application will usually be the first step in assessing whether you need a protected species licence. You may need further licence-specific surveys after your planning permission has been granted in order to apply for your licence. Your planning permission may include conditions or informatives with regard to protected species licensing.

You can find further information on licensing here - https://www.gov.uk/guidance/wildlife-licences

3.7 British Standard on Biodiversity

In 2013 the first British Standard on Biodiversity (BS42020) was produced. This sets the standard for assessment of biodiversity within the planning process and provides guidance which Cornwall Council follows.

The British Standard is numbered 42020 to reflect the UK commitment to halt overall loss of biodiversity by 2020 in line with the European Biodiversity Strategy and UN Aichi targets.

This commitment is passed down to local authorities to implement, mainly through planning policy, which is why Cornwall Council follows the BS42020 code of practice, which offers a clear methodology for biodiversity management.

For strategic applications (usually for more than 10 dwellings) being submitted to our planning team we will require an Ecological Constraints and Opportunities Plan (ECOP) and a Balance Sheet or table setting out habitats lost and gained as detailed in the British Standard (BS42020:2013). These ensure that the areas of habitat to be lost, retained or enhanced can be clearly seen on one plan, and can be

clearly calculated in one table. The ECOP and balance sheet setting out habitats lost and gained table are also a useful document for the developer or future owner of the site to have as they assimilate information from the suite of ecological work undertaken. You can see an example Balance Sheet on page 28.

ECOPs and Balance sheets are also useful in recording the success of mitigation and enhancement measures through post construction monitoring.

3.8 A Net Gain approach for Cornwall

In line with the revisions to the NPPF and the increased importance and emphasis placed on achieving net gains for the environment and biodiversity through planning, the Council is developing an approach to the use of the DEFRA biodiversity metric in determining whether planning applications are delivering net gain. This emerging process will be subject to consultation and will be incorporated in the proposed built and natural environment SPD that is currently under development and will eventually replace this document.

4. Biodiversity in Cornwall

4.1 Cornwall Local Plan Policy

The Cornwall Local Plan: Strategic Policies, was adopted in November 2016 and contains numerous references to biodiversity. Policies 22 and 23 (replicated below) amplify and interpret policy in the 2012 NPPF. Since the adoption of the Local Plan the NPPF has been revised (2018), further strengthening the approach to the mitigation hierarchy applied to protecting habitat and species and to achieving net gain for the environment. It also strengthens the position relating to non-statutory sites and to irreplaceable habitats such as Ancient Woodland. **These revisions are material considerations in the determination of relevant applications.**

Table 1: Designated and notable habitats and species in policies 22 and 23

Statutory Sites:
International Designated
Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites:
These sites are of international nature conservation importance. This includes candidate SACS (cSACs) and provisional SPAs (pSPAs)
Development proposals with potential to affect a SAC, cSAC, SPA or pSPA require consultation with Natural England and have to be assessed under the Conservation of Habitats and Species Regulations (2017), commonly known as the Habitats Regulations. This process is known as Habitats Regulations Assessment (HRA) and is covered in more detail in section 6.2.8.
Subject to the following paragraph development will only be permitted where the council is satisfied that any necessary mitigation is included such that, in combination with other development, there will be no adverse effects on the integrity of European Nature Conservation Sites.
Proposals having an adverse impact on the integrity of such areas that cannot be avoided or adequately mitigated to remove any adverse effect will not be permitted other than in exceptional circumstances. These circumstances will only apply where there are: a. no suitable alternatives; b. imperative reasons of overriding public interest; and c. necessary compensatory provision can be secured.
Policy 23 of the Local Plan contains more information on how the council assess and mitigates for impacts on European Nature Conservation Sites.
National Designated
Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs):
These sites are of National importance. Development proposals with potential to affect a SSSI or NNR require consultation with Natural England. For sites directly impacting SSSI permission is required from Natural England.
Development proposals within or outside an SSSI or Marine Conservation Zone which would be likely to adversely affect the site (either individually or in combination with other developments) will not be permitted unless the benefits of the development, at this site, clearly outweigh both the adverse impacts on the site and any adverse impacts on the wider network of SSSI and Marine Conservation Zones.
Local Designated
Local Nature Reserves (LNRs)
These sites are protected from development; the Local authority is responsible for LNRs.
Developments likely to have an adverse impact on locally designated sites, either for their biodiversity or geodiversity interest,) will only be permitted where there are no suitable alternative sites, impacts are unavoidable and there is full provision for habitat re-creation and management.

Table 2

Non-Statutory Sites:
Non-statutory sites include County Wildlife Sites (CWS), County Geology Sites (CGS) and Roadside Verge Audit Geological and Biological Sites
These are of at least county importance for wildlife/geology in Cornwall and are all recognised and given weight through the planning process. Developments which would have an adverse impact on County Wildlife Sites will not be supported by Cornwall Council unless there are no suitable alternative sites, impacts are unavoidable and there is full provision for habitat re-creation and management. Where proposals are for site uses which can be easily accommodated elsewhere, such as housing, development within CWS will not be supported.
Habitats and Species of Principle Importance:
Adverse impacts on Habitats and Species of Principle Importance under the Natural Environment and Rural Communities Act (NERC) (2006) and Red Data Book must be avoided wherever possible. If adverse impacts are not avoidable they must be conserved and protected through mitigation, compensation and enhancement measures.
Ancient woodland and veteran trees
Development must avoid the loss or deterioration of ancient woodland and veteran trees, unless the need for, or benefits of, development on that site clearly outweigh the loss. On development sites where the benefits of the development do outweigh the loss (e.g. infrastructure projects where suitable alternative sites are not available) any losses must be mitigated for by the planting of young trees of a similar type within the site and of a suitable number to provide long term replacement habitat.
Ecological Networks and Green Infrastructure
It must be recognised that habitats and species have value outside the designation framework, in line with Local Plan Policy 23, and so developments must show how they have retained existing ecological networks and provided enhanced green infrastructure in line with Local Plan Policy 25 through their proposals.

4.2 Biodiversity in Cornwall

Biodiversity is a material consideration in the planning decision. Cornwall Council as the Local Planning Authority (LPA), through its development control role, is required to ensure that harmful effects on the species or its habitat are avoided or suitably mitigated. **Even when planning permission is granted, the developer must comply with protected species and habitats legislation whilst carrying out the development.**

Whilst some species may occur within statutorily protected sites, they are often found outside of these, and consequently are vulnerable to a range of threats including built development and land use changes.

Adequate information about important species, habitats and geological features, and appropriate design solutions, must be provided by applicants when submitting planning applications.

This enables local planning authorities to determine what effects, if any, the development will have on protected species and biodiversity.

If planning applications are submitted with insufficient supporting evidence the Council has powers to require further information or, in some cases to refuse planning permission on the grounds of insufficient information.

5. Guiding principles for developers - The development control process

This section sets out some guiding principles for developers and applicants whether applying for a householder, general or strategic (major) planning application. The five stage process outlined below should be followed to ensure biodiversity is properly assessed through development management.

The five stages are:

Stage 1: Surveys and assessment of impact

Stage 2: Assessment of impact and net gain

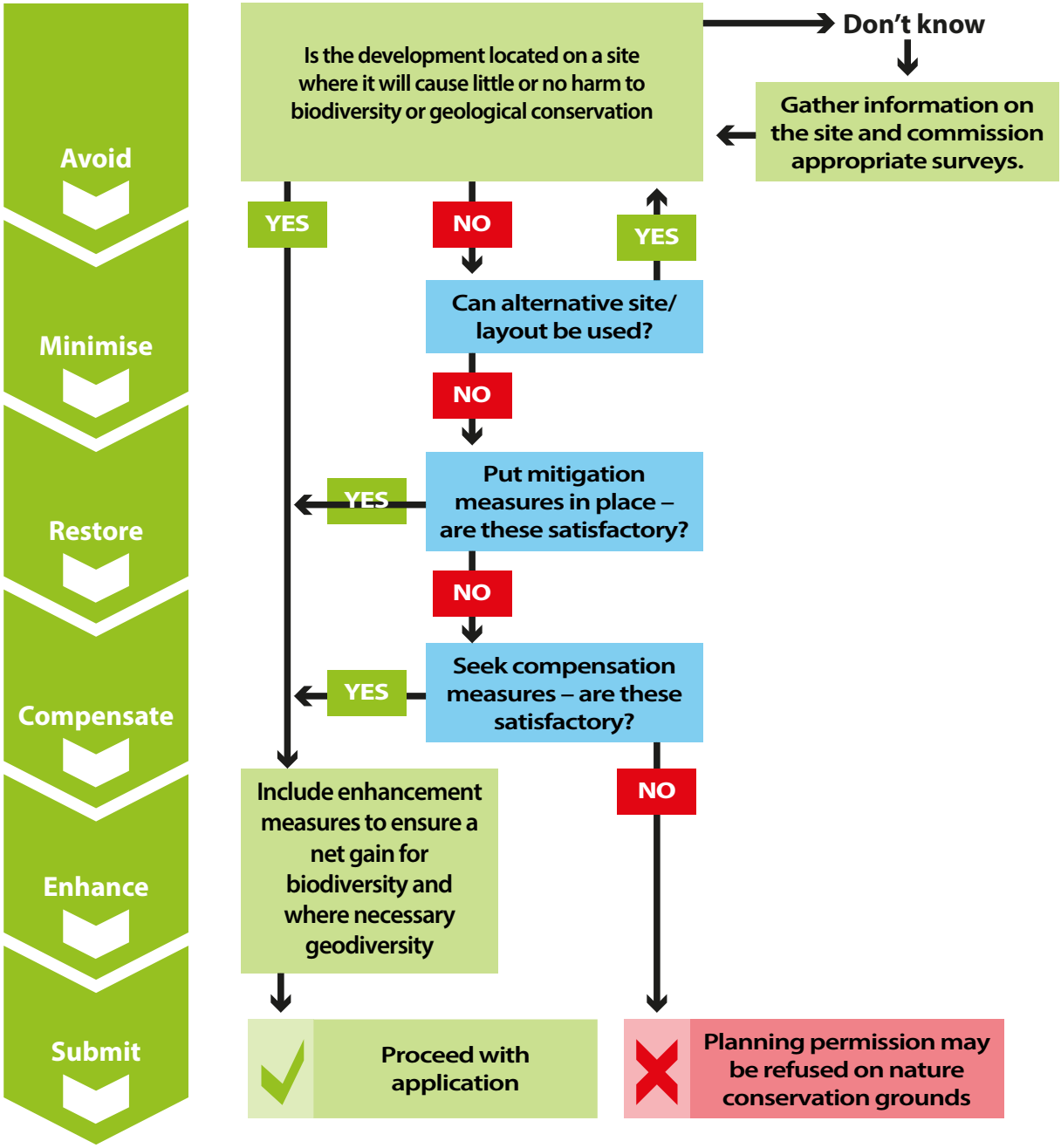
Stage 3: Design

Stage 4: Construction

Stage 5: Monitoring, management and enforcement

A flow chart summary of how biodiversity is considered through the planning system is shown in Figure 1, below. The flow chart refers to a hierarchy of options for biodiversity on sites, commonly known as the mitigation hierarchy. The principle of the hierarchy is that enhancement should be the starting point when looking at the biodiversity of sites, before looking at avoiding and reducing impacts, then mitigating them, and only as a last resort compensating for their loss. This is set out in Figure 4 in section 5.4.1.

Figure 1- How biodiversity is considered through the planning system



5.1 Guiding principles for developers

5.1.1 View biodiversity as an opportunity not a constraint

Where wildlife is successfully incorporated into the design of a development it can be an asset to the local community and for tourism. Houses close to greenspace often command higher market value than houses further away and encourage healthier lifestyles. Local communities are less likely to object to development proposals that account for the needs of wildlife.

5.1.2 Accessing ecological expertise

Assessing the likely ecological impacts of a development is often complex so employing an ecological or environmental consultant is usually cost effective.

Bear in mind that no ecologist can specialise in everything and you are likely to need either a consultancy with a number of specialist staff, or your own team of specialists for projects with more complex ecological issues.

Pre-application discussion with relevant agencies and organisations (see appendix E) will ensure all issues are considered before an application is submitted and help prevent delays.

Cornwall Council offers a paid for Pre-Planning Application service to review your proposals. This can be done at any stage, but preferably done early enough can help ensure you have undertaken all the surveys needed, and then designed suitable mitigation and enhancement into your project before you submit it for planning. This can help significantly in making sure your application contains all the ecological assessment needed and is scheduled to minimise delay through ecological constraints.

Natural England also offers a Discretionary Advice Service for prospective developers. Further information can be found at www.gov.uk/guidance/developers-get-environmental-advice-on-your-planning-proposals

5.1.3 Surveys and Information Gathering

Adequate survey information must be gathered before preparing detailed site layouts or masterplans and submitting a planning application. The information should then be used to inform the design of the development from the earliest stage. Insufficient information can significantly delay decision making.

Ecological surveys are required where there is a "reasonable likelihood" of protected species being present (as set out in the Wildlife and Countryside Act 1981, as amended). Your ecological consultant can help advise you on what surveys will be required, and you can also seek the advice of your case officer and the council's Ecologist if required.

It is important you schedule surveys into your development timetable, as many can only be undertaken at specific times of year. See figure 3 for help with this.

5.1.4 Avoidance, Mitigation and Compensation

Ecological or environmental consultants can advise on avoiding negative impacts on biodiversity and geodiversity through careful site design. Where negative impacts are unavoidable it may be possible to minimise the impacts through mitigation measures. Where mitigation alone is insufficient, it may be possible to use compensatory measures to offset harm. You are likely to need to provide some enhancement measures to ensure your development does not result in net loss for biodiversity. See the mitigation hierarchy on page 18 for how you should apply mitigation, compensation and enhancement measures.

5.1.5 Enhancement

There are opportunities to provide new benefits on nearly all development sites. Simple examples include extending and enhancing retained habitats, creation of new habitats, designing in generous buffers for offsite ecological features, like woodland or watercourses, and provision of bird and bat boxes/bricks.

In order to deliver ecological enhancement across Cornwall all new residential developments are expected to provide either a bat or bird box/tube within the structure of the building at a rate of one box/tube per unit. Consultant ecologists will be able to provide advice on how to group these within developments as it is likely that bat and bird boxes will be grouped on units closest to suitable habitat. For developments of two or more houses every other building needs to have a bee brick built in as well as the bat and bird boxes. At least 75% of bat and bird boxes must be provided built into the dwellings themselves as tree mounted boxes have a limited life span. Your ecological consultant will be able to advise you on the best type of box or brick for the site, and where on each building they should be sited. For small scale applications without input from an ecological consultant general principles to assist applicants are provided in table 6.

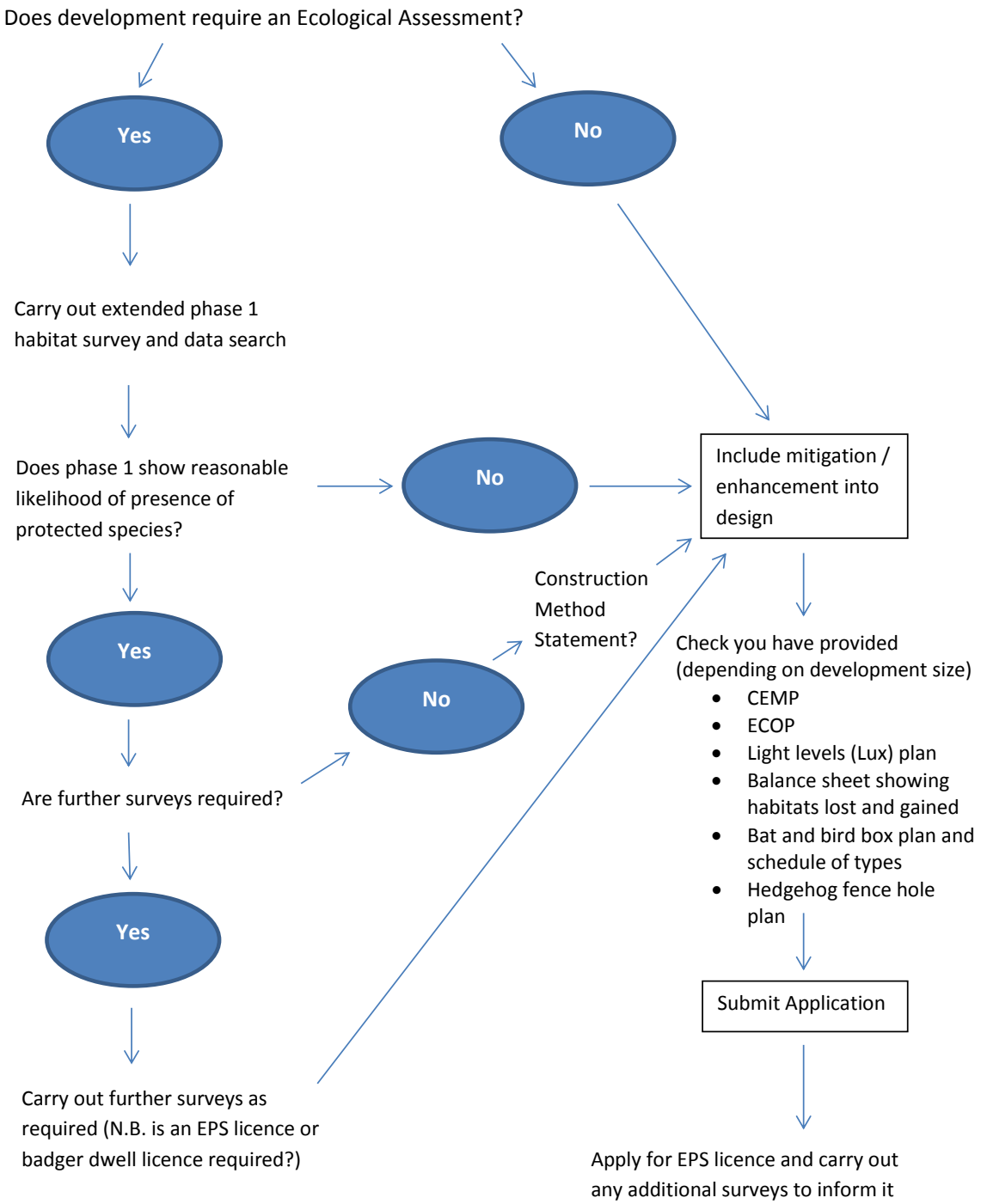
This flow chart sets out the process of obtaining surveys and building the findings into your design and submission:

Figure 2 – Survey to submission process flow chart

Note that you may need the advice of a suitably qualified ecologist to help you decide if your site needs Ecological Assessment. A quick guide to whether you may need to undertake surveys is set out in Appendix B.

Note for householder scale applications e.g. extensions, loft conversions etc, you may be able to proceed straight to a bat and bird survey. Once again your suitably qualified ecologist will be able to assist you determine this, or seek the advice of your case officer.

Survey Flowchart



5.2 Stage 1: Surveys and information gathering

This stage is needed before acquiring land with development potential or commissioning designs or submitting a planning application

5.2.1 Habitat and species surveys

Where a site contains areas of habitat, wildlife potential or geological features, it is necessary for the developer to gather information to assess the biodiversity value of the site and the immediate surrounding area.

Surveys need to be carried out at the earliest possible stage to inform the design of developments and incorporate biodiversity and geodiversity features into the design.

Survey information on the potential for protected species and habitats, linked to any required mitigation or compensatory measures, will help avoid infringements of national and international law and help the LPA assess the likely biodiversity impacts (positive or negative) of your planning application. Surveys at this stage also help satisfy the legal requirements of EIA, Conservation of Habitats and Species Regulations 2017 and form the basis of a subsequent licence application, if required. The diagram at Appendix B shows when surveys are likely to be required, although this should also be checked if you are unsure.

