

Cinderford Northern Quarter Biodiversity Strategy Technical guidance (BSTg)



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Background

The Council in partnership with the Cinderford Regeneration Board set out a spatial programme for regeneration in the Core Strategy and the Cinderford Northern Quarter Area Action Plan (CNQAAP). In undertaking this programme the environmental complexity of the Northern Quarter was acknowledged, however the social and economic regeneration needs of Cinderford and the wider area are also considered very important. To address these issues the CNQAAP and its supporting documents set out high level requirements for biodiversity mitigation and enhancement.

In May 2013 the Council, with the involvement of partners, set about developing a more detailed Biodiversity Strategy to provide a strategic framework to guide individual proposals through the planning process.

As part of planning applications at the former Northern United colliery and at Newtown Road, the Homes and Communities Agency (HCA) prepared and submitted a Northern Quarter wide biodiversity strategy. The HCA's strategy has helped to inform the FoDDC Cinderford Biodiversity Strategy Technical guidance (CBSTg).

The terms of reference for the CBSTg were to develop a strategy that provided:

- a positive outlook addressing issues and providing sustainable solutions, it must be reflective of the Cinderford Regeneration Board's strategic objectives and Council policy;
- technical guidance for development proposals in the AAP area;
- a strategic focus to ecological requirements, supporting adaptable approaches dependent of individual development proposals at the time;
- guidance for future development of the CNQAAP, avoiding duplication by being based on the HCA strategy;
- opportunities for those with local specialist ecological knowledge to engage with the development of the strategy;
- opportunities for wider community groups and stakeholders to engage with the development of the strategy;
- elected members with an opportunity to engage with the development of the strategy through FoDDC's Planning Policy Support Group, Planning Committee, Cabinet & Full Council;
- a consultation draft of the strategy by August 2013.

Consultation stages

Stage		
Terms of reference for CBSTg	April 2013	
Local ecological specialists technical workshop	May 2013	
Local ecological specialists technical feedback workshop	June 2013	<i>(See Appendix 1)</i>
Planning policy Portfolio Holder's support group	June 2013	
Cabinet report to authorise public consultation on draft strategy	July 2013	
Public Consultation period	Aug/Sept 2013	
Revised draft	April 2014	
Planning Committee report on Consultation	June 2014	
Cabinet for adoption	June 2014	<i>Current stage</i>

1 . Introduction to the Cinderford Biodiversity Strategy guidance (CBSTg) and its use

Using this document

1.1 The CBSTg will help to guide development over the lifetime of the CNQAAP through to 2026 and beyond. It has been developed by the Forest of Dean District Council, with the involvement of other individuals and organisations. The starting point has been to map and evaluate the biodiversity resource of the area. The CBSTg then identifies likely impacts of proposals before outlining mitigation requirements which enable integration with wider forest plans.

1.2 In planning policy terms this document is technical guidance to help ensure that the requirements of Forest of Dean District Core Strategy (CS), the CNQAAP and the Masterplan and Design Code Supplementary Planning Document (MDC) are met. It does not form part of the development plan or local plan. In the context of the CNQAAP, however, it provides important information as to how the tests, requirements and standards set out in the CS, CNQAAP and MDC will be expected to be met by development proposals (see Figure 1.1). Whilst not part of the development plan the CBSTg is a ‘material consideration’ and gains ‘weight’ through its public consultation process and through the process of adoption as council policy. The planning policies in the CS and CNQAAP are written to safeguard the matters considered by the CBSTg. As a result planning proposals that do not accord with the BSTg are not likely to meet the biodiversity policy requirements set out in the CS or CNQAAP and will not be permitted.

1.3 Whilst the CBSTg is informed by many of the same planning policies, legislative requirements and ecological principles, as the previous HCA Biodiversity Strategy, it varies from it in a number of important respects. The BSTg has been produced by the Local Planning Authority (LPA) and provides technical guidance for all future development within the CNQAAP, whilst the HCA Biodiversity Strategy was produced by a developer to demonstrate how two specific planning applications (subsequently approved) at the Northern United and Forest Vale sites could meet relevant planning policies, legislative requirements and ecological principles. Whilst the HCA Biodiversity Strategy remains relevant to implementation of these two permissions, future applications should follow CBSTg.

1.4 There are strict national and in some cases international legislative requirements in relation to certain species and habitats in the CNQAAP. Biodiversity considerations are in any event fundamental to achieving sustainable development as required by the CNQAAP and MDC. The Council will use this CBSTg as one of the key documents in evaluating development proposals in and around the CNQAAP area.

1.5 Changing timescales, markets and demands are likely to mean that the form and pace of development will vary over the plan period to 2026. With this in mind the CBSTg sets out principles that should be followed and identifies the standards of protection, mitigation and enhancement expected of development. Whilst specific biodiversity measures set out in the CBSTg represent effective approaches, changes in information, time-scales and proposals may lead to changes to these approaches. In these circumstances development proposals will be expected to set out why the changes have occurred and demonstrate how the requirements of the key principles are met in revised approaches.

1 . Introduction to the Cinderford Biodiversity Strategy guidance (CBSTg) and its use

1.6 The CNQAPP sets out a detailed policy framework for the development of the area; this includes a number of policy areas in relation to biodiversity. This document sets out how these policy requirements can be met in respect of biodiversity, but does not itself, contain policies. With such a policy framework already in existence, together with the need to accommodate adaptability to biodiversity approaches, it is considered therefore that adoption of the CBSTg as a Supplementary Planning Document (SPD) is not necessary as it would add little in a planning policy context; it could be also seen to constrain biodiversity approaches.

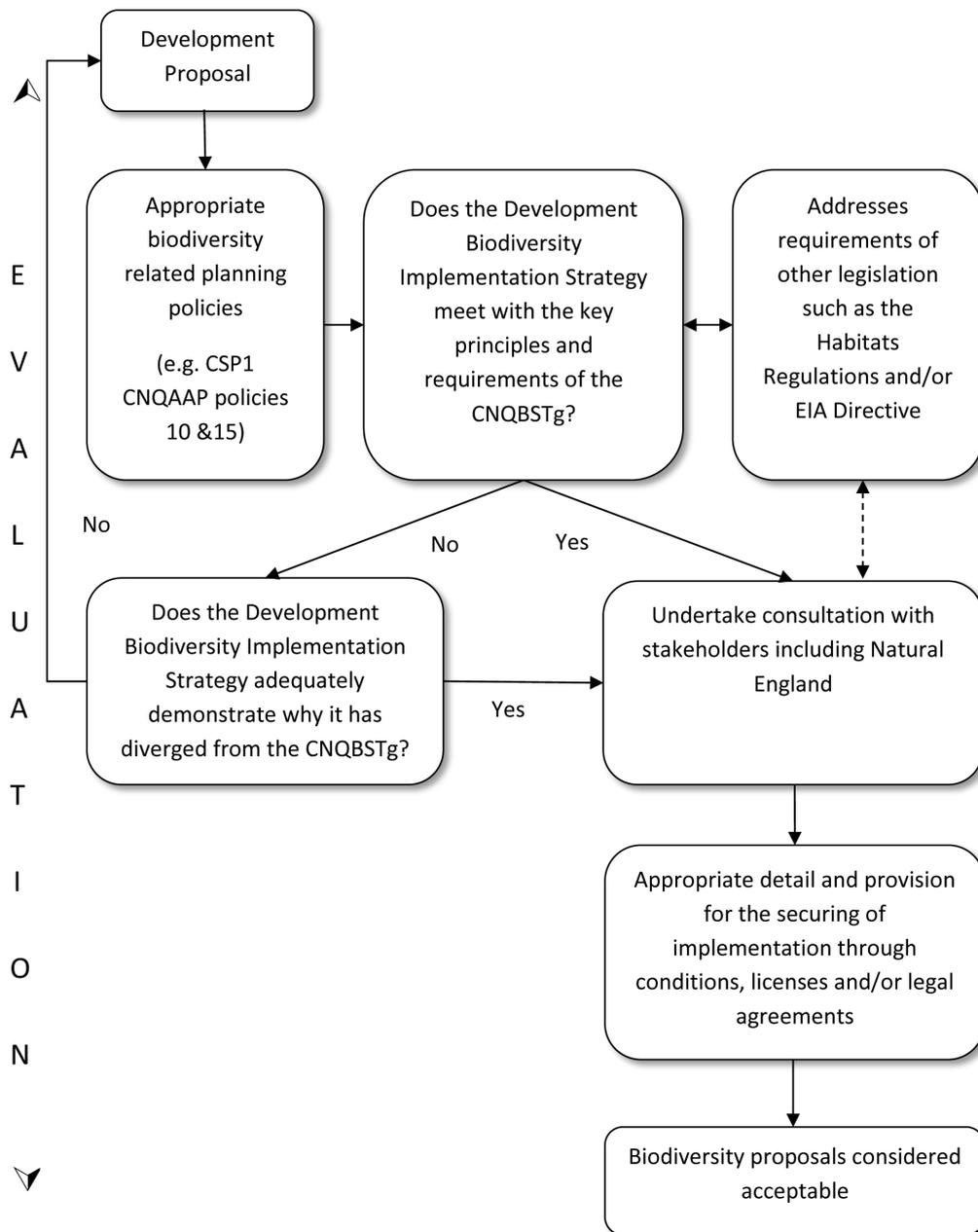


Figure 1.1

1 . Introduction to the Cinderford Biodiversity Strategy guidance (CBSTg) and its use

Planning Policy Context

1.7 The development of the CBSTg has been guided by a number of planning policies. These include the Government's planning policies, as set out in Chapter 11 of the National Planning Policy Framework, and its guidance as set out in the Natural Environment Chapter of the National Planning Practice Guidance. It has also been guided by the policies within the CS and CNQAAP as detailed in the following sections.

1.8 The CS includes three policies of particular relevance to the CBSTg:

1.9 Policy CSP.1 Design & Environmental Protection

The design and construction of new development must take into account important characteristics of the environment and conserve, preserve or otherwise respect them in a manner that maintains or enhances their contribution to the environment, including their wider context. New development should demonstrate an efficient use of resources. It should respect wider natural corridors and other natural areas, providing green infrastructure where necessary.

In achieving the above, the following will be considered:

- *The effect of the proposal on the landscape including AONBs and any mitigation/enhancement that is necessary or desirable.*
- *The impact on any protected sites (natural and historic sites and heritage assets and potential for avoiding and/or mitigating any impacts, or providing enhancement, should the development be acceptable).*
- *The requirements of the management plans of the AONBs.*
- *Whether the existing infrastructure is adequate- additional provision will be required where it is not.*
- *Whether the development is at risk from flooding, whether it can be permitted taking into account any risks, and the sequential approach and any mitigation that may be necessary to ensure the development is safe and flood risk is not increased elsewhere.*
- *The impact of the development on any land contamination or risk to the development from ground instability including the mining legacy-Proposals must undertake appropriate remediation measures and verification works where contamination and/or stability issues are identified.*
- *The potential for the development to cause pollution and any mitigation measures to avoid pollution or make environmental improvements where existing problems occur.*
- *The provision of water supply and the development's impact on groundwater, watercourses and any protected abstractions.*
- *Any potential impact on the sterilisation of mineral resources and consideration of the potential for the prior extraction of those mineral resources ahead of development.*
- *Proposals for waste minimisation and management.*

Development that is not able to be satisfactorily accommodated in respect of the above will not be permitted.

1 . Introduction to the Cinderford Biodiversity Strategy guidance (CBSTg) and its use

1.10 Policy CSP. 11

The Cinderford Northern Quarter will be allocated as an area for mixed development to lead the regeneration of the town. Land will be set aside for approximately 175 dwellings, about 6ha of employment generation uses and about 3.5ha for mixed uses. These will include cultural, educational and recreational provision together with ancillary service space. All will be set within the forest environment and will lead on innovation, design and energy efficiency.

1.11 Policy CSP. 2 Climate Change Adaptation (Strategic objective: thriving sustainable communities) looks to the future and ensures that new development takes account of the impacts of changes in climatic conditions over its lifetime. It addresses key issues including water management, shading, exposure, biodiversity, landscaping and heat regulation. In relation to biodiversity the policy has two main elements;

Developments must support green infrastructure corridors that link to existing habitat features and networks. They must show that the integrity of any affected nature conservation sites is not compromised by the development proposed. Proposals that prevent or restrict network connections will not be supported.

And

Developments will be required to make long lasting biodiversity enhancements which could include the creation of new habitats where these would be appropriate. They should support existing features (trees, ponds, hedgerows etc), provide and manage public open space and should also provide additional features for a wide variety of species and habitats in appropriate locations throughout the development. Additional features provided should be consistent with the characteristics of the surrounding area.

1.12 Policy CSP. 11 sets out the purpose, scale and nature of development in the CNQAAP. CSP. 1 provides a series of criteria, development proposals are required to meet in order for them to be permitted.

1.13 Policies CSP. 1 and 2 relate to all development proposals within the district and their application needs to be appropriate to the type and locations of the development proposal. The overarching principles in these policies are that:

New development must take into account important characteristics of the environment and conserve, preserve or otherwise respect them in a manner that maintains or enhances their contribution to the environment, including their wider context.

And to

Support green infrastructure corridors that link to existing habitat features and networks.... show that the integrity of any affected nature conservation sites is not compromised, does not prevent or restrict network connections will not be supported and make long lasting biodiversity enhancements.

1 . Introduction to the Cinderford Biodiversity Strategy guidance (CBSTg) and its use

1.14 In the context of CNQAAP and biodiversity, development proposals are therefore required to demonstrate how they will adhere to these overarching principles. The CBSTg sets out the biodiversity measures by which compliance with these requirements will be evaluated.

Cinderford Northern Quarter Area Action Plan

1.15 To some degree every policy within the document is relevant to biodiversity due to the inter-relationship between land use and biodiversity, however the following policies are considered to be of particular relevance:

- Policy 2 Cross-cutting approach to sustainability
- Policy 10 Landscape and biodiversity strategy
- Policy 15 Road hierarchy and link road
- Policy 26 European nature conservation designations

1.16 These policies are provided in Appendix 2 for reference. However due to the inter-relationship between policies and the supporting information within the CNQAAP it is considered that a good understanding of the whole CNQAAP is required to adequately address biodiversity issues.

1.17 Policy 2 sets out that sustainability is at the heart of development proposals. Addressing environmental issues (including biodiversity) will therefore be required to demonstrate development proposals are ‘sustainable’. The sustainability theme is further expanded in the key design principles (Policy 8) and the MDC.

1.18 Policy 10 provides the key framework for the CBSTg. It sets out that development proposals must be “accompanied by detailed landscape and biodiversity implementation strategies” which detail mitigation, enhancement and management measures. The explanatory text of the policy (5.40 – 5.42) provides for a layered approach providing biodiversity mitigation, enhancement and monitoring. The CNQAAP & MDC provide a high level strategy setting out key objectives and requirements. The CBSTg is intended to provide a framework from which developers can draw to prepare their biodiversity strategies relevant to their development proposals.

1.19 Policy 15 and the CNQAAP’s Habitats Regulations Assessment identify that certain road alignments; together with their construction and use, pose particular issues for bats. The location, layout, design and mitigation need particular attention and must take account of how the various species of bats use the area. Policy 15 sets out some specific ecological requirements in relation to roads. It should be remembered that these are not the only ecological/biodiversity requirements in relation to roads and that more general considerations arising from policy 10 and CSP1 also need to be addressed.

1 . Introduction to the Cinderford Biodiversity Strategy guidance (CBSTg) and its use

1.20 Policy 26 highlights the requirements of the Conservation of Habitats and Species Regulations 2010 (hereafter referred to as the Habitats Regulations). It sets out that development proposals will be required to consider if they are likely to have any significant effects on European designated sites. Where likely significant effects cannot be ruled out an Appropriate Assessment should be undertaken to demonstrate, with mitigation, that there be will no adverse effects on the integrity of a European designate site. Applicants are advised to undertake early consultation with Natural England.

1.21 Essentially the same requirements are set out in the National Planning Policy Framework (NPPF) as in the CS and CNQAAP, although at a more strategic level. The CS and CNQAAP provide the criteria based policies sought in paragraph 113 of the NPPF and clearly demonstrate the distinctions in the hierarchy of designated sites. Further guidance is provided in Government Circular 06/05: Biodiversity and Geological Conservation-Statutory Obligations And Their Impact Within The Planning System.

Development Biodiversity Implementation Strategies

Figure 1.2 illustrates the relationship between the CNQAAP and the CBSTg. The council will expect Development Biodiversity Implementation Strategies (DBIS) to be consistent with the key principles and approaches set out in the CBSTg. Where proposals diverge from the approaches of CBSTg, the developer will be expected to demonstrate why the changes are required and show how the key principles are adequately respected. This document provides advice and guidance to ensure DBISs reflect and address biodiversity issues.

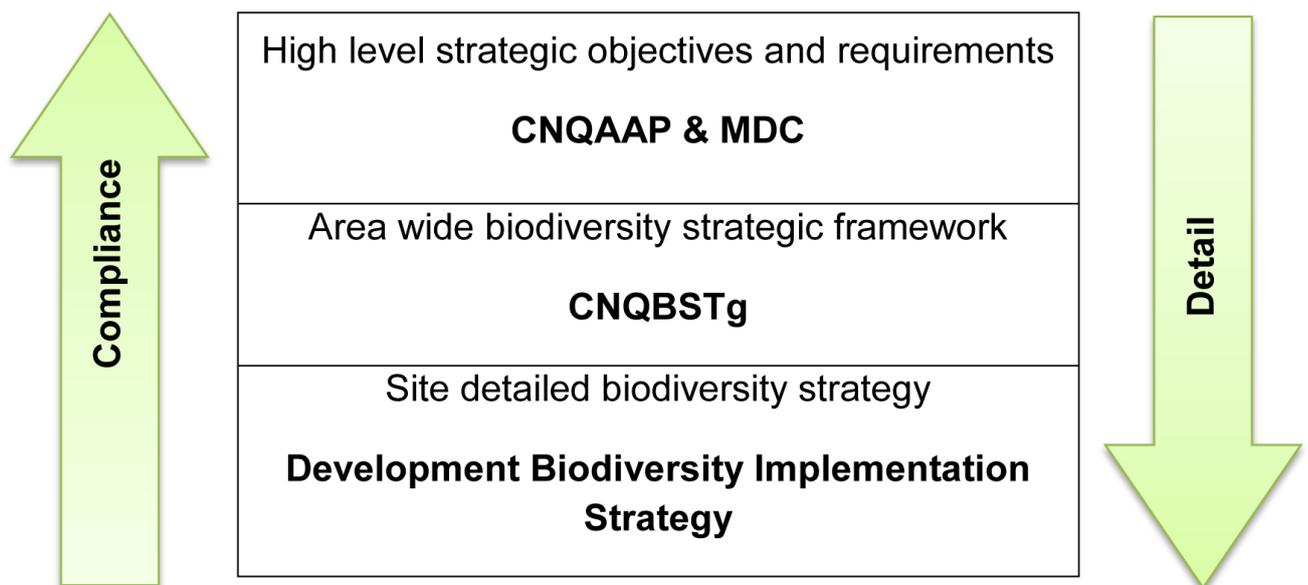
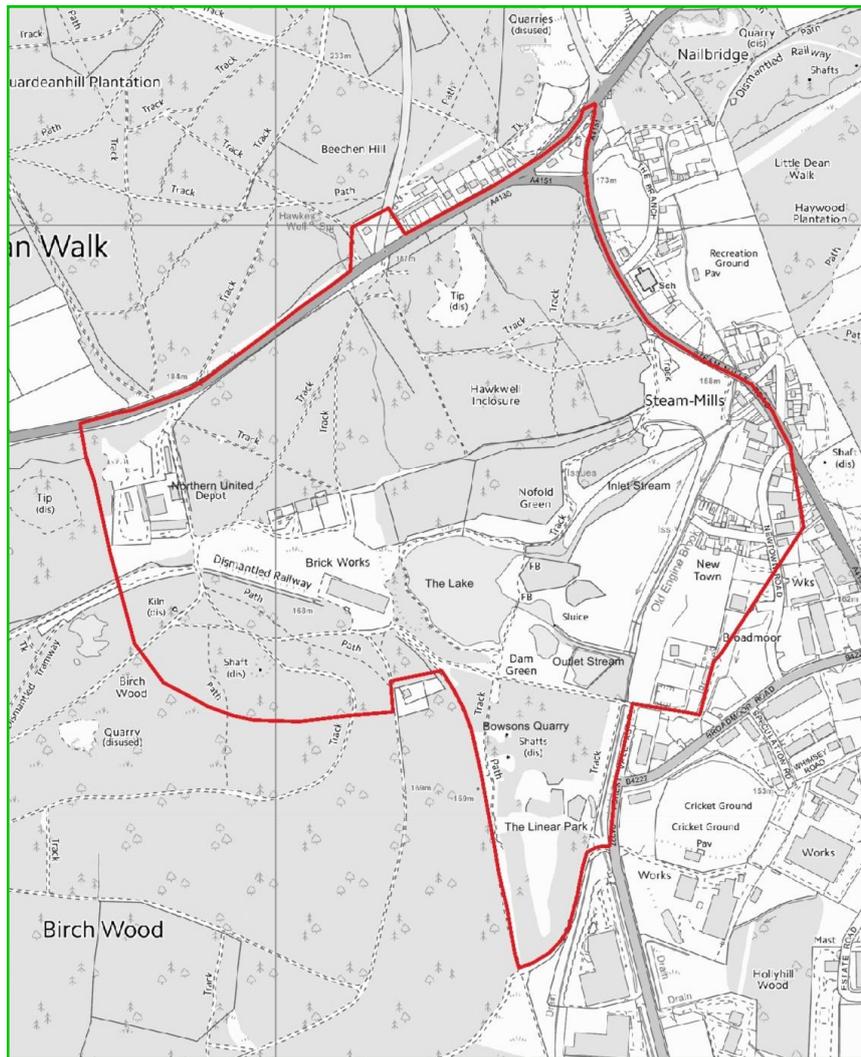


Figure 1.2

2. Describing the CNQ Biodiversity Resource and its Value

Extent, location and context

2.1 The CNQAAP area covers an area of 84ha and lies to the north west of Cinderford in the west of Gloucestershire. The area is flanked by forest to the south and west, the A4136 to the north and by the principal settlement of Cinderford to the east. Figure 2.1 illustrates the boundary of the CNQAAP area and locations within it.



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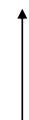
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Figure: 2.1

Title: CNQAAP boundary and locations

— CNQAAP boundary



2 . Describing the CNQ Biodiversity Resource and its Value

Geology

2.2 The CNQAAP area is underlain by a synclinal basin of Supra-Pennant rock of the Upper Carboniferous Coal Measures, comprising beds of mudstone, siltstones, sandstones and coal seams which outcrop at the surface. Much of the natural drift deposits of silt, clay, sand and gravel expected to occur within the area have been removed or significantly disturbed as a result of the previous industrial uses (see below) and replaced with made ground consisting of silty clays containing fragments of coal, shale and sandstone.

Land use history

2.3 The area forms part of the statutory Forest of Dean, utilised previously by both Norman and Anglo-Saxon Kings as royal hunting grounds. Its status as part of a royal hunting reserve helped protect it from exploitation and illegal settlement over the subsequent medieval and post-medieval period. However, mineral extraction and periodic woodland clearance still took place. It is uncertain when mining for coal first began in this area but the presence of weathered outcrops of coal would have made its initial winning, for domestic heating purposes, relatively easy. The number, size and depth of mines increased throughout the 17th, 18th and 19th centuries in response to the demand for coal to smelt and forge iron, assisted by technological advances in mining techniques and the advent of trams and railways. During the 19th and 20th centuries the the CNQAAP contained up to 14 coal mines and the area was crossed by two railway lines. However, by the middle of the 20th century many of these mines were closed. The now disused Northern United Colliery was one of the last to close in 1965.

2.4 Following the demise of the collieries part of the CNQAAP area was subject to open cast mining in the 1970s and also to clay extraction in more recent decades. Many of the mines have since been capped or filled in and mining spoil heaps, open cast mining areas and the clay extraction pits, re-profiled and landscaped. Whilst the CNQAAP area still contains a garage, brickworks and several disused mine buildings the site is now predominantly used for informal recreational purposes including angling. Woodland within and surrounding the CNQAAP area is predominantly managed for commercial timber production by the Forestry Commission.

Landscape

2.5 The CNQAAP area lies within the Cinderford and Ruspidge Landscape Character Area which in turn forms a component of the wider Wooded Syncline and Settled Forest Margin Landscape Character Type of the District. The key characteristics of this landscape include:

- A distinctive syncline or basin structure occupied by extensive areas of coniferous and deciduous woodland plantation and dense vegetation of varying types, age and management;
- Linear ponds and lakes along streams bordered by verdant lawns and riparian habitats;
- A long history of mining, industrial activity and forest management and;
- Almost continuous encirclement by a belt of sprawling, linear development.

2 . Describing the CNQ Biodiversity Resource and its Value

2.6 Woodland densely blankets the Wooded Syncline and Settled Forest Margin Landscape Character Type and has tended to recolonise other historic mining and industrial sites elsewhere in the Forest, obscuring them from view. As such the CNQAAP area is fairly atypical of its Landscape Character Type. Its more or less permanently semi-open character is attributable, at least in part, to rabbit and deer grazing and the soils of site which appear to have inhibited rapid woodland re-colonisation and instead favoured grassland and areas of scrub development. Other areas with a more permanent open character within the core Forest are limited and tend to be associated with Lodges (for example Worcester and Herbert Lodges) and other recently disused industrial sites such as Crab Tree Hill and Howlers Hill which have distinctively different characters to that of the CNQAAP area.

2.7 The Cinderford Linear Park which runs along the western edge of Cinderford into the southern tip of the CNQAAP area is an important landscape feature and acts as a buffer between the town, with its industrial fringe, and the core forest.

Key Ecological Components

2.8 The combination of water courses, the surrounding forest and past industrial use of the CNQAAP area have exerted their influence on the biodiversity of the site. As a consequence the area supports a blend of habitats and species, characteristic of both woodland and post-industrial land.

2.9 The following section focuses on Key Ecological Components within and beyond the CNQAAP that are defined as:

- European Sites including Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites;
- Lesser horseshoe bats that are necessary to the integrity of the Wye Valley and Forest of Dean Bat SAC;
- Nationally designated sites including Sites of Special Scientific Interest (SSSIs);
- Locally designated sites including Key Wildlife Sites (KWS);
- Species protected by law including those listed under Schedule II of the Habitats Regulations Schedule 1 or 5 of the Wildlife & Countryside Act 1981 (as amended);
- Habitats and species listed as Habitats and Species of Principal Importance in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006;
- Ecological corridors that facilitate the movement of the above species.

2.10 In order to provide context Broad Habitats are also described, where present, and the local distribution and extent of habitats and species beyond the CNQAAP area where this information is available.

2.11 Information in the following section has been collated from a range of sources including ecological records from the Gloucestershire Centre for Environmental Records, from evidence base reports associated with the Forest of Dean CS and CNQAAP and ecological consultant reports for individual planning proposals within and around the AAP area determined prior to 2014. A list of these sources of information is provided in Appendix 5.

2 . Describing the CNQ Biodiversity Resource and its Value

Sites

Box 2.1

Key Ecological Component - Sites

- Wye Valley and Forest of Dean Bat SAC
- Wye Valley Woodlands SAC
- Hawkwell Inclosure Key Wildlife Site
- Cinderford Linear Park Key Wildlife Site

2.12 The CNQAAP area contains no European or national statutory designated wildlife sites such as SACs or SSSIs.

2.13 Five European sites lie within a 15 km radius of the CNQAAP area: These include the River Wye SAC (3.7km distant) designated primarily for its riverine species and habitats. The Wye Valley Woodlands SAC (5.8km distant at their closest point) designated for its woodland habitat and Lesser horseshoe bats. Walmore Common Special Protection Area (SPA) and Ramsar (9km distant) and the Severn Estuary SAC, SPA and Ramsar (9.2km distant) designated for their marine and estuarine habitats, fish and bird species.

2.14 The Wye Valley and Forest of Dean Bat SAC consists of a complex of 13 SSSIs in Monmouthshire and the Forest of Dean. Westbury Brook Ironstone Mine SSSI is the nearest component site lying 1.4km away from the CNQAAP area. The SAC was designated in 2005 for its exceptional breeding population of lesser horseshoe bats (totalling 26% of the national population) and for its greater horseshoe population (totalling 6% of the national population) in the northern part of its range. Whilst the CNQAAP area contains no SSSIs or SACs itself, a purpose built artificial roost and nearby disused mining buildings at the Northern United Colliery site support a large breeding colony of lesser horseshoe bats. Individuals from this colony are considered to be necessary to the integrity of the Wye Valley and Forest of Dean Bat SAC as they are likely to hibernate at cave sites such as Westbury Brook Ironstone Mine SSSI. They are also considered to be necessary to the integrity of the Wye Valley Woodlands SAC, where lesser horseshoe bats are a qualifying, but not primary, reason for the sites selection, as the species is known to forage in these areas.

2.15 The nearest other SSSI (without a European Site designation) is Edge Hills Quarry (1.9km distant) designated for its geological interest. Speech House Oaks SSSI, designated for its oak woodland and associated epiphytic flora, is situated 2.7km to the south west of the CNQAAP.

2 . Describing the CNQ Biodiversity Resource and its Value

2.16 The CNQAAP area contains two non-statutory designated wildlife sites. The Hawkwell Inclosure KWS, covering part of the Hawkwell Inclosure, was designated for its woodland and associated shrub layer and ground flora. The central section is dominated by conifer but is fringed by broadleaved woodland consisting primarily of sessile oak and beech and containing some dead standing and lying wood. The understorey is sparse and includes goat willow scattered sycamore, oak and silver birch saplings and hawthorn. The ground flora includes a range of woodland species including the rare broad-leaved helliborine.

