8. Ecology and Biodiversity

**Potential/Predicted Significant Environmental Effects**

### Site Preparation and Construction Phase
- Potential effects on the M1 Woodland SINC;
- Potential death or injury of individual badgers;
- Potential effects on roosting bats through destruction or disturbance of roosts;
- Potential effects on roosting bats through an increase in artificial lighting;
- Potential effects on foraging and commuting bats through loss of habitat;
- Potential effects on foraging and commuting bats through an increase in artificial lighting;
- Potential effects on breeding birds through loss of habitat; and,
- Potential death or injury of reptiles through habitat removal.

### Operational Phase
- Potential effects on statutory sites through increased recreational pressure;
- Potential effects on the M1 Woodland SINC through increased recreational pressure; and,
- Potential effects on roosting, foraging and commuting bats through an increase in artificial lighting and noise.

### Introduction

8.1 This Chapter reports the assessment of the effect of the Proposed Development on the identified ecological and nature conservation features of the Site and the surrounding area based upon desk study consultations and field surveys. In particular, it considers the potential effects of the Proposed Development on habitats and protected and notable species.

8.2 The assessment has been undertaken in accordance with the Institute of Ecology and Environmental Management (IEEM) Guidelines for Ecological Impact Assessment in...
the United Kingdom (2006) (IEEM, 2006) (Ref. 8.1). These guidelines are used nationally for the production of ecological impact assessments.

8.3 The existing ecological potential of the Site, and the surrounding area, has been reviewed. Additionally, the character and nature conservation value of the habitats and the potential for protected and notable species has been assessed. Potential effects to flora and fauna from the Proposed Development are outlined. Where appropriate, measures to prevent, minimise or control those effects or enhance the nature conservation value of the ecological features are presented. Residual effects following the adoption of those measures are also presented.

8.4 This Chapter (and its associated Appendices) is not intended to be read as a standalone assessment and reference should be made to the front end of this ES (Chapters 1 - 5) as well as Chapter 18 Cumulative Effects and Interaction of Factors.

Methodology

Scope of the assessment

8.5 The assessment of the effects follows the IEEM guidelines (Ref. 8.1). These guidelines are widely used nationally for the production of ecological impact assessments.

8.6 The starting point of any 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.

8.7 Due to the timing of this application, and the seasonal constraints associated with a number of protected species surveys, a number of additional surveys are still to be undertaken; however, a robust precautionary principle has been adopted for this assessment.

Determining Value

8.8 The IEEM guidelines recommend that the value of the ecological receptors or features is determined based on a geographic frame of reference that includes the following levels:

- International;
Valuing Habitats

8.9 In accordance with the IEEM guidelines, the value of habitats is measured against published selection criteria where available. Reference is also made to UK and local (Nottinghamshire) Habitat Action Plans (HAPs), although as the guidelines note, the presence of a HAP reflects the fact that the habitat is in a sub-optimal state (and hence that action is required) and does not necessarily imply any specific level of protection for the habitat. In accordance with the guidance, features may be assigned greater value if there is a reasonable chance that they can be restored to a higher value in the future.

Valuing Species

8.10 In accordance with the IEEM guidelines, in assigning a level of value to a species, it is necessary to consider its distribution and status, including a consideration of trends based on available historical records. Rarity is an important consideration because of its relationship with threat and vulnerability although since some species are inherently rare, it is necessary to look at rarity in the context of status. A species that is rare and declining should be assigned a higher level of importance than one that is rare but known to be stable.

8.11 Reference is also made to UK and Local (Nottinghamshire) Biodiversity Action Plans (BAPs) although the presence of a BAP-listed species reflects the fact that the population is in a sub-optimal state and does not necessarily imply any specific level of importance.

1 The Ecological Zone of Influence (EZoI) is the area or resources that may be affected by the biophysical changes caused by activities associated with a project. The EZoI will be different for different ecological receptors. For example, most habitats outside the Site boundary are unlikely to be affected by the Development Proposals, whereas a riparian species, such as otter could be affected even at considerable distances downstream of the Site, e.g. due to construction impacts on streams running through the site.
Predicting and Characterising Ecological Impacts

8.12 In accordance with IEEM guidelines, when describing impacts, reference is made to the following where applicable:

- Confidence in predictions (levels of certainty that an impact will occur as predicted), based on the following four point scale:
  - Certain/near certain (≥95% probability)
  - Probable (50-95% probability)
  - Unlikely (5-50% probability)
  - Extremely unlikely (≤5% probability)

- Magnitude – if an impact is deemed to be significant then its magnitude, in quantitative terms, should be assessed;

- Extent – the area over which an impact occurs;

- Duration – the time for which an impact is expected to last

- Reversibility – a permanent impact is one that is irreversible within a reasonable timescale or for which there is no reasonable chance of action being taken to reverse it; a temporary impact is one from which a spontaneous recovery is possible;

- Timing and frequency – whether impacts occur during critical life stages or seasons.

Direct and Indirect Ecological Impacts

8.13 Both direct and indirect impacts are considered within this assessment. A direct impact is directly attributable to a defined action such as the physical loss of a habitat or the immediate mortality of an individual of a particular species. Indirect impacts are attributable to an action, but which effect ecological resources through effects on an intermediary ecosystem, process or receptor. An example of an indirect effect would be the change in a plant community following changes to local hydrological conditions which are directly attributable to a development.

Approaches for Determining Significant Effects

8.14 In accordance with the IEEM guidelines, a significant effect, in ecological terms, is defined as an impact (either adverse or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area, including cumulative effects.
8.15 In accordance with the IEEM guidelines, the approach adopted here aims to determine an effect to be significant or not on a basis of a discussion of the factors which characterise it, i.e. the ecological significance of the effect is not dependent on the value of the feature in question.

8.16 As noted above, effects are only assessed in detail for receptors of sufficient detail that effects upon them may be significant (in terms of legislation or policy). In this assessment effects are assessed in detail only for receptors of at least local value or subject to some form of legal protection.

8.17 Any significant effects remaining after mitigation (the residual effects), together with an assessment of the likelihood of success in the mitigation, are the factors to be considered against legislation, policy and development control in determining the application.

8.18 The effects of the Proposed Development on the ecological receptor in question will be discussed in terms of the following:

- Description of feature and ecological value;
- Proposed activity;
- Effects of unmitigated impact;
- Effect on integrity or conservation status and confidence level;
- Mitigation and enhancement; and
- Residual effects and confidence level.

8.19 An EIA Scoping Report was submitted to Broxtowe District Council in October 2012 (Appendix 1.3). This Chapter provides an update on the scope of the assessment and re-iterates the evidence base for insignificant effects.

8.20 Effects to the following receptors have been ruled out of the assessment due to either their absence from the Site or the low value of their habitats.

- Arable farmland;
- Individual semi-mature trees;
- Semi-improved grassland;
- Great crested newts (Triturus cristatus); and,
- Rare and notable terrestrial and aquatic invertebrates.
Consultation undertaken to date

8.21 Table 8.1 provides a summary of the consultation activities undertaken in support of the preparation of this Chapter.

