



Plot SGR1, Bicester

Ecological Assessment Report

On behalf of **SGR (Bicester1) Limited**

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1 Executive Summary

- 1.1.1 Peter Brett Associates LLP (PBA) was commissioned to undertake an Ecological Assessment of an area of pasture/grassland located off the B4100 in the village of Caversfield to the north of Bicester, Oxfordshire. The Bicester Eco-Town development bordered the south-west and north-west boundaries of the Site. This Ecological Assessment was required to support a planning application for a proposed residential development with associated infrastructure, landscaping and public open-space.
- 1.1.2 The Ecological Assessment was informed by a desk study, including a review of ecological survey work undertaken as part of the adjacent Eco-Town development, and an extended Phase 1 habitat survey. The results of these studies were used to identify potential impacts of the development proposals and their effects on ecological features.
- 1.1.3 The Site comprised an area of semi-improved neutral grassland bordered by hedgerows to the north-east and north-west, scattered trees, scrub and patches of tall ruderal vegetation. A small watercourse was located in the south-eastern corner of the Site.
- 1.1.4 No effects on either statutory or non-statutory sites designated for their nature conversation value are expected to arise. This is explained primarily by the nature of development and their respective distances from the proposed development.
- 1.1.5 The Site was found to contain habitats with the potential to be used by foraging and commuting bats; badgers; nesting birds; reptiles and invertebrates. However, it was agreed with Cherwell District Council's Ecology Officer that the Phase 1 habitat survey and existing ecological data adequately demonstrated the Site to be of low intrinsic ecological value and it was therefore agreed that no dedicated surveys in relation to protected species were required to inform this planning application.
- 1.1.6 Ecological mitigation and enhancement measures will be delivered through sensitive scheme design that includes green open space and supports species movement through the Site and into green infrastructure within the wider landscape, as well as simple measures, including bat boxes, bird boxes, invertebrate boxes and log piles. During Site preparation and construction appropriate management and working measures will ensure there is no breach of the legislation that protects habitats and certain species.
- 1.1.7 Habitats within the Site are not significant in supporting farmland birds. As a consequence, the development will not make a significant contribution to any cumulative impacts arising as a result of development of the wider masterplan area. However, as the Site lies within the Eco town masterplan area an appropriate financial contribution will be made to support management that will benefit farmland birds in the wider area through delivery of a strategic mitigation site.
- 1.1.8 Appropriate working methods during site preparation and construction, the inclusion of relevant design measures and an appropriate financial contribution to strategic mitigation for the benefit of farmland birds will jointly safeguard ecological resources and deliver a net gain for biodiversity. As such there is no reason, relating to ecological resources, that this planning application should not be approved.

This Executive Summary contains an overview of the key findings and conclusions. However, no reliance should be placed on any part of the executive summary until the whole of the report has been read.

2 Introduction

2.1 Overview

- 2.1.1 PBA was commissioned to undertake an ecological appraisal of an area of land (the Site) known as Plot SGR1, to the north west of Bicester. The purpose of the appraisal is to inform a planning application for a new residential development.

2.1 Site Location & Description

- 2.1.1 The Site covers an area of 5.3ha and is located in the village of Caversfield to the north of Bicester, Oxfordshire (Central Grid Reference: SP 579 251). The B4100 borders the Site to the north/north-east, with Caversfield House further to the north. Home Farm and associated landholdings border the Site to the south and south-east with the Bicester Eco-Town Development (currently under construction) bordering the Site to the west and north-west (see **Figure 1**).

2.2 Description of Development

- 2.2.1 Outline planning permission (with all matters reserved excluding access) is to be sought to allow the construction of up to 75 residential properties with associated infrastructure including roads, pedestrian and cycle routes. A community orchard and allotment are to be created in north/north-east of the Site covering an area of 0.49ha (9%) of the Site area with a further 2.69ha (50.5%) of the Site to comprise open space and play-space. A Sustainable Urban Drainage (SUDs) system is also to be included in the open space.

2.3 Ecological Context

- 2.3.1 An extensive suite of baseline ecological survey work was undertaken in support of the Bicester Eco-Town Exemplar site that borders the Site to the east and south. This survey work was undertaken in 2010 and is summarised below to provide additional context:
- 2.3.2 **Extended Phase 1 habitat Survey** – this survey identified the Exemplar site to have the potential to support roosting, foraging and commuting bats, nesting birds, badgers, great crested newts, otters, water voles, reptiles, invertebrates, hazel dormice and white-clawed crayfish (ARUP, 2010a).
- 2.3.3 **Hedgerow Survey** – a number of important and ecologically valuable hedgerows were identified within the Exemplar site. Hedgerow 7 on the north-western boundary of the Site supported 6 native woody species and was categorised as a High value hedgerow (ARUP, 2010b).
- 2.3.4 **Crayfish Survey** – a crayfish survey was undertaken in August 2010. This survey found the watercourses within the Exemplar site (and on the eastern boundary of the Site) to be dry at the time of survey. It was considered that signal crayfish *Pacifastacus leniusculus* could use these watercourses during seasonally wet periods but that the presence of white-clawed crayfish *Austropotamobius pallipes* was extremely unlikely (ARUP, 2010c).
- 2.3.5 **Great Crested Newt Survey** – presence/absence surveys for great crested newts *Triturus cristatus* were undertaken in May 2010. Two waterbodies surveyed are immediately adjacent to the north-eastern corner of the Site. No great crested newts were identified during these surveys. However, access to ponds offsite to the north was not possible (though the closest of these contained fish and was thus thought to be unsuitable) (ARUP, 2010d).
- 2.3.6 **Reptile Survey** – a suite of reptile surveys comprising 10 visits was undertaken in May, June and September 2010. Only two common lizards *Zootoca vivipara* and one grass snake *Natrix*

helvetica were recorded. These reptile records were 425m to the north-west and 280m to the west of the Site respectively (ARUP, 2010e).

- 2.3.7 **Breeding Bird Survey** – breeding bird surveys undertaken between May and July 2010 identified an assemblage of 19 probable/confirmed breeders in the site including the specially protected barn owl *Tyto alba* (ARUP, 2010f).
- 2.3.8 **Bat Survey** – assessment of potential roosts, dusk emergence and dawn return to roost surveys and activity transects were undertaken in late spring, summer and autumn 2010. Six bat species were recorded during the roost emergence surveys (common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, noctule *Nyctalus noctula* and Leisler's bat *Nyctalus leisleri* and bats of the genus *Myotis*). Three roost sites were also confirmed at St Laurence Church (brown long-eared and *Myotis*, 30m to the north of the Site), a farm building (common pipistrelle maternity roost, 120m to the east of the Site) and a willow tree (common pipistrelle roost, 75m to the south). The activity transects (one of which passed through the Site) recorded an assemblage of four species (common pipistrelle making up the majority of activity, plus *Nathusius* pipistrelle *Pipistrellus nathusii*, noctule and *Myotis* bat) (ARUP, 2010g).
- 2.3.9 **Water vole and Otter Survey** – no signs of otters *Lutra lutra* or water voles *Arvicola amphibius* were identified during the field surveys in 2010 (ARUP, 2010h).
- 2.3.10 **Dormouse Survey** – surveys undertaken between May-September 2010 revealed no signs of dormice *Muscardinus avellanarius* to be present. However, the hedgerows and woodland parcels were considered suitable for future use/colonisation being connected to suitable habitat in the wider landscape (ARUP, 2010i).
- 2.3.11 **Badger Survey** – a field survey and bait marking survey were undertaken in May 2010. An active main sett was identified 130m to the south-west of the Site. With an annexe sett 340m to the west and a number of outlier setts the closest being 45m to the south of the Site (ARUP, 2010j).
- 2.3.12 **Invertebrate Surveys** – surveys for invertebrates were undertaken between summer and autumn 2010. No legally protected invertebrates were identified with only the small heath butterfly *Coenonympha pamphilus* and 10 moth species (all Species of Principal Importance) recorded of note along with one nationally scarce and one nationally notable species (Colin Plant Associates, 2010).

2.4 Report Objectives

- 2.4.1 This report sets out an ecological assessment of the proposed development. As such, the objectives of this report are to provide:
- outline survey methodologies and relevant survey guidance;
 - a description of an ecological baseline for the Site and any features of potential ecological importance;
 - an assessment of impacts associated with the construction and operation of the proposed development in order to assess the significance of effects on important ecological features;
 - any required ecological mitigation, compensation and / or enhancement measures required to accord with legislation/ planning policy.

3 Methods

3.1 Overview

3.1.1 The section below sets out the methodology used to inform the ecological assessment of the Site. This includes a desk study, extended Phase 1 Habitat survey, evaluation approach and survey limitations. Details of survey personnel are also included.

3.2 Study Area

3.2.1 The survey area included all land within and adjacent to the redline boundary where this could be accessed or viewed from within the Site boundary.

3.3 Desk Study

3.3.1 Existing ecological data for the Site and land up to 2km from its boundary in relation to protected/notable species and non-statutory designated sites was requested from the Thames Valley Environmental Records Centre (TVERC).

3.3.2 A search made with reference to the *Multi Agency Geographic Information for the Countryside* (MAGIC) website was undertaken to locate any sites of international importance within a 5km of the Site and statutory sites of national and local importance within 2 km.

3.3.3 The ecological survey work undertaken in support of the Bicester Eco-Town development (adjacent to the Site) was also reviewed in order to provide additional context and to provide further insight into the potential for protected/notable species to be present on Site.

3.4 Extended Phase 1 habitat Survey

3.4.1 The site visit was undertaken by Stephen Foot MCIEEM on the 7th February 2018. The habitats within the site were identified and described following the standard JNCC Phase 1 habitat survey methodology, as detailed in the Phase 1 habitat Survey Handbook (JNCC, 2010). This uses a system of codes to describe different habitat types based on the dominant vegetation present. The survey was extended to give particular consideration to the potential of the habitats present to support protected or otherwise notable species.

3.4.2 The weather conditions were dry with clear skies (1-2/8 cloud cover) with a light/moderate breeze (Beaufort Scale F2-F3). Temperatures were cold ranging between 1°C and 3°C.

3.5 Survey Personnel

3.5.1 Stephen Foot has been in continuous employment as a professional ecologist since 2005. He has also gained a range of experience in completing ecological assessments of a variety of sites and habitat types using the extended Phase 1 method. Stephen has particular knowledge of bat and herptile survey and assessment, holding licences granted by Natural England for bats, dormice, rare reptiles and great crested newts.

3.6 Evaluation and Impact Assessment Approach

3.6.1 The importance of ecological features potentially affected by the proposed development was evaluated using CIEEM Ecological Impact Assessment guidance (CIEEM, 2016). This guidance recommends that valuation of ecological features associated with a site is made with reference to the geographical framework below:

- International and European;

- National (England);
 - Regional/County (Oxfordshire);
 - Borough (Cherwell);
 - Local (Caversfield);
 - Site (of value within the site boundary or zone of influence of the development only)
 - Negligible (of no significant value at any geographic level).
- 3.6.2 Construction and operation of the proposed development may cause impacts which lead to effects on ecological features. Impacts may be direct or indirect in nature and may occur in the construction and/or operational phase of the development.
- 3.6.3 The assessment of the significance of predicted ecological effects is based on professional judgement and made with reference to whether effects are positive or negative. The extent, magnitude, duration, timing, frequency, and reversibility of the impacts is also considered and forms part of the assessment.
- 3.6.4 These factors provide a means of characterising the impacts of the proposed development and thereby support an assessment of the significance of the effects on the important ecological features determined as relevant in this assessment. CIEEM guidance states that a *'significant effect is an effect that either supports or undermines biodiversity conservation objectives for important ecological features or biodiversity in general'*.
- 3.6.5 The lowest geographic threshold at which a feature may be considered important (and as such, susceptible to a significant effect that would form a material consideration during planning) is 'Local' (i.e. Caversfield). As such, only features of importance at the 'Local' threshold or greater are subject to an impact assessment.
- 3.6.6 Where protected species (of less than 'Local' importance) are nonetheless present, measures to ensure compliance with relevant wildlife legislation have also been included.
- 3.6.7 The construction and operational impacts of the proposed development and associated impacts on important ecological features are based on the following plans:
- Caversfield, Bicester Development Framework plan (DWG No. RPC001/008 Rev B);
 - Caversfield, Bicester Access and Movement plan (DWG No. RPC001/012 Rev C); and
 - Caversfield, Bicester Land Use plan (DWG RPC001/011 Rev D).