A typical level of survey data is that householder applications often need bat and building nesting bird surveys, a general application often needs an extended Phase 1 Habitat Survey or preliminary Ecological Assessment, and any species specific surveys recommended with it, and a strategic (major) planning application usually needs the same as a general application but with the additional of an Ecological Constraints and Opportunities Plan and a Habitats Lost and Gained table (see Section 3.7 on the British Standard BS 42020:2013 for details). Please note this is intended as a guide and cannot be taken to apply to every development as ecology is so spatially variable.

If you are not sure about what surveys are required your ecological consultant will be able to assist you. Alternatively you can take advantage of Cornwall Council's Pre-Planning Application Service, or ask your case officer

5.2.2 Validation of planning applications

If an application for a development affected by the above is submitted without sufficient survey information or assessment then the local planning authority is entitled to ask for more information and may refuse planning permission due to a lack of information.

Note that your application will often pass through the planning validation process so that an in depth assessment of your application can be made by the case officer and/ or the Cornwall Council Ecologist. You should not therefore assume that because your application has passed through validation there will be no further queries or requests for information regarding ecology.

In order to assist your planning application passing through validation with all the required ecological information submitted we have prepared a ten point checklist to look at before you submit your application. This is given within section 5.4.8, table 9.

5.2.3 Ecological expertise

Employing an ecological or environmental consultant is likely to prove cost effective in the long term. Appropriately qualified ecological consultants can be found by looking on the Chartered Institute Ecological and Environmental Management (CIEEM) website or by calling CIEEM on 01962 868626. Costs will vary depending on the scale and location of the work proposed, but an initial simple inspection for protected species can cost relatively little. You should allow time and budget for the initial survey and any further protected species or habitats surveys protected.

There is an advantage in using consultants with local knowledge as there are some species that are present in Cornwall which are not present across England (and vice versa). In addition there are species which are present in parts of the county and not present in others. Using a consultant with local knowledge will help ensure you only commission the surveys you actually need, and that findings are put within a local context. For example some species are nationally scarce but relatively widespread in Cornwall and a consultant with local knowledge will help ensure they draw the correct conclusions about this.

5.2.4 Undertaking ecological surveys

The first ecological survey undertaken on a site is usually a Preliminary Ecological Appraisal (PEA) or an Extended Phase 1 Habitat Survey. This allows your ecological consultant to look at what habitats are present on site, and whether there is potential for protected species to be present.

The PEA or Extended Phase 1 Habitat Survey will nearly always incorporate a desk based assessment of protected species and habitats records and any designated sites nearby. It is important that quality ecological data sets are obtained on protected species and habitats using the Local Records Centre, and where necessary other species specific recording groups. It is important this step is not missed out as it informs what further species specific surveys may be required, and any special work which may need to be undertaken for off-site designated sites, for example Appropriate Assessment (see section 5.3.1).

Species specific surveys are often recommended within a PEA or Extended Phase 1. For example a large garden might need a reptile survey, a house to be demolished is likely to need a bat survey, a hedge to be removed might need a dormouse survey. Any such recommended surveys must be completed prior to your planning application being made as the Local Planning Authority need to understand what ecological features are present on site in order to weigh up the impact of any given application.

Make sure you read your ecological consultant's recommendations and undertake further recommended surveys

Commonly delays occur where applicants undertake a Preliminary Ecological Appraisal or Extended Phase 1 Habitat Survey but do not then undertake any species specific surveys recommended. It is important to check your report or speak to your ecological consultant.

You need to allow sufficient time within your development timetable to undertake your PEA/ Extended Phase 1 and any further surveys required. Due to the timing constraints of some species specific surveys this can take up to a year, or even more for the largest sites.

Remember that biodiversity changes over time and so most ecological surveys are only valid for 12 months. After this time your ecological consultant is likely to want to re-visit the site and verify their original findings are still valid. After 36 months your original ecological survey will be considered too old for planning purposes and need to be re-done. If you are unsure of the validity of your surveys please check with your case officer as there are variations between species and types of planning application.

5.2.5 Timing of ecological surveys

Detailed surveys for some species and habitats cannot be carried out at certain times of year. Ecological expertise needs to be brought in as early as possible so that surveys can be planned to fit in with the development timetable.

The level of survey data needed and the time taken to collect it will vary according to the size of the development and the habitats and species concerned. There are certain times of year when surveys need to be conducted for different species and habitats and this needs to be taken into account. A table of survey periods is shown overleaf, but this is only a guide and weather conditions are likely to result in some variation in suitability.

5.2.6 Tree surveys and development

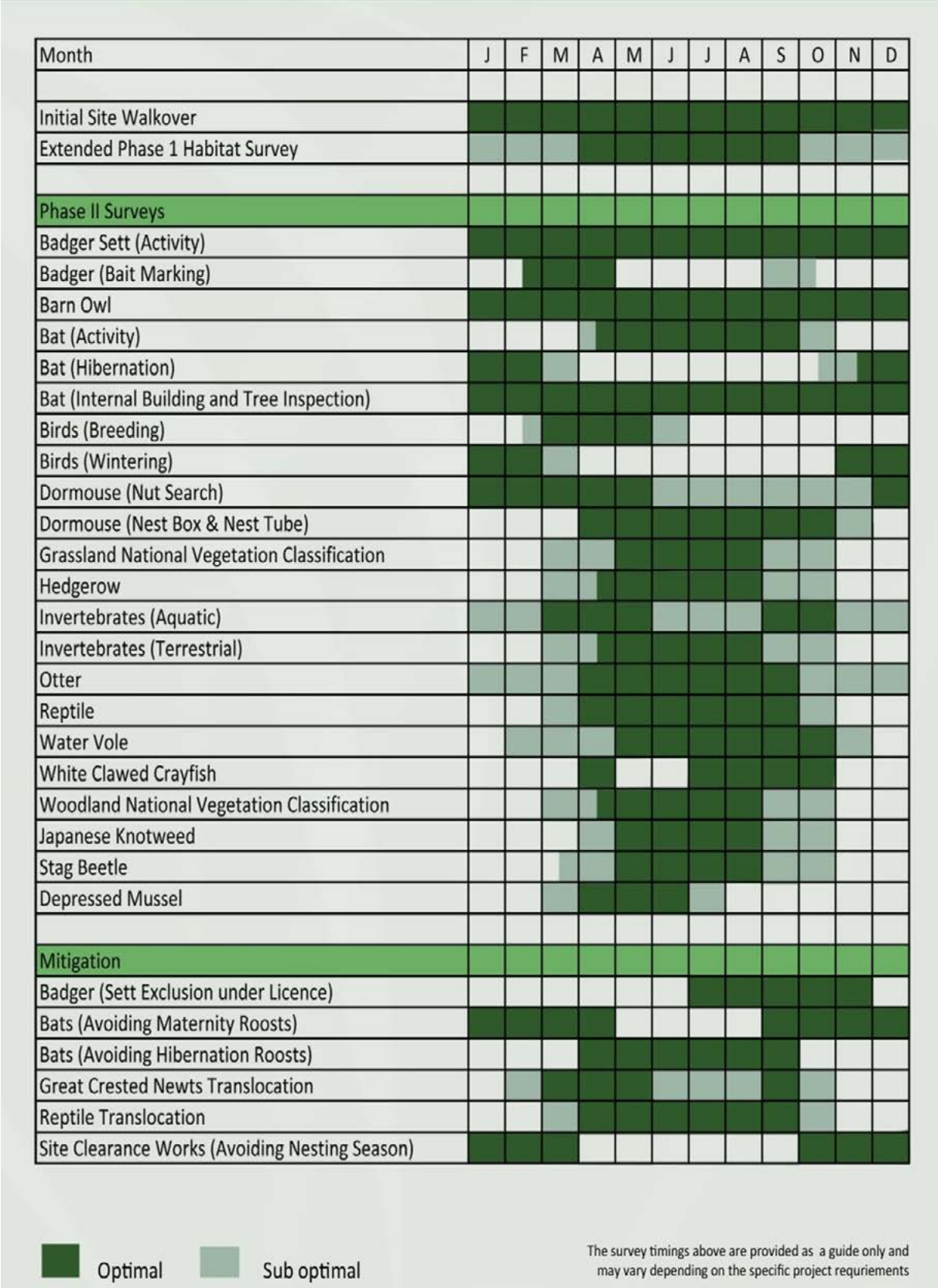
Larger developments often require a tree survey which follows BS5837:2005. Tree surveys concentrate on the health and amenity value of trees rather than their biodiversity importance so these cannot be relied upon to cover protected species issues. Old trees and those with cracks, splits, lifted bark and rot holes can be very valuable to wildlife including protected species such as bats and barn owls. It is recommended that the tree survey and ecological survey are considered together to ensure that trees of importance to wildlife and trees of high visual amenity and landscape value are retained as part of a development.

5.2.7 Hedges and development

Well managed Cornish hedges represent a linked, stable habitat supporting a wide range of animals and plants. Hedges are also of great landscape, historical and geological importance. It is therefore very important that they are adequately surveyed and then incorporated into the layout of the site to ensure they are retained in a sustainable manner. Cornish Hedgerow Guidance been developed and can be found in Appendix D.

The guidance related to hedgerow retention, loss and creation, should be reflected in your masterplans and Ecological Constraints and Opportunities Plan.

Figure 3 – Guideline Survey Timetable



5.3 Stage 2: Assessment of impact and net gain

5.3.1 The Habitat Regulations and Appropriate Assessment

The Habitats Regulations make provision for designation of high level conservation sites including Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or Ramsar sites. These are strictly protected areas which support habitats and/or species that are considered most in need of conservation at the European level as part of the Natura 2000 network of sites. The regulations require that development activities which are likely to have a significant effect on SAC, SPA or Ramsar site (i.e. qualifying features for which it is designated) must be subject to special scrutiny in the planning system and will require screening for Likely Significant Effects to determine whether an Appropriate Assessment (AA) is required.

A site does not have to be located within a SAC, SPA or Ramsar site to require AA, it just has to have the potential to impact on it. Thus developments which may have indirect impacts, such as those via water or air, on a SAC or SPA are also likely to require screening for Appropriate Assessment. This is especially true of developments located adjacent to European Designated Sites, or those with a linkage to the European Site, such as through a watercourse, even if the development site is some distance from the designated site. Note that there is no threshold for the size of the development, even a single house would require screening for AA if there could be a significant effect on the European Site from it. You should speak to your ecological consultant if you need advice on whether an AA is needed or not, or you can use the Cornwall Council Pre-Planning Application service.

If screening for Appropriate Assessment (or Appropriate Assessment itself) is required then the Local Planning Authority are the Competent Authority for making the decision. However in order to make our decision we require the applicant to provide us with all the necessary information. To do this your ecological consultant will need to prepare a "Report to Inform" AA screening or AA. This is sometimes also referred to as a "Shadow" AA screening or AA.

Cornwall Council (the 'Competent Authority' under the Regulations), may only grant planning permission if it can be almost certain that there would no adverse effect on the integrity of the SAC or SPA site, so a high quality and scientifically robust report to inform the habitat Regulations Assessment is very important.

If your development will require HRA screening or Appropriate Assessment you should refer to the European Designated Sites Recreational User Impacts Supplementary Planning Document currently being produced by Cornwall Council. This contains important information on how recreational in-combination impacts on European Protected Sites are being delivered strategically and information about financial contributions required in some parts of Cornwall.

5.3.2 Environmental Impact Assessment

Some developments require Environmental Impact Assessment (EIA) to be undertaken, under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 . Even permitted development that could have a significant impact on conservation interests may require EIA and therefore the production of an Environmental Statement. If in doubt applicants should initially contact the local planning authority so that the application may be 'screened' to determine if EIA is necessary.

You can find a guide to Environmental Impact Assessment on the government web pages, here: http://planningguidance.communities.gov.uk/blog/guidance/environmental-impact-assessment/

5.3.3 Ecological Impact Assessment

Once on-site surveys have been completed Ecological Impact Assessment may be required to identify, quantify and evaluate the potential effects of your development on habitats, species and ecosystems.

EcIA can be used for the appraisal of projects of any scale including the ecological component of Environmental Impact Assessment (EIA). When undertaken as part of an EIA, EcIA is subject to the relevant EIA Regulations. However unlike EIA, EcIA on its own is not a statutory requirement. It is a best practice evaluation process undertaken to support a range of assessments.

5.3.4 Net gain

Biodiversity Net Gain is where development leaves biodiversity in a better state than before. It has become a fundamental principle within planning and is specifically mentioned within the NPPF (paragraphs 170 - 177):

"Planning policies and decisions should contribute to and enhance the natural and local environment by … minimising impacts on biodiversity and providing net gains in biodiversity including by establishing coherent ecological networks that are more resilient to current and future pressures" para 170, NPPF (2018)

Calculating net gains and losses is still a developing field and the tool which is generally used to do this at present is DEFRA's Biodiversity metric. This is the first government-issued metric to calculate all losses and gains of biodiversity from a development project and is a tool to inform achievement of net gain.

If you submit a biodiversity net gain/net loss matrix with your planning application we will expect your ecologist's approach to use the metric in combination with ecological survey data. This is because a metric can help understand the biodiversity outcomes from a development project (i.e. whether an overall loss, neutral or gain) and guide decisions on how much compensatory habitat is needed to achieve 'no net loss' or 'net gain' but what type of habitat, which animals are to use it and all other ecologically-based decisions should be based on a comprehensive understanding of the biodiversity affected. This is especially important when compensating for the needs of individual species.

5.4 Stage 3: Design

5.4.1 Protecting the biodiversity present on the site

Once you have completed your surveys (see Stage 1, above) you can start to design biodiversity into your development. This should take the opportunity to retain and bolster existing habitat wherever possible. This is much simpler, and almost always more cost effective, than trying to retro fit biodiversity solutions into an existing masterplan.

It also makes sure that important and hard to compensate for features, like hedges, important trees, copses, watercourses or wetland can be incorporated at the start of master planning.

Consideration also needs to be given to natural features that include off site for green infrastructure just outside the application site which may be affected by the scheme. This is especially necessary where adjacent sites may be designated for their biodiversity value, and where a linear habitat such as a water course, Cornish hedge or hedgerow which may act as a wildlife corridor, will be affected by the development. Examples of this would include on site buffering offsite habitats, such as trees and hedges, where the root protection zones need to be taken into account, as well as wetland or designated sites.

Sustainable Drainage Systems (SuDs) features also need to be designed with biodiversity in mind. CIRIA document 753, Chapter 6, "Designing for Biodiversity" contains excellent guidance.

Hedges are especially important both for wildlife and as a key part of the Cornish landscape. There is therefore a dedicated section on hedges included as Appendix D **which should be read as part of this SPD.**

The design of your site needs to reflect what the ecological surveys have found on site and what you can improve, what you can retain as it is, what you can mitigate for (i.e. reduce the impact upon) and exceptionally what you need to compensate for. This is set out simply in the "mitigation hierarchy below".

Remember NPPF requires proposals to minimise impacts and provide net gain for biodiversity, so you need to think about which features you can enhance or retain as they are as well as how you can mitigate for any losses your development will cause.

Figure 4 – Delivering biodiversity measures within the mitigation heirachy

Enhance	You should seek to enhance features which already have good biodiversity value, or improve areas with low biodiversity value	For example you might be able to plant up with native species gaps in a hedge, or replace amenity grassland with suitably managed species rich grassland
Avoid	You should avoid impacts to features of biodiversity value wherever possible	For example you could retain a mature tree within the design, retain hedges, or keep an original building or portion of an original building if it supported species such as bats or nesting birds.
Minimize	You should minimize any adverse impact you are having on features of biodiversity interest	For example if you need to create an access point or roadway through a hedge you should site the hedge break in the most gappy or most species poor part of the hedge, as well as making the gap as narrow as is practicable. If you need to build a slipway in the coastal environment you could use engineered mesh instead of solid solutions to reduce shading and provide a suitable substrate for marine life, such as algae. In some cases habitats and species may be suitable for translocation. For example sections of hedge can be carefully re-sited using suitable methodologies (see Appendix D).
Restore	If you are going to have an adverse impact on a feature with ecological value you need to restore it as much as possible	For example if you have to remove a section of hedge for site access during construction the operational requirement of the gap may be smaller than the construction requirement. The severed hedge ends of the construction gap can therefore be restored through replanting and use of the original soil and stone removed.
Compensate	If you are losing features of ecological interest then you need to compensate for them. Compensation is nearly always required at a greater level than the loss incurred because newly created habitats tend to have much smaller biodiversity value than the old features which have been lost. **Note that compensation is not always acceptable.** Loss of well established features such as mature trees and hedges, or coastal or benthic habitats are very hard to compensate adequately for and your ecologist will be able to advise you on whether this option is likely to be viable.	For example if you are losing a line of hedge you would usually try and provide around double the original length as compensation, or if you lost a bat roost you would nearly always need to provide greater provision of roosting facilities on site.
Offset	If you cannot compensate for biodiversity loss on site then offsite compensation may be considered as a way to achieve net gain. This is providing new habitats in a similar way to compensation, but doing this off site.	Compensation can work well for very large scale developments where the off site compensation can be assured. Sometimes this is possible by working with a nature conservation organisation. It can also work well in the marine environment, for example with off site creation of salt marsh.

5.4.2 Enhancing your site for biodiversity

Enhancement can be delivered in many different ways, and your consultant ecologist will be able to advise you on this. Some basic ideas are shown below to assist with specific measures for habitats and species.

The table below gives examples of the kinds of enhancement for habitats that can be carried out. Existing habitats can be used to inform the choice.

Table 3 – Example enhancement for habitats

What habitats are present?	What can be created, restored or enhanced? Some examples
Coastal location	a) Restore intertidal habitats b) Use soft engineering for coast protection c) Create coastal grassland d) Use variety of materials & create artificial intertidal pools
Waterways, water bodies	a) Enhance water body e.g. by reprofiling banks and maintaining suitable undeveloped buffers on the advice of your ecologist b) Create a new water body c) Create habitat suitable for otters/amphibians d) create bat access to roof voids and cavity walls e) create green walls and rooves
Wetland	a) Create a sustainable drainage scheme that is also a wetland habitat next to wetland areas (not on top)
Building or other structure	a) Incorporate barn owl or bat "lofts" b) Erect bird boxes c) Erect bat boxes and use "bat bricks"
Grassland	a) Create an area of wildflower meadow, acid grassland, wetland scrapes- depending on the quality of the existing wetland b) Create new areas adjacent to the site & consider inverting the soil profile
Cornish hedge	a) Enhance by repairing damaged sections and implementing appropriate management regime b) Link existing hedges by creating new ones c) Link other habitats by creating new hedges. See the hedge document in Appendix D for further information.
Mine sites and quarries	a) Retain and manage areas supporting important species b) Create suitable conditions for colonisation by lower plants and invertebrates, e.g. green/rubble roofs
Woodland/Scrub	a) Manage existing woodland for biodiversity, particularly old woodland b) Buffer woodland areas and link to other habitats c) Plant new trees, erect bat/bird/dormice boxes
Trees	a) Retain existing ancient/mature trees and trees with cracks, splits, deadwood and lifted bark b) Provide a suitable buffer from development using the advice of an arboriculturalist c) Plant native species d) Facilitate natural regeneration (allow trees to grow naturally from seed buried in the soil)
Heathland	a) Bring existing heathland areas into best practice management b) Extend existing areas using established re-creation techniques
Other habitats	a) Use landscape character assessment, the SW Nature Map and the Cornwall Habitats of Principle Importance to inform decision on what should be created
Non-native species	a) Control invasive non-native species at the earliest opportunity

Sustainable Drainage Systems (SuDS)	a) Use a variety of SuDS components e.g. swales and ponds, and design them into one, linked, wetland system b) Grade the sides of SuDS ponds so that there is a dry level bench, gentle slopes, wet shallow areas and deeper water zones c) Use variations in topography to protect ecologically valuable features from aggressive mowing by providing a physical restraint d) Avoid smooth finishes to pond and swale edges as rough margins provide a great diversity of habitats e) Use native wetland planting, without any invasive species f) Maximise the use of local provenance plants suited to local soils and hydrology g) Install amphibian ladder in gullys and drain pots

The table below gives examples of the kinds of enhancement for species that can be carried out. Existing habitats can be used to inform the choice.