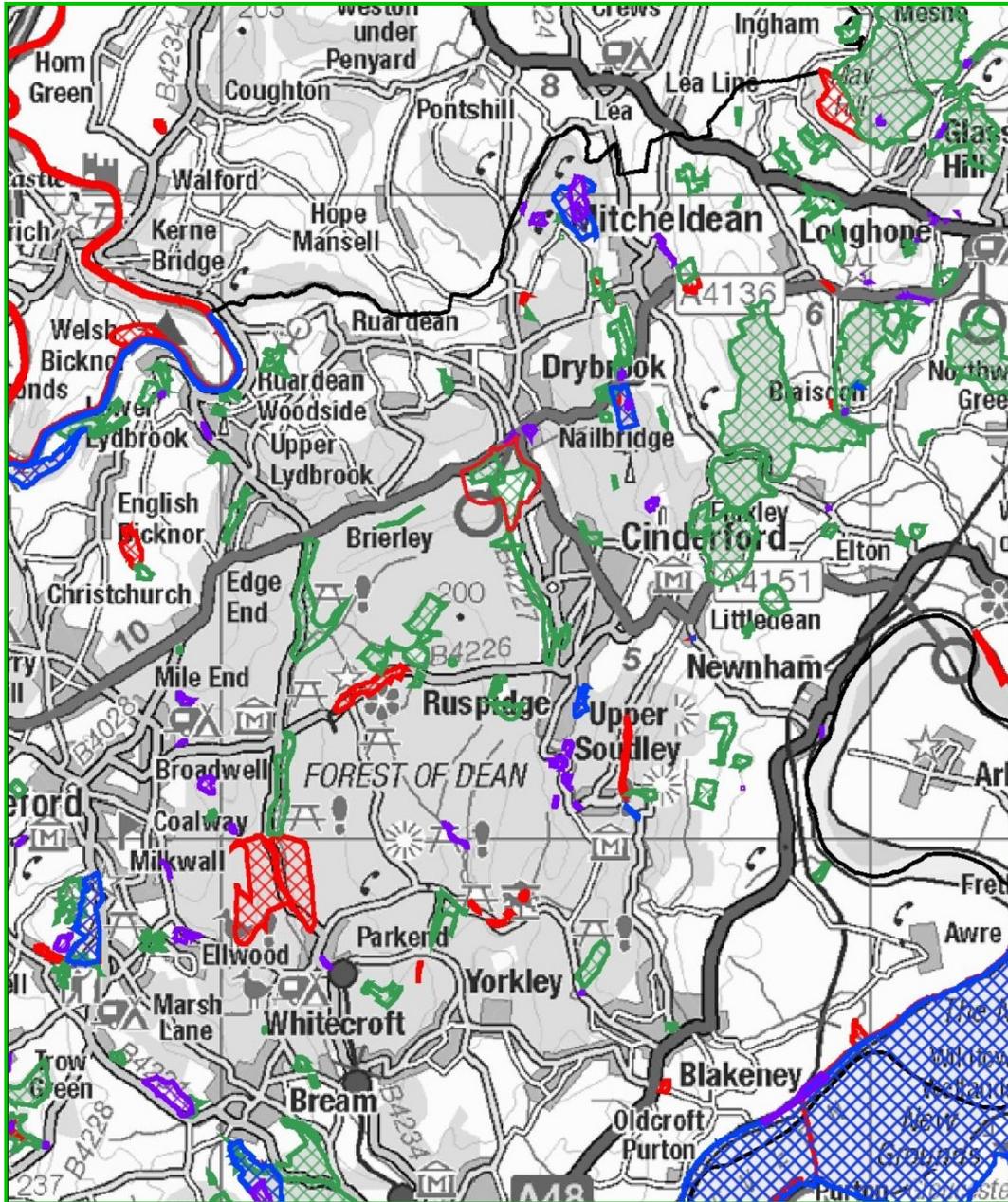
2.17 Cinderford Linear Park was originally designated as a KWS in 1997 for its diverse mosaic of habitats including woodland, scrub and acid, neutral and base rich ground flora (enhanced further by large and small areas of open water) and its invertebrate (butterfly) and vertebrate (reptile) fauna. The site was extended in 2000 to include acid and wet grassland and again in 2012 to include areas of bat interest and additional areas of semi-natural grassland.

2.18 Laymoor Quay KWS, a Gloucestershire Wildlife Trust nature reserve, and Serridge Green KWS which lie to the south and west of the CNQAAP area respectively were designated for their marsh, bog, swamp, mire and tall herb fen habitats. Laymoor Quay KWS was also designated for its lowland heath and plant interest.

2.19 The CNQAAP area contains no designated Regionally Important Geological and Geomorphological Sites (RIGS). Two RIGS, Nailbridge Quarry and Nailbridge Scars, are located immediately north and west respectively of the CNQAAP area. Both were designated for the educational value of their Upper Carboniferous Pennant Sandstone & shale containing fragments of coal.

2.20 Figure 2.2 illustrates designated sites of importance for biodiversity located inside and surrounding CNQAAP area.

2. Describing the CNQ Biodiversity Resource and its Value



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Legend

Title: Designated sites

- CNQAAP boundary
- European Sites

Figure: 2.2

- SSSIs
- KWS
- RIGS



2 . Describing the CNQ Biodiversity Resource and its Value

Habitats

2.21 The CNQAAP area sits within the Ruardean Woods Strategic Nature Area (SNA) where woodland mosaic, including Heathland and Dry Acid Grassland Habitats of Principal Importance, are considered a priority. In particular, the SNA identifies opportunities to:

- Manage and restore Lowland Mixed Deciduous Woodland;
- Manage, restore and create Lowland Dry Acid Grassland;
- Manage and restore Marsh;
- Manage restore and create Ponds and manage and create Wet Woodland.

2.22 The CNQAAP area supports five Habitats of Principal Importance in England listed under Section 41 of the NERC Act 2006. Two of these, Lowland Mixed Deciduous Woodland (LMDW) and Wet Woodland, are identified as main priority habitats within the Natural Character Area (NCA) Profile for Forest of Dean and Lower Wye.

2.23 In addition, the CNQAAP area supports a range of Broad Habitats including Grassland and Woodland. Whilst these are not Habitats of Principal Importance they help set the context for such habitats and in some instances are important because they support Species of Principal Importance (see Table 2.2). Where appropriate these Broad Habitats have been broken down into sub-categories (using definitions produced by the Joint Nature Conservancy Committee for the now superseded UK Biodiversity Action Plan) in order to provide further information. The definitions for these sub-categories can be found at Annex 4.

Habitat	Area (ha)	Habitat status
Woodland (Conifer)	29.3	Broad Habitat
Lowland Mixed Deciduous Woodland	15.8	Habitat of Principal Importance In England
Grassland	12.7	Broad Habitat
Ponds	5.4	Habitat of Principal Importance In England
Wet Woodland	4.1	Habitat of Principal Importance In England
Open Mosaic Habitats on Previously Developed Land	4.1	Habitat of Principal Importance In England
Woodland (Broad leaved and Mixed)	2.9	Broad Habitat
Rivers	0.2	Habitat of Principal Importance In England

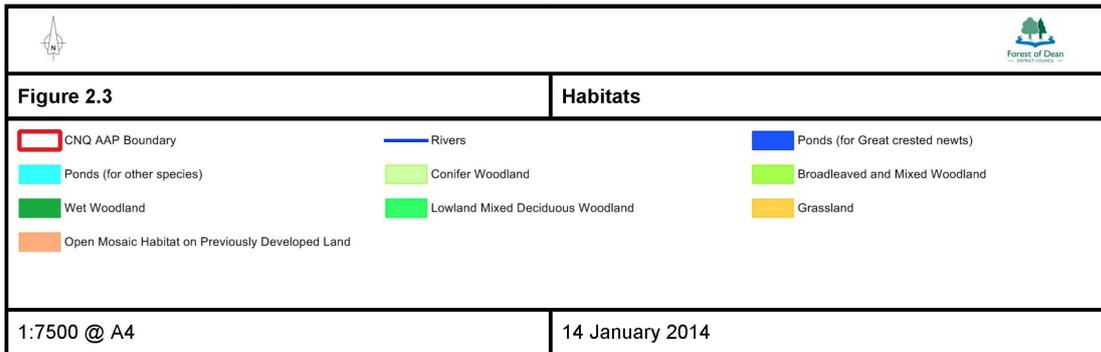
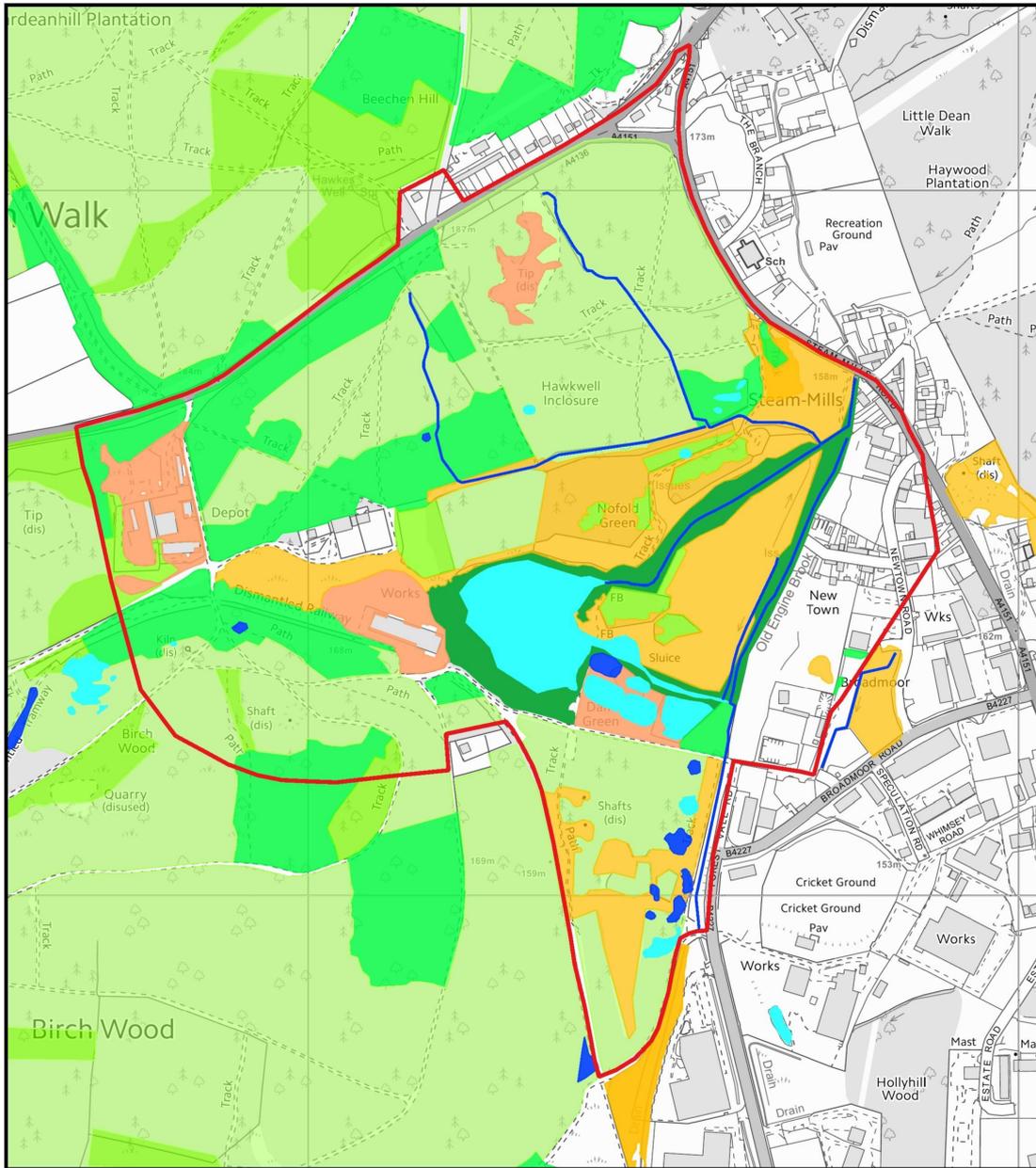
2 . Describing the CNQ Biodiversity Resource and its Value

Habitat	Area (ha)	Habitat status
Other (Improved Grassland, tracks, roads, buildings etc.)	9.8	Broad Habitat
Total	84	

Table 2.1 CNQAAP Area Habitats of Principal Importance in England and Broad Habitats in the CNQAAP

2.24 Figure 2.3 illustrates the location and extent of Habitats of Principal Importance in England and Broad Habitats within and surrounding the CNQAAP area.

2. Describing the CNQ Biodiversity Resource and its Value



2 . Describing the CNQ Biodiversity Resource and its Value

Habitats of Principal Importance

Box 2.2

Key Ecological Component - Habitats

- Ponds
- Rivers
- Open Mosaic Habitats on Previously Developed Land
- Wet Woodland
- Lowland Mixed Deciduous Woodland
- Grassland

2.25 Ponds, in the form of the large central lake (covering 1.5ha) and a number of scattered ponds across the CNQAAP area provide foraging habitat for bats and breeding habitat for great crested newts. Ponds are likely to be under-recorded within the Ruardean Woods SNA but are likely to be widespread across it.

2.26 Rivers can be found in the form of the highly modified Old Engine Brook, which runs along the eastern edge of the CNQAAP area, and its tributaries which act as inlet and outlet streams for the Lake. They can also be found as a series of other small watercourses running approximately north-south through the Hawkwell Inclosure.

2.27 The distribution and extent of Open Mosaic Habitats on Previously Developed Land (OMHoPDL) within the CNQAAP area is restricted to areas of grassland that also incorporate areas of bare substrate, such as at Northern United, and the Brickworks or newly created pools such as at Dam Green. OMHoPDL is likely to be under-recorded within the Ruardean Woods SNA but may occur at other historic industrial sites where succession to woodland has been delayed or prevented.

2.28 Thin ribbons of Wet Woodland can be found along the watercourses and around water bodies within the CNQAAP area. They are secondary rather than ancient in origin due to past industrial use of the site and subsequent comprehensive re-landscaping of the area. Wet Woodland is likely to be under-recorded and is likely to be restricted to poorly drained land and areas running along watercourses within the Ruardean Woods SNA.

2.29 Within the CNQAAP area Lowland Mixed Deciduous Woodland is primarily restricted to areas within the Hawkwell Inclosure and edge of Birch Wood. Ancient Semi-Natural Woodland (ASNW) is limited to the south-western corner of the Hawkwell Inclosure. Significant blocks and

2 . Describing the CNQ Biodiversity Resource and its Value

thinner ribbons of Lowland Mixed Deciduous Woodland can be found within the Ruardean Woods SNA to the west and south of the CNQAAP area. This and other woodland types within the SNA is predominantly categorised as Ancient Replanted Woodland.

Other habitats

2.30 Grassland can be found in the form of species-rich and species-poor grassland within the CNQAAP area. This Broad Habitat is considered a single community type dominated by grasses and sedges but variations in soil pH result in the presence of a range of other plant species characteristic of neutral, calcareous and acid grassland communities. Lower lying poorly drained areas to the west support marshier grassland with more bryophytes and reeds. Where grazing pressure is lower, as in the north-west, the grassland becomes more rank, tussocky and floristically species-poor. The habitat also includes areas of occasional scattered scrub. The relatively recent and post-industrial origins of this grassland provide a poor fit with any National Vegetation Classification (NVC) community type meaning the habitat does not qualify as Lowland Hay Meadow. Equally a lack of bare ground component means that significant areas of this habitat do not qualify as OMHoPDL. However, these grasslands support a range of Species of Principal Importance in England and can be found in three distinct areas: as a band of variable width running approximately east-west along the edge of Hawkwell Inclosure from Northern United to Steam Mills; as a block to the east of the Lake and within rides and large glades within the Linear Park. This type of grassland is likely to be under-recorded within the Ruardean Woods SNA. Small areas of habitat with similar characteristics to certain types of grassland within the CNQAAP area can be found on the eastern edge of Steam Mills, east and west of Valley Road and west of Woorgreens. Grassland of lesser conservation value can be found as improved grassland in fields to the east of the Old Engine Brook.

2.31 Woodland (Conifer) forms the predominant woodland type within the CNQAAP area and its immediate surrounds. It can be found as blocks of evergreen conifers, pine and larch plantation within the Linear Park and the Hawkwell Inclosure. Large similar blocks of conifer plantation can be found to the west and south of the CNQAAP. Coniferous Woodland is widespread and extensive within the wider Ruardean Woods SNA.

2.32 Woodland (Broadleaved and Mixed) occurs as small blocks and ribbons of native and non-native broadleaved woodland throughout the AAP area. The extent of this type of habitat within the wider SNA is likely to be relatively limited.

Species

2.33 The CNQAAP area supports an internationally important lesser horseshoe maternity colony, an important assemblage of other European Protected Species (EPS), including other bat species, great crested newt and dormouse, a range of declining breeding birds and threatened invertebrates. Table 2.2 summarises these species and the habitats which support them.

2 . Describing the CNQ Biodiversity Resource and its Value

Key Ecological Component – species	Habitats of Principal Importance in England					Broad Habitats		
	LMDW	Wet Woodland	Ponds	OMHoPDL	Rivers	Grassland	Woodland (Broad leaved & Mixed)	Woodland (Conifer)
Common toad	•	•	•		•	•	•	
Great crested newt	•	•	•		•	•	○	○
Tree pipit	•					•	•	•
Nightjar	•						•	•
Lesser redpoll	•	•					•	
Linnet						•		
Hawfinch	•						•	○
Cuckoo	•					•	•	
Lesser spotted woodpecker	•	•					•	
Reed bunting	•				•	•	•	•
Willow tit	•	•			•		•	
Marsh tit	•	•					•	
House sparrow*					•			
Wood warbler	•						•	
Dunnock	•				•		•	
Bullfinch	•				•		•	
Starling*	•				•	•	•	
Song thrush					•	•	•	
Common crossbill								•
Turtle dove	•							
Barbastelle & noctule bat	•	•	•	•	•	•	•	
Common pipistrelle, soprano pipistrelle & Leisler's bat	•	•	•	•	•	•	•	•
Brown long-eared bat*	•	•			•		•	•

2 . Describing the CNQ Biodiversity Resource and its Value

Key Ecological Component – species	Habitats of Principal Importance in England					Broad Habitats		
Greater horseshoe bat*	•	•		•	•	•	•	
Lesser horseshoe bat*	•	•	•	•	○	○	•	•
Whiskered/Brandt's bat*	•	•	•	•			•	?
Serotine bat	•					•	•	•
Natterer's bat	•	•	•	•	•	•	•	•
Daubenton's bat	•	•	•	•			•	
Bechstein's bat	•	•	•				•	
Otter		•	•	•			•	
Dormouse	•						•	○
Common lizard	•				•	•	•	
Slow-worm	•				•	•	•	
Adder	•				•	•	•	
Grass snake	•	•	•	•	•	•	•	
Wood white	•r						•r	
Dingy skipper						•		
Grizzled skipper	•r						•r	
Small Heath						•		
Autumnal rustic moth	•r						•r	
Broom moth	•					•	•	
Cinnabar moth					•	•		
Dark brocade moth						•		
Ear moth		•				•		
Forester moth	•r				•	•	•r	
Grass rivulet moth						•m		
Hedge rustic moth						•		
Knot grass moth	•				•	•	•	
Mouse moth	•					•m	•	
Oak hook-tip moth	•						•	
Rosy rustic moth					•			
Rustic moth					•	•		

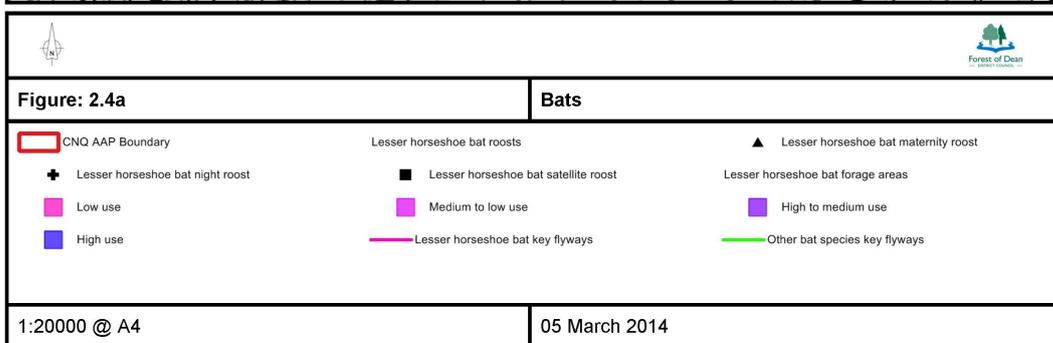
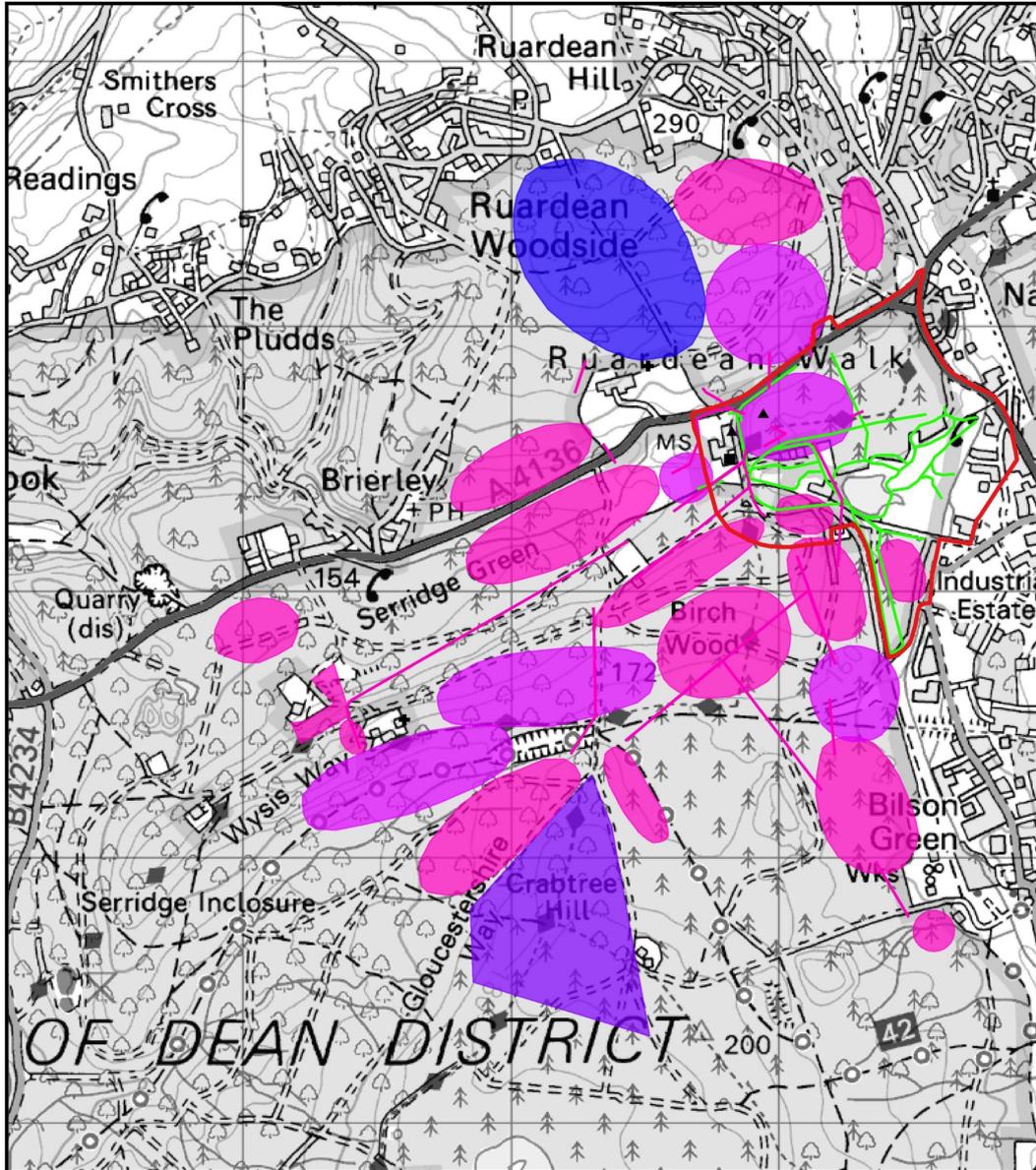
2 . Describing the CNQ Biodiversity Resource and its Value

Key Ecological Component – species	Habitats of Principal Importance in England					Broad Habitats			
Sallow moth		●				●m			
Shaded broad-bar moth					●	●			
Small emerald moth	●r					●	●r		
Small pheonix moth	●				●		●		
Small square-spot moth	●					●m	●		
	Key: ● - optimal habitat; ○- sub-optimal habitat; r – rides/clearings/edges; m-marshy/damp grassland, * – also buildings; ?- possible use								

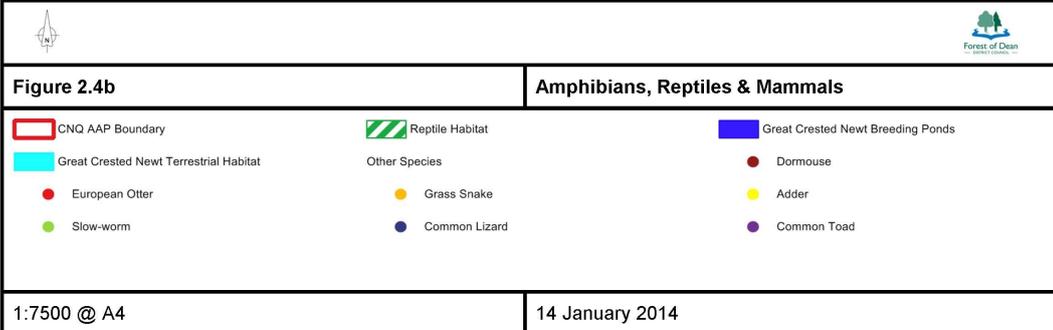
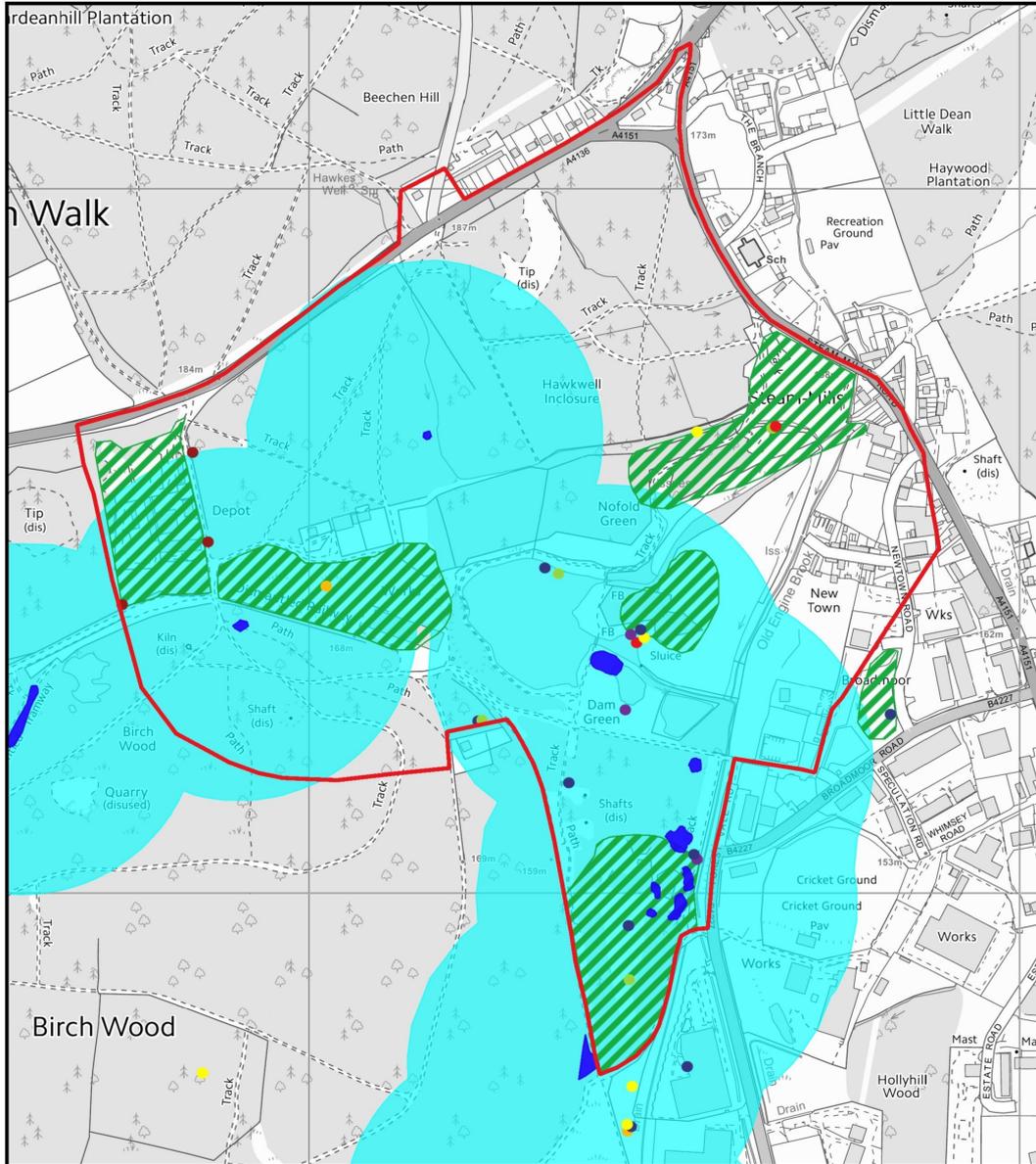
Table 2.2 Relationship between Habitats and Species of Principal Importance in England associated with the CNQAAP area.

