



Birmingham Eastside Extension

ES Volume 2 Technical Appendix T1: Ecology
Technical Information

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West Midlands Combined Authority

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1 Ecology

1.1 Background

- 1.1.1 This Technical Appendix should be read in conjunction with Chapter 17 Ecology of ES Volume 1: Main Statement, ES Volume 2 Technical Appendix T2: Preliminary Ecological Appraisal and ES Volume 2 Technical Appendix T3: Bat Activity Report.
- 1.1.2 This Technical Appendix provides detailed baseline data, an evaluation of the ecological features and a discussion of impacts and effects for protected sites, species and habitats of value for nature conservation within the Zone of Influence (ZoI) of the BEE. It includes descriptions of the likely impacts and assessment of the associated effects of the development of the Birmingham Eastside Extension (BEE), during both the construction and operational phases.
- 1.1.3 The BEE involves the construction and operation of a 1.9km extension to the Midland Metro light rail network in Birmingham as described in Chapter 2 BEE Description in ES Volume 1: Main Statement. The BEE will connect the Birmingham City Centre Extension (BCCE) at Bull Street/Corporation Street providing a new link to the proposed HS2 Station at Curzon Street and Birmingham Coach Station, terminating at High Street Deritend to the east of the Birmingham City Centre between Rea Street and Floodgate Street. The proposed extension is conceived as the first phase of a potential extension of the Midland Metro further east to Birmingham Airport.

1.2 Legislation, Policy Guidance and Best Practice

- 1.2.1 Many habitats and species are protected to varying degrees through European and national legislation. Advice relating to wildlife is also given in various policy documents.

European

- 1.2.2 The main European legislation and policy guidance relevant to this chapter is contained within the following documents:
- *Convention on Biological Diversity (CBD) 1992* is a multilateral treaty to promote conservation of biodiversity and sustainable development which was signed by 170 countries including the United Kingdom in 1992;
 - *The Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar) 1971* is an international treaty for the conservation of wetland habitats;
 - *European Commission (EC) Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (Habitats Directive 1992) as amended (92/43/EEC)* is the main piece of European legislation which protects some 220 habitats and 1,000 species listed on the directive's Annexes;
 - *EC Directive on the Conservation of Wild Birds (Birds Directive 1979) as amended (79/409/EEC)* aims to protect European wild birds and their habitats, in particular through designation of Special Protection Areas;

- *Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) as amended* is a binding international legal instrument which aims to conserve wild flora and fauna and their natural habitats;
- *Bonn Convention on the Conservation of Migratory Species of Wild Animals (1979) as amended* is an international treaty which aims to conserve terrestrial, marine and avian migratory species throughout their range; and
- *Bonn Convention on the Conservation of Migratory Species of Wild Animals - Agreement on the Conservation of Bats in Europe (1999) as amended* is the treaty that provides the framework for bat conservation in Europe.

National legislation

- 1.2.3 The main piece of United Kingdom (UK) legislation on nature conservation is the Wildlife and Countryside Act 1981 (as amended) which protects animals, plants, and certain habitats in the UK. Other relevant national legislation includes:
- *Conservation of Habitats and Species Regulations 2010* transpose the EC Habitats Directive into national law, providing protection for “European Sites” and “European Protected Species”;
 - *Protection of Badgers Act 1992* is the main piece of UK legislation protecting badgers and their setts;
 - *Wild Mammals (Protection) Act 1996* protects common mammal species from certain cruel acts;
 - *Countryside and Rights of Way (CROW) Act 2000* gives biodiversity conservation in the UK a statutory basis;
 - *Natural Environment and Rural Communities (NERC) Act 2006* imposes a duty on public bodies to conserve biodiversity. Section 41 (S41) of the *NERC Act 2006* requires the Secretary of State to publish a list of habitats and species that are of principal importance for the conservation of biodiversity in England. The list (including 56 habitats and 943 species) has been drawn up in consultation with Natural England and draws upon the UK Biodiversity Action Plan (BAP) List of Priority Species and Habitats;
 - *The Hedgerow Regulations 1997* define the criteria for “important hedgerows” and require that a hedgerow removal notice is submitted to the local planning authority for approval before such a hedgerow is removed; and

Policy

National Planning Policy

- 1.2.4 The National Planning Policy Framework (NPPF) (DCLG, 2012) provides a streamlined set of documents at a national level, to which 'lower level' plans, policies and projects should adhere to as appropriate. Regard has been given in this assessment to relevant policy contained within the NPPF.

- 1.2.5 Chapter 11 NPPF '*Conserving and enhancing the natural environment*' sets out the Government's policies on biodiversity, landscape and geological conservation. In summary, with regards to ecology and biodiversity, the NPPF requires that the planning system and planning policies should:
- minimise impacts on biodiversity and provide net gains in biodiversity where possible (paragraph 109);
 - recognise the wider benefits of ecosystem services (paragraph 109);
 - explore and encourage opportunities to incorporate biodiversity in and around developments (paragraph 118);
 - refuse planning permission if significant harm cannot be avoided, adequately mitigated, or, as a last resort, compensated for (paragraph 118);
 - not normally lead to a consent where the proposed development on land within or outside a Site of Special Scientific Interest (SSSI) would be likely to have an adverse effect on the SSSI (either individually or in combination with other developments) (paragraph 118);
 - lead to a refusal of planning permission if development will result in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss (paragraph 118);
 - afford the following wildlife sites the same protection as European sites:
 - potential Special Protection Areas (SPAs) and possible Special Areas of Conservation (SACs);
 - listed or proposed Ramsar sites; and
 - sites identified, or required, as compensatory measures for adverse effects on European sites, potential SPAs, possible SACs, and listed or proposed Ramsar sites.

- 1.2.6 As a result of new drivers and requirements, the '*UK Post-2010 Biodiversity Framework*', published in July 2012, has now superseded the UK BAP. A key aspect of this new mechanism has been the devolution of UK habitat and species action plan lists to individual countries, meaning that Natural England now maintains these lists for England. These lists now link to the Habitats and Species of Principal Importance in England, as detailed in lists which are maintained by the Secretary of State under *Section 41 of NERC* (2006).

Regional and local policy

- 1.2.7 The Birmingham Unitary Development Plan (UDP) contains policies and proposals that currently guide development and land use across the Birmingham and is the existing Development Plan for Birmingham.
- 1.2.8 In time, the UDP will be replaced by the Birmingham Development Plan (BDP) and other key planning policy documents currently being prepared, known as Development Plan

Documents. Once approved, these documents will form the statutory Development Plan for Birmingham and will be the main basis for planning application decisions.