Table 4 – Example enhancement for species

What species are present?	How can the site be protected and enhanced for the species?
Amphibians	Follow best practice SUDS design when creating ponds and wetlands, provide standalone ponds and wetland features, include amphibian ladders in gullies and drainage pots – see case study 14.11.
Bats	Incorporate bat 'lofts' within conversions Create access points for bats into roof voids and cavity walls Erect bat boxes at a rate of one per new dwelling (or bird boxes where these are more appropriate), built into the buildings on site. Up to 25% of these may be on trees if preferred providing long lasting (e.g. woodcrete) tree mounted box are used. Retain existing trees, hedges and especially ancient/mature trees and trees with cracks, splits, deadwood and lifted bark Maintain and create suitable planting & habitat links Creation of feeding habitat-ponds, grassland, hedges, scrub Design dark corridors and dark areas into site layouts. Plans showing lighting levels or a Lighting Impact Assessment may be required to accompany your planning application.
Badgers	Retain and create mosaic of woodland, scrub, orchards and pasture Install underpasses below new roads
Otters	Retain or create undisturbed habitat by rivers using wide buffers from development. Retain large bank side trees Establish wet woodland, bank side trees and scrub Remove barriers to passage such as culverts , add otter ledges to bridges and create ponds
Dormice	Retain and create linked areas of woodland, scrub and hedges Appropriate hedge management Erect dormice boxes
Other small mammals	Retain and create undisturbed habitats - rough grassland Establish native planting & habitat links. Create small holes (around 13cm wide and tall) in garden fences to allow animals to pass.

What species are present?	How can the site be protected and enhanced for the species?
Hedgehogs	Ensure green linkage paths are created between hedges, woods and gardens. Create small holes (around 13cm wide and tall) in garden fences to allow animals to pass.
Newts and other amphibians	Retain and create accessible ponds with some shading Retain and create mosaic of scrub, hedges, woodland and grassland around ponds
Reptiles	Retain and create undisturbed areas of habitat and basking areas of bare ground/ short grass on south facing slopes Create small south facing slopes for basking Construct log piles and hibernacula Create wetland areas for grass snakes
Barn owls	Create barn owl loft and/or erect barn owl boxes on sites over 1km from main roads Retain and create grassland habitats and woodland edges, preferably away from roads
Other birds	Erect swift, swallow and house martin boxes at a rate of one per new dwelling (or bat boxes where these are more appropriate), built into the buildings on site. Up to 25% of these may be on trees if preferred providing long lasting (e.g. woodcrete) tree mounted box are used. Provide other bird boxes on trees etc Establish native planting particularly berry and seed producing trees and shrubs Create green/brown/ rubble/walls or rooves on new buildings
Wildflowers	Establish species which are native to Cornwall following best practice guidance for establishment and management Create green/rubble roofs on new buildings Soil inversion
Mosses, liverworts and lichens	Create green/rubble roofs on new buildings Create bare areas of suitable substrate
Invertebrates	Create green/rubble roofs on new buildings Create bare areas of suitable substrate Create mosaic of scrub, hedges, grassland Create ponds with shallow sides Create bare ground Retain and create deadwood habitats Plant trees with early spring blossom such as hawthorn, blackthorn and willow Provide bee bricks built into developments at a rate of one per two residential units Plant species given in the Royal Horticultural Societies (RHS) "Perfect for Pollinators" list https://www.rhs.org.uk/science/conservation-biodiversity/wildlife/encourage-wildlife-to-your-garden/plants-for-pollinators

5.4.3 SuDS Design Elements

Table 5

Design Criteria	Key Principles
Water Quantity	People and property must be protected from all flooding sources, including the wider catchment area and any subsequent pressures the SuDS may add to it.
Water Quality	The source must be controlled to mitigate water pollution, with adequate retention time and treatments to reduce the risk of polluted water.
Biodiversity/ amenity	SuDS can have a positive impact on urban design, providing opportunity for biodiversity (often dependent on water quality and quantity).SuDS components should have shallow slopes and make good use of vegetation to prevent access for health and safety. There must also be easily identifiable components and risks.
Landscaping	As SuDS are normally at, or on the surface attention to detail and aesthetics must be given a high priority.
Management	Management needs to be sustainable and cost effective. There must be safe maintenance access, an effective bypass system for use during maintenance activities, disposal areas and waste management .

Figure 5. Effective landscaping. Copyright Susdrain.

Figure 6. Construction of a SuDS pond. Copyright Susdrain.

5.4.4 Biodiversity opportunities within the built fabric

In order to help achieve gain for biodiversity Cornwall Council expects each new residential unit (this includes conversions of non-residential buildings and new dwellings built to replace demolished dwellings) to provide at least one bat or bird box/ brick per unit within the scheme and one bee brick within every other unit (i.e. one bee brick per two dwellings). Other developments, including commercial, educational, transportation etc will also be required to provide a scheme including integrated boxes for bats and birds. Provision of artificial nest sites is required due to the lack of nesting opportunities in modern building design. The reduction in available nesting and roosting sites is implicated in the decline of these species.

Boxes need to be built into the units on site as other types of box e.g. tree mounted or surface mounted to buildings, have a very limited lifespan. However to allow some flexibility within site design up to 25% of boxes may be tree mounted. Your ecological consultant will be able to advise on a suitable mix of building and tree mounted boxes.

In order to make the provision of boxes as useful to species as possible the below table has been provided (Produced originally by Exeter City Council, developed from advice, principally from Stephen Fitt RSPB, as well as DWT and BCT).

Table 6 – Species and provision of integrated bat and bird boxes for them

Species	Actions	Notes
Common Swift	Install integrated swift boxes at soffits/eaves level	Any suitable buildings • At least five metres above ground level with unimpeded access. • A northerly or well shaded aspect is essential, avoid southerly elevations and the immediate vicinity of windows • Nest sites should be reasonably close as Swifts usually nest in colonies • Broadcasting recorded calls throughout the breeding season will increase likelihood ofoccupation. . See www.swift-conservation.org
House Sparrow	Install integrated boxes at soffits/eaves level	Suitable buildings within close foraging range of open spaces & green infrastructure. • At least two metres above ground level with somewhere to perch in the immediate vicinity. • Needs to be shaded. Easterly aspect is best, avoid southerly elevations. • Sparrows prefer nesting in loose groups (10-20 pairs) and boxes can be adjacent to each other, ideally in groups of six or more
Starling	Install integrated boxes at soffits/eaves level	Suitable buildings within close foraging range of open spaces & green infrastructure. • At least three metres above ground level with somewhere to perch in the immediate vicinity. • Needs to be shaded, easterly aspect is best, avoid southerly aspect • Ideally install a group of nests each >1.5m apart. • Starlings can be noisy so their nests are best sited where they won't be a nuisance.
Barn Swallow	Create purpose built ledges, inside buildings where they will be secure from predation by cats, rats etc Install pre-formed nest cups to encourage establishment	Open sided buildings, eg. carports, porches & bin and cycle stores etc within close proximity to green infrastructure & other open space. • Swallows will need access to their principal nesting material which is mud collected from, puddles & the edges of standing water or slow flowing streams. • Avoid situations where droppings might become a nuisance e.g. over doors or windows.

Species	Actions	Notes
House Martin	Install pre-cast nest cups to encourage establishment	Buildings with wide soffits/eves in close proximity to , green infrastructure & other open space. • At least five metres of clear space above ground level. Adequate shelter from sun and prevailing weather, avoid South elevations. • House martins breed in close knit groups and provided there is an adequate supply of mud from the edges of standing water or slow flowing streams will build clusters of nests. • Fixing over doors and windows is best avoided.
Garden birds (such as robins, blackbirds, thrushes, tits etc)	Install appropriate nest boxes	Where there is access to adequate public and private open space including gardens. • Sheltered from direct sunlight and the prevailing weather
Tawny owls, barn owls and kestrels	Install appropriate nest boxes	The interface between town and country. • Direct access to suitable hunting grounds. • The site must be at low risk of disturbance. • Seek specialist advice on site suitability
Crevice dwelling bats (such as Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, Brandt's and Whiskered Bat)	Leave or create spaces in the wall or behind the cladding • Install ready-made bat boxes into the walls or under the eaves • Create sandwich boards of at least 3 layers with a 1 inch gap to place inside the roof void, against the battens • Create access to batten gaps and cavity walls	Crevice dwelling bats can crawl into the smallest spaces although areas of about 1 sqm would be useful for summer nursery roosts. • The height of entry can be from 2-7m above ground level. • Generally the summer nursery roosts will have a southerly or westerly aspect for solar heating. Male roosts and winter hibernation roosts have a northerly aspect. • Materials for the roosts should be rough (for grip), non-toxic or corrosive, with no risk of entanglement (modern roof lining membranes are not suitable for use in potential bat roosts as they carry the risk of entanglement, therefore only bituminous roofing felt that does not contain polypropylene filaments should be used. For example bitumen felt type 1F, which is hessian reinforced. • Create gaps/holes of at least 20mm x 50mm in soffit/barge/weatherboards, with holes in weatherboards to allow bats into the batten gaps. Avoid sealing in the top of the cavity walls to provide roosting sites for crevice bats • The access should not be lit by artificial lighting. • Maintain or enhance linear features in the landscape such as tree-lines and hedgerows that the bats can use for cover and flight paths.

Species	Actions	Notes
Roof void dwelling bats such as, Serotine, Leisler's and Daubenton's	Leave timber joists and/or beams exposed • Install access points such as spaces under the eaves or specially-made holes in the roof tiles	The height of entry should be from 2-7m above ground level. • Generally the summer nursery roosts will have a southerly or westerly aspect for solar heating. Male roosts and winter hibernation roosts have a northerly aspect. • Materials for the roosts should be rough (for grip), non-toxic or corrosive, with no risk of entanglement (modern roof lining membranes are not suitable for use in potential bat roosts as they carry the risk of entanglement, therefore only bituminous roofing felt that does not contain polypropylene filaments should be used. For example bitumen felt type 1F, which is hessian reinforced. • The access should not be lit by artificial lighting. • Maintain or enhance linear features in the landscape such as tree-lines and hedgerows that the bats can use for cover and flight paths.
Bats that need flight space (such as Natterer's, and Brown and Grey Long-eared)	Provide bat entry points e.g. tiles or bricks Keep roof space untrussed to allow flight	The height of entry should be over 2m above ground level. • Roosting/nesting dimensions of untrussed roof space should be 2-2.8 m (h) x 5 m (w) x 5 m (l) • Maintain or enhance linear features in the landscape such as tree-lines and hedgerows that the bats can use for cover and flight paths.
Green and brown roofs	Design in green or brown roofs wherever suitable	Green and brown rooves (sometimes called Living Rooves) can enhance the wildlife of urban areas and can also replace habitat Lost at ground level to building work; for example brown roofs can recreate brownfield Habitat features which are important to site biodiversity. • Can be particularly useful when the development site is too small to incorporate • Biodiversity enhancement at ground level • They are especially useful for invertebrates including pollinators You can find useful information on creating Green Rooves at Buglife's website.

Bat, bird and bee boxes built into buildings can be discretely sighted and are already used widely across the south west. You can see some examples in the case studies at the back of this report. It is likely that some parts of a development will be better suited for the siting of bat and bird bricks and boxes, and an experienced ecologist with knowledge of the site and its surrounding can advise on target species, how many units should be included and where.

Figure 7 – Bat and bird boxes on commercial scale developments

©Graham Jeffery / BCT

Cullompton's Library gets Swift homes

Stephen Fitt, who works as a volunteer for the RSPB in the South West, tells us the following: *"With the approval of the Devon County Ecologist I check their monthly planning list and if there are any obvious potential candidates for Biodiversity enhancement I liaise with the relevant Planning Officer. In this instance Swift boxes were made a consition of Planning approval, and I worked with their Architects, the Exeter Office of the NPS Group, on how and where.*

We installed Schwegler Light Weight Swift Box Type 1A's. There is a loud speaker wired to the Library's PA System to play calls. Due to ongoing building work, there was only a very limited opportunity to play the latter last July, but I was told Swifts came visiting almost immediately and created lots of local interest!

My work with Devon County continues and we are currently working on a number of school projects and the main library in Exeter. As a consequence of this work I am spreading the word and two or three schools in Dorset have adopted similar policies."

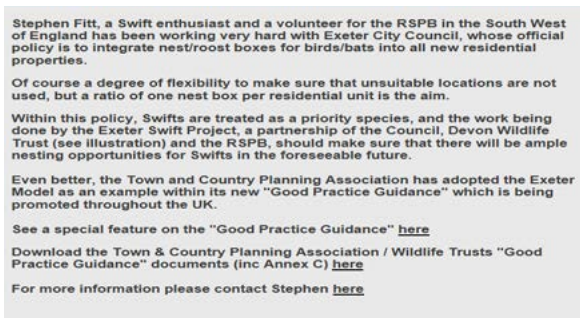
Photo © John Baggley NPS South West Ltd

Above left: a close-up view of the eight Schwegler boxes sunk into the facade of the new building in Cullompton, and right, a general view of the building, showing how they augmen the street view. Swifts will be a very exciting aerial component of this town's summer skies.

Great news from Exeter

RSPB volunteer gets amazing results...

Above: Isca College Exeter; Three Schwegler nestboxes have been fitted to the high brick wall to encourage Swifts to nest there. Photo © Emily Stallworthy, Devon Wildlife Trust



Stephen Fitt, a Swift enthusiast and a volunteer for the RSPB in the South West of England has been working very hard with Exeter City Council, whose official policy is to integrate nest/roost boxes for birds/bats into all new residential properties.

Of course a degree of flexibility to make sure that unsuitable locations are not used, but a ratio of one nest box per residential unit is the aim.

Within this policy, Swifts are treated as a priority species, and the work being done by the Exeter Swift Project, a partnership of the Council, Devon Wildlife Trust (see illustration) and the RSPB, should make sure that there will be ample nesting opportunities for Swifts in the foreseeable future.

Even better, the Town and Country Planning Association has adopted the Exeter Model as an example within its new "Good Practice Guidance" which is being promoted throughout the UK.

See a special feature on the "Good Practice Guidance" here

Download the Town & Country Planning Association / Wildlife Trusts "Good Practice Guidance" documents (inc Annex C) here

For more information please contact Stephen here

©Stephen Fitt/ RSPB

Table 7 - Advice on siting artificial nest boxes within the built environment:

Residential developments.	Commercially available Swift boxes incorporated in the fabric recreate the natural cavities found in older properties and are acceptable to most building dependent species. They will be used by house sparrows, great tits and starlings as well as swifts and other species, should be approximately be a metre+ apart and approximately five metres above ground level in locations sheltered from prevailing weather conditions and direct sunlight.
Residential flats and other high rise buildings	The source must be controlled to mitigate water pollution, with adequate retention time and treatments to reduce the risk of polluted water.
Schools, public, commercial and industrial buildings	These buildings are particularly suitable for swifts. If the advice for residential developments does not meet architects specifications bespoke solutions can be found. The RSPB has successful case studies available. Locations should be sheltered from prevailing weather conditions and direct sunlight, the height and numbers depend on the design of the building and the surrounding property. As swifts are "colonists" a minimum of twelve cavities is appropriate.
Buildings adjacent to open spaces and/or water bodies	The same criteria as listed in the above categories will usually apply but additional advice may be required.

Figure 8 – Bat and bird boxes on domestic scale developments

©Graham Jeffery / BCT

We also require all post-development fences on site to have holes of at least 13cm diameter to allow the passage of hedgehogs and other small mammals, reptiles and amphibians.

Figure 9 – hedgehog holes in fences

©George Pilkington/ Nurturing nature

5.4.5 Presenting your design

Ecological Constraints and Opportunities Plans and Habitat Balance Sheets

The Council is currently working on options to apply a consistent and measurable approach to net gain. In advance of this metric the ECOP sheet below will continue to be used to help identify opportunities to reduce lost habitat and achieve environmental and biodiversity net gain.

For larger sites submitted to Cornwall Council's Planning team (typically more than 10 dwellings), once you have worked through the mitigation hierarchy of avoid, reduce, mitigate, compensate, enhance you need to produce an Ecological Constraints and Opportunities Plan (ECOP) and a Balance Sheet showing habitats lost and gained in a table, in line with BS42020. (An example sheet can be found below). This will quantify the habitats you had to start with, and the habitats you will end up with. This should record; what was on site at the beginning, what will be retained and lost and what will be restored by the proposal. You can see an example of an ECOP and Habitats Lost and Gained table below. You may find it helpful to use red outlined boxes for Constraints and green outlined boxes for Opportunities

You will need to mark the location and type of bat, bird and bee boxes you are installing on your ECOP, as well as any access points you are making for small mammals (13cm minimum holes or gaps in every fence or under every gate). (Or if your bat, bird and bee box layout is complex you may prefer to present this on a separately annotated masterplan instead of your ECOP). You will also need to clearly show which hedges are being lost, enhanced and created, not forgetting to mark where gaps in hedges will need to be created for temporary or permanent access points.

You should also use the ECOP to mark on corridors which will be retained as dark routes, and areas which will be planted up, including your public open spaces, verges SUDS (sustainable urban drainage) features such as ponds and swales, all of which should be maximised for their biodiversity.

Habitats					
Broad Habitat Type	Baseline habitat on-site	Habitat retained undisturbed	Habitat lost	Habitat created or restored	Overall Gain or Loss
Hedgerow	841m	791m	50m	123m native planted hedge	+ 73m
Grassland	1.7 ha	0.15 ha	1.6 ha agricultural grassland	0.15 ha species rich grassland	- 1.45 ha
Waterbodies	0	none	none	none	none
Woodland/scrub	0	none	none	200 native saplings in addition to hedgerow planting	+200 native saplings
Heathland	0	none	none	none	none
Species					
Bats		791m hedgerow retained	none	Roosting potential in new trees	
Birds		791m hedgerow retained	none	Nesting potential in new trees	
Invertebrates, small mammals and amphibians		791m hedgerow retained	none	Habitat within 15 wood piles	

Table 8 - Balance sheet of ecological loss and gain

5.4.6 Lighting Plans

Many species are sensitive to lighting, especially bats and invertebrates. Some species of bat such as Greater and Lesser Horseshoe are especially sensitive to light, and require dark corridors for foraging and navigation. The latest research shows Horseshoe bats using dark corridors with average light levels of 0.04 Lux (as an example a full moon on a clear night would be approximately 0.25 Lux) and there may be no 'light threshold' below which there is little impact on behaviour.

Due to this sensitivity to light by some species of bat we expect lighting to be provided only when necessary. When mitigating the impacts of artificial lighting on bats it is therefore important to ask the following key questions:

1. Do we need to light?
2. Where does the light need to be?
3. What is the light required for?
4. How much light is actually needed to perform the tasks required?
5. When is the light required?

