BEDFORD LOCAL PLAN 2040

PRE-SUBMISSION (REGULATION 18) CONSULTATION

AUGUST 2021

REPRESENTATIONS ON BEHALF OF LONE STAR LAND LTD

Pegasus Group

Birmingham | Bracknell | Bristol | Cambridge | Cirencester | Dublin | East Midlands | Leeds | Liverpool | London | Manchester | Newcastle | Peterborough

DESIGN ENVIRONMENT PLANNING ECONOMICS HERITAGE

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CONTENTS:

Page No:

APPENDICES:

1.0 Introduction

1.1 Pegasus Group are instructed by Lone Star Land Ltd ("**Lone Star**") to submit representations to the Regulation 18 consultation Bedford Local Plan 2040 (the "**draft Plan**").

1.2 Lone Star control 1.8 hectares of land south of Roxton Road in Great Barford (the "**Site**", or the "**Lone Star Site**" - see land control plan at **Appendix A**). The Lone Star Site has been assessed as part of the Council's Call for Sites, under site reference **ID915**.

1.3 Lone Star have been actively engaged with the local community and Great Barford Parish Council since acquiring an interest in the Site. In addition to maintaining a dialogue with Great Barford Parish Council's Neighbourhood Plan Sub-Committee, Lone Star have presented proposals for the Site to the local community via a website, the distribution of leaflets, an individual consultation event in October 2020 and participation at the "Meet the Developers" consultation event in November 2020. The Site is not allocated for development in the Made Neighbourhood Plan but did score well in the Parish Council's own assessment for deliverability.

1.4 Lone Star welcome the opportunity to engage further in the Local Plan process through these representations, having previously made representations to the now adopted Core Strategy and also having made submissions through the Council's Call for Sites.

1.5 The tests of soundness that Development Plans need to meet so as to be legally compliant and found sound, are set out in the National Planning Policy Framework (NPPF), paragraph 35:

- **Positively prepared** – providing a strategy which, as a minimum, seeks to meet objectively assessed needs, and is informed by agreements with other authorities, so that unmet need from neighbouring areas is accommodated where it is practical to do so and

is consistent with achieving sustainable development;

- **Justified** – an appropriate strategy, taking into account the reasonable alternatives, and based on proportionate evidence;
- **Effective** – deliverable over the Plan period, and based on effective joint working on cross-boundary strategic matters that have been dealt with rather than deferred, as evidenced by the statement of common ground; and
- **Consistent with national policy** – enabling the delivery of sustainable development in accordance with the policies in the Framework.

1.6 These tests of soundness, along with other legal and procedural requirements associated with the Plan-making process provide a contextual framework for these representations.

2.0 Evidence Base

Evidence Produced to Support the Local Plan

2.1 The Council's consultation page identifies a number of documents which sit behind the Local Plan, key amongst these are the 'Site Assessments' and the Sustainability Appraisal.

2.2 Lone Star consider that the Site Assessments report does not accurately reflect the submissions made to the Council to date with regard to their individual site assessment.

2.3 In particular the Site is identified by the Council as having possible Highway capacity issues. This query, however, is not supported by the Highway department comments identified in the Site Assessment pro-forma, which acknowledge that the Site could deliver betterment to local connectivity (i.e. widen pre-existing footpaths), and notes that there are no access constraints.

2.4 The Site is assessed as being Best and Most Versatile (BMV) agricultural land, whilst Lone Star's submission documents to the Call for Sites made clear that whilst it is in class 3, it is unclear if the land is Class 3a (BMV), or 3b (not BMV). In any event, the size of the Site and location of the Site do not make it critical to the viability of an agricultural unit. Finally, the Site Assessments report queries the Site's ecological value. Detailed survey work has been undertaken on site (attached as Appendix B) and identifies that whilst the habitat may be suitable for reptiles, the nature of the Site is such that it has low potential of supporting any viable population, and that standard working practice surveys can avoid any harm. The report also identifies how a net gain in biodiversity could also be delivered at a nearby off-site location to mitigate any loss on site, a point which was also incorrectly referenced in the Council's assessment as being 'uncertain'.

2.5 The Sustainability Appraisal ("**SA**") identifies a number of options which have been considered for assessment as 'reasonable alternatives'. The SA identifies

that the Option 2 scenarios are the 'best performing', and of those the SA selects Option 2a as performing better than options 2b-2c. This is based on an assessment that rail access above all other factors, is the key component of sustainability which will drive a shift away from reliance on the private car.

2.6 Such an approach, however, fails to have regard to numerous other key aspects of sustainable living. For example, directing employment growth alongside new residential development, proposing housing at locations already well served by shops services and facilities (so as to remove the demand for travel at source), or to recognise that the planned rapid shift away from fossil fuel transportation modes may shift the emphasis about what is important in terms of rail accessibility.

2.7 In particular whilst the SA recognises the role of transport corridor growth and especially the role of the A421 corridor, it seems perverse to narrow the identification of Great Barford to just one of the four variations of Option 2 proposed. Great Barford is after all, a Key Service Centre at the second Tier of the existing settlement hierarchy behind only the Bedford/Kempston urban area. Great Barford was assessed at this level in the hierarchy, following the Council's own methodological approach in the 2018 Settlement Hierarchy Paper, still part of the 2040 Local Plan evidence base.

2.8 As the current Core Strategy identifies, Great Barford contains '*a good range of services and [is] well connected to larger town centres by regular public transport.*' As a Key Service Centre, the current Core Strategy recognises that it provides a '*strong service role for the local community and surrounding area.*'

2.9 The current SA strategy over emphasises the potential role of rail in meeting the sustainable transport needs of the Borough. Rail is important, but by its nature is a fixed piece of infra-structure with fixed starting points and destinations. It has an important role, but one which is necessarily limited. Optimising use of existing sustainable settlements, with '*regular public transport*' which is flexible in its routing and frequency, and settlements which meet a '*strong service role*' should play an equally important part in the growth strategy of Bedford Borough to 2040.

2.10 Lone Star would welcome further engagement with officers to address the technical delivery aspects of their site, in order to rectify any misgivings as identified through the Council's Site Assessment process regarding its ability to deliver sustainable development, before the publication of the Council's Regulation 19 Local Plan.

3.0 Proposed Growth and Spatial Strategy Options

3.1 Lone Star have concerns regarding the potential reliance within the draft Local Plan of use of a stepped trajectory, as set out at para 3.5. The use of stepped trajectories does not address the need to meet the existing requirement (i.e. the known level of people in housing need year on year), but simply defers this to another day. There is also concern that the emerging strategy does not seek to address directly how housing provision for older people may be delivered, and/or if the locational implications of that may differ from general market or affordable housing.

3.2 If the Council decide that the provision of large strategic sites is an important part of site delivery in the Borough, then the changes in the National Planning Policy Framework ("**NPPF**") published in July 2021, now provide a sound policy context for Local Plans to include such proposals within the context of a 30-year Vision to recognise their longer lead in times, and prolonged delivery (NPPF para 22). The delivery of larger sites, therefore, is not a sound reason for failing to meet the aspirations of those in housing need now.

3.3 The Local Plan should be based on a strategy which delivers a sufficient supply and mix of deliverable sites to meet the requirement of years 1 to 5 of the plan, and sites or areas for years 6 – 10. The NPPF does not support the deferral of meeting the known housing requirement to beyond year 10. The PPG (68-021) confirms that stepped requirements should not be used to unnecessarily delay meeting needs. Where stepped trajectories have been allowed elsewhere, such as Leeds and Thanet (in Thanet based on similar arguments that large sites would deliver later in the Plan period), those authorities have been unable to demonstrate an uplift in deliverability at the time the 'step' kicked in.

3.4 The Council's strategy, therefore, should be one of meeting current requirement levels today, not deferring a substantial part of delivery to the post 2030 period. A stepped housing requirement also gives rise to substantial social and economic harm by not meeting the needs of households in the early part of the plan period.