- 1.2.9 The BDP will set out the statutory framework to guide decisions on development and regeneration in Birmingham up to 2031. It will set out how and where new homes, jobs, services and infrastructure will be delivered and the type of places and environments that will be created. The Plan will cover the whole administrative area of the city. The Plan was submitted to the Secretary of State for examination on July 1 2014; however, on Thursday 26 May 2016 the Secretary of State issued a direction under section 21A of the Planning and Compulsory Purchase Act 2004 (inserted by section 145(5) of the Housing and Planning Act 2016) to Birmingham City Council (BCC) not to take any step in connection with the adoption of the BDP 2031.
- 1.2.10 The direction will remain in force until it is withdrawn by the Secretary of State or the Secretary of State gives a direction under section 21 of the 2004 Act in relation to the BDP 2031.
- 1.2.11 Despite the holding direction on the BDP it still holds significant weight and, alongside the UDP, forms the main local planning policy; with the following policies are relevant to the proposed development:

The Birmingham Unitary Development Plan (UDP)

- 1.2.12 **Policy 3.37-** the importance of safeguarding and enhancing the natural environment of the City is recognised. This involves both the protection of existing areas of nature conservation importance and measures to improve the diversity and quality of wildlife habitats throughout the City. Development in, or likely to affect, any Site of Special Scientific Interest (SSSI) will be subject to special scrutiny. Where such development may have an adverse effect, directly or indirectly, on the SSSI it will not be permitted unless the reasons for development clearly outweigh the nature conservation value of the site itself and the national policy to safeguard the national network of such sites.
- 1.2.13 **Policy 3.37A-** development likely to have an adverse effect on a Local Nature Reserve (LNR) or Site of Importance for Nature Conservation (SINC) identified in the UDP, or subsequently identified, will not be permitted unless it can be clearly demonstrated that there are reasons for the proposal which outweigh the need to safeguard the substantive nature conservation value of the site or feature.
- 1.2.14 **Policy 3.37B-** where development of any SSSI, LNR or SINC is permitted, planning conditions may be imposed and/or planning obligations sought to promote the management and conservation of the nature interests involved and to provide appropriate compensatory measures. However, permission will not be granted for the development of any SSSI, LNR or SINC simply because the nature conservation value of the site has reduced since designation due to a lack of good management.

- 1.2.15 **Policy 3.38-** schemes including reclamation of derelict land, and new developments, particularly those on open land, will be expected to respect, and where possible enhance, the local environment, for example through the retention of existing trees and through planting and landscaping schemes using native species where appropriate, with the objective of maximising wildlife value. The retention and enhancement of existing tree cover, hedgerows, wildlife habitats and geological features will be supported in order to ensure that the natural heritage of an area is not lost. Development proposals which lead to the loss of a valuable wildlife habitat should make provision for a replacement habitat of equal value.
- 1.2.16 **Policy 3.39-** development which may harm the integrity or continuity of landscape features that are of major importance for wild fauna and flora (including features such as river and stream corridors, canals, active and disused railway corridors, natural greenspaces, urban wasteland sites, hedgerows, ponds and small woods) will only be permitted where the reasons for development clearly outweigh the need to retain the feature and in such cases developers would be expected to provide appropriate mitigation measures. Appropriate management of features will be sought by the imposition of conditions, by the use of planning obligations, and by concluding management agreements with landowners and developers.
- 1.2.17 **Policy 3.39A-** a comprehensive Nature Conservation Strategy has been prepared and adopted as Supplementary Planning Guidance. This identifies those parts of Birmingham that are particularly valuable from a nature conservation aspect, acknowledges and recognises the value of green corridors and networks, and includes many areas which form part of Birmingham's open space system. Those parts of Birmingham currently lacking in wildlife habitats are identified in the strategy as Wildlife Action Areas. Policies to ensure local biodiversity, appropriate management and adequate public access are included. These may be secured through the use of Section 106 agreements. In addition, the Birmingham and Black Country BAP provides additional information supporting the Nature Conservation Strategy.

Birmingham Development Plan (BDP)

- 1.2.18 **Policy TP8 – Biodiversity and Geodiversity-** The maintenance, enhancement and restoration of sites of national and local importance for biodiversity and geology will be promoted and supported. These include SSSIs, National Nature Reserves (NNRs), LNRs, SINCs and Sites of Local Importance for Nature Conservation (SLINCs) currently identified in the Policies Map or subsequently identified.
- 1.2.19 Development which directly or indirectly causes harm to sites of national importance (SSSIs and NNRs) will not be permitted.
- 1.2.20 Development which directly or indirectly causes harm to local sites of importance for biodiversity and geology (LNRs, SINCs and SLINCs), priority habitats and important geological features, species which are legally protected, in decline, are rare within

- Birmingham or which are identified as national or local priorities will only be permitted if it has been clearly demonstrated that:
- the strategic need for the proposal outweighs the need to safeguard the importance of the designated site, or important habitat, species or geological feature and no alternative site is available which will meet the need;
 - damage is minimised and measures can be put in place to mitigate remaining impacts; and
 - where damage cannot be avoided or fully mitigated, appropriate compensation is secured.
- 1.2.21 Development proposals that may affect any designated site or important habitat, species or geological feature must be supported by adequate information to ensure that the likely impact of the proposal can be fully assessed.
- 1.2.22 The integrity of wildlife corridors and ‘stepping stones’ will be protected from development that would harm their function.
- 1.2.23 Priority habitats and priority species listed in Section 41 of the NERC Act 2006 or in national and local BAPs will be maintained and opportunities to enhance and add to these natural assets will also be identified. The BAP for Birmingham and the Black Country and data from EcoRecord (the ecological database for Birmingham and the Black Country) will be used to inform the development of a strategic landscape-scale framework for the restoration and creation of priority habitats and recovery of priority species populations across Birmingham, including opportunities to create or restore linkages between important wildlife areas.
- 1.2.24 All development should, where relevant, contribute to enhancing Birmingham’s natural environment, having regard to strategic objectives for the maintenance, restoration and creation of ecological and geological assets. Biodiversity and geodiversity enhancement measures should be appropriate to the nature and scale of the development proposed. Development proposals should clearly identify how ongoing management of biodiversity and geodiversity enhancement measures will be secured.