2.34 Figures 2.4a, 2.4b, 2.4c and 2.4d illustrate the location of key species within and surrounding the CNQAAP area.

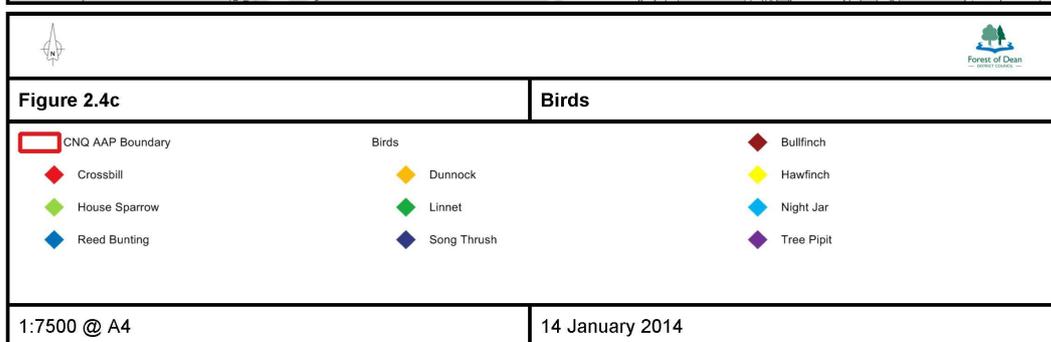
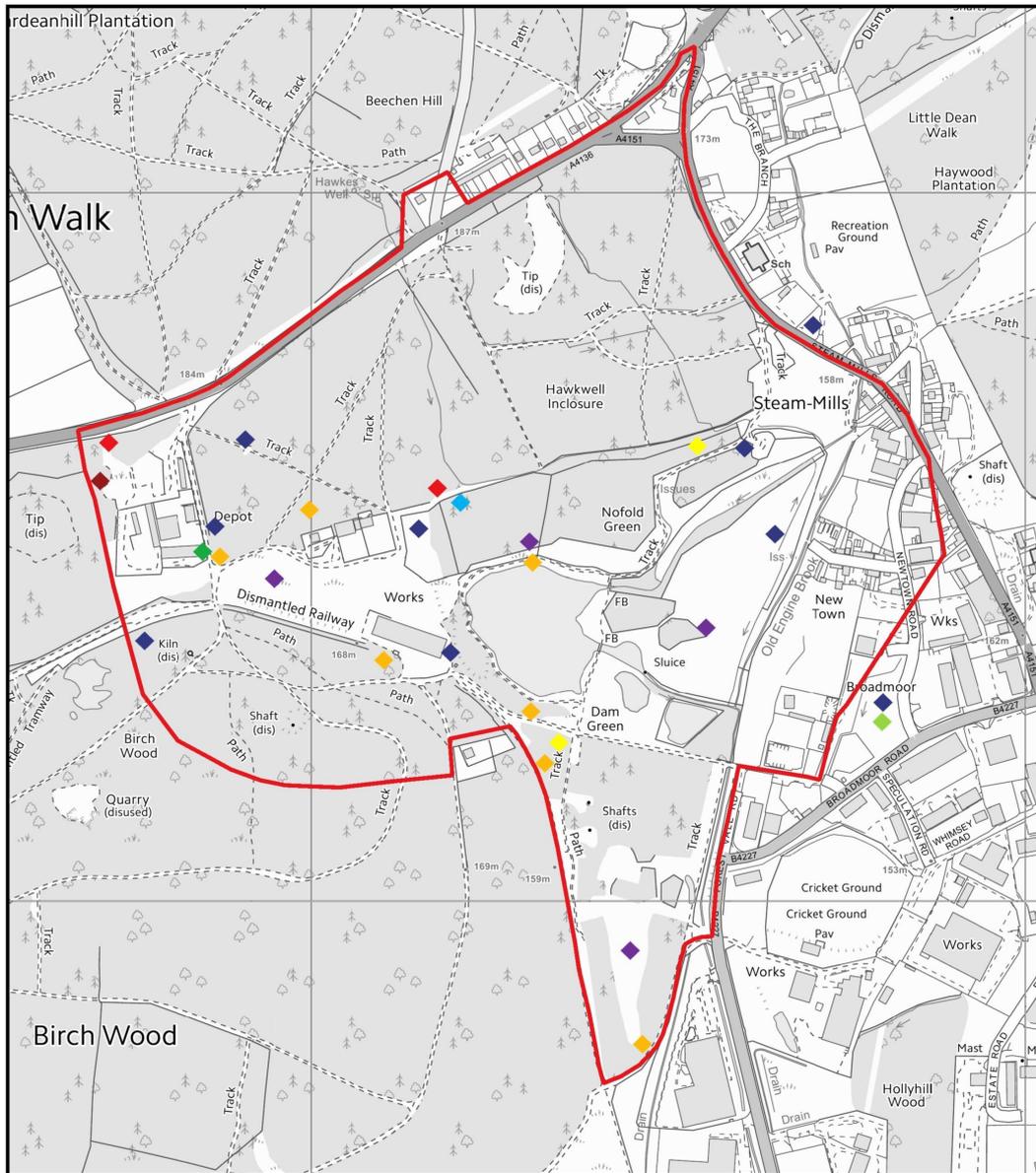
2. Describing the CNQ Biodiversity Resource and its Value



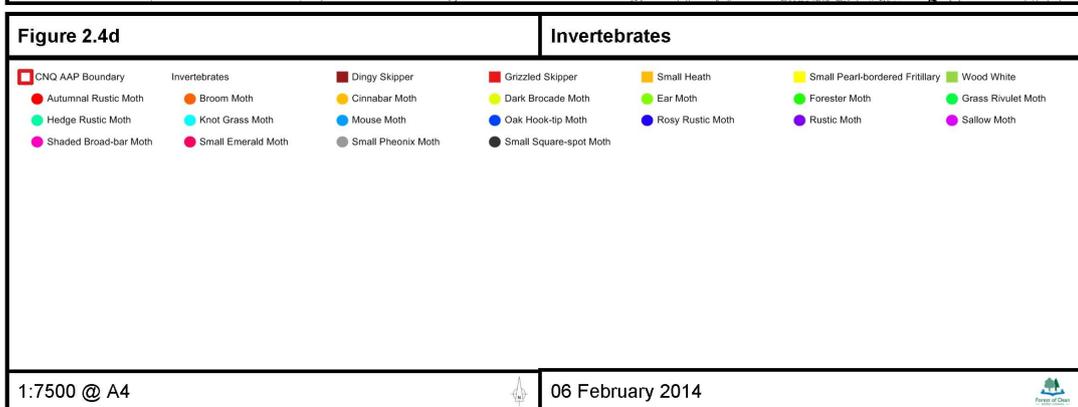
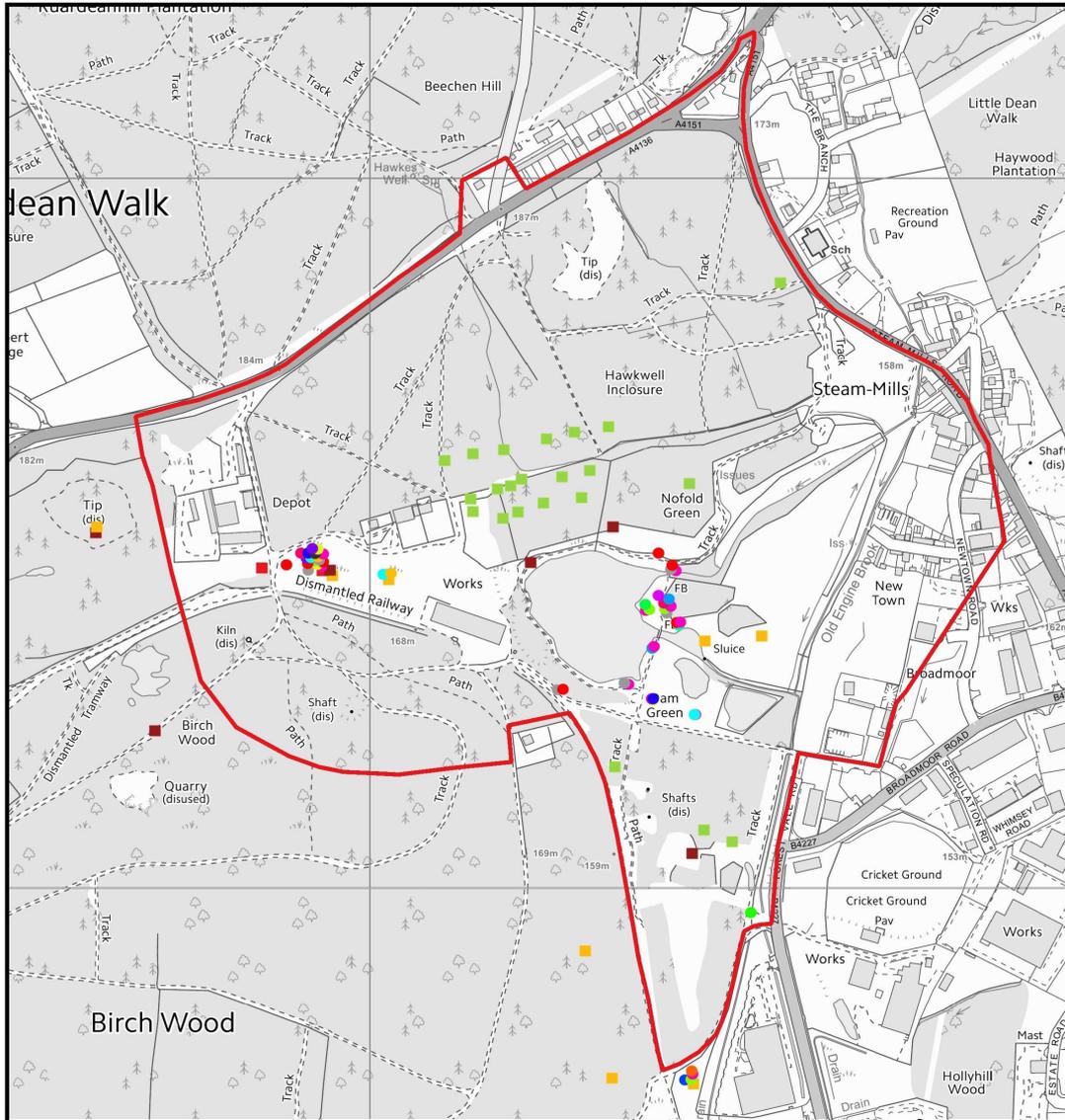
2. Describing the CNQ Biodiversity Resource and its Value



2. Describing the CNQ Biodiversity Resource and its Value



2. Describing the CNQ Biodiversity Resource and its Value



2 . Describing the CNQ Biodiversity Resource and its Value

Amphibians and reptiles

Box 2.3

Key Ecological Component - Amphibians and reptiles

- Great crested newt
- Common toad
- Common lizard
- Slow-worm
- Adder
- Grass snake

2.35 The Linear Park contains a series of small ponds which support a medium to large population of great crested newts. Significant areas of the CNQAAP area provide terrestrial habitat for this population and for another small population outside the CNQAAP boundary to the south-west of Northern United. Great crested newts are a European Protected Species listed under Schedule 2 of the Habitats Regulations and are a Species of Principal Importance in England listed under Section 41 of the NERC Act 2006. Ponds in the area also support common toad, another Species of Principal Importance in England.

2.36 The CNQAAP area is also known to support populations of common lizard, slow-worm, grass snake and adder, all listed as a Species of Principal Importance in England. Each of these species is likely to be widespread across the area where suitable habitat is present. The Northern United site is known to support an exceptional population of slow-worms and good populations exist at Bowson Colliery and the Brick Works. Good populations of common lizard can be found in grassland to the east of the Lake, at Steam Mills, Dam Green, the Brick Works and at Northern United.

2 . Describing the CNQ Biodiversity Resource and its Value

Birds

Box 2.4

Key Ecological Component - Birds

- House sparrow
- Starling
- Linnet
- Lesser redpoll
- Tree pipit
- Lesser spotted woodpecker
- Nightjar
- Hawfinch
- Bullfinch
- Dunnock
- Reed bunting
- Song thrush
- Common crossbill
- Willow tit
- Marsh tit
- Turtle dove
- Cuckoo
- Wood warbler

2.37 The CNQAAP area supports a wide range of bird species including 17 breeding bird species listed as Species of Principal Importance in England under Section 41 of the NERC Act 2006 and the RSPB's red list of Species of Conservation Concern. A number of these species including cuckoo, nightjar, lesser spotted woodpecker and willow tit are associated with woodland within and surrounding the area.

2.38 Hornbeam and cherry woodland within the CNQAAP area supports a breeding and wintering colony of hawfinch. This species is listed in Schedule 1 of Wildlife and Countryside Act 1981 (as amended) and occurs at several sites within the Dean. The site is thought to act as one of the most important sites for the species both within the Forest of Dean and Wye Valley and the UK.

2.39 Woodland around the Northern United Colliery supports breeding common crossbill; this species is also listed in Schedule 1 of Wildlife and Countryside Act 1981 (as amended). Nightjar, a species of Principal Importance in England, has also been recorded as foraging, but not breeding, in the north of the area. In addition twenty RSPB Amber listed species have also been recorded within the CNQAAP area.

2 . Describing the CNQ Biodiversity Resource and its Value

Mammals

Box 2.5

Key Ecological Component - Mammals

- Lesser horseshoe bat*
- Greater horseshoe bat*
- Barbastelle bat*
- Whiskered/brandt's bat
- Noctule bat*
- Serotine bat
- Leisler's bat
- Badger
- Brown long-eared bat*
- Natterer's bat
- Daubenton's bat
- Common pipistrelle bat*
- Soprano pipistrelle bat*
- Bechstein's bat*
- Dormouse*
- Otter*

*Species of Principal Importance in England

2.40 The disused Main Office and Bath House at Northern United and a purpose built nearby Artificial Roost, support a breeding colony in excess of 300 lesser horseshoe bats. Approximately 40 individuals are also known to hibernate within the Artificial Roost during the winter months. This species is listed in Schedule 2 and 4 of the Habitats Regulations. The maternity, but not hibernation, colony within the Artificial Roost meet the criteria for selection as a SSSI. The species' flyways extend across the CNQAAP area to foraging areas at the Lake and woodland up to 2.5km beyond the roosts. Night roosts at Herbert Lodge (to the north) and Trafalgar House (to the south-west) are also used by the species.

2.41 Buildings at Northern United also act as minor roosts for greater horseshoe, natterer's, brown long-eared, common pipistrelle and myotid bat species. Timing of recordings suggests that a pipistrelle bat maternity roost may lie close to the area, possibly within the industrial or residential buildings of Steam Mills. The CNQAAP area also acts as an important commuting and foraging area for 13 bats species. These include a small number of the very rare greater horseshoe bat, rare barbastelle, bechstein's and whiskered/Brandt's bats, uncommon noctule and serotine and scarce Leisler's bat. All bat species are listed under Schedule 2 of the Habitats Regulations and Schedule 5 of the Wildlife & Countryside Act 1981 (as amended).

2.42 Hazel dormouse is known to occur within the area but its recent appearance here and the absence of any significant areas of optimal habitat within and around the CNQAAP area indicate that the population is likely to be small. The hazel dormouse is a European Protected

2 . Describing the CNQ Biodiversity Resource and its Value

Species listed under Schedule 2 of the Habitats Regulations and is also a Species of Principal Importance in England. There is an absence of records for this species in the Forest to the immediate south of the CNQAAP area but it can be found at low densities in woodland to the east of Cinderford and at Worrall Hill to the west.

2.43 Whilst there are historic records for water vole along the Cinderford Brook the species is now considered absent from the area. Otters are wide ranging and nomadic and whilst they have been recorded within the area no holts are known to be present. Badger setts are present within woodland surrounding the CNQAAP area and the species' forage areas are likely to extend into it.

Invertebrates

Box 4.6

Key Ecological Component - Invertebrates

- Dingy skipper butterfly
- Grizzled skipper butterfly
- Small heath butterfly
- Wood white butterfly
- Autumnal rustic moth
- Broom moth
- Cinnabar moth
- Dark brocade moth
- Ear moth
- Forester moth
- Grass rivulet moth
- Hedge rustic moth
- Knot grass moth
- Mouse moth
- Oak hook-tip moth
- Rosy rustic moth
- Rustic moth
- Sallow moth
- Shaded broad-bar moth
- Small emerald moth
- Small pheonix moth
- Small square-spot moth

2.44 The CNQAAP area supports colonies of wood white, small heath, dingy skipper and grizzled skipper butterfly, all of which are Species of Principal Importance in England listed under Section 41 of the NERC Act 2006. These species form closed populations. Their colonies are thought to function as part of a metapopulation, connected by occasional dispersal along woodland rides and glades to other populations west and south of the area. The Northern

2 . Describing the CNQ Biodiversity Resource and its Value

Quarter appears to form the north-eastern limit of distribution for many of these species in the Forest of Dean. Small pearl-bordered fritillary and pearl-bordered fritillary occur in woodland to the south and west of the CNQAAP area.

2.45 The CNQAAP area also supports 18 moth species listed as Species of Principal Importance in England listed under Section 41 of the NERC Act 2006. Different species are associated with dry and damp grasslands, waste ground, woodlands and their edges.

2.46 Ten species of damselfly and 15 species of dragonfly occur within the CNQAAP including the Red Data Listed (Near Threatened) variable damselfly, scarce blue-tailed damselfly and common club-tailed dragonfly along with five other scarce and/or local species.

2.47 A Red Data Book parasitic fly is associated with tussocky grassland in the north of the CNQAAP area. Nine species of Nationally Scarce invertebrate are found within the area. These include four species of water beetle (*Hydroglyphus pusillus*, *Rhantus suturalis*, *Enochrus ochropterus* and *E. melanocephalus*); 3 species of moth (six-belted clearwing, totrix moth and orange footman moth); a harvestman (*Dicranopalpus ramosus*) and a pollen bee (*Meligethes atramentarius*).

2.48 White-clawed crayfish, a species listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), has been recorded in Soudley Ponds, into which the Old Engine Brook drains. As such the species may occur within the CNQAAP area.

Plants and Fungi

2.49 The CNQAAP and surrounding areas support a range of locally rare and/or interesting lichens. These include lichens within woodland and also on fence posts within the Linear Park, crustose lichens on sasicolous boulders and cladonias on spoil tips. Whilst none of these can be considered Key Ecological Components their retention is desirable.

Ecological Corridors for Key Ecological Components

2.50 Ecological Corridors for Key Ecological Components, usually in the form of semi-natural linear habitat features, allow the movement of species across the landscape. This movement prevents fragmentation and isolation effects including reductions in genetic exchange and interruption of routes that connect resting, breeding, hibernating and foraging areas. Most semi-natural linear features within the CNQAAP area are likely to function as ecological corridors for a variety of species. Table 2.3 describes most of the Ecological Corridors for Key Ecological Components within and beyond the CNQAAP boundary. Figure 2.5 illustrates the location of these Ecological Corridors.

2 . Describing the CNQ Biodiversity Resource and its Value

Key Ecological Component		
Species	Function	Description
Lesser horseshoe bat	Key flyways that act as commuting routes from the CNQAAP area roosts to foraging areas in the surrounding Forest.	Several flyways leading from the roost buildings north to Astonbridge Inclosure and south into the Serridge Inclosure via scrub and woodland.
Other bats species	Key flyways that act as commuting and foraging areas.	Several flyways along watercourses, woodland edges and around the Lake.
Wood white, dingy and grizzled skipper, common reptiles	Dispersal and interchange of individuals within and beyond the CNQAAP.	Woodland edges rides and glades running west and south from the CNQAAP area.
Great crested newt	Dispersal and interchange of individuals associated with the great crested newt breeding population.	Ponds running south through the Linear Park.
Dormouse	Dispersal and interchange of individuals within and beyond the CNQAAP	Woodland and Scrub

Table 2.3 Ecological Corridors for Key Ecological Components

2. Describing the CNQ Biodiversity Resource and its Value

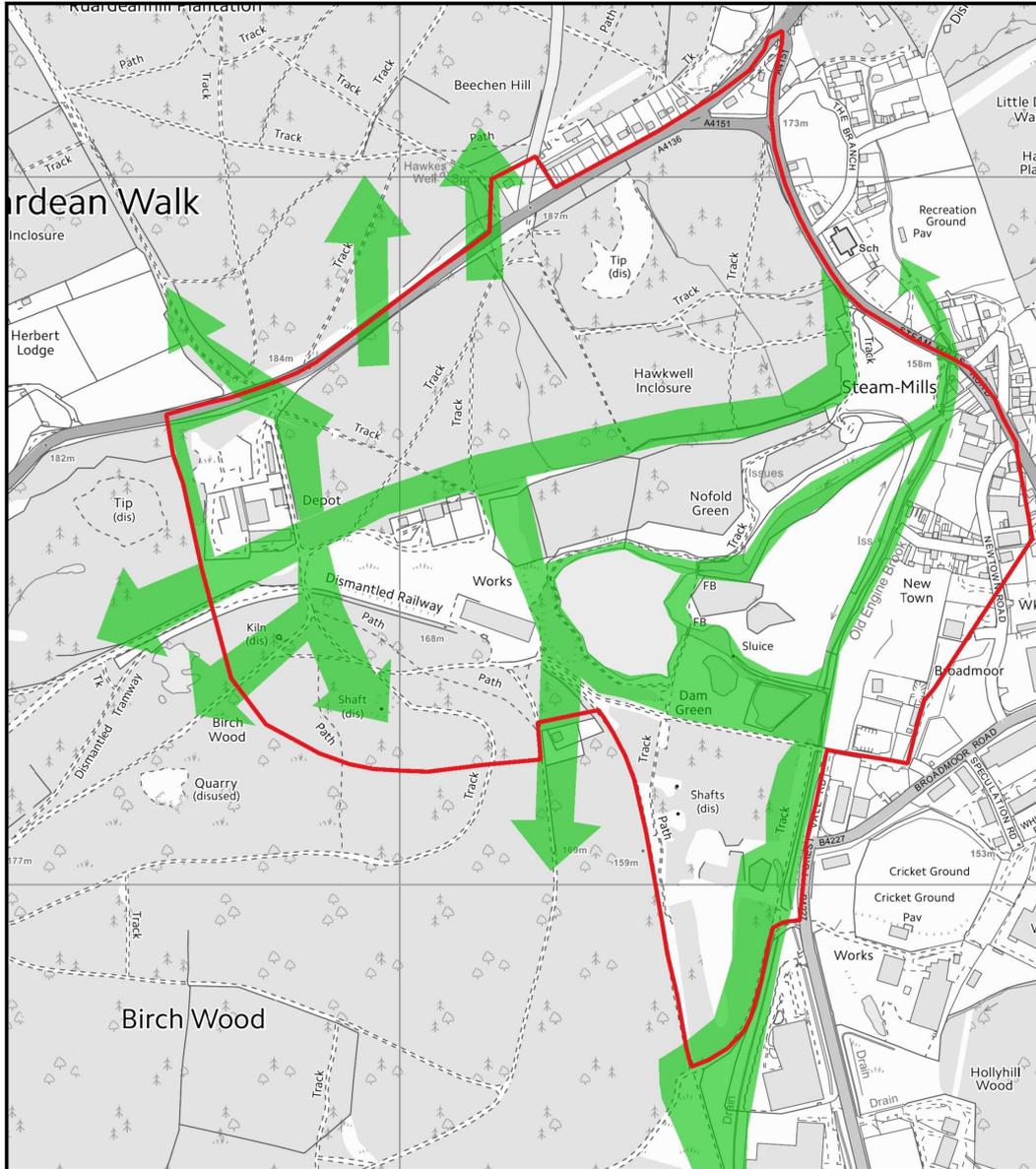


 	
Figure 2.5	Ecological Corridors for KEC
 FoD Area Action Plan Boundary	 Ecological Corridors for Key Ecological Components
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3 . Key Issues

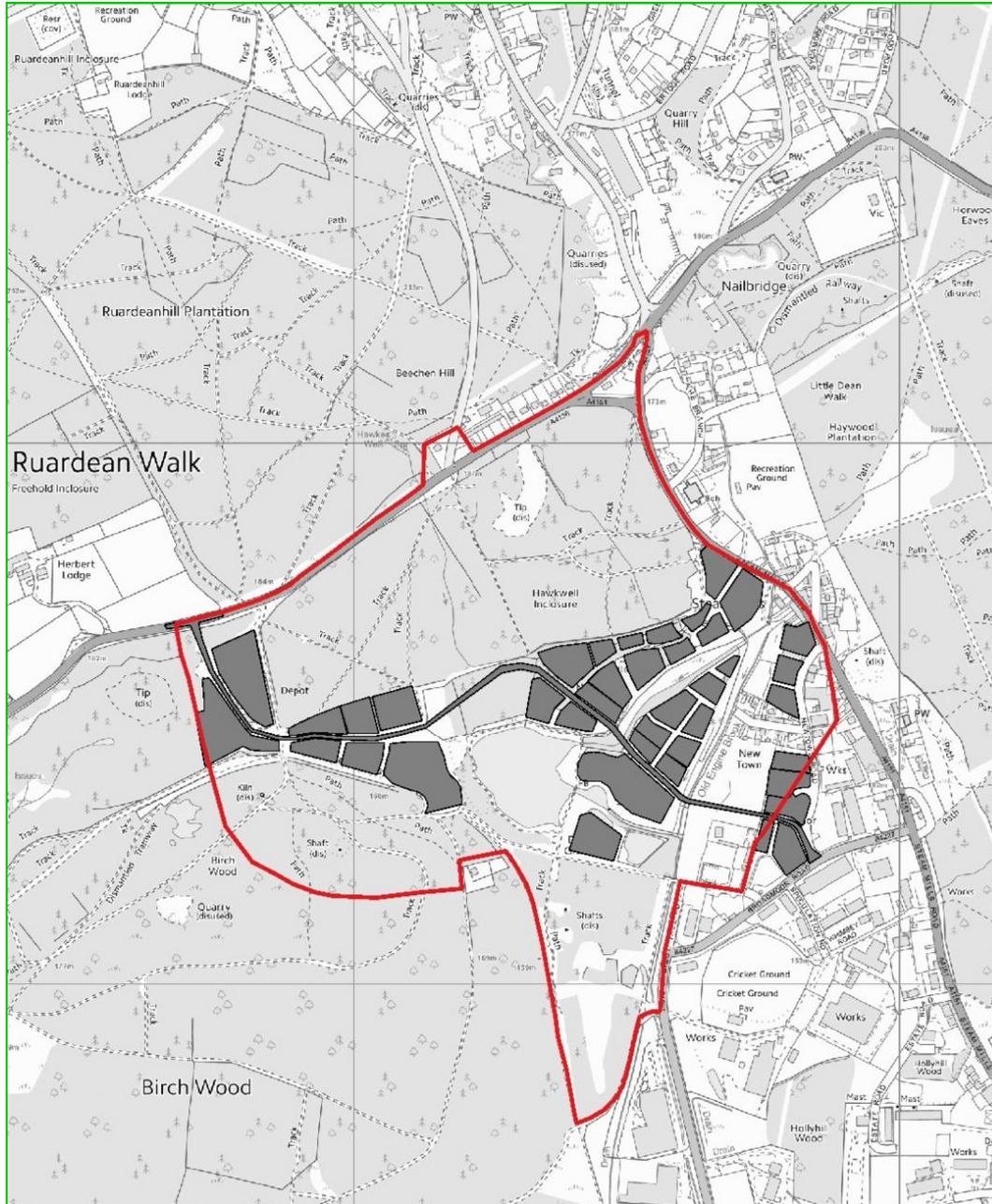
CNQAAP development

3.1 The CNQAAP, adopted in February 2012, promotes the development of the Northern Quarter as a strategic amenity hub serving Steam Mills and Cinderford and as a destination for surrounding villages. Approximately 16.5 ha of the the area will be developed, including areas to be redeveloped and areas that are already developed and will remain so. Existing land uses include a brick works, garage and parts of Forest Vale Industrial Estate. It is expected that development will primarily take the form of an educational facility, office, industrial and residential development served by a new spine road connecting the A4136 to the Forest Vale Industrial Site.

3.2 Development of the CNQAAP area should be complete by 2026. Phasing is indicative but the majority of development, perhaps with the exception of office and mixed employment use at Northern United and Broadmoor is only likely to progress following construction of the spine road. Given the indicative nature of phasing, a number of Zones (see Figure 3.1) within the CNQAAP area have been delineated to help identify and described potential ecological impacts, including cumulative impacts, on Key Ecological Components.

3.3 The issues identified within this section are based on development as set out in the CNQAAP. They should be viewed as indicative and a tool to help developers scope impacts. It should not be viewed necessarily as a comprehensive summary of all impacts likely to be associated with the development of the CNQAAP area or its individual phases. Developers will be responsible for undertaking their own comprehensive impact assessments based on adequate survey work and an understanding of the their detailed development design. As a result the range and type of impacts associated with any one development proposal may vary from that identified in this section.

3 .Key Issues



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Legend

Figure: 3.1

Title: Development plots

- CNQAAP boundary
- Development plots



3 . Key Issues

Potential biodiversity impacts

Box 3.1

Key issues

- Adverse effects on the integrity of the Severn Estuary SAC, SPA & Ramsar site and Walmore Common SPA and Ramsar site and the Wye Valley and Forest of Dean Bat SAC and Wye Valley Woodlands SAC;
- Maintaining the favourable conservation status of European Protected Species (including great crested newts, dormice, bats);
- Avoiding net loss of habitats that support other protected species (breeding birds, reptiles etc) maintain habitat links and secure suitable capture and translocation effort (where relevant) and long-term management for benefit of these species;
- Avoiding net loss of Habitats or Species of Principal Importance in England;
- Retaining and strengthening Ecological Corridors for Key Ecological Components.

3.4 Biodiversity is vulnerable to a variety of impacts associated with development. These can occur where the footprint of development coincides with that of designated sites or Habitats of Principal Importance in England resulting in direct loss of valued habitats that cannot be easily or quickly re-created. It can also occur when development affects ecological corridors or emits pollution for example.

3.5 Development of the CNQAAP area has the potential to impact in a variety of ways on a range of Key Ecological Components both within and beyond the area. These key issues are discussed in further detail in the remainder of this section. It should be noted that some potential impacts on Key Ecological Components may be cumulative. Where possible the cumulative impacts of development have been identified.

3.6 Developers should view this section as a tool for scoping the impacts of their proposals. It should not be used as a substitute for desktop studies and site surveys that may need to be undertaken to demonstrate the presence/absence of any given Key Ecological Component and the extent to which such Components may be affected by any given proposal (see Key Principle 1 in Section 4 for further information).

3 . Key Issues

Potential designated site loss and damage

3.7 European Sites within 15km of the CNQAAP area are sensitive to a range of impacts. The Cinderford Northern Quarter Habitats Regulations Screening Assessment Pre-submission Draft identified a range of effects which may impact on these European Sites. The Assessment split key potential impacts into two categories. The first included potential impacts on European Sites which are summarised in Table 3.1. The second included potential impacts on the lesser horseshoe bat population of the CNQAAP area, considered necessary to the integrity of the Wye Valley and Forest of Dean Bat SAC and Wye Valley Woodlands SAC. These potential impacts are summarised in Table 3.2. Each of these potential impacts are considered key issues.