Table 8.1. Summary of consultation undertaken to date

<table>
<thead>
<tr>
<th>Body/organisation</th>
<th>Individual/s at body/organisation</th>
<th>Meeting dates and other forms of consultation</th>
<th>Summary of outcome of discussions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nottinghamshire Wildlife Trust</td>
<td>Ben Driver</td>
<td>Telephone conversation on the 08-02-2013</td>
<td>Ben highlighted the need for further surveys for bats, reptiles and breeding birds and agreed that no other surveys were required.</td>
</tr>
</tbody>
</table>

Method of baseline data collection

Desk study

8.22 A desk study was carried out in accordance with guidance provided in IEEM’s ‘Guidelines for Preliminary Ecological Appraisal’ (IEEM, 2012) (Ref. 8.2). The purpose of the desk study was to identify notable or protected habitats or species potentially effected by the Proposed Development.

8.23 The search radius of the desk study varied according to the type of ecological receptor. A search radius of 10km was used to identify the presence of nature conservation sites with a European or international designation. A radius of 5km was used to search for bat records following recommendations made in English Nature’s Bat Mitigation Guidelines (Mitchell-Jones, 2004) (Ref. 8.3). A search radius of 2km was used to search for the presence of all other nature conservation sites with a statutory or non-statutory designation and records of all other protected and notable species.

8.24 The following organisations and databases were consulted as part of the desk study:

- Multi Agency Geographical Information for the Countryside (MAGIC) website for statutory conservation sites;
8.25 Further details of the desk study methodology can be found in the Preliminary Ecological Appraisal of the Site (Appendix 8.1).

Site visit

8.26 A preliminary ecological appraisal of the Site (Appendix 8.1) and the immediately surrounding area was conducted on the 30 October 2012 by Tom Oliver, of WSP Environmental Ltd, Senior Ecologist and licensed bat worker (Natural England Licence Number 20123657).

8.27 This report detailed the broad habitats present following the Joint Nature Conservation Committee (JNCC) Phase 1 habitat survey methodology (Ref. 8.4); and provided an assessment of those habitats for their potential to support protected or notable species following IEEM guidance.

8.28 The potential presence of protected and rare or notable species was considered. Due to the types of habitats present, the following further survey work has been undertaken.

- **Badgers.** A full walkover of the Site, including a 50 m buffer around the Site, was undertaken as part of the preliminary ecological appraisal (Appendix 8.1). The survey included checking for signs of badger presence following the methodology outlined by Harris et al. 1989 (Ref. 8.5).

- **Bats.** On the 30 October 2012 all individual mature trees on Site were initially visually inspected from the ground for their potential to support roosting bats. All of the surveys were commensurate with the Bat Conservation Trust Bat Surveys: Good Practice Guidelines 2nd Edition (Hundt, 2012) (Ref. 8.6). The suitability of the mature trees within Site to support roosting bats varies. There are five Category 1 trees, all of which will be further assessed through detailed visual inspections and dusk emergence and pre-dawn re-entry surveys where necessary. The remaining individual trees are classified as either Category 2 or 3 and do not required further assessment.
- **Hedgerows.** All hedgerows on the Site were surveyed on 30 October 2012 to determine if they are “important” hedgerows under ‘The Hedgerow Regulations’ 1997 (Ref. 8.7). To determine the status of the hedgerows features such as: the number of woody species; the presence of ditches; mature trees; and the presence or potential presence of protected species were recorded. The survey also determined if any of the hedgerows are species rich, as this type of hedgerow is a priority habitat within the UKBAP.

**Sensitive Receptors**

8.29 **Table 8.2** provides a list of the sensitive ecological receptors which will be considered in the following assessment.

<table>
<thead>
<tr>
<th>Ecological Receptor</th>
<th>Valuation</th>
<th>Comments</th>
<th>Considered in the assessment?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sellers Wood SSSI / LNR</td>
<td>Regional</td>
<td>Woodland containing a diverse botanical species assemblage as well a number of ponds with a diverse aquatic fauna.</td>
<td>Yes</td>
</tr>
<tr>
<td>M1 Woodland SINC</td>
<td>District</td>
<td>Site of Importance of Nature Conservation completely contained within the Proposed Development. Diverse botanical assemblage and potential for protected species.</td>
<td>Yes</td>
</tr>
<tr>
<td>Arable</td>
<td>Within zone of influence only</td>
<td>Not considered a scarce habitat resource within the wider area.</td>
<td>No</td>
</tr>
<tr>
<td>Improved grassland</td>
<td>Within zone of influence only</td>
<td>Not considered a scarce habitat resource within the wider area.</td>
<td>No</td>
</tr>
<tr>
<td>Poor semi-improved grassland</td>
<td>Within zone of influence only</td>
<td>Not considered a scarce habitat resource within the wider area.</td>
<td>No</td>
</tr>
<tr>
<td>Hedgerows</td>
<td>Within zone of influence only</td>
<td>The hedgerows present appreciably enrich the habitat resource of the local area but none are species-rich, important under the Hedgerow</td>
<td>No</td>
</tr>
<tr>
<td>Ecological Receptor</td>
<td>Valuation</td>
<td>Comments</td>
<td>Considered in the assessment?</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Parkland scattered trees – broad-leaved</td>
<td>District</td>
<td>Regulations or classified as a UK BAP priority habitat. At present five individual Category 1 trees – trees with potential to support bats (Hundt, 2012) have been identified. Further surveys are required to establish the presence or likely absence of roosting bats within these trees and assess the impact of the development on these trees; however the trees are only capable of supporting low numbers of bats.</td>
<td>Yes</td>
</tr>
<tr>
<td>Badgers</td>
<td>Local</td>
<td>Widespread and common throughout Nottinghamshire. Their presence appreciably enriches the biodiversity resource within the local context.</td>
<td>Yes</td>
</tr>
<tr>
<td>Roosting bats</td>
<td>District</td>
<td>At present five individual Category 1 trees – trees with potential to support bats (Hundt, 2012) have been identified. Further surveys are required to establish the presence or likely absence of roosting bats in these trees and assess the impact of the development on these trees.</td>
<td>Yes</td>
</tr>
<tr>
<td>Foraging and commuting bats</td>
<td>District</td>
<td>The Site also possesses some areas good quality foraging habitat and due to its size is likely to support a numbers of foraging bats, particularly along the hedgerows and around the woodland SINC</td>
<td>Yes</td>
</tr>
<tr>
<td>Nesting birds</td>
<td>Local</td>
<td>The Site has good habitat for breeding birds with a variety of suitable nesting and foraging areas including woodland, hedgerows,</td>
<td>Yes</td>
</tr>
<tr>
<td>Ecological Receptor</td>
<td>Valuation</td>
<td>Comments</td>
<td>Considered in the assessment?</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------</td>
<td>----------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Wintering birds</td>
<td>Within zone of influence only</td>
<td>The Site mainly consists of arable fields, common in context to the wider landscape, and which offer limited potential for wintering birds. Bird scaring methods were observed during the initial visit to Site, making it unlikely that wintering birds would choose to settle on the Site.</td>
<td>No</td>
</tr>
<tr>
<td>Reptiles</td>
<td>District</td>
<td>The Site possesses a good balance of foraging, basking and hibernation habitats for reptiles. Large piles of manure and a collapsed outbuilding could potentially acting as artificial refugia for hibernating reptiles.</td>
<td>Yes</td>
</tr>
<tr>
<td>Invertebrates</td>
<td>Within zone of influence only</td>
<td>The habitats found on Site are frequently occurring across the wider landscape, with the vast majority of the Site unsuitable for anything other than common invertebrate species</td>
<td>No</td>
</tr>
<tr>
<td>Great crested newts</td>
<td>Negligible</td>
<td>There are no water bodies on the Site and the terrestrial habitat present is sub-optimal for great crested newts. Two water bodies are located south of the Site but Nottingham Business Park presents a significant barrier to dispersal north and more easily available and better quality terrestrial habitat is available to the south.</td>
<td>No</td>
</tr>
</tbody>
</table>
Legislation / Policy Framework

8.30 This section sets out the legislation and policy context for the ecological assessment. A summary of the relevant policy and legislation is set out below at the international, national, regional and local levels.