Birmingham and the Black Country Biodiversity Action Plan (BAP)

- 1.2.25 The Birmingham and the Black Country BAP forms a technical appendix to the BDP, providing baseline information on habitats and species and a clear set of biodiversity aims, priorities and targets, which can be applied within all aspects of the planning process.
- 1.2.26 Despite the UK BAP lists being superseded, the LBAP mechanism remains current. The relevant local biodiversity policy is the Birmingham and the Black Country LBAP. The habitats for which action plans have been prepared are listed below. In England there are 56 habitats listed as Habitat Types of Principal Importance for the purpose of conserving biodiversity within section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Of these, 22 have been recorded in Birmingham and the Black Country. LBAP Habitat Action Plans:

- Upland Oak Woodland;
- Upland Mixed Ashwoods;
- Wet Woodlands;
- Wood Pasture and Parkland;
- Lowland Mixed Deciduous Woodland;
- Lowland Heathland;
- Lowland Meadows;
- Lowland Calcareous Grassland;
- Lowland Dry Acid Grassland;
- Purple Moor Grass and Rush Pastures;
- Coastal and Floodplain Grazing Marsh;
- Arable Field Margins;
- Hedgerows;
- Mesotrophic Lakes;
- Eutrophic Standing Waters;
- Ponds;
- Reedbed;
- Lowland Fens;
- Lowland Raised Bog
- Rivers;
- Inland Rock Outcrops and Scree Habitat; and
- Open Mosaic Habitat on Previously Developed Land.

1.2.27 In addition to the national priorities, within Birmingham and the Black Country there are other valuable habitats:

- Ancient Woodland;
- Canals;
- Parks and Open;
- Allotments; and
- Gardens.

1.3 Methodology

Introduction

1.3.1 This section explains the approach that has been used to produce this Ecological Impact Assessment (EclA). It is structured as follows:

- methodology;
- development of assessment criteria; and
- assumptions and limitations.

1.3.2 Current guidance on ecological assessments recommends that all ecological features that occur within a Zone of Influence around the proposed development are investigated (CIEEM, 2016). The potential Zol includes:

- areas directly within the land take for the proposed development and access;
- areas which will be temporarily affected during construction;
- areas likely to be impacted by hydrological disruption; and
- areas where there is a risk of pollution and noise disturbance during construction and/or operation.

1.3.3 The Zol is a buffer around the BEE route, the width of which depends on the sensitivity of the habitat or species to disturbance and change in biophysical conditions resulting from the construction and operation of the BEE. The Zol for each ecological feature along the BEE route were established in the Scoping Report (ES Volume 2 Technical Appendix H). The individual Zols are set out in Table 2.1.

1.3.4 A formal Scoping Opinion (ES Volume 2 Technical Appendix I) was received on 13 January 2016. BCC's Ecologist confirmed that the content of the Scoping Report with respect to ecology meets with the requirements for assessment of ecological impacts from the BEE; however, they felt that the EIA should include an assessment of the potential impact of increased lighting along the BEE route on bats in the vicinity of the and on nesting birds.

Scope of the assessment

Technical scope

1.3.5 An Extended Phase 1 habitat survey was initially undertaken 50m either side of the BEE alignment on 13 March 2015 to inform the Scoping Report. This report was subsequently updated on 7 June 2016 to include the finalised route realignment and areas of the permanent and temporary works. The Extended Phase 1 Habitat Surveys were undertaken in accordance with the JNCC 'Handbook for Phase 1 Habitat Survey: a technique for environmental audit' (2010). Habitats were mapped and any potential for protected species was target noted.

Spatial scope

1.3.6 The Zols were determined in accordance with paragraph 12.1.4 of the Scoping Report (ES Volume 2 Technical Appendix H). The appropriate distances for the ecological receptors which were used for this assessment are shown in Table 1.1 below.

Table 1.1: Ecological features and Zol

Ecological Receptor	Zol
Designated statutory and non-statutory sites	Scheme boundary plus 1km
Habitats	Scheme boundary only
Bats	Scheme boundary plus 50m buffer

Ecological Receptor	ZoI
Reptiles	Scheme boundary only
Birds	Scheme boundary only
Great Crested Newts (GCN)	Scheme boundary only
Badgers	Scheme boundary plus 50m

Temporal scope

Construction phase

- 1.3.7 The construction phase includes all activities carried out by the construction contractor, including site preparation, vegetation clearance, setting up of construction compounds and any mitigation works required before and during construction and construction of the BEE to completion. Construction is currently anticipated to commence in 2020, for completion in late 2021.

Operational phase

- 1.3.8 The operational phase is assessed at the first year of operation (2022) following construction completion and at year 15.

Desk study

- 1.3.9 As recommended in the 'Guidelines for Preliminary Ecological Appraisal' (CIEEM, 2013), a desk study was undertaken of the designated sites for nature conservation, habitats of conservation importance and protected and notable species which occur within 2km of the BEE route where it passes along Deritend High Street. This radius was extended to 10km for international and European conservation sites including: Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar Sites; and 30km for SACs designated for roosting bats.

- 1.3.10 Data was obtained from the Birmingham and the Black Country ecological database (EcoRecord) as well as relevant publications, reports and online databases. These included the Multi-Agency Geographic Information for the Countryside (MAGIC), Joint Nature Conservation Committee (JNCC) and the Birmingham and Black Country BAP.

Site survey

- 1.3.11 A field survey, in the form of an Extended Phase 1 Habitat Survey was initially undertaken by Mott MacDonald graduate ecologist Jeff Grant Grad CIEEM on the 13 March 2015. Due to the period of time elapsed between the initial survey and the TWAO application a second site visit was undertaken by Jeff Grant and Tom Oliver CEnv MCIEEM, Mott MacDonald senior ecologist, on 7 June 2016. All habitats within the BEE were identified and mapped in

compliance with the ‘Handbook for Phase 1 habitat survey: a technique for environmental audit’ (Joint Nature Conservation Committee, 2010). Dominant plant species were noted, as were any protected, uncommon or invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

1.3.12 An assessment was also undertaken of the likely presence or absence of protected and notable animal species within the Zol of the BEE. This was based on the known distribution of species, habitat suitability and/or direct evidence such as field signs or observations. The methodologies and assessment criteria used were based on current published guidance where available.

1.3.13 The area surveyed is identified in the Preliminary Ecological Appraisal (ES Volume 2 Technical Appendix T2).

Protected species surveys- bats

1.3.14 The suitability of roosting habitats and commuting and foraging habitats was initially assessed as part of the Preliminary Ecological Appraisal (ES Volume 2 Technical Appendix T2) with buildings, trees and other habitats assessed as having negligible, low, moderate or high potential for roosting bats as recommended in the *Bat Surveys: Good Practice Guidelines 3rd Edition* (Collins, 2016). The criteria for assessing the potential of the habitats to support bats are outlined in Table 1.2.