Ecologists should work closely with lighting engineers and planners at an early stage to inform the development and design and installation of lighting schemes.

Sites which are used by bats need to contain light exclusion zones (dark areas) which are interconnected to allow bats to move freely from their roosts along commuting routes to their foraging grounds without being subject to artificial illumination. These dark zones need have Lux levels of no greater than 0.5 Lux to minimise the chance of bat disturbance.

The dark corridors need to be placed with consideration for the use of the landscape as a whole in relation to key commuting routes, linking foraging sites and roosts. Therefore comprehensive pre-development bat surveys determine the effectiveness of dark corridors as this information can be used to ensure they are well connected and functional. Corridors with well grown vegetation are preferable as they create dark fly ways sheltered from predators and the elements. Heavily clipped low hedges or tree-lines are less suitable.

To increase their effectiveness dark corridors should be:

i. Well-connected within the bat landscape – linking to existing flight paths, roosts or foraging areas;

ii. Outgrown with mature vegetation providing shelter for bats from the weather and predators as they fly;

iii. Planted with native species to encourage insect populations, thereby allowing bats to forage along the corridors;

iv. Located away from roads to avoid traffic noise which will reduce the foraging efficiency of passive listening bats (Schaub 2008); and

v. Monitored/maintained long-term to ensure they remain functional, e.g. have not been removed or altered in a way that will reduce effectiveness.

If there are bats using your site, or other sensitive receptors, you should expect to provide a lighting plan which shows Lux levels on it, and applies the principles set out above.

The following will help you make sure your lighting plan includes the information we require:

- A qualified lighting engineer should be involved at an early stage in the design process in order to establish lighting principles before conflicts arise. Where protected species are present this should include the designing of dark corridors, to be used as flight and foraging routes, within and around your site.
- The lighting design plan should include the specification, number, orientation, dimming and control (timing, sensing) arrangement for each luminaire.
- The lighting plan should include the anticipated illuminance at ground level on the horizontal-plane within all areas of the site, with actual lux figures or contours displayed. 'Heat map' style colour scales should be avoided unless an unambiguous scale is provided.
- Lux limits for each zone apply to the horizontal plane from ground level up to 3m above ground level. It is recommended that plans showing light levels at 0m, 1m and 2m are given.
- Upwards lighting, for example from ground installed uplighters, will not be permitted in areas being used by light sensitive species of bats as they provide a "wash" of upward light which is hard to quantify on plans and impacts adversely on foraging bats.
- Where necessary, vertical lighting plots can be given, or may be requested, in order to demonstrate lux levels on features such as walls, hedgerows or tree-lines.

- The light attenuation anticipated to occur as a result of newly planted habitats or retained habitats should be modelled where present as this can demonstrate the value of such features in achieving light screening targets. However "predicted" screening from new planting will need to be shown on a separate plan to the "day 1" situation before the planting has established.
- Light trespass from windows should also be modelled, making assumptions where necessary as to the location, specification, intensity and recessing of interior bulbs.
- Key habitats suitable for bats immediately adjacent to the site which may be impacted must also be taken into consideration e.g. hedges, woodland, rivers, ponds.
- Lux contour plans should include an output using a Maintenance Factor of 1, i.e. full ('Day 1') lighting efficiency and this should be clearly stated.
- 'Warm white' LED luminaires with colour temperatures of 3000K or less should be used wherever possible due to their reduced blue-UV spectrum component.
- The presence of glare acting upon light sensitive areas, such as trees used by bats or river corridors used by otters, should be considered within the design process and will be considered by the local authority in assessing the plans. A direct line of sight between a relatively intense light source (or group of light sources) to areas with sensitive ecological receptors should be avoided through changing the luminaire type, location, angle/direction or use of blinds and cowls.
- Part-night lighting (PNL) regimes will not be accepted as mitigation against impacts on horseshoe bats. Recent research indicates that light-averse bat species are similarly impacted by part-night lighting scheme as they are by full-night lighting schemes and that PNL does not remove the lighting conflict at key post-emergence activity windows.

5.4.7 Construction Environmental Management Plans

In preparation for the construction stage details of how biodiversity will be protected during the construction stage must be considered. This often takes the form of a Construction Environmental Management Plan. The scope of this document exceeds just biodiversity matters but must include them with clear action points for their delivery. There is more detail on CEMPs in section 6.4.

5.4.8 Preparing for submission:

Once you have completed the survey and design sections you should complete the checklist below to make sure you have everything you need.

Table 9 – Ten Point Checklist – check before submission

	Question for applicant:	Link to relevant section of this document	Yes/No
1	Does my site meet any of the requirements on the ecological survey checklist?	See figures 1 and 2	
2	For householder applications and conversion of barns/ outbuildings: If yes to question 1 have I commissioned a bat and/ or building nesting bird survey? Note internal inspections can usually be done at any time of year but if emergence surveys are recommended following your internal inspection these can only be done when bats are active. Bats are usually active from April to September inclusive but your bat ecologist will advise you on when the emergence survey is needed. If they are required both the internal inspection and the emergence surveys will need to be submitted with your planning application.	See figure 3 for timetable	

	Question for applicant:	Link to relevant section of this document	Yes/No
3	For general and strategic applications: If yes to question 1 have I commissioned a Preliminary Ecological Appraisal (PEA) or an Extended Phase 1 and got it ready to submit with my application?	See figure 2 for survey detail	
4	For general and strategic applications: If yes to question 3 have I had any additional surveys recommended by the PEA/ Phase 1 completed? E.g. for bats, reptiles, invertebrates and other protected species. These need to be complete and submitted with your planning application.	See figure 2	
5	Do I have bats using or roosting on my site? If so check whether you need to submit a lighting plan with your application. For strategic level schemes (more than 10 houses) you may need a Lighting Impact Assessment.	See 5.4.6 for detail on lighting requirements.	
6	Could my site impact on a SAC or SPA (Special Area of Conservation or Special Protection Area)? If yes have I asked my ecological consultant to produce a Report to Inform an Appropriate Assessment or HRA screening. Note your ecological consultant may wish to consult NE or Cornwall Council before this to determine the scope of the Report to Inform HRA screening or AA.	See European Designation Sites SPD	
7	Are my surveys less than 12 months old? If yes submit with planning. If no check with your case officer, your ecologist or Council ecologist to see what age of reports you need. If reports are out of date they will need to be updated before you can submit for planning.	Check with your case officer, your ecologist or Council ecologist	
8	Is my site a strategic level application (i.e. more than 10 dwellings)? If yes have I asked my consultant to produce an Ecological Constraints and Opportunities Plan and a Balance Sheet showing the habitat lost and gained in a table and got them ready to submit with planning?	See 3.7 for BS42020	
9	Have I built in the enhancement measures required? For all new dwellings as a minimum this will mean one bat or bird box per dwelling, 1 bee brick per 2 dwellings and the sustainable treatment of hedges, as well as any site specific mitigation measures you require.	See table 6 and 7 for bat and bird box provision	
10	Have I ensured all fences have gaps of at least 13cm diameter to allow hedgehog and small animal passage? Gaps under gates will often suffice.	See table 4	

5.5 Stage 4: Construction – All activities relating to site clearance and building phases

Regardless of how effectively the biodiversity and geodiversity values of the site have been identified and considered through the project planning and design stages, there remains a risk that environmental impacts will occur during the construction phase unless specific measures are taken to prevent or minimise this.

You will often be asked to provide details of how you will protect and enhance the environment as you construct your project. These documents are usually called construction environmental management plans or CEMPs and should confirm to BS42020:2013.

Construction environmental management plans should detail methods of working to prevent or minimise impacts arising from site clearance, demolition and construction. This must contain adequate information to provide reassurance that impacts can be controlled. It is likely to include at least the following:

- Details of site location
- Details of site phasing
- Details of materials and machinery to be used on site
- Likely or intended access routes into and around the site – these aren't necessarily required on planning applications, but can result in impacts if not considered
- Temporary works designs – e.g. for structural repair
- Details of site offices, compounds and other temporary structures
- Details of service provisions both temporary and permanent
- Materials storage provisions and re-fuelling arrangements
- Details of soil storage and management
- Details of key species on the site and measures to avoid impacting on them
- A programme of works, will all necessary ecological mitigation and enhancement built into the time frame
- Exclusion areas to protect trees and other habitat and landscape features
- Details of how invasive species such as Japanese knotweed, if present, will be controlled and managed
- Details of the procedure for dealing with the unexpected discovery of a protected species once work has commenced, e.g. stop work and seek advice
- Details of post site use restoration and aftercare where applicable

These documents should be designed with the end user in mind. This is usually the site manager, or sometimes the environmental clerk of works, depending on the size of the project. **We therefore expect to see very clear action points, together with the person responsible for their delivery and when in the construction process they need to be completed by.**

We are likely to ask for more specific information if your CEMP does not set clear action points, together with a timescale and a responsible person.

For example we don't want:

"efforts should be made to conserve trees on site" ✗

We do want:

"root protection zones for trees have been designed in line with BS5837, as shown in plan x, and will be fenced off on site using chestnut paling by the site manager before construction works commence". ✓

5.5.1 Landscape and Environmental Management Plan

In order to set out how you will protect the landscape and environment during operational phase (i.e. post construction) of your development you may need to produce a Landscape and Environmental Management Plan or LEMP.

These differ from a CEMP because they set out management for landscape and biodiversity features after construction. This is very important for many ecological compensation and enhancement features which depend on their treatment post construction. For example new

hedges or newly planted wildflower meadow which require ongoing management to ensure their success. LEMPs can also set out and report against monitoring targets to identify how well the measures which have been delivered are working once they have been created during the construction phase.

As with CEMPs your LEMP needs to include set action points together with the person responsible and the timeframe for their delivery. This is because the LEMP sets out how you will deliver all the species protection which you surveyed (see stage 1) and then designed enhancement, mitigation, compensation etc for (in stage 2).

For example we don't want:

"the long term survival of the newly planted hedge will be ensured"

We do want:

""the newly planted hedge will be subject to hand pruning in years 1 and 2 before moving to a machine cut from year 3 onwards. In year 3 one side of the hedges will be cut by machine, and in year 4 the other side of the hedge will be cut. In year 4 the first side will be cut again, and in year 5 the second side. Alternative cutting will help retain the biodiversity value of the hedge whilst it establishes. All hedge management will be undertaken by the management company, which will be funded by the annual ground rent paid by occupiers.

5.5.2 Minimising pollution through the CEMP and LEMP

Many of the activities that take place on a demolition or construction site have the potential to cause pollution of air or water, create disturbance through noise or light, or re-mobilise soil contaminants, including invasive species such as Japanese knotweed. Such activities are subject to their own legislation, regardless of the benefit of planning permission, including the Water Resources Act 1991, the Environmental Protection Act 1990 and the Wildlife and Countryside Act 1981(as amended)

The Environment Agency has a range of information leaflets concerning pollution prevention, many of which are relevant to construction activities - e.g. Pollution Prevention Guidance Note 5: Works in, near or liable to affect watercourses. Further information can be found via: www.environment-agency.gov.uk.

5.5.3 Environmental Clerk of Works (ECOW)

For large developments the use of an ECOW is often useful to ensure that attention to environmental matters becomes an ongoing process. As well as ensuring that any and all protective measures remain intact at all times, they could also provide training to other site staff in, for example, emergency spill procedures or flooding. In some cases supporting specialists may be required, such as an arboriculturalist. The typical role of an Ecological Clerk of Works and an Environmental Clerk of Works is set out in BS42020:2013.

5.6 Stage 5 - Monitoring, management and enforcement - Once planning permission has been given

In order to make sure the mitigation, compensation, enhancement you designed in stage 2 and then designed delivery for in stage 3 you may need to include provision for follow up monitoring, management and enforcement. This will often be detailed within the LEMP discussed in stage 2. Monitoring programmes would be expected to include, but not restricted to, use of bat and bird boxes, success of planting measures, success of any translocations undertaken. On larger sites, or those with more sensitive ecological features, such as bat roosts, this is likely to be a condition of your planning permission.

If you needed a European protected species licence monitoring is also likely to be an essential part of your licence. Your ecologist will ordinarily undertake the monitoring works and then feed back the results to Natural England as required by them and detailed on the licence itself. This is applicable on all types of licence, including those for householder applications.

A competent ecological consultant will be able to devise a monitoring scheme appropriate to the scale of the development and implement it for an agreed time period. Monitoring the success of these measures gives information that can be used to assess whether the development needs modifying or if further mitigation or compensation is needed.

You may also need to make a financial contribution to secure ecological compensation or mitigation. This will often be through a Section 106 agreement, and your case officer will be able to assist with this.

It is recommended you speak to your case officer about conditions early on in the process, as they will be able to advise what it is and is not possible to deliver by condition.

5.6.1 Planning conditions

Many aspects of ecological assessment, mitigation and enhancement will be addressed through the design of the development approved. However, it will often be necessary to secure further matters, such as their precise delivery, or any time constraints, through the imposition of conditions and/or obligations.

Planning conditions mitigate identified harm that would otherwise result in the refusal of the application. Planning conditions achieve this in several ways on the development site including:

- A developer monitoring a site during and post construction to ascertain any effects on wildlife, especially protected species
- Ensuring that the development process continues to comply with NPPF after planning permission has been granted, for example by requiring an ecological watching brief
- The monitoring of retained features and of new or enhanced habitats to gauge their success
- Restricting or regulating the development in some way, for example by requiring certain operations to be carried out at set times of the year
- Requiring works to be carried out, such as construction of a barn owl nesting box as part of a barn conversion or habitat enhancement for example.
- Requiring schemes or further details such as a detailed landscaping scheme to be submitted for approval to the Local Planning Authority.
- Requiring the incorporation of existing ecological/geological features such as trees, hedges and mine waste dumps and their protection during construction.
- Limiting the duration of all or part of the development
- Requiring appropriate management and maintenance after construction to benefit biodiversity and geodiversity
- Requiring a CEMP or LEMP

Conditions can only be used where they are: necessary, relevant to planning, relevant to the development to be permitted, enforceable, precise and reasonable.

If your CEMP or environmental reports state that you need an ECOW you are likely to receive a condition asking you to confirm at the end of works that an ECOW was present. Suitable evidence will include weekly/ monthly checklists of the site the ECOW has performed, or any reports they have written during their time on site. If you do not have these a letter from your ecologist saying they acted as ECOW will be sufficient.

When you wish to discharge ecological

conditions, for example that your bat, bee and bird boxes have been erected, you will need to provide evidence of this. We will often state in your condition that you need a letter from your ecologist which says they attended your site to undertaken the given work, and that it has been completed. This, accompanied by photographs if suitable, should allow your condition to be discharged as you will have demonstrated you have delivered the ecological measures set out within your reports.

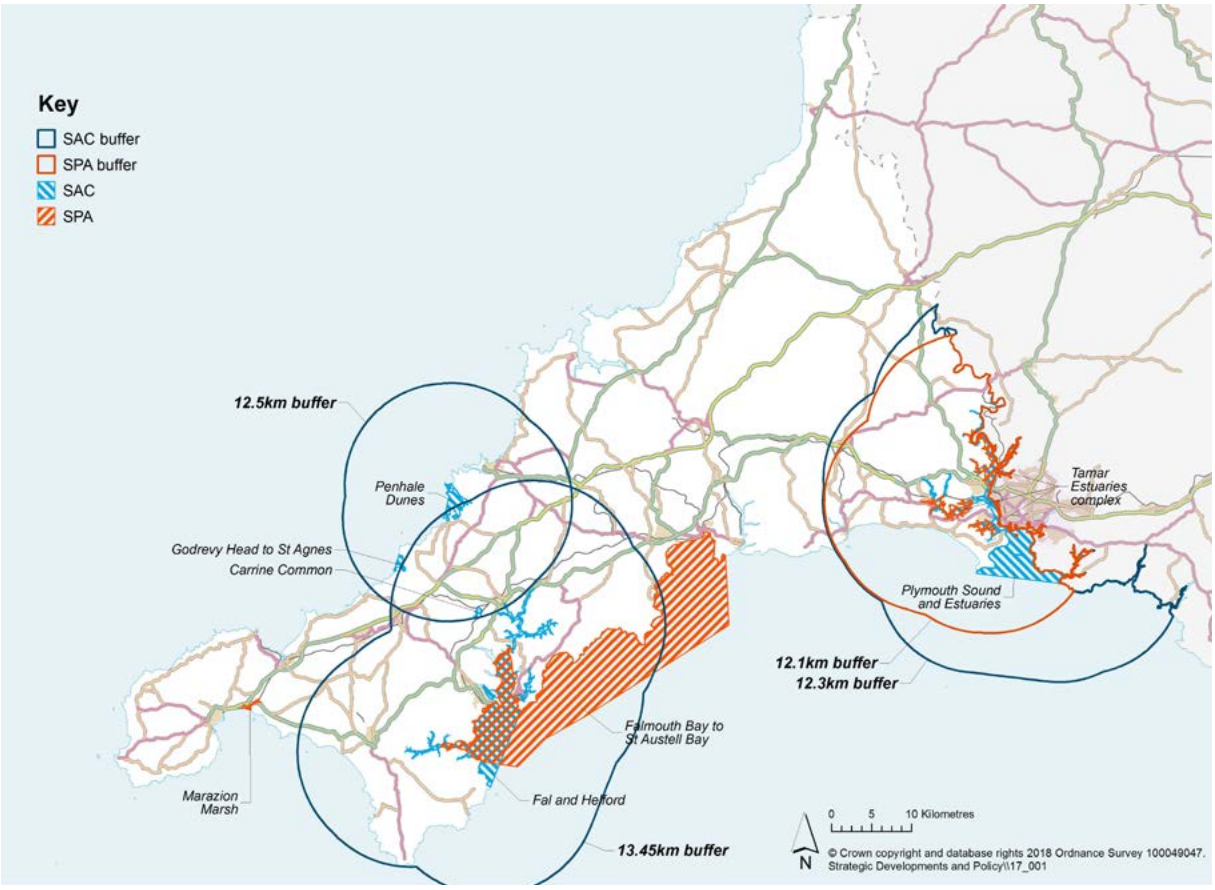
5.6.2 Planning obligations

Planning obligations are an agreement between the planning authority and the developer (those with a legal interest in the land). They are sometimes used to address biodiversity or geological conservation issues, particularly where enhancement or mitigation measures are to be carried out outside the application site. For example a developer may choose to deliver an off site compensation through a nature conservation body and we as the LPA would expect a planning obligation agreement to demonstrate this.

In addition to planning conditions and obligations, informatives may be attached to planning application decision notices. Informatives guide the applicant to other consents that might be necessary, such as a European Protected Species licence issued by Natural England. Informatives are not a statutory part of the decision notice but should be carefully considered as they may assist in ensuring a development is properly carried out.

If your development lies within one of the Zones of Influence identified around the European Designated Sites which have been identified as being vulnerable to recreational pressure then you will need to make a contribution to the management and monitoring on in-combination effects on these sites. This contribution is usually made through a Section 106 agreement but is also sometimes made through a Community Infrastructure Levy (CIL) contribution or Unilateral Undertaking. If your site falls within one of these Zones of Influence then please read the European Designated Sites Supplementary Planning Document which covers this subject in detail. Alternatively seek the advice of your case officer who will be able to assist.

Figure 10: Map showing Zone of Influences identified around SACs and SPAs in Cornwall which are vulnerable



6. FAQs

Q. How do I find a good ecological consultant?

It is recommended that you choose a consultant with good local knowledge. This helps ensure that you only undertake surveys you need to undertake because locally familiar consultants understand what is and is not present in Cornwall.