Potential development impacts	Wye Valley and Forest of Dean Bat SAC	Wye Valley Woodlands SAC	Severn Estuary SAC, SPA & Ramsar site	River Wye SAC	Walmore Common SPA and Ramsar site
Disturbance (from increased traffic along the A48)					●
Air pollution (from increased traffic along the A48)			●		○
Silt or toxic pollution via surface or ground waters			●		
Key: ● - qualify habitat/feature; ○ - supporting habitat/feature					

Table 3.1 Potential impacts on designated European Sites

Potential development impacts	Roosts	Commuting routes	Forage habitat
Light, noise and dust pollution	●	●	●
Vibration	●		
Acute or chronic pollution of ground or surface waters		●	●
Risk of mortality/injury (during roost demolition, renovation works etc.)	●		
Recreational pressure	●	●	●

3 . Key Issues

Potential development impacts	Roosts	Commuting routes	Forage habitat
Loss of linear landscape features that act as key flyways		●	
Risk of mortality/injury (from road collision)		●	
Conversion of woodland to open habitats associated with compensation for wider impacts		●	●

Table 3.2 Potential impacts on CNQAAP lesser horseshoe bat colony and it's supporting habitats which are necessary to the integrity of Wye Valley and Forest of Dean Bat SAC and Wye Valley Woodlands SAC

3.8 Edge Hills Quarry, which is the nearest SSSI without an additional European Site designation, is unlikely to be affected by development of the Northern Quarter due to its distance from the Northern Quarter and because it is designated for its geological, rather than ecological, interest.

3.9 Speech House Oaks SSSI, designated for it oak woodland and associated epiphytic flora, is situated 2.7km to the south west of the Northern Quarter. The site is potentially sensitive to air pollution impacts resulting from increased traffic along the B4226.

3.10 The Cinderford Linear Park KWS covers much of the Northern Quarter and so significant impacts on biodiversity features for which this site was designated are considered likely. These potential impacts are described in more detail later in this section under relevant habitats and species.

3.11 No direct loss of any SSSI, KWS (other than the northern portion of Cinderford Linear Park) or RIGS is likely to arise as a result of development of the Northern Quarter. However, there is potential for other parts of the Linear Park KWS and Laymoor Quay KWS to be negatively impacted by pollution from development of the Northern Quarter entering these sites via the Engine Brook and its tributaries. These risks relate to all Development Zones.

Potential habitat loss impacts

3.12 One of the key impacts that has the potential to arise from the development of the Northern Quarter is the direct loss of habitats considered to be Key Ecological Components. Table 3.3 summarises these potential losses by Development Zone.

Key Ecological Component	Development Zone potential habitat losses (ha)								
	1	2	3	4	5	6	7	8	Total
Lowland Mixed Deciduous Woodland (ha)	0.08	0.05	-	0.03	0.15	-	-	-	0.31

3 .Key Issues

Key Ecological Component	Development Zone potential habitat losses (ha)								
	1	2	3	4	5	6	7	8	Total
Wet Woodland (ha)	-	0.20	-	-	-	0.01	0.01	-	0.22
Ponds (ha) (#)	-	-	0.30 (4)	-	-	-	-	-	0.30 (4)
Open Mosaic Habitat on Previously Developed Land (ha)	1.45	0.13	0.22	-	-	-	0.12	-	1.92
Rivers	-	-	-	-	-	-	-	-	-
Grassland	-	0.49	0.71	0.20	2.84	2.15	0.71	-	7.1
Key Ecological Component habitats sub-total	1.53	0.87	1.23	0.23	2.99	2.16	0.84	-	9.85
Woodland (Broadleaved and Mixed)	0.48	0.09	0.46	-	0.49	0.02	-	-	1.54
Woodland (Coniferous)	0.01	0.17	-	-	-	0.04	-	-	0.22
Other habitats sub-total	0.49	0.26	0.46	-	0.49	0.06	-	-	1.76
Total	2.02	1.13	1.69	0.23	3.48	2.22	0.84	-	11.61

Table 3.3 Potential Habitat Losses by Development Zone

Potential species impacts

3.13 Both Habitats of Principal Importance in England and Broad Habitats found within the Northern Quarter provide resting, breeding, hibernating and foraging areas for a range of species that are Key Ecological Components. Loss or a reduction in the quality of these habitats is therefore likely to affect the ability of these species to maintain their abundance and/or extent.

Key Ecological Component	Development Zone potential habitat losses (ha)								
	1	2	3	4	5	6	7	8	Total
Great crested newt	1.81	0.73	1.72	1.08	1.57	0.98	3.58	-	11.47
Dormouse	0.57	0.51	0.46	0.03	0.64	0.07	0.01	-	2.29

3 . Key Issues

Key Ecological Component	Development Zone potential habitat losses (ha)								
	1	2	3	4	5	6	7	8	Total
Reptiles	1.73	0.53	0.61	0.43	2.08	0.82	0.93	-	7.13

Table 3.4 Potential Species Impacts

3.14 Development of Zone 1 has the potential to result in the loss of the lesser horseshoe bat maternity roost within the Main Office and the satellite roost within the Bath House at Northern United. The risk of physical injury or mortality to these bats should demolition take place whilst their roosts are in use, or without replacement roosts in place and in significant use, is a key issue. Such impacts may have an adverse effect on the integrity of the Wye Valley and Forest of Dean Bat SAC and Wye Valley Woodlands SAC. Demolition of other buildings within this Zone also has the potential to result in the loss of three minor roosts for other bat species.

3.15 Many of the Northern Quarter Development Zones coincide with potential dormouse habitat (albeit sub-optimal in nature), great crested newt terrestrial habitat and reptile and breeding bird habitat with a risk that these and at least one great crested newt breeding pond, may also be lost. The development of several Zones also has the potential to cause loss of key invertebrate habitat.

3.16 Physical injury or mortality to protected species, including great crested newts and reptiles, is a key issue. Impacts can significantly increase where habitat loss occurs at sensitive times of the year or where species are not translocated to suitable receptor sites prior to commencement of construction works.

Habitat loss for Key Ecological Component species	Development zones with potential for impact							
	1	2	3	4	5	6	7	8
Bat roosts	•							
Dormouse habitat	•	•	•	•	•	•	•	
Great crested newt terrestrial habitat	•	•	•	•	•	•	•	
Great crested newt breeding ponds			•					
Reptile and bird habitat	•	•	•	•	•	•	•	
Invertebrate habitat	•	•	•		•	•	•	

3 . Key Issues

Ecological Corridors for Key Ecological Components

3.17 Ecological Corridors for Key Ecological Components allow important species to migrate and disperse within and beyond the Northern Quarter. They connect resting, breeding, hibernating and foraging habitat for a range of key species. Interruption of these corridors can result for example in reduced genetic exchange and fragmentation and isolation of habitats, making species less resilient to a wide range of other pressures including climate change. Their role is therefore considered critical and their interruption a key issue.

3.18 Habitat loss and lighting associated with development of various Zones including Zones 1, 2 and 7 has the potential to result in interruption of key lesser horseshoe bat flyways connecting roosts in the Northern United area to forage areas in woodlands to the south and west. Such impacts may have an adverse effect on the integrity of the Wye Valley and Forest of Dean Bat SAC and Wye Valley Woodlands SAC. Development of these Zones and Zones 3, 5 and 6 has the potential to interrupt key flyways used as commuting routes by other bat species. In addition, there is a risk that development of Zone 2 (the spine road) could result in increased mortality of bat species as a result of road collisions.

3.19 Development of various zones has the potential to interrupt Ecological Corridors for Key Ecological Components likely to be used by other species including reptiles and invertebrates (Development Zones 2 and 7) and dormouse (Development Zones 2, 4, and 7). Whilst interruption of corridors connecting great crested newt breeding ponds is expected to be limited, interruption of corridors connecting breeding ponds to terrestrial forage habitat is a risk. In addition, Development of Zones 3, 5 and 6 has the potential to result in culverting of watercourses preventing movement of species, such as otter, along riparian corridors.

Ecological Corridor for Key Ecological Components impacts	Development zone where impacts are expected							
	1	2	3	4	5	6	7	8
Lesser horseshoe bat key flyways	•	•					•	
Other bat species key flyways	•	•	•		•	•	•	
Bat road collisions		•						
Dormouse corridors		•		•			•	
Great crested newt corridors								
Reptiles and butterflies		•					•	
Riparian corridor culverting		•	•	•	•	•		•

3 . Key Issues

Emissions

3.20 Emissions may take many forms and utilise different pathways. They may be associated with both the construction and the operational phases of development. Emissions can include noise and vibration, light, dust, silt and toxic chemicals. Pathways can include air, water and soil. Most wildlife is sensitive to emissions and some are particularly vulnerable. The significance of impact is likely to vary depending on the species concerned and the type, distance, timing, frequency, duration of the emission and existing baseline levels. These impacts are described in further detail below as well as existing background levels.

3.21 Noise and vibration from construction and operation of development can result in disturbance to some Key Ecological Components, especially bats and badgers.

3.22 Development of Zones 1 and 2 has the potential to result in noise and vibration disturbance to the lesser horseshoe bat maternity roost in the Main Office and satellite roost within the Bath House at the Northern United Colliery. There is very little literature about the effects of disturbance on bats and safe working distances. However, expert observation and opinion suggests that horseshoe bats are particularly sensitive to disturbance. Impacts on bats are likely to be most severe where noise and vibration (above background levels to which the colony is accustomed) occurs frequently (daily or weekly) and where significant colonies (including all maternity colonies and hibernation colonies with more than 5 to 10 individuals) of rarer species (including horseshoe bats) are affected.

Species vulnerable to impacts	Potential impacts from noise and vibration							
Bats	Interrupted torpor resulting in impacts on energy balances and associated increased mortality/reduced breeding success. Roost abandonment (especially if noise/vibration is repeated).							
Badgers	Activity near setts can cause later emergence and/or behavioural changes that may affect foraging and energy balances and so result in increased mortality/reduced breeding success.							
Birds	Depending on the species concerned noise may cause movement away which can for instance affect breeding or feeding success.							
Zone	1	2	3	4	5	6	7	8
Lesser horseshoe bats	●	●						

3 . Key Issues

3.23 Artificial lighting can alter the behaviour of some Key Ecological Components including bats, moths and other nocturnal animals.

3.24 Development of Zone 1 has the potential to result in lighting of the lesser horseshoe bats roosts at the Northern United Colliery. Lighting associated with the majority of Development Zones also has the potential to result in the interruption of major flyways used by lesser horseshoe and other bat species as major flyways. Lighting along Zone 2 may reduce bat flight heights and so increase the risk of collision with vehicles. Lighting associated with all development zones may draw insects away from darker areas such as woodland surrounding the Northern Quarter reducing the foraging quality of these areas for light sensitive bats, such as long-eared bats, myotis species (including whiskered/Brandt’s, Daubenton’s and Natterer’s) barbastelle and greater and lesser horseshoe bats. Lighting associated with all Zones has the potential to result in increased invertebrate mortality or affect invertebrate behaviour in detrimental ways. Lighting has potential to impact on lesser horseshoe and other bats in a variety of ways and so is considered a key issue.

Species vulnerable to impacts	Potential impacts from lighting
Bats	<p>Lighting of roost entrances can delay emergence affecting energy balances and increase mortality/reduce breeding success.</p> <p>Lighting above certain levels can cause abandonment of flyways resulting in increased mortality/reduced breeding success.</p> <p>Lighting at roosts and along flyways can increase predation and so increase mortality rates.</p> <p>Lighting can reduce flight heights and so increase collision rates where roads cross flyways.</p> <p>Lighting can attract insects, depleting darker areas where certain species of bat would otherwise forage for this food source.</p>
Other nocturnal animals	<p>Lighting may affect the behaviour of nocturnal birds (e.g. nightjar) restricting foraging time and forage area extent.</p> <p>Lighting of riparian corridors may prevent otter movement.</p>
Invertebrates	<p>Emitted light may attract large numbers of invertebrates including moths, damselflies, dragonflies, and butterflies resulting in their increased mortality (via collision with hot lamps or increased predation). Emitted light may also disturb flight, navigation, vision, migration, dispersal, egg-laying, mating, feeding and camouflage of invertebrates.</p>

3 . Key Issues

Species vulnerable to impacts	Potential impacts from lighting							
	Polarised light (i.e. light reflected off surfaces) can attract aquatic invertebrates resulting in eggs being laid on man-made surfaces where they will not develop. Moths in particular can be attracted by light sources up to 500m away. Collisions with hot lamps and increased predation(by for example, light tolerant bat species) can result in higher mortality rates or even local extinction of very small moth populations.							
Zone	1	2	3	4	5	6	7	8
Impact	•	•	•	•	•	•	•	•

3.25 Dust deposition may smother vegetation affecting its photosynthesis, respiration and transpiration and allow the penetration of phytotoxic gaseous pollutants. This in turn can result in visible physical injury to vegetation or alter the structure or productivity of grassland, trees and woodlands. Dust pollution may be emitted during construction or during operation of roads and certain types of light industrial development for example.

3.26 Soils within brownfield sites that have had a previous industrial history may be contaminated with a range of pollutants such as asbestos, hydrocarbons (such as oils and fuels) and hazardous heavy metals and solvents. These can enter ground and surface waters when construction activity takes place damaging aquatic and terrestrial habitats and affecting the species they support.

3.27 Where development occurs adjacent to surface waters there is a risk that these can become polluted by development construction activities. Such pollution can include oil from machinery, cement, concrete and grout from building and silt from excavations, run-off and stored materials. Pollutants can damage or kill aquatic life by smothering or suffocating it or by changing the pH of water for example.

Species vulnerable to impacts	Potential impacts of air and water borne pollution
Bats	Dust may adversely affect vegetation that functions as commuting routes or forage habitat.
Bats, mammals, reptiles, amphibians and birds	Pollution of aquatic and terrestrial habitats may result in loss/reduction of invertebrate and other food sources on which these species feed.

3 . Key Issues

Species vulnerable to impacts	Potential impacts of air and water borne pollution							
Rare invertebrates	Surface water pollution may result in loss of white-clawed crayfish (if present)							
Zone	1	2	3	4	5	6	7	8
Dust pollution	•	•	•				•	
Construction pollution		•	•	•	•	•		•
Contaminated land pollution	•	•	•	•	•	•	•	•

Other impacts

3.28 Recreational pressure associated with residential or tourism development has potential to cause disturbance to Key Ecological Components including bats and certain bird and reptile species.

3.29 Residential and eco-tourism development associated with Zones 3, 5, 6 and 8 in particular has the potential to result in elevated levels of human presence within woodland surrounding the Northern Quarter and so could impact on ground-nesting and other sensitive bird species. Behavioural disturbance (e.g. alarm calling) may be triggered in species like nightjar and common crossbill at distances of up to 150m. These species may take flight when disturbance takes place at distances of 10 to 100 metres. Distances at which other species are disturbed are not currently well understood but impacts at these or greater distances would not be unreasonable to assume.

Species vulnerable to impacts	Potential impacts from human presence/recreational pressure
Bats	Increased human presence may increase the risk of vandalism or other disturbance to buildings supporting bat roosts.
Ground-nesting and other sensitive bird species	Recreational activity such as walking (especially with dogs) can cause ground-nesting and other sensitive birds to alter behaviour or take 'flight' impacting on these species energy balances, feeding behaviour and the vulnerability of young, eggs or fledglings resulting in avoidance or reduced abundance in such areas (e.g. hawfinch and nightjar).

3 . Key Issues

Species vulnerable to impacts	Potential impacts from human presence/recreational pressure							
	Recreational activity during the winter months can disturb ground-feeding birds (e.g. hawfinch which is extremely wary of people). Recreational activity can result in accidental trampling of nests of ground-nesting species (e.g. wood warbler). Certain species are sensitive to disturbance when building, laying or incubating eggs.							
Great crested newts	Introduction of fish into ponds is likely to result in increased predation and eventual loss of associated newt populations.							
Reptiles and badgers	Species are not tolerated resulting in deliberate killing and injury resulting in increased mortality especially near residential areas.							
Zone	1	2	3	4	5	6	7	8
Impact			•		•	•		•

3.30 Increased human presence within the area may also have other indirect impacts on Key Ecological Components such as littering. An increased presence of domestic cats associated with residential development has the potential to result in increased predation especially of mammals, birds, amphibians and reptiles within retained and surrounding habitats.

Species vulnerable to impacts	Potential Impacts							
Mammals, birds, amphibians and reptiles	Domestic cats from residential areas may hunt within nearby semi-natural habitat resulting in increased mortality of a variety of species.							
Zone	1	2	3	4	5	6	7	8
Impact				•	•	•		•

3 . Key Issues

Impacts by Development Zone

Note

3.31 The following tables summarise the most significant impacts likely to be associated with the different zones of development within the CNQAAP area and should be read in conjunction with earlier parts of this section. These tables are based on ecological information available at the time of publication. As more detailed surveys are undertaken in relation to individual planning applications or as part of a wider programme of recording by local naturalists new Key Ecological Component species in particular may be discovered. Impact assessments for individual planning proposals will need to take account of such additional information.

Zone 1 Northern United

Development Zone 1 description

Use: Mixed employment

AAP Phase: 1, 2011-2015

Plot number/s: 1a and 1b

Footprint size: 2.1ha

Key Ecological Components

- Severn Estuary, Walmore Common and Speech House Oaks (connected by water courses and/or roads)
- Bat roosts (lesser horseshoe bat maternity and satellite roosts and minor roosts for other bat species)
- European Protected Species: dormouse; great crested newt; bats
- Habitats of Principal Importance: Open Mosaic on Previously Developed Land, Lowland Mixed Deciduous Woodland
- Other Species of Principal Importance: common reptiles; birds (crossbill, bullfinch and linnet); invertebrates (including grizzled skipper)
- Ecological Corridors for KEC: lesser horseshoe and other bats

Broad Habitats: Woodland (Broad Leaved and Mixed); Woodland (Coniferous)

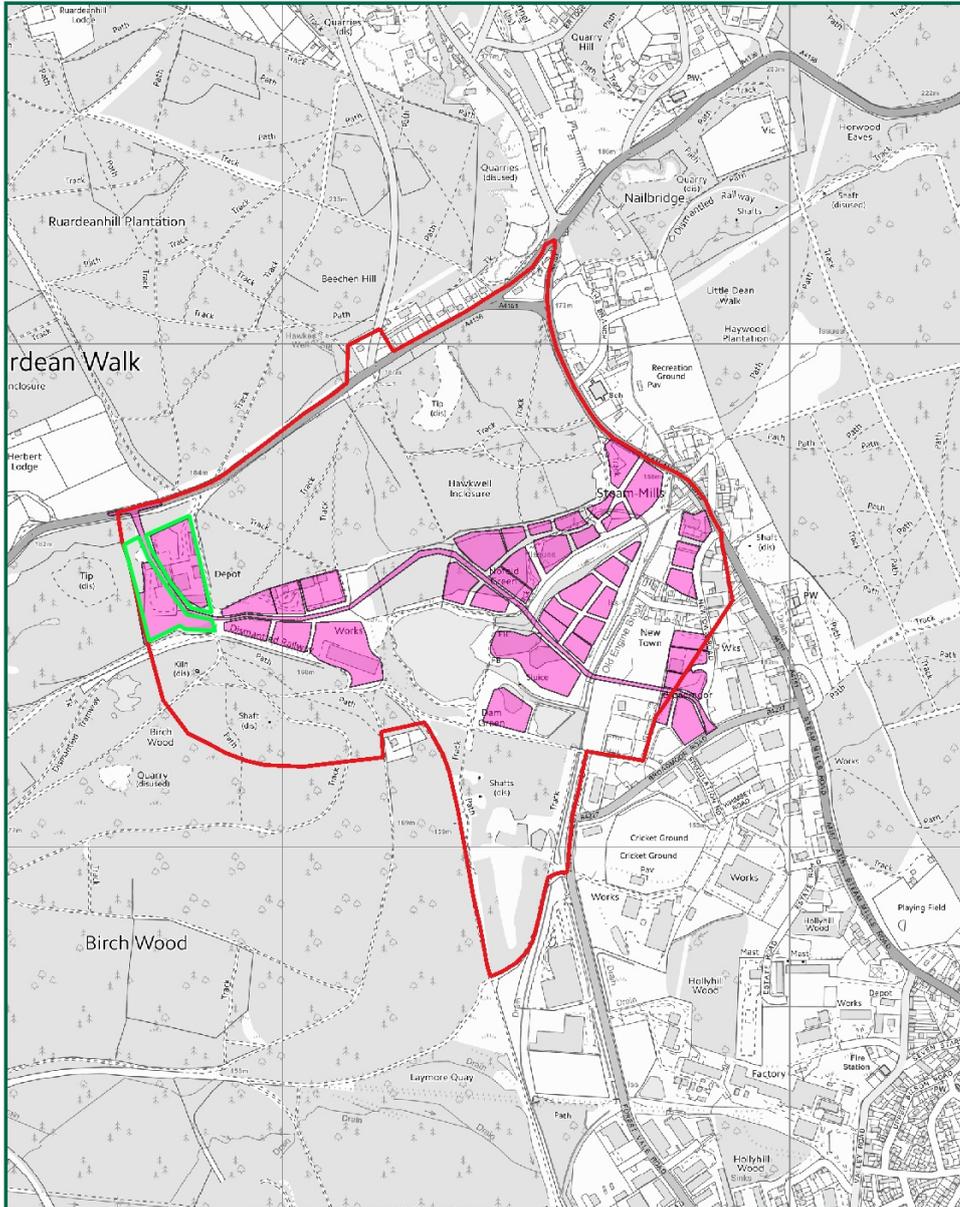
Summary of main potential impacts

- Bat roost loss/damage/disturbance
- Habitat of Principal Importance loss

3 . Key Issues

- Disturbance of European Protected species, protected species and other Species of Principal Importance and/or loss of habitats supporting them
- Interruption of key bat flyways and butterfly corridors from habitat loss, pollution, disturbance etc.

3 .Key Issues



Development Zone 1

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3 . Key Issues

Zone 2 The Spine Road

Development Zone 2 description

Use: Spine Road

AAP Phase: 1, 2011-2015

Plot number/s: 2

Footprint size: 1.3ha

Key Ecological Components

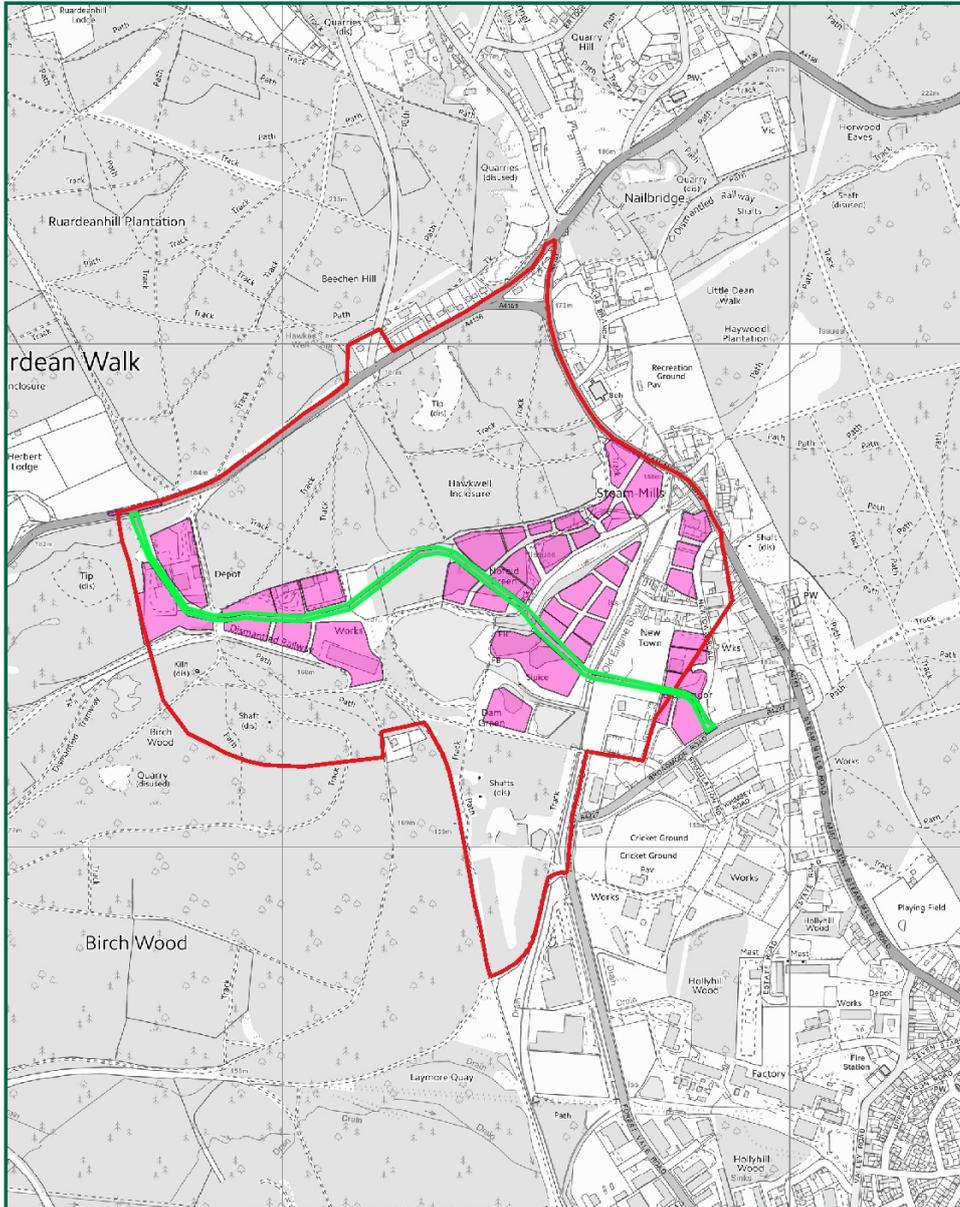
- Severn Estuary, Walmore Common and Speech House Oaks (connected by water courses and roads)
- Bat roosts (lesser horseshoe bat maternity and satellite roosts and minor roosts for other bat species)
- European Protected Species: dormouse; great crested newt; bats
- Habitats of Principal Importance: Open Mosaic on Previously Developed Land; Wet Woodlands; Lowland Mixed Deciduous Woodland; Rivers
- Other Species of Principal Importance: common reptiles; birds (crossbill, tree pipit, linnet, bullfinch, song thrush); invertebrates (including wood white butterfly, grizzled skipper butterfly, autumnal rustic moth, ear moth)
- Ecological Corridor for KEC: lesser horseshoe and other bats; dormouse; great crested newts; reptiles and butterflies; otter

Broad Habitats: Grassland; Woodland (Broad leaved and Mixed); Woodland (Conifer)

Summary of main potential impacts

- European Site pollution/disturbance
- Bat roost loss/damage/disturbance
- Habitat of Principal Importance loss
- Disturbance of European Protected species, protected species and other Species of Principal Importance and/or loss of habitats supporting them
- Interruption of key bat flyways and butterfly corridors from habitat loss, pollution, disturbance etc.

3 .Key Issues



Development Zone 2

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3 . Key Issues

Zone 3 The Educational Facility

Development Zone 3 description

Use: Education facility and parking

AAP Phase: 1, 2011-2015

Footprint size: 1.7 ha

Key Ecological Components

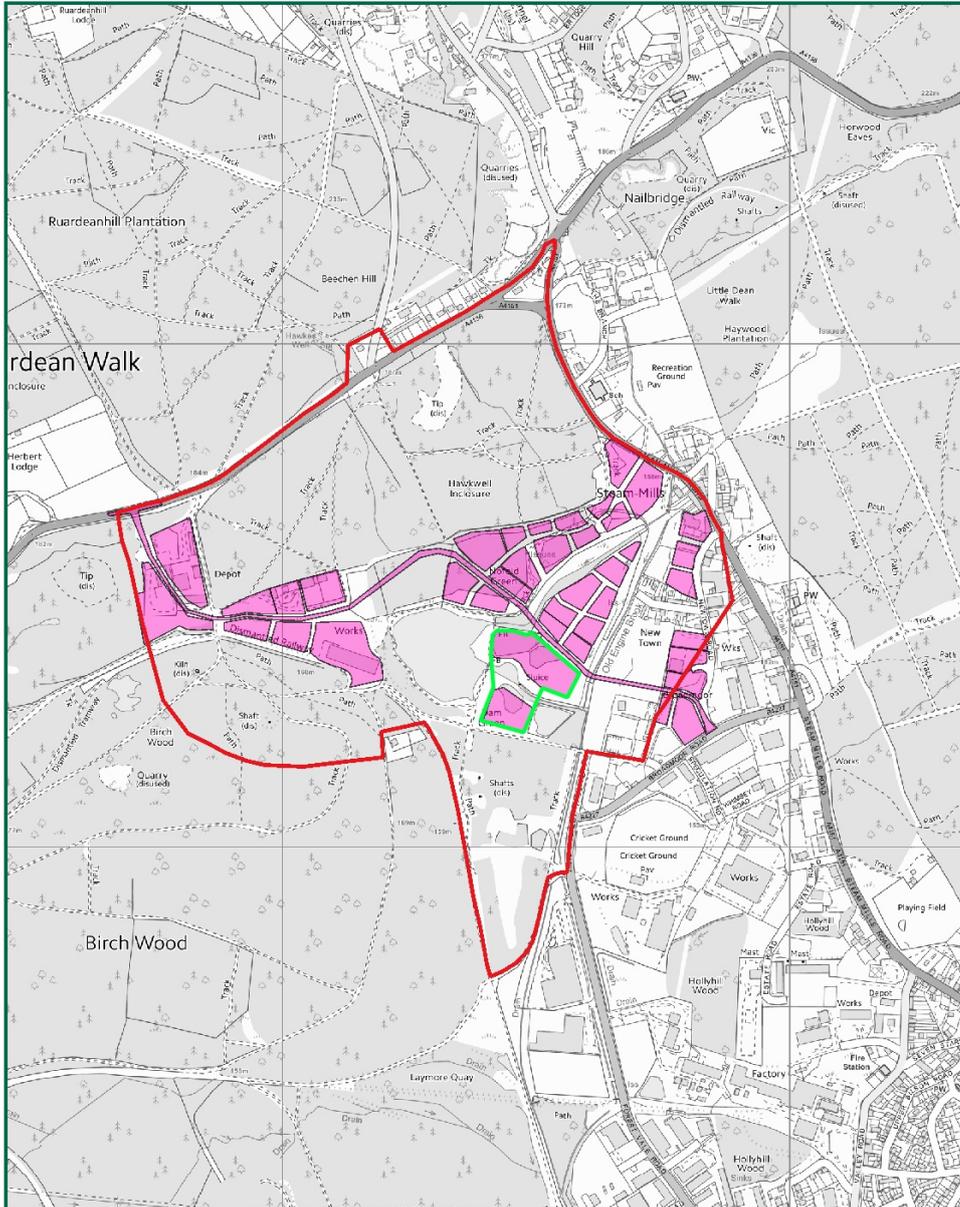
- Severn Estuary, Walmore Common and Speech House Oaks (connected by water courses and roads)
- European Protected Species: dormouse; great crested newt; bats
- Habitats of Principal Importance: Ponds; Open Mosaic on Previously Developed Land; Rivers
- Other Species of Principal Importance: common reptiles (including adders, common toad); birds (including tree pipit, linnet, bullfinch, song thrush, hawfinch); invertebrates (including dingy skipper butterfly, small heath butterfly, ear moth, mouse moth, small phoenix moth, shaded broad-bar moth, knot grass moth)
- Ecological Corridor for KEC: bats; otters

Broad Habitats: Grassland; Woodland (Broad leaved and Mixed)

Summary of main potential impacts

- European Site pollution/disturbance
- Habitat of Principal Importance loss
- Disturbance of European Protected species, protected species and other Species of Principal Importance and/or loss of habitats supporting them (including great crested newt breeding ponds)
- Interruption of key bat flyways from habitat loss, pollution, disturbance etc.