Table 1.2: Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the site

Suitability	Description	
	Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or large numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain potential roost features (PRF)s but with none seen from the ground or features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as hedgerow with gaps or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.

Suitability	Description	
	Roosting habitats	Commuting and foraging habitats
	unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection conditions and surrounding habitat.	<p>Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valley, streams, hedgerows, lines of trees and woodland edge.</p> <p>High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland.</p> <p>Site is close to and connected to known roosts.</p>

Source: Bat Surveys – Good Practice Guidelines – 3rd Edition (Collins, 2016).

Preliminary roost assessment - buildings

- 1.3.15 The survey followed good practice guidelines as set out in the Bat Mitigation Guidelines (Mitchell-Jones, 2004) and Bat Surveys: Good Practice Guidelines 3rd Edition (Collins, 2016). All of the buildings within the BEE were surveyed externally to determine their potential to support roosting bats. This was undertaken in the field initially on 13 March 2015 and additionally on 7 June 2016 by Tom Oliver CEnv MCIEEM, Mott MacDonald senior ecologist and licensed bat worker (Natural England Bat Class Licence WML-CL18, Registration Number: 2015-10885-CLS-CLS).
- 1.3.16 The preliminary roost assessment of the buildings involved an external inspection which involved a systematic search of the exterior of the buildings to identify potential or actual bat access points and roosting places such as:
- behind peeling paintwork or lifted rendering;
 - hanging tiles;
 - weatherboarding;
 - eaves;
 - soffit boxes;
 - fascias;
 - lead flashing;
 - gaps under felt;
 - under tiles/slates;
 - in existing bat boxes; and
 - gaps in brickwork or stonework which may allow access to cavity- or rubble-filled walls.

- 1.3.17 The preliminary roost assessment of the buildings included locating evidence of use by bats, such as:
- bat droppings (size and shape of droppings grouped into small, medium or large to signify type of bat that may be present);
 - feeding remains (bats often eat the bodies and leave the wings of invertebrate prey including moths, butterflies and larger flies such as lace wings);
 - fur-oil staining;
 - scratch marks;
 - urine splashes; and
 - bat specimens, live or dead.

- 1.3.18 The buildings were examined using direct observation, binoculars, endoscopes, ladders and a high power torch, where necessary, to enable closer inspection of suitable features.

Preliminary ground level roost assessment – trees

- 1.3.19 All trees within and immediately adjacent to the BEE were surveyed for evidence of, or potential for, roosting bats by looking for PRFs that bats could use. Features of trees commonly used by bats for roosting and shelter include:
- woodpecker holes;
 - rot holes;
 - hazard beams;
 - other vertical or horizontal cracks and splits (such as frost-cracks) in stems or branches
 - partially detached platey bark;
 - knot holes arising from naturally shed branches, or branches previously pruned back to the branch collar;
 - man-made holes (e.g. cavities that have developed from flush cuts) or cavities created by branches tearing out from parent stems;
 - cankers (caused by localised bark death) in which cavities have developed;
 - other hollows or cavities, including butt-rots;
 - double-leaders forming compression forks with included bark and potential cavities;
 - gaps between overlapping stems or branches;
 - partially detached ivy with stem diameters in excess of 50mm; and
 - bat, bird or dormouse boxes.
- 1.3.20 Field signs that may indicate use of trees by bats include:
- bat droppings in, around or below a PRF;
 - odour emanating from a PRF;
 - audible squeaking at dusk or in warm weather; and
 - staining below the PRF.

Bat activity survey

- 1.3.21 Bat activity across the BEE route was assessed through a bat activity survey completed between May and August 2016, the full methodology for which can be found the Bat Activity Survey Report (ES Volume 2 Technical Appendix T3).
- 1.3.22 All bat surveys broadly followed good practice guidelines as set out in *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd Edition) (Collins, 2016), with surveys completed monthly from May to August
- 1.3.23 The bat activity surveys covered the entire BEE route and immediately surrounding areas, with all three surveys initially starting outside Ladbrooke House on Bordesley Street, as this is the location of the historic bat roost. After completing an emergence survey of Ladbrooke House the survey then focused on observing any other bat activity along the BEE route. These surveys comprised walking transects using manual bat detectors (Batlogger M full spectrum bat detector).
- 1.3.24 The manual survey technique is used to ascertain the variety of species using the area and give an indication of their spatial distribution across a transect. The surveys were weather and temperature dependent as inclement weather does not provide the optimum conditions for these species. Surveys were not undertaken during heavy rain or when dusk temperatures dropped below 10°C.
- 1.3.25 The manual transect surveys were undertaken in the field in 2016 by Mott MacDonald senior ecologist Tom Oliver CEnv MCIEEM and licensed bat worker (Natural England Bat Class Licence WML-CL18, Registration Number: 2015-10885-CLS-CLS) and Mott MacDonald graduate ecologist Jeff Grant GradCIEEM.
- 1.3.26 Batlogger M full spectrum bat detectors were used during the manual transect surveys. These surveys encompassed:
- one survey per month, up to August, following instruction in May 2016;
 - regular stops were made at listening and recording points for 3 minutes and then bat activity was recorded continuously between points; and
 - surveyors recorded echolocation of passing bats and noted their flight paths (commuting routes and foraging locations) where possible. Calls of sufficient clarity and which were of an adequate length allowed the surveyor to identify the bat species (or family in the case of the more difficult *Myotis* species).
- 1.3.27 This survey effort is commensurate with the minimum recommended survey effort required for a site with low habitat quality. Each of the surveys was undertaken at dusk and the timings were in line with good practice as shown in Table 1.3.

Table 1.3: Recommended bat activity survey timings

Survey Objective	Dusk survey	Dawn survey
Bat Activity away from roost (e.g. transects, all species)	START: ¼ hour before sunset LENGTH: 2-3 hours	LENGTH: 2-3 hours FINISH: sunrise

Source: Collins, 2016

Assessment criteria

Scope of the assessment

- 1.3.28 The assessment of the effects follows the CIEEM guidelines (CIEEM, 2016). These guidelines have been recently issued, and came into effect on the 3 January 2016, and build on the original guidelines published in 2006 and are widely used nationally for the production of EclAs.
- 1.3.29 The starting point of this assessment of effects is to determine which features should be subject to detailed assessment. Ecological receptors to be subject to more detailed assessment should be a) of sufficient value that impacts upon them may be significant (in terms of legislation or policy); and b) potentially vulnerable to significant impacts arising from the development. A summary of the key points from the guidance is given below.