A good place to look is the CIEEM professional members list which you can find here: http://www.cieem.net/members-directory

Q. Can protected habitat and species surveys be conditioned?

Not normally. The presence or absence of protected species, and the extent to which they could be affected by the proposed development, must be established before planning permission is granted; otherwise all material considerations will not have been considered in making the decision. The use of planning conditions to secure ecological surveys after planning permission has been granted will therefore only be applied in exceptional circumstances, such as the following.

a. Where original survey work will need to be repeated because the survey data might be out of date before commencement of development (note your surveys must be in date for your planning application).

b. To inform the detailed ecological requirements for later phases of developments that might occur over a long period and/or multiple phases (for example on large infrastructure projects).

c. Where adequate information is already available and further surveys would not make any material difference to the information provided to the decision-maker to determine the planning permission, but where further survey is required to satisfy other consent regimes, e.g. an European Protected Species licence

d. To confirm the continued absence of a protected species or to establish the status of a mobile protected species that might have moved, increased or decreased within the site.

e. To provide detailed baseline survey information to inform detailed post-development monitoring.

It is important to note that conditioning surveys because the development timetable has not taken account of seasonality, or because there has been an oversight about any recommended species specific surveys being undertaken are not acceptable.

To avoid this ensure your timetable allows sufficient time for ecological surveys, and make sure you undertake any species specific surveys your ecological consultant recommends.

It is strongly recommended you read your PEA or extended Phase 1 Habitat Survey as soon as it arrives, and commission any additional surveys recommended to suit your development timetable. Your planning application cannot be determined if there are outstanding species specific surveys and this is a common area where survey timing windows are missed.

Q. What happens if I need a protected species licence from Natural England?

You are most likely to need a protected species licence from Natural England if you are disturbing or damaging the rest place of a European Protected Species. Examples of this would be needing to move a bat roost whilst development works took place, or disturbing the resting place of a water vole.

First of all you should try and design and schedule your works to avoid the impact altogether. In some instances this will remove the need for a licence. Note however that you are still likely to need to ask your ecologist to provide a method statement for your application works which you would need to submit as part of your planning application.

You should seek advice from your ecological consultant who will be able to assist you with the design of any impact avoidance, or if this is not possible, with your licence application.

Once lodged Natural England will process your application, which takes at least 6 weeks. You therefore need to build into your schedule time for your consultant to prepare the application, and then at least 6 weeks for Natural England to process your application.

If your licence application is accepted you will be able to complete your works under licence, and your consultant will then respond to Natural England with a feedback report.

It is normal for Cornwall Council to apply either a condition or informative to your planning permission pointing out that you

will need a licence. We are also likely to ask to see the method statement and drawings which will support a licence application prior to determination. You will need to have your ecologist prepare a method statement and detailed drawings as part of your protected species licence application anyway, so it is no additional work for you to have these prepared in time to accompany your planning application. Remember the onus is on you as the developer to follow the due process and ensure protected species legislation is complied with even if you do not have a planning condition about obtaining a licence.

Q. Do I need surveys for outline planning permission?

Yes. Biodiversity is a material consideration in the planning process, regardless of whether the application is for outline or full planning permission. A Preliminary Ecological Appraisal (sometimes referred to as an extended Phase 1 habitat survey) and any species specific surveys recommended are highly likely to be required at outline planning permission stage.

This is because otherwise there is a risk outline planning permission could be given for a site, or portion of a site, which later transpires to be unsuitable for development because of protected species or habitats.

Q. I have a householder planning application in, and the case officer says I need a bat survey. I don't agree, what happens now?

Our planning case officers are trained to assess the likelihood of bats being present in a building, with the assistance of Cornwall Council's ecologist. This includes looking at the building itself and the surrounding habitat. In order to provide a guide to how likely a building is to support bats they will often refer to the Association of Local Government Ecologists trigger list which you can see in Appendix C.

However this is not an exhaustive list and is intended to be interpreted by an ecologist using their professional knowledge. You may therefore find that you are required to submit a bat survey by us as the Local Planning Authority even though you don't believe the trigger list requirements have been met. This is because the trigger list is intended as a guide only and bats may be found in other situations beyond those listed. For example, pipistrelle and brown long eared bats will frequently occupy modern buildings and built structures. Further, some species of bat are crevice roosting, and do not need loft spaces. This means buildings which have loft conversions, or only have limited features of bat interest, such as lead flashing, could still offer roosting potential.

Developers, and those acting for them, should be mindful that disturbance of any roosts or harm to a bat or bats is a criminal offence. By asking you to provide a bat survey up front with your planning application you are not only providing us with the information we need as a material consideration, you are also helping yourself by understanding any constraints on your development so that you can deliver suitable mitigation through your design, and know up front any time limitations this will bring.

Q. How long are ecological surveys valid for?

This varies between species but most ecological surveys are only valid for 12 months. After this time your ecological consultant is likely to want to re-visit the site and verify their original findings are still valid. After 36 months your original ecological survey will be considered too old for planning purposes and need to be re-done. If you are unsure of the validity of your surveys please check with your case officer as there are variations between species and types of planning application.

Q. What happens if I find protected species on the site after I have my planning permission?

You need to seek the advice of a suitably qualified ecologist. The legislation which protects wildlife and species applies to you as the householder or land owner regardless of whether you already have planning permission or not. It may be that with the advice of an ecologist you can proceed with your development, often with some tweaks to timings or methodologies. However it may be that you need to alter your development slightly and so may need to amend your planning permission. If you are not sure seek the advice of your ecologist or Cornwall Council's ecologist.

Q. Why can't we just provide mitigation as if protected species were present and not bother with surveys?

This is not possible because you cannot provide mitigation designed to reduce or remove impact if you do not understand what you are impacting upon. For European Protected Species which require a licence you will not be able to obtain a licence without detailed species specific surveys, and providing "worst case scenario" mitigation

based in incomplete survey data is not accepted by the licensing body Natural England.

Q. How do I know if I need an invertebrate survey?

Invertebrate surveys may be required where there are previous records of scarce/endangered designated species within the development site or nearby area, or where any of the following are present:

- Previously developed or 'brownfield' land
- bare ground
- ponds and wet areas such as ditches and streams
- deadwood
- 'mosaics' of habitats, including scrub, flower-rich grassland, woodland, hedgerows, wetland, heathland or bare ground
- coastal habitats

The need for invertebrate surveys may be identified in Phase One or Preliminary Ecological Appraisal, or in a scoping visit by a specialist. You can find further information on Buglife's website.

Remember to allow sufficient time for species specific surveys. Invertebrate surveys usually have to be undertaken between April and September, depending upon the taxonomic groups being targeted. Early season surveys are particularly important for some pollinator species, when sallow and blackthorn is in flower.

Q. My site has been previously developed, does this mean it has less ecological value?

No, it may in fact have more value than some greenfield sites. Some previously developed sites become very important for biodiversity. Old buildings are fairly likely to offer roosting potential for bats and nesting potential for birds. Scrubby habitats may be suitable for dormice, and patches of scrub with open ground are ideal reptile habitat. In fact the NERC Act Section 41 habitat 'Open Mosaic Habitat on Previously Developed Land' is very important for many species, such as invertebrates, and is of particular relevance when considering brownfield sites within development plans. The National Planning Policy Framework requires the effective use of land by reuse so long as it is not of high environmental value, which might be indicated by the presence of rare/endangered species and habitats.

Q. How do I know if I need a lighting plan and what should it include?

As explained on section 5.3.6 lighting is a particular concern for certain species, including bats, otters and invertebrates. If there are bats using your site, or other sensitive receptors, you should therefore expect to provide a lighting plan which shows Lux levels on it. You will need to show how you have sited and designed your lighting to minimise impacts on light sensitive species. For very large or very sensitive developments a Lighting Impact Assessment may be required.

7. Appendix A - Legislation and Planning Context

7.1 Legislation

7.1.1 International

The EU 2020 Biodiversity Strategy - outlines a long-term vision of ensuring that by 2050 European Union biodiversity and the ecosystem services it provides are protected, valued and appropriately restored.

7.1.2 Protected Habitats, Species and Designated Sites

- The Conservation of Habitats and Species Regulations (HM Government, 2017) (as amended) encompasses Special Areas of Conservation (SACs) and provides additional protection for Special Protected Areas (SPA's), RAMSAR sites and European Protected Species (EPS).
- The Countryside and Rights of Way (CRoW) Act (HM Government, 2000) provides additional protection for Sites of Special Scientific Interest (SSSIs) and threatened species; under the CRoW Act (2000)
- Local Authorities have a statutory duty to consider habitats and species of principle importance as part of planning applications followingthe Natural Environment and Rural Communities (NERC) Act (HM Government, 2006) which bestows a legal duty on public authorities to conserve biodiversity.
- The Hedgerows Regulations (1997) protects ecologically/ historically important hedgerows.
- The Protection of Badgers Act (1992) protects badgers as specified below.
- The Wildlife and Countryside Act (HM Government 1981, as amended) encompasses the protection of wildlife (fauna and flora), SSSIs, SPAs, National Nature Reserves (NNRs) and RAMSAR sites.
- Statutory Designated Sites
- Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are of International nature conservation importance.
- Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs) are of National importance. Development proposals with potential to affect a SAC, SSSI or NNR require permission from Natural England.
- Local Nature Reserves (LNRs) are protected from development; the Local authority is responsible for LNRs.
- Non-Statutory Designations
- Non-statutory sites include County Wildlife Sites (CWS), County Geology Sites (CGS), Roadside Verge Audit Biological Sites and Ancient Woodlands. CWSs and CGSs are of at least county importance for wildlife/geology in the Isles of Scilly; all are given increased protection through the planning process.

7.1.3 European Protected Species

European Protected Species (EPS) (Bat, dormouse, otter, water vole, plus great crested newt which are considered outside their native range in Cornwall): EPS are listed on Annex IV(a) of the European Communities Habitats Directive.

In Britain protection of EPS is achieved through their inclusion on Schedule 2 of the Conservation and Habitats Regulations 2017, Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 12 of the Countryside and Rights of Way Act 2000 (HM Government, 1981, 2000 & 2010).

As a result of this statutory legislation it is an offence to:

- Deliberately capture, injure or kill an EPS;
- Intentionally or recklessly disturb an EPS in its place of rest/ breeding site;
- Intentionally or recklessly damage, destroy or obstruct access to a EPS place of rest/ breeding site (even if the EPS is not occupying the resting / breeding place at the time);
- Possess or sell or exchange an EPS (dead or alive) or part of an EPS.

7.1.4 Badgers:

- Badgers are legally protected under the Protection of Badgers Act 1992. As a result of this statutory legislation it is an offence to: NE and DEFRA 2015
- Purposely kill, injure or take a badger;
- Intentionally or recklessly damage, destroy or obstruct access to a badger sett;
- Disturb a badger when occupying a sett.

7.1.5 Birds:

In Britain the nests (whilst in use or being built)

and eggs of wild birds are protected against taking, damage and destruction under the Wildlife and Countryside Act 1981 (as amended) (HM Government, 1981).

Some species (i.e. barn owl) are also listed on Schedule 1 of the Wildlife and Countryside Act (HM Government, 1981 as amended); it is an offence to:

- Intentionally capture, injure or kill a Schedule 1 listed species;
- Intentionally or recklessly disturb a Schedule 1 listed species whilst nesting;
- Intentionally or recklessly disturb a dependent young Schedule 1 listed species.

7.1.6 Amphibians and Reptiles

Amphibians and Reptiles (species commonly found in Cornwall: common frog, common toad, smooth newt, adder, common lizard, slow worm and grass snake): amphibians and reptiles are protected under Schedule 5 (section 9(1) and 9(5)) of the Wildlife and Countryside Act 1981 (as amended). This legislation makes it an offence to kill and/ or injure amphibians and reptiles, and sell or transport for the purpose of sale.

Small populations of smooth snake and sand lizard are also present at key sites in Cornwall. These species are European Protected Species and so require a licence from Natural England for any works which could impact on them.

7.1.7 Invertebrates

There are three invertebrates in the UK which are EPS in their own right, one of which,the Large Blue butterfly, occurs in Cornwall as a result of reintroduction. In addition Marsh Fritillary can be listed as an interest feature of a European Designated Site. However, there are 400 species of principle importance in the UK, which includes species given legal protection under Schedule 5 of the Wildlife and Countryside Act and S41 priority invertebrate species (which are afforded protection when applying the requirements of the National Planning Policy Framework to conserve and enhance biodiversity). Additional measures of species scarcity include the designations of Nationally Scarce and Red Data Book listing.

7.1.8 Plants, including Ferns, Bryophytes and Lichens

Many species of plants also have legal protection and the conservation designations section of JNCC should be utilised for up to date lists.

7.2 Planning Context

The local planning authority has a statutory obligation to consider impacts upon protected species resulting from development. Planning permission will not be granted with outstanding ecological surveys, and if applicable an appropriate mitigation plan (except under exceptional circumstances as set out in ODPM Circular 06/2005).

National Policy: The National Planning Policy Framework (NPPF) (2018) was updated in 2018. Government Circular 06/05 is still in use. Chapter 15 of the NPPF (2018) 'conserving and enhancing the natural environment' is detailed below:

170. Planning policies and decisions should contribute to and enhance the natural and local environment by:

a. protecting and enhancing valued landscapes, sites of biodiversity or geological conservation value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b. recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;

c. maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

d. minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

e. preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

f. remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

171. Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework[1]; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

172. Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and the Broads[2]. The scale and extent of development within these designated areas should be limited. Planning permission should be refused for major development[3] other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of:

a. the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy;

b. the cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and

c. any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.

173. Within areas defined as Heritage Coast (and that do not already fall within one of the designated areas mentioned in paragraph172), planning policies and decisions should be consistent with the special character of the area and the importance of its conservation. Major development within a Heritage Coast is unlikely to be appropriate, unless it is compatible with its special character.

7.3 Habitats and biodiversity

174. To protect and enhance biodiversity and geodiversity, plans should:

a. Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity[4]; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation[5]; and

b. promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

175. When determining planning applications, local planning authorities should apply the following principles:

a. if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;

b. development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader

1 Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.

2 English National Parks and the Broads: UK Government Vision and Circular 2010 provides further guidance and information about their statutory purposes, management and other matters.

3 For the purposes of paragraphs 172 and 173, whether a proposal is 'major development' is a matter for the decision maker, taking into account its nature, scale and setting, and whether it could have a significant adverse impact on the purposes for which the area has been designated or defined.

4 Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.

5 Where areas that are part of the Nature Recovery Network are identified in plans, it may be appropriate to specify the types of development that may be suitable within them.

impacts on the national network of Sites of Special Scientific Interest;

c. development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons58 and a suitable compensation strategy exists; and

d. development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

176. The following should be given the same protection as habitats sites:

a. potential Special Protection Areas and possible Special Areas of Conservation;

b. listed or proposed Ramsar sites[6]; and

c. sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

177. The presumption in favour of sustainable development does not apply where development requiring appropriate assessment because of its potential impact on a habitats site is being planned or determined.

6 Potential SPAs, Possible SACs and proposed Ramsar Sites are site on which Government has initiated public consultation on the scientific case for designation as a Special Protection Area, candidate Special Area of Conservation or Ramsar Site

8. Appendix B – Survey effort

It is the responsibility of the developer and the ecological consultant to ensure that a reasonable amount of survey effort has been expended in proportion to the scale of development. If you would like to agree the survey effort required you can arrange a Pre Planning Application with your case officer. This is a paid for service charged.

Table 1 - Cornwall Council Natural Environment Development Guidance Note 1

Proposals for development that will trigger an ecological assessment or protected species survey	Species and biodiversity/geodiversity features most likely to be affected and for which a survey will be required									
	Extended Phase 1 Habitat survey	Bats	Barn Owl	Breeding Birds	Otter	Dormouse	Water Vole	Badger	Reptiles	Plants, or Phase 2 habitat survey
Proposed development which includes the modification conversion, demolition or removal of buildings and structures (especially roof voids) involving the following:		●	●	●						
• all agricultural buildings (e.g. farmhouses and barns) particularly of traditional brick or stone construction and/or with exposed wooden beams greater than 20cm thick; *1		●								
• all buildings with weather boarding and/or hanging tiles that are within 200m of woodland and/or water; *1		●								
• pre-1960 detached buildings and structures within 200m of woodland and/or water; *1		●								
• pre-1914 buildings within 400m of woodland and/or water *1		●								
• pre-1914 buildings with gable ends or slate roofs, regardless of location; *1		●								
• all tunnels, mines, kilns, ice-houses, adits, military fortifications, air raid shelters, cellars and similar underground ducts, structures and caves; *1		●								
• all bridge structures, aqueducts and viaducts (especially over water and wet ground).*1	●	●		●	●		●			
Proposals involving lighting of churches and listed buildings or flood lighting of green space within 50m of woodland, water, field hedgerows or lines of trees with obvious connectivity to woodland or water. *1		●	●	●	●					
Proposals affecting woodland, or field hedgerows and/or lines of trees with obvious connectivity to woodland or water bodies	●	●		●		●		●		●
Proposed tree work (felling or lopping) and/or development affecting:										
• old and veteran trees that are older than 100 years;		●		●						
• trees with obvious holes, cracks or cavities,										
• trees with a girth greater than 1m at chest height;										
Proposals affecting gravel pits or quarries and natural cliff faces and rock outcrops with crevices, caves or swallets.		●		●					●	●
Major proposals within 500m of a pond or Minor proposals within 250m of pond (Note: A major proposal is one that is more than 10 dwellings or more than 0.5 hectare or for nonresidential development is more than 1000m2 floor area or more than 1 hectare)	● *2									
Proposals affecting or within 30m of rivers, streams, canals, lakes, or other aquatic habitats.	● *3			●	●		●			●
Proposals affecting 'derelict' land (brownfield sites), allotments and railway land.	●			●				●	●	●
Proposals affecting previously undeveloped (Greenfield) land with the exception of domestic gardens and in some cases intensively farmed arable land (see proposals affecting trees and hedges above)	●			●				●	●	●
Proposed development affecting any buildings, structures, feature or locations where protected or priority species or habitats are known to be present (type of survey required decided on a case by case basis)*4.	●	●	●	●	●	●	●	●	●	●
Proposed development on, adjacent to or otherwise affecting internationally, nationally or locally designated biodiversity or geodiversity sites (type of survey required decided on a case by case basis). *5	●	●	●	●	●	●	●	●	●	●
Proposals affecting quarries, pits, cliffs, river sections, outcrops, mines, caves, tunnels, cuttings, and mine dumps.	*6									
On the request of Natural England, Environment Agency, Forestry Commission, Cornwall Wildlife Trust or Cornwall Council. *7	●	●	●	●	●	●	●	●	●	●

*1 In these situations protected species surveys will be sought by Cornwall Council in support of Listed Building Consent applications as well as planningapplications

*2 An extended phase 1 habitat survey will be required where the pond itself will be affected or lost due to the proposed development

*3 An extended phase 1 habitat survey will be required where the river or aquatic habitat will be directly affected by the development (such as proposed culverting or diverting of water courses) or where there are likely to be significant indirect effects (such as proposed outflows into rivers)

*4 Confirmed as present (or to have been present in the past) by either a data search from the Cornwall Ecological Data Network or as notified to the developer by the local planning authority, and/or by Natural England, the Environment Agency or other nature conservation organisation or local expert.