3.5 To achieve this objective of national policy guidance, to meet the housing requirement with positive site allocations in years 1 to 10 of the plan or at least broad areas of growth from beyond year 5, the plan will need to balance away from such a heavy reliance on freestanding large new settlements. Currently, the Reg 18 plan speculates that the step might shift from 970 dw/yr up to 2030, with 1,580 dw/yr beyond 2030, i.e. deferring 6,100 dwellings ((1,580-970) * 10 years) to later in the plan period. The named new settlement proposals, however, are only proposed for between 2,500 and 5,585 dw within options 2b, 2c and 2d. This would imply that even if this strategy were pursued, there is an element of deferral of housing need which is simply being deferred to later in the Plan period without justification.

3.6 Lone Star Land would encourage a strategy which does not seek to delay meeting housing need through a stepped trajectory. In order to achieve the Standard Methodology ("**SM**") figure, as a minimum, the strategy should allow for a greater number of small and medium sized sites to be delivered, which are capable of being brought forward within the first 10 years of the Plan period, to meet the current need, now.

3.7 Such a strategy should necessarily look to reliance on the delivery of sites at those settlements that are consistent with the locational strategy of the emerging plan (i.e. those sites which lie*, inter alia*, on the A421 corridor) and settlements which have been assessed and been found by the Council to be highly sustainable in their own right, i.e. the Key Service Centres, including Great Barford.

3.8 That Great Barford only appears in one of the four Option 2 scenarios, is without any sense of evidential support or justification. As aforementioned, the Settlement Hierarchy background paper concludes that it is a highly sustainable settlement with a full range of local services to meet day to day community needs, it is close to and well connected to Bedford, with frequent public transport service provision, and is able to support further growth demonstrably without causing environmental, landscape or heritage harm, through the delivery of sites such as that promoted by Lone Star Land.

3.9 The Council are therefore invited to review the trajectory of delivery for their Reg 19 Local Plan, to provide a recognition of the prolonged delivery rates and timetable of larger strategic scale sites, establish a vision beyond 2040 to delivery of those sites, and look to commit to providing that which is required by the NPPF, i.e. a supply of deliverable sites for the first 10 years of the plan period, which meets as a minimum, the Standard Methodology identified requirement.

3.10 With regard to the provision of housing for older people, the emerging housing strategy is silent on the role that Key Service centres, such as great Barford, may play in meeting that specific tenure. NPPF para 62 makes clear that the housing needs of older people are to be specifically addressed in planning policies. The Council's spatial strategy may reflect that Key Service Centres have a particular role (being defined as the most locally sustainable settlements beyond the Bedford/Kempston Urban Area) and which would be well placed to accommodate and meet the housing needs of an aging population.

Appendix A: Site Plan

ROXTON ROAD

BROOK LANE

ADDINGTONS ROAD

BROOKSIDE

25.0m

25.3m

Allotment Gardens

Legend

- Red Line Boundary
- Existing Buildings
- Existing Landscaping

N

0 10 20 30 40 50m

EXISTING SITE PLAN - 1:500

Intelligent Residential Design
Architecture | Design | Planning
M | [redacted] E | [redacted]

client	
project	Land at Roxton Road Great Barford
project no	19235
drawing no	PA/03
drawing description -	Existing Site Plan
scale	1:500 @ A1
date drawn	August 2020
rev	

Appendix B: Ecological Appraisal

Lone Star Land Ltd.

Land South of Roxton Road, Great Barford

ECOLOGICAL APPRAISAL

February 2021

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B	Draft	MPG / 16.07.20	RJS / 24.07.20
B	Final	MPG / 19.02.21	

CONTENTS

TABLES

APPENDICES

FIGURES

EXECUTIVE SUMMARY

- FPCR Environment and Design Ltd. (FPCR) were commissioned by Lone Star Land Ltd. to complete an ecological assessment of land south of Roxton Road, Great Barford. The site predominantly comprised arable land (and field margins). Other habitat included of a line of scrub and patches of scattered scrub. The site was bounded to the north and east by hedgerows with occasional semi-mature hedgerow trees, and to the southwest by fencing and private gardens.
- The site does not fall within the designation boundary of any statutory or non-statutory designated sites of nature conservation importance. Two non- non-statutory designated sites of nature conservation importance are located within 1km of the site no direct or indirect impacts to nature conservation upon these sites are anticipated from the development.
- Arable habitats within the site were identified as being of negligible ecological importance. Habitats of greater ecological importance included the hedgerows, scrub, trees and field margins.
- Five ponds were located within 500m of the site of which two were isolated from the site. Limited suitable terrestrial commuting, foraging and resting habitats which are affected by the development are present on-site for GCN (field margins and 80m section of H1). Environmental DNA confirmed the presence of GCN with P3.1 and P3. It was concluded that there is a low risk of a GCN being present in a resting place of the affected suitable habitats. As such works will be undertaken under a Precautionary Working Method Statement. Suitable on-site mitigation and enhancement for GCN will be provided within the development scheme.
- No evidence of badger activity was identified within the site or within 30m of the site.
- No suitable bat roost features were identified on any of the trees within the site. Nocturnal survey work completed in spring and summer 2019 identifying six bat species present within the site. Bat activity was predominantly foraging associated along hedgerow H1, off-site gardens and domestic boundaries and scattered scrub along the western boundary. The development proposal will diversity habitats on site and provide a positive impact upon the local bat population.
- Habitats suitable to support reptiles were identified within the site, but were very limited in extent. As such, the site is not considered suitable to support a viable reptile population. Appropriate precautionary working methods are recommended prior to commencement of ground preparation works to minimise the minor risk of harm to such species.
- Suitable nesting habitats for birds are present on-site in the form of scattered scrub, semi-mature trees and hedgerows. A single blackbird was observed nesting within scattered scrub. It is recommended that if ground preparation works are to be undertaken on any sections of hedgerow, trees or scattered scrub within the bird nesting season (March to August inclusive), then a nesting bird check should be undertaken by a suitable experienced ecologist. The limited extent of the arable land is considered sub-optimal to be utilised by ground nesting birds.

1.0 INTRODUCTION

1.1 The following report has been prepared by FPCR Environment & Design Ltd. on behalf of Lone Star Land Ltd. It provides details of an extended Phase 1 Habitat survey undertaken on 12th April 2019 and an updated Phase 1 Habitat survey undertaken on 15th May 2020, on an area of land located south of Roxton Road, Great Barford (hereafter referred to as the 'site'). The site is centred on the ordnance survey grid reference TL13155255.

1.2 Objectives were to:

- Obtain detailed baseline information on the habitats and ecological features of the site;
- Identify the presence of any Habitat of Principal Importance under Section 41 of the Natural Environmental and Rural Communities (NERC) Act 2006[1];
- Identify the presence of any 'Important' hedgerows as defined in the Hedgerow Regulations, 1997[2];
- Identify the presence, or the potential for the presence, of any protected species, such as, although not limited to, those protected under the Wildlife and Countryside Act 1981 (*as amended*)[3] or the Conservation of Habitats and Species Regulations 2017[4];
- Identify any further, specialist surveys that may be required to support a planning application.

2.0 SITE LOCATION AND CONTEXT

2.1 An outline planning application for residential development (Use Class C3) with all matters reserved (scale, layout, appearance, landscaping) except access will be made. The application aims to form part of the 'Great Barford 500 dwelling requirement', as defined in Policy 4S of the Bedford Borough Local Plan 2030 (Adopted version, January 2020), which states a housing requirement of 500 homes for Great Barford over the Local Plan period.

2.2 The site comprised a single managed arable field approximately 1.85ha in size. Associated margins and boundaries comprised hedgerows, domestic boundaries, scattered scrub and occasional semi-mature trees.

2.3 The site is bounded by Roxton Road to the north, existing urban environment to the east and west and an arable field to the south.

2.4 Planning permission has been granted for 81 dwellings, open space, landscaping and car parking opposite the site to the North of Roxton Road (application reference 14/00443/MAO). Furthermore, an outline application (application reference 20/00139/MAO) has been made for the erection of up to 74 dwellings and associated works on land which is located directly to the south of this site on land between to the site's southern border and Addingtons Road.

[1] https://www.legislation.gov.uk/ukpga/2006/16/contents

[2] http://www.legislation.gov.uk/uksi/1997/1160/contents/made

[3] *The Wildlife and Countryside Act 1981* (*as amended*). [Online]. London:HMSO Available from http://www.legislation.gov.uk/ukpga/1981/69 [Accessed 09/03/2015]

[4] http://www.legislation.gov.uk/uksi/2017/1012/contents/made

3.0 DEVELOPMENT PROPOSALS

3.1 Development proposals include the construction of 48 dwellings with public open space (POS) and new hedgerow and tree planting.