Determining importance

- 1.3.30 The EclA should demonstrate how a proposal will comply with statutory requirements and policy objectives for biodiversity. European, national and local governments and specialist organisations have identified a large number of sites, habitats and species that provide the key focus for biodiversity conservation in the UK and Ireland, supported by policy and legislation.
- 1.3.31 Ecologists may identify ecological features that are not included in lists of important sites or features, but considered important on the basis of expert judgment e.g. because of their local rarity or because they enable effective conservation of other important features. For example, an area of low quality grassland neighbouring a designated saltmarsh could be considered important to allow the saltmarsh to migrate landward as a consequence of sea level rise.
- 1.3.32 Ecological features might also be important because they play a key functional role in the landscape e.g. as 'stepping stones' for migratory species to allow them to move during their annual migration cycle, as well as for species to move between sites, to disperse populations to new locations, to forage, or move in response to climate change.
- 1.3.33 Various characteristics contribute to the importance of ecological features. Examples include:
- naturalness;

- animal or plant species, sub-species or varieties that are rare or uncommon, either internationally, nationally or more locally, including those that may be seasonally transient;
- ecosystems and their component parts, which provide the habitats required by important species, populations and/or assemblages;
- endemic species or locally distinct sub-populations of a species;
- habitat diversity;
- habitat connectivity and/or synergistic associations;
- habitats and species in decline;
- rich assemblages of plants and animals;
- large populations of species or concentrations of species considered uncommon or threatened in a wider context;
- plant communities (and their associated animals) that are considered to be typical of valued natural/semi-natural vegetation types, including examples of naturally species-poor communities; and
- species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change.

Geographic context

- 1.3.34 The CIEEM guidelines recommend that the value of the ecological receptors or features is determined based on a geographic context that includes the following levels:
- international and European;
 - national;
 - regional;
 - metropolitan, county, vice-county or other local authority-wide area; and
 - local.
- 1.3.35 Various approaches can be adopted for defining local importance, including assessment within a district or borough context or within a zone of influence. Consideration of impacts at all scales is important, and essential if objectives for no net loss of biodiversity and maintenance of healthy ecosystems are to be achieved.
- 1.3.36 The following paragraphs provide guidance on how to apply the concept of importance to assess the impacts of land use change on designated nature conservation sites, habitats, species and ecosystem services.

Designated sites

- 1.3.37 For designated sites, importance should reflect the geographical context of the designation. For example, Local Wildlife Sites may be designated according to criteria applied in a county or district context, and should be considered important accordingly.
- 1.3.38 Sites that are considered to be important in an international, European and national context and protected through international and national legislation are identified on the Joint Nature

Conservation Committee (UK) protected sites webpages. Where there is potential for a significant effect on such sites, the effect should be assessed in accordance with the respective statutory procedures and relevant government policy.

- 1.3.39 Where a site has multiple designations the EclA should consider the impacts of the development in respect of each of the features of each of the designations, carefully distinguishing between them in accordance with the respective legislation and policy. For example, where a site is both a SSSI and a Special Protection Area (SAC) or Special Area of Conservation (SPA) (in the UK), or SPA/SAC and a Natural Heritage Areas (in Ireland), the impacts need to be assessed in respect of each of the interests and for each of the qualifying features of the SSSI, SPA, SAC or NHA, carefully applying the differing legislative and policy requirements in respect of each designation, as may be necessary.
- 1.3.40 In both UK and Ireland it is also necessary to have regard to impacts on features for which a site may be notified, designated or classified in the future. In particular, in Ireland, proposed Natural Heritage Areas (pNHAs) that have not yet been formally designated should be considered important at the national scale. Proposed NHAs are legally protected from damage and competent authorities are obliged to take into account the ecological value of pNHAs in planning and licensing. European case law also requires member states to ensure adequate and appropriate levels of protection for sites that may, or should, be classified as SPAs or designated as SACs.
- 1.3.41 On the rare occasion that a site no longer appears to meet the criteria relating to its designation or proposed designation, discussions should be held with the designating authority to agree how the site should be treated. Where this relates to internationally/nationally designated sites, unless the site has been formally 'de-notified', the designation still applies and the relevant national government has legal and policy obligations to ensure that the site is restored to favourable condition. It must be demonstrated in the EclA that development will not be detrimental to the recovery of these sites.
- 1.3.42 Conversely, there may be occasions when an undesignated site is considered to meet published selection criteria for statutory or non-statutory site designation, or have substantive potential to meet them. This should be used to guide the assessment of importance and discussions should be held with the potential designating authority to agree how the site should be treated.

Habitats

- 1.3.43 Habitat types of European (International) conservation importance are listed on Annex I of the Habitats Directive. Habitat types that are considered priorities for conservation in England and Wales are listed as habitats of principal importance under sections 41/42 of the Natural Environment and Rural Communities Act 2006. Habitats considered of principal importance for biodiversity in Scotland (the Scottish Biodiversity List) are listed under Part 1 section 2(4) of the Nature Conservation (Scotland) Act 2004. *Valuing Nature - A Biodiversity Strategy for*

Northern Ireland to 2020 refers to priority habitats and this list is hosted on the Northern Ireland Environment Agency website as the 'biodiversity list for priority habitats'⁶⁴. Habitats protected at national level in Ireland are listed in Actions for Biodiversity – Ireland's National Biodiversity Plan 2011-2016 and under the Wildlife Acts, 1976 to 2012. Additional locally important habitats may be listed in local BAPs.

- 1.3.44 There may be cases where important habitat types are affected but they are currently in a degraded or unfavourable condition. Whilst the current baseline condition of a habitat may be sub-optimal, its potential value should be considered, including its possible contribution to conservation objectives. It is essential not to under-estimate the importance of habitats in sub-optimal condition where there is potential for restoration.

Species

- 1.3.45 Species of European (International) conservation importance are listed on Annexes II, IV and V of the Habitats Directive and Annex I of the Birds Directive. Species that are considered to be priorities for conservation in England and Wales are listed as species of principal importance under sections 41/42 of the Natural Environment and Rural Communities Act, 2006. Additional locally important species may be listed in local BAPs.
- 1.3.46 Deciding the importance of species populations should make use of existing criteria where available. For example there are established criteria for defining nationally and internationally important populations of waterfowl. The scale within which importance is determined could also relate to a particular population, e.g. the breeding population of common toads within a suite of ponds or an otter population within a catchment.
- 1.3.47 When determining the importance of a species population, contextual information about distribution and abundance is fundamental, including trends based on historical records. For example, a species could be considered particularly important if it is rare and its population is in decline.