Legislation

8.31 Applicable legislation is summarised below. More detailed explanations of these international, european and national obligations and objectives are included in Appendix 8.2.

- Convention on Wetlands of International Importance 1971 (the Ramsar Convention) [Ref. 8.9];
- Convention on the Conservation of Migratory Species of Wild Animal 1979 (the Bonn Convention) [Ref. 8.10];
- Convention on the Conservation of European Wildlife and Natural Habitats 1979 (the Bern Convention) [Ref. 8.11];
- Convention on Biological Diversity 1992 (one of the 3 Rio Conventions arising from the 1992 Earth Summit) (Biodiversity Convention) [Ref. 8.12];
- Wildlife and Countryside Act 1981, as amended (WCA) [Ref. 8.16];
- Protection of Badgers Act 1992 [Ref. 8.17];
- The Hedgerows Regulations 1997 [Ref. 8.7];
- Natural Environment and Rural Communities Act 2006 (the NERC act) [Ref. 8.18];
- Countryside and Rights of Way Act 2000 (CRoW) [Ref. 8.19]; and,
- The Conservation of Habitats and Species Regulations 2010 (as amended) (the Habitats Regulations) [Ref. 8.20].
**Statutorily protected sites**

8.32 Local Nature Reserves (LNRs); National Nature Reserves (NNRs); Sites of Special Scientific Interest (SSSIs); Special Areas of Conservation (SAC); and Special Protection Areas (SPA) contain examples of some of the most important natural and semi-natural ecosystems in the United Kingdom (UK) and Europe and receive strict protection under both UK and European legislation. In addition, Ramsar sites receive International protection under the Ramsar Convention (Ref. 8.9).

**Non-statutory sites**

8.33 Sites of Importance for Nature Conservation (SINCs) receive protection through the Broxtowe Borough Council Local Plan. SINCs are the most important non-statutory wildlife sites in Nottinghamshire, containing valuable habitats such as ancient woodland and species-rich grassland. Many provide a refuge for rare and threatened plants and animals and form a major part of the strategy to conserve the biological richness of Nottinghamshire as a whole.

**Protected species**

8.34 Under European and UK legislation, a number of species and their habitats are strictly protected from damage, disturbance and destruction etc. Certain species such as some reptiles and birds receive partial protection under UK legislation, e.g. protection from killing/injuring only or protection at certain times of the year only.

**Invasive weeds**

8.35 The WCA 1981 (as amended) (Ref. 8.16) makes it an offence to plant or otherwise cause to grow in the wild species listed on Schedule 9 of the act, including Japanese knotweed (*Fallopia japonica*) and giant hogweed (*Heracleum mantegazzianum*).

**Planning Policy**

**National Planning Policy Framework (NPPF)**

8.36 Chapter 11 of the NPPF ‘Conserving and enhancing the natural environment’ (Ref. 8.21) 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;
recognise the wider benefits of ecosystem services;

- explore and encourage opportunities to incorporate biodiversity in and around developments;

- refuse planning permission if significant harm cannot be avoided, adequately mitigated, or, as a last resort, compensated for;

- not normally lead to a consent where proposed development on land within or outside a Site of Special Scientific Interest (SSSI) would likely to have an adverse effect on the SSSI (either individually or in combination with other developments), and

- 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.

8.37 The Government Circular 06/2005 (Ref. 8.22), which is referred to in the NPPF, provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system. This guidance remains relevant and applicable.

**Local planning policy**

8.38 The following policies within Broxtowe Borough Council Local Plan (Ref. 8.23) are relevant to the assessment:

- **E8** – Planning permission will not be granted for development in the Green Belt except where it constitutes appropriate development.

- **E16** - Planning permission will not be granted for development on or adjoining local nature reserves or Sites of Importance for Nature Conservation, which would damage or devalue their interest, unless there are special reasons which outweigh the recognised value of the sites. Where it is accepted that there are special reasons for development which outweigh the local value of the site, the applicant shall minimise harm to the site’s features. Compensation for the loss of the site’s features of interest will be required, secured by planning conditions or negotiated planning obligations. Wherever opportunities arise, appropriate measures should be taken to enable the improvement or creation of Sites of Importance for Nature Conservation.
• **E19** – On development sites of 0.5 hectares or more, wherever opportunities arise, the Council will seek, as appropriate, the enhancement of existing nature conservation resources and the provision of new resources.

• **E24** – Development that would adversely affect important trees and hedgerows will not be permitted.

**Biodiversity Strategies and Action Plans**

**The UK Biodiversity Action Plan (UKBAP)**

8.39 The UKBAP (UKBAP Steering Group, 1994) ([Ref. 8.24](#)) was first produced in 1994, sets priorities for the conservation of habitats and species in the UK and includes habitat action plans (HAPs) and species action plans (SAPs), many of which are for habitats and species that are rare, declining or under threat. Since the creation of the UKBAP, devolution led to England, Wales, Scotland and Ireland to produce their own country biodiversity groups and strategies. However, in 2007 a shared vision for UK biodiversity conservation was adopted by the devolved administrations and the UK governments, and is described in 'Conserving Biodiversity – the UK Approach' (DEFRA, 2007) ([Ref. 8.25](#)). This document sets out future shared priorities for UK Conservation, and the responsibilities at UK and country levels.

**East Midlands Biodiversity Strategy**

8.40 Published in 2006, ‘Putting Wildlife Back on the Map: A Biodiversity Strategy for the East Midlands’ was produced by East Midlands Biodiversity Partnership (EMBP) in 2006 ([Ref. 8.26](#)) and endorsed by the East Midlands Regional Assembly as a ‘daughter strategy’ to the Regional Environment Strategy. This links the Biodiversity Strategy for England (EBS), the UK Biodiversity Action Plan (UKBAP) and Local Biodiversity Action Plans (LBAPs) at regional level.

8.41 The aim of this strategy is to promote the creation of the policy, strategic and communications framework within which conservation and enhancement of biodiversity can best be achieved.

**Nottinghamshire Local Biodiversity Action Plan**

8.42 The ultimate goal of the Nottinghamshire Local Biodiversity Action Plan (Nottingham Biodiversity Action Group, 1998) ([Ref. 8.27](#)) is to conserve and enhance the County’s unique variety of wild species and natural habitats, and hence to contribute to the conservation of both UK and global biodiversity.
Nature Conservation Strategy for the Borough of Broxtowe

8.43 The first nature conservation strategy for Broxtowe entitled “Nature Conservation Strategy for the Borough of Broxtowe” August 2001 [Ref. 8.28] defined its aim as:

“To conserve and enhance the Boroughs natural heritage for the benefit of people and wildlife”.

8.44 This remains valid today and is the overarching aim which drives all elements of this strategy.

8.45 An additional element that now has to be taken into consideration involves managing our natural environment to allow wildlife to cope with climate change. Enhancing existing natural areas and linking them to other natural areas, where possible, to create corridors of habitat or wildlife corridors will aid movement and help wildlife cope with changing climatic conditions.

Existing Baseline Conditions

8.46 This section describes the baseline ecological conditions of the Site and the surrounding area established during the preliminary ecological appraisal.