4.0 METHODOLOGY

Desk Study

4.1 A consultation exercise was completed with statutory and non-statutory nature conservation organisations for baseline ecological information from the preceding 20 years. The search area for biodiversity information was related to the significance of sites and species and potential zones of influence, as follows:

- 15km around the application area for sites of International Importance (e.g. Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites);
- 2km around the application area for sites of National or Regional Importance (e.g. Sites of Special Scientific Interest (SSSIs)) and species records (e.g. legally protected or notable species); and
- 1km around the application site for non-statutory sites of County or Local Importance (e.g. Sites of Importance for Nature Conservation (SINCs), Local Wildlife Sites (LWSs), County Wildlife Site (CWS), Local Nature Reserves (LNRs)).

4.2 Organisations consulted included:

- Natural England via the Multi Agency Geographic Information for the Countryside (MAGIC) website (www.magic.defra.gov.uk);
- Bedfordshire Biodiversity Recording and Monitoring Centre (BRMC).

4.3 Further inspection, using colour 1:25,000 OS base maps (www.ordnancesurvey.co.uk) and aerial photographs from Google Earth (www.maps.google.co.uk), was also undertaken in order to provide additional context and identify any features of potential importance for nature conservation in the wider countryside.

Field Survey

Overview

4.4 The survey technique adopted for the habitat assessment followed the Extended Phase 1 habitat survey technique as recommended by Natural England[5]. This comprised a walkover of the site, mapping and broadly describing the principal habitat types and identifying the dominant plant species present within each habitat type and any invasive weeds (where present). Whilst the plant species lists obtained should not be regarded as exhaustive, sufficient information was obtained to determine broad habitat types. This survey was completed on 12th April 2019 and 15th May 2020.

4.5 Throughout the walkover survey consideration was additionally given to the actual or potential presence of protected species, such as, although not limited to those protected under the Wildlife and Countryside Act 1981 *(as amended)*, the Protection of Badgers Act 1992[6] and the Conservation of Habitat and Species Regulations 2017.

[5] JNCC 2010. *Handbook for Phase 1 habitat survey - a technique for environmental audit*, ISBN 0 86139 636 7

[6] *The Protection of Badgers Act 1992 (as amended)*. [Online]. London: HMSO Available from: http://www.legislation.gov.uk/ukpga/1992/51/contents [Accessed 09/03/2015].

Habitats

4.6 Hedgerows were surveyed using the Hedgerow Evaluation and Grading System (HEGS)[7]. The aim of the assessment is to allow the rapid recording and ecological appraisal of any given site in the UK, and to allow the grading of the individual hedges present, in order to identify those which are likely to be of greatest significance for wildlife. This method of assessment includes noting down: canopy species composition, associated ground flora and climbers; structure of the hedgerow including height, width and gaps, and associated features including number and species of mature tree and the presence of banks, ditches and grass verges.

4.7 Using the HEGS methodology each hedgerow can then be given a grade. These grades are used to assign a nature conservation value to each hedgerow as follows:

- Grade -1, 1, 1+ High to Very High Value
- Grade -2, 2, 2+ Moderately High to High Value
- Grade -3, 3, 3+ Moderate Value
- Grade -4, 4, 4+ Low Value

4.8 Hedgerows graded -2 or above are suggested as being a nature conservation priority.

4.9 The hedgerows were also assessed for their potential ecological value under the Hedgerow Regulations 1997[8] (Statutory Instrument No: 1160) to determine whether they qualified as 'Important Hedgerows' under the Regulations. This was achieved using a methodology in accordance with both the Regulations and DEFRA guidance. An assessment of archaeological importance as defined under the Hedgerow Regulations 1997 was beyond the scope of this assessment.

4.10 All hedgerows were also assessed as to whether they qualified as Habitats of Principal Importance (Priority Habitats) under Section 41 of the NERC Act 2006, i.e. whether they consisted of 80% or more native species.

Fauna

Badger

4.11 All hedgerows and other suitable habitats within the development boundary and accessible land within 30m were searched for evidence of badger *Meles meles* activity. Methodology employed followed that outlined by Harris and Creswell and Jefferies[9].

4.12 Evidence of badger occupation and activity sought included:

- Setts: including earth mounds, evidence of bedding and runways between setts;
- Latrines: often located close to setts, at territory boundaries or adjacent to favoured feeding areas;
- Prints and paths or trackways;
- Hairs caught on rough wood or fencing; and

[7] Clements, D.K. & Tofts, R.J. 1992. *Hedgerow Evaluation and Grading System (HEGS): A methodology for the ecological survey, evaluation and grading of hedgerows.*

[8] DEFRA 1997. *The Hedgerow Regulations 1997: A Guide to the Law and Good Practice, London, HMSO*

[9] Harris, S., Cresswell, P. & Jefferies, D. 1989. *Surveying for badgers*. Occasional Publication of the Mammal Society No. 9. Mammal Society, Bristol.

- Other evidence: including snuffle holes, feeding and playing areas and scratching posts.

Bats

Ground Level Tree Assessment

4.13 The trees on site were assessed from ground level during the Phase 1 Habitat Survey for their potential to support roosting bats and to enable recommendations with respect to the proposed works. During the survey Potential Roosting Features (PRF's) for bats such as the following were sought (based on p16, British Standard BS8596:2015)[10] :

- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar.
- Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems).
- Woodpecker holes.
- Cracks/splits in stems or branches (horizontal and vertical)
- Partially detached, loose or platy bark.
- Cankers (caused by localised bark death) in which cavities have developed.
- Other hollows or cavities, including butt rots.
- Compression of forks with occluded bark, forming potential cavities.
- Crossing stems or branches with suitable roosting space between.
- Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk).
- Bat or bird boxes.
- Other suitable places of rest or shelter not listed above.

4.14 Certain factors such as orientation of the feature, its height from the ground, the direct surroundings and its location in respect to other features, may reduce enhance or reduce the potential value.

4.15 Based on the above, trees were classified into general bat roost potential groups based on the presence of such features. Table 1 broadly classifies the potential categories as accurately as possible and discusses the relevance of the features. This table is broadly based upon Table 4.1 and Chapter 6 in The Bat Conversation Trust survey guidelines[11].

4.16 Although the British Standard Document groups trees with moderate and high potential, these have been separated in Table 1 (as per Table 4.1 in the BCT guidelines) to allow more specific survey criteria to be applied.

[10] British Standard 2015. BS 8596:2015 *Surveying for bats in trees and woodland – Guide*, October 2015.
[11] Bat Conservation Trust 2016. *Bat Surveys for Professional Ecologists: Good Practice Guidelines*.

Table 1: Bat Survey Protocol for Trees

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey work
Confirmed Roost	Evidence of roosting bats in the form of live / dead bats, droppings, urine staining, mammalian fur oil staining, etc.	A Natural England derogation licence application will be required if the tree or roost site is affected by the development or proposed arboricultural works. This will require a combination of aerial assessment by roped access bat workers (where possible, health and safety constraints allowing) **and** nocturnal survey during appropriate periods (e.g. nocturnal survey - May to August) to inform on the licence. Works to tree undertaken under supervision in accordance with the approved good practice method statement provided within the licence. **However,** where confirmed roost site(s) are not affected by works, work under a precautionary good practice method statement may be possible.
High Potential	A tree with one or more Potential Roosting Features that are obviously suitable for larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter protection, conditions (height above ground level, light levels, etc.) and surrounding habitat. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.	Aerial assessment by roped access bat workers, (if appropriate) can be undertaken at any time **and** / **or** nocturnal survey during appropriate period (May to August). Following additional assessments a tree may be upgraded or downgraded based on findings. If roost sites are confirmed and the tree or roost is affected by proposals a licence from Natural England will be required. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.
Moderate Potential	A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc.) and surrounding habitat but unlikely to support a roost of high conservation status (i.e. larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, rot cavities, branch socket cavities, etc.	A combination of aerial assessment by roped access bat workers (can be undertaken at any time) **and / or** nocturnal survey during appropriate period (May to August). Following additional assessments a tree may be upgraded or downgraded based on findings. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey work
		If a roost site/s is confirmed and affected by the works a licence from Natural England will be required.
Low Potential	A tree of sufficient size and age to contain Potential Roosting Features but with none seen from ground or features seen only very limited potential. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	No further survey required but a precautionary working method statement may be appropriate.
Negligible/No potential	Negligible/no habitat features likely to be used by roosting bats	None.