Legally protected species

- 1.3.48 Specific species have legal protection under Annex IV of the EC Habitats Directive and the appropriate national regulations. In the UK other species are protected under Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended), the Wildlife and Environment (Northern Ireland) Act 2011) and the Nature Conservation (Scotland) Act 2004. In Ireland, species are protected under the Wildlife Acts 1976 to 2012, which includes the Flora (Protection) Order, 1999, and the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011).
- 1.3.49 Lists of legally protected species may require careful interpretation. For example, in England and Wales birds listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) have special legal protection during the breeding season in addition to the general protections

afforded to birds throughout the year. Caution should also be applied when referring to the lists of animal and plant species of Community interest in Annex II of the EC Habitats Directive lists and Annex 1 the EC Birds Directive⁷⁵. These species have no specific legal protection under these Annexes except insofar that SACs and SPAs may be designated because of the presence of these species and that they should be conserved on these sites as defined.

- 1.3.50 Where protected species are present and there is the potential for a breach of the legislation, those species should be considered as 'important' features. It will always be necessary for the EclA to determine whether there could be a breach of the legislation as a result of the project, and the scheme being assessed needs to be designed/ mitigated in such a way that the law will not be contravened.

Legally controlled species

- 1.3.51 Consideration should also be given to ensuring that land use changes do not result in contravention of laws relating to legally controlled plant and animal species⁷⁶ under Schedule 9 of the Wildlife and Countryside Act 1981 in Britain (e.g. Japanese knotweed, Himalayan balsam, giant hogweed), under the Wildlife (Northern Ireland) Order 1985 (as amended), under the Wildlife and Natural Environment (Scotland) Act 2011, under the Wildlife Acts 1976 to 2012 in Ireland, and under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011). See also Invasive Species Ireland (Ireland North & South). In addition, five plants (common ragwort, broad-leaved dock, curled dock, creeping thistle, spear thistle) are identified as injurious in the Weeds Act 1959 (as amended by The Ragwort Control Act 2003 (England and Wales)). The relevant agricultural weed control legislation for Ireland is the Noxious Weeds Act 1936, and weed species to which the Act applies have been added by ministerial orders. EclA should, where appropriate, identify how such species will be controlled. It is important to be aware that the new EU Regulation on invasive alien species came into force on 1 January 2015.

Impact Assessment

Introduction

- 1.3.52 The impact assessment process involves:
- identifying and characterising impacts;
 - incorporating measures to avoid and mitigate (reduce) these impacts;
 - assessing the significance of any residual effects after mitigation;
 - identifying appropriate compensation measures to offset significant residual effects; and
 - identifying opportunities for ecological enhancement.
- 1.3.53 In EclA it is only essential to assess and report likely significant effects.
- 1.3.54 Assessment of ecological impacts is required at the following stages:

- during initial scoping – to provide the basis for selecting ecological features within the zone(s) of influence that require systematic assessment;
 - during the evolution of the project – to identify the need for avoidance and mitigation and opportunities for enhancement; and
 - after mitigation strategies have been devised and their likely success considered – to assess residual effects and whether these are significant and require compensation.
- 1.3.55 The assessment should include potential impacts on each ecological feature determined as ‘important’ from all phases of the project, e.g. construction, operation and decommissioning. It should consider direct, indirect, secondary and cumulative impacts and whether the impacts and their effects are short, medium, long-term, permanent, temporary, reversible, irreversible, positive and/or negative.
- 1.3.56 The assessment of impacts takes into account the baseline conditions to describe:
- how the baseline conditions will change as a result of the project and associated activities; and
 - cumulative impacts of the proposal and those arising from other developments.
- 1.3.57 The significant effects must be assessed in the context of the predicted baseline conditions within the zone(s) of influence during the lifetime of the development). Information may be required from other specialists as impacts may relate to noise, air quality, hydrology, water quality etc. Liaison with other disciplines will enable more robust predictions for project-related bio-physical changes and assessment of their ecological implications. Cross-reference should be made to other assessments submitted with the proposal.

Predicting ecological impacts and effects

- 1.3.58 There could be any number of possible impacts on important ecological features arising from a development. However it is only necessary to describe in detail the effects that are likely to be significant. Impacts that are either unlikely to occur, or if they did occur are unlikely to be significant, can be scoped out. For transparency, justification for scoping out any ecological impact should be provided. If in doubt the potential impact should be assessed.

Characterising ecological effects

- 1.3.59 When describing ecological impacts reference should be made to the following characteristics:
- positive or negative;
 - extent;
 - magnitude;
 - duration;
 - timing;
 - frequency; and
 - reversibility.

1.3.60 The assessment only needs to describe those characteristics relevant to understanding the ecological effect and determining the significance. For example, timing of the removal of a hedgerow is unlikely to be of particular relevance to the assessment of the effect on hedgerows, although it may be relevant in assessing the effect on a species using the hedgerow, such as nesting birds. It should be noted, however, that the clearance of vegetation in Ireland (including hedgerows) is subject to restrictions under the Wildlife Acts 1976 to 2012.

Positive or negative

1.3.61 Positive and negative impacts/effects should be determined according to whether the change is in accordance with nature conservation objectives and policy:

- positive impact – a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. Positive impacts may also include halting or slowing an existing decline in the quality of the environment; and
- negative impact – a change which reduces the quality of the environment e.g. destruction of habitat, removal of species foraging habitat, habitat fragmentation, pollution

Extent

1.3.62 The extent is the spatial or geographical area over which the impact/effect may occur.

Magnitude

1.3.63 Magnitude refers to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.

Duration

1.3.64 Duration should be defined in relation to ecological characteristics (such as a species' lifecycle) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species.

1.3.65 The duration of an activity may differ from the duration of the resulting effect caused by the activity. For example, if short-term construction activities cause disturbance to birds during their breeding period, there may be long-term implications from failure to reproduce that season. Effects may be described as short, medium or long-term and permanent or temporary. Short, medium, long-term and temporary will need to be defined in months/years.

Frequency and timing

- 1.3.66 The number of times an activity occurs will influence the resulting effect. For example, a single person walking a dog will have very limited impact on nearby waders using wetland habitat, but numerous walkers will subject the waders to frequent disturbance and could affect feeding success, leading to displacement of the birds and knock-on effects on their ability to survive.
- 1.3.67 The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. bird nesting season.