*5 These include SACs, Ramsar sites, SSSIs, Local Nature

Reserves, county Wildlife Sites and Local Geological Sites (Regionally Important Geological Sites). See www.magic.gov for international and national sites, Cornwall Wildlife Trust for Wildlife Sites and Natural Environment Team, Cornwall Council for Local Geological Sites

*6 Geological survey and assessment

*7 In order to simplify Table 1, a number of less commonly encountered species and habitats have been omitted, but on particular sites these may be a material consideration. These may be identified during the extended phase 1 survey or through consultee responses and will have to be considered in the ecological assessment or before a planning decision is made.

There are many sources of information on survey techniques and timings, these are detailed below.

8.1 Further information sources for biodiversity and geodiversity survey work

8.2 General

BS 42020:2013 Biodiversity. Code of practice for planning and development http://shop.bsigroup.com

CIRIA 2011 Working with wildlife: guidance for the construction industry J Newton, B Nicholson, R Saunders, R Willets and C Williams of The Ecology Consultancy, R Venables of Crane Environmental www.ciria.org

Guidelines For Ecological Impact Assessment In The UK And Ireland. Terrestrial, Freshwater and Coastal Second Edition January 2016 www.ieem.net/ecia

Landscape and Urban Design for Bats and Biodiversity Bat Conservation Trust 2013 https://www.bats.org.uk/resources/guidance-for-professionals.

8.2.1 All protected species

Surveys and mitigation plans: protected species. Natural England and Department for Environment, Food & Rural Affairs First published March 2015 Standing advice for local planning authorities to assess development effects on protected species and for ecologists on species licences https://www.gov.uk/environment/protected-sites-species.

8.2.2 Amphibians and reptiles

Reptiles: Guidelines for developers, English Nature 2004 ISBN 1 85716 807 0

https://www.gov.uk/guidance/reptiles-protection-surveys-and-licences

- Facts about Reptiles, English Nature 1993
- Herpetofauna Workers' Manual, Gent, T. and Gibson, S. Eds. 2003 JNCC ISBN 1 86107 4506

8.2.3 Badgers

Badgers and Development, English Nature 2002 ISBN 1 85716 614 0

https://www.gov.uk/guidance/badgers-surveys-and-mitigation-for-development-projects

8.2.4 Barn owls

Barn Owls on Site; A Guide for Developers and Planners, English Nature on behalf of The Barn Owl Trust 2002.

Barn Owls and Major Roads - Barn Owl Trust.

8.2.5 Bats

- Bats and Trees, Bat Conservation Trust 1997
- Bats and Buildings, Bat Conservation Trust 2012
- 3rd Edition Bat Workers' Manual, Mitchell-Jones, A.J., & McLeish, A.P. Eds., 2004. ISBN 1 86107 558 8 www.jncc.gov.uk/page-2861
- Bat Surveys for professional ecologists- Good Practice Guidelines, 3rd edition, Bat Conservation Trust 2016

Renewable Energy Planning Guidance Note 3: The development of onshore wind turbines, Cornwall Council 2013.

8.2.6 Dormouse

The Dormouse Conservation Handbook, Bright, P., Morris, P. and Mitchell-Jones, T. 2006 (2nd edition). English Nature, Peterborough.

.Surveying dormice using nest tubes- results and experiences from the South West Dormouse Project, Chanin, P. and Woods, M. English Nature Research Report 527 2003.

8.2.7 Otters

Otters and River Habitat Management, The Environment Agency 1993. Out of print

8.2.8 Invertebrates

The need for invertebrate surveys may be identified in Phase One or Preliminary Ecological Appraisal, or in a scoping visit by a specialist. You can find further information on Buglife's website.

9. Appendix C – Association of Local Government Ecologists Trigger List from the Bat Conservation Trust

Guideline list of where bats are *likely* to be present and where developers can reasonably be expected to submit a bat survey.

i. Proposed development which includes the modification, conversion, demolition or removal of buildings and structures (especially roof voids) involving the following:
   - all agricultural buildings (e.g. farmhouses and barns) particularly of traditional brick or stone construction and/or with exposed wooden beams greater than 20 cm thick;
   - all buildings with weather boarding and/or hanging tiles that are within 200 m of woodland and/or water;
   - pre-1960 detached buildings and structures within 200 m of woodland and/or water;
   - pre-1914 buildings within 400 m of woodland and/or water;
   - pre-1914 buildings with gable ends or slate roofs, regardless of location;
   - all tunnels, mines, kilns, ice-houses, adits, military fortifications, air raid shelters, cellars and similar underground ducts and structures;
   - all bridge structures, aqueducts and viaducts (especially over water and wet ground); and
   - all developments affecting buildings, structures, trees or other features where bats are known to be present.

ii. Proposals involving lighting of churches and listed buildings or floodlighting of green space within 50 of woodland, water, field hedgerows or lines of trees with obvious connectivity to woodland or water.

iii. Proposals affecting quarries with cliff faces with crevices, caves or swallets.

iv. Proposals affecting or within 400 m of rivers, streams, canals, lakes, or within 200 m of ponds and other aquatic habitats.

v. Proposals affecting woodland or field hedgerows and/or lines of trees with obvious connectivity to woodland or water bodies.

vi. Proposed tree work (felling or lopping) and/or development affecting:
   - old and veteran trees that are older than 100 years;
   - trees with obvious holes, cracks or cavities; and
   - trees with a girth greater than 1 m at chest height.

vii. Proposed development affecting any feature or locations where bats are confirmed as being present, revealed by either a data trawl (for instance of the local biological records centre) or as notified to the developer by any competent authority (e.g. planning authority, Statutory Nature Conservation Organisation or other environmental or conservation organisation).

Remember this is intended as a guide only and bats may be found in other situations beyond those listed above. For example, pipistrelle and brown long eared bats will frequently occupy modern buildings and built structures. You may therefore be asked to submit a bat survey prior to determination even if your development type is not shown on this trigger list.

Developers, and those acting for them, should be mindful that disturbance of any roosts or harm to a bat or bats is a criminal offence.

10. Appendix D - Cornish hedges and development

10.1 What is the difference between a hedge and a hedgerow?

In Cornwall, a hedge is considered to be a built structure or bank that may or may not be faced with stone. Frequently, these are topped with trees, shrubs and other plants which sometimes, but not always, form hedgerows.

A hedgerow is generally understood to be a boundary line of trees or shrubs which tend to be over 20m long and less than 5m wide at the base, provided that at one time the trees or shrubs were more or less continuous.

If you would like to know more about these features Cornish Hedges have a very informative website dedicated to producing advice on the value, construction and management of Cornish hedges which can be accessed here http://www.cornishhedges.co.uk/

In relation to this Biodiversity Supplementary Planning Document appendix when we refer to hedges we mean any bank, whether faced with stone or not, which is often but not always topped with trees, scrub or other vegetation.

10.2 Cornish hedges in the Landscape

Cornish hedges have defined our landscape for centuries and today provide a distinct local identity quite different from other areas of the country where hedgerows are more common.

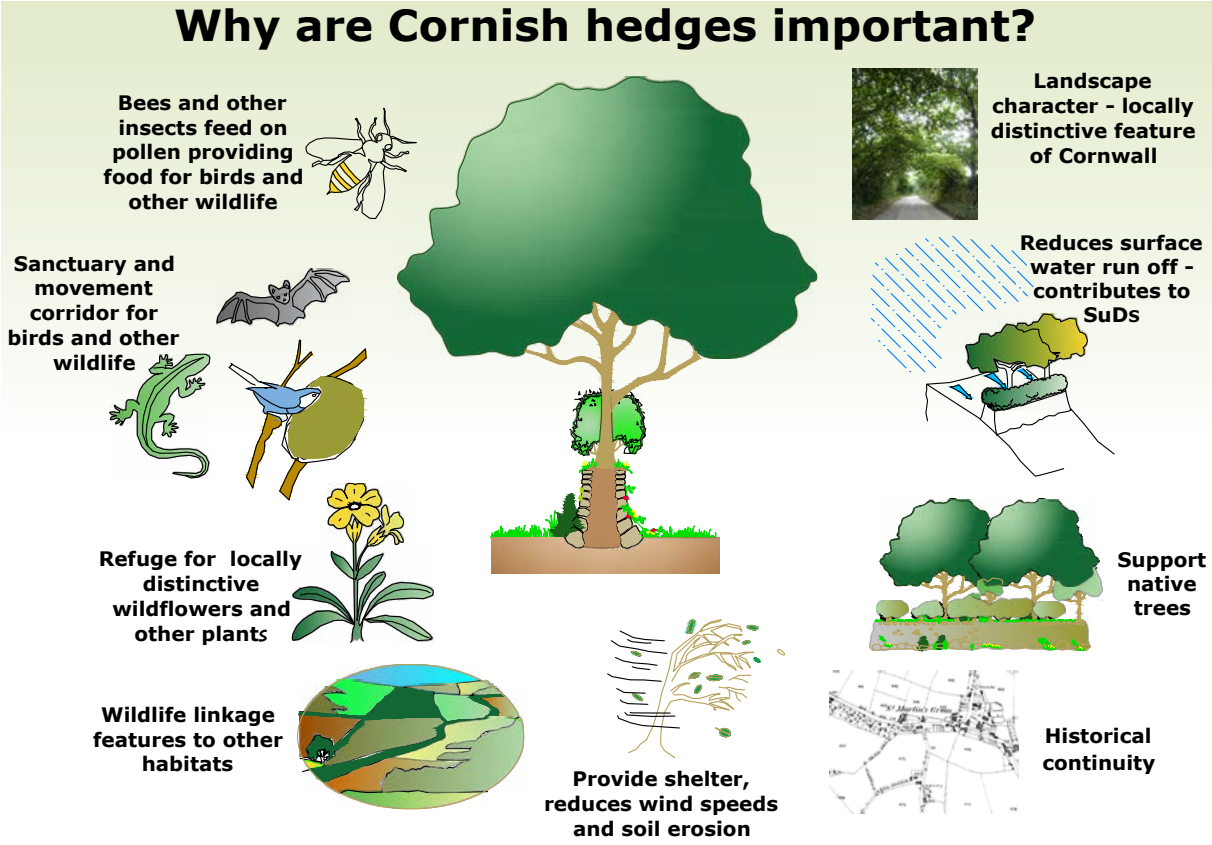
In Cornwall there are still about 30,000 miles of hedges which constitute our most prominent landscape feature.

In urban areas and around our gardens more formal planted hedges or hedgerows may be found. These provide shelter, protection, seclusion, privacy and a backdrop, for other plants and features.

10.3 Cornish hedges and Biodiversity

In Cornwall there are about 30,000 miles of hedges, our largest semi-natural habitat. Often with additional grassy margins and ditches, they provide a variety of conditions which elsewhere occur only in a wide range of different habitats. Across Cornwall our variety of hedges include the characteristics of flower-meadows, woodlands, scrub and wood margins, heathland, wetland, rocky outcrops and sea cliffs.

The high wildlife value of Cornish hedges results from their individual and collective habitat importance. There are more than 500 native plant species living in a widely diverse range of hedge habitats. The physical structure of Cornish hedges, especially with a grassy margin or ditch, provides a variety of conditions suitable for the flora and fauna of grassland, woodland, moorland, cliff and wetland.



10.4 Hedges as Biodiversity Action Plan Habitat

Ancient and/or species-rich hedgerows are a priority habitat under the UK Biodiversity Framework which contains the following objectives and targets:

- Halt the net loss of species-rich hedgerows through neglect and removal by the year 2000.
- Halt all loss of hedgerows which are both ancient and species-rich by 2005.
- Achieve favourable condition for 25% (c.47,500 km) of species-rich and ancient hedges by 2000.
- Achieve favourable condition for 50% (c.95,000 km) of species-rich and ancient hedges by 2005.
- Maintain the overall national number of individual hedgerow trees (estimated by CS2000 to be 1.8 million in Great Britain in 1998), by maintaining the number of such trees within each county or district, through ensuring a balanced age structure.

10.5 Why is an individual hedge valuable?

- It is a structure that provides many differing habitats and microhabitats
- It is a sanctuary for species within a landscape which has been converted to intensive arable and silage fields, or urban development

10.6 Why are Cornish hedges important collectively?

- include a wide range of altitudes, shelter, maritime exposure and geological composition
- have a long and continuous history, often species-linked with the original pre-farming landscape.
- Provide linking refuges between other habitats.

10.7 Assessing hedges for development

It is essential that hedges are assessed as both a landscape and biodiversity feature as part of any development proposal.

Due to the high biodiversity value of hedges, and the key role they play in our landscape and sense of place in Cornwall there is a strong presumption in favour of the retaining of all hedges within developments.

10.7.1 Cornish hedges and the Hedgerow Regulations (1997)

The definition of a hedge used in the Hedgerow Regulations does not accord with all Cornish hedges, since many do not have rows of trees or bushes on them. Many Cornish hedges are very rich in plants and animals and are of high landscape and historical importance yet are not classed as 'important' under the regulations. The Hedge (and Wall) Importance Test (HIT), devised by the Guild of Cornish Hedgers is an alternative which can be applied to all hedges, dry stone walls and hedgerows, including Cornish hedges. For more information on the HIT test see www.cornishhedges.com or appendix 4 of: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/320858/Defining_stone_walls_of_historic_and_landscape_importance.pdf

10.7.2 Master planning for hedges

It is very important that the masterplan reflects the existing network of hedges within a site, and considers how best to retain hedges within a development. It is recognised that it is often required to create access points through hedges, and these should be sited where the hedge is of least value. This can be achieved by widening an existing access point, or choosing a degraded,

weakened or low biodiversity section of hedge. *Figure 1*

In order to retain the character of the hedge the cut ends of new access points should be faced in a similar stone to the original hedge, and planted on either side to create as continuous link of vegetation over the gap as possible e.g. by tree planting on either side of the new gap.

10.7.3 Buffering for hedges

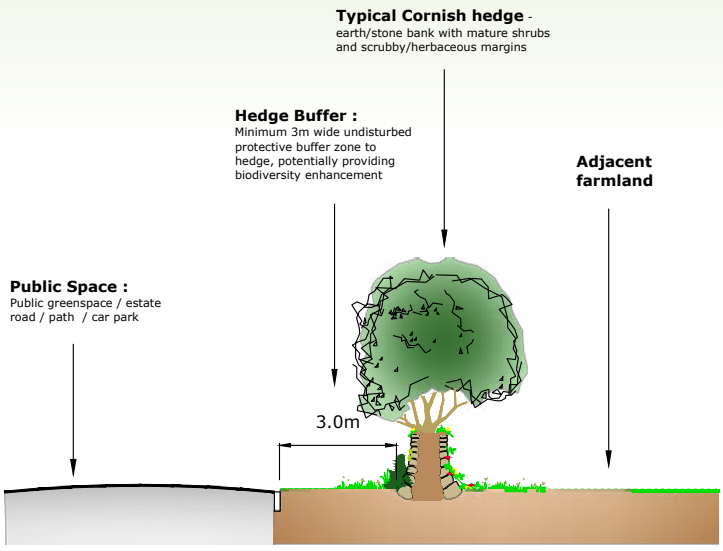
In addition it is important that hedges are suitably buffered within developments. For residential developments as an absolute minimum a buffer of 2m either side of the hedge is required. For industrial and solar farm developments a 5m buffer is an absolute minimum. Where woodland is present a 10m buffer is absolute minimum. Where hedge trees are present root protection zones should be calculated using BS5837, as the roots of trees will stretch out of the hedge and into the surrounding fields. Thus the minimum buffer sizes given above are likely to be significantly larger where hedge trees are present.

We have therefore developed the following guidance for the treatment of hedges within developments, which is based around three common scenarios.

SCENARIO 1:
Hedgerow retained as a boundary between public realm and adjacent farmland

SUSTAINABILITY RATING :

High value Cornish hedges should be retained in this scenario



PRO'S

1. Hedgerow retained as boundary so ensuring future viability
2. Maintenance of Cornish hedge and hedge margin bounding public realm to best practice , as agreed in proposed development landscape management plan (planning requirement)
3. Farmland side of hedge remains unaffected by development , good for retaining biodiversity value. Agricultural management regime in place

CON'S

1. Biodiversity value of hedge may be negatively impacted by street lighting

10.8 The treatment of hedges in development

Most favoured -

10.8.1 Scenario 1 - Retention of hedges within the public realm

(see figure 1)

It is preferred if masterplans can set out developments with existing hedges retaining a function as a strategic boundary, which may be as part of a public open space. With larger multifunctional open spaces it may be feasible to use the hedgerows to separate them into smaller areas. Ideally the different areas should have different characteristics and functions to make sense of the divisions. This means that a green buffer is retained on both sides of the hedge, and the hedge forms part of the natural and amenity value of the public open space. Furthermore access for maintenance of the hedge is assured for the long term. Careful consideration is needed for the needs for natural surveillance of formal open spaces. See Design Requirements in the Council's Open Space Strategy. Formal parks & amenity (type1), children's equipped play (type 4) and in some cases youth provision (type 5) require a degree of visibility from other community facilities, roads and housing frontage that hedgerows inevitably prevent. Whereas using the hedgerows to separate natural spaces (type 2), sports pitches (type3) or allotments (type6) from other spaces can work well, providing the access is well-planned. This can lead to very linear open spaces, which may work as green corridors for wildlife & pedestrian/cycle movement, and will normally be classed as natural open spaces only. Consideration should be given to minimum size requirements of open spaces.

10.8.2 Scenario 2 – Retention of hedges along roads and public areas

(see figure 2)

As a second public realm option it is also considered acceptable to site hedges between roads and another public area, such as some types of open space. As with the option of fully siting hedges within public open space this encourages the long term retention of the hedge for screening, and allows access for maintenance. In view of the natural surveillance requirements of more formal open spaces, consideration needs to be given to where the primary views into the site are needed. If the proposed hedge-lined road represents the only view into the space, then it would only be suitable for open space such as natural space (type 2) where access will be informal, or for separate facilities such as sports pitches (type3), allotments (type6) or cemeteries (type &). This

Figure 2

SCENARIO 2:
Hedgerow retained as a boundary within public areas

SUSTAINABILITY RATING :

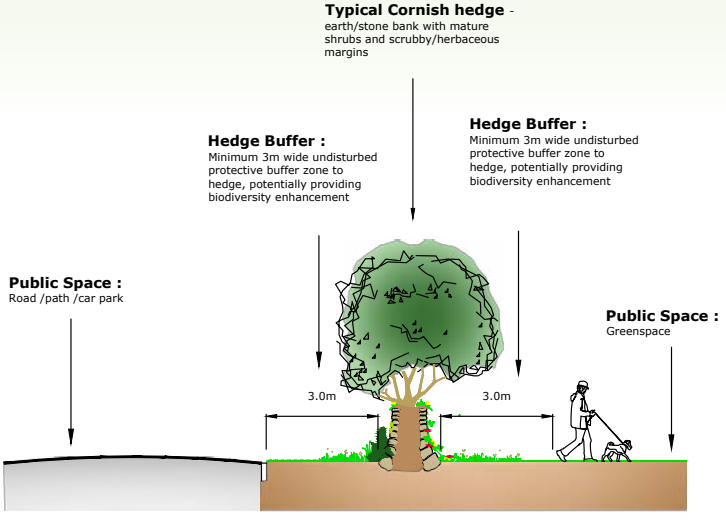
High value Cornish hedges should be retained in this scenario

PRO'S

1. Hedgerow retained as boundary so ensuring future viability
2. Maintenance of Cornish hedge and hedge margins to best practice as agreed in proposed development landscape management plan (planning requirement)
3. Potential for biodiversity enhancement to hedge on both sides

CON'S

1. Cornish hedge restricts natural surveillance of public greenspace
2. Biodiversity value of hedge may be negatively affected by street lighting

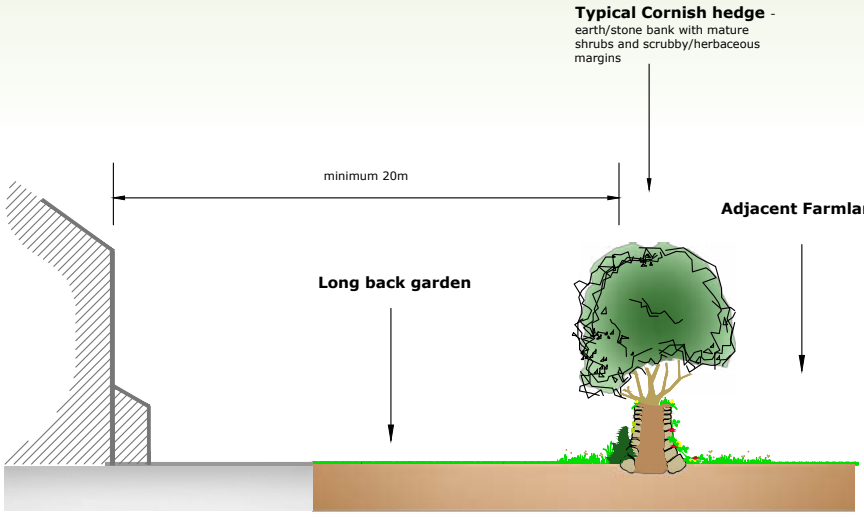


option is not as preferred as full retention within public open space as careful consideration to the surfacing of pavements and roads alongside hedges is required to ensure root zones are not adversely impacted. However, providing a development can demonstrate that they have considered the required buffer zones for the hedge and any hedge trees retaining hedges next to pavements or roads is acceptable.