* The Conservation of Habitats & Species Regulations 2017 (as amended) affords protection to "breeding sites" and "resting places" of bats. The EU Commission's Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC, February 2007 states that these are places "*where there is a reasonably high probability that the species concerned will return*".

Activity Transect Surveys – Foraging and Commuting Bats

4.17 A walked activity transect survey was completed on 30th May 2019 and 9th July 2019. The primary objectives being to identify foraging areas, commuting routes and species utilisation of the development and adjacent area. The transect route was determined prior to survey in order to sample different areas of the study area. Point count stops were incorporated to provide further information regarding bat activity levels. Each point count was a minimum of five minutes long, during which time all bat activity was recorded. The transect commenced at sunset and was just over two hours in duration.

4.18 The transect was walked at a steady pace and when a bat passed by the species, time and behaviour was recorded on a study area plan. This information helps to form a general view of the bat activity present within the study area and highlights what habitats types are associated with bat activity. A Wildlife Acoustics Inc. Echo Meter Touch® bat detector was used in conjunction with an Echo Meter Touch® app and Apple Inc. iPad®.

4.19 The transect was undertaken when conditions were suitable (i.e. when the ambient air temperature exceeded 10ºC and there was little wind and no rain).

Table 2: Bat Activity Transect Survey Conditions

Survey date	Sunset/Sunrise	Temperature °C	Rain	Wind (0-5)	Cloud %
30.05.19	21:18	18°C	0	2	10%
09.07.19	21:21	18°C	0	0	90

4.20 Post-survey, bat calls were analysed using Kaleidoscope© (Wildlife Acoustics) software package, by taking measurements of the peak frequency, inter-pulse interval, call duration and end frequency. From this, the level of bat activity across the study area in relation to the abundance of individual species foraging and commuting along habitats was assessed.

Automated Surveys – Foraging and Commuting Bats

4.21 A static passive recording broadband detector was deployed within the study area in May 2019 and July 2019, with the automated surveys on-going, to supplement the manual transect survey in accordance with industry guidance[12].

4.22 Passive monitoring was undertaken using an automated logging system (Wildlife Acoustics Inc. Song Meter® SM2BAT+ bat detector, herein referred to as a SM2BAT+ detector) with the output saved to an internal storage device. A single SM2BAT+ device was placed along the margin of dense scrub located within the south of the site (feature of value to bats to be affected by the proposals) for the duration of the spring survey period.

4.23 The detector was programmed to activate 30 minutes before dusk and recorded continuously until 30 minutes following sunrise over an extended period of time (five consecutive nights) of suitable and/or typical weather conditions.

4.24 The recorded data was analysed using the Kaleidoscope© and BatSound® Pro software packages. The automated static detector survey timings and weather conditions are provided Table 3.

Table 3: Automated Survey Conditions

Date	Timing and Weather conditions
16th – 21st May	Sunset 20:52 to 20:58 Sunrise 05:02 to 04:57 Temperatures 6 to 18°C (1 night below 10°C) Average wind speed 7 to 18km/h No rainfall at night
4th – 9th July	Sunset 21:23 to 21:21 Sunrise 04:48 to 04:52 Temperatures 10 to 25°C Average wind speed 5 to 14km/h Rainfall on 1 night

Great Crested Newt

4.25 As part of the Phase 1 habitat survey a habitat suitability index (HSI) assessment was completed on accessible ponds within 500m of the survey area where suitable habitat connectivity was identified using OS mapping and aerial photographs. This provides a measure of the likely suitability that a water-body has for supporting GCN. Whilst not a direct indication of whether or not a pond will support the species, generally, those with a higher score are more likely to support GCN than those with a lower score, and there is a positive correlation between HSI scores and ponds in which GCN are recorded. Ten separate attributes are assessed for each pond to calculate the suitability of the ponds to support GCN:

- Location (Area A, B or C within the UK);
- Pond area (size in m²);
- Permanence (how many times it likely dries out in a decade);
- Fowl (impact of waterfowl if present);
- Fish (impact of fish if present);
- Pond count (density of ponds within 1km)

[12] Collins, J. (ed,) 2016. *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. The Bat Conservation Trust, London.

- Location (Area A, B or C within the UK);
- Water quality (invertebrate diversity);
- Shade (percentage of a water body's perimeter shaded);
- Fowl (impact of waterfowl if present);
- Terrestrial habitat (quality of surrounding habitat); and
- Macrophytes (percentage of surface area occupied).

4.26 A score is assigned according to the most appropriate criteria level set within each attribute and a total score calculated of between 0 and 1. These are multiplied together and then the tenth root calculated. Pond suitability is then determined according to the scale shown in Table 4.

Table 4: HSI Scores as a Measure of Pond Suitability

HSI score	Pond Suitability
<0.5	Poor
0.5 - 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

Presence / Absence eDNA Survey

4.27 Environmental DNA (eDNA) sampling determines the presence / absence of GCN in accordance with industry guidance[13]. This methodology has been approved by Natural England for the determination of GCN presence/ absence.

4.28 Sampling was undertaken by appropriately licenced ecologists on the 26th June 2019. Samples of water were collected from each pond using sampling kits obtained from ADAS. This comprised taking samples of agitated water from 20 locations around each pond and mixing thoroughly. 15 ml of this water was then placed into each of the 6 sterile sample tubes containing preservative, precipitates and a DNA sequence that is used for degradation control. All samples were stored in accordance with the protocols provided by the laboratory. The samples were then transported under suitable conditions to ADAS' laboratory for analysis.

Reptiles

4.29 Habitats present within the site were considered for their potential suitability to support reptile populations, including the presence of features which provide opportunities for reptiles to bask, forage and/or hibernate, and areas of varied vegetation structure in sheltered locations with sunny aspects and connectivity to other suitable reptile habitats. This assessment was based on the methodology detailed in the Herpetofauna Workers Manual[14] and the Froglife Advice Sheet[15].

[13] Analytical and Methodological Development for Improved Surveillance of the Great Crested Newt, WC1067, Appendix 5, Technical advice note for field and laboratory sampling of GCN environmental DNA.
[14] Herpetofauna Workers' Manual. JNCC, Peterborough.
[15] Froglife, 1999. *Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10.* Froglife, Halesworth.

Birds

4.30 Habitats present within the site were considered for their potential suitability to support nesting and ground nesting bird populations.

Biodiversity Impact Assessment

4.31 As part of the process of determining how biodiversity offsetting might be utilised in England, Department for Environment, Food & Rural Affairs (DEFRA), Natural England and local councils in six pilot areas collaborated to test the system. This pilot scheme ended in April 2014 and whilst not yet part of any Planning Development Plan, the process can be used as an aid to ensure that development provisions will be of benefit to biodiversity and thus ensure compliance with the National Planning Policy Framework[16] (NPPF).

4.32 The current available guidelines on the use of offsetting[17] provides a raw metric that is reflected in the Warwickshire County Councils Biodiversity Impact Assessment Calculator (BIAC) (v19), the performance of which has undergone review over the past five years by Warwickshire County Council.

The Biodiversity Impact Assessment (BIA) calculations completed on the scheme have been calculated in accordance with the Warwickshire Coventry and Solihull - Biodiversity Impact Assessment Calculator v19.0. 19235_PA_01 – Illustrative Site Layout was used for this assessment.

[16] https://www.gov.uk/government/publications/national-planning-policy-framework--2
[17] https://www.gov.uk/government/publications/technical-paper-the-metric-for-the-biodiversity-offsetting-pilot-in-england

5.0 RESULTS

Desk Study (Figure 1)

Statutory Designations

5.1 The site is not covered by or does not lie adjacent to any statutory designated site of nature conservation. There are no internationally designated sites within 15km of the site and no nationally / regionally designated sites within 2km of the site.