Reversibility

- 1.3.68 An irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation.
- 1.3.69 In some cases, the same activity can cause both reversible and irreversible effects. For example placement of a temporary access through an ancient wood could cause the loss of food and shelter for common woodland birds that may be reversible, but the compaction of fragile woodland soils and damage to ancient woodland ground flora along the access route is effectively irreversible.

Assessment of cumulative impacts and effects

- 1.3.70 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects are particularly important in EclA as many ecological features are already exposed to background levels of threat or pressure and may be close to critical thresholds where further impact could cause irreversible decline. Effects can also make habitats and species more vulnerable or sensitive to change.

Assessment of effects

- 1.3.71 After assessing the impacts of the proposal all attempts should be made to avoid and mitigate ecological impacts. Once measures to avoid and mitigate ecological impacts have been finalised, assessment of the residual impacts should be undertaken to determine the significance of their effects on ecological features. Any residual impacts that will result in effects that are significant, and proposed compensatory measures, will be the factors considered against ecological objectives (legislation and policy) in determining the outcome of the application.

Significant effects

- 1.3.72 Significance is a concept related to the weight that should be attached to effects when decisions are made. For the purpose of EclA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features'

or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local.

- 1.3.73 A significant effect is simply an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. A significant effect is a positive or negative ecological effect that should be given weight in judging whether to authorise a project: it can influence whether permission is given or refused and, if given, whether the effect is important enough to warrant conditions, restrictions or further requirements such as monitoring. A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant negative ecological effects can be lawfully permitted following EIA procedures as long as the mitigation hierarchy has been applied effectively as part of the decision-making process.

Determining ecologically significant effects

Designated/defined sites and ecosystems

- 1.3.74 Significant effects encompass impacts on structure and function of defined sites and ecosystems. The following need to be determined:
- for designated sites – is the project and associated activities likely to undermine the site’s conservation objectives, or positively or negatively affect the conservation status of species or habitats for which the site is designated, or may it have positive or negative effects on the condition of the site or its interest/qualifying features? or
 - for ecosystems – is the project likely to result in a change in ecosystem structure and function?
- 1.3.75 Consideration should be given to whether:
- any processes or key characteristics will be removed or changed;
 - there will be an effect on the nature, extent, structure and function of component habitats; or
 - there is an effect on the average population size and viability of component species.
- 1.3.76 Consideration of functions and processes acting outside the formal boundary of a designated site is required, particularly where a site falls within a wider ecosystem e.g. wetland sites. Predictions should always consider wider ecosystem processes.
- 1.3.77 Many ecosystems have a degree of resilience to perturbation that allows them to tolerate some biophysical change. Ecological effects should be considered in the light of any information available or reasonably obtainable about the capacity of ecosystems to accommodate change.

Habitats and species

- 1.3.78 Consideration of conservation status is important for evaluating the effects of impacts on individual habitats and species and assessing their significance:
- habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area; and
 - species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.
- 1.3.79 In many cases (e.g. for species and habitats of principal importance for biodiversity), there may be an existing statement of the conservation status of a feature and objectives and targets against which the effect can be judged. However, not all species or habitats will be described in this way and the conservation status of each feature being assessed may need to be agreed with the relevant SNCO and set out in the EclA. The conservation status of a habitat or species will vary depending on the geographical frame of reference.
- 1.3.80 When assessing potential effects on conservation status, the known or likely background trends and variations in status should be taken into account. The level of ecological resilience or likely level of ecological conditions that would allow the population of a species or area of habitat to continue to exist at a given level, or continue to increase along an existing trend or reduce a decreasing trend, should also be estimated.

Summary of valued ecological receptors for further consideration

- 1.3.81 As recommended in the current EclA guidance (CIEEM, 2016), the assessment in this ES chapter only considers those ecological receptors that are both of sufficient conservation value and vulnerable to significant impacts arising from the BEE. These are termed Valued Ecological Receptors (VERs).
- 1.3.82 The EclA guidelines mean it is generally considered inappropriate to attempt to address all ecological receptors and likely impacts in EIAs; instead, the focus should be on ecological receptors and ecological features which are covered by the relevant nature conservation and environmental legislation and policies. The EIA Directive and resulting UK Regulations only require the assessment of significant effects.

Valued Ecological Receptors (VERs)

- 1.3.83 Based on the surveys undertaken to date and the habitats found on and immediately adjacent to the BEE a number of sensitive receptors have been considered. Table 1.4 provides a list of sensitive ecological receptors which will be considered in the following assessment.

Table 1.3: Ecological receptors included in the assessment

Ecological Receptor	Valuation	Comments	Considered further in the assessment?
Designated Sites			
National Statutory Sites	National	No national statutory sites are present within 2km of the BEE.	No
Local Statutory Sites	County	No local statutory sites are present within 2km of the BEE	No
Non-statutory Sites	Local	Four Sites of Local Importance for Nature Conservation (SLINC) are present within 1km of the BEE. As the BEE is almost exclusively routed through existing hardstanding roads and footways, no direct impacts are anticipated due to the distances from the sites to the BEE route.	No
Habitats			
Amenity Grassland	Within zone of influence only	Not considered a scarce habitat resource within the wider area.	No
Buildings	Within zone of influence only	All the buildings within the BEE were assessed as having low potential for roosting bats and breeding birds	No
Fenceline	Within zone of influence only	No ecological value	No
Hardstanding	Within zone of influence only	No ecological value	No
Introduced Shrub	Within zone of influence only	Not considered a scarce habitat resource within the wider area.	No
Running Water	Within zone of influence only	Channelised river makes for limited ecological value. No aquatic flora or macro fauna is present.	No
Scattered Scrub	Within zone of influence only	Not considered a scarce habitat resource within the wider area.	No
Scattered Trees	Within zone of influence only	Although some trees are mature and are therefore likely to support a wider range of invertebrates their true value is more from an aesthetic landscape perspective, see Chapter 13: Townscape and Visual Amenity in ES Volume 1: Main Statement.	No
Species			
Badgers	Within zone of influence only	No suitable habitat for badgers within the Zol.	No
Bats	Local	The Zol has no suitable habitat for roosting bats and very limited potential as a foraging resource,	No

Ecological Receptor	Valuation	Comments	Considered further in the assessment?
		with only one piece of bat activity observed. Due to the openness and heavy disturbance of the BEE large amounts of activity have not been discovered, see ES Volume 2 Technical Appendix T3: Bat Activity Report.	
Birds	Local	There is a small amount suitable habitat for breeding birds within the scrub and introduced shrub although this very limited and these habitats are abundant across the wider area.	No
Great Crested Newts	Local	The BEE offers no habitat for great crested newts and amphibians.	No
Reptiles	Local	The BEE has no potential to support reptiles.	No

1.3.84 Based on the information collected as part of the baseline reports to support this EclA, namely the Preliminary Ecological Appraisal (ES Volume 2 Technical Appendix T2) and Bat Activity Survey Report (ES Volume 2 Technical Appendix T3), all ecological receptors described within the baseline above are excluded from further consideration in this assessment. This is because their conservation value is not sufficiently high, according to those criteria already described, for them to be considered as VERs, or because it is considered unlikely that they will be significantly impacted by the construction or operation of the BEE.