Figure 3

SCENARIO 3:
Hedgerow retained as a boundary between private back gardens and adjacent farmland

SUSTAINABILITY RATING : ★★★



PRO'S

1. Hedgerow retained as boundary so ensuring future viability
2. Farmland side of hedge remains unaffected by development , good for retaining biodiversity value. Agricultural management regime in place

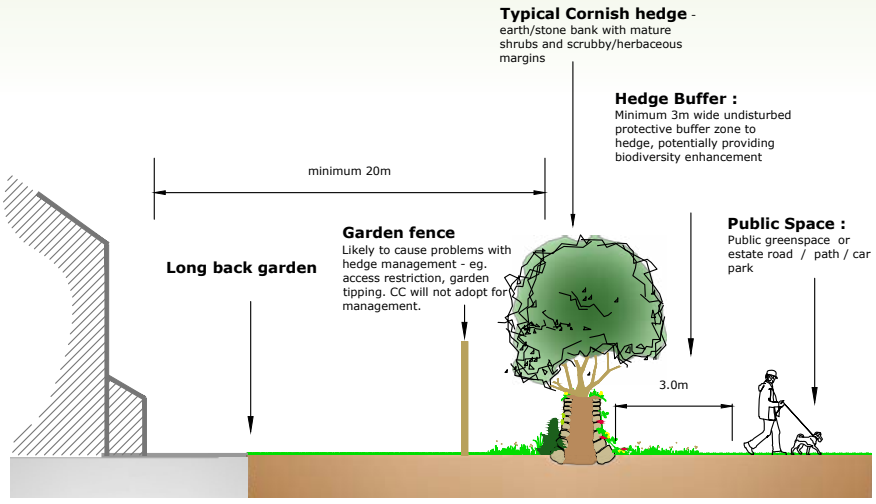
CON'S

1. Hedge on garden side may be out of scale with garden size and has the potential to create unwelcome shade leading to the removal of shrubs and trees, reducing the biodiversity value of the hedge itself and impacting on the wider interconnected wildlife corridor network.
2. Gardening activities attempting to improve the appearance of the hedge may lead to removal of native vegetation , use of garden chemicals and introduction of non native species - all of which would significantly reduce the biodiversity value of the hedge
3. Biodiversity value of hedge may be negatively affected by domestic/garden lighting

Figure 4

SCENARIO 4:
Hedgerow retained as a boundary between private back gardens and adjacent public realm

SUSTAINABILITY RATING : ★★★



PRO'S

1. Hedgerow retained as boundary, so ensuring future viability
2. Maintenance of Cornish hedge and hedge margins from public realm side to best practice as agreed in proposed development landscape management plan (planning requirement)
3. Potential for biodiversity enhancement to hedge on public realm side

CON'S

1. Hedge on garden side may be out of scale with garden size and has the potential to create unwelcome shade leading to the removal of shrubs and trees, reducing the biodiversity value of the hedge itself and impacting on the wider interconnected wildlife corridor network.
2. Gardening activities attempting to improve the appearance of the hedge may lead to removal of native vegetation , use of garden chemicals and introduction of non native species - all of which would significantly reduce the biodiversity value of the hedge
3. Hedge potentially subject to light pollution from domestic/garden and street lighting

10.8.3 Scenario 3 – Retention of hedges with one garden boundary

(see figures 3 and 4)

Retaining hedges next to small gardens is not encouraged. This is because there tend to be two treatment options for hedges in this scenario, and neither assures the long term retention of the hedge. The first is to leave the hedge as the garden boundary. In large gardens this approach is acceptable as the hedge is usually retained as the garden is large enough to cope with any dryness or shading issues from the hedge. However in smaller gardens hedges are often degraded over time, and in many cases completely removed. The second option is to fence off the hedge. This is considered unacceptable however as it tends to create "dead space" that encourages weeds, the tipping of garden waste, antisocial behaviour and could eventually be lost to encroachment. It is therefore strongly encouraged that hedges are not used as garden boundaries unless gardens are large enough to accommodate them – a minimum of 30m length from habitable building.

10.8.4 Scenario 5 – Hedgerows translocated on site to retain mature habitat structure

(see figure 5)

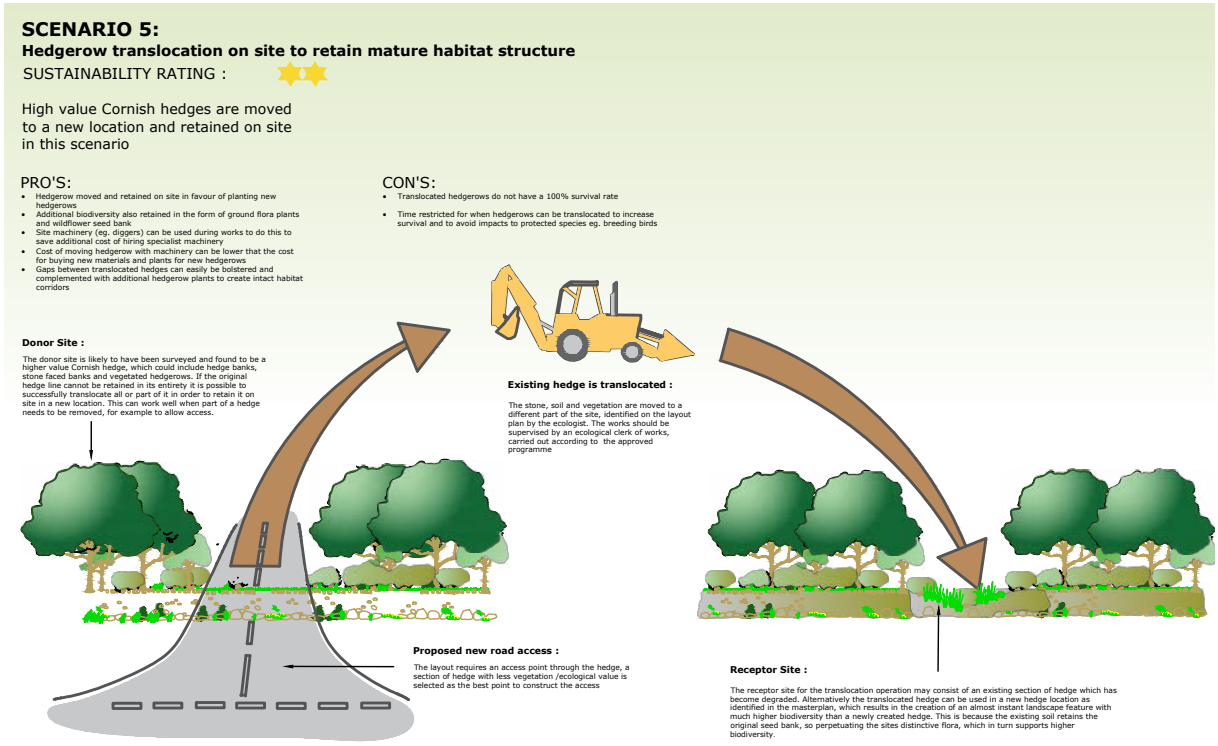
Hedgerows can be moved (translocated) and retained on site in favour of planting completely new hedgerows, if they cannot be retained on site in their original location. This is now recognised as a standard practise and it is preferred if masterplans can set out developments with existing hedges translocated on site to retain a function as a strategic boundary, which maybe as part of a public open space or a garden boundary.

This option is not as preferred as full retention on site as translocated hedgerows do not have a 100% survival rate. Translocation should only be carried out in the winter months when the plants are dormant and before the bird nesting season starts. A specific method statement should be supplied alongside the landscape masterplan to appropriately set out the translocation process in order to review the methodology for translocation, approve the locations of donor (original hedge location) and receptor (new hedge location) boundaries and the timing of the operations.

Where possible, hedgerows should be moved a shorter distance as deemed possible in order reduce stress on the plant and give the best chance of success due to the similar soil and weather conditions. Prior to undertaking the hedgerow translocation, adequate space at the receptor site will be secured to ensure longevity and success.

During the translocation works an Ecological

Figure 5



Clerk of Works (ECoW) should be present to assess and supervise the process and subsequently search for the presence of ecological features such as reptiles and amphibians which maybe hibernating within the roots and leaf litter of the hedge. If reptiles and/or amphibians are found, work will stop until appropriate reptile/amphibian refugia have been sited and the species individuals have been moved into a safe location.

Furthermore, as with retained hedgerows, once translocated, careful consideration to the surfacing of pavements and roads alongside hedges is required to ensure root zones are not adversely impacted. If the development can demonstrate that they have considered the required buffer zones for the hedge and any hedge trees translocating hedges next to pavements or roads is acceptable.

10.8.5 Scenario 6 – retention of hedges sandwiched between back gardens

(see figure 6)

For the reasons stated above the retention of hedges as a boundary between two gardens i.e. sandwiched between back to back gardens is strongly discouraged. If this treatment of hedges is adopted within a development 50% of the length of hedge in this scenario must be treated as lost within your Ecological Constraints and Opportunities Plan and Habitat Lost and Gained tables. This is to reflect the likely long term reduction in the biodiversity value of hedges treated in this way.

Applications treating hedges in this way will need to demonstrate that there is no way of delivering scenario's 1-5, in order of priority, in order for this approach to be supported by the County Ecologist and Landscape Architects.

- Least favoured

10.9 Hedges for biodiversity value

10.9.1 Planting hedges for biodiversity

There is a strong preference for planting native mix hedges regardless of the development proposals. Single species "amenity hedges" such as ***Griselinia Littoralis*** or ***Photinia x fraseri*** are not generally supported as suitable alternatives. If non-native species are required it is preferable these are either mixed with native hedge species, or selected for their biodiversity value, such as production of edible berries or seed.

For native hedges it is suggested a mixture of species is chosen, such as 75% hawthorn and 25% mix of other species such as holly, blackthorn, guelder rose, hazel, beech and dog rose. Hawthorn, blackthorn or holly often provides the basis of stock-proof hedges.

Figure 6

SCENARIO 6:
Hedgerow retained as a boundary between two private back gardens

SUSTAINABILITY RATING :

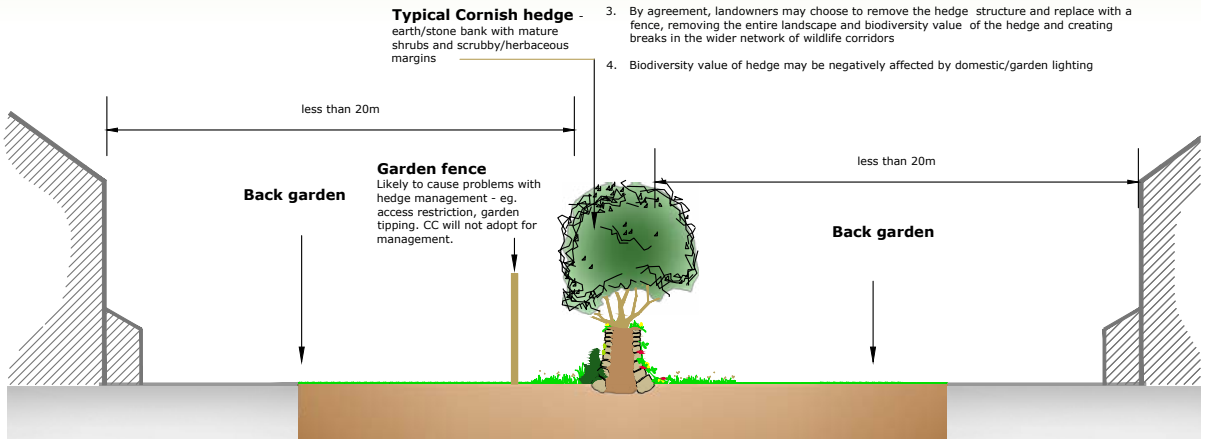
In this scenario Cornish hedges will be counted as 'LOST' at a 50% ratio ie. if a 200m length of hedge is sandwiched between gardens, a 100m length should be counted as 'lost' in the 'habitats lost and gained table', EQUIVALENT REPLACEMENT HABITAT will be required

PRO'S:

1. Some attempt has been made to retain the hedgerow within the development and it's function as a boundary may provide future viability but this depends on the scale and nature of the hedge, the aspect, the length of the back gardens and any specific agreements in place regarding hedgerow protection and management.

CON'S:

1. Hedges may be out of scale with garden sizes and have the potential to create unwelcome shade leading to the removal of shrubs and trees, reducing the biodiversity value of the hedge itself and impacting on the wider interconnected wildlife corridor network.
2. Gardening activities attempting to improve the appearance of the hedge may lead to removal of native vegetation , use of garden chemicals and introduction of non native species - all of which would significantly reduce the biodiversity value of the hedge
3. By agreement, landowners may choose to remove the hedge structure and replace with a fence, removing the entire landscape and biodiversity value of the hedge and creating breaks in the wider network of wildlife corridors
4. Biodiversity value of hedge may be negatively affected by domestic/garden lighting



Managing hedges for biodiversity value

- Oak, hawthorn, blackthorn and bramble are the richest common hedgerow hosts for wildlife species.
- Ivy gives vital autumn and winter food and shelter to many beneficial insects and birds.
- Dead trees, topped at 3m (10ft) and left to rot away gradually, benefit invertebrates and fungi.
- The thicker and higher the hedge, the more food and safety it provides for hedge-nesting birds.
- A good mix of native locally-occurring hedge plants yields berries and seeds throughout the winter.
- Bushy hedges make corridors between isolated habitats, encouraging biodiversity.
- Plenty of mature growth in the hedge harbours useful predators, e.g. ground beetles.
- Trees, bushes and summer wildflowers along the hedge encourage insect-eating birds and bats.
- Stone hedges are valuable for lichens, ferns, mosses and lizards.
- Untrimmed growth is needed for the whole life cycles of many moths and butterflies.
- Leaving dead twigs, leaves and fallen fruits in the hedge provides the basis for food for many insects, song birds and small mammals
- Cutting each side of the hedge in rotation so only one side is cut at any one time, which allows species to continue to inhabit the uncut portion.

10.10 Creating new hedges

Newly created hedges should follow the local vernacular, and should ensure they supply suitable niches for the establishment of vegetation. Cornish hedges should be constructed using the Cornwall Council plan shown below.

Figure 6 – Cross section of a Cornish Hedge

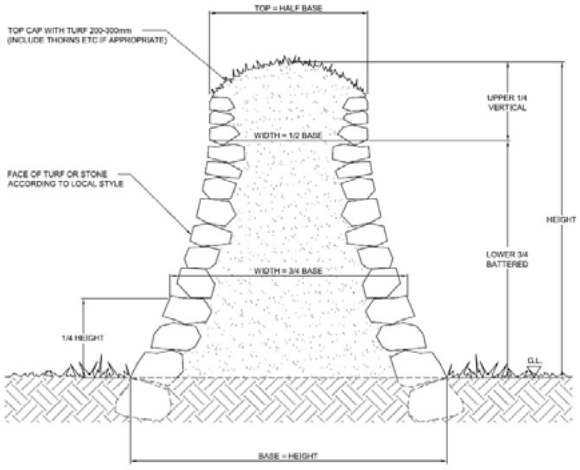


Figure 7, examples of Cornish walls suiting the local vernacular

In general, native plant species should be the first choice when it comes to planting up schemes and hedges. This is especially the case where you are providing planting to mitigate or compensate for a loss of existing native species (some landscape schemes may require a greater diversity of tree species and you can consult the Cornwall Council forestry team for advice on

this). Where applicable additional notes are provided on which species are suited to various parts of Cornwall, as some of the more commonly used species are not naturally found in Cornwall. The list below is a good starting point for native species that are suitable for planting:

Table 1 – Suitable native species for planting schemes

Species	Scientific Name	Notes
Hawthorn	***Crataegus monogyna***	Generally suitable across Cornwall
Hazel	***Corylus avellana***	Generally suitable across Cornwall
Blackthorn	***Prunus spinosa***	Generally suitable across Cornwall
Crab Apple	***Malus sylvestris***	Rare in Cornwall although widespread. Not as suitable for planting as Hawthorn, Blackthorn, Ash, Holly and Hazel.
Holly	***Ilex aquifolium***	Generally suitable across Cornwall
Pedunculate Oak	***Quercus robur***	Generally suitable across Cornwall
Ash	***Fraxinus excelsior***	Generally suitable across Cornwall. Remember that due to Hymenoscyphus fraxineus passported ash planting material will need to be assessed as being free of H. fraxineus and authorised to be moved. Users of ash should plant only plant passported stocks.
Field Maple	***Acer campestre***	Probably native in the far south-east and far north-east, north of Bude. Elsewhere it is not appropriate. Mainly found on base-rich soil.
Wild privet	***Ligustrum vulgare***	Scarce in the granite areas and on the Lizard, but is native and so suitable for planting.
Dog rose	***Rosa canina***	Generally suitable across Cornwall
Dog wood	***Cornus sanguinea***	Native only in the extreme south-east of Cornwall; elsewhere it is not appropriate as non-native and prefers alkaline soils. Therefore only suitable in the area around St Germans, Torpoint and Saltash.
Wayfaring tree	***Vibernum lantana***	Vibernum lantana
Guelder rose	***Vibernum opulus***	Native in Cornwall, mostly in the east from north to south but also in central areas around Bodmin. Not appropriate for planting in west Cornwall.
Hornbeam	***Carpinus betulus***	Very rare in most of Cornwall apart from the south-east, and even here is likely to have been planted. It is native in Britain only in the south-east.
Sessile Oak	***Quercus petraea***	Common throughout Cornwall and suitable for new plantings, especially on the more acid soils.
Alder	***Alnus glutinosa***	Italian Alder and Grey Alder are not suitable for planting in Cornwall, instead use Alder, Alnus glutinosa.
Grey Willow	***Salix cinerea***	If planting Willow use Grey Willow Salix cinerea not Goat Willow Salix caprea which is rare in Cornwall, preferring drier habitats
European Gorse	***Ulex europaeus***	Suitable across Cornwall unless very wet

Note that the Wayfaring tree (Viberbum lantana) does not naturally occur in Cornwall even in the east. It is not even common in Devon, where it is largely restricted to the south-east.