3.7 Terminology and Nomenclature

- 3.7.1 For the purposes of this assessment the 'Site' refers to all areas within the application boundary.
- 3.7.2 Higher plant vernacular and scientific names are given on the first usage of the species name, with the scientific name given in italics.
- 3.7.3 Use of the terms 'impact' and 'effect' within this section follow the definitions as defined within CIEEM Guidance (CIEEM, 2016). An 'impact' is defined as an action that results in changes to an ecological feature e.g. when a Proposed Development requires the removal of a tree with bat roost features. An 'effect' is the outcome to an ecological feature from an impact e.g. the effects on a bat population from the loss of a tree with bat roost features.

3.8 Limitations

- 3.8.1 The extended Phase 1 habitat survey was completed in winter (February) which is outside the optimal period for habitat and botanical survey, as many plant species have died back and may not be evident. However, although sub-optimal, Phase 1 habitat surveys can be completed year-round. In this case, it is deemed that sufficient information was available to accurately classify the habitats present and to assess their value and potential to support protected/notable species. As such, the survey outcome was not limited by its timing.
- 3.8.2 The focus of an extended Phase 1 habitat survey is to identify, map and assess the habitats present. Reasonable effort was also made to search for and note any obvious evidence of species within the Site (with incidental records of species encountered being made). However, it is possible that some specific features (e.g. badger setts) would not have been located at this time. This is particularly the case in areas with dense vegetation, where features may have been obscured.

3.9 Report Qualification

- 3.9.1 The survey described here was undertaken in accordance with the best practice methodologies current at the time of commissioning. Site circumstances, scientific knowledge or methodological requirements can change during the course of a project, and these external factors may impact on the scope of subsequent work requirements.
- 3.9.2 All survey work and reporting was undertaken by experienced and qualified ecologists, in accordance with the Code of Professional Conduct of the Chartered Institute of Ecology and Environmental Management (CIEEM).
- 3.9.3 All ecological surveys have an expected validity period owing to the tendency of the natural environment to change over time. This validity period as between ecological features and is also dependent on the degree of change in a site's management and overall landscape ecology. Where the potential for change is considered to be relevant to the site, this is highlighted in the appropriate section.
- 3.9.4 This report does not purport to provide detailed, specialist legal advice. Where legislation is referenced, the reader should consult the original legal text, and/or the advice of a qualified environmental lawyer.

4 Baseline Conditions and Valuation

4.1 Overview

- 4.1.1 The section below sets out the findings of the desk study and extended Phase 1 habitat survey along with an evaluation made with reference to the CIEEM geographical framework in order to identify those features that are important in making a planning determination.

4.2 Designated Sites

Statutory Designated Sites

Results and Evaluation

- 4.2.1 There are no statutory designated sites of international importance within a 5km radius of the Site.
- 4.2.2 Ardley Cutting and Quarry SSSI is located 1.95km to the west of the Site and designated for its limestone grassland supporting a rich botanical and invertebrate assemblage. Further details of this site are included in **Appendix A** and its location is confirmed in **Figure 2**. Its designation as a SSSI is such that Ardley Cutting and Quarry SSSI is assessed as being of national importance.
- 4.2.3 Bure Park Local Nature Reserve (LNR) is located approximately 800m to the south-west of the Site and comprises grass meadows, young broad-leaved woodland, hedges and scrub. The river Bure runs through the site, feeding a small pond which also supports great crested newts. LNRs are designated by local authorities usually for their amenity, as opposed to ecological, value and as such Bure Park is valued as being important at a local level.

Non-statutory Designated Sites

Results and Evaluation

- 4.2.4 Three non-statutory Local Wildlife Sites (LWS) are present within a 2km radius of the Site. The closest of these is Bicester Airfield LWS located 1.15km to the east. This large airfield supports species-rich grassland and early successional scrub classified as Open Mosaic of Habitats on Previously Developed Land (a Habitat of Principal Importance). The remaining two LWSs are summarised in **Appendix A** and shown on **Figure 2**. Each of these LWSs are valued as being important at a county level.

4.3 Habitats

- 4.3.1 The following Phase 1 habitat types were recorded on and adjacent to the Site during the survey:
- Dense continuous scrub
 - Scattered broadleaved trees
 - Semi-improved neutral grassland
 - Tall ruderal vegetation
 - Running water
 - Species-rich hedgerow with trees

- Species-poor hedgerow
- Hardstanding

4.3.2 The identity and distribution of habitats recorded within the Site is presented on **Figure 3** and described. Photographs of habitats recorded are provided in **Appendix C**.

Dense continuous scrub

4.3.3 A number of small discrete patches of dense continuous scrub were present within and adjacent to the Site boundary. These were generally dominated by bramble *Rubus fruticosus* agg. with occasional dog rose *Rosa canina*, common nettle *Urtica dioica* and hawthorn *Crataegus monogyna*.

Scattered broadleaved trees

4.3.4 A number of young and semi-mature trees were present within the Site boundary, predominantly to the north/north-east within grassland and along the access track to the farm complex offsite. Species present included frequent horse chestnut *Aesculus hippocastanum* with occasional beech *Fagus sylvatica*, lime *Tilia* sp. and pedunculate oak *Quercus robur*. A line of more mature specimens was also present along the bank of the watercourse in the south-eastern corner of the Site. Species here included aspen *Populus tremula*, elder *Sambucus nigra*, crack willow *Salix fragilis*, ash *Fraxinus excelsior* and pedunculate oak. A line of mature trees was also present in the north-eastern corner of the Site which comprised frequent Leyland cypress *Cupressocyparis x leylandii*, Norway maple *Acer platanoides* and horse chestnut.

Semi-improved neutral grassland

4.3.5 The majority of the Site was dominated by grazed, semi-improved grassland. This was of limited ecological interest, having a high proportion of coarse grassland species and limited herb/forb flora jointly indicating signs of nutrient enrichment. Grass species within the sward included frequent common bent *Agrostis capillaris* and annual meadow grass *Poa annua* with occasional red fescue *Festuca rubra*, Yorkshire fog *Holcus lanatus*, creeping bent *Agrostis stolonifera*, perennial rye-grass *Lolium perenne* and coarse grass species including cock's-foot *Dactylis glomerata* and false oat-grass *Arrhenatherum elatius*. Herbs and forbs included occasional creeping buttercup *Ranunculus repens*, creeping cinquefoil *Potentilla reptans*, ribwort plantain *Plantago lanceolata* and common nettle *Urtica dioica*.

Tall ruderal vegetation

4.3.6 An area of tall ruderal vegetation was identified close to the eastern boundary of the Site. This surrounded a large rubble/spoil pile and comprised abundant common nettle with occasional teasel *Dipsacus fullonum*, cow parsley *Anthriscus sylvestris*, hogweed *Heracleum sphondylium* and great burdock *Arctium lappa*. A number of patches of ruderal vegetation dominated by common nettle with occasional cow parsley were also present throughout the grassland area that dominates the Site and in a narrow strip along the south-western boundary of the Site.

Running water

4.3.7 A watercourse bordered the eastern boundary of the Site and was understood to dry out in the winter (ARUP, 2010); at the time of survey it held flowing water of 20-30cm in depth. The watercourse was approximately 2-3m in width, had shallow banks and a bed comprised of gravel and a silt-based substrate. Aquatic macrophytes were generally sparse with a small pool off the main channel supporting more dense vegetation including fool's watercress *Apium nodiflorum* and water parsnip *Berula erecta*. Pendulous sedge *Carex pendula*, reed sweet

grass *Glyceria maxima* and common reed *Phragmites australis* was noted in patches elsewhere along the length of the watercourse.

Hedgerows

- 4.3.8 A species-poor hedgerow with trees bordered the northern/north-western boundary of the Site. This was largely unmanaged being 2.5-3m in height. Woody plant species included abundant hawthorn *Crataegus monogyna* with occasional blackthorn *Prunus spinosa*, field maple, dog rose, elder *Sambucus nigra* and English elm *Ulmus procera*. Young/semi-mature trees within the hedgerow included ash, pedunculate oak and horse chestnut. Ivy *Hedera helix* was abundant within the ground flora associated with the hedgerow with occasional bramble, common nettle and ground ivy *Glechoma hederacea*.
- 4.3.9 A species-poor hedgerow with trees bordered the north-eastern boundary of the Site running parallel to the B4100 road. This hedgerow was well managed/maintained being c. 2m in height and c. 1.5m in width. This hedgerow was dominated by hawthorn with occasional field maple, English elm and guelder rose *Viburnum opulus*. Ivy dominated the ground flora with occasional common nettle. This hedgerow gave way to bramble scrub further to the south along the boundary fence.

Habitat Evaluation

- 4.3.10 The majority of the Site comprised semi-improved neutral grassland, with scattered trees, areas of ruderal vegetation and scrub. Each of these habitats was comprised of common, readily established plant species and are widespread throughout the UK. As such these habitats are considered to be of negligible ecological value.
- 4.3.11 The hedgerows and the watercourse on the south-eastern boundary have some intrinsic ecological value and also act as corridors for wildlife and are therefore considered important at the **local** level.

4.4 Species

- 4.4.1 The results of the desk study, including review of previous ecological survey information, and assessment of the nature and suitability of habitats currently on Site are presented below. These jointly support assessment of the likelihood of protected species or species of conservation importance being present on Site.
- 4.4.2 The assessment of habitat suitability was discussed and agreed with the Ecology Officer at Cherwell District Council (Charlotte Watkins) in a series of email exchanges with PBA during February 2018 in advance of preparation of this assessment.
- 4.4.3 The assessment in relation to each species is presented firstly having regard to their level of legislative protection, and thereafter, alphabetically.

Bats

Results and Evaluation

Desk Study

- 4.4.4 Survey data obtained through survey work by ARUP in 2010 identified three bat roosts to be present in the vicinity of the Site. These were in St Laurence Church to the north, a farm building to the east and a willow tree to the south (ARUP, 2010g). The activity transect surveys identified the treeline along the eastern boundary of the Site (adjacent to the watercourse) to be used as a commuting and foraging feature by bats present in the local area.

Field Survey

- 4.4.5 No trees or structures were present on Site with features with the potential to be used by roosting bats. The hedgerows along the north and north-western boundaries were linear features likely to be of some value to commuting bats, although the tree line and watercourse adjacent to the eastern boundary was considered likely to be of greater value. Some species of bat can also be expected to forage over the grassland, particularly when cattle are present such that invertebrate prey species (beetles and flies in particular) increase in number.
- 4.4.6 Given its small size and the abundance of similar and more suitable habitats in the surrounding area the Site is considered to be of local level importance to foraging and commuting bats.

Great Crested Newts

Results and Evaluation

Desk Study

- 4.4.7 The closest, most recent record of great crested newts related to a location approximately 1.15km to the south of the Site and is dated 2011.
- 4.4.8 Great crested newt surveys undertaken by ARUP in 2010 did not reveal the presence of great crested newts in any waterbodies within a 500m radius of the Site. Small waterbodies offsite to the east were assessed as having below average suitability to support great crested newts (one of which is online with the watercourse) with no newts found in follow up survey work. A large waterbody is present offsite to the north within the grounds of Caversfield House was known to support a large population of fish and therefore assessed as unsuitable for breeding great crested newts (ARUP, 2010d)

Field Survey

- 4.4.9 Great crested newts are generally present in aquatic habitats with no/negligible flow between February and July. The remainder of the year is spent foraging and sheltering in terrestrial habitats (rough grassland and scrub/woodland edge) (Inns, 2009). Great crested newts are capable of travelling significant distances (in excess of 1km) between aquatic and terrestrial habitats (Jehle *et al.*, 2011). However, numerous studies have identified that great crested newts are more usually found at the highest densities in terrestrial habitats up to 200m from breeding ponds (Franklin, 1993), although dispersing young may travel further when leaving aquatic breeding habitats. Cresswell and Whitworth (supported by more recent work by Jehle *et al.*, 2011) found that great crested newts are unlikely to typically move in excess of 50m from a breeding pond, where this is surrounded by high-quality terrestrial habitat (Cresswell and Whitworth, 2004).
- 4.4.10 The two small waterbodies offsite to the east were again assessed during the 2017 field survey and appeared not to have changed in condition since previous surveys were undertaken by ARUP in 2010. Discussion with the farm manager confirmed that the waterbodies dry out annually in the summer and are filled in the winter via the adjacent watercourse. The farm manager also confirmed that in flood events large fish from the waterbody in Caversfield House are often washed into these small waterbodies (Pers Comm). Great crested newt larvae do not thrive where populations of fish are present as they typically swim and forage throughout the water column and are therefore readily predated upon as a result of this behaviour (Beebee, 2013). Having regard to their limited size, the findings of the previous surveys and the rationale above, the waterbodies are considered unsuitable and unlikely to support breeding great crested newts.
- 4.4.11 The grassland that dominates the majority of the Site is regularly grazed and as such did not provide suitable sheltering or foraging opportunities for great crested newts. The lack of suitable aquatic habitat in the vicinity of the Site, presence of the watercourse to the east (a barrier to newt migration for at least part of the year), the presence of poor quality terrestrial

habitat on the remainder of the Site and the presence of the Eco-Town construction site along the south-western boundary jointly are such that great crested newt is considered absent from the Site and this species is not considered further in this assessment.