Non-Statutory Designations

5.2 Two non-statutory designations were present within 1km of the site.

5.3 River Great Ouse County Wildlife Site (CWS) is located c.780m to the east, and comprises a number of riverine habitats and features including fen, marsh, swamp, floodplain grazing marsh, wet woodland, neutral grassland, scrub, mature trees and pollards, copses, plantations and ruderal vegetation.

5.4 Great Barford House Grassland CWS is approximately 1.9ha in extent and located c.760m to the north-east. It comprises a sheep grazed grassland with a boundary of defunct hedgerow to the north and a c.0.2ha thin strip of broadleaved woodland to the south-east. The grassland is somewhere on the constant between MG5 *Cynosurus cristatus-Centaurea nigra* and MG6 *Lolium perenne-Cynosurus cristatus* grassland.

Species Records

5.5 No species records provided were located within or adjacent to the site (see Figure 1).

5.6 A small number of great crested newt *Triturus cristatus (*GCN) records were identified within 2km of the site. All records were located over 500m from the site and were associated with ponds present among arable land to the west of the site.

5.7 A single common lizard *Zootoca vivipara* record was identified within 2km of the site. This was located c.1.8km south of the site on a bank between a disused railway and a small lake.

5.8 Records for several bat species identified within the search area included common pipistrelle *Pipistrellus pipistrellus*, brown long-eared bat *Plecotus auritus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctule,* Daubenton's bat *Myotis daubentonii,* and unidentified pipistrelle species *Pipistrellus* species. Records were predominately located in the vicinity of a road-bridge crossing the River Great Ouse and neighbouring residential areas, and along a road to the south. In addition, a single unidentified pipistrelle species roost was located within a residential part of Great Barford, located c.760m to the south.

5.9 A number of badger activity records and records of setts were identified within 2km. None of these were located within 30m of the site boundary. The majority of the records were associated with arable land and roadsides to the north and west.

5.10 Records of other protected species including otter *Lutra lutra* and water vole *Arvicola amphibius* were returned. These were all associated with areas along the River Great Ouse. There are no habitats within the site considered unsuitable to support these species.

5.11 Several invertebrate species records were identified within 2km of the site. All originated from a single vantage point along a double width minor road located c.580m south-east of site.

5.12 Several bird species records from a small number of vantage points were returned. Species included barn owl *Tyto alba,* dunnock *Prunella modularis*, northern lapwing *Vanellus vanellus* and skylark *Alauda arvensis.*

Field Survey – Habitats

Overview

5.13 The habitats described below correspond to those mapped on Figure 2: Phase 1 Habitat Plan. Plant species lists for each habitat is provided in Appendix A.

5.14 Habitats comprise entirely of a single arable field compartment and field boundary habitats.

5.15 The site boundaries were formed by domestic fences and ornamental hedge planting to the west, a line of scattered and small patches of scattered scrub to the southwest, arable land to the south, a hedgerow to the east and a hedgerow with a wooden post rail fence and Roxton Road to the north.

Arable

5.16 Arable habitat was dominated by a wheat *Triticum* monoculture with herbaceous species encroachment, including groundsel *Senecio vulgaris*, cut-leaved crane's-bill *Geranium dissectum*, dandelion *Taraxacum officinale* and cow parsley *Anthriscus sylvestris* all recorded as rare. A c.1-2m wide arable field margin with a long, thick sward of c. 30-50cm height was present around all sides of the arable compartment. Frequent grass species included; perennial ryegrass *Lolium perenne*, cock's-foot *Dactylis glomerata*, rough meadow-grass *Poa trivialis*, false oat-grass *Arrhenatherum elatius* and meadow foxtail *Alopecurus pratensis*. Herbaceous species, all recorded as rare, included common nettle *Urtica dioica*, red dead-nettle *Lamium purpureum*, cow parsley, cleavers *Galium aparine* and hogweed *Heracleum sphondylium*.

Scattered Scrub

5.17 Scrub present along the western site boundary was dominated by bramble *Rubus fruticosus* agg. and hawthorn *Crataegus monogyna,* with blackthorn *Prunus spinose* and elder *Sambucus nigra* recorded as rare.

Hedgerows

5.18 Two hedgerows were recorded present. Hedgerow H1 was dominated by hawthorn with frequent blackthorn, rare elder and rare *Prunus* species. It was c.2-4m in height and c.1-2m in width. It ran adjacent to a road and exhibited evidence of regular intensive management via cutting.

5.19 Hedgerow H2 was dominated by hawthorn with holly *Ilex* recorded as rare. The hedgerow was c.1-2m in height and c.1-2m in width and exhibited evidence of regular maintenance via trimming.

5.20 Hedgerow base flora was very limited in diversity and incorporated the same species as arable field margins.

5.21 Both hedgerows consisted of 80% or more native species therefore are classified as Habitats of Principal Importance. Neither qualifies as important under the wildlife and landscape criteria of the Hedgerows Regulations 1997.

Table 5: Summary of the Extent of the Hedgerows and their Ecological Value

Hedge No.	Approx. Length (m)	Important Hedgerow (Hedgerow Regs)	HEGS SCORES					
			Structural Score	Connectivity Score	Diversity Score	Associated Features Score	Grade	Value
1	155	No	8	4	4	0	3	Moderate
2	82	No	6	3	3	0	4	Low

Broad-leaved Trees

5.22 Two semi-mature and a single young sycamore *Acer pseudoplatanus* standards were located within hedgerow H1. A single semi-mature *Prunus* species was located within hedgerow H2.

Biodiversity Impact Assessment

5.23 Habitats proposed on-site and off-site are detailed below and in the full BIA is given in Appendix D and E respectively.

Habitat Biodiversity Impact (On-Site)

5.24 The site comprised a habitat biodiversity value of 3.76.

5.25 The entirely of arable land is to be lost to the proposed buildings, hardstanding, gardens, amenity grassland, broad-leaved semi-natural woodland plantation and semi-improved neutral grassland (area of attenuation basin and marginal planting).

5.26 The BIA identified a loss in habitat biodiversity with a habitat biodiversity impact score of -1.93 from the proposed development.

Hedgerow Biodiversity Impact (On-Site)

5.27 The UK's hedgerows contribute greatly to biodiversity in the landscape, providing important nest sites, corridors, feeding sites and shelter belts. The linear nature of these habitats requires them to be treated differently to those parcels measured by area and thus where hedgerows are lost another hedgerow must be created. Therefore, in accordance with the guidance, hedgerows are considered separately within BIA under the Hedgerow Impact Assessment.

5.28 Hedgerow H2 is to be fully retained. Approximately 75m of hedgerow H1 is to be retained and enhanced through hedgerow tree planting. Approximately 80m of Hedgerow H1 is to be lost, with approximately 65m of this to be replanted to native species rich with trees. A new native species rich hedgerow with trees (c. 175m in length) is to be planted and a semi-ornamental hedgerow is to be planted.

5.29 Therefore, the overall, the BIA identified a gain in hedgerow biodiversity with a hedgerow biodiversity impact score of 2.34.

Field Survey – Fauna

Great Crested Newt

5.30 No waterbodies were present within the site. On-site habitats providing suitable resting places and foraging areas for GCN were limited to areas of scattered scrub, hedgerow bases, and arable field margins.

5.31 Five waterbodies were located within 500m of the site (Figure 3). Of these, pond P1 is located c.475m to the north-west, pond P2 is c.17m to the east, pond P3 c.57m to the south, pond P3.1 c.52m to the south and pond P4 c.475m to the south.

5.32 Pond P1 is considered isolated from the site by existing road infrastructure, urban development and industrial land, and pond P4 is isolated by existing road infrastructure, urban development and a flowing brook. Consequently, no further assessment was completed on these two ponds.

5.33 Suitable commuting habitat with no barrier to dispersal was identified between the site and ponds P2, P3 and P3.1. Table 6 provides a summary description and habitat suitability index (HSI) for each.

Table 6: Summary of Pond Descriptions and HSI

Pond Number	Pond Description	Approximate Distance from Site	HSI
P2	Small rear garden and allotment pond. Pond is lined and contains emergent vegetation. Pond banks lined and are sloped at c.35°.	17m	0.52 (Below Average)
P3	Small rear garden pond. Pond is lined and supports emergent vegetation. Pond banks are lined and are steep (c.70-90°). Pond margins are surrounded by paved slabs and small rocks.	57m	0.52 (Below Average)
P3.1	Very small rear garden pond. Pond supports no vegetation. Pond margins are surrounded by paved slabs and rocks. Pond banks are steep (c.90°). A population of smooth newts were present at the time of eDNA survey.	52m	0.49 (Poor)

5.34 Environmental DNA (eDNA) surveys were undertaken upon P3.1 and P3 (access was not permitted to P2). Results confirmed the presence of GCN within P3.1 and P3.