11. Appendix E Environmental bodies and their role in the planning process

Organisation	Role in Planning Process	Contact Details
Natural England (Local Team Office)	Has a statutory role as consultee or advisor on protected species, development affecting statutory sites and ecological/geological aspects of EIA	https://www.gov.uk/government/organisations/natural-england Email: enquiries@naturalengland.org.uk Phone: 03000603900 Local Office: Polwhele, Truro, TR4 9AD
Natural England (Licensing Section, Bristol)	Has a statutory role to issue and advise upon licences for legally protected species for the purposes of development	https://www.gov.uk/government/organisations/natural-england Email: commercialservices@naturalengland.org.uk Email: wildlife@naturalengland.org.uk Licensing Office: Natural England, Horizon House, Deanery Road, Bristol BS1 5AH
Environment Agency	Has a statutory role as a consultee or advisor on sustainable development	https://www.gov.uk/government/organisations/environment-agency Email: enquiries@environment-agency.gov.uk
Cornwall Council	Planning authority and highway authority. Historic Environment Service Environment Service: General guidance/ pre application advice for trees and ecology on applications to be determined by the County Council	https://www.cornwall.gov.uk
Cornwall Wildlife Trust	Non-statutory consultee to planning applications affecting County Wildlife Sites and for major developments	www.cornwallwildlifetrust.org.uk Email: info@cornwallwildlifetrust.org.uk Local Office: Five Acres, Allet, Truro TR4 9DJ
RSPB	Non-statutory consultee to planning applications affecting RSPB reserves and major developments likely to impact on areas important for birds.	https://www.rspb.org.uk/ Local Office: 4th Floor (North Block), Broadwalk House, Southernhay West, Exeter EX1 1TS
Cornwall AONB Team	Advise on development proposals that are potentially damaging to the character of the Cornwall AONB	http://www.cornwall-aonb.gov.uk/ Email: info@cornwall-aonb.gov.uk Local Office: Room 4A, Pydar House Pydar Street, Truro TR1 1EA

Organisation	Role in Planning Process	Contact Details
Tamar Valley AONB unit	Advise on development proposals that are potentially damaging to the character of the Tamar AONB	http://www.tamarvalley.org.uk/ Email: enquiries@tamarvalley.org.uk Local office: The Tamar Valley Centre, Cemetery Road, Drakewalls, Gunnislake, PL18 9FE
Environmental Records Centre for Cornwall and the Isles of Scilly	Collates, manages and disseminates environmental information, Five Acres,	http://erccis.org.uk/ Telephone: 01872 302250 Email: ERCCIS@cornwallwildlifetrust.org.uk Local Office: Five Acres, Allet, Truro TR4 9DJ
Forestry Commission	Consultee on any development that is within, or will potentially have an effect on, ancient woodland	http://www.forestry.gov.uk/england Email: southwest.fce@forestry.gsi.gov.uk Local Office: Buller's Hill, Kennford, Exeter EX6 7XR
Marine Management Organisation	Statutory body for the marine environment, e.g. marine licencing, marine planning and marine policy. Also work on marine sites and species.	Email: consultations.mmo@marinemanagement.org.uk Local office: Chi Gallos, Hayle, Marine Renewables Park North Quay, Hayle TR27 4DD
Cornwall Inshore Fisheries and Conservation Authority (IFCA)	Advice on developments which may affect woodlands, or are seeking to provide new, especially public, woodland.	Email: enquiries@cornwall-ifca.gov.uk Local office: Chi Gallos, Hayle Marine Renewables Park, North Quay, Hayle TR27 4DD
Woodland Trust	Advice on developments which may affect woodlands, or are seeking to provide new, especially public, woodland.	https://www.woodlandtrust.org.uk/ Email: england@woodlandtrust.org.uk Kempton Way, Grantham, Lincolnshire NG31 6LL
Local office: Chi Gallos	Advice on developments which may affect invertebrates and pollinators. Advice on planting mixes which are good for invertebrates and pollinators, including for roadside verges, public open space etc.	https://www.buglife.org.uk/ Local Office: THINQTANQ, Fairbairn House, Higher Lane, Plymouth PL1 2AN
Butterfly Conservation	Advice on developments which may affect butterflies	info@butterfly-conservation.org.uk Manor Yard, East Lulworth, Wareham, Dorset, BH20 5QP

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13. Case studies

13.1 Case Study: Bats at Church Hall, Mithian

Figure 1. The church hall. © CEC Ltd.

13.1.1 Site Assessment

Located NW of Chiverton Cross roundabout backing onto a tree lined country lane.

Habitat features: The surrounding area consists of various native trees and hedgerows, with a good network of scrub which provides good foraging areas for bats.

Evidence of brown long-eared bats during the visual assessment (16/12/10) and the lesser horseshoe bat during an emergence survey (23/05/13).

13.1.2 Scheme Proposal

Church hall conversion- residential accommodation

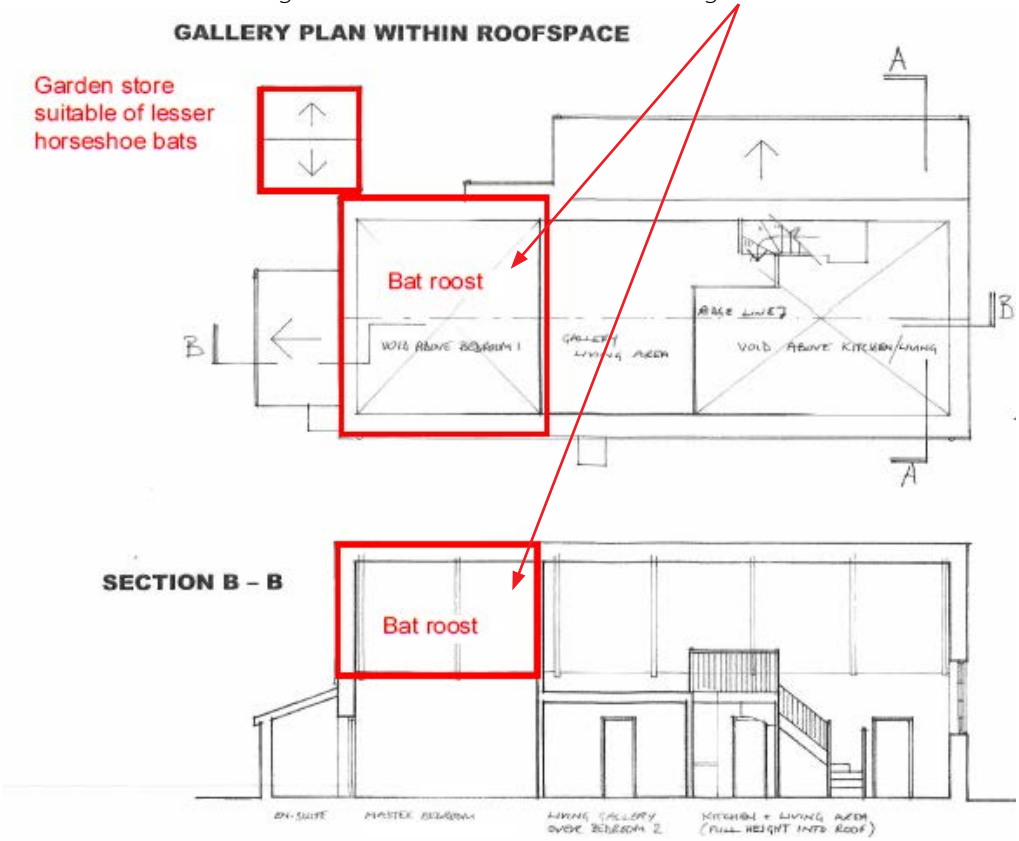
13.1.3 Key Issues

Conversion of the church hall could disturb bats roosting and feeding. Bats have an EPS status under the Conservation Regulations (1994).

Lighting can have a significant effect on bat species roosting, foraging and navigating.

13.2 Mitigation required

- EPS licence to be obtained from Natural England is essential before works commence.
- Bat boxes to be installed in boundary trees for alternative roosting.
- Roof void to be made suitable with access on the south elevation for day roosting of the brown long eared bat.
- Outbuilding to be made available for feeding and night roosting lesser horseshoe bats. To be fitted with a bitumen felt roof lining
- Minimal lighting near the access points and roosting areas.



13.3 Case Study: Bird boxes at Nansledan

13.3.1 Site Summary

Nansledan is a 540-acre site in Newquay which will provide up to 4,000 homes.

The masterplan addresses sustainability to provide solutions to minimise and mitigate the impact on the environment.

The Duchy and RSPB are working in partnership to trial the use of nesting boxes in Nansledan.

13.3.2 Environmental Strategy

The building contractors are fitting unobtrusive artificial cavities into houses for swifts, starlings, and house sparrows.

The aim of this is to provide additional habitat for various bird species and to encourage this practice in other developments.

The bird boxes are self contained, inexpensive and durable unlike the more traditional external nest boxes.

Providing multiple bird boxes in properties will attract species such as swifts, house martins and swallows that stay in colonies during breeding periods.

Figure 1. Example of a bird box at Nansledan. © 2016 Duchy of Cornwall.

The bird boxes with adequate building materials and insects as a food source for the birds nearby increase the chance of colonies returning to previous nesting sites.

Figure 2. Bird box within brick wall

Figure 3. Wood clad wall with bird boxes

Figure 4. Block wall installation with integrated box

13.4 Case Study: Langarth Park and Ride

13.4.1 Site Summary:

- Site area: 10.97ha
- Native woodland and shrub area: 1.3ha
- New meadow areas: 2.26ha
- 2.6 million users from August 2008-May 2015
- SUDS in operation
- CEEQUAL Excellent award

Figure 1. Entrance to the site. CEC Copyright 2015.

Figure 2. Establishment of Rudbeckia. CEC Copyright 2015.

13.4.2 Design Considerations:

- Respect the environment and quality of the Cornish landscape.
- Modern design approach to inspire future projects.
- Designed with sensitivity to key ecological features.
- Improved visitor experience compared to other parking facilities.

Figure 3. Area dominated by weeds. Copyright CEC 2015.

Figure 4. Buffer planting in front of hedges. Copyright CEC 2015.

Ecological Gain	Ecological Loss
Biodiversity increase from 5.22 units to 37.68 units	Over filtration of SUDS results in poor ecological value of the pond.
The buildings green roof provides additional habitat.	Tree canopy underdeveloped adding stress to fern growth.
Groundcover car park slope shrub established well, providing cover, berries, flowers and a nectar food source for wildlife.	Domination of space by weeds over various areas of the site, resulting in failure of other species such as heather, ***Betula*** and ***Prunus*** trees.
Habitats retained on site. Audits showed evidence of 6 species of bat and badgers on site.	Wildflower and herbaceous woodland have not developed well, causing diversity to be detrimentally low in some areas.

Table 1.Balance sheet of ecological loss and gain.

Figure 5. Key mitigation features Copyright CEC 2015.

13.5 Case Study: Bee bricks

Numbers of solitary bees are on a decline for various reasons, including chemical farming, less wildflower meadows and less available habitat.

Adapting existing building components to cater for wildlife can make a great difference.

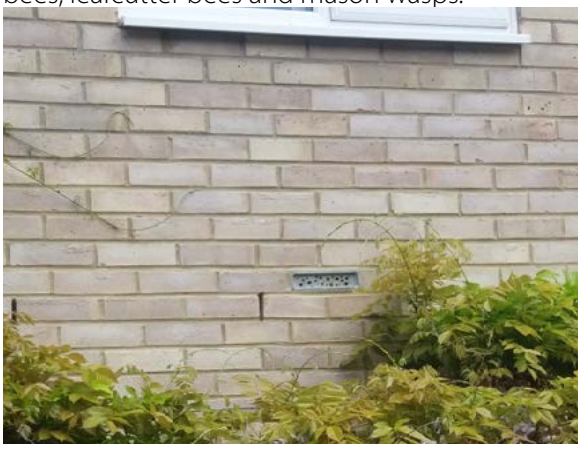
Bee bricks have been designed to support the declining bee population.

Each brick contains multiple cavities for bees to lay their eggs, providing habitats for the next generation of bees, which is vitally important in order to attain impressive population densities in urban settings.

The bricks are integral to a building and can be used in the construction of many homes and offices.

In this example bee bricks were positioned in a warm environment on a sunny walls with a nearby nectar source, at between 1-2m above ground level.

Common species attracted were nesting mason bees, leafcutter bees and mason wasps.



All photos Copyright Green and Blue, 2016.

13.5.1

13.6 Case Study: Lesser Horseshoe Bat Mitigation

13.6.1 Site Proposal:

Substantially renovate and modernise the property.

Figure 1. Lesser horseshoe bat roosting. © Plan For Ecology

13.6.2 Issues:

- Investigations using remote monitoring, visual assessments and emergence surveys presented the discovery of 10 lesser horse shoe bats roosting within the boat house below the property to hibernate in winter and as a maternity roost in summer.
- The disturbance would be so great that it would not be possible to undertake works whilst the bats were present.

Figure 2. Bat access point © Plan for Ecology

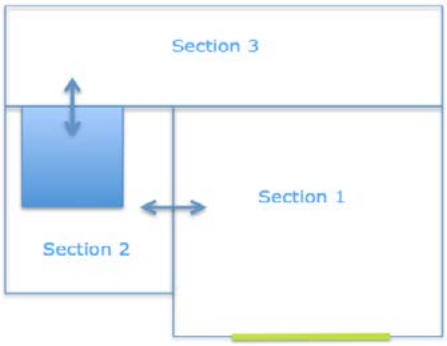


Figure 3. Boathouse layout with bat travel patterns (blue arrows) and entrance (green) © Plan for Ecology

13.6.3 Mitigation Conditions:

- A 6 week exclusion period scheduled to minimise disturbance of dependant pups and alternative roosting provision was made for use during the six week period.
- Exclusion monitoring to take place, ensuring no entrapment of bats in the boathouse.
- The alternative roost was situated on the flight path, featuring a bitumen roof, with minimal light and a plywood lining as well as false joints for roosting potential.
- Bat friendly products used in the renovation of the boathouse to enhance and safeguard the roost (such as insulation and a plywood lining).
- In accordance with the EPS license, monitoring will continue two years post development.

Figure 4. Bats roosting on a modern roofing membrane. © 2016 Indiegogo

13.7 Case Study: Hannafore storm water outfall reconstruction, Looe

13.7.1 Site:

Prior to works in 2008, the old cast iron storm overflow pipe was inadequate for water flows and had deteriorated. Resulting in surcharges of storm flows through manhole covers onto the frequently used beach with subsequent health and environmental impacts as raw sewage was exposed (figure 1). The substances could harm the delicate marine ecosystem and post a significant public health threat from pathogenic bacteria and viruses. The spills also contained plastic which was of risk to marine wildlife through entanglement and ingestion.

Figure 1. Sewage leaking through manhole covers. Copyright CWT.

13.7.2 Development:

BAM were contracted to replace the old pipework with a more substantial pipe sourced from local materials (concrete from Redruth and steel from Devoran). BAM used a wood float finish which encouraged colonization of marine algae on its rough surface.

13.7.3 Summary:

The work was completed in October 2009, having the following positive impacts:

- Surrounding seawater showing no raised levels of ammonia- reduced public health risk.
- Restoring the beach to its former clean and healthy environment
- An installed alarm system in the unlikely event of a system failure
- A monitoring strategy comprised of bi-annual cleans and monthly checks
- Algae and brown seaweed colonisation on the new pipe

A new clear walkway for public use to enjoy the wildlife or for water sports access (however this trampling effect could slow colonisation).

Figure 2. Colonisation of marine algae. Copyright CWT.

Figure 3. Presence of molluscs and limpets. Copyright CWT.

13.8 Case Study- Swanpool SSSI path edge repair works

13.8.1 Site:

Swanpool lagoon is a popular recreational resource located behind a shingle bar, with brackish water conditions maintained by tidal water influx.

Figure 1. Aerial view of site . © 2016 Spalding Associates (Environmental) Ltd.

Figure 2. Flooded pavement before repairs. © 2016 Spalding Associates (Environmental) Ltd.

13.8.2 Proposal:

Repair a section of the path on the southern edge of the pool that is a public safety hazard, causing flooding and disintegration of the pavement.

Figure 3. The repaired pavement. Copyright © 2016 Spalding Associates (Environmental) Ltd.

13.8.3 Mitigation:

- Avoided relocating high risk Victorella pavida habitat features
- Avoided adverse effects on the SSSI and pool waters
- Created additional colonisation opportunities for scientific research of the species.

Figure 4. Relocation boxes for Victorella pavida. Copyright © 2016 Spalding Associates (Environmental) Ltd.

Figure 5. Victorella pavida. Image: Michelle Carter (published on the MarLIN website).

13.9 Case Study- Reducing the impact on Amphibians from drains

Figure 1. A toad escaping a gully pot. © Perth and Kinross Council

Roadside gully pots are essential for reducing road surface rainwater, however, this comes at a cost of large numbers of amphibians being susceptible to falling into the gully pots during migration. Once trapped, is it likely that amphibians will die from starvation or being washed into the sewage system and drowning.

Figure 2. A toad avoiding drowning in a gully pot. © Andrew Law and Daniele Muir.

The UK has 6 native amphibians, some of which have rapidly declined in recent years, making conservation increasingly important

Figure 3. An amphibian ladder. © Andrew Law and Daniele Muir.

The Eden Project have been undertaking a one year trial of Enkamat ladders following reports of toads being stuck in the drains. In total, 10 ladders were installed and consequently there have been no reports of amphibians being trapped in the gully pots.

Figure 4. A rescued newt. © Cornwall College 2017

Figure 5. Toads rescued from a gully pot. © Andrew Law.

RAVON in the Netherlands conducted research into the best material for a vertical escape ladder. They concluded that enkamat (a plastic netting) was durable and easy to climb from the base of the gullypot to the road surface. 75% of all the amphibians were able to escape the test construction, lowering the gullypot-related mortality rate.

Figure 6. Enkamat "escape ladder". © ARG UK 2017

13.10 Case Study: Harbour Redevelopment, Hayle

13.10.1 Site Summary:

Estuary and harbour with post industrial areas, tidal sediments and rocks, subtidal pools and streams, saltmarsh and sand dune.

13.10.2 Development Proposal:

new road and infrastructure construction, new bridge on estuary, restoration of quay walls

13.10.3 Environmental Strategy:

A management plan was developed for the construction phase and ecologist appointed to safeguard water quality and monitor heavy metal contamination, ensure mitigation for birds, bats and reptiles and priority habitats. Biodiversity management plans ensured important features were considered and protected during future development phases.

Valuable rocky estuarine habitat for birds and fish was added to by placing boulders from site excavations onto the shore to extend the existing feature. Copyright Spalding Associates

Bridge construction works were successfully screened from wintering birds feeding and resting on the adjacent tidal flats of the RSPB reserve.. Copyright Spalding Associates

Baseline surveys had found a high value reptile community using the site. An hibernaculum was created as part of the longer term mitigation plan; the boulders were reclaimed during site clearance. Copyright Spalding Associates

Valuable low nutrient sandy soil habitat with short open vegetation was protected to maintain habitat diversity. Distinctive local plant communities were retained by careful 'storing' of existing soils containing seed of native and rarer species to be re-laid on site in suitable locations on completion. Copyright Spalding Associates

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