3 .Key Issues



Development Zone 3

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3 . Key Issues

Zone 4 Broadmoor

Development Zone 4 description

Use: Office/light industrial and healthcare

AAP Phase: Independent

Footprint size: 1.3ha

Key Ecological Components

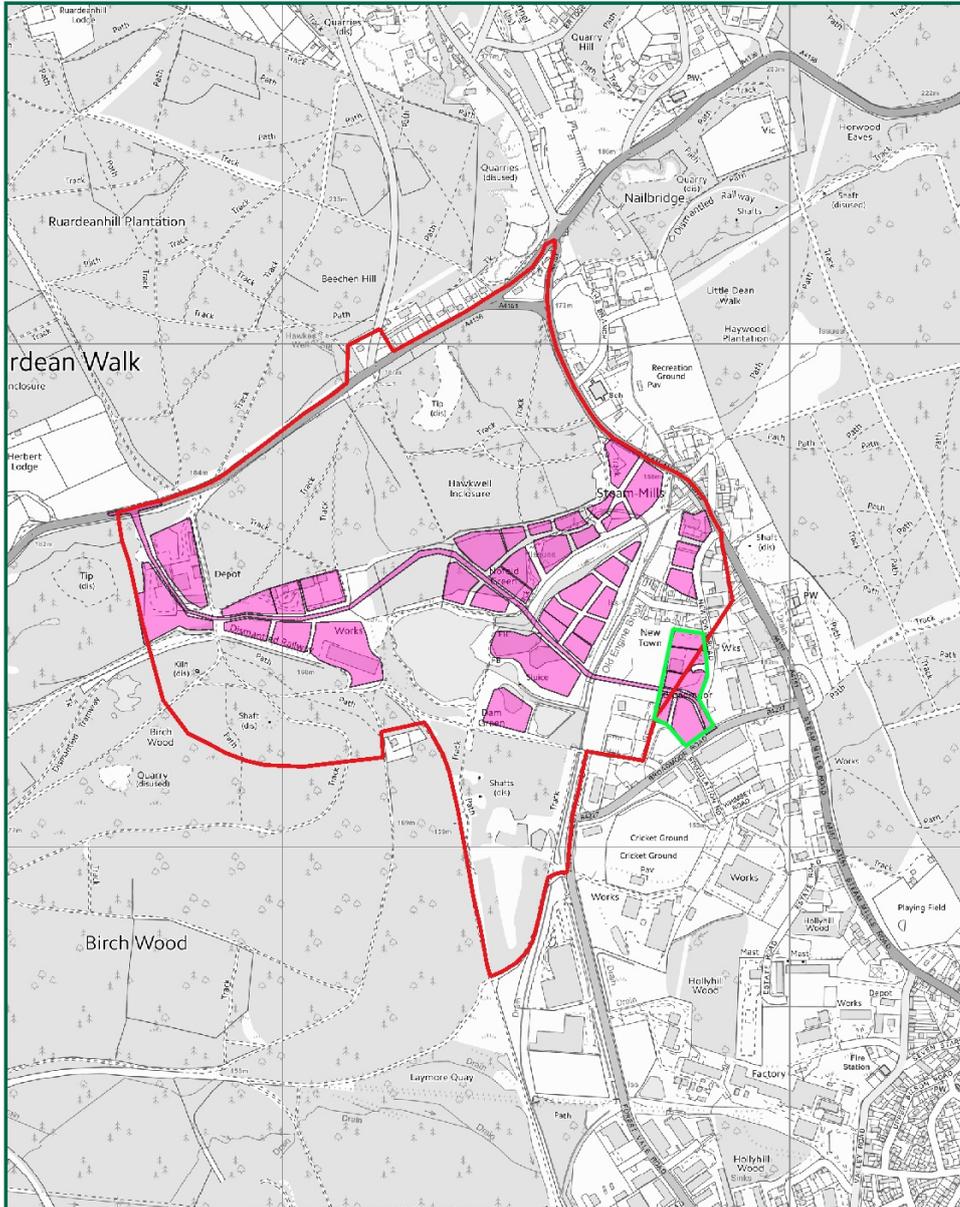
- Severn Estuary, Walmore Common and Speech House Oaks (connected by water courses and/or roads)
- European Protected Species: dormouse; great crested newt; bats
- Habitats of Principal Importance: Lowland Mixed Deciduous Woodland; Rivers
- Other Species of Principal Importance: common reptiles (common lizard); birds (including tree pipit, linnet, bullfinch, song thrush, house sparrow)
- Ecological Corridors for KEC: dormouse; otters; bats

Broad Habitats: Grassland

Summary of main potential impacts

- Disturbance of European Protected Species, protected species and other Species of Principal Importance and/or loss of habitats supporting them

3 .Key Issues



Development Zone 4

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3 . Key Issues

Zone 5 Norfolk Green

Development Zone 5 description

Use: Residential and office

AAP Phase: 2 & 3 2016-2022

Footprint size: 3.0ha

Key Ecological Components

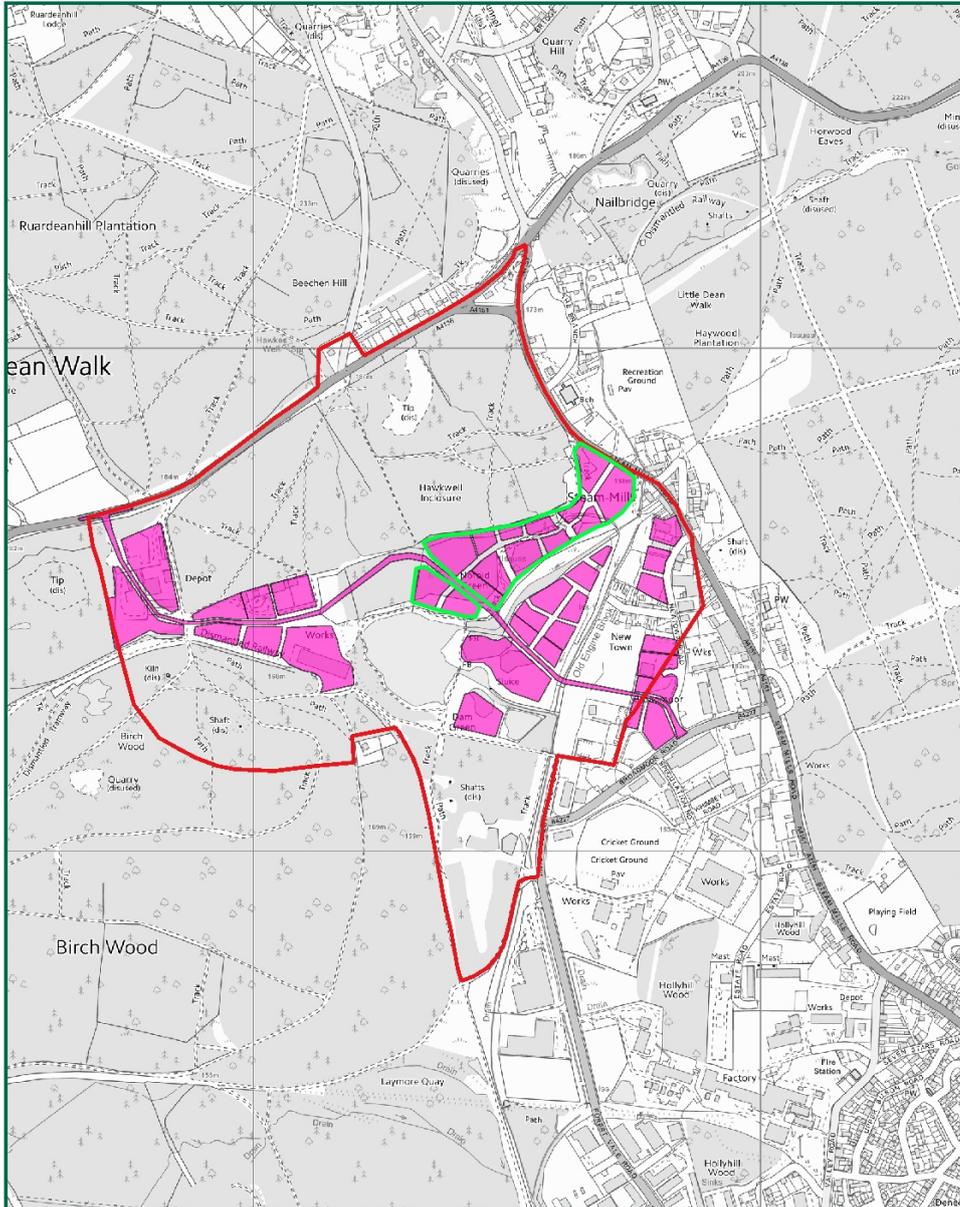
- Severn Estuary, Walmore Common and Speech House Oaks (connected by water courses and roads)
- European Protected Species: dormouse; great crested newt; bats
- Habitats of Principal Importance: Rivers; Lowland Mixed Deciduous Woodland
- Other Species of Principal Importance: common reptiles (including adder and slow-worm); birds (including song thrush, nightjar, hawfinch, tree pipit, crossbill); invertebrates (including dingy and grizzled skipper butterfly, wood white butterfly, autumnal rustic moth)
- Ecological Corridors for KEC: bats; otter

Broad Habitats: Grassland; Woodland (Broad Leaved and Mixed); Woodland (Coniferous)

Summary of main potential impacts

- European Site pollution/disturbance
- Habitat of Principal Importance loss
- Disturbance of European Protected species, protected species and other Species of Principal Importance and/or loss of habitats supporting them
- Interruption of key bat flyways from habitat loss, pollution, disturbance etc.

3 .Key Issues



Development Zone 5

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3 . Key Issues

Zone 6 East of the Lake

Development Zone 6 description

Use: Residential and office

AAP Phases: 2 & 3 2016-2022

Footprint size: 2.4ha

Key Ecological Components

- Severn Estuary, Walmore Common and Speech House Oaks (connected by water courses and roads)
- European Protected Species: dormouse; great crested newt; bats
- Habitats of Principal Importance: Wet Woodland; Rivers
- Other Species of Principal Importance: common reptiles; birds (including tree pipit, song thrush); invertebrates (including dingy and grizzled skipper)
- Ecological Corridors for KEC: bats; otters

Broad Habitats: Grassland; Woodland (Broad Leaved and Mixed)

Summary of main potential impacts

- European Site pollution/disturbance
- Habitat of Principal Importance loss
- Disturbance of European Protected species, protected species and other Species of Principal Importance and/or loss of habitats supporting them
- Interruption of key bat flyways from habitat loss, pollution, disturbance etc.

3 . Key Issues

Zone 7 The Brickworks

Development Zone 7 description

Use: Industrial and office

AAP Phase: 1&2, 2011-2015

Footprint size: 1.8ha

Key Ecological Components

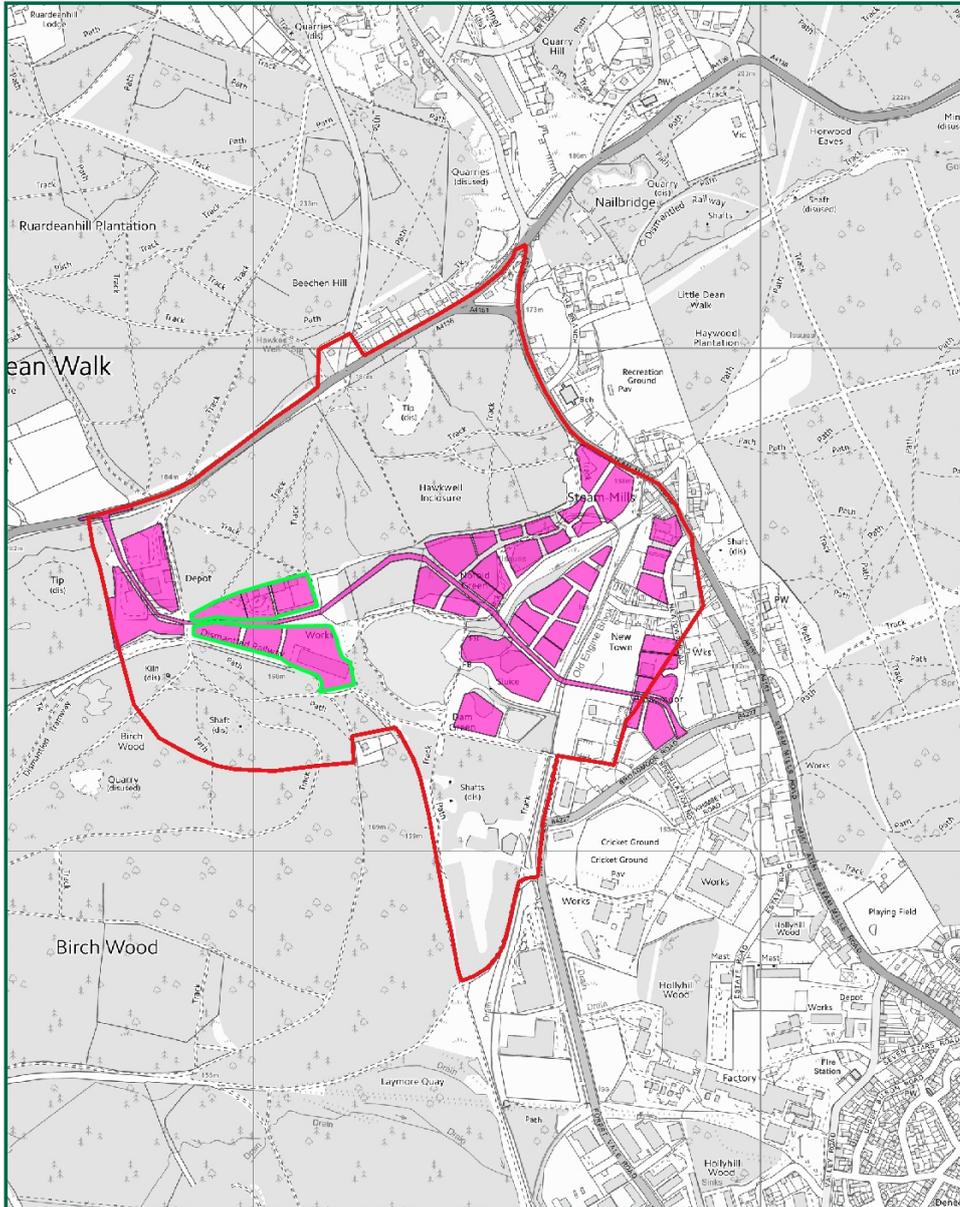
- Severn Estuary, Walmore Common and Speech House Oaks (connected by water courses and/or roads)
- European Protected Species: dormouse; great crested newt; bats
- Habitats of Principal Importance: Wet Woodland; Open Mosaic on Previously Developed Land
- Other Species of Principal Importance: common reptiles (grass snake); birds (including tree pipit, song thrush); butterflies (including small heath, dingy skipper and grizzled skipper butterflies, small square spot, rustic, shaded broad-bar, knot grass, dark brocade, small emerald, rosy rustic, cinnabar and small phoenix moths)
- Ecological Corridors for KEC: lesser horseshoe and other bat species; dormouse; reptiles; butterflies

Broad Habitats: Grassland

Summary of main potential impacts

- Habitat of Principal Importance loss
- Disturbance of European Protected species, protected species and other Species of Principal Importance and/or loss of habitats supporting them
- Interruption of key bat flyways and butterfly corridors from habitat loss, pollution, disturbance etc.

3 .Key Issues



Development Zone 7

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3 . Key Issues

Zone 8 Newtown

Development Zone 8 description

Use: Residential

AAP Phase: Independent:

Footprint size: 0.7ha

Key Ecological Components

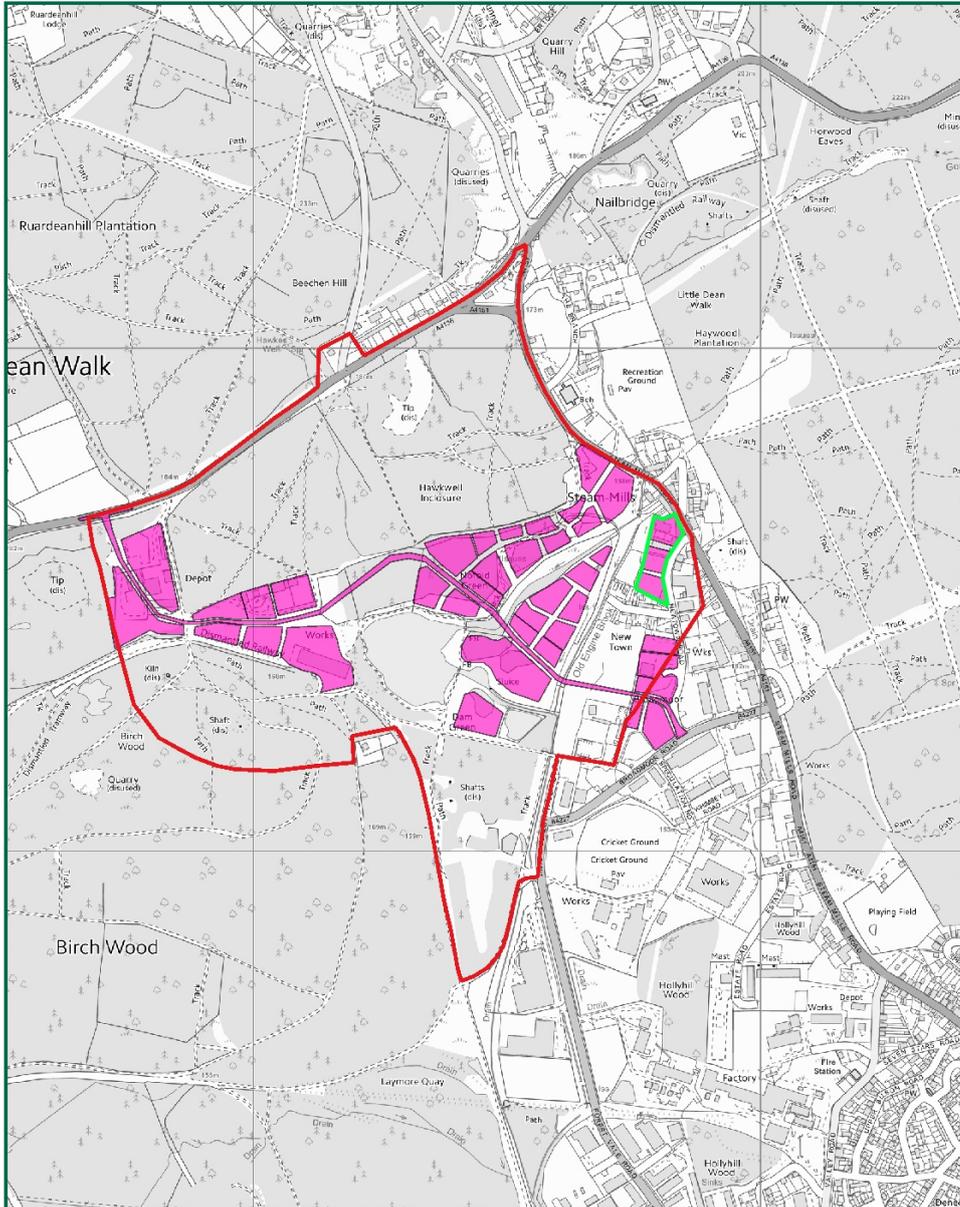
- Severn Estuary, Walmore Common and Speech House Oaks (connected by water courses and/or roads)
- European Protected Species: none
- Habitats of Principal Importance: Rivers
- Other Species of Principal Importance: common reptiles; birds
- Ecological Corridors for KEC: otters

Broad Habitats: none

Summary of main potential impacts

- Habitat of Principal Importance loss
- Disturbance to Species of Principal Importance and/or loss of habitats supporting them

3 .Key Issues



Development Zone 8

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4 . Key Principles

Overview

4.1 The following section contains the Key Principles that development proposals within the CNQAAP area should demonstrate that they meet. These Key Principles are based on national planning policy guidance and circulars, legislation, CS and AAP policies, Natural England and Environment Agency Standing Advice and biodiversity best practise, such as the Technical Guidance Series produced by the Chartered Institute of Ecology and Environmental Management. They have been developed to address Key Issues relevant to Key Ecological Components identified earlier in the document.

4.2 In particular, the Key Principles reflect the requirements of the NPPF which details how the planning system should contribute to conserving and enhancing biodiversity by minimising impacts on biodiversity and providing net biodiversity gains where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

4.3 Those preparing development proposals should develop their DBISs in a sequential way as illustrated below:

Avoid & Reduce

Evaluate if the development objectives can be delivered in ways that avoid significant impact or markedly reduce impacts on biodiversity.

Mitigate

Examine how design, layout and methods of working can effectively mitigate for the identified biodiversity impacts

Acknowledge and Compensate/offset

Acknowledge any residual impacts of the development proposals and set out compensatory measures.

(Sequential approach to biodiversity implementation strategies)

Key Principle1 Ensuring Development Proposals are Informed by Appropriate Information

4.4 Table 4.1 summarises the level of information that is likely to be required by the LPA for planning development proposals associated with the CNQAAP and when in the application process this will be required. Guidance about the format and content of this information is described in the subsequent section.

4 . Key Principles

Development proposals with the potential to affect:	Information requirements			
	Survey	Impact assessment	Avoidance, mitigation and compensation	Other
European Sites and lesser horseshoe bat roosts, their Ecological Corridors and forage areas	●	●	*	HRA information
EPS (including their Ecological Corridors)	●	●	*	Derogation test information
Other Species of Principal Importance (including their Ecological Corridors)	●	●	○	-
Habitats of Principal Importance	●	●	○	-

Key: ● - detailed information prior to validation; * - detailed information prior to determination, ○ - detailed information prior to determination encouraged or as a minimum outline information required to demonstrate that impacts can in principle be effectively avoided, mitigated, or as a last resort, compensated for (more detailed information will be required through planning conditions/obligations).

Table 4.1 Development proposal information checklist

4.5 Section 2 of this document outlines the Key Ecological Components within and around the CNQAAP area. Whilst this information is considered sufficient for the purposes of producing this technical guidance, higher levels of detail regarding Key Ecological Components are likely to be required as part of individual development proposals. For this reason, and because survey data can go out of date, developers should use Section 2 of this document to scope likely ecological information requirements.

Standards for ecological survey, impact assessment and mitigation

4.6 Developers are encouraged to seek advice from the LPA about the ecological survey, impact assessment and mitigation measures likely to be required for their proposals in the early stages of design.

4.7 Where there is reasonable likelihood of Key Ecological Components being present and affected by development it is essential that their presence and the extent to which they may be affected by the proposed development is established prior to approval. Development proposals should be accompanied by ecological survey and impact assessment undertaken to a recognised standard. In particular ecological surveys should:

- Follow Natural England Standing Advice and other best practice guidance;

4 . Key Principles

- Be undertaken at a suitable time of year, using appropriate survey effort by an experienced, and where appropriate, suitably licenced person;
- Identify any constraints to survey methodology which may affect the interpretation of survey results and other data;
- Describe and justify any deviation from recognised survey methods;
- Be no more than two years old where there is potential for European Site or EPS to be affected, and no more than three years old where other Key Ecological Components have the potential to be effected;
- Be accompanied by a walk-over survey where development proposals are reliant on ecological survey data over 12 months old in order to demonstrate that there has been no significant change on the ground in the interim.

4.8 Developers should refer to Section 2 of this document and undertake an ecological records search, for example using the Gloucestershire Centre for Environmental Records, in order to scope ecological survey requirements for their proposals and when undertaking desktop studies. Developers are strongly encouraged to submit ecological records that they gather through survey work to the Gloucestershire Centre for Environmental Records.

4.9 Some surveys, such as scoping or preliminary surveys, can be carried out all year round but may be more productive at certain times of year. For more specific surveys, there are often relatively narrow times of year when these can occur. For details of optimal survey periods refer to Table 4.1a. Those developing proposals should familiarise themselves with these constraints early within the design process to ensure their developments take account of any potential constraints.

Key Ecological Component	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Badgers		●	●	●	*	*	*	*	*	●	●	*
Bats (summer roosts)				*	●	●	●	●	●	*		
Bats (hibernation roosts)	●	●	●								●	●
Bats (foraging/commuting)				*	●	●	●	●	●	*		
Birds (breeding)			●	●	●	●	●	●				
Birds (over wintering)	●	●									●	●

4 . Key Principles

Key Ecological Component	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Dormice	•				•	•	•	•	•		•	•
Great crested newts (terrestrial)			•	•	•	•	•		•	•		
Great crested newts (aquatic)		•	•	•	•							
Invertebrates				•	•	•	•	•	•			
Otters	•	•	•	•	•	•	•	•	•	•	•	•
Reptiles			•	•	•	•			•			
White-clawed crayfish							•	•	•			
Habitats				•	•	•	•	•	•			

Key: • Optimal survey time; *extending into

Table 4.1a Survey Calendar

4.10 Impact assessments should correctly and comprehensively identify, describe and assess all stages of development including demolition, where relevant, construction and operation and should assess any impacts associated with off-site mitigation where this is proposed. Impact assessment should follow best practice guidance such as The Guidelines For Ecological Impact Assessment in the United Kingdom produced by the Chartered Institute of Ecology and Environmental Management.

4.11 Impact assessment should take account of any cumulative impacts. The approach to cumulative impact assessment should be agreed with the LPA through pre-application discussions. In order to assess cumulative effects, impact assessments should consider: environmental trends; completed developments and; other developments for which consent has been granted that may affect the zone of influence for associated Key Ecological Components. Please refer to subsequent paragraphs on European Sites and Environmental Impact Assessment for proposals subject to Appropriate Assessment under the Habitat Regulations and/or Environmental Impact Assessment. In order to consider cumulative impacts individual development proposals should review other CNQAAP development proposals that have been granted permission but which have not yet been implemented or fully completed as part of their impacts assessment.

4.12 Where it has been identified that Key Ecological Components are likely to be impacted, it is essential that development proposals include effective measures to protect these Components. These measures should be based on Natural England Standing Advice and best practice guidance.

4 . Key Principles

4.13 Some forms of mitigation can be carried out all year round. However, many types of mitigation can only be undertaken at certain times of year. For details of these periods refer to Table 4.1b. Those developing proposals should familiarise themselves with these constraints early within the design process to ensure their developments take account of any potential constraints.

Key Ecological Component	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Badgers (sett destruction/stopping up)							●	●	●	●	●	
Bats (works on summer/maternity roosts)	●	●	●	●					●	●	●	●
Bats (works on hibernation roosts)			●	●	●	●	●	●	●	●		
Birds (clearance for breeding birds)	●	●						●	●	●	●	●
Dormice (above ground clearance)	●	●	●	●					●	●	●	●
Dormice (capture/release and stump root clearance)					cr●	cr●	c●	c●				
Great crested newts (pond management)	●	●									●	●
Great crested newts (trapping)			pl●	pl●	pl●	pl●	l●	l●	l●	l●		
Invertebrates												
Otters (non-breeding)	●	●	●	●	●	●	●	●	●	●	●	●
Reptiles (above ground scrub clearance (hibernation))	●	●									●	●
Reptiles (capture and translocation)			●	●	●	●	*	○	*			

4 . Key Principles

Key Ecological Component	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
White-clawed crayfish (capture/exclusion)				●			●	●	●	●		
Habitats (planting/translocation)	●	●	*	*					*	●	●	●

Key: ● - optimal; * - sub-optimal; cr - capture and release; c - capture only; pl in ponds and on land; l on land only; ○ - scrub clearance

Table 4.1b Mitigation Calendar

4.14 Development proposals subject to assessment under Regulation 61 and 62 or the Habitats Regulations or which are likely to need an EPS licence will be required to submit detailed mitigation prior to positive determination by the LPA. As a result it may be necessary for outline planning applications to submit information that would otherwise only be required at reserved matters stage. Development proposals likely to have impacts on other Key Ecological Components are encouraged to develop similarly detailed measures and as a minimum should demonstrate how these Key Ecological Components can be protected in principle prior to approval.

Site safeguard and long-term management

4.15 Where management, restoration, creation and/or enhancement for Key Ecological Components is necessary in accordance with Key Principle 2 of this document, development proposals will need to demonstrate how land proposed for this purpose will be safeguarded and sympathetically managed over the long-term. This is likely to be best achieved through:

- A review of relevant wider strategic plans in order to demonstrate that the land proposed for this purpose is unlikely to be subject to damaging proposals, for example new built development or afforestation, in the foreseeable future;
- Preparation and submission of Biodiversity Management Plans (BMPs) (Table 4.2 provides for further information about when in the planning process these will be required.)