Otters

Results and Evaluation

Desk Study

- 4.4.12 No records of otters were provided in the results of the desk study and no field signs of otters were identified during the field surveys undertaken by ARUP in 2010 (ARUP, 2010h).

Field Survey

- 4.4.13 The watercourse adjacent to the eastern Site boundary could be used by otters as a commuting corridor on occasion as the large waterbody within the grounds of Caversfield House offsite to the north may be used for foraging.
- 4.4.14 The Site itself was of negligible value to otter with peripheral scrub and hedgerow habitats being adjacent to roads and an active construction site, jointly resulting in high levels of disturbance. The likelihood of an otter holt or laying up site being present on Site is therefore negligible. There is the possibility that otters could move along the watercourse in the south-east of the Site on rare occasions. However, given the results of the desk study and poor suitability of the habitats on Site this species is considered not to be present or associated with the Site. Otter is therefore not considered further in this assessment.

Hazel dormice

Results and Evaluation

Desk Study

- 4.4.15 No records of hazel dormice were provided in the results of the desk study and surveys undertaken between May-September 2010 revealed no signs of dormice to be present. (ARUP, 2010i)

Field Survey

- 4.4.16 The Dormouse Conservation Handbook states that *this species tends to be found in extensive ancient semi-natural woodland, where there has been time for shrub species diversity to develop, and where coppicing of hazel is carried out on a long rotation. This appears to constitute the species' core habitat, especially where shrubs flourish in clearings and around woodland edges* (Bright *et al*, 2006). More recent research has shown that dormice prefer early successional stages of woody vegetation (Juskaitis *et al*, 2013) though still with a high diversity of tree and shrub species, which ensure a continuing food supply throughout the seasons.
- 4.4.17 The hedgerow on the north-eastern boundary was poorly connected to suitable habitat in the local landscape and the hedgerow was fragmented to the south and east. The hedgerow with trees in the north-west of the Site was isolated from other more suitable habitat and substantive woodland parcels. Given the results of the desk study, the negative findings during previous targeted survey effort, along with the isolation of the boundary hedgerows and associated small pockets of scrub, the Site is considered to be of negligible value for dormice and this species is not therefore considered further in this assessment.

White-clawed crayfish

Results and Evaluation

Desk Study

- 4.4.18 No records of white-clawed crayfish were revealed by the desk study. A crayfish survey was undertaken in August 2010 and found the watercourses within the Exemplar site (and on the eastern boundary of the Site) to be dry at the time of survey. It was considered that signal crayfish could use these watercourses during seasonally wet periods but that the presence of white-clawed crayfish was extremely unlikely (ARUP, 2010c). White-clawed crayfish is not therefore considered further in this assessment.

Water voles

Results and Evaluation

Desk Study

- 4.4.19 No records of water voles were provided in the results of the desk study and no field signs to indicate the presence of this species were recorded in the surveys undertaken by ARUP in 2010 (ARUP, 2010h).

Field Survey

- 4.4.20 The water vole is usually found within 2m of the water's edge, along the densely vegetated banks of ditches, river, streams and marshes where it feeds on grasses, reeds and sedges (Harris & Yalden, 2008). The watercourse on the south-eastern boundary and offsite to the east is known to dry in the summer months and as such was considered to be suboptimal for this species.
- 4.4.21 Given the absence of previous records and unsuitability of habitats water vole is considered absent from the Site and as such is not considered further in this assessment.

Badgers

Results and Evaluation

Desk Study

- 4.4.22 The closest record of a badger related to a location approximately 450 m to the west of the Site and is dated 2010. A field survey and bait marking survey were undertaken in May 2010. This identified an active main sett 130m to the south-west of the Site; an annexe sett 340m to the west and a number of outlier setts, the closest being 45m to the south of the Site (ARUP, 2010j).

Field Survey

- 4.4.23 Woodland copses, scrub and hedgerows are preferred locations for sett building as they allow badgers to emerge from the setts inconspicuously and young cubs to play near the sett entrances without being visible to potential predators and people (Neal & Cheeseman, 1996). The badger's preferred food source is the earthworm and therefore they predominantly forage on areas of grassland and pasture. Badgers are omnivorous and they supplement their diet with carrion and fruits from hedgerows, trees and shrubs (Neal & Cheeseman, 1996 and Roper, 2010).
- 4.4.24 The grassland dominating the Site is likely to be used as a foraging resource by a local badger clan, and two badger paw prints noted in the north-west of the Site show badgers do move

through the Site. Small areas of excavated soil were also noted and may have been badger snuffle holes, indicating foraging activity.

- 4.4.25 No setts were identified during the field survey either on or within of the boundary of the Site, although the possibility of the presence of an outlier badger sett in dense bramble scrub in the north-west of the Site cannot be discounted until a full search has been undertaken.
- 4.4.26 Given the limited evidence of badger activity within the Site, a lack of clear evidence of a sett and the abundance of similar quality foraging habitat within the local landscape, the Site is considered not to be important for this species, which in event has no conservation status. Badger is not therefore considered further in this assessment, other than in relation to management measures required during construction to ensure there is no breach of the legislative protection afforded to badgers and their setts.

Birds

Results and Evaluation

Desk Study

- 4.4.27 The desk study revealed nine records of bird species. The majority of these were from a location 1.3km to the south-east of the Site. Breeding bird surveys undertaken between May and July 2010 identified an assemblage of nineteen probable/confirmed breeders in the Exemplar site, including barn owl *Tyto alba* (ARUP, 2010f).

Field Survey

- 4.4.28 During the field survey in 2017 a number of birds were also incidentally recorded on Site. These are listed in **Table 1** below.

Table 1: Bird species recorded during the site visit in 2017

Common name	Scientific name
Blackbird	<i>Turdus merula</i>
Blue tit	<i>Cyanistes caeruleus</i>
Carrion crow	<i>Corvus corone</i>
Goldfinch	<i>Carduelis carduelis</i>
Great tit	<i>Parus major</i>
Green woodpecker	<i>Picus viridis</i>
Magpie	<i>Pica pica</i>
Mallard	<i>Anas platyrhynchos</i>
Mistle thrush	<i>Turdus viscivorus</i>
Red legged partridge	<i>Alectoris rufa</i>
Robin	<i>Erithacus rubecula</i>
Woodpigeon	<i>Columba palumbus</i>
Wren	<i>Troglodytes troglodytes</i>

- 4.4.29 The tall ruderal vegetation, scattered trees, dense scrub and hedgerows were assessed as having the potential to provide nesting habitat for the above and other species of birds.
- 4.4.30 The Site provided no suitable nesting habitat for barn owls and the heavily grazed grassland is likely to be of limited value to foraging barn owls which typically forages over tussocky grassland with a good litter layer that provides habitat for their preferred prey species (field voles) (Barn Owl Trust, 2012).
- 4.4.31 The hedgerows and grassland may support some farmland bird species. However, the intensive grazing regime is such that much of the grassland had limited value for ground-

nesting farmland species. Despite this it is still possible that grass tussocks and edge habitat associated with pockets of tall ruderal vegetation provided potential nesting habitat for skylark *Alauda arvensis* and meadow pipit *Anthus pratensis*, with hedgerows providing potential nesting habitat for other farmland species, including yellowhammer *Emberiza citrinella*, linnet *Carduelis cannabina* and possibly corn bunting *Emberiza calandra*. However, habitat suitability and extent was limited and the Site is therefore assessed as being important at site level only for bird species, including farmland species. Birds are therefore considered no further in this assessment other than in relation to (i) the management measures required to minimise a risk of breaching protective legislation; and potential cumulative effects given the location of the Site within the north west Bicester masterplan area.

Reptiles

Results and Evaluation

Desk Study

- 4.4.32 The desk study provided a 2017 record of common lizard which related to a location approximately 1.3 km to the south-east of the Site. The dedicated reptile surveys undertaken by ARUP in 2010 confirmed the presence of two common lizards and one grass snake from 425m to the north-west and 280m to the west of the Site respectively (ARUP, 2010e). These results indicated only low populations of both species to be present.

Field Survey

- 4.4.33 Reptiles prefer a mosaic of habitats with a varied vegetation structure providing conditions suitable for both sheltering and foraging (Edgar *et al*, 2010). The majority of the Site comprised intensively managed, uniform grassland and is of limited value to this species group. Hedgerows on the Site periphery lack dense marginal growth and this restricts likely use of the edge habitat by reptiles. The large rubble/spoil pile in the east is suitable for sheltering and overwintering reptiles, but unlikely to be used due to its location within largely unsuitable foraging habitat. Given the limited extent of suitable habitat the Site is considered to be of negligible, and certainly no more than of site level value for this species group. Reptiles are therefore considered no further in this assessment other than in relation to the management measures required to minimise a risk of breaching protective legislation.

Invertebrates

Results and Evaluation

Desk Study

- 4.4.34 Desk study records have not revealed any protected invertebrate species within or in close proximity to the Site. ARUP concluded that the hedgerows within the Exemplar site were of low value to invertebrates as they are frequently trimmed or flailed, thereby removing the foraging resource and breeding sites for invertebrates, such as brown hairstreak. ARUP also assessed the field margins were of limited value to invertebrates. However, two notable invertebrate species: the Nationally Scarce Shaded Pug moth *Eupithecia subumbrata* and the Nationally Notable Roesel's bush cricket *Metrioptera roeselii* were identified in the margins of one of the northern hedgerows (Colin Plant Associates (CPA), 2010 and Hyder Consulting UK Ltd, 2010).

Field Survey

- 4.4.35 The grassland, scrub, ruderal and hedgerow habitats on Site support common and widespread plant species that are capable of supporting a range of invertebrate species. However, these habitats are limited in extent in the context of the availability of suitable habitat present in the wider landscape. Unmanaged field margins within the Site were absent at the

time of survey and therefore the presence of the nationally scarce and nationally notable invertebrate species recorded by ARUP is unlikely. Given the management, grazing regime and presence of common and widespread plant species the Site is considered of no more than site level importance for invertebrates which are therefore considered no further in this assessment.

4.5 Summary

4.5.1 The value of the ecological features discussed above is summarised in **Table 2** in order to confirm those features:

- of local value or above such they are taken forward to full assessment in accordance with section 3.6.5 above; or
- requiring dedicated management to avoid a breach of protective legislation or accord with a specific policy requirement.

Table 2: Summary Evaluation

Ecological Feature	Importance	Impacts Assessment Required	Management Measures Required
Ardley Cutting and Quarry SSSI	National	Yes	No
Bure Park LRN	Local	Yes	No
Bicester Airfield LWS	County or below.	Yes	No
Grassland, ruderal vegetation and scrub	Negligible	No	No
Hedgerows and watercourse	Local	Yes	No
Bats	Local	Yes	No
Great crested newt	None	No	No
Otters	None	No	No
Hazel Dormouse	None	No	No
White Clawed Crayfish	None	No	No
Water voles	None	No	No
Badgers	None	No	Yes

Ecological Feature	Importance	Impacts Assessment Required	Management Measures Required
Birds	Site	No	Yes
Reptiles	Site	No	Yes
Invertebrates	Negligible	No	No

5 Impact Assessment

5.1 Overview

5.1.1 This section assesses the significance of impacts on those ecological features associated with the Site that have been valued as being of local ecological importance or above. The assessment is made (i) assuming effective implementation of embedded mitigation measures; and (ii) with reference to policy and legislation relevant to each feature (**Appendix D**).

5.2 Embedded Mitigation

5.2.1 The proposed development has been designed to minimise impacts on habitats of ecological value. The detailed design includes embedded mitigation as shown on the Development Framework Plan (Project No. RPC001/008 Rev B).

5.2.2 Embedded mitigation measures are described in summary below and taken into account in making an assessment of the significance of any effect on valued features.