Statutory and Non-Statutory Nature Conservation Sites

8.47 Sellers Wood, jointly designated as a Site of Special Scientific Interest (SSSI) and Local Nature Reserve (LNR), is located approximately 1.6km north of the Site. The SSSI element of the woodland is designated because it is a fine example of broad-leaved semi-natural woodland containing a range of broad-leaved trees including ash (Fraxinus excelsior), wych elm (Ulmus glabra), hazel (Corylus avellana), rowan (Sorbus aucuparia) and oak (Quercus robur) and is of regional importance. As a whole (SSSI and LNR) the site also boasts many plants such as giant bellflower (Campanula latifolia), early purple orchid (Orchis mascula) and yellow archangel (Galeobdolon luteum) and lots of hoverflies have been recorded there including the Triglyphus primus which is nationally rare. Smooth newt (Lissotriton vulgaris), common frog (Rana temporaria) and common toad (Bufo bufo) can also be found in the many ponds within Sellers Wood.

8.48 While there are twenty four non-statutory nature conservation sites within 2km of the Site (see Appendix 8.1) the vast majority of these sites will be unaffected by the Proposed Development as the zone of influence of the likely impacts during
construction and operation of the Proposed Development is likely to be limited to the
curtilage of the Site or very close to the Site. However, one non-statutory nature
conservation site: M1 Woodland Site of Importance for Nature Conservation (SINC) is
completely contained within the Proposed Development. The reasons for its
designation are unknown but is most likely due to the age and botanical diversity of
the woodland.

Habitats present on Site

8.49 The Site is dominated by three large arable fields and a field of improved grassland
interspersed with smaller fields of improved, semi-improved and amenity grassland
(see Figure 2 in Appendix 8.1). The edges of these fields are defined by a range of
boundary features including species-poor intact hedges and hedges with trees or
species-poor defunct hedges. Other linear features (e.g. fences, a dry ditch and an
earth bank) either define the edges of the fields or are associated with other linear
features. A block of broad-leaved semi-natural woodland (the M1 Woodland SINC) is
present with the Site as well as a number of scattered trees.

8.50 The majority of the Site is heavily managed given its predominantly arable land use
which not only limits the types of species that will be found on Site, but also the
carrying capacity of the Site. The woodland, hedgerows and poor semi-improved
grassland are the best potential habitats for a range of species and given their spatial
layout provide relatively good connectivity across the Site.

8.51 The following habitats (with corresponding JNCC codes) were recorded on Site
during the preliminary ecological appraisal. Habitats are listed in code order and not
order of importance. Further information for each habitat type is provided in
Appendix 8.1.

- Broad-leaved semi-natural woodland (A1.1.1);
- Parkland scattered trees – broad-leaved (A3.1);
- Improved grassland (B4);
- Poor semi-improved grassland (B6);
- Arable (J1.1); and,
- Species-poor hedgerow (J2.1.2).
Protected or notable species

**Badgers**

8.52 The desk study revealed eleven records of badger within 2km of the Site from the past ten years, the most recent of which was from 2010. See Appendix 8.1, for further details.

8.53 A survey for badgers was incorporated into the extended Phase 1 habitat survey. A single sign of badgers was recorded on the Site. A latrine was recorded in an area located close to the southern boundary (Target Note (TN) 2 on *Figure 2, Appendix 8.1*). See Appendix 8.1, for further details.

8.54 There was no evidence of badger setts on the Site at the time of survey with minimal signs of badger presence. The Site is likely to be a part of the territory of a badger clan and used from time to time for foraging (within the Site) and to access foraging areas off-site. The Site is predominantly arable land which is generally considered to be low value badger foraging habitat. Areas of semi-improved grassland will have some value for foraging badgers as will the woodland.

**Bats**

8.55 The desk study revealed only two confirmed species of bat within 5km of the Site from the past 10 years, these were common pipistrelle (*Pipistrellus pipistrellus*) and noctule (*Nyctalus noctula*). The nearest recorded roost is for common pipistrelle which was recorded approximately 0.6km from the Site. While records older than 10 years are not disregarded, less emphasis is placed on their importance due to the length of time that has elapsed since last being recorded. See *Appendix 8.1*, for further details.

8.56 An initial visual assessment of all individual trees on the Site was made during the extended Phase 1 habitat survey. This assessment identified five trees as showing potential to support roosting bats due to the presence of cracks, holes or crevices with the tree structure and were classified as Category 1 trees (Hundt, 2012). During the extended Phase 1 habitat survey a visual assessment of the trees within the M1 Woodland SINC was also undertaken with a further number of trees identified as having potential to support roosting bats. See *Appendix 8.1*, for further details.

**Birds**

8.57 The desk study revealed records for 15 notable bird species within 2km of the Site. Schedule 1 species recorded within 2km include: kingfisher (*Alauda arvensis*), honey-
buzzard (*Pernis apivorus*), peregrine (*Falco peregrinus*) and hobby (*Falco subbuteo*). Species listed on the UK BAP and section 41 of the NERC Act 2006 include: skylark (*Alauda arvensis*), linnet (*Carduelis cannabina*), bullfinch (*Pyrrhula pyrrhula*), yellowhammer (*Emberiza citronella*) and house sparrow (*Passer domesticus*). A total of 8 red list and 7 amber list species have been recorded within the 2km search area within the last 10 years (Eaton et al. 2009; Ref. 8.8). Refer to Appendix 8.1 for further details.

8.58 In addition to the bird species recorded within the desk study, grey partridge (*Perdix perdix*) was noted as being on the Site during the initial site walkover.

**Reptiles**

8.59 The desk study failed to highlight a single reptile within 2km of the Site; however, an absence of records does not mean that reptiles are absent from the Site. Suitable areas of habitat for reptiles exist within and immediately adjacent to the Site boundary including basking, foraging and hibernation habitat.

**Future Baseline**

8.60 The current baseline environment is unlikely to change without the Proposed Development as, in the absence of development, the majority of Site will continue to be managed as agricultural land. The current management regime of the Site includes arable crop rotation in three of the fields with the fourth field utilised for grazing pasture; with regular cutting/maintenance of the hedgerow boundaries.

8.61 The exception to this is the M1 Woodland SINC which is not currently actively managed. If left alone the trees would continue to grow and potentially provide better habitat for bats through the creation of cracks and crevices which come with decay and disease. The ground flora is likely to become overgrown with bramble, reducing the floral diversity, the main reason for the SINC’s designation, but also increasing cover for other species such as breeding birds and badger.

8.62 If such regimes were to continue, the Site’s capacity to support a broader range of species, particularly birds and bats, is likely to slowly increase as the hedgerows and woodland continue to mature and develop. This means that a net increase in species population numbers would be expected should the Proposed Development not go ahead within the foreseeable future.
Predicted Impacts

Site Preparation and Construction

Potential effects on the M1 Woodland SINC

8.63 The Site includes an area of woodland designated locally as a Site of Importance for Nature Conservation or Local Wildlife Site. Little information is available for the reasons for its designation other than that it is a notable, broad-leaved woodland adjacent to the motorway.

8.64 The proposed development includes the provision of an informal pedestrian access through the SINC woodland. The provision of a track through established woodland has the potential to result in the loss or damage to established trees although an existing track does exist which could be reused.

8.65 A Coal Authority report presented within the Desk Study and Terrain Assessment (Appendix 13.1) for the Site indicates that there are twenty two mine entrances within, or within 20m, of the Site boundary six of which are located within the SINC woodland. For the purposes of this assessment, it has been assumed that no mitigation (i.e. investigation and capping) for the mineshafts will be undertaken within the SINC and if, at a later date, mitigation should be required further assessment will be needed.