Badgers

5.35 No active setts, inactive badger setts or physical evidence of badgers was identified within the site or a 30m radius of the site boundary.

Bats

<u>Tree Roost Assessment</u>

5.36 No suitable roost features were identified among any of the trees within the site.

<u>Foraging / Commuting Habitat</u>

5.37 Suitable commuting and foraging habitats were limited to areas of scattered scrub, hedgerows, field perimeter trees, field margins and areas bordering domestic boundaries and gardens.

Spring Transect Survey (Figure 4)

5.38 The transect survey completed on the 30th May 2019 recorded only 16 bat contacts, all identified as either common pipistrelle or soprano pipistrelle. Bat activity was predominantly recorded along the western and northern boundaries of the site. Along the western boundary, bats were observed foraging in and out of neighbouring gardens and over the scattered scrub. They were also observed commuting and social calling along the boundary. Along the northern boundary, bats were

observed foraging, commuting and passing along hedgerow H1 and under trees. A single soprano pipistrelle was observed foraging along hedgerow H2 multiple times.

Summer Transect Survey (Figure 5)

5.39 The transect survey completed on the 9th July 2019 recorded only 13 bat contacts, all identified as common pipistrelle, soprano pipistrelle or noctule. Bat activity was predominantly recorded along the norther boundary of the site along hedgerow H1. Bats were observed passing and foraging along hedgerow H1 and under trees. Along the western boundary, bats were observed foraging in and out of neighbouring gardens and over the scattered scrub. A single soprano pipistrelle and a single noctule were observed foraging along hedgerow H2 and over the neighbouring rear garden.

Spring Static Detector Survey

5.40 The SM2BAT+ static detector was located along hedgerow H1 proximate to a semi-mature tree in the location of the anticipated site access road (25003_08_020_01.1 access design). A total of 3829 registrations were recorded across the five-night period (Appendix C). Bat activity was dominated by common pipistrelle (3245 registrations, 84.7% of total bat activity recorded). Other species recorded included soprano pipistrelle (430 registrations, 11.2% of total registrations), noctule (137 registrations, 3.6% of total registrations), unidentified *Pipistrellus* species (16 registrations, 0.4% of total registrations) and Nathusius' pipistrelle *Pipistrellus nathusii* (single registration recorded at 22:11).

5.41 The majority of bat activity was recorded between two to five hours after sunset, indicating foraging behaviour in the vicinity of the detector.

Summer Static Detector Survey

5.42 The SM2BAT+ static detector was located in the same location as the spring static detector survey along hedgerow H1 proximate to a semi-mature tree in the location of the anticipated site access road (25003_08_020_01.1 access design). A total of 5604 registrations were recorded across the five-night period (Appendix C). Bat activity was dominated by common pipistrelle (5460 registrations, 97.4% of total bat activity recorded). Other species recorded included soprano pipistrelle (106 registrations, 1.9% of total registrations), noctule (25 registrations, 0.4% of total registrations), brown long-eared bats (10 registrations. 0.2% of total registrations) and unidentified *Myotis* species (3 registrations, 0.05% of total registrations).

5.43 The majority of bat activity again was recorded between two to five hours after sunset, indicating foraging behaviour in the vicinity of the detector.

Reptiles

5.44 No physical evidence of reptiles was identified during the walkover survey.

5.45 On-site habitat considered suitable to support reptile commuting, foraging and sheltering behaviour was limited to peripheral scattered scrub, field margins and hedgerows.

Birds

5.46 Field boundary hedgerows and hedgerow trees and scattered scrub provided potential nesting and foraging habitat for a range of farmland and urban edge species. During the walkover survey a single blackbird *Turdus merula* was identified nesting in scattered scrub.

5.47 The arable habitats provided suitable breeding sites for ground nesting farmland bird species such a skylark, however given the proximity to existing development and limited extent (<4ha) this area is considered sub-optimal for such species.

6.0 DISCUSSION, RECOMMENDATIONS AND CONCLUSIONS

Sites of Nature Conservation Value

6.1 No statutory or non-statutory designated sites are present within the site boundary and no statutory designated sites have been recorded within 2km or 15km of the site. Consequently, there are no constraints to the proposed development.

6.2 Two non-statutory designated sites occur within 1km of the site. No direct or indirect impacts to nature conservation are anticipated from the construction phase of development on the Great Barford House Grassland and the River Great Ouse CWS's, with both located over 750m from the application site.

6.3 Post-development, direct and indirect negative impacts on the nature conservation status are considered very unlikely on Great Barford House Grassland CWS due to the absence of public rights of access to the CWS. Areas alongside the Great River Ouse include well established footpaths and other facilitates, including amenity grassland, benches and information boards for members of the public. On the river itself, motor-powered boats are currently permitted to dock and drive up and down the river. Given the existing recreational facilitates along the river, development of the site is unlikely to significantly impact the conservation status of this site.

Habitats

6.4 The degree to which habitats receive consideration within the planning system relies on a number of mechanisms, including:

- Inclusion within a specific policy, for example veteran trees, ancient woodland and linear habitats within the National Planning Policy Framework (NPPF);
- A non-statutory site designation (e.g. CWS);
- Habitats considered as Habitats of Principal Importance for the conservation of biodiversity as listed within Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006;
- Habitats identified as being a Priority Habitat within the local Biodiversity Action Plan (Bedfordshire BAP).

6.5 The habitats identified during the survey which fall within the above listed categories are hedgerows and mature trees.

6.6 Arable land has been recorded as being of negligible ecological importance and the loss of this habitat would not result in a significant effect to biodiversity locally.

6.7 Scattered scrub is considered a habitat of low nature conservation importance and any loss is not likely to result in significant impacts to biodiversity locally. It is however anticipated that all scattered scrub is to be retained as part of the development scheme.

6.8 All hedgerows in the proposed development areas comprise over 80% native species and are therefore classified as a Habitat of Principal Importance and the local BAP. It is recommended that these are to be retained as fully as possible. Loss of approximately 80m of hedgerow H1 is anticipated according to 19235_PA_01 – Illustrative Site Layout in order to facilitate a new site access road with visibility splay and a new footpath. Approximately, 65m of this hedgerow is to be replanted. The existing field access gap along hedgerow H1 is to be closed. Native hedgerow

species are to be used in replanting. Furthermore, native hedgerow tree species are to be planted along new and existing sections of hedgerow H1. Hedgerow H2 is to be fully retained as part of the development proposals.

6.9 All hedgerows that are to be retained should be suitably protected during construction activities i.e. working methods should adhere to standard best practice guidance. This would include BS5837 Trees in Relation to Construction – Recommendations: 2012 for trees and hedges.

6.10 All semi-mature and young trees are to be retained as part of the development scheme. These should be suitably protected during construction activities as recommended above.

6.11 Mitigation for loss of the habitats within the site are to be provided within the green infrastructure (GI) and public open space (POS) surround the site as detailed in 19235_PA_01 – Illustrative Site Layout. Areas of amenity grassland, two woodland copses, native scrub planting and an attenuation basin with marginal and aquatic vegetation planting are all proposed. Furthermore, a new native species rich hedgerow (c. 155m) with native trees is to be planted along the sites southern boundary.

Biodiversity Impact Assessment

6.12 The BIA identified a loss in habitat biodiversity with a habitat biodiversity impact score of -1.93 and a hedgerow biodiversity impact score of 2.17 from the proposed development.

Habitat Biodiversity Impact (Off-Site) (Figure 6) (Agreement yet to be confirmed)

6.13 In order to achieve a ≥10% gain on the habitat biodiversity value, the off-site biodiversity offsetting scheme needed to achieve a habitat biodiversity gain of ≥0.38, thus a habitat biodiversity value of ≥2.31 (this total is achieved from the -1.93 plus the 0.38). The additional off-site land (1.6ha) available to offsetting comprises an arable field with poor semi-improved field margins. The southern and eastern field margins, c.3m, are a public bridle way and are currently intensely managed (mown at time of survey). Therefore, it is recommended that the field margins are retained and continued to be managed as they are.