- Native tree planting and hedgerow planting including the planting of fruit trees to assist in offsetting the loss of ruderal and grassland habitat;
- Retention of c 50% of the Site as public open space to be enhanced botanically using a species-rich grassland mix to improve the ecological value of retained areas of grassland and offset the loss of existing poorer quality grassland elsewhere;
- A buffer of at least 30m maintained between the footprint of the proposed works and the margin of the watercourse in the south-eastern corner of the Site to prevent impacts on aquatic habitat;
- A Sustainable Urban Drainage System (SUDS) providing valuable habitats for a range of species. and
- A Lighting Strategy that directs and minimises light spill onto the hedgerows in the north-west and north-east and avoids any lighting along the south-eastern/eastern Site boundary.

Impact Assessment

5.2.3 The impacts of the proposed development that the potential to have effects on valued ecological features, in the absence of mitigation are summarised below.

- Habitat loss;
- Pollution events; and
- Lighting.

5.3 Designated Sites

5.3.1 Ardley Cutting and Quarry SSSI, Bure Park LNR and Bicester Airfield LWS are each valued as being of local ecological value or above.

Legislation/ Planning Policy

- 5.3.2 Sites of Special Scientific Interest (SSSI) are notified under the Wildlife and Countryside Act (WCA) 1981 (as amended) with improved provisions for their protection and management introduced by the Countryside and Rights of Way Act 2000 (in England and Wales).
- 5.3.3 The National Planning Policy Framework (NPPF) states that *Proposed Development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest.*
- 5.3.4 Policy ESD 10 of the Cherwell Local Plan seeks to protect statutory and non-statutory areas designated for their biodiversity value:
- *Development which would result in damage to or loss of a site of biodiversity or geological value of **national importance** will not be permitted unless the benefits of the development clearly outweigh the harm it would cause to the site and the wider national network of SSSIs, and the loss can be mitigated to achieve a net gain in biodiversity/geodiversity.*
 - *Development which would result in damage to or loss of a site of biodiversity or geological value of **regional or local importance including habitats of species of principal importance** for biodiversity will not be permitted unless the benefits of the development clearly outweigh the harm it would cause to the site, and the loss can be mitigated to achieve a net gain in biodiversity/geodiversity.*

Impact Assessment

- 5.3.5 The Site falls within the SSSI Impact Risk Zone (IRZ) for Ardley Cutting and Quarry SSSI and stated as being at risk from infrastructure projects, particularly air pollution events (combustion, industrial processes, etc.). However, these types of impacts are not associated with the proposed development. Given the distance between the SSSI and the Site (1.9km) and the small scale and nature of the proposed works, neither direct or indirect impacts are predicted to occur and Ardley Cutting and Quarry SSSI will be subject to no effects as a result of the proposals.
- 5.3.6 Bure Park LNR is located c. 800m from the Site and surrounded by residential development. Recreational use of the LNR is promoted by the local authority who manage the habitats, paths and other facilities within the LNR accordingly. The distance between the Site and the LNR, in combination with the open space provision included as part of the proposals for the Site, are such that no significant increase in recreational use by new residents is expected and therefore no predicted significant effects on Bure Park LNR.
- 5.3.7 Bicester Airfield LWS is located just over 1km to the east, and for the same reasons as are set out above in relation to Ardley Cutting and Quarry SSSI, there will be no significant effects as a result of the proposals.

5.4 Habitats (hedgerows and watercourse)

- 5.4.1 The hedgerows and watercourse within the Site have been valued as important at a local level.

Legislation and Planning Policy

- 5.4.2 Policy ESD 10 of the Cherwell District Local Plan encourages protection of the natural environment, seeks biodiversity gain through enhancing existing features and promoting ecological networks in new development.
- 5.4.3 The Site lies within the boundary of the North West Bicester Masterplan area. A dedicated supplementary planning document, the North West Bicester Supplementary Planning Document (SPD) was published in February 2016 by Cherwell District Council. It includes development requirements, including in relation to ecological resources (Development Principle 9 – Green infrastructure and landscape).
- Principle 9 (c) Hedgerows and Stream corridors – *hedgerow loss should be minimised and mitigated for, existing hedges retained and enhanced by buffer planting as part of the landscape framework and breaches of the hedges minimised. A minimum 60 metre corridor to the watercourses (30 metres each side of the centre line) should be provided to create a strong landscape feature in the scheme and secure the opportunity for biodiversity gain from the development.*

Impact Assessment

- 5.4.4 In advance of site preparation and construction, appropriate methods for working will be prescribed and all site operatives briefed accordingly. Such measures include best environmental practice guidance outlined in the Environment Agency's Pollution Prevention Advice and Guidance (Environment Agency, 2007) (now archived) and those outlined by the Construction Industry Research and Information Association guidance (CIRIA, 2015). The following minimum standards will to prevent ecological impacts within and beyond the Site boundary:
- dedicated measures to prevent dust and other emissions from construction affecting land beyond the Site;
 - chemicals and fuels stored in secure containers; spill kits made available;
 - noise and vibration controlled and kept to the minimum necessary.
- 5.4.5 The root protection zones of retained trees will be defined following professional arboricultural advice (CBA Trees, 2018) and will protect tree and hedgerow root systems and avoid soil compaction.
- 5.4.6 Small sections of hedgerow will need to be removed in the north-west to allow for pedestrian and vehicular access onto the Site (Land Use Plan (RPC001/011 Rev D). The planting of a new length of hedgerow on the eastern boundary comprising native plant species or species with a known wildlife benefit will mitigate for loss of the small sections of hedgerow to be removed, meeting the requirement of Development Principle 9 (c).
- 5.4.7 The proposed scheme retains the hedgerows and protects and buffers the watercourse to the south-east within a substantial area of open space, orchard and allotment. These habitats will be managed to enhance the integrity and connectivity of the hedgerow network and watercourse and to create new grassland and other relevant habitats meeting the requirements of SPD development Principle 9.
- 5.4.8 As a result of effective management measures and design that protects and enhances the hedgerow and wetland network there will be a beneficial effect on hedgerow and the stream habitats significant at a local level.

5.5 Bats

5.5.1 The Site has been valued as being of local importance for bats.

Legislation/ Planning Policy

5.5.2 Bats and their roosts are afforded protection under the Conservation of Species and Habitats Regulations 2017 and the Wildlife and Countryside Act 1981 (as amended). In broad terms these pieces of legislation jointly mean that the animals themselves are protected against killing, injury, taking (capture) and disturbance. In addition, their places of shelter are protected against damage, destruction and obstruction (see **Appendix D**).

5.5.3 Policy ESD 10 of the Cherwell District Local Plan encourages protection of the natural environment, seeks biodiversity gain through enhancing existing features and promoting ecological networks in new development. This is reiterated in the Principles that are embedded in the SPD which encourages inclusion in development design of numerous features that will support wildlife, including bats. Numerous features are explicitly mentioned, including a *20 metre buffer along either side of designated hedgerows recognised for their ecological value to create a "dark corridor" for nocturnal species such as bats*; and the need for *hedgerows and associated buffers to be included in accordance with the Green Infrastructure and Landscape Strategy*

Impact Assessment

5.5.4 There is no planned use of lighting during the construction phase. In the event that construction lighting is required its use will be minimised and spillage onto key habitats (hedgerows and the watercourse) avoided.

5.5.5 The scheme enhances the suitability of the Site for foraging and commuting bats through hedgerow retention, and establishment of a substantial buffer which will include new tree planting and grassland. Enhanced opportunities for species of bat that preferentially forage over water will result from the establishment of a SUDS feature and creation of a 30m habitat buffer adjacent to the watercourse.

5.5.6 Lighting close to the north-west boundary of the Site (within the built development) will be directional and minimise light spill onto the hedgerow so as to avoid compromising its suitability for commuting bats. Lighting on the eastern boundary of the Site has been avoided.

5.5.7 Approximately 50% of the Site will be open space and support a mix of diverse grassland, an orchard and an allotment providing further enhancement for bats by increasing the diversity and abundance of invertebrate prey in and around the Site.

5.5.8 Taken together these design measures are such that there will be a beneficial effect on bats significant at a local level as a result of the proposed development.

Summary Impact Assessment

5.5.9 **Table 3** sets out a summary of the significance of effects on valued features associated with the Site.

Table 3: Summary of Ecological Effects

Ecological Feature	Importance	Effect	Significance Level
Ardley Cutting and Quarry SSSI	National	None	N/A
Bure Park LRN	Local	None	N/A
Bicester Airfield LWS	County or below.	None	N/A
Hedgerows and watercourse	Local	Beneficial	Local
Bats	Local	Beneficial	Local

6 Management Measures

6.1 Overview

- 6.1.1 Assessment has shown there to be species potentially associated with the Site that may be present in low numbers, and as such are not an important ecological feature, but never the less generate the requirement for dedicated management measures to ensure no breach of the legislation that protects the species or species group concerned.

6.2 Badgers, and other mammals

Legislation/ Planning Policy

- 6.2.1 Badgers are a common and widespread species and as such have no conservation status. Badgers and their setts are however protected under the Protection of Badgers Act 1992 making the intentional or reckless destruction, damage or obstruction of a badger sett an offence (**Appendix D**).

Management Measures

- 6.2.2 Management measures will be implemented to minimise the risk of a breach of the legislation that protects badgers and their setts. Prior to the start of works a dedicated badger survey will be undertaken by a suitably experienced ecologist. This will involve a search of all suitable habitats for active setts, clearing any dense vegetation in advance (in the presence of a suitably experienced ecologist) where this is necessary to undertake a reliable and robust survey. In the event that any burrows of other mammals, including red foxes and rabbits, are found during vegetation clearance the area will be carefully excavated and left open overnight to give animals a chance to escape. The outcome of the badger survey will guide the measures needed to avoid disturbance/destruction. If avoidance is not possible a licence issued by Natural England will be sought in order to allow works to proceed lawfully.
- 6.2.3 During construction, general good practice will be employed to avoid creating potential hazards which could cause harm to animals entering the area (particularly those that forage at night). For example, any open trenches or pits will be covered over when not in use and/or sloping planks (or similar) inserted to enable animals to escape to safety should they become trapped.
- 6.2.4 Although not a requirement arising from impact assessment, the proposed development will enhance conditions on Site for badgers through the incorporation of additional hedgerow, tree and orchard planting which will provide increased foraging and sheltering opportunities for badgers and other mammals.

6.3 Birds, including farmland birds

Legislation/ Planning Policy

- 6.3.1 All wild birds, their active nests and eggs receive protection under the Wildlife and Countryside Act 1981 (as amended) in respect of intentional killing and injury or damage and destruction (**Appendix D**). Measures to ensure the risk of breaching this legislation are set out below.
- 6.3.2 Ecological assessment to inform development of the SPD established the wider area to be important in supporting farmland birds. As a consequence the developer of any Site located within the North West Bicester masterplan area is bound by the provisions of Development Requirement 9(e) of the SPD, regardless of whether the individual site being promoted is assessed as being significant farmland birds: *As it is not possible to mitigate for the impact of farmland birds on the site, off site mitigation measures should be provided and all applications within the masterplan area should contribute to the provision of off-site mitigation.*

Management Measures

- 6.3.3 In the absence of appropriate working methods during site preparations the proposed development has the potential to damage or destroy active nests. The dense scrub, scattered trees, scrub, hedgerows and tall ruderal vegetation provides nesting habitat for common, widespread species of breeding birds. Therefore, in order to avoid damage or destruction of nests and eggs, or killing or injury of young birds in nests, site clearance within suitable habitat will be timed to avoid the breeding season of common bird species (generally taken to be end of February – late August). If this timing is not possible, all areas to be cleared will first be checked by an ecologist or other suitably qualified individual for active nests. This will involve watching the areas for signs of nesting activity and undertaking a search for active nest sites in the 24 hours before clearance takes place. In the event that nesting activity is identified clearance works in the vicinity of the nest will cease until the young have fledged or the nest has evidently failed.
- 6.3.4 Assessed in isolation the loss of the small areas of suitable habitat within the Site will have no significant effect on birds, including farmland species, and provides no prompt for mitigation. However, assessment of the impacts arising from implementation of the eco town proposals concluded development of the masterplan area would result in significant cumulative effects on the assemblage of farmland birds currently supported across the area to the north west of Bicester. The SPD therefore requires the creation of a strategic mitigation site capable of sustaining the farmland bird assemblage and that those progressing development on any site within the masterplan area must make an appropriate financial contribution to management of such a site. Therefore, despite an assessment which concludes, that in isolation the proposals for the Site will result in no significant effects on farmland birds, an appropriate financial contribution to strategic mitigation will be made thereby contributing to the avoidance of cumulative effects in the wider area.
- 6.3.5 The establishment of newly created grassland and wetland habitat and enhancement of the extent, condition and connectivity of hedgerows habitats will improve conditions for species of bird, including some species typically associated with farmland, delivering the biodiversity gain anticipated by policies in the Cherwell Local Plan and the SPD.