8.66 As the SINC lies completely inside the Proposed Development boundary it is considered unlikely that any in-combination effects will exist with any of the surrounding committed developments.

8.67 The potential removal of a number of trees from within the SINC associated with the creation of the pedestrian/cycleway access has the potential to damage the root systems of trees within the woodland will result in a Certain, Irreversible, Direct, Long-term, Negative effect at a Local scale on a receptor of up to District value prior to the implementation of mitigation measures. However, as outlined above, there is an existing track in the woodland which could be reused.

Potential death or injury of individual badgers

8.68 At present there are no badger setts on the Site, or the immediate area around the Site (up to 50m from the Site); however, it appears that they do use the Site in some capacity, most likely as a foraging resource, due to the presence of a latrine on the Site. Surveys of the Site for the presence of badgers will be undertaken throughout
2013 to monitor the Site for evidence of use by badgers, with the assessment updated accordingly.

8.69 Based on the evidence obtained during the preliminary ecological appraisal, and for the purposes of this assessment, it has been assumed that badgers do not inhabit the Site, or the immediate areas surrounding the Site, but use it as a foraging resource.

8.70 In terms of cumulative impacts from committed developments both the Eden Park and the Oxylane Village developments are located far enough away from the Site not to have any in-combination effects on the welfare of badgers, with the M1 motorway acting as a major barrier to dispersal. The new hotel development on Mornington Crescent, and the expansion to Nottingham Business Park, will require mitigation measures for the potential presence of badgers and after mitigation are unlikely to have any significant effects.

8.71 The construction activities have the potential to kill or harm badgers using the Site, but will not disturb or directly effect setts, and as a result the construction activities will have a Certain, Irreversible, Direct, Short-term Negative effect at a Local on a species of Local value prior to the implementation of mitigation measures.

**Potential effects on roosting bats through destruction or disturbance of roosts**

8.72 Five trees on the Site have been identified as Category 1 trees – potential to support roosting bats (Hundt, 2012) (Ref. 8.6.), two of which will definitely be lost as part of the development but all five will be disturbed through the development process.

8.73 A detailed visual inspection of all five trees will take place in 2013, followed by dusk emergence / pre-dawn re-entry surveys where required to assess if, and where necessary how, the trees are used by roosting bats.

8.74 From the initial visual assessment conducted in October 2012, and in the absence of up to date information, for the purposes of this assessment it has been assumed that these trees support low numbers of common species of roosting bats. Removal of these trees will therefore result in the destruction of a number of bat roosts of low conservation status (Mitchell-Jones, 2004 (Ref. 8.3)) and could also result in the injury or death of individual bats.

8.75 Based on the information available on the four committed developments, they contain little suitable habitat for roosting bats and their development won’t have a significant effect on the amount of habitat available for roosting bats in the area.
8.76 The removal of the five Category 1 trees will result in a **Certain, Irreversible, Direct, Long-term Negative** effect at a **District** scale prior to the implementation of mitigation measures.

**Potential effects on roosting bats through an increase in artificial lighting and noise**

8.77 There is the potential for negative effects through disturbance to roosting bats resulting from increases in artificial lighting and light spill in the vicinity of the roosts, along with increases in noise. Illuminating a bat roost creates disturbance and may cause the bats to desert the roost. Light falling on a roost access point will at least delay bats from emerging and this shortens the amount of time available to them for foraging. As the main peak of nocturnal insect abundance occurs at and soon after dusk, a delay in emergence means this vital time for feeding is missed. The effects of noise on bats is less well documented to that of increased artificial lighting; however prolonged periods of increased noise, especially during night time hours is likely to disturb bats and their foraging activities.

8.78 Additionally, many night flying insects are attracted to light, especially those that emit an ultra-violet component. Whilst studies have shown that some species of bats, such as pipistrelle, noctule and Leisler’s swarm around such lights feeding on the insects attracted to the light, slower flying species such as the myotid and long-eared bats avoid lights. As night flying insects from further afield are attracted to lit areas, there can be a reduction in the numbers of insects in habitats adjacent to these lit areas. This can further reduce the ability of light avoiding bats such as brown long-eared bats to feed in habitats adjacent to these lit areas. Therefore, an increase in artificial lighting levels at the Site can reduce feeding opportunities for light avoiding bats in the surrounding area.

8.79 Artificial lighting is also thought to increase the chances of bats being preyed upon by avian predators such as kestrels (*Falco tinnunculus*) and owls hunting at night under the artificial light.

8.80 From the initial visual assessment conducted in October 2012, and based on the information available, for the purposes of this assessment it has been assumed that the five Category 1 trees currently support low numbers of common species of roosting bats. Based on the current parameter designs, two of the five trees will be directly lost through development, with the other three likely to be retained.
8.81 Increases in artificial lighting and noise levels in the vicinity of five trees assumed to be bat roosts will result in a Certain, Reversible, Direct, Short-term Negative effect at the up to District scale prior to the implementation of mitigation measures.

Potential effects on foraging and commuting bats through loss of habitat

8.82 Due to the scale of the Site it is likely to be used by foraging and commuting bats and bat activity surveys will be undertaken in 2013 to assess the levels of bat activity across the Site. Based on the habitat present on the Site, local records for bats and the Site’s location within the wider landscape, a realistic worst case scenario has assumed that the Site is used by moderate numbers of pipistrelle, noctule and myotid bats for commuting and foraging.

8.83 The construction phase of development will remove all hedgerows and grassland, and the majority of mature trees, from the central areas of the Site.

8.84 Of the committed developments, one has been considered as having potential in-combination effects with the Proposed Development in terms of foraging potential for bats.

8.85 Eden Park and the Oxylane Village developments located west of the M1 motorway will not have a significant effect on foraging bats at the Site, Local or District level as they have limited suitable habitat for foraging bats. Above the District level the effect of the development is considered not significant as the loss of habitat is small in scale compared to the wider county. The small hotel development to the east of the Site contains no suitable habitat for foraging bats. As a result the cumulative effects from these developments are not considered to be a factor.

8.86 The one scheme considered (expansion to Nottingham Business Park) has been considered to increase the level of in-combination loss of foraging bat habitat at the Local level. From the details made available the scheme will remove foraging habitat from the Local area immediately south of the Site, replacing it with buildings and associated car parks. No details on the types and numbers of bat species using this Site or the details of any mitigation measures are available for this development but given the loss of suitable foraging habitat it is likely to have an effect at the Local level.

8.87 The Proposed Development will remove the hedgerows and other vegetation from the Site which will result in a Probable, Reversible, Direct, Long-term, Negative effect
Potential effects on foraging and commuting bats through an increase in artificial lighting and noise

8.88 Bat activity surveys will be undertaken in 2013 to determine the current baseline with regards to commuting and foraging bats and the results of these surveys will be used to update this ES chapter as an addendum.

8.89 There is the potential for any security lighting during the construction phase to act as a barrier to movement across the Site. This is likely to effect certain species of bat (e.g. brown long eared, myotis bats) both directly by acting as a barrier to movement across the Site and indirectly, by attracting phototropic insects from surrounding dark areas thus reducing the amount of available prey. Conversely, certain species of bat (e.g. pipistrelle, noctule and Leisler’s bats) are likely to benefit as they are less sensitive to light and will actively forage on the enhanced prey resource that is found around street lights. On site generators are also likely to disrupt feeding patterns and commuting routes through an increase in artificial noise.