6.14 In order to offset the habitat losses within the site (and gain 10%), it is recommended that semi-improved grassland and scattered scrub are created within the southernmost 1.5ha of the arable field. Details for each are given below:

<u>Semi-Improved Grassland</u>

6.15 It is recommended that 1ha is sown with a species rich mix (i.e. Emorsgate EM2, Standard General Purpose Meadow Mixture). This will need to be managed appropriately in the long term.

Objectives

- Achieve moderate condition in 15 years.

Establishment

- Best surface sown in autumn or spring;
- Sowing at a rate as specified – 4 g/m²;

- Ground should be cultivated prior to seeding to bury the surface vegetation, harrow or rake to produce a medium tilth, and roll, or tread, to produce a firm surface as set out above; and
- Predominately perennial species are unlikely to flower in the first growing season. Annual weeds from the soil in the first growing season can be easily controlled by topping or mowing.

Habitat Management

- Mowing / strimming annually in late July / early August to c.150mm (with additional cuts in Autumn or Spring if needed) to encourage wild flower development;
- Cutting the sward on a rotational basis will ensure that a continuous supply of nectar and seeds for local fauna are available across the site and floristic diversity is maintained, whilst providing a mosaic of sward heights. The different sward lengths will provide habitat diversity of interest to a range of local fauna including invertebrates, butterflies and small mammals.
- All arising's will be left in situ for c 48hours to allow appropriate time for seeds to fall and any invertebrates to move back into the sward. Arising's will then be removed to prevent enrichment of the soil through decomposition;
- Inspections for invasive weeds, to be controlled as necessary. Spot spray with a herbicide, or hand pull for undesirable and persistent weed growth like docks and thistles;
- Any worn areas to be reseeded as required; and
- All litter, stones or other debris should be collected and removed by the Contractor immediately prior to grass cutting operations.

Scattered Scrub

6.16 It is recommended that an area of 0.5ha is planted with scattered scrub. Scattered scrub is a block of scrub dominated by shrub species.

Objective

- Achieve moderate condition in 10 years;
- Contains at least three native species, which could include elder, bramble, dog-rose, hawthorn or blackthorn;
- Shrub species less than 5m tall and have a scrub cover of less than 30%.

Habitat Management

- During the first 5 years following planting, water shrubs in periods of extreme drought (2 or more weeks without substantial rainfall);
- After establishment continue to water only if deemed to be required;
- Prune out dead, leggy and broken branches, without damage to the natural habit of plant. Prune back shrubs in the period October to March in accordance with sound horticultural practices, pruning back to a node, shoot or bud;
- Perennials should be cut back in autumn or winter once they have flowered;

- Remove all cut material from site. Remove all litter and debris at each visit, leaving the site clean and tidy;
- Remove all weed growth by hand as necessary to ensure weed free and tidy planting beds. A minimum of two visits are required per growing season (April to October);
- Replace plants that are lost, damaged or become sick or weak from senescence, vandalism, theft, disease, drought, inclement or stormy weather, fungal or other pathogenic or pest attack, or other adverse cause within the first five years. Replace such shrubs with the same or similar species on a one for one basis.

6.17 The creation of 1ha of semi-improved grassland (to moderate condition) and 0.5ha of scattered scrub (to moderate condition) results in a biodiversity gain within the additional land of 3, which gives an overall habitat biodiversity net gain for the development/offsite enhancements of 1.07.

6.18 A habitat biodiversity gain of 1.07 is over and above the net gain needed to offset the site and get a 10% net gain.

Fauna

6.19 Principal pieces of legislation protecting wild species are Part 1 of the Wildlife and Countryside Act 1981 *(as amended)* (WCA) and the Conservation of Habitats and Species Regulations 2017 (as amended). Some species, for example badgers, also have their own protective legislation (Protection of Badger Act 1992). The impact that this legislation has on the Planning system is outlined in ODPM 06/2005 Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System.

6.20 The presence of protected species is a material consideration in any planning decision, it is essential that the presence or otherwise of protected species, and the extent to which they are affected by proposals is established prior to planning permission being granted. Furthermore, where protected species are present and proposals may result in harm to the species or its habitat, steps should be taken to ensure the long-term protection of the species, such as through attaching appropriate planning conditions.

6.21 In addition to protected species, there are those that are otherwise of conservation merit, such as Species of Principal Importance for the purpose of conserving biodiversity under the NERC Act 2006. These are recognised in the NPPF[18], which advises that when determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying a set of principles including:

- If significant harm to biodiversity resulting from a development cannot be avoided……, adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

[18] https://www.gov.uk/government/publications/national-planning-policy-framework--2

6.22 The implications for the proposed development that various species identified from the desk study and field survey, or those that are otherwise thought reasonably likely to occur, are outlined below:

Badger

6.23 Badgers are a widespread species that are protected from harm and cruelty by the Protection of Badgers Act 1992.

6.24 No setts were identified within the site or within a 30m radius of the site. Consequently, badgers have not been identified as a statutory constraint to development.

6.25 As badgers were identified in the desk study and are a wide-ranging species that may use the site from time to time and new setts can establish quickly. Therefore as best practice the following precautionary measures are recommended to ensure that badgers are not harmed during works (thus maintaining legal compliance):

- If development has not commenced within 12 months May 2020**, the development site should be re-surveyed for the possible presence of badger setts** (plus an area of 30m from the development site boundary).
- To further minimise the risk of harm to badger and other wildlife **any trenches or other deep excavations created within the development site will be left with a sloping end or a ramp** to prevent animals from becoming trapped, or will be suitably covered before dusk to prevent any passing animals falling in. Careful consideration will also be given to the location of topsoil storage mounds that can readily become used by badgers for the creation of new setts.

Bats

6.26 All UK species of bats and their roosts are listed on the Conservation of Habitats and Species Regulations 2017, making it illegal to deliberately disturb any such animal or damage / destroy a breeding site or roosting place of any such animal. Bats are also afforded full legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (*as amended)*. Under this legislation it is illegal to recklessly or intentionally kill, injure or take a species of bat or recklessly or intentionally damage or obstruct access to or destroy any place of shelter or protection or disturb any animal whilst they are occupying such a place of shelter or protection. Some bat species, including soprano pipistrelle, noctule and brown long-eared bat are also Species of Principal Importance under the NERC Act.

<u>Tree Roost Assessment</u>

6.27 All trees were assessed as providing negligible roosting potential to support roosting bats. Therefore, the presence of a bat roost has not been identified as a statutory constraint to the development proposals. **It is recommended that a range of bat boxes are provided on retained trees and/or on new residential dwellings** to provide an enhanced roosting resource for the local bat population.

<u>Foraging / Commuting Habitat</u>

6.28 Consultation records identified a number of bat records of several species within 2km of the site.

6.29 From the survey work undertaken to date, bat activity across the site comprised common pipistrelle and soprano pipistrelle, noctule, unidentified *Pipistrellus* species, Nathusius' pipistrelle, brown long-eared and unidentified *Myotis* species. The most abundant species recorded were common

and soprano pipistrelle, both common and widespread species. No Annex II bat species under the Habitats Directive were recorded.

6.30 Bat activity during the transects undertaken in both May and June were predominantly associated with the western, eastern and northern site boundaries. Eastern and western boundary features are to be fully retained as part of the development scheme.

6.31 The SM2BAT+ static detector for both May and July surveys was deployed at the location of loss along hedgerow H1. Bat activity was recorded across the five days for both surveys, the majority of which was between two to five hours post sunset. Thus the majority of bat activity was indicative of bat foraging behaviour for common and widespread bat species (mainly common pipistrelle). As such it has been concluded that H1 forms part of a wider foraging resource for the local population of common pipistrelles but does not constitute a significant commuting route. This conclusion is supported as only low levels of activity were recorded in association with this hedgerow during the activity transect surveys. As such H1 is considered to be of at least site level value for the local bat population.