6.4 Reptiles

Legislation/ Planning Policy

- 6.4.1 All species of common reptile are protected from intentional killing and injury under the Wildlife and Countryside Act, 1981 (as amended). Reptiles are also classified as SPI's (**Appendix D**). Management measures required to avoid a breach of this legislation during Site preparation and clearance/dismantling of the rubble/spoil pile are therefore set out below.

Management Measures

- 6.4.2 In the absence of appropriate mitigation there is the potential for small numbers/individual reptiles to be killed/injured during vegetation clearance and dismantling of the rubble pile. In order to avoid contravention of the legislation protecting this species group, a precautionary method of working will be adopted. This will include the following measures:
- above ground clearance will be undertaken during the months when reptiles are active (generally April – October) and on days when temperatures are between 9°C and 18°C;
 - areas of long grass, ruderal vegetation and scrub will be cut in phases to allow animals to disperse to safety. Vegetation will first be cut to 15cm before being cut to ground-level in the presence of a suitably qualified ecologist;
 - dismantling/removal of features considered to provide potential for sheltering reptiles will be conducted in the months when reptiles are generally active in accordance with an agreed method of working and in the presence of a suitably qualified ecologist;

- any reptiles found during Site preparation will be moved to suitable habitat close to, but outside the Site or working boundary (e.g. dense vegetation offsite to the east close to the stream corridor).

7 Mitigation and Enhancement Measures

7.1 Overview

7.1.1 This section details the ecological management, mitigation and enhancement measures incorporated into scheme design. Jointly these demonstrate the proposals accord with national and local planning policy, as well as the SPD.

7.2 Embedded Mitigation in Scheme Design

7.2.1 The scheme has been designed to deliver the biodiversity requirements clearly set out in Principle 9 in the SPD. In particular, the scheme enhances the condition and connectivity of linear habitats, improving the integrity of green infrastructure within the Site and its links to corridors in the wider masterplan area. It also safeguards a significant portion of the Site (c. 50%) for the establishment of new and ecological valuable grassland and orchard habitats, as well as an allotment site which contributes to the area of green open space available for the enjoyment of new residents. The habitat creation and enhancement measures which will be delivered through detailed design include:

- Native tree planting and hedgerow planting including the planting of fruit trees to assist in offsetting the loss of ruderal and grassland habitat post-development;
- Retention of c 50% of the Site as public open space to be enhanced botanically using a species-rich grassland mix to improve the ecological value of retained areas of grassland and offset the loss of existing poorer quality grassland elsewhere on Site;
- A buffer of at least 30m maintained between the footprint of the proposed works and the margin of the watercourse in the south-eastern corner of the Site to prevent impacts to this adjacent aquatic habitat;
- A SUDs system providing valuable habitats for a range of species.
- Directional lighting minimising light spill onto the hedgerows in the north-west and north-east. No lighting along the south-eastern/eastern Site boundary to prevent impacts to foraging/commuting bats and other nocturnal wildlife.

7.2.2 The biodiversity value which should be achieved, as a minimum, through the detailed scheme design is confirmed through a biodiversity metric calculation, as provided at Appendix E.

7.3 Avoidance and Mitigation Measures

7.3.1 Site preparation and construction will be undertaken having regard to avoidance and mitigation measures specified to safeguard ecological resources. These will be set out in full in a Construction Environmental Management Plan (CEMP) (or equivalent document) and summarised below:

- **Tool box talk** – operatives working on the construction site will be given a ‘tool box talk’ as part of site induction. This will make operatives aware of important ecological features and the measures to be implemented to safeguard these features;
- **Air Quality** – dust abatement measures will be implemented. These will include dampening down storage areas of sand or aggregates and access routes during high volume vehicle movements;
- **Fuel Storage** - the CEMP will include a Pollution Prevent Plan. This will confirm arrangements for fuel storage, emergency spill procedures and arrangements for removal of waste oil/ fuel from Site upon the completion of construction works;

- **Surface Water Runoff Control** – measures to ensure there is no surface water run off into the watercourse will be specified;
- **Lighting Control Measures** – construction lighting will be avoided. Where this is not possible its use will be minimised, spill avoided and the hedgerows and watercourse will not be illuminated.
- **Badger** – a badger survey will be undertaken before the commencement of preparatory works in order to locate any active setts, determine their current status and then establish any action required, including the requirement to proceed with the authority of a badger licence issued by Natural England. The survey will be timed sufficiently in advance of the start of works so as to allow any necessary measures to be implemented.
- **Nesting Birds** – vegetation clearance will take place outside the bird nesting period (generally late February – late August). If this is not possible habitat areas will first be checked by a suitably experienced ecologist immediately prior to clearance (i.e. the same morning or during the previous day) for signs of nesting activity. Should any areas contain active nests the vegetation will not be removed until the young have fledged or the nest is abandoned. If necessary, the ecologist will make repeat checks to confirm the status of the nest. Active nests will be retained with an appropriate buffer to avoid or minimise disturbance. This may involve leaving vegetation several metres in diameter (on either side) of the nest.
- **Reptiles** – vegetation clearance in preparation for construction will be undertaken during the months when reptiles are generally active (April – late September) and when temperatures are between 9°C and 18°C. Clearance will be directional and phased, cutting first at a height of c. 15cm before clearing to near ground level. This approach will allow any reptiles present to disperse to safety.

7.4 Enhancement Measures

- 7.4.1 The embedded mitigation measures described above will deliver significant ecological enhancement as an inherent component of the scheme. However, further enhancement will be afforded by implementation of the following general measures:

Bat and Bird Boxes

- Bat boxes will be affixed to suitable retained trees on the eastern Site boundary, adjacent to the watercourse. These may comprise one or a mixture of the following; Schwegler 1FF bat box, Schwegler 2F (double-fronted option) box (suitable for pipistrelle species), Schwegler 2FN boxes (also suitable for a range of species including pipistrelle bats).
- Bird boxes will be affixed to mature trees along the eastern/south-eastern boundary of the Site to enhance conditions for nesting birds. The boxes will be wood or woodcrete with an entrance hole around 45 mm in diameter. These will be suitable for a range of bird species, including starlings *Sturnus vulgaris* (an SPI).

- 7.4.2 Boxes will be installed 3 and 4.5 metres from the ground where they are out of reach of people (so as to limit interference), high enough to deter cats and other predators but not so high as to make maintenance difficult or to expose the boxes to adverse weather. Boxes will also be placed at slightly different heights and facing differing directions to give a diversity of roost and nest site options. The direction of the boxes should avoid facing into the prevailing weather and face a generally southerly direction (i.e. south-west through south to south-east).

Invertebrate Boxes

- 7.4.3 Invertebrate boxes placed within the eastern half of the Site and in locations surrounded by vegetation will provide shelter for over wintering invertebrates. Many designs are commercially

available and will be used by invertebrate taxa that the landscaping design is expected to support, including lacewings, ladybirds and solitary bees.

Log Piles

- 7.4.4 Retention of logs, brash and chippings following site preparation and the creation of habitat piles will benefit a wide range of species including saproxylic (deadwood dependant) invertebrate species and sheltering/overwintering small fauna (amphibians, reptiles and mammals).

8 Conclusion

- 8.1.1 Review of existing ecological records, the outcome of previous ecological studies on adjacent land and an extended Phase 1 habitat survey has informed assessment of the current ecological interest of the Site.
- 8.1.2 This assessment has determined that the Site is dominated by grassland with limited areas of ruderal vegetation and scrub which are of no significant ecological value. Hedgerows at the Site boundaries and a watercourse are of greater, but still only local value.
- 8.1.3 The low ecological interest of the Site limits its potential to support protected species and/or species of conservation concern. It was consequently agreed with Cherwell District Council's Ecology Officer that no species specific or other surveys are required to inform this planning application.
- 8.1.4 The scheme has been developed having regard to opportunities and constraints, including those relating to ecology. As a result, measures are embedded in design to ensure ecological mitigation is delivered as an inherent component of the scheme. Key measures include hedgerow retention and enhancement, buffering of the watercourse and establishment of open space supporting grassland and orchard habitat over c 50% of the Site. Potential indirect impacts will be managed by pollution control measures and a bespoke lighting strategy that will ensure linear features remain unlit. This will enhance their function as ecological corridors within the green infrastructure network and sustain use by nocturnal species, including bats
- 8.1.5 Ecological features valued as being important at a local level or above were limited to (i) sites designated for their nature conservation value; and (ii) foraging and commuting bats. The assessment concluded that the proposals will result in no effect on designated area as a result of the features for which each of the areas are designed, the nature of the proposals and the distance between each of the designated areas and the Site. Jointly, habitat enhancement measures and a bespoke lighting strategy are considered likely to result in a beneficial effect on bats.
- 8.1.6 The Site was assessed as potentially also supporting other species/species assemblages protected by legislation, albeit likely to be present in only low numbers, if at all. These species are not therefore subject to impact assessment but management measures are identified to minimise the risk of the proposals resulting in an unintentional legislative breach.
- 8.1.7 The Site includes habitat that can be expected to support breeding birds, including farmland species. However, suitable habitat within the Site is limited in extent and suitability such that its loss, when assessed in isolation, will have no significant effect on birds, including farmland species, and provides no prompt for mitigation. However, assessment of the impacts arising from implementation of the eco town proposals concluded development of the masterplan area would result in significant cumulative impacts on the assemblage of farmland birds currently associated with the area to the north west of Bicester. The SPD therefore requires the creation of a strategic mitigation site capable of sustaining the farmland bird assemblage, and that those progressing development on any site within the masterplan area make an appropriate financial contribution to management of such a site. Therefore, despite the assessment that in isolation the proposals for the Site will result in no significant impact on farmland birds, an appropriate financial contribution to strategic mitigation will be made thereby contributing to the avoidance of cumulative impacts on the farmland bird assemblage in the wider area.
- 8.1.8 In addition to ecological mitigation embedded in scheme design, bespoke measures will deliver further biodiversity enhancement. Such measures will include installation of bat and bird boxes, each specified to meet the preferences of species known to be present in the area; invertebrate boxes; and retention of log/vegetation piles to create and sustain conditions suitable for shelter and hibernation.

- 8.1.9 Policies in the NPPF and Cherwell Local Plan 2011-2031 and the Principles set out in the SPD all seek the protection of important ecological features and encourage land development to deliver biodiversity gain. This assessment demonstrates the Site to be of generally low ecological value such that development will result in no significant ecological effects; that an appropriate financial contribution to management of a strategic mitigation site will assist in addressing cumulative impacts on farmland bird across the wide area to be north west of Bicester; and that the ecologically informed design can reasonably be expected to deliver biodiversity enhancement. As such there are no reason, relating to ecological features, that this planning application should not be granted.