4.16 Further guidance about the structure and content of BMPs is provided under Key Principle 2.

4 . Key Principles

Land ownership	BMPs required for European Sites and their interest features and European Protected Species	BMPs for other Key Ecological Components
Developer owned land	BMP required prior to approval, secured through implementation condition or Unilateral Undertaking (UU)	Scale plans identifying the size and location of the land. Information outlining the structure and contents of the BMP (development and implementation secured through condition or UU)
Third party owned land	BMP required prior to approval (secured through Section 106 agreement)	Plan identifying the size and location of the land. Information outlining the structure and contents of the Management Plan (development and implementation secured through S106 Heads of Terms)

Table 4.2 Biodiversity Management Plan

European Sites

4.17 Development proposals should demonstrate how they will affect traffic levels through wider traffic modelling undertaken to a recognised standard. Where traffic modelling indicates traffic movements along the A48 will increase, development proposals should also demonstrate, through air pollution modelling, whether critical load thresholds or other environmental criteria (e.g. Environmental Quality Standards), for key pollutants will be exceeded for qualifying and supporting habitats of the Severn Estuary SAC, SPA & Ramsar and Walmore Common SPA and Ramsar sites. Air pollution modelling should be undertaken using recognised models (for example ADMS, AERMOD, SCAIL and FRAME). Modelling should consider ammonia, sulphur and nitrogen dioxide pollution in particular and heavy metals, volatile organic compounds (VOCs), persistent organic pollutants (POPs) and dust/particulates. Developers are encouraged to refer to the Air Pollution Information System (APIS) for further information about the impacts of these types of pollutants. Where traffic modelling indicates traffic movements along the A48 will increase, development proposals should also demonstrate, whether and to what extent existing noise levels will increase.

4.18 Development proposals with the potential to impact on the lesser horseshoe bat roosts, their commuting routes or forage areas will be subject to detailed HRA by the LPA. Development proposals should provide adequate and appropriate information to the LPA in order for it to undertake the HRA. In particular they should describe the: size; scale, phasing (where relevant) and physical requirements of demolition (where relevant), construction and operation and previous use; the ecological baseline, for example roost characterisation, flyway and forage area locations and use; and comprehensive effective mitigation measures.

4 . Key Principles

4.19 Where the LPA undertakes a HRA that concludes that an individual planning application would be unlikely to have a significant effect on the internationally important interest features of a European Site alone, sufficient additional information should be provided to allow the LPA to consider whether this would also be the case in combination with other plans or projects.

4.20 Sufficient information should be provided to allow the LPA to attach a high level of confidence to all elements of the HRA. Developers are therefore strongly advised to adopt a precautionary approach where gaps in scientific research mean that impacts or the effectiveness of mitigation is uncertain. Advice on the type of information required for HRA purposes should be sought from the LPA and Natural England at the earliest possible stage of design.

4.21 Where measures are required to provide safe road crossing points for lesser horseshoe bats development proposals should demonstrate the effectiveness of these measures through survey work that confirms the location of flyways, the height at which bats fly along these and review of the latest published research and guidance relating to road crossing mitigation and the behavioural ecology of this species. Monitoring and rectification measures should mitigation fail for any reason should be included.

European Protected Species

4.22 Development proposals likely to require a EPS Licence will be subject to assessment under Regulation 9(5) of the Habitats Regulations by the LPA. In addition to appropriate ecological survey work and impact assessment requirements development proposals should demonstrate how they meet the three derogation tests set out under Regulation 53(2)e, 53(9)(a) and 53(9)(b) of the Habitats Regulations. In particular, such development proposals should demonstrate that:

- There is a genuine need and a ‘purpose’ for the proposed activity;
- There are no satisfactory alternatives to delivering and meeting the need in the way proposed;
- The licenseable action will allow the need to be meet;
- The development proposal is proportionate and;
- There will be no adverse effect on the Favourable Conservation Status of the species concerned.

4.23 Phased or multi-plot development proposals which are likely to effect EPS should be accompanied by a Master Plan, in accordance with Natural England guidance, for the species concerned.

4 . Key Principles

Environmental Impact Assessment

4.24 Where an Environmental Impact Assessment (EIA) is required by the LPA, development proposals should demonstrate how they comply with this requirement through submission of an Environmental Statement. In particular, EIA may be required for any development proposals with potential to affect lesser horseshoe bat roosts, commuting routes or forage areas.

4.25 EIAs addressing ecological key issues should follow the Chartered Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment in the United Kingdom. Ecological mitigation proposals included within EIAs should be structured in accordance with the headings set out under Key Principle 2 of this document.

Monitoring

4.26 Where planning conditions/obligations are likely to be required to secure measures designed to avoid, reduce, mitigate or compensate/offset biodiversity impacts, proposals should include monitoring to assess the effectiveness of these. Monitoring should be appropriate to the Key Ecological Component concerned, should be based on sound ecological principles and scientific methods of study, be undertaken in systematic way with a clearly identified purpose and where relevant reflect Natural England Standing Advice. Monitoring should be proportionate, reflecting the status of the Key Ecological Component concerned and the likely magnitude of impact upon it. For small-scale proposals with low impacts it may be sufficient for applicants to simply demonstrate that features such as new bird boxes for example have been installed to a suitable standard. For larger scale proposals or those associated with high or complex impacts monitoring proposals should include the following details: purpose, aims and objectives of monitoring; an adequate description of baseline data; appropriate success criteria; thresholds, triggers and targets against which effectiveness of measures can be assessed; data gathering and analysis methodologies (including timing, location, duration, responsible persons and lines of communication); review arrangements (and publication as appropriate) and; contingency and remedial actions should monitoring indicate measures are/will not be effective (including how these will be agreed and implemented with LPA).

Key Principle 2 Ensuring Development Proposals do not Adversely Affect European Sites and Conserve Other Key Ecological Components

4.27 Development proposals must demonstrate how they will avoid, adequately mitigate, or, as a last resort, compensate for any significant harm to biodiversity. Distinction should be made between the hierarchy of international, national and locally designated sites, so that protection is commensurate with their status and appropriate weight is given to their importance and the contribution they make to wider ecological networks.

4.28 Table 4.3 summarises measures that are likely to be required by the LPA for planning development proposals associated with the CNQAAP area. Guidance about the format and content of these requirements is described in the subsequent section.

4 . Key Principles

4.29 Much of the guidance under Key Principle 2 is generic and individual development proposals will need to demonstrate how they meet this guidance. Deviation from the guidance would need to robustly demonstrate why this is necessary and how the impact on species and habitats can be mitigated. Such circumstances are likely to be limited to situations where new survey information or published research relating to Key Ecological Components becomes available or where individual proposals deviate in nature from that described within the AAP and which as a consequence result in reduced ecological impacts.

4 . Key Principles

Development proposals with the potential effect:	Development Design Scheme	Road Design Scheme	Construction Environmental Management Plan	Traffic Strategy	Lighting Strategy	Roost retention/replacement Strategy	Biodiversity Management Plan	Biodiversity Spatial Masterplan	Species Translocation Scheme	SUDs	Recreational Strategy
Severn Estuary SAC, SPA & Ramsar site			•	•						•	
Walmore Common SPA & Ramsar site				•							
Lesser horseshoe bat roosts	•		•		•	•	•	•			•
Lesser horseshoe bat commuting routes	•	•	•		•		•	•		•	
Lesser horseshoe bat foraging areas	•				•		•	•		•	
Other bat species (commuting routes/forage areas)	•	•	•		•		•	•		•	
Great crested newt	•	•	•				•	•	•	•	
Dormouse	•	•	•				•	•	•	•	
White-clawed crayfish	•	•	•				•	•		•	
Common reptiles		•	•				•	•	•	•	•
Breeding birds			•				•	•			•
Habitats of Principal Importance			•				•	•		•	
Other Species of Principal Importance		•	•		•		•	•		•	•
Ecological Corridors for KEC	•		•				•	•		•	

Table 4.3 Development Proposal Measures Checklist

4 . Key Principles

Development Design Scheme (DDS)

4.30 The CNQAAP recognises the Lake and the forest as key assets which are to be retained. Other Key Ecological Components requiring retention in this way include the Artificial Roost, key flyways associated with all retained lesser horseshoe bat roosts and wetland corridors (otherwise known as ‘green fingers’). Other Key Ecological Components should be retained through layout wherever possible. In order to achieve this, development proposals should minimise their footprints and set development back from habitats which act as Ecological Corridors for Key Ecological Components.

Road Design Scheme (RDS)

4.31 Key flyways for bat species should not be interrupted by road development. Roads should be aligned to avoid these flyways wherever possible. Where this is not possible roads should be designed to minimise their widths and traffic speeds. Where roads unavoidably cross these key flyways safe passes designed specifically for the species concerned and aligned on the route of the existing flyway will be required.

4.32 For lesser horseshoe bats the use of under passes, such as tunnels and culverts to minimise gaps and road collisions, maintain low-light conditions and avoid disturbance associated with vehicle movement is strongly encouraged. The design of these under-passes is likely to be critical to their success and should:

- As a minimum be at least 2.5m in diameter. Minimum under-pass height levels should be informed by appropriate ecological survey work to establish pre-development flight heights at proposed road crossing locations
- Include native planting at under-pass entrances to help ‘funnel’ bats through;
- Achieve low light-levels (of less than 1 lux) within and approaching the underpass and;
- Retain as much key flyway vegetation as possible during construction and replace any loss immediately with an appropriate native planting scheme. Appropriate artificial flyway structures should be installed and maintained well before commencement of construction and maintained during post-construction to prevent interruption of flyways and guide bats through under-passes whilst planting grows.

4.33 The use of suitably designed over-passes for lesser horseshoe bats, in the form of partially or completely vegetated bridges, called green bridges or habitat bridges, may provide an acceptable alternative to underpasses if they can demonstrate that they are capable of increasing pre-development flight heights, sufficiently high to avoid vehicle collisions. Vegetated hop-overs (with walls or embankments) may also prove acceptable where they can demonstrate this or where road collision can be avoided due to very light traffic flows. Over-passes require similar low-light and vegetation requirements to that for underpasses. Only under and over-pass designs with published research to demonstrate their effectiveness are likely to be acceptable.

4.34 Where roads cross key flyways of other bat species under/over-pass designs suitable to the species concerned will be required. In general, the higher and broader an underpass the more likely bats are to use it. Ideally underpasses should achieve a width/height ratio of one.

4 . Key Principles

An important objective of these under/over-passes should be to retain the original route of key flyways and achieve flight heights which avoid the risk of collision with vehicles. Retention of vegetation cover along existing key flyways is another important objective of over/under-pass design.

4.35 Serotine, noctule and Leisler's bat fly high over the landscape. These species require under-passes with dimensions of 6m high by 6m wide to be effective but over-passes such as suitably designed hop-overs or green/habitat bridges may also prove effective for these species. Other bat species do not fly so high and smaller underpasses of 4m high by 4m wide may be appropriate. Over and under-pass design requirements should reflect guidance such as that contained within the Bat Conservation Trust's Landscape and Urban Design for Bats and Biodiversity (2012) publication.

4.36 Wire mesh structures, known as bat gantries, should be avoided as research evidence does not currently support their effectiveness.

4.37 Development proposals involving bat under or over-passes for key flyways should be accompanied by robust monitoring plans. Monitoring should be designed to assess the proportion of individuals that use these structures to cross roads safely (i.e. at a safe height) pre and post-construction, set acceptable levels in relation to this and detail rectification measures that will be employed should these levels not be met. Rectification measures may include for example use of walls to raise flight heights at hop-overs or low level bollard lighting along stretches of road between eco-passages to dissuade bats crossing at these unsafe points.

4.38 Roads should also be designed to retain connectivity for other Ecological Corridors for Key Ecological Components. For dormouse RDSs should consider provision of suitable additional planting at bat under/over-pass and dormouse bridges and tunnels. For amphibians RDSs should consider how dispersal routes, especially for great crested newts, will be maintained, where appropriate include dropped or wildlife kerbs and avoid use of gully pots for road sections in proximity to Ecological Corridors. For otters RDSs should consider best practice guidance such as the Design Manual for Roads and Bridges (DMRB), Volume 10, Section 4 Nature Conservation Advice in relation to Otters.

4.39 For invertebrates such as butterflies and moths RDSs should consider how road design can avoid fragmentation and net habitat loss in particular. Consideration should be given to the retention, creation and management of habitats, such as grassland, scrub or woodland edge/shelterbelts, along broad road verges that link to other larger patches of suitable habitat. These linked larger patches may support existing butterfly or moth populations or else be suitable for appropriate habitat improvement or creation. Where possible RDSs should seek to ensure that verges include varied topography e.g. cuttings and embankments, especially when south or west facing, or stepped. Verges and linked larger areas should in addition include varied micro-habitats/micro-landscaping (e.g. small humps and hollows), vegetation structure and habitats as well as suitable larval food plants and nectar sources appropriate to the species concerned. RDS's should consider provision of suitable additional planting at bat under/over-pass to encourage safe movement of invertebrates across roads.

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4.40 Development proposals involving eco-passages for any Key Ecological Component should include proposals for their long-term maintenance.

Construction Environmental Management Plan (CEMP)

4.41 CEMPs are likely to be needed where temporary or permanent retention of Key Ecological Components is required within a development proposal site or where construction activities may otherwise impact on Key Ecological Components beyond the development site boundary.

4.42 CEMPs should include plans showing the location and extent of Key Ecological Components for which the CEMP needs to be prepared. CEMPs should:

- Provide information to justify that the construction methods, activities and footprint proposed represent the best practicable environmental option;
- Risk assess all proposed construction activities likely to impact on the Key Ecological Components for which the CEMP needs to be prepared. This should include scale plans for and an assessment of: site layout and setup (e.g. location of site offices/construction compounds, storage/maintenance areas for materials/plant); construction access routes; demolition; ground works (e.g. ground investigation, vegetation clearance, routing of underground services, full extent of development footprint, temporary earthworks/bunds); assembly areas for dry and wet trades and environmental incidents/accidents (e.g. fire sites, pollution, leakages);
- Identify potential areas of conflict between these construction activities and Key Ecological Components.

4.43 Using the above information CEMPs should identify ‘protection zones’ where construction activity (including access and underground service routing for example) will be avoided and how construction in other areas of the development site will be undertaken to avoid or minimise impacts to relevant Key Ecological Resources. CEMPs should consider a wide range of measures some of which are outlined in Table 4.4.

CEMP measures	Further detail
Siting of all construction activities	Construction ‘protection zones’
Timing/phasing of all construction activities	To avoid critical/sensitive periods (e.g. bat breeding season)
Training and awareness of site personnel	For example tool talks and informative/warning signs
Ecological clerk of works supervision on site	
Protective fencing	Location and type should be specified

4 . Key Principles

CEMP measures	Further detail
Dust, surface and ground water pollution prevention control (including accidents and emergencies)	In accordance with Environment Agency Standing Advice such as its Pollution Prevention Advice and Guidance (PPG) and Model Procedures for the Management of Contaminated Land
Artificial lighting	Lighting strategy
Contingency measures	For example discovery of a protected species during construction
Special measures	For example soft demolition techniques for bat roost demolition

Table 4.4 CEMP Measures

4.44 Measures should be accompanied by a schedule detailing when, and for what period of time, each measure will implemented, details of responsible persons and lines of communication.

4.45 The extent of ‘protection zones’ should be informed by the sensitivity of each Key Ecological Component to construction impacts. In some circumstances it may be possible to draw these zones tight to the boundaries of Key Ecological Component they are intended to protect. In others ‘protection zones’ may need to be drawn much wider in response to the sensitivity of Key Ecological Components. Table 4.4 outlines likely requirements in relation to this. Where disturbance impacts are likely, measures should take account of existing baseline conditions and consider, for example, the extent to which noise may vary in relation to existing conditions.

Key Ecological Component	Further detail
Lesser horseshoe bat maternity and satellite roosts	Protection zones should be made as large as feasibly practicable.
Lesser horseshoe bat key flyways	Protection zones should extend a minimum of 15m either side of the centre of these flyways
Lesser horseshoe bat forage areas and key fly ways for other bat species	Protection zones should extend a minimum of 10m from the edges of forage areas like the Hawkwell Enclosure and Birch Wood
The Lake, Engine Brook and inlet and outlet tributaries	Protection zones should extend 8-15m from the edge of the Lake and either side of the watercourses

4 . Key Principles

Key Ecological Component	Further detail
Other watercourses	Protection zones should extend at least 5m from either side of watercourses

Table 4.5 Key Ecological Components requiring wider ‘protection zones’

Traffic Strategy (TS)

4.46 Where critical load or other environmental criteria thresholds for pollutants will be exceeded for qualifying and supporting habitats of the Severn Estuary SAC, SPA and Ramsar site, Walmore Common SPA and Ramsar site or Speech House Oaks SSSI, or where existing noise levels will be exceeded at Walmore Common SPA and Ramsar site, development proposals should demonstrate how these impacts can be effectively ameliorated.

Lighting Strategy (LS)

4.47 In order to minimise artificial light pollution and its impacts on Key Ecological Components within and beyond the CNQAAP area all development proposals should demonstrate how they will keep lighting to a functional minimum during both construction and operation. LSs should:

- Be produced by professional lighting designers;
- Include an assessment of whether lighting is necessary and potential alternatives;
- Propose lighting only where and when it is needed;
- Keep the number and wattage of lights to a minimum;
- Avoid light spill (lamps should not emit at angles greater than 70 degrees);
- Avoid lights that emit a broad spectrum of light, those with a high UV content or white and blue wavelengths;
- Create ‘dark zones’ (where light levels do not exceed 1 lux) within and around sensitive locations such as the lake, ponds, watercourses, bat roosts their key flyways and woodland edges;
- Consider planting schemes to screen sensitive locations from light pollution and use of temporary close-board fencing as an interim measure whilst vegetation matures and;
- Clad buildings and surface roads with materials that do not reflect polarised light in proximity to the Lake and watercourses.

4.48 Developers are encouraged to refer to Bug Life’s A Review of the Impact of Artificial Light on Invertebrates and the Bat Conservation Trust’s Landscape and Urban Design for Bats and Biodiversity (2012) publication for further advice.

Roost Retention/Replacement Strategy (RR/RS)

4.49 Roost retention/replacement strategies should:

4 . Key Principles

- Consider, for example, office rather than residential and/or low rather than high density development options to prevent an increase, and reduce where possible, recreational disturbance around retained roosts.
- Retain the Artificial Roost;
- Retain the Main Office and Bath House roosts at Northern United where possible. Where this is not possible provide like-for-like (or better) purpose built replacement roost opportunities (including hibernacular provision);
- Locate any replacement roost opportunities: within the existing home range of the CNQAAP lesser horseshoe colony; adjacent to existing commuting routes, within existing forage areas; in low disturbance areas;
- Prevent demolition of the Main Office at Northern United until it can be demonstrated that its replacement roost is in significant use by lesser horseshoe bats;
- Prevent demolition of the Bath House at Northern United until it can be demonstrated that its replacement roost is in use by lesser horseshoe bats;
- Utilise appropriate demolition techniques identified through production of a CEMP and;
- Take full account of current best practice (e.g. The Lesser Horseshoe Bat Conservation Handbook (2008) published by the Vincent Wildlife Trust) and research to inform replacement roost building design and associated landscaping.

Biodiversity Management Plan (BMP)

4.50 In general, development proposals should demonstrate how they will retain, manage and improve Key Ecological Components wherever possible rather than offset losses through for example habitat re-creation.

4.51 Species which are Key Ecological Components within the CNQAAP area are highly reliant on the provision and maintenance of associated habitats and ecological corridors for their continued survival. The relationship between species that are Key Ecological Components and the habitats that support them is summarised in Table 2.2. Development proposals should demonstrate how they take account of this dependency through adoption of a habitat and ecological network led approach towards conserving and enhancing species.

4.52 Where loss of Key Ecological Components is unavoidable, development proposals should compensate by restoring or re-creating habitats and features. Development proposals should provide compensatory habitat and features of at least similar extent and quality to that lost and seek to contribute proportionately to the deliver of the Biodiversity Spatial Masterplan (see Table 4.6 and Figures 4.1 and 4.2).

4.53 It is likely that development proposals will need to develop BMPs where the following is required:

- In-situ management and improvement measures for Key Ecological Components that require retention;
- Ex-situ re-creation measures to offset/compensate where it can be demonstrated that loss of or damage to other Key Ecological Components is unavoidable.

4 . Key Principles

- Enhancement measures necessary to deliver biodiversity net gains (see Key Principle 3 for further details).
- BMPs should demonstrate how they have taken account of the free movement of deer and wild boar through the CNQAAP area and beyond, and practical issues of free-grazing sheep.
- That any area used for compensation will be in the long-term control of the applicant. Where third party land is proposed to be used for compensation the agreement of the third party to the use of their land for the purpose and period required must be secured.

4.54 Where BMPs include habitat improvement or re-creation measures they should seek to mimic the structure and floristic composition of the habitats they are enhancing or replacing as closely as possible. Such measures should also have regard to the inclusion of trees and other plants listed at Appendix 6 in order to maximise biodiversity benefits.

4.55 All BMPs should include detailed management for the first 5 years and outline long-term management requirements. BMPs should detail their aims and objectives, a review of site potential and constraints, monitoring requirements, details of responsible persons, review arrangements, plans showing the location and extent of works, and a work schedule detailing when particular activities will take place. Where BMPs are required for in-situ conservation of Key Ecological Components they should also contain: a description and evaluation of the key features and appropriate management options relevant to the aims and objectives already identified.

4.56 In addition to requirements under the above section where BMPs are required to offset impacts to Key Ecological Components they should also demonstrate:

- That the type, extent and location of habitats and features proposed for re-creation/restoration are in accordance with the Biodiversity Spatial Masterplan (see relevant section later in this chapter);
- That appropriate strategies and method statements for creating/restoring target habitats and other features relevant to the aims and objectives already identified have been selected (See Appendix 3);
- How any proposed conversion of existing woodland habitat will comply with UK Forestry Standard guidelines on landscape, soil, historic environment, water, biodiversity and climate change.

Biodiversity Spatial Masterplan (BSM)

4.57 The BSM seeks to ensure that the most important Key Ecological Components are retained and protected and where compensation is unavoidable, ensure that this makes the greatest possible contribution to improving and enhancing the biodiversity resource in and around the CNQAAP area. It consists of masterplans (Figures 4.1 and 4.2) illustrating the Key Ecological Components to be retained, an overview of locations for compensation measures and targets that indicate the likely acceptable extent of these. Development proposals should demonstrate how they will contribute to the BSM targets and masterplan.

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4.58 The BSMs approach is underpinned by an understanding of the existing biodiversity resource and impacts on this resource likely to arise as a result of the development of the CNQAAP area as outlined earlier of this document.

4.59 Box 4.1 describes Key Ecological Components where there is a strong presumption in favour of their retention, protection and, where appropriate, improvement as part of the wider development of the CNQAAP area.

Box 4. 1

Key Ecological Components where there is a strong presumption in favour of their retention, protection and improvement

- The Artificial Bat Roost
- Lesser horseshoe bat key flyways (associated with retained roosts)
- Ancient semi-natural woodland
- The Lake
- Rivers and streams and their wider riparian corridors (otherwise known as ‘green fingers’)

4.60 The BSM also provides an overview of the type, extent and location of compensation measures likely to be required where unavoidable loss or damage to other Key Ecological Components may arise. The BSM adopts a primarily habitat led approach to compensation. It restricts the approach to habitat types that are likely to be re-creatable and requires replacement of broadly the same type of habitat as that to be lost. Newly created or restored habitats are likely to be of a lower quality, initially, than those they replace. The BSM recognises this and adopts a net gain approach in response requiring larger areas of habitat to be created or restored than are to be lost. In addition and wherever possible the BSM adopts a minimum viable size approach to habitat patch creation to help ensure resilience.

4.61 Figure 4.1, 4.2 and Table 4.6 outline the BSM masterplan and targets for the creation and restoration of important habitats associated with overall development of the CNQAAP area.

4.62 Opportunities to create new areas of woodland to offset woodland loss resulting from development are limited as the CNQAAP area is already surrounded by large areas of forest. Instead the BSM encourages the conversion of coniferous woodland to Lowland Mixed Deciduous Woodland in order to improve habitat quality for foraging for bats, dormouse and hawfinch for example.

4.63 The BSM promotes the avoidance of permanent open habitat offset areas around the retained and replacement bat roosts in order to safeguard bat foraging habitat within close proximity of these features. In addition, the BSM promotes the maintenance and enhancement of ecological corridors for species including safe crossing zones for bats.

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Habitat type	Likely habitat loss (ha) from development phases	BSM target	Long-term net gain (ha)	Notes
Lowland Mixed Deciduous Woodland	0.31	8.58	6.51	Target involves conversion of existing coniferous woodland to Lowland Mixed Deciduous Woodland and Wet Woodland
Woodland (Broadleaved and Mixed)	1.54			
Woodland (Coniferous)	0.22			
Wet Woodland	0.22	0.72	0.5	
Ponds (ha/#)	0.30 (4)	0.48 (9)	0.18(5)	
Open Mosaic Habitat on Previously Developed Land	1.93	4.12	2.19	
Rivers	-	-	-	
Grassland	7.09	15.03	7.94	
Total	11.61	28.93	17.32	
Area not suitable for permanent open habitat off setting	-	54.34		
Ecological corridor maintenance/enhancement	-	5.96		Includes 1.47ha of land acting as safe bat crossing zones

Table 4.6 Overall CNQAAP targets for habitats

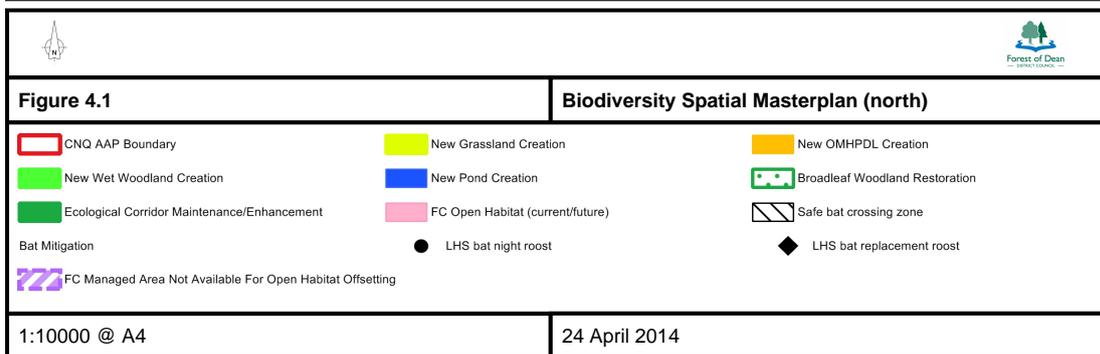
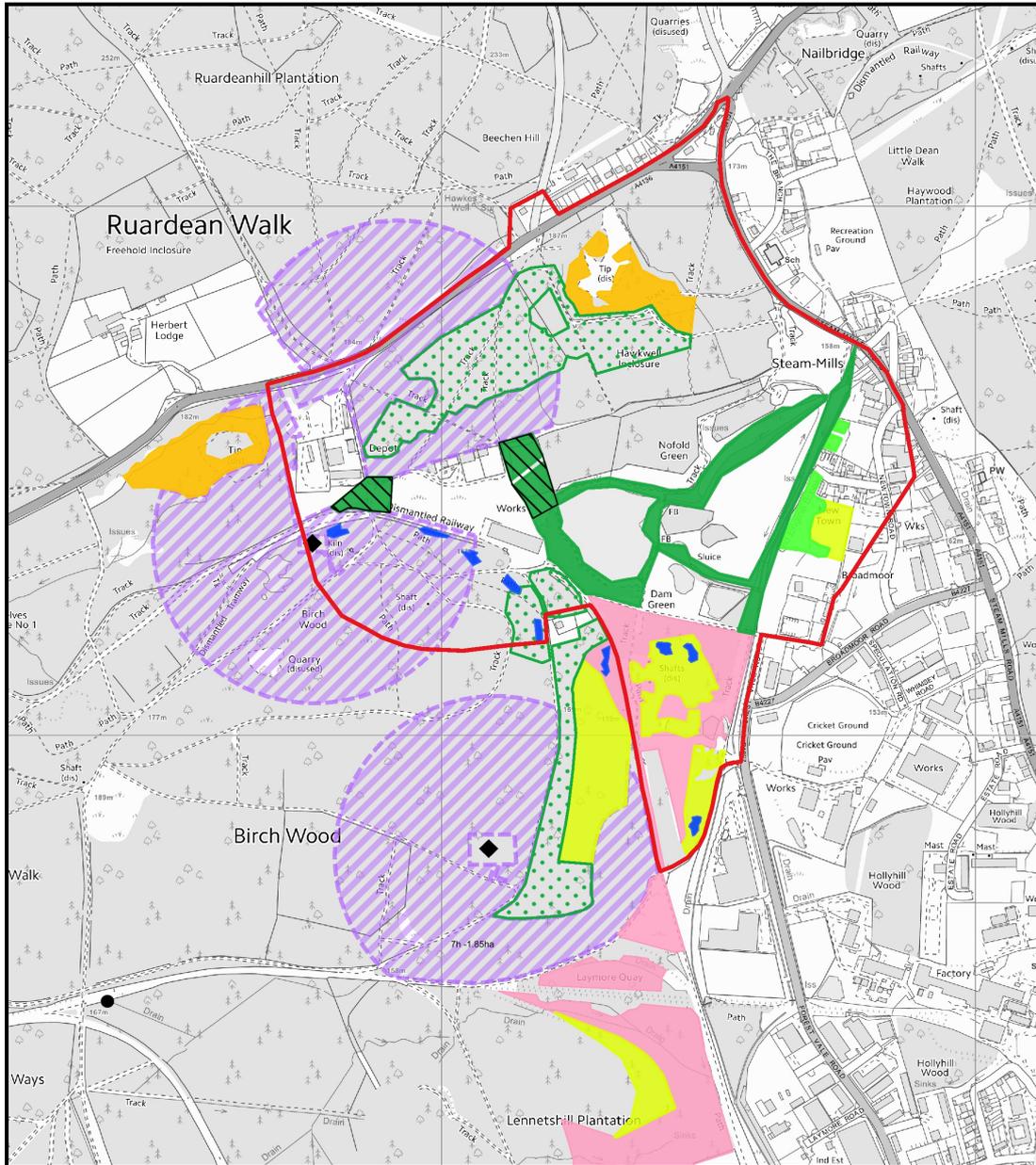
4.64 The BSM adopts a strategic approach to the location of compensation using the following guiding principles:

- Creating/restoring habitats as close as possible to the original habitats they are to replace;
- Creating/restoring habitats in locations that connect, strengthen or create ecological networks;
- Contributing to habitat targets within the Ruardean Woods SNA;
- Ensuring created habitats meet minimum patch size requirements;