8.90 Based on the habitat present on the Site, local records for bats and the Site’s location within the wider landscape, a realistic worst case scenario has assumed that the Site is used by moderate numbers of pipistrelle, noctule and myotid bats for commuting and foraging. Following activity surveys later this year this assessment will be updated in the form of an ES Addendum.

8.91 The timing of the development is unlikely to coincide with the other committed developments, and it has been assumed that none of these schemes will have a 24 hour lighting policy. It is therefore considered unlikely that any in-combination effects will exist as a result.

8.92 Increases in artificial lighting and noise levels in the vicinity of the woodland and hedgerows will result in a Probable, Reversible, Direct, Short-term Negative effect at the Local scale on a receptor of District value prior to the implementation of mitigation measures. Following activity surveys this assessment will be updated in the form of an ES Addendum.

Potential effects on breeding birds through loss of habitat

8.93 The hedgerows, woodland and grassland on the Site provide habitat for a range of nesting bird species. The preliminary ecological appraisal identified a number of
common bird species including long-tailed tit \textit{(Aegithalos caudatus)}, goldfinch \textit{(Carduelis carduelis)} and chaffinch \textit{(Fringilla coelebs)} but also some less common amber and red listed birds including bullfinch \textit{(Pyrrhula pyrrhula)}, grey wagtail \textit{(Motacilla cinerea)} and grey partridge \textit{(Perdix perdix)}.

Further breeding bird surveys will be undertaken in spring and early summer 2013 to fully establish the diversity of bird species present, and breeding, on the Site. Until these surveys provide an accurate reflection of the current species assemblage on the Site, and for the purposes of this assessment, it has been assumed that there is a mix of common and some rarer, woodland and agricultural, bird species.

The construction phase of the development will result in the loss of all the hedgerows on the Site, some mature trees and rough grassland. This will result in a loss of nesting sites which will reduce the overall carrying capacity of the Site for birds, reducing the number of young birds recruited into the local population each year and will increase competition for nesting sites. There will also be a loss of foraging resources; although, as only a small percentage of the total resource available is being lost, this is not seen as a significant effect.

If works are scheduled in the bird nesting season (typically March to August inclusive) the removal of vegetation has the potential to destroy nests, eggs and dependent young of a number of red list bird species.

Three of the nearby committed developments, Eden Park, Oxylane Village and the Nottingham Business expansion, offer similar habitats to that found on Site in terms of breeding birds. However, the habitats within these sites are not uncommon with the wider landscape, and as a result the schemes are not likely represent a significant in-combination effect on breeding bird assemblages.

The loss of nesting habitat suitable for nesting birds will result in a \textit{Probable, Reversible, Direct, Short-term Negative} effect at the Site scale on a receptor of Local value prior to the implementation of mitigation measures. Following the completion of breeding bird surveys this assessment will be updated in the form of an ES Addendum.

Potential death or injury of reptiles through habitat removal

Surveys to determine the presence or likely absence of reptiles within the Site will be undertaken in 2013; the results of which will be used to update this ES chapter as an addendum. The habitat present within the Site appears to be capable of supporting reptiles, but due to the absence of recent records of reptiles within the wider area, it
has been assumed that a low population of reptiles including slow-worm (*Anguis fragilis*), grass snake (*Natrix natrix*) and common lizard (*Lacerta vivipara*) is present.

8.100 Slow worm and grass snake are protected from injury or death under the Wildlife and Countryside Act 1981 (as amended). During the construction phase removal of suitable reptile habitat within the Site, supporting slow worm and grass snake, has the potential to breach this legislation through the death or injury of individual reptiles.

8.101 Eden Park and the Oxylane Village developments located west of the M1 motorway will not have a significant effect on conservation of reptiles within the locality as the M1 motorway to the west of the Site is likely to act as a major barrier to dispersal for all species of reptiles, and as a result any population of reptiles found on the Site is likely to be distinct from those west of the the motorway. Above the District level the effect of the development is considered not significant as the loss of habitat is small in scale compared to the wider county. The small hotel development to the east of the Site contains no suitable habitat for reptiles. As a result the cumulative effects from these developments are not considered to be a factor.

8.102 The expansion to Nottingham Business Park will result in loss of suitable reptile habitat in close proximity to the Site, potentially affecting reptiles, leading to an in-combination effect at the Local level.

8.103 Therefore the effect to slow worms and grass snake through removal of suitable habitat will be a **Probable, Direct, Irreversible, Direct, Long-term Negative** effect at a **Local** scale on a receptor of District value.

**Operation**

**Potential affects on statutory sites through increased recreational pressure**

8.104 Seller’s Wood SSSI and LNR are located 1.4 km north of the Proposed Development. The development of a new residential area in close proximity to the SSSI and LNR is likely to increase the recreational use of the woodland as a whole. The Proposed Development is likely to increase the population within the Broxtowe District by approximately 1,400 based, on an occupancy rate of 2.5 people per home (555 homes are planned), which represents approximately 1% of the current population within the district.

8.105 Considering that the Proposed Development is likely to only increase the population of the district by approximately 1% and the realistic numbers of visitors to Seller’s wood
the potential increase in recreational pressures is not likely to have an effect at any level.

**Potential effects non-statutory sites through increased recreational pressure**

8.106 At present the M1 Woodland SINC is not currently publicly accessible as it is bordered by the M1 motorway on one side and privately owned farmland on the others. The Proposed Development replaces the existing agricultural fields with predominantly residential properties, which will result in increased recreational use of the SINC. As well as creating a pedestrian / cycleway through/adjoining the SINC the woodland is likely to be utilised by dog owners and walkers who will effect the ground flora within the woodland.

8.107 A Coal Authority report presented within the Desk Study and Terrain Assessment (Appendix 13.1) for the Site indicates that there are twenty two mine entrances within, or within 20m, of the Site boundary six of which are located within the SINC woodland. Public access to the SINC woodland will need to be considered in terms of risk to the public from mineshaft collapse. It is possible that access may need to be prevented to this area of the Site post-construction. However, based on the parameter plans provided to date it has been assumed that public access is available to the woodland.

8.108 The increase in recreational pressure will result in a **Probable, Direct, Irreversible, Long-term Negative** effect at a **Local** scale on a receptor of up to District value.

**Potential effects on roosting, foraging and commuting bats through an increase in artificial lighting and noise**

8.109 An increase in artificial lighting in the vicinity of bat roosts within the Site; and hedgerows and woodland retained within the masterplan may disturb roosting or/and foraging and commuting habitat for bats.

8.110 It is understood that a comprehensive lighting design for the Proposed Development will be prepared at the detailed design stage and therefore not available for consideration at this time. However, based on previous experience of similar schemes, and the parameter plans provided to date, lighting is expected to be limited to minimal street lighting associated with access routes, security lights on houses, the primary school, neighbourhood centre and retirement village. The artificial lighting to be installed on the Site will be predominantly street lighting along
the access routes which will be designed to comply with guidance contained within BS 5489-1: 2003 and BS EN 13201-2:2003.

8.111 Increases in artificial lighting in the vicinity of bat roosts and the retained hedgerows and woodland will result in a **Probable, Reversible, Direct Long-term Negative** effect at up to a **District** scale prior to the implementation of mitigation measures.

**Mitigation and Enhancement Measures**

**Site Preparation and Construction**

**Potential effects on the M1 Woodland SINC**

8.112 It is proposed that the pedestrian/cycleway will correspond with an existing farmers access trackway, and no impact on existing tree (either roots nor canopies) is anticipated at the current time. Further detailed design will be required prior to construction and a specific Arboricultural Impact Assessment undertaken as required.