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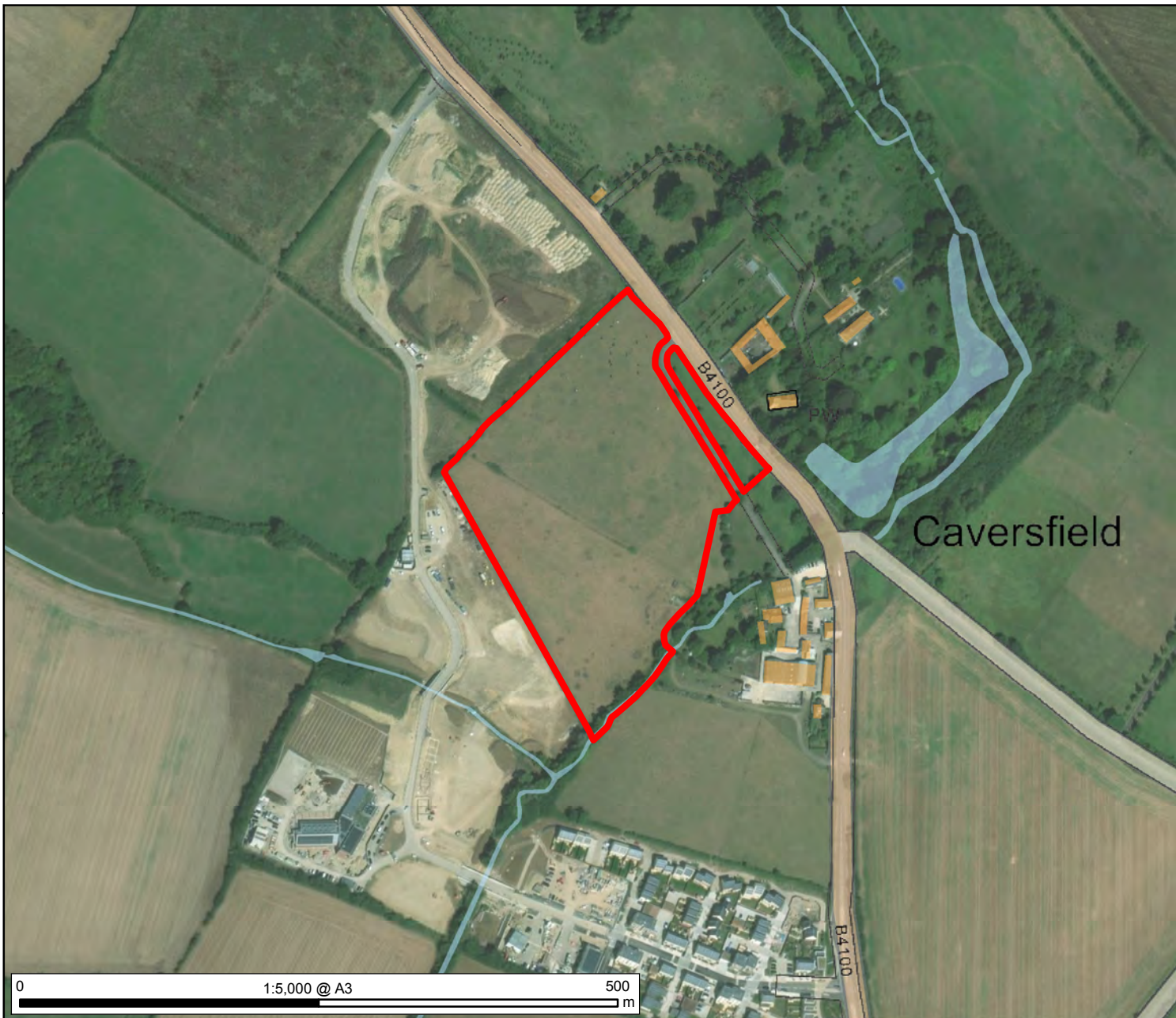
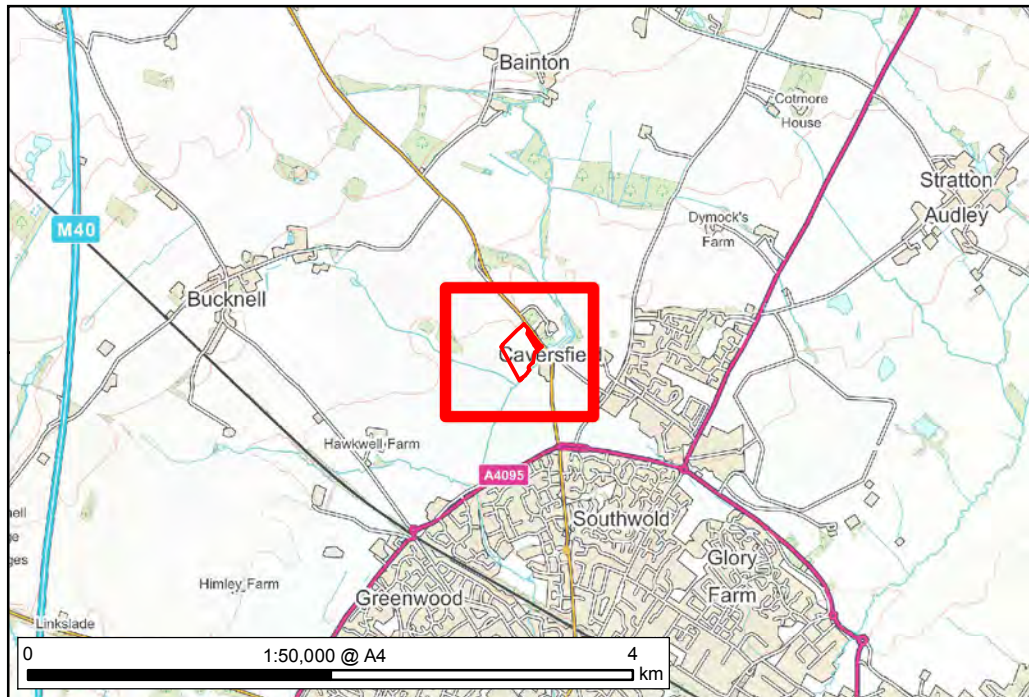
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10 Figures

Figure 1: Site Location Plan



Client:
SGR (Bicester 1)
Limited

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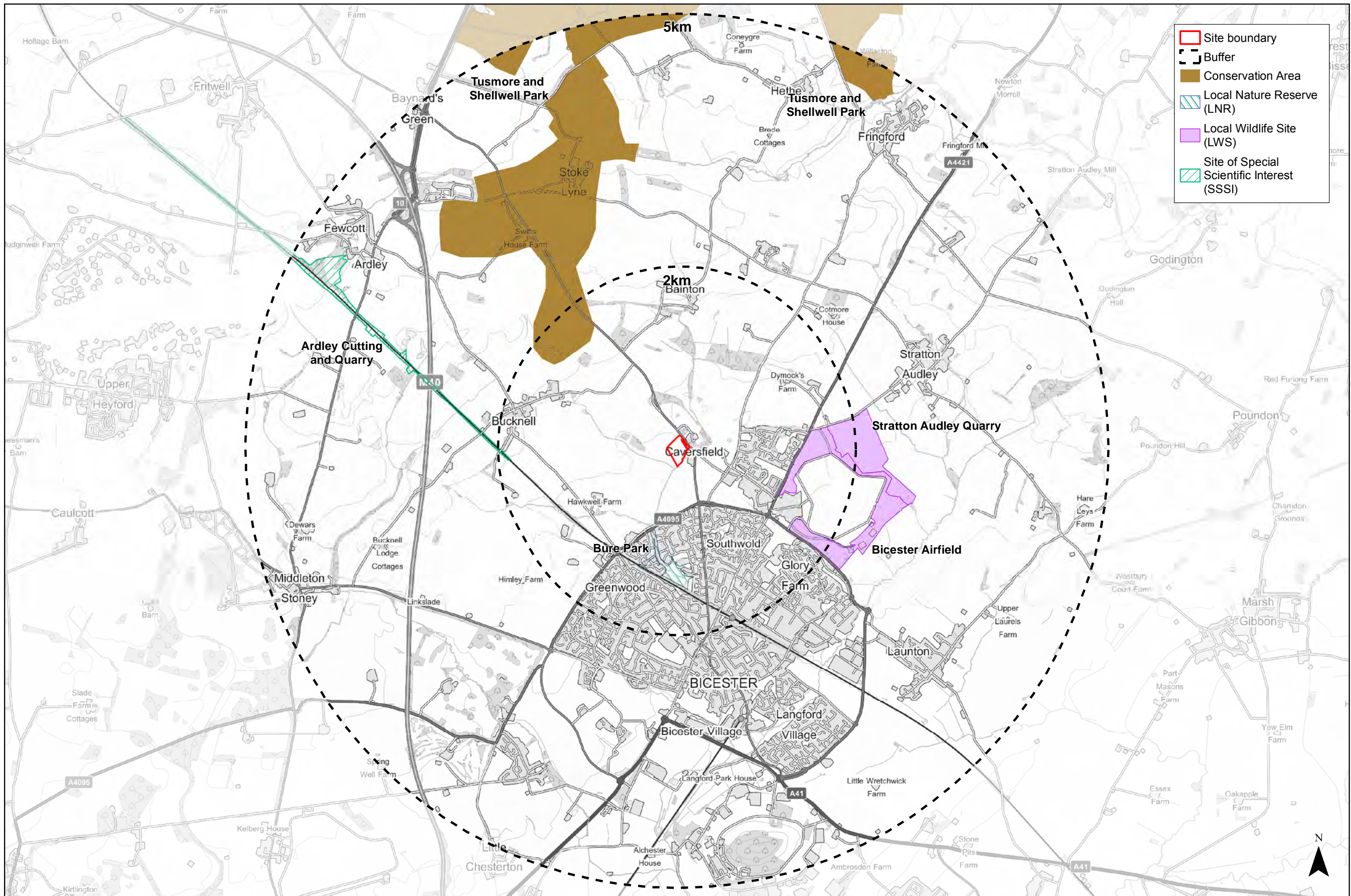
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Caversfield, Bicester
Site Location Plan

Figure 1 Rev A

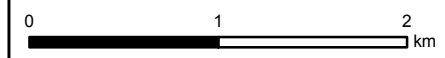


Figure 2: Designated Site Plan/ Desk study Plan



- Site boundary
- Buffer
- Conservation Area
- Local Nature Reserve (LNR)
- Local Wildlife Site (LWS)
- Site of Special Scientific Interest (SSSI)

Caversfield, Bicester



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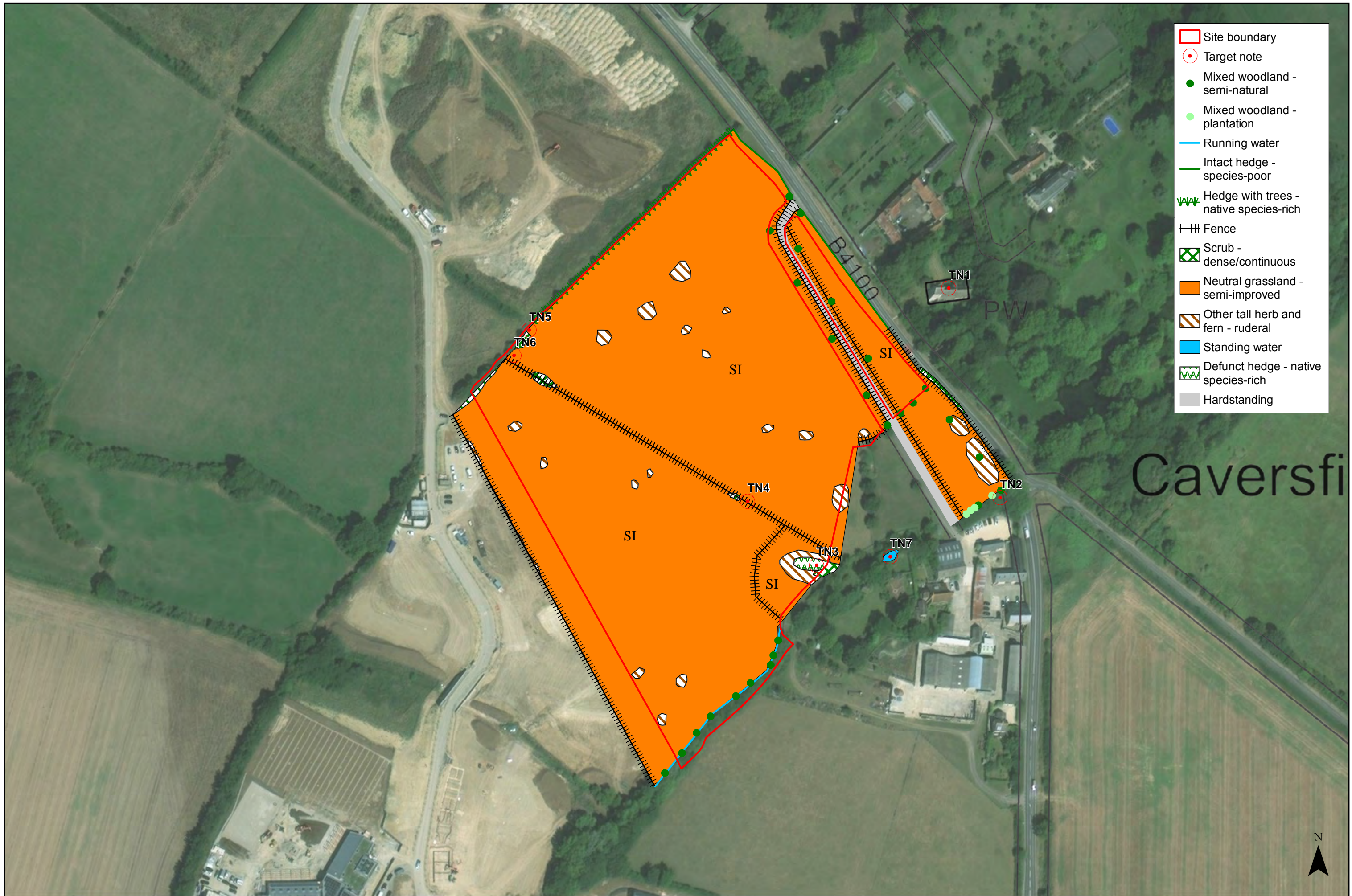