1.3.85 It is, therefore, not necessary to formulate specific mitigation measures or to assess the impacts on these ecological receptors in the subsequent sections of this report. However, generic mitigation associated with the BEE may serve to benefit these ecological receptors in general terms.

1.4 Baseline Conditions

Introduction

1.4.1 This section presents the baseline conditions identified within the ZoI at the time of surveying. It includes descriptions of the key and protected ecological receptors in the relevant ZoI. More detailed descriptions, survey data and maps are presented in the Preliminary Ecological Appraisal (PEA) and Bat Activity Survey ES Volume 2 Technical Appendices T2 and T3 respectively.

Surveys

Designated sites for nature conservation

- 1.4.2 For further information on designated sites and locations please see the Preliminary Ecological Appraisal in ES Volume 2 Technical Appendix T2; however, there are no statutory designated sites within 1km of the BEE and only four non-statutory sites within 1km, although no impacts are anticipated on these sites due to their distances from the BEE and intervening habitats.

Table 1.4: Summary of non-statutory designated sites within Zol

Site name	Designation	Proximity to the BEE alignment	Description	Conservation value
Digbeth Branch Canal	SLINC	100m east	Canal linking the nearby Birmingham and Fazeley Canal with the Grand Union Canal. Limited aquatic vegetation with a corridor of scrub, tall herb and neutral grassland	Important at a Local level
Birmingham and Fazeley Canal	SLINC	400m north west	Canal with relatively diverse aquatic flora and narrow strips of associated corridor vegetation comprising scrub, tall herb and neutral grassland	Important at a Local level
Grand Union Canal	SLINC	450m north east	Canal with sparse aquatic flora and surrounding habitats of wooded cuttings, grass verges and tall herb	Important at a Local level
Worcester and Birmingham Canal	SLINC	1km west	Canal with grass verges and short embankments. The site connects a number of wildlife sites in the area.	Important at a Local level

Source: EcoRecord, 2016

Habitats

- 1.4.3 The BEE is located in an urban area, dominated by hardstanding and built structures. Table 1.5 provides a summary of habitats which were identified within and adjacent to the Scheme Boundary. Locations of all habitats are shown on the Phase 1 Habitat Map in Appendix D of the Preliminary Ecological Appraisal in ES Volume 2 Technical Appendix T2 with associated Target Notes and photographs in Appendix E and F of the Preliminary Ecological Appraisal, respectively ().

Table 1.5: Habitats within the Zol

Habitat	Comments	Conservation value
Amenity grassland	Well maintained, short sward grassland	Negligible

Habitat	Comments	Conservation value
Buildings	Four buildings lie directly within the site boundary, both modern and in good physical condition, they lack features for bats and nesting birds as well as being netted	Negligible
Hardstanding	Roads, footpaths and pedestrian areas	Negligible
Introduced shrub	Ornamental and evergreen planting	Low
Parkland Scatter Trees	Mixture of species of broad-leaved trees, varying in age	Low
Running Water	Culverted section of the River Rea passes underneath the BEE alignment	Low
Scattered Scrub	Small area of brownfield land with self-set bramble and buddleja	Low

Protected and notable species

1.4.4 A summary of the potential for protected species present within the ZOI for the BEE is provided in Table 1.6, along with the nature conservation value for each species. Full details of protected species potential are provided in the Preliminary Ecological Appraisal and Bat Activity Survey (ES Volume 2 Technical Appendices T2 and T3).

Table 1.6: Protected and notable species

Species	Protection/Conservation Status	Description	Conservation Value
Amphibians	S41 and LBAP	No suitable breeding habitats within or immediately adjacent to the BEE and very limited terrestrial habitat.	N/A
Great Crested Newts	Wildlife and Countryside Act 1981, S41 and LBAP	No suitable breeding habitats within or immediately adjacent to the BEE (within 500m) and very limited terrestrial habitat. No historical records of great crested newt within 2km.	N/A
Breeding birds	Wildlife and Countryside Act 1981, S41 and LBAP	The BEE provides limited nesting habitat for a small number of common urban bird species. No evidence of or suitable habitat for Schedule 1 species was recorded.	Low
Bats	Wildlife and Countryside Act 1981, S41 and LBAP	No roosts of bats were recorded within the ZOI. Bat activity within the Scheme Boundary was very limited, with only one incidence over 8 hours of survey time.	Low
Badger	Protection of Badgers Act 1990	No evidence of badger activity was noted within the Scheme Boundary and it is highly unsuitable habitat	N/A

Species	Protection/Conservation Status	Description	Conservation Value
Reptiles	Wildlife and Countryside Act 1981, S41 and LBAP	The urban nature of the study area and isolation of it offers no habitat suitable for reptiles and none were recorded.	N/A

1.5 Prediction of Effects

Introduction

1.5.1 This Section presents the assessment of potential impacts upon ecology and nature conservation and the predicted effects which are anticipated to occur as a result of the implementation of the BEE. The assessment takes into account the embedded mitigation measures which have been incorporated into the BEE as part of the iterative design process.

1.5.2 The mitigation measures are deemed to form an integral part of the BEE and are therefore documented within the Chapter 2: BEE Description section in ES Volume 1: Main Statement.

Works with potential to affect ecology and nature conservation

1.5.3 All ecological receptors described within the baseline above are excluded from further consideration in this assessment. This is because their conservation value is not sufficiently high, according to those criteria already described, for them to be considered as VERs, or because it is considered unlikely that they will be significantly impacted by the construction or operation of the BEE due to absence or low numbers within the ZoI.

1.5.4 Due to absence of statutory nature conservation sites within the ZoI; distances between the BEE and the non-statutory nature conservation sites; low or negligible conservation value of the habitats within the BEE; and the low or negligible conservation value of those habitats to support protected or notable species, there are no likely significant effects during the construction or operational phases of the BEE.