8.113 Additionally, a Construction Environmental Management Plan (CEMP) will be produced to provide detailed methodologies for working practices which will be adopted in order to minimise negative effects on the valuable ecological receptors within the Site during the construction works. This document will be kept on site and an Environmental Champion will be nominated who will have responsibility for ensuring that the CEMP is implemented. The CEMP will be introduced at the start of the works through the provision of a toolbox talk to the Environmental Champion, and all Site workers will be given an overview of the ecologically sensitive receptors as part of their site induction. The CEMP will detail tree protection methods, which will include:

- Temporary fencing will be installed 1m beyond the drip line of large trees close to works, to protect the root system of the tree being damaged by excavation or by compaction of the soil from the passage of heavy equipment over the roots;

- If this is impractical (e.g. due to adjacent hedges) or if it would unacceptably restrict the construction footprint, the maximum possible area will be fenced; and,

- To further mitigate against the compaction of soil over the roots, which restricts the diffusion of oxygen through the soil and therefore asphyxiating the roots, bog-matting and/or sand padding may be used to spread the weight of machinery over the roots.
**Potential death or injury of individual badgers through habitat removal**

8.114 The presence of badgers on Site will be monitored through regular surveys prior to commencement of works on the Site. If badgers are found to be on the Site following any of these surveys then a Natural England Badger Development Licence may be required before works can begin.

8.115 If no badgers are found on the Site or within 50m prior to commencement of on site activities it is still recommended that during the development of the Site, any open trenches or hazardous areas, including machinery, should be securely fenced off to prevent badgers (or other wildlife) from injuring themselves as they are a mobile and wide ranging species and could potentially enter the Site at any time.

**Potential effects on roosting bats through destruction or disturbance of roosts**

8.116 Based on the current parameter designs, two of the five trees will be directly lost through development, with the other three likely to be retained. Further surveys, yet to be completed, will confirm the presence or likely absence of bats from these trees at which point appropriate mitigation can be outlined.

8.117 It should be noted that as the status of roosting bats within the trees on the Site is not known, specific mitigation measures cannot be recommended at this stage. However, if roosting bats are found within the trees, detailed mitigation measures will be provided within the Method Statement which will be necessary to accompany the European Protected Species Licence (EPSL) application to allow disturbance of or destruction to any bat roosts.

8.118 Timing of the works would be dependent upon the status of any bat roosts present. Typically to ensure that bats are not harmed during construction works, removal of vegetation would be scheduled to avoid the bat breeding (typically May to August inclusive) and hibernation (typically mid October to mid March inclusive) periods. A Method Statement would be produced to cover the removal of the trees, which would likely include ‘soft felling’ of the tree in the presence of a licenced bat ecologist.

8.119 Assuming that the Site is being used by low numbers of common species of bats, an appropriate number of bat boxes will be installed at different heights and aspects on retained mature trees within the Site.
8.120 These will be a mixture of Schwegler bat boxes to provide roosting opportunities for a variety of bat species including myotis, pipistrelle and noctule. This mitigation will be updated following the undertaking of surveys to an appropriate level.

**Potential effects on roosting bats through an increase in artificial lighting and noise**

8.121 The CEMP will specify the locations of the contractor’s compound, material storage areas and temporary security/health and safety lighting required throughout the works to ensure that the siting of such features considers the surrounding sensitive receptors and that any disturbance from lighting is reduced to a minimum.

8.122 Lighting provided during this phase will be limited to certain areas of the EZol at any one time and its use will be short term in nature. This will mainly comprise lighting for health and safety and security in the vicinity of plant, temporary buildings etc. Artificial night time lighting will be directional and pointed away from any roosts.

8.123 The use of overnight generators will be restricted to essential use only to reduce noise disturbance to roosting bats.

**Potential effects on foraging and commuting bats through loss of habitat**

8.124 Based on the current parameter plans, all of the internal hedgerows will be removed to make space for the development. Mitigation is likely to include the retention of perimeter hedgerows and the woodland within the Site, including filling of any gaps present within the hedgerows and the widening of the hedgerows wherever possible, particularly along the southern boundary. However, it should be noted that as the species, numbers and locations of foraging bats across the Site is not known, specific mitigation measures cannot be recommended at this stage.

8.125 New tree and hedgerow planting will be provided in the open space areas within the western portion of the Site to mitigate for the loss of the internal hedgerows and encourage a wider diversity of invertebrates on which bats feed. Any ornamental areas will incorporate ‘bat friendly’ plants, which also encourage a diverse range of invertebrates on which bats feed.

8.126 Additionally, the provision of sustainable urban drainage systems (SUDS) within the Site is also likely to provide a greater diversity of habitats on the Site encouraging invertebrates which will provide a foraging resource for bats.
Potential effects on foraging and commuting bats through an increase in artificial lighting and noise

8.127 As detailed above, the CEMP will specify the locations of the contractor’s compound, material storage areas and temporary security/health and safety lighting required throughout the works to ensure that the siting of such features considers the surrounding sensitive receptors and that any disturbance from lighting is reduced to a minimum.

8.128 Where practicable the contractor will ensure that any artificial lighting within 20m of any hedgerow or the woodland within the Site will be directional and will be pointed away from the hedgerow or woodland to ensure that bats can continue to forage within and commute through the Site during the construction phase of the development.

8.129 The use of overnight generators will be restricted to essential use only to reduce disturbance to foraging and commuting bats.

Potential effects on breeding birds through loss of habitat

8.130 Wherever possible no vegetation will be cleared during the bird nesting season (March-August inclusive) in order to avoid disturbing nesting birds or damaging nests or eggs, which are protected under the Wildlife and Countryside 1981 (as amended). If there is a requirement to clear vegetation between March and August then a walkover survey of all effected areas will be undertaken by a suitably experienced ecologist to check for signs of nests. If any active nests are found, then they will be protected from disturbance with a minimum of a 5m buffer zone in vegetation until the young have fledged naturally. If nests are found in buildings then the demolition will be delayed until the young have fledged.

8.131 The creation of new hedgerows will mitigate for the loss of some of the nesting habitat currently on site. The woodland will also be supplemented with new planting and managed to provide a greater diversity of bird nesting habitat through diversification of the age classes of trees and provision of understory shrub layers which are lacking in the woodland areas at the present time.

8.132 To increase the number of nesting sites available an appropriate number of bird boxes will be installed on mature trees within the Site, mainly within the areas of woodland. In addition to this, and where practicable, a combination of nest boxes
for house sparrow, house martin, swift and swallow will be installed on newly erected buildings within the Site to provide opportunities for these declining species.

**Potential death or injury of reptiles through habitat removal**

8.133 At present approximately 10% of the Site is suitable habitat for reptiles and the first stage of mitigation will be to retain as much of this as possible within the Site. Where this isn’t possible, and to prevent injury or death to reptiles, a process of displacement will take place when reptiles are active (April to September inclusive).

8.134 All areas of suitable habitat (scrub, ruderal vegetation, long grassland and woodland) will be removed in a phased cut. A direct search will be made by experienced ecologists, with any reptiles recorded being captured and removed to areas of suitable habitat within the Site being retained. If they are not captured the area will be clearly marked and excluded from the cut until the ecologist is satisfied that the reptiles have moved. Initially a cut will be made a minimum of 150 millimetres (mm) above ground level with appropriate strimmer/brush cutter equipment. The personnel will then return to the start of the area and perform a second cut to approximately 50mm above ground level. A final check will be made by the ecologist before a final cut reducing vegetation to ground level and if possible creating bare earth.