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Designated Areas of Nature
 Conservation Interest

Figure 3: Extended Phase 1 Habitat Survey Plan - with target notes



- Site boundary
- Target note
- Mixed woodland - semi-natural
- Mixed woodland - plantation
- Running water
- Intact hedge - species-poor
- W Hedge with trees - native species-rich
- Fence
- Scrub - dense/continuous
- Neutral grassland - semi-improved
- Other tall herb and fern - ruderal
- Standing water
- W Defunct hedge - native species-rich
- Hardstanding

Caversfi

Caversfield, Bicester

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m

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Extended Phase 1 Habitat Survey
Results

Appendix A Designated Sites

Table 4: Statutory and Non-Statutory Designated Areas with 2 km of Site Boundary

Site Name	Area (ha)	Grid ref.	Description
<i>Statutory Designated Sites of National Importance</i>			
Stratton Audley Quarries SSSI	8.7	SP 6005 2545, SP 602 250	This SSSI is located 1.85km to the east and is designated for its geological interest.
Ardley Cutting and Quarry SSSI	40.13	SP 540 269	This site is located approximately 1.95 km to the west and comprises an extensive area of limestone grassland supporting a rich botanical and invertebrate assemblage. There is also a woodland with associated wetland/pond habitat supporting a large population of great crested newts <i>Triturus cristatus</i> .
<i>Statutory Designated Sites of Local Importance</i>			
Bure Park LNR	8.4	SP 578 237	This LNR lies approximately 800m to the south-west and comprises grass meadow, young broad-leaved woodland, hedges and scrub. A small river (the Bure) runs through the site, feeding a small pond which also supports great crested newts great crested newts.
<i>Non-statutory Designated Sites (Local Wildlife Sites)</i>			
Bicester Airfield LWS	161	SP 599 240	This LWS is located 1.15km to the east. This large airfield supports species-rich grassland and early successional scrub being classified open mosaic of habitats on previously developed land (a Habitat of Principal Importance). Calcareous grassland is also present in the north.
Twelve Acre Copse LWS	2.7	SP 567 265	This site is located 1.65km to the north-west of the Site. This site consists of an area of ancient woodland woodland surrounded by an arable landscape.
Stratton Audley Quarry LWS	36.95	SU 600 251	This site lies 1.8km to the east of the Site. This former quarry meets the criteria of being a HPI (open mosaic habitat on previously developed land). This site supports a diverse botanical and invertebrate assemblage with ephemeral pools supporting a number of stonewort species. Great crested newts are also present on site.

Table 4: Protected Species and Species of Conservation Importance within a 2km radius of the site.

Common name	Scientific name	Date	Grid ref.	Location and distance from the site
Great crested newt	<i>Triturus cristatus</i>	2011	SP 5763 2380	Approximately 1.15 km to the south of the Site.
Common lizard	<i>Zootoca vivipara</i>	2017	SP 590 241	Approximately 1.3 km to the south-east of the Site.
Kestrel	<i>Falco tinnunculus</i>	2008	SP 601 250	Approximately 1.9 km to the east of the Site.
Swift	<i>Apus apus</i>	2014	SP 5906 2469	Approximately 1 km to the east of the Site.
Green woodpecker	<i>Picus viridis</i>	2014	SP 597 253	Approximately 1.7km to the east of the Site.
Skylark	<i>Alauda arvensis</i>	2008	SP 601 250	Approximately 2km to the east of the Site.
Dunnock	<i>Prunella modularis</i>	2017	SP 590 241	Approximately 1.3 km to the south-east of the Site.
Song thrush	<i>Turdus philomelos</i>	2017	SP 590 241	Approximately 1.3 km to the south-east of the Site.
Whitethroat	<i>Sylvia communis</i>	2017	SP 590 241	Approximately 1.3 km to the south-east of the Site.
House sparrow	<i>Passer domesticus</i>	2017	SP 590 241	Approximately 1.3 km to the south-east of the Site.
Bullfinch	<i>Pyrrhula pyrrhula</i>	2017	SP 590 241	Approximately 1.3 km to the south-east of the Site.
Noctule	<i>Nyctalus noctula</i>	2017	SP 590 241	Approximately 1.3 km to the south-east of the Site.
Common pipstrelle	<i>Pipistrellus pipistrellus</i>	2015	SP58102530	Approximately 200m to the north of the Site.
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	2017	SP 590 241	Approximately 1.3 km to the south-east of the Site.
Brown long-eared bat	<i>Plecotus auritus</i>	2015	SP58102530	Approximately 200m to the north of the Site.
Hedgehog	<i>Erinaceus europaeus</i>	2012	SP 573 240	Approximately 1km to the south-east of the Site.
Badger	<i>Meles meles</i>	2010	SP 574 251	Approximately 450 m to the west of the Site
Polecat	<i>Mustela putorius</i>	2015	SP571472639 2	Approximately 1.3km to the north-west of the Site.

Appendix B Target Notes

Target Note 1

- B.1.1 St Laurence Church offsite to the north-east known to support roosting bats.

Target Note 2

- B.1.2 A watercourse borders the eastern boundary of the Site. This watercourse is known to dry in the summer months and as such is of limited value to riparian mammals (water voles and otters).

Target Note 3

- B.1.3 A large pile of rubble and spoil offering potential overwintering opportunities to reptiles, amphibians and other small fauna.

Target Note 4

- B.1.4 Diggings in the field margin likely evidence of rabbit activity but could also be badger "snuffle holes" where badgers foraged for worms.

Target Note 5

- B.1.5 A rabbit warren in the north-western corner of the Site.

Target Note 6

- B.1.6 A badger paw print in the north-western corner of the Site.

Target Note 7

- B.1.7 A small waterbody offsite to the south-east. This water body is often inundated with water from the nearby watercourse in winter and dries out in the summer. Frogs are known to breed in this small waterbody.

Appendix C Photographs



Photograph 1: The Site was dominated by managed/grazed semi- improved neutral grassland



Photograph 2: A species-rich hedgerow with trees bordered the north-western boundary of the Site.



Photograph 3: A small patch of dense scrub in the north-west of the Site. Evidence of rabbit burrows was present beneath this scrub.



Photograph 4: A badger print in the north-west of the Site



Photograph 5: A watercourse runs along the south-eastern boundary of the Site.



Photograph 6: A small waterbody was present offsite to the east. This is filled through inundation by the adjacent brook.



Photograph 7: A large rubble pile offering potential overwintering opportunities to small fauna.



Photograph 8: St Laurence Church offsite to the north-east, known to support roosting bats.

Appendix D Legislation and Planning Policy

D.1.1 This section briefly summarises the relevant national and local planning policies and legislation pertaining to habitats and species mentioned within this report. Please note that the following text does not constitute legal advice.

D.2 National Planning Policy Framework

D.2.1 The National Planning Policy Framework (NPPF) was published in March 2012. This document states that, “*the planning system should contribute to and enhance the natural and local environment by:*

- *Protecting and enhancing valued landscapes, geological conservation interests and soils;*
- *Minimising impacts on biodiversity and providing net gains in biodiversity, where possible contributing to the Government’s commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; and*
- *Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability”.*

Planning – land allocation and policies

D.2.2 The NPPF states that ‘*in preparing plans to meet development needs, the aim should be to minimise pollution and other adverse effects on the local and natural environment. Plans should allocate land with the least environmental or amenity value, where consistent with other policies in this Framework.*’

D.2.3 Local planning authorities are advised in paragraph 113 to ‘*set criteria-based policies against which proposals for any development on or affecting protected wildlife or geodiversity sites or landscape areas will be judged. Distinctions should be made between the hierarchy of international, national and locally designated sites so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks.*’

D.2.4 In paragraph 111, the NPPF refers to brownfield land as follows: ‘*planning policies and decisions should encourage the effective use of land by re-using land that has been previously developed (brownfield land), provided that it is not of high environmental value.*’

D.2.5 Local planning authorities are advised further to ‘*set out a strategic approach in their Local Plans, planning positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure...*’

D.2.6 The NPPF also states that, “*to minimise impacts on biodiversity and geodiversity, planning policies should:*

- *Plan for biodiversity at a landscape-scale across local authority boundaries;*
- *Identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation;*
- *Promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to*

national and local targets; and identify suitable indicators for monitoring biodiversity in the plan; and

- *Where Nature Improvement Areas are identified in Local Plans, consider specifying the types of development that may be appropriate in these Areas.”*

Planning applications and biodiversity

D.2.7 “When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- *If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *Proposed Development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site’s notified special interest features is likely, an exception should only be made where the benefits of the development, at this site clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest;*
- *Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;*
- *Opportunities to incorporate biodiversity in and around developments should be encouraged;*
- *Planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland...unless the need for, and benefits of, the development in that location clearly outweighs the loss...’*

D.2.8 The Government Circular 06/2005 remains valid and Paragraph 99 provides guidance stating “*It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the Proposed Development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision*”.

D.3 Species and Habitats of Principal Importance

D.3.1 The NPPF (paragraph 117) indicates that local authorities should take measures to “*promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species*” linking to national and local targets through local planning policies. Priority species are those species shown on the England Biodiversity List published by the Secretary of State in accordance with Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Planning authorities have a duty under Section 40 of the NERC Act to have regard to priority species and habitats in exercising their functions including development control and planning.

D.4 Local Planning Policy

D.4.1 The Site falls into Cherwell District Council’s jurisdiction. On 19th December 2016, The Cherwell Local Plan 2011-2031 Part 1 was re-adopted in accordance with a Court Order and an associated addendum to the Local Plan Inspector’s Report.

D.4.2 The adopted Cherwell Local Plan 2011-2031 Part 1 incorporating the re-adopted Policy Bicester 13 supersedes the Plan that was adopted in July 2015. The following policy relates to biodiversity.

Policy ESD 10: Protection and Enhancement of Biodiversity and the Natural Environment

D.4.3 *Protection and enhancement of biodiversity and the natural environment will be achieved by the following:*

- *In considering proposals for development, a net gain in biodiversity will be sought by protecting, managing, enhancing and extending existing resources, and by creating new resources*
- *The protection of trees will be encouraged, with an aim to increase the number of trees in the District*
- *The reuse of soils will be sought*
- *If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or as a last resort, compensated for, then development will not be permitted.*
- *Development which would result in damage to or loss of a site of international value will be subject to the Habitats Regulations Assessment process and will not be permitted unless it can be demonstrated that there will be no likely significant effects on the international site or that effects can be mitigated*
- *Development which would result in damage to or loss of a site of biodiversity or geological value of national importance will not be permitted unless the benefits of the development clearly outweigh the harm it would cause to the site and the wider national network of SSSIs, and the loss can be mitigated to achieve a net gain in biodiversity/geodiversity*
- *Development which would result in damage to or loss of a site of biodiversity or geological value of regional or local importance including habitats of species of principal importance for biodiversity will not be permitted unless the benefits of the development clearly outweigh the harm it would cause to the site, and the loss can be mitigated to achieve a net gain in biodiversity/geodiversity*
- *Development proposals will be expected to incorporate features to encourage biodiversity, and retain and where possible enhance existing features of nature conservation value within the site. Existing ecological networks should be identified and maintained to avoid habitat fragmentation, and ecological corridors should form an essential component of green infrastructure provision in association with new development to ensure habitat connectivity*
- *Relevant habitat and species surveys and associated reports will be required to accompany planning applications which may affect a site, habitat or species of known or potential ecological value*
- *Air quality assessments will also be required for development proposals that would be likely to have a significantly adverse impact on biodiversity by generating an increase in air pollution*
- *Planning conditions/obligations will be used to secure net gains in biodiversity by helping to deliver Biodiversity Action Plan targets and/or meeting the aims of Conservation Target Areas. Developments for which these are the principal aims will be viewed favourably*