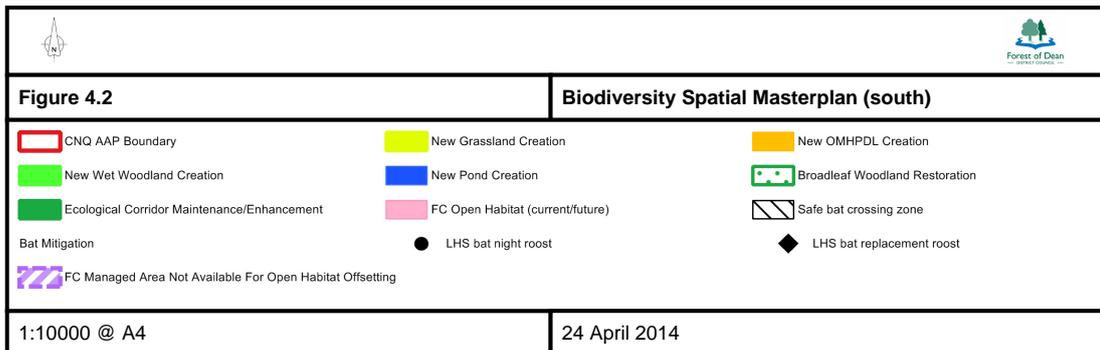
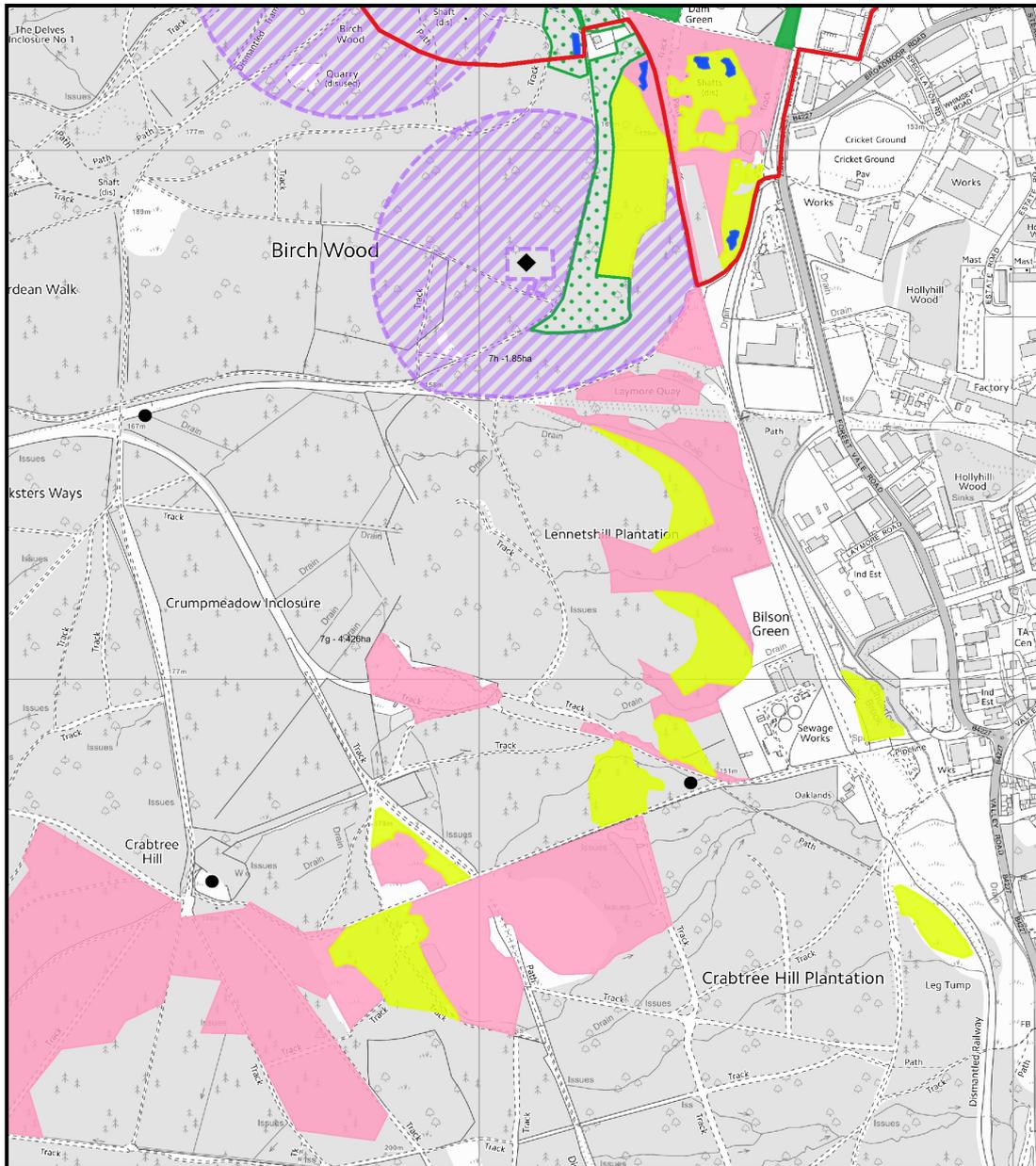
4 . Key Principles

- Complimenting Forest Plans (where compensation is proposed on Forestry Commission owned land);
- Restricting open habitat creation/restoration to those areas that will not interrupt lesser horseshoe bat key flyways to areas of woodland habitat where radio tracking indicates the CNQAAP lesser horseshoe bat population forage least;
- Avoiding open habitat creation in areas that support Lowland Mixed Deciduous Woodland or important woodland for species such as hawfinch;
- Promoting Open Mosaic Habitat on Previously Developed Land and Grassland creation/restoration in areas with low soil fertility and suitable pH conditions (i.e. coniferous woodland, especially that located on historic mining spoil sites);
- Retaining woodland subject to normal forestry operations within 300m of retained and replacement roosts.

4 . Key Principles



4 . Key Principles



4 . Key Principles

Species Translocation Scheme (STS)

4.65 The BSM reflects Natural England’s Standing Advice and other best practice for species mitigation and in particular the principles of avoidance, mitigation and, as a last resort, compensation as set out in the overview to this section.

4.66 Where translocation of European and other protected species such as great crested newts and reptiles is required development proposals will need to provide information to demonstrate that a suitable translocation site(s) is available prior to a positive determination. Conditions or planning obligations are likely to prevent development from taking place until suitable receptor sites are available and translocation has taken place.

4.67 Where habitat creation at receptor sites is required for species translocation purposes development proposals will need to demonstrate that the area proposed for this purpose already contains, or is capable of, containing suitable habitats and has sufficient carrying capacity. Translocation to areas of existing established habitat is not likely to be acceptable as there is a risk that such habitats already support the species and that the natural carrying capacity of this habitat would be exceeded if additional individuals were translocated to it. Translocation proposals should:

- Demonstrate no net loss of habitat, with receptor sites being of an adequate size to accommodate the numbers of animals to be moved. Receptor sites should be of good quality for the translocated species requirements. Surveying of receptor sites should be undertaken to evaluate the biodiversity value of the area and implications of the change in habitat for the translocated species;
- Not underestimate the time required to prepare receptor sites in advance and the time required to undertake sufficient capture and translocation effort;
- Provide networks or green corridors for species to re-colonise areas when development is completed to ensure users of the development have opportunities to engage with wildlife (this habitat should not be counted within no net loss);
- Locate receptor sites to maintain habitat links to other areas and/or extend existing established area for the species;
- Demonstrate how long term management for the receptor sites will be secured;
- Avoid loss of local conservation status by translocating species to suitable offset areas identified in the BSM and;
- Consider, for species that may be subject to persecution or disturbance such as adder, translocation to suitable but more distant sites still within the Statutory Forest but with lower recreational pressure.

4 . Key Principles

Sustainable Drainage Systems (SuDS)

4.68 A broad range of drainage solutions is encompassed within the term SuDS, from permeable surfacing to green roofs and attenuation ponds. Selecting the right SuDS solution should deliver multiple benefits and they present many opportunities for biodiversity mitigation and enhancement.

4.69 Development proposal should look to use SuDS for multiple benefits and exclude options without multiple benefits unless there are good reasons to do so such as avoiding loss of a Habitat of Principal Importance in England for example. SuDS should be designed to reflect the following:

- Clean water: Source control ensures a controlled flow of clean water for biodiversity within development before water enters the SuDS features;
- Connectivity: Links between existing and proposed green infrastructure enhance natural colonisation, provide for habitat types such as those set out in table 4.5 and improve habitat resilience;
- Structural diversity: Varied profiles both vertically and horizontally provide maximum habitat potential;
- Nutrient control: Low fertility measures generally promote habitat diversity and reduced maintenance costs;
- Native planting & colonisation: Reflect local habitats and species through planting or weed control.

Recreational Strategy (RS)

4.70 In order to minimise recreational impacts to Key Ecological Components retained within the CNQAAP area, and those found in the area beyond, development proposals should carefully consider access provision. In particular, proposals should demonstrate how resident/visitor movement will be actively managed to dissuade access to the most sensitive areas, and promote responsible behaviour. Measures may include for example; layouts which encourage pedestrian/cycle movements away from sensitive areas and provide and promote dedicated local recreational space; defensive native planting along woodland edges; dog waste bins; no dog fouling signs; and interpretation boards to increase understanding about biodiversity in and around the CNQAAP area and its sensitivity.

Key Principle 3 Ensuring Development Proposals Contribute to Biodiversity Enhancement

4.71 All development proposals must demonstrate how they will contribute to enhancement of biodiversity associated with the CNQAAP area. Such measures are entirely separate and additional to those that may be required to avoid, minimise or compensate for loss or damage of Key Ecological Components. Measures proposed should:

- Be proportionate to the development proposal concerned;

4 . Key Principles

- Be designed to enhance habitats and species typical of the CNQAAP area;
- Comply with best practice guidance and be designed to last for a minimum of 25 years;
- Source stock from locally native sources where planting is proposed;
- Build in biodiversity enhancement as part of building design;
- Consider off site locations enhancement to compliment the BSM;
- Consider how landscaping and other design elements can increase permeability of movement for biodiversity across the CNQAAP;
- Include details of how the above measures will be sustainably managed in the long-term, through production of a BMP.

4.72 Examples of the type of enhancement development proposals should consider are provided in Table 4.7

Measure	Integrated into building	Plot landscaping or public open space	Off site
Bird boxes	•	•	•
Purpose built bat roosts :integrated bat boxes on south, south-west or south-east elevations near gable apexes or eaves, away from disturbance	•		
Night roosts: for lesser horseshoe bats (rendered block work construction, see the Lesser Horseshoe Bat Conservation Handbook, 2008 published by the Vincent Wildlife Trust)	•		•
Green/brown roofs: for birds and invertebrates	•		
Permeable fencing designs: for a range of species including mammals, amphibians and reptiles		•	
Ponds: for great crested newts, bats and invertebrates		•	•
Locally native planting: for invertebrates and birds: range of plant species that provide nectar and berries throughout the year (See Appendix 6 for further guidance)		•	•
Signature, avenue, street, belt and group locally native tree planting for bat roosting potential: oak, beech, ash, elm		•	•

4 . Key Principles

Measure	Integrated into building	Plot landscaping or public open space	Off site
Signature, avenue, street, belt and group native tree planting for bat foraging potential: oak, willow, beech, ash, elm and birch		•	•
Living or green walls: on shady elevations	•		
Habitat walls: for insects mostly on sunny elevations	•		
Cherry and hornbeam planting: for hawfinch (in low disturbance areas)		•	•
Wildlife friendly planting schemes that link gardens together and are treated as interconnected habitat rather than individual units		•	

Table 4.7 Enhancement measures

Key Principle 4 Opportunities for Partnership Working and Community Engagement

Local environmental groups

Box 4.2

Local Groups with a keen ecological interest in the area

- Butterfly Conservation
- Forest of Dean Angling Club
- Forest of Dean Friends of the Earth
- Gloucestershire Amphibians and Reptile Group (Glos Arg)
- Gloucestershire Bat Group
- Gloucestershire Naturalists Society
- Gloucestershire Wildlife Trust
- RSPB

4 . Key Principles

4.73 There is a wealth of local knowledge in the communities in and around Cinderford both in terms of biodiversity and past land use. Wherever possible those with this wealth of knowledge should be encouraged to participate in preparing proposals in order to meet the aims of the document. Those preparing development proposals should support community engagement and partnership working opportunities in the following ways:

- Ensure consultation at an early stage in the preparation of proposals with community groups and specialists with local ecological knowledge;
- Seek opportunities for partnership working to address wider environmental objectives of local environmental groups and;
- Explore opportunities for local environmental groups to be directly involved in habitat management and monitoring.

4.74 Proposals should demonstrate how early (pre planning application) discussions has been sought from stakeholders and this considered in relation to the proposal's development.

Governmental organisations

4.75 In addition to local environmental groups, governmental organisations such as Natural England, the Environment Agency and the Forestry Commission, are important stakeholders. It is vital that those preparing development proposals engage with these organisations at the earliest opportunity and throughout the process.

4.76 The Forestry Commission has a key role in the development of the CNQAAP. As the major adjoining landowner it is likely to act as the most significant provider of land where compensation could take place.

4.77 This document sets out the likely compensation measures that will be required on land managed by the Forestry Commission. Compensation on land not owned by the developer will be expected to be controlled by a legal agreement between the landowner, developer and the Council. These legal agreements will require early discussion between all parties.

4.78 The Forestry Commission has extensive commitments across the district and developers must allow adequate time earlier in the preparation of an application to consult with it. To support this process developers should be able to demonstrate consultations have commenced with the Forestry Commission prior to pre-applications discussion with the Council. Table 4.7a sets out the process and key requirements.

Planning Stage: Initial assessment and concepts

- At the first opportunity notify Forestry Commission of intention to prepare a planning application.
- Provide a scoping assessment to the Forestry Commission indicating the areas of development (number of ha's and location) and species and habitats likely to be affected.
- Propose timetable for development of mitigation proposals. Substantial time should be allowed for this stage.

4 . Key Principles

Planning Stage: Pre-application discussion with the Council

- At pre-application discussions demonstrate that a timetable for mitigation proposals has been agreed with Forestry Commission.
- In consultation with the Council and Forestry Commission develop mitigation proposals.
- This stage should culminate in the preparation of draft mitigation proposals and heads of terms for a legal agreement (see notes below).

Planning Stage: Submission of application to the Council

- Mitigation Plan submitted with planning application.
- Heads of terms agreed and submitted with planning application.

Notes

Costs: All parties' legal fees will be expected to be met by applicant; costs of mitigation establishment and management to be met by applicant and; a contribution toward the long-term management and monitoring from the applicant will be expected.

Implementation: Detailed access agreements will be needed to access third party land (e.g. Council or Forestry Commission Land); contractors working on Forestry Commission land will be expected to work to Forestry Commission and Forest Stewardship Council standards.

Table 4.7a Consultations on mitigation proposals with the Forestry Commission

5 . Monitoring the CBSTg

5.1 The objective of the CBSTg is to ensure that development of the CNQAAP area conserves its biodiversity and delivers biodiversity enhancements wherever possible. In particular the document seeks to:

- Avoid adverse effects on the integrity of the Severn Estuary SAC, SPA & Ramsar site, Walmore Common SPA and Ramsar site, the Wye Valley and Forest of Dean Bat SAC and Wye Valley Woodlands SAC;
- Maintain the favourable conservation status of European Protected Species (including great crested newts, dormice, and bats);
- Avoid net loss of habitats that support other protect species (breeding birds, reptiles etc.), secure suitable capture and translocation effort (where relevant) and long-term management for benefit of these species;
- Avoid net loss of Habitats and Species of Principal Importance;
- Retain and strengthen Ecological Corridors for Key Ecological Components;
- Maximise opportunities to enhance biodiversity.

5.2 Whilst individual DBISs will monitor their own implementation there is a need to periodically review this document to keep a check on the ‘sum of the parts’.

5.3 Through the planning process DBISs will be evaluated in relation to this document and other Biodiversity Implementation Strategies that have been agreed by the Council.

5.4 The Council will undertake a strategic review of planning applications submitted every three years with the first review being undertaken in 2017 and the last three years after completion of the final phase of development within the CNQAAP area, to evaluate the combined implementation of the developer lead strategies.

5.5 This strategic review will address the following areas:

Area	Key Evaluation Questions
Community engagement & opportunities	i. The extent to which planning proposals have demonstrated pre-application engagement with stakeholders. ii. The extent to which partnership working has explored wider environmental objectives with local groups.
Wye Valley and Forest of Dean Bat SAC	iii The extent to which the CNQAAP's lesser horseshoe bat population compares with baseline period of 2010 to 2012 and subsequent 3 year periods. iv. An evaluation of the implementation of the avoidance mitigation and compensation measures for lesser horseshoe bats.

5 . Monitoring the CBSTg

Area	Key Evaluation Questions
Habitats and Species of Principal Importance	v. Net balance of habitats (as referred to in the CBSTg's BSM tables and figures). vi. An evaluation of habitat quality and areas in active management for biodiversity as a result of DBISs.
Ecological networks	vii. Evaluation of ecological networks in the context of those described in the strategy.
Biodiversity enhancement	viii. Design features for biodiversity enhancement within developments.

5.6 This guidance will be subject to review through the evaluation process previously described and in response to other information that may become available, from time to time, through for example individual planning proposals. It will be important that the guidance adapts to changing circumstances and the outcomes of its application, particularly during delivery of initial phases of the CNQAAP.

Appendix 1 . Notes from the Local Ecological Specialist Technical Workshop

CINDERFORD NORTHERN QUARTER BIODIVERSITY STRATEGY

WORKSHOP – TUESDAY 7 MAY 2013

NOTES

ATTENDING:

<p>Peter Hibberd Strategic Director, Forest of Dean District Council</p>	<p>Jenny Bennett Johns Associates</p>
<p>Alisa Swanson Natural England</p>	<p>Robin Ward Gloucestershire Amphibian and Reptile Group</p>
<p>Councillor Martin Quaille Cabinet Member for the Environment, Forest of Dean District Council</p>	<p>Peter Kelsall Forestry Commission</p>
<p>Rebecca Wilson Forestry Commission</p>	<p>Andrew Bluett Gloucestershire Naturalist's Society</p>
<p>Alastair Chapman Sustainability Team Leader, Forest of Dean District Council</p>	<p>Wendy Jackson Regeneration Manager, Forest of Dean District Council</p>
<p>Louise Scammell Regeneration Officer, Forest of Dean District Council</p>	<p>Sarah Ayling Biodiversity and Countryside Officer, Forest of Dean District Council</p>

INTRODUCTION:

Appendix 1 . Notes from the Local Ecological Specialist Technical Workshop

Peter Hibberd welcomed everyone to the meeting. Peter explained that the delivery of the Cinderford AAP was a key priority for the Forest of Dean District Council and stressed that the Council wished to deliver the project in a sustainable manner. The aim of the workshop was to engage with local ecological specialists to assist the Council in developing the Biodiversity Strategy.

WORKSHOP:

Alastair Chapman introduced the structure of the Biodiversity Strategy workshop. Alastair explained that the Forest of Dean District Council was preparing a Biodiversity Strategy (BS) based on the Johns Associates BS Version 1.2. The document would provide a strategic approach to addressing biodiversity issues in future planning applications, covering the delivery of the AAP until its completion in 2026. The BS would have to be flexible in its approach, yet provide details on phasing and delivery.

The workshop was structured to address 4 key questions for the development of the BS as follows:

Does the BS describe ecological baseline conditions adequately? Are there any important gaps in formation
Does the BS identify and describe all impacts adequately?

What should the vision and key principles for the BS be?

Is the mitigation suggested within the BS proportionate and appropriate?

DOES THE STRATEGY DESCRIBE ECOLOGICAL BASELINE CONDITIONS ADEQUATELY?
ARE THERE ANY IMPORTANT GAPS IN INFORMATION?

Habitats

- Mires – although not present within the NQ, the habitat could be created as an enhancement, consider links to Laymoor Quay.
- Consider building design for lesser black backed gull nesting.
- Suggested that a list of habitats/planting relating to food plants of key species on site be developed.

Mammals

- Lesser horseshoe bats now known to forage over the Lake.
- The BS needs to describe the link between the Lesser horseshoe bats at Northern United and the Wye Valley and Dean Plateau Special Area of Conservation and so further survey work to establish this may be required.
- Other bat species – consider potential for tree roosting.

Appendix 1 . Notes from the Local Ecological Specialist Technical Workshop

- Dormice – what is the core minimum area for the NQ population, how does it relate to the wider Forest population (several records in the core Forest north of the A4136 including Worrall Hill and Plump Hill)?
- Water vole – consider enhancement if species was known to be present historically.

Reptiles and amphibians

- Great crested newt - identified in 2 locations within and near to the Northern Quarter. Present at Laymoor Quay, David Dewsberry currently doing survey (GWT may hold previous survey records).
- Adders – good numbers in scrub grassland mosaic (associated with gorse and bramble in particular) between lake tributaries to east of the Lake and similar habitat in the Steam Mills area.

Birds

- Hawfinch - locations marked on plan. Hornbeam, Cherry and good water source essential for species. See FC Annual reports (Jerry Lewis).
- Willow tit - requirement to understand this species' habitat requirements in order to provide appropriate mitigation. Associated with Larch and requires specific nest boxes (design currently being researched). Need to be cautious about provision of other tit boxes as these may push willow tits out of the area.
- Lake used by common sandpiper on passage.

Invertebrates

- Small-pearl butterfly, potential for presence – additional surveys required.
- Grayling butterfly, potential for presence – locations marked on the supplied plan.
- Dragonflies – records from Ingrid Twissell, 10 damselflies (incl. 2 near threatened red data list species) and 15 species of dragonfly (several scarce/local and one near threatened red data list species).
- Moths, moth trapping currently being undertaken – Roger Gaunt & Simon Glover mentioned as best contacts. Roger is the local recorder for moths.
- White-clawed crayfish - advised to check whether the Old Engine Brook is underlain by any calcareous geology - if it is not, then crayfish presence may be ruled out.
- Freshwater pearl mussel in Lake.

Other

Appendix 1 . Notes from the Local Ecological Specialist Technical Workshop

- Additional survey suggestions – fish species in the Lake, fungi, lichens, butterflies (incl. Small pearl-bordered fritillary).
- Provide local naturalists with a hard copy map to record any additional records from within the AAP which have yet to be submitted to GCER.

DOES THE STRATEGY IDENTIFY AND DESCRIBE ALL IMPACTS ADEQUATELY?

Additions were suggested to the Potential Impacts Summary sheet:

- Consider winter feeding habitat requirements for birds and other species.

WHAT SHOULD THE VISION AND KEY PRINCIPLES FOR THE STRATEGY BE?

DKP3 – mitigation needs to include translocation and monitoring requirements. For reptiles there is a need to adopt a hierarchical approach to translocation. For adders off-site translocation to FC areas where reptile habitat enhancement and extension is already occurring should be considered. Hierarchical approach to translocation for common lizard and slow worm could be adopted.

DKP 4 - need to refine especially in relation to net gains specifying long-term nature of this aim and perhaps limiting this to priority species and habitats which need to be defined.

IS THE MITIGATION SUGGESTED WITHIN THE STRATEGY PROPORTIONATE AND APPROPRIATE?

Potential for:

- Fencing designs that allow species to permeate the AAP area (e.g. hedgehogs).
- Bird and bat boxes incorporated into building design (informed by priority species).
- Top soil from the AAP area may need to be translocated to create some of the compensatory habitat.
- Green/brown roofs (especially on larger buildings).
- Mitigation to compliment the forthcoming Landscape and Heritage HLF bid.
- Eco-visitor centre for use by local wildlife groups to showcase the AAP area as an exemplar for sustainability and to provide opportunities for recruitment of young naturalists.
- The wider AAP area to act as a wider exemplar for sustainable development.

CONCLUSION:

Peter thanked all for their attendance. It was agreed that a future meeting would be beneficial and the format of the meeting allowed for productive discussion.

Appendix 1 . Notes from the Local Ecological Specialist Technical Workshop

CINDERFORD NORTHERN QUARTER BIODIVERSITY STRATEGY WORKSHOP

FEEDBACK SESSION – TUESDAY 4 JUNE 2013

NOTES

<p>Peter Hibberd Strategic Director, Forest of Dean District Council</p>	<p>Andrew Bluett Gloucestershire Naturalist's Society</p>
<p>Rebecca Wilson Forestry Commission</p>	<p>Colin Studhome Gloucestershire Wildlife Trust</p>
<p>Penny Simpson Forestry Commission</p>	<p>Wendy Jackson Regeneration Manager, Forest of Dean District Council</p>
<p>Gary Kennison Gloucestershire County Council</p>	<p>Sarah Ayling Biodiversity and Countryside Officer, Forest of Dean District Council</p>
<p>Alastair Chapman Sustainability Team Leader, Forest of Dean District Council</p>	

INTRODUCTION:

Peter Hibberd welcomed everyone to the meeting. He quickly referred to the legal challenge to the Core Strategy, emphasising that this was outside the remit of this session but that the Biodiversity Strategy would of course need to take account of the High Court ruling when made.

SUMMARY OF FEEDBACK FROM THE WORKSHOP:

Alastair Chapman explained the purpose of the Biodiversity Strategy again for the benefit of those who were not at the previous workshop. He also explained that there had been no action points from the workshop, as the purpose of the meeting had been to listen to issues and suggestions, consider them after the workshop and then feedback at this meeting.

Appendix 1 . Notes from the Local Ecological Specialist Technical Workshop

A general discussion was then had about the previous workshop with participants commenting that:

- The full ecological baseline may not yet be fully understood and some local recorders could have concerns about passing on records
- An ecosystem or habitat led approach would take account of interactions between habitats and species and should be considered when developing the Strategy
- The importance of monitoring should be reflected within the Strategy
- The detail of hierarchical approach to mitigation needed developing
- In terms of species and habitats there were likely to be ‘winners and losers’
- the delivery mechanisms for off-site mitigation in particular needed to be developed
- Construction environmental management plans could be a useful tool to confine development within approved areas and prevent unintentionally damage of surrounding areas.

RESPONSE TO KEY ISSUES & SUGGESTIONS:

Sarah Ayling was able to report that many of the suggestions raised at the previous workshop would be incorporated into the Biodiversity Strategy and that work was being progressed to address other issues that had been raised. This was summarised as follows:

Survey

- There was agreement of the need to incorporate further analysis especially for butterflies (Small pearl-bordered and Grayling), White clawed crayfish and fungi and lichens. The Biodiversity Strategy will include this additional survey work where available before publication or else be required as part of individual planning applications.
- A survey for species of fish within the Lake was not viewed a priority as important fish species were unlikely to be present or affected by development.
- Radio tracking or other survey to demonstrate the link between the Northern Quarter lesser horseshoe colony and SAC sites was viewed as unnecessary given the strong policy assumption that such a link already exists.
- Blank maps had been sent out to naturalists via Gloucestershire Naturalists but as yet no returns had been received.
- A significant amount of additional survey work was being undertaken by the HCA during 2013 and where possible any new data from this work would be incorporated into the Strategy.

Evaluation of habitats and species

Appendix 1 . Notes from the Local Ecological Specialist Technical Workshop

- Further work would take place to evaluate habitats and species within a Forest context. However, under recording in the area, lack of local records and delays getting records to and onto the GCER system meant that the strategy would need to be responsive and work with what was known. However, it was considered that sufficient information was available upon which to base the Strategy.

Mitigation

- Key Principle 4 (which included net biodiversity gains) would be refined and refocused with an emphasis on 'no net biodiversity loss' for Habitats and Species of Principal Importance and other legally protected species and on selected enhancements for species typical of the area.
- In relation to Key Principle 3 (which included mitigation) serious consideration was being given to the possibility of mitigation in the wider core forest (for example translocation of adders to areas where land management is already occurring to increase reptile habitat) but that this would need to be discussed and agreed with the Forestry Commission.

It was also reported that there were opportunities for enhancement of woodland for hawfinch and the potential to strengthen wildlife links to the Brierley area, as well as south along the Linear Park, but that this also needed to be explored and agreed with the Forestry Commission. Equally the Strategy needed to consider recreational disturbance in surrounding woodland and how this could be best managed.

Enhancement

- The Strategy would where possible look to build in more permeability for species movement across the Northern Quarter together with planting schemes and roosting and nesting opportunities for species typical of the area.
- It would be difficult to secure mire creation given the absence of this type of habitat within the Northern Quarter or enhancements specifically for water vole given the absence of this species from the area currently or any programme to control mink.
- A much larger area of land surrounding the Northern Quarter was subject to previous industrial uses and so may well contain soils capable of supporting post-industrial grassland that would need to be re-created without the need to move large quantities of soil.
- The idea for an eco-facility within the Northern Quarter was something the Council was supportive of. Further consideration was needed about how best this could be progressed and delivered.

NEXT STEPS:

Alastair explained that drafting of the Strategy would now begin with a view to submitting this for Committee approval in July and then public consultation and asked all parties to remain engaged in the process. Peter thanked all for their attendance and input commenting that the session had once again been productive and helpful.

Appendix 2 . CNQAAP Policies

CNQAAP polices containing key biodiversity aspects. Developers are advised to review the entire CNQAAP and the Masterplan and Design Code SPD.

Box A1

Policy 2

Cross-cutting approach to sustainability

The Council will require all proposals to place sustainability at the heart of their rationale and design process. Applicants will be expected to make detailed reference to the Sustainability Statement which accompanies the Masterplan, the Sustainable Development Framework and the Sustainability Appraisal report in preparing proposals. Proposals should be proactive in responding to sustainability issues highlighted in the AAP and accompanying SA. It is anticipated that an Environmental Impact Assessment will be required and this will be supported by appropriate studies or strategies in relation to the assessment, reconciliation or mitigation of key environmental issues. Specific details are identified under the thematic policies that follow.

Appendix 2 . CNQAAP Policies

Box A2

Policy 10

Landscape and Biodiversity Strategy

The Council will require development proposals to define a sensitive and carefully considered landscape, biodiversity and public realm strategy which respects the Northern Quarter's natural rural and woodland character, biodiversity value and key natural/landscape assets such as the forest, grasslands, Steam Mills lake and tributaries. Proposals would need to incorporate the following:

- Strong semi-natural green links and buffer zones including the retention of core or existing wildlife corridors to allow a connected biodiversity network (particularly those areas identified for specific bat species mitigation);
- Responsive approach to key views and promotion of footpaths and green corridors;
- Mitigation and enhancement of habitats and biodiversity including increasing the carrying capacity of retained habitat areas to mitigate potential impacts on protected species (such as reptiles); and
- Maintaining riparian buffer zones and minimising intervention (including outfalls and crossings) and incorporating enhancements to ecological value of these features.