8.135 Any rubble piles or other refuge features will be dismantled carefully under the supervision of the ecologist.

8.136 The areas cut down to bare earth will be maintained as such by regularly removing any vegetation regrowth to prevent reptiles recolonising the Site during construction.

8.137 Following the Proposed Development, approximately 11.35 ha (35%) of of the Site will be used as Public Open Space (POS) of which 8.15ha will be non-structured. Approximately half of this land will be managed with reptiles in mind which will include leaving areas of grassland and scrub to grow out to provide suitable habitat for these species. Two hibernacula will be created in these areas during the construction phase, which will be created specifically with slow worm, grass snake and common lizard in mind, including a log and rubble base covered with soil and vegetation mix. This will provide long-term habitat for hibernating reptiles.
Operation

**Potential effects on the M1 Woodland SINC through increased recreational pressure**

8.138 It is proposed that following construction the ownership of the M1 Woodland SINC will be transferred to a Third Party (likely to be either the Local Authority or an appropriate local interest group) and, as such, they will be responsible for future management of the SINC.

8.139 It is recommended that initially a full botanical survey of the SINC will be undertaken which will then be used to inform a management plan of the SINC. This survey should be undertaken in spring/summer 2013 and highlight areas where any management is most urgently required and if any rides and glades could be created to encourage plant and invertebrate diversity.

8.140 It is anticipated that following the initial botanical survey and development of the management plan any further management would be dealt with at Reserved Matters stage. However, it is likely to be that the practical management of the woodland is handed over to Nottingham Wildlife Trust or a similar conservation organisation.

**Potential effects on roosting, foraging and commuting bats through an increase in artificial lighting and noise**

8.141 It should be noted that as the species, numbers and locations of both roosting and foraging bats across the Site is not known, specific mitigation measures cannot be recommended at this stage. However, an appropriate number of bat boxes will be installed across the Site to provide new habitat for roosting bats.

8.142 In line with the lighting strategy, which aims to limit and reduce light spill into sensitive areas of the Site, no permanent night time lighting will be installed in the vicinity of any identified roosts, any newly erected bat boxes; The M1 Woodland SINC, the retained hedgerows, or SUDS. Any areas of new planting will be designed to prevent potential disturbance to roosting areas and encourage the use of the Site by foraging and commuting bats.
Residual Effects

Site Preparation and Construction

Potential effects on the M1 Woodland SINC

8.143 Providing the mitigation measures outlined in paragraphs 8.115 to 8.116 are implemented throughout this phase, it is considered that the effects to the SINC will be ‘not significant’.

Potential death or injury of individual badgers

8.144 Providing the mitigation measures outlined in paragraphs 8.117 to 8.118 are implemented throughout this phase, it is considered that the effects to the badgers will be ‘not significant’.

Potential effects on roosting bats through destruction or disturbance of roosts

8.145 Providing the mitigation measures outlined above in paragraphs 8.129 to 8.122 are implemented throughout this phase, it is considered that the effects to roosting bats will be ‘not significant’. However, following more detailed surveys of the trees this assessment will be updated in the form of an ES Addendum.

Potential effects on roosting bats through an increase in artificial lighting and noise

8.146 Based on the assumptions made above, which assume that the Site supports low numbers of common species of bat, and providing the mitigation measures outlined above in paragraphs 8.123 to 8.125 are implemented throughout this phase, it is considered that the effects to roosting bats will be ‘not significant’. However, following more detailed surveys of the trees this assessment will be updated in the form of an ES Addendum.

Potential effects on foraging and commuting bats through loss of habitat

8.147 Based on the assumptions made above, which assume that the Site supports low numbers of common species of bat, and providing the mitigation measures outlined above in paragraphs 8.126 to 8.128 are implemented throughout this phase, it is considered that the effects to foraging and commuting bats will be ‘not significant’. However, following activity surveys across the Site this assessment will be updated in the form of an ES Addendum.
Potential effects on foraging and commuting bats through an increase in artificial lighting and noise

8.148 Based on the assumptions made above, which assume that the Site supports low numbers of common species of bat, and providing the mitigation measures outlined above in paragraphs 8.129 to 8.131 are implemented throughout this phase, no significant effects to commuting or foraging bats are anticipated to occur during the construction phase. The residual effects are therefore assessed as being ‘not significant’ at any geographical scale. However, following activity surveys across the Site this assessment will be updated in the form of an ES Addendum.

Potential effects on breeding birds through loss of habitat

8.149 Following the mitigation strategy outlined above it is anticipated that effects to the bird assemblage within the Site during the construction phase will be ‘not significant’.

Potential death or injury of reptiles through habitat removal

8.150 Following the mitigation strategy outlined above it is anticipated that effects to the slow-worm and grass snake population during the construction phase are considered to result in an ecological effect which is ‘not significant’.

Operation

Potential effects on the M1 Woodland SINC through increased recreational pressure

8.151 Following the mitigation strategy outlined above, which includes long-term management of the SINC, which currently has no management, it is anticipated that effects to the woodland during the operational phase are considered to result in an Probable, Reversible, Direct, Long-term Positive effect at the Local scale on a receptor of up to District value.

Potential effects on roosting, foraging and commuting bats through an increase in artificial lighting and noise

8.152 Based on the assumptions made above, which assume that the Site supports low numbers of common species of bat, and providing the mitigation measures outlined above in paragraphs 8.143 to 8.144 are implemented throughout this phase, no significant effects to roosting, commuting or foraging bats are anticipated to occur during the operational phase. The residual effects are therefore assessed as being ‘not significant’ at any geographical scale. However, following activity surveys across the Site this assessment will be updated in the form of an ES Addendum.
Limitations

8.153 This assessment is based on information available from existing records held by the Nottinghamshire Bat Group, NBGRC, Notts Birdwatchers and Notts Wildlife Trust; and a field survey undertaken as part of the preliminary ecological appraisal (Appendix 8.1). It has not been the aim of this assessment to record every species present on the Site, as one survey acts as a snap-shot, recording only those species which are present at the time or whose presence can be indicated through field signs such as feeding remains, droppings or places used for shelter or foraging. This evidence has been used to draw conclusions about the flora and fauna within the Site and provide an assessment of their ecological and nature conservation value.

8.154 At present breeding bird survey, bat surveys, reptile surveys and a botanical survey of the SINC are still to be undertaken. The value of the Site relating to these species will be determined following completion of these surveys in an addendum.

8.155 Data is based on existing records but does not necessarily constitute a comprehensive list of protected and notable species records. These records are not exhaustive, as there is currently no national or regional policy for systematic data gathering. Therefore, absence of data does not constitute evidence of absence (i.e. it may be that the Site has not previously been surveyed). It is also possible that other data exist within this area that has not been made available to WSP.

8.156 All distances calculated are estimates, measured from the Site boundary to the closest point of the designated site or record.

Summary and Statement of Significance

- Due to the timing of this application, and the seasonal constraints associated with a number of protected species surveys, a number of additional surveys are still to be undertaken; however, a robust precautionary principle has been adopted for this assessment with the majority of residual effects assessed as being ‘Not Significant’ at any level.

- Given this robust approach it is anticipated that even if protected species are found within the zone of ecological influence that given the levels of mitigation outlined the effects of the Proposed Development will be ‘Not Significant’. 
References