- *A monitoring and management plan will be required for biodiversity features on site to ensure their long term suitable management.*
- D.4.4 The Site also falls within the boundary of the North West Bicester Masterplan. North West Bicester is governed by Central Government's Eco-town Planning Policy Statement (Eco-town PPS). A dedicated supplementary planning document (the North West Bicester Supplementary Planning Document [SPD]) was published in February 2016 by Cherwell District Council. Considerations of relevance to biodiversity within the document include the following:
- D.4.5 Development Principle 4 (Homes) states *"Home designs will encourage more sustainable ways of living for example through gardens and food production and biodiversity (for example, fruit trees, wildflower meadows and log piles)"*.
- D.4.6 Development Requirement 9 - Green infrastructure and landscape states *"There should be areas where biodiversity is the principal outcome, such as the nature reserve, parts of the country park, and wildlife corridors and buffers. In addition, opportunities to maximise biodiversity in other green spaces should be taken"*.
- D.4.7 Development Principle 9a (Tree Planting) states *"To reflect the Biodiversity Strategy, native trees and shrubs should be planted on the site particularly within woodland, the country park, the nature reserve, and ecological buffers and corridors but also as a proportion of other plantings"*.
- D.4.8 Development Principle 9 (c) – Hedgerows, dark buffers and stream corridors states *"Hedgerow loss should be minimised and mitigated for and existing hedges retained as part of the landscape framework and breaches of the hedges minimised in designing the layout of development. Retained hedgerows identified on the masterplan will be enriched by semi-natural vegetation in buffer zones, a minimum of 10 metres either side of the hedgerow in accordance with the Green Infrastructure and Landscape Strategy."*
- D.4.9 *The establishment of a minimum 60 metre corridor to the watercourses (30 metres each side of the centre line) shall be provided to create a strong landscape feature in the scheme and secure the opportunity for biodiversity gain from the development. This principle goes on to state that "A 20 metre buffer along either side of designated hedgerows recognised for their ecological value will be provided to create a "dark corridor" for nocturnal species such as bats.*
- D.4.10 Development Principle 9 (e) - Biodiversity states that *"Sensitive management of open space provision to secure recreation and health benefits alongside biodiversity gains"*. With regard to farmland birds this principle states *"As it is not possible to mitigate for the impact of farmland birds on the site, off site mitigation measures should be provided and all applications within the masterplan area should contribute to the provision of off-site mitigation"*.
- D.4.11 *Proposals must demonstrate inclusion of biodiversity gains within the built environment for example through planting, bird, bat and insect boxes and the inclusion of green roofs . A biodiversity strategy which is part of an approved biodiversity strategy for the whole masterplan area, shall accompany all planning applications. It should include an accepted numerical metric to show that a net gain in biodiversity will be achieved.*
- D.4.12 Development Requirement 10 (Water) states *"Development proposals shall incorporate Sustainable Urban Drainage Systems (SUDS) designed to maximise the opportunities for biodiversity"* (Cherwell District Council, 2016).

D.5 European Legislation – Bats, Great Crested Newts and Otters

- D.5.1 The original (1994) "Habitat Regulations" transposed the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC)

into national law. The Conservation of Habitats and Species Regulations 2017 consolidates the various amendments that have been made to the Regulations.

D.5.2 “European protected species” (EPS) are those which are present on Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (as amended). These habitats and species are subject to the provisions of Regulation 41 of those Regulations. All EPS are also protected under the Wildlife and Countryside Act 1981 (as amended). Taken together, these pieces of legislation make it an offence to:

- Intentionally or deliberately capture, injure or kill any wild animal included amongst these species
- Possess or control any live or dead specimens or any part of, or anything derived from these species
- deliberately disturb wild animals of any such species
- deliberately take or destroy the eggs of such an animal, or
- intentionally, deliberately or recklessly damage or destroy a breeding site or resting place of such an animal, or obstruct access to such a place

D.5.3 For the purposes of paragraph (c), disturbance of animals includes in particular any disturbance which is likely—

- to impair their ability to survive, to breed or reproduce, or to rear or nurture their young,
- or in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
- to affect significantly the local distribution or abundance of the species to which they belong.

D.5.4 Although the law provides strict protection to these species, it also allows this protection to be set aside (derogation) through the issuing of licences. The licences in England are currently determined by Natural England (NE) for development works. In accordance with the requirements of the Regulations (2010), a licence can only be issued where the following requirements are satisfied:

- *The proposal is necessary ‘to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment’*
- *‘There is no satisfactory alternative’*
- *The proposals ‘will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range’.*

National Legislation

Breeding birds

D.5.5 All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs.

Common Reptiles

- D.5.6 The common, widespread species of reptile (slow worm, grass snake, adder and common lizard) are protected through Sections 9(1) and 9(5) of the Wildlife and Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000, making it an offence to, intentionally or recklessly kill or injure any reptile or sell, offer for sale, possess or transport for the purchase of sale or publish advertisements to buy or sell any reptile.
- D.5.7 Reptiles across the UK have undergone significant declines in recent years and all species of reptile within the UK are now included on the list of species of principal importance prepared in response to Section 41 of the Natural Environment and Rural Communities (NERC) Act, 2006. This legislation placed a duty on the Secretary of State to publish, review and revise lists of living organisms in England that are of principal importance for the purpose of conserving biodiversity. The NERC Act also required the Secretary of State to take, and promote the taking of, steps to further the conservation of the listed organism.

Badgers

- D.5.8 Badgers are protected under the Protection of Badgers Act 1992. This makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. A licence can be granted by Natural England to permit works that would otherwise result in an offence (e.g. to allow sett closure where activities close by may otherwise result in disturbance or damage to the sett).

Wild Mammals (Protection Act, 1996 (as amended))

- D.5.9 Under the Wild Mammals (Protection) Act 1996 it is an offence to cause unnecessary suffering to wild mammals, including crushing and asphyxiating. This Act is primarily concerned with animal welfare and aims to prevent cruelty. As a result, offences include those actions with the intent to inflict unnecessary suffering. A wild mammal includes any mammal which is not domestic or captive. Red foxes, wild deer and other mammals such as rabbits are therefore covered by the Act.

Appendix E Biodiversity Metric Calculation

E.1 Defra Metric

E.1.1 Defra’s technical paper which informed the Biodiversity Offsetting pilot scheme in 2012 states: “Biodiversity in its entirety is impossible to measure so a ‘metric’ is used to represent, and provide a measure of, overall biodiversity. Metrics are surrogates, or combinations of measurements, that together provide an assessment of the biodiversity value of a particular area. The metric allows the biodiversity impact of a development to be quantified so that the offset requirement, and the value of the compensatory action, can be clearly defined. Metrics are transferable between sites and habitats, allowing an impact on one habitat type to be offset with conservation action elsewhere, or involving a different habitat type and/or quality of habitat.”. The paper prepared by DEFRA defined the habitat bands which would form the basis of the pilot scheme; these are outlined in Table E.1 below.

Table E.1: Habitat Type Bands applied to Biodiversity Metric Pilot Scheme Adapted from DEFRA (2012) Technical paper.

Habitat type band	Distinctiveness	Broad habitat type covered	Type of offset
High	High	Priority habitat as defined in response to the requirements of Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006	Same band type, and ideally like for like
Medium	Medium	Semi-natural	Within band type or trade up
Low	Low	E.g. Intensive agricultural– but may still form an important part of the ecological network in an area.	Trade up

E.1.2 DEFRA and Natural England’s resulting biodiversity offsetting metric pilot scheme worked with the local councils in six areas. One of these areas was Warwickshire, Coventry and Solihull (WCS) who together with the Environment Bank developed a Biodiversity Impact Assessment Calculator and which is freely available for download and use. The principal of the WCS Calculator was to link Phase 1 habitat survey codes (a method of habitat survey defined within the extended Phase 1 habitat survey handbook (JNCC, 2010)) to habitat distinctiveness. The user then applies the habitat area and habitat condition. The habitat distinctiveness was pre-determined to either High, Medium or Low (as outlined above in Table E.1), with respective ‘scores’ of 6, 4, or 2.

- E.1.3 Similarly, habitat condition is assigned by the user to either 'Good, Moderate or Poor' with respective scores of 3, 2, or 1. This mirrors the approach set out in the Defra paper (DEFRA, 2012) which in turn is based on that adopted for Higher Level Stewardship schemes (DEFRA, 2005). Obviously the 'condition' of an area of habitat is intrinsically linked to the type of habitat. For example, the criteria for a 'good condition' area of semi-natural broadleaved woodland would differ to the criteria for a 'good condition' area of neutral grassland. For this reason, professional judgement has been used to assign a reasonable condition assessment to the habitats within the Site.
- E.1.4 PBA have undertaken an assessment of the proposed development using the "Defra Metric" developed by Warwickshire, Coventry and Solihull Councils. The WCS calculator separates the habitats on-site into a number of categories based on:
- Whether the habitat is retained or lost, and if retained the resulting condition post development (i.e. enhanced or unchanged);
 - Whether there are indirect negative impacts on the habitat; and
 - Whether new habitats are created, or enhanced.
- 10.1.1 Given the development application is in outline, the detail of habitat enhancements to be provided within the green space of the proposed development is yet to be defined. The metric has therefore been used to determine the existing value of the Site and the residual biodiversity value as a result of the habitats lost to the Proposed Development. This provides a biodiversity unit value which will need to be met by future biodiversity provision, to be confirmed through detailed design.
- 10.1.2 The calculation shows that the Site has a "Site habitat biodiversity value" score of 39.10. Taking into account the assumptions that at least 2.37ha of the Site will be retained as grassland, and the trees within the site will be retained, with only 10m per hedgerow lost to the development, the Biodiversity Calculator shows a residual habitat impact score of $-18.82 - 0.24 = -19.06$. Screenshots of the metric output are provided below.
- 10.1.3 Through detailed design, the proposals will ensure biodiversity gain in order to meet the policy requirements, with reference to this residual habitat impact score. This will be achieved through delivery of the habitat creation and enhancement measures provided in Section 7 of this report; the value of the detailed design provision will be demonstrated through completion of the biodiversity metric table taking into account the habitat creation and enhancement provided by the detailed design.

Warwickshire Coventry and Solihull - Biodiversity Impact Assessment Calculator

KEY
No action required
Enter value
Drop-down menu
Calculation
Automatic lookup
Result

Local Planning Authority:	
Site name:	
Planning application reference number:	
Assessor:	
Date:	

v. 18.3 08/08/2014
Amendment from v18.2 only affects green roofs, for other habitats v18.2 still us
Please fill in both tables
Please do not edit the formulae or structure
To condense the form for display hide vacant rows, do not delete them
If additional rows are required, or to provide feedback on the calculator please contact WCC Ecological Services

Existing habitats on site Please enter <u>all</u> habitats within the site boundary		Habitat distinctiveness		Habitat condition		Habitat Biodiversity Value				Comment					
		Distinctiveness	Score	Condition	Score	Habitats to be retained with no change within development		Habitats to be retained and enhanced within development			Habitats to be lost within development				
T. Note	code	Phase 1 habitat description	Habitat area (ha)					Area (ha)	Existing value	Area (ha)	Existing value	Area (ha)	Existing value		
		Direct Impacts and retained habitats		A	B	C	A x B x C = D	E	A x B x E = F	G	A x B x G = H				
	A21	Woodland: Dense continuous scrub	0.02	Medium-Low	3	Moderate	2	0.00				0.02	0.12		
	I22	Other: Spoil	0.01	Low	2	Poor	1	0.00				0.01	0.02		
	A3	Woodland: Scattered trees	0.11	Medium	4	Good	3	0.11	1.32						
	B22	Grassland: Semi-improved neutral grassland	4.48	Medium	4	Moderate	2	2.37	18.96			2.11	16.88		
	C31	Other: Tall ruderal	0.30	Medium-Low	3	Moderate	2	0.00				0.30	1.80		
	n/a	Built Environment: Buildings/hardstanding	0.11	none	0	Poor	1	0.00				0.11	0.00		
Total			5.03					2.48	20.28	0.00	0.00	2.55	18.82	J	
											Site habitat biodiversity value		7D + 7F + 7H		
											39.10				
Indirect Negative Impacts Including off site habitats							Value of loss from indirect impacts K x A x B								
Before/after															

Biodiversity Impact Assessment
Linear Impact Assessment
Summary
Habitat Details
Habitat trading down correction
Linear trading down correction ...

Calculation Summary

Habitats	Area (ha)	Habitat Biodiversity Value
Total existing area onsite	5.03	39.10
Habitats negatively impacted by development		
Habitat Impact Score	2.55	18.82
On site habitat mitigation		
Habitat Mitigation Score	0.00	0.00
Habitat Biodiversity Impact Score		
If -ve further compensation required		-18.82
Percentage of biodiversity impact		100.00
Linear features	Length (km)	Linear Biodiversity Value
Total existing length onsite	0.63	7.56
Linear features negatively impacted by development		
Linear Impact Score	0.02	0.24
On site linear mitigation		
Linear Mitigation Score	0.00	0.00
Linear Biodiversity Impact Score		
If -ve further compensation required		-0.24
Percentage of linear biodiversity impact		100.00