The Council will require development proposals progressed in accordance with the AAP to be accompanied by detailed landscape and biodiversity implementation strategies and programmes which set out landscape proposals, detail mitigation, licensing requirements and enhancement measures to biodiversity, together with management tools such as additional biodiversity enhancement checklists, biodiversity/ landscape management/ long term and maintenance plans. The strategy must ensure that the following criteria are achieved:

- The site is not left untreated after remediation works for longer than one planting season;
- The site remains accessible for the public before and after remediation works and is treated to retain its amenity value;
- Key habitats, feeding areas and commuting corridors for protected species are maintained and where possible enhanced; and
- Biodiversity mitigation measures related to protected habitats and species, identified to date and as supplemented by appropriate future survey, must accord with requirements of current legislation and good practice guidance. In addition, the requirements of Policy 26 must be taken into account.

Appendix 2 . CNQAAP Policies

Box A3

Policy 15

Road hierarchy and link road

Road hierarchy

Development proposals for the Northern Quarter will be expected to respect the broad hierarchy of primary and secondary routes outlined in the Masterplan movement framework. The following factors will be considered when assessing proposals:

1. Impact on areas of high ecological sensitivity, including bats;
2. Provision of appropriate mitigation measures to address environmental issues such as severance of commuting routes and disturbance of feeding grounds;
3. Specific issues relating to the quality of access and egress to specific sites based on their functional and operational requirements; and
4. Maintain a minimum 10m offset from watercourses.

All proposals should be developed in general conformity with the broad alignment outlined in the AAP unless otherwise agreed by the Council and their partners. However, there is flexibility for adjustment of the north western section of the spine road alignment, if required to mitigate impacts on protected species (e.g bats). Such changes would need to accord with the requirements of the Forestry Act.

The precise alignment of routes and junction arrangements will be determined through detailed design and technical assessment.

Spine Road

In order to unlock the full potential of the Northern Quarter, the Council will require the comprehensive development of the site to be carefully coordinated with the construction of a new spine road. The Council will pursue the following objectives when assessing detailed designs for the road and adjacent development alongside the route:

- The new route should have a street-based character not that of a traffic dominated by-pass; and
- The design of the street section should seek to avoid, minimise, or compensate (in that order) any impact on forest land and protected species.

The design of the street section must demonstrate to a high standard how the four primary bat corridor routes to/ from the roost sites will be maintained and protected during and after the construction of the spine road. Any further primary bat corridor routes that may be identified prior to development will be similarly maintained and protected. Key factors will include:

Appendix 2 . CNQAAP Policies

1. A detailed scheme of vegetation protection and landscaping, including the phasing of works demonstrating that woody vegetation structure within and surrounding primary bat corridors will be in place prior to development being undertaken and maintained after development is completed.
2. Artificial lighting must be designed to maintain effective dark flight ways for Lesser Horseshoe bats within primary bat corridors
3. Minimum surface paths and road widths appropriate to the function of the road within primary bat corridor areas to minimise the degree of severance
4. When needed create new road crossing structures such as culverts and gantries to maintain primary bat corridors designed with suitable expert advice and according to best practice guidance
5. A detailed programme of monitoring for no less than three summers following the construction in each of the primary bat corridor areas. The programme should specify contingency procedures and responsibility for implementation should the monitoring reveal the crossings are not being used by numbers of lesser horseshoe bats comparable to those identified in the baseline surveys of 2010/ 11.
6. Suitable provision for the long term management and maintenance of all vegetation and road crossing structures that are required to maintain primary bat corridor routes.

Junction onto A4136

The junction of the spine road and the A4136 is to be located in the vicinity of the existing Northern United junction. Detailed analysis of traffic flows at this junction should be used to determine its design. This is likely to require a more detailed assessment of the assignment and distribution of strategic and site based traffic and modelling of traffic flows at the junction for future years.

The design of the junction must demonstrate to a high standard how the primary bat corridors at the entrance to the Northern United site and crossing the A 4136 from the roost sites, will be maintained and protected as dark crossing points during and after the construction of the junction.

Junctions at Broadmoor Road

Further detailed analysis of traffic flows at the junction of the Spine Road with Broadmoor Road and the junction of Broadmoor Road with the Gloucestershire College campus car park access should be carried out to determine the design of these junctions. This is likely to require a more detailed assessment of the assignment and distribution of education related traffic and modelling of traffic flows at the junctions for future years.

Passenger drop-off facilities

With passenger access to the Gloucestershire College campus from the Spine Road, it is likely that vehicles will stop to drop off or pick up students. The design of the access arrangements and car parking for the education facility should seek to address these issues.

Appendix 2 . CNQAAP Policies

Off site highways

Further analysis of the traffic impacts of development of the Northern Quarter on the junction of the A4151 Cinderford Bridge junction should be carried out in consultation with Gloucestershire County Council.

Further analysis should also be carried out of potentially increased traffic flows in surrounding minor roads such as Speculation Road/Whimsey Road with a view to potentially closing these to through traffic.

Box A4

Policy 26

European Nature Conservation Designations

In accordance with the 2010 Regulations, development proposals will need to identify any significant effects of development on European sites in the AAP area and surrounding buffer zone of 15 km and potentially more for some effects such as water pollution and identify if these are likely to occur alone and in combination with other plans and projects. Mitigation measures may need to be considered as part of this assessment. Where significant effects are considered likely to occur, the need for an appropriate assessment will be triggered in accordance with the 2010 Regulations to ensure no adverse effect on the integrity of the European site. The assessment must be directly related to the conservation objectives for the site.

Appendix 3 . Biodiversity Management Plan Prescriptions

Guidance on the approaches and strategies likely to be required to manage and improve existing habitats and create and maintain new habitats and features.

Open Mosaic Habitat on Previously Developed Land

Species to include management for	Likely approach
Management of retained habitat	<p>Great crested newt, reptiles, birds, invertebrates</p> <p>Occasional scrub control on rotation basis</p> <p>Encourage grazing by sheep or rabbits</p> <p>Consider cutting and removing grass arisings in the autumn</p>
Improvement of retained habitat	<p>Creation of ponds, wetland hollows or scrapes</p> <p>Construction of refugia for reptiles and amphibians</p>
Spatial considerations	<p>Locate within conifer plantations on historic mining spoil sites where fertility is low and topography is varied</p> <p>Ecological links</p> <p>2 ha minimum patch size</p>
Strategies for creating/restoring target habitats	<p>Locate on nutrient poor soils</p> <p>Vary aspect and slope to provide for micro-climates</p> <p>Clear fell existing tree cover</p> <p>Removal of any organic litter and disturb nutrient poor soils</p> <p>Provide for natural colonisation on nutrient poor bear soils</p> <p>Consider seed sourcing or ‘turf’ translocation from neighbouring areas to initialise habitat</p>

Appendix 3 . Biodiversity Management Plan Prescriptions

Grassland

Species to include management for	Likely approach Great crested newts, reptiles, birds, invertebrates
Management of retained habitat	<p>Occasional scrub control on rotation basis</p> <p>Encourage grazing by sheep or rabbits</p> <p>Consider cutting and removing grass arisings in the autumn</p> <p>Cutting regime to create/maintain a varied sward structure</p>
Improvement of retained habitat	<p>Creation of ponds, wetland hollows or scrapes</p> <p>Construction of refugia for reptiles and amphibians</p>
Spatial considerations	<p>Locate within conifer plantations on historic mining spoil sites where fertility is low and topography is varied</p> <p>Ecological links</p> <p>2 ha minimum patch size</p>
Strategies for creating/restoring target habitats	<p>Locate on nutrient poor soils</p> <p>Vary aspect and slope to provide for micro-climates</p> <p>Clear fell existing tree cover</p> <p>Removal of any organic litter and disturb nutrient poor soils</p> <p>Provide for natural colonisation on nutrient poor bear soils</p> <p>Consider seed sourcing or 'turf' translocation from neighbouring areas to initialise habitat</p>

Appendix 3 . Biodiversity Management Plan Prescriptions

Lowland Mixed Deciduous Woodland and Wet Woodland

Species to include management for	Likely approach
	Amphibians, birds, bats, dormice, invertebrates
Management of retained habitat	<p>Maintain standing dead wood</p> <p>Rotational coppicing</p> <p>Maintain rides and woodland edges by occasional cutting and coppicing of shrub layer on rotation</p> <p>Plan for thinning or coppicing to vary age structure (seek guidance from the Forestry Commission)</p>
Improvement of retained habitat	<p>Extend woodland rides, where appropriate</p> <p>Install bird, bat and dormice boxes</p> <p>Create wood piles</p> <p>Create wet scrapes in rides or unshaded ponds in rides</p>
Spatial considerations	Ecological links
Strategies for creating/restoring target habitats	<p>Thin or remove coniferous species (seek advice from the Forestry Commission)</p> <p>Re-plant with broadleaf species appropriate to the area (seek advice from Forestry Commission)</p> <p>Improve woodland habitat for bat foraging (lesser horseshoe bat) and dormice, especially creation of a woodland understorey (at least 50% cover)</p> <p>Create wood piles</p>

Appendix 3 . Biodiversity Management Plan Prescriptions

Ponds

Species to include management for	Likely approach
	Amphibian, reptiles, bats, birds, invertebrates
Management of retained habitat	Avoid over-shading by coppicing trees around pond edges Phased de-silting
Improvement of retained habitat	Create varied edge profiles and extend wetland margins Provide refugia
Spatial considerations	Link eastern and western great crested newt colonies using ponds spaced approx. 100m apart. Include ponds adjacent to bat flyways where possible. Ecological links Patch size – each pond 500-800m ²
Strategies for creating/restoring target habitats	Ponds could most beneficially be created within 250m of other retained Ponds known to support great crested newts and which link populations Seek to create permanent ponds, with varied cross-sectional profiles including shallow areas and areas greater than 1m deep, with surface areas of 500-800m ²

Appendix 3 . Biodiversity Management Plan Prescriptions

Ecological Corridors

Species to include management for	Likely approach
Management of retained habitat	<p>Bats, great crested newts, reptiles, invertebrates</p> <p>Ensure flyways are dark</p> <p>Control lighting to no more than 1 lux for lesser horseshoe bats</p> <p>Cut flyway vegetation using a sensitive rotational scheme</p> <p>Retention of standing and fallen dead wood</p>
Improvement of retained habitat	<p>Improve edge structure of existing rides</p> <p>Gap up any 'weak' sections of vegetation with additional planting</p> <p>Increase the width of flyway vegetation</p> <p>Create ponds adjacent to flyways</p> <p>Use 'heavy standard' trees on key routes to provide vegetation structure</p>
Spatial considerations	Ecological links
Strategies for increasing bat movements across the CNQAAP area	<p>New hedgerows and tree belts/groups as part of public and private landscaping schemes</p> <p>Avenue, street and courtyard tree planting</p> <p>Pond creation</p> <p>Built in bat boxes and boxes in trees</p> <p>Minimised artificial lighting levels</p> <p>Establish un-mown and flower-rich areas</p> <p>Planting to provide an all-year round food supply of insects</p>

Appendix 4 . Glossary

Term used	Definition/explanation
Ancient Semi-Natural Woodland (ASNW)	An ancient woodland site, believed to have had continuous woodland cover since 1600 AD, composed principally of native tree species that have not obviously been planted.
Avoid	Ensuring that negative impacts do not occur as a result of planning decisions by, for example, locating development away from areas of ecological interest.
Biodiversity	Biodiversity encompasses the whole of the natural world and all living things with which we share the planet. It includes plants, animals, even invisible micro-organisms and bacteria which, together, interact in complex ways with the inanimate environment to create living ecosystems.
Biodiversity Management Plans	Plans for the maintenance, restoration, creation, enhancement and monitoring of areas for Key Ecological Components.
Cinderford Area Action Plan (CNQAAP)	<p>The CNQAAP is a Development Plan document which sits within the Forest of Dean District Council's (FoDDC) Local Development Framework and has been developed in line with the FoDDC Core Strategy. It contains a list of policies specific to the Northern Quarter area.</p> <p>Area Action Plans are designed to address areas of significant change, including sites where regeneration opportunities need to be sensitively balanced with conservation concerns. They ensure that development is of an appropriate scale, mix and quality for its location.</p>
Cinderford Linear Park	Cinderford Linear Park is a natural park between the western boundary of Cinderford town and adjacent wooded areas. The park is characterised by a mix of grassland, woodland, ponds and heritage features and is a place for recreation.
Cinderford Regeneration Board	The Cinderford Regeneration Board was established in November 2005 and is the decision-making body empowered to provide a wider strategic direction on Cinderford regeneration matters. The Board is made up of 15 members who come from both the public and private sectors. Regeneration activity determined by the Board is undertaken by the Forest of Dean Council's regeneration team and other partners.
Climate Change Adaptation	Climate Change Adaption involves changing the way in which tasks are undertaken to prepare for the potential impacts of climate change.

Appendix 4 . Glossary

Term used	Definition/explanation
Compensate	Measures which are taken to make up for the loss of, or permanent damage to, biodiversity. Where some harm to biodiversity is reduced through mitigation, compensation will represent the residual harm which cannot be entirely mitigated. Compensation measures may be delivered within or outside the development site.
Conservation of Habitats and Species Regulations 2010 (as amended) (the Habitats Regulations)	The Habitats Regulations aim to promote the maintenance of biodiversity, by requiring EU Member States to take measures to maintain or restore natural habitats and wild species considered to be of European interest. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law. Since 1994 the Regulations have been regularly amended mainly as a result of case law with the largest changes being made to this national legislation in 2010. To reflect this and that further material changes that might be made in the future this document refers to the 2010 Regulations (as amended).
Construction Environmental Management Plans (CEMPs)	Set out the management measures required during construction to safeguard the local environment. Covering emissions and risks to areas such as air, water soil, and biodiversity. CEMP's outline how environmental issues that arise will be handled to ensure compliance with relevant legislation.
Core Strategy (CS)	The CS is the principal document in the Local Development Framework for the Forest of Dean. It sets out an overall vision setting out how the district and places within it should evolve; strategic objectives for the area focusing on key issues; a strategy for the delivery of these objectives, setting out where when and by what means development will be delivered and an explanation of how the delivery process will be monitored.
Development Biodiversity Implementation Strategy (DBIS)	A biodiversity strategy which is developed in relation to a specific development proposal within the CNQAAP area.
Ecological Corridors for Key Ecological Components	Usually in the form of semi-natural linear habitat features that allow the movement of species across the landscape. This movement prevents fragmentation and isolation effects including reductions in genetic exchange and interruption of routes that connect resting, breeding, hibernating and foraging areas together.

Appendix 4 . Glossary

Term used	Definition/explanation
Enhancement	To increase in value, importance or attractiveness (Bradshaw 1997). Here the implication is not so much making something bad better, but of making something that is already in a relatively good condition even better.
Environmental Impact Assessment (EIA)	The aim of EIA to protect the environment by ensuring that a local planning authority when deciding whether to grant planning permission for a project, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision making process. The process of Environmental Impact Assessment is governed by the Town and Country Planning (Environmental Impact Assessment) Regulations 2011.
European Site	These are statutory sites, designated under European legislation. They include: designated and candidate Special Areas of Conservation (SAC and cSAC); classified and potential Special Protection Areas (SPA and pSPA) and; listed and proposed Ramsar Sites.
European Protected Species (EPS)	EPS are animals and plants that receive protection under the Habitats Regulations.
Favourable Conservation Status (FCS)	The Habitats Regulations lists species and habitats in its Annexes to be maintained or restored at FCS. FCS for habitats is defined as when: its natural range and areas it covers within that range are stable or increasing and; the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future and; the conservation status of its typical species is favourable. FCS for species is defined as when: population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats and; the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future and; there is, and will probably continue to be, a sufficiently large habitat to maintain its population on a long term basis.
Forest Plans (FP)	FPS are produced by the Forestry Commission, to set out the management proposals for the next thirty years for the woodlands they look after. The Plans aim to fulfil a number of objectives: provide descriptions of the woods as they are now; show the process the Forestry Commission goes through when deciding what is best for the woods in the long term; show how the woods should develop over

Appendix 4 . Glossary

Term used	Definition/explanation
	the next thirty years and; specifically show tree felling and re-establishment in more detail for the first 10 years and in outline for the succeeding 20 years.
Grassland	This Broad Habitat was previously referred to in the UK Biodiversity Action Plan as UK BAP Broad Habitats including Acid Grassland, Neutral Grassland and Calcareous Grassland. These grasslands are characterised by their underlying soils and rocks and traditional management which in turn influence their flora and structure.
Habitats of Principal Importance in England	The England Biodiversity List is a list of flora, fauna and habitats considered by the Secretary of State to be of principal importance for conserving biodiversity. Fifty-six habitats are included on the S41 list. The publication of the England Biodiversity List satisfies the requirements of Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 for the conservation of biodiversity. The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006 "to have regard" to the conservation of biodiversity in England, when carrying out their normal functions.
Habitats Regulations Assessment (HRA)	The Habitats Regulations require competent authorities to carry out an Appropriate Assessment in certain circumstances where a plan or project affects a European Site. HRA refers to the whole process, including the Appropriate Assessment step. Appropriate Assessment is required when a plan or project affecting a Natura site: is not connected with management of the site for nature conservation, and; is likely to have a significant effect on the site (either alone or in combination with other plans or projects).
Harm	Any impact, direct or indirect, that may have an adverse effect on a biodiversity interest.
Homes and Communities Agency (HCA)	The HCA is the national housing and regeneration agency for England. It contributes to economic growth by helping communities to realise their aspirations for prosperity and to deliver high-quality housing that people can afford.
Integrity	In relation to Special Areas of Conservation (SAC) is the coherence of the sites ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified

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Term used	Definition/explanation
Interpretation	Interpretation is an educational activity which aims to reveal meanings and relationships through the use of original objects, by first hand experience and by illustrative media, rather than simply to communicate factual information. It is the art of explaining the place of man in his environment, to increase visitor or public awareness of this relationship and to awaken a desire to contribute to environmental conservation.
Key Ecological Components	Features, habitats and species that are considered to be of primary importance for biodiversity in the CNQAAP area.
Key Principles	A set of principles developed to guide the development of biodiversity strategies and approaches for the CNQAAP area.
Key Wildlife Sites (KWS)	Local Wildlife Sites (known as Key Wildlife Sites in Gloucestershire) are non-statutory sites designated because they support habitats and/or species considered important in a County context. A local Wildlife Partnership, consisting of a variety of stakeholders including local authorities, public bodies and nature conservation NGOs, is responsible for establishing the framework and administering the Local Site System under which KWSs are designated. These sites have no legal protection, yet they still deserve recognition as important places for wildlife outside of legally protected land such as SSSIs.
Landscape Character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from one another, rather than better or worse.
Landscape Character Assessment	A Landscape Character Assessment explains what the landscape of each place is like and what makes one place different to another. It assumes that every place is special and distinctive and sets out to show just how and where these special qualities and distinctive features occur.
Lowland Mixed Deciduous Woodland	A Habitat of Principal Importance in England. Lowland mixed deciduous woodland grows on all kinds of soils, and includes most semi-natural woodland in southern and eastern England, and in parts of lowland Wales and Scotland. Many are ancient woods which have been continuously wooded since the 17th century.
Masterplan and Design Code Supplementary Planning Document (MDC)	The MDC is part of a family of documents that support and provided further guidance to the adopted CNQAAP. The Masterplan provides the broad spatial, urban design, movement and land use principles

Appendix 4 . Glossary

Term used	Definition/explanation
	for the area. The Design Code is a set of written and illustrated rules to instruct the physical development of a site. The purpose of the Code is to set down design guidance for the delivery of the CNQAAP.
Mitigate	Measures to mitigate are ones taken which reduce negative impacts. Examples of mitigation measures include changes to project design, construction methods or the timing of work, or enhancing or restoring other interests or areas on a site so its overall ecological value is retained.
National Character Areas (NCA)	NCAs divide England into 159 distinct natural areas. Each is defined by a unique combination of landscape, biodiversity, geodiversity and cultural and economic activity. Their boundaries follow natural lines in the landscape rather than administrative boundaries, making them a good decision making framework for the natural environment.
National Planning Policy Framework (NPPF)	The NPPF sets out the Government's planning policies for England and how these are expected to be applied. It sets out the Government's requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so. It provides a framework within which local people and their accountable councils can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities. The National Planning Policy Framework is a material consideration in planning decisions.
National Vegetation Classification (NVC)	The NVC is a system of classifying natural habitat types in Great Britain according to the vegetation they contain. A large scientific meeting of ecologists, botanists, and other related professionals in the United Kingdom resulted in the publication of a collection of five books by which detail the incidence of plant species in twelve major habitat types in the British natural environment.
Natural Environment and Rural Communities Act 2006 (NERC Act)	The NERC Act came into force on 1st Oct 2006. Section 40 of the Act requires all public bodies to have regard to biodiversity conservation when carrying out their functions.
Open Mosaic Habitats on Previously Developed Land	A Habitat of Principal Importance in England. Defined as areas of 0.25ha or more containing one or more of the following early successional communities: annuals; mosses/liverworts; lichens; ruderals; inundation species; open grassland and; flower-rich grassland. To qualify vegetation must contain loose bare substrate

Appendix 4 . Glossary

Term used	Definition/explanation
	or pools. Grassland habitat within the CNQAAP area is relatively rank lacking the small areas of bare substrate that would otherwise allow its wholesale inclusion within this habitat type.
Ponds	A Habitat of Principal Importance in England. Defined as permanent and seasonal standing water bodies of up to 2 ha in extent which also provide habitat for European or nationally protected species. In the case of the CNQAAP area, waterbodies are considered Ponds because of their ability to support great crested newts or act as forage areas for bat species.
Ramsar Site	Ramsar sites are wetlands of international importance, designated under the Ramsar Convention. It is government policy that Ramsar sites should be treated as if they were European Sites, i.e. the Habitats Regulations should be applied to them.
Regionally Important Geological and Geomorphological Sites (RIGS)	RIGS are locally designated sites of local, national and regional importance for geodiversity in the United Kingdom. RIGS may be designated for their value to earth science and to earth heritage, and may include cultural, educational, historical and aesthetic resources. They are conserved and protected from development as a material consideration through the planning system by the Town and Country Planning Act 1990.
Restoration	Restoration includes techniques that aim to raise the conservation status of a habitat or species from a relatively poor level to a more favourable state.
RSPB Red/Amber list	A list of UK bird species included within the RSPB's 'Birds of Conservation Concern' publication. The list is split into three, green, amber and red – indicating an increasing level of conservation concern.
Legal Agreements (Section 106's)	Section 106 of the Town and Country Planning Act 1990 (as amended), commonly known as s106 agreements, are a mechanism which make a development proposal acceptable in planning terms, that would not otherwise be acceptable. They are focused on site specific mitigation of the impact of development. S106 agreements are often referred to as 'developer contributions'.
Rivers	A Habitat of Principal Importance in England. Defined using the previous Priority Habitat description for the UK Biodiversity Action Plan of the same name. In the case of the CNQAAP area watercourses are considered a Rivers primarily due to their ability to support otter.

Appendix 4 . Glossary

Term used	Definition/explanation
Sites of Special Scientific Interest (SSSIs)	Area identified by English Nature under the National Parks and Access to the Countryside Act 1949 for protection by reason of the rarity of its nature conservation, wildlife features or geological interest.
Special Areas of Conservation (SAC)	SACs are strictly protected sites designated under the Habitats Regulations.
Special Protection Areas (SPA)	SPAs are strictly protected sites classified in accordance with Article 4 of the EC Birds Directive which came into force in April 1979.
Species of Principal Importance in England	The England Biodiversity List is a list of flora, fauna and habitats considered by the Secretary of State to be of principal importance for conserving biodiversity. The publication of the England Biodiversity List satisfies the requirements of Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 for the conservation of biodiversity. The S41 list is used to guide decision-makers such as public bodies, including Local Planning Authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006 "to have regard" to the conservation of biodiversity in England, when carrying out their normal functions.
Standing Advice	Natural England has adopted national standing advice for protected species. It provides a consistent level of basic advice which can be applied to any planning application that could affect protected species and is a material consideration.
Strategic Nature Area	The Strategic Nature Areas (SNAs) form the Gloucestershire Nature Map. This map identifies landscape-scale areas where there is opportunity for both the maintenance and, crucially, the restoration/expansion of Priority Habitats. As such, they collectively represent an extremely useful aid to targeting nature conservation action.
Supplementary Planning Document (SPD)	Supplementary Planning Documents provide guidance on local planning matters. Planning authorities may prepare Supplementary Planning Documents (SPDs) to provide greater details on the policies of its development plan documents. There is no requirement for them to be listed in a local planning authority's local development scheme, so they can be brought forward as circumstances change. Whilst they are not examined by an Inspector, a supplementary planning document is still subject to a process of consultation and engagement with relevant parties.

Appendix 4 . Glossary

Term used	Definition/explanation
Sustainable Drainage Systems (SuDS)	SuDS are a sequence of water management practises and features designed to drain surface water in a manner that will provide a more sustainable approach than what has been the conventional practise of routing run-off through a pipe to a watercourse
UK Biodiversity Action Plan (UK BAP)	The UK BAP was first published in 1994, and was the UK Government's response to the Convention on Biological Diversity (CBD), which the UK signed up to in 1992 in Rio de Janeiro. The UK BAP described the biological resources of the UK and provided detailed plans for conservation of these resources. Action plans for the most threatened species and habitats were set out to aid recovery, and national reports, produced every three to five years, showed how the UK BAP was contributing to the UK's progress towards the significant reduction of biodiversity loss called for by the CBD. The UK BAP has since been superseded by the Government's 'Biodiversity 2020: A Strategy for England's wildlife and ecosystem services' publication.
UK Forestry Standards (UKFS)	The UKFS is a standard for sustainable forest management in the UK. It is supported by its series of guidelines, outlines the context for forestry in the UK, sets out the approach of the UK governments to sustainable forest management, defines standards and requirements, and provides a basis for regulation and monitoring.
Wet Woodlands	A Habitat of Principal Importance in England. Wet woodland occurs on poorly drained or seasonally wet soils, usually with alder, birch and willows as the predominant tree species, but sometimes including ash, oak, pine and beech on the drier riparian areas. It is found on floodplains, as successional habitat on fens, mires and bogs, along streams and hill-side flushes, and in peaty hollows.
Woodland (Broadleaved and Mixed)	This Broad Habitat was previously referred to in the UK BAP as Broadleaved, Mixed and Yew Woodland and was defined as follows: Broadleaved and mixed woodland is characterised by vegetation dominated by trees that are more than 5m high when mature, which form a distinct, although sometimes open, canopy with a canopy cover of greater than 20%. It includes stands of both native and non-native broadleaved tree species, and of yew <i>Taxus baccata</i> , where the percentage cover of these trees in the stand exceeds 20% of the total tree cover. Stands of broadleaved, mixed and yew woodland may be either ancient or recent woodland and either semi-natural arising from natural regeneration of trees, or planted.

Appendix 4 . Glossary

Term used	Definition/explanation
Woodland (Coniferous)	This Broad Habitat was previously referred to in the UK BAP as Conifer Woodland and was defined as follows: characterised by vegetation dominated by trees that are more than 5 m high when mature, which form a distinct, although sometimes open canopy which has a cover of greater than 20%. It includes stands of both native and non-native coniferous trees species (with the exception of yew <i>Taxus baccata</i>) where the percentage cover of these trees in the stand exceeds 80% of the total cover of the trees present.

Appendix 5 . Sources of Key Ecological Component Information

- 5.1** Duverge, Dr. Laurent. Report on bat surveys carried out in 2011 at Northern United Lesser horseshoe bat roost Cinderford Forest of Dean, Gloucestershire. (Oct 2011).
- 5.2** Entec UK Limited. Cinderford Area Action Plan - Ecological Appraisal Report. May 2009.
- 5.3** ERM, Baxter, Alan. Pre Submission Draft AAP Habitats Regulations Screening Assessment. March 2011.
- 5.4** Gloucestershire Environmental Records Centre. Rare and protected species records (for Northern Quarter Area and 500m surrounding area). December 2013.
- 5.5** GVA. Outline Planning Application - Proposed Class B1, B2, B8 and D1 Uses and Associated Development, Land at Northern United, Cinderford, Addendum to Environmental Statement Vol. 1, 2 & 3. December 2012.
- 5.6** Johns Associates. Cinderford Northern Quarter Biodiversity Strategy Version 1.2. December 2012.
- 5.7** Johns Associates. Regeneration of Forest Vale, Cinderford Ecological Impact Assessment. October 2012.

Appendix 6 . Planting List

6.1 The following list outlines some native tree, shrub and other plant species that should be consider when developing planting schemes to improve or enhance retained habitats and design other areas such as highway verges and public open space for example. It should also be considered for example to inform seed mix designs for habitat creation measures and/or as a menu from which to select suitable plant species for supplementary plug planting. Plant stock should be from locally native stock wherever possible.

Trees and shrubs	Beneficial for:
Ash	Bat roosting and foraging
Beech	Bat roosting and foraging
Birch	Broom moth, bat foraging
Elm	Bat roosting and foraging
Hawthorn	Knot grass and mouse moth
Oak	Oak hook-tip moth, bat roosting and foraging
Sallow	Sallow and autumnal rustic moth
Willow	Bat foraging

Other plants	Beneficial for:
Agrimony	Grizzled skipper butterfly
Bitter vetch	Wood white butterfly
Bog myrtle	Dark brocade moth
Bracken	Broom and knot grass moth
Broom	Broom moth
Butterbur	Ear moth
Chickweed	Mouse and rustic moth
Cinquefoil	Grizzled skipper butterfly
Clover spp.	Small broad-bar moth
Common dog-violet	Small pearl-bordered fritillary
Dock spp.	Autumnal rustic, knot grass, rosy rustic and rustic moth

Appendix 6 . Planting List

Fine grasses (festuca spp. Poa spp and agrostis species)	Small heath butterfly
Grass spp.	Ear and dark brocade moth
Groundsel	Cinnabar moth
Hair grass spp.	Hedge rustic moth
Heather	Autumnal rustic moth
Marsh violet	Small pearl-bordered fritillary
Matt grass spp.	Hedge rustic moth
Meadow vetchling	Wood white butterfly
Plantain	Rosy rustic and rustic moth
Ragwort	Cinnabar moth
Sorrel spp.	Forester moth
Traveller's joy	Small emerald moth
Tufted vetch	Wood white butterfly
Vetch spp. (bird's foot trefoil, greater bird's foot trefoil, horseshoe vetch)	Small broad-bar moth, Dingy Skipper and wood white butterfly
Wild strawberry	Grizzled skipper butterfly
Willowherb	Small phoenix moth
Yellow rattle	Grass rivulet moth