6.32 Appropriate bat foraging and commuting mitigation and enhancement is to be provided within the Green Infrastructure (GI) and POS detailed within the proposed development (19235_PA_01 – Illustrative Site Layout). An 80m section of H1 will be removed to facility the development during construction. However, a c.65m section will be replanted which will be native species rich with native tree planting (thus providing improved foraging habitat once matured). This will leave a minor gap (a maximum of 15m) which is not considered to be significant and will not result in any potential adverse impacts on the local bat population. Further enhancements to the existing retained sections of hedgerow H1 include new native species tree planting. Collectively, mitigation and enhancement of hedgerow H1 has the potential to create a greater value resource for the local bat population compared with the current baseline condition.

6.33 Further enhancements within the POS and GI include a new native species rich hedgerow with native species tree planting along the southern boundary (c.155m), standard tree planting around the site, woodland copses, scrub planting and an attenuation basin with marginal and aquatic planting. The above will diversify habitats present within the site.

6.34 It is recommended that an appropriate sensitive lighting scheme is implemented along retained and created habitat, especially around the boundaries of the development. Where artificial lighting cannot be avoided the lighting scheme will be designed with reference to the Bat Conservation Trust and Institute of Lighting Professionals guidance[19]. Lighting considerations which are recommended to be implemented during construction and incorporated into the development in order to ensure minimal light spill from the site include;

- During the construction period no artificial lighting should be used at night;
- The lighting scheme should ensure lighting is directed to where it is needed, avoiding light spillage, particularly along the woodland habitats, hedgerows / scrub lines, wildflower grassland and waterbodies;

[19] Bat Conservation Trust & Institute of Lighting Professionals (ILP) 2018. *Guidance Note 8: Bats and artificial lighting in the UK*. Bats and the Built Environment Series.

- The lighting scheme should incorporate LED luminaires as these have a sharp cut-off, lower intensity, good colour rendition and dimming capability. All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used;
- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats; and
- Security lighting on properties backing on to sensitive habitats such as hedgerows, trees or waterbodies will be low wattage (<70W)[20] motion censored lights on short (1min) timers. These should be provided on any properties (along the site boundaries) at construction to dissuade future homeowners from installing unsuitable lighting which could adversely impact bats.

6.35 With the implementation of the above recommendations it is unlikely that the development will affect the local bat population affected by the proposed development and the development has potential to result in an overall positive enhancement in terms of the quality and extent of suitable resources available to the local bat population at the site level.

GCN

6.36 GCN are afforded full protection under the Wildlife & Countryside Act 1981 *(as amended)* and the Conservation of Habitats and Species Regulations 2017 (*as amended*).

6.37 A small number of GCN records were returned from within 2km of the site, however none were located within 500m of the site.

6.38 Five ponds are located within 500m of the site. Ponds P1 and P4 are considered to be isolated from the site due to significant barriers to GCN dispersal. Pond's P2, P3 and P3.1 were located c.17m, c.57m and c.52m from the site boundary respectively and comprised direct commuting habitat to the site. Access was not permitted to undertake surveys upon P2.

6.39 Arable land (the majority of the site) is not considered to provide any suitable habitat for GCN. Suitable terrestrial commuting, foraging and resting habitats which are present on-site for GCN, are limited in extent to field margins, scrub and hedgerows. All arable field margins (2m wide) are to be lost and c.80m of hedgerow H1 is to be lost. Scrub and the majority of hedgerows are to be retained within the development.

6.40 Environmental DNA confirmed the presence of GCN with P3.1 and P3 with a low detectability result indicating a likely small GCN population (which would be concurrent with the small size of the garden ponds). GCN present within ponds P3.1 and P3 are considered unlikely to utilise the limited suitable site habitats due to the following reasons:

- The limited extent of suitable habitat on site does not provide a significant optimal foraging resource;
- Arable field margins offer limited areas of shelter for GCN within the sward;
- Ponds P3.1 and P3 are both located >50m away from the site. Furthermore, the actual commutable distance from the nearest GCN Pond along suitable habitat features would be c.80m.

[20] Stone, E.L. (2013) *Bats and lighting: Overview of current evidence and mitigation*.

- There is no connecting habitat feature from P3.1 and P3 into the wider are (such as towards P2).

6.41 In addition, scrub and the majority of hedgerows (providing GCN terrestrial habitats) are retained. The small section of hedgerow (H1) to be removed to facilitate site access is c.200m from the nearest GCN pond.

6.42 As such, it is concluded that there is a low risk of a GCN being present in a 'resting place' (protection of resting places only applies to such areas when there is a high likelihood that the species will return[21]) within the on-site field margins or hedgerow (the only affected suitable terrestrial habitats). As such works will be undertaken under a Precautionary Working Method Statement outlined below.

Great Crested Newt Method Statement

a) Prior to commencing works, all contractors must be given a "tool box talk" from an appropriately qualified ecologist. Contractors will also review the relevant section of this Method Statement.

b) Prior to commencing works the following will be undertaken in each habitat type as listed below:

Arable – No requirement for hand or destructive searches by a qualified ecologist.

Field margins – Areas to be lost to undergo a prior fingertip (hand) search (and strimming if appropriate) by the qualified ecologist.

Hedgerows – Hedgerows to be lost to undergo a prior fingertip (hand) search by the qualified ecologist. Any root removal (following the fingertip search) will be undertaken via a destructive search under the supervision of the qualified ecologist outside of the hibernation period (Nov-Feb).

c) Any trenches which are excavated on site and left overnight must have a shallow gradient at one end to allow wildlife including GCN to exit.

d) The creation of rubble piles / soil mounds should be avoided. If this is not possible they should be compacted and located in the north of the site.

e) No contractor may touch or pick up any GCN. In the unlikely event that any Great Crested Newt are discovered during the works, then the works must cease immediately and the qualified ecologist must be consulted immediately to determine how to proceed

GCN Mitigation

6.43 The minimal losses of potential GCN foraging habitat (80m of hedgerow and field margin loss) will be mitigated on-site with further enhancements provided suitable for GCN. This includes:

- Species rich meadow grassland to be created in the south-west of the site located within 100m of ponds P3.1 and P3;
- Retention and enhancement of boundary features to maintain and improve connectivity, this will include gapping of hedgerows, re-planting (a species rich) c.65m of H1 and the creation of a new native species hedgerow along the sites southern boundary (c.155m) in order to provide connectivity to pond P2 and the wider area;

[21] Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC (Final Version February 2007)

- Raised bed crossing or culvert for the potential vehicular link between the site and the adjacent development to the south in order to maintain connectivity to the attenuation basin;
- Woodland copse planting;
- Attenuation basin to provide suitable foraging habitat for GCN and other wildlife along with species rich grassland (wildflower meadow) and tree planting around the perimeter of the pond;
- Two hibernacula's recommended (one located within the south-west of the site and the other around the attenuation basin).
- Management of habitats, this will ensure their suitability for GCN and other wildlife.

Reptiles

6.44 All British reptiles are protected from killing and injury under the Wildlife and Countryside Act 1981 (as amended) and are listed as Species of Principal Importance for the conservation of biodiversity under Section 41 of the NERC Act, indicating that public bodies, such as the Local Planning Authority, have a duty to have regard to the conservation of these species.

6.45 Limited but suitable reptile commuting, foraging and sheltering habitat is present on-site. As such, the site is unlikely to support a viable reptile population.

6.46 Site clearance works of suitable habitat have the potential to result in the accidental killing or injuring of reptile species, which as a result of the protection afforded to them, will need to be avoided. To prevent this it will be necessary to undertake appropriate precautionary works.

6.47 Passive displacement methods will be undertaken of field margin habitats (in conjunction with the GCN Method Statement outlined above) prior to site preparation works to ensure any reptiles, which have a low likelihood of being present, are not harmed during such works. This would involve the directional strimming of the areas of suitable habitats from the centre of such habitats towards adjacent/retained habitats.

6.48 The relevant areas will first be slowly directionally strimmed, with the vegetation given two cuts, the first to 200mm and the second 1-2 hours later to 50mm. All arising's will be removed from the working areas to prevent creation of potential areas of refugia from being used by reptiles moving across the area. Any areas of existing suitable refuge within the working areas such as discarded items will additionally be removed by hand prior to site preparation works.

6.49 Furthermore, the removal of the bases of hedgerow H1 will be undertaken under an ecological watching brief as outlined within the GCN Method Statement above.

Birds

6.50 All wild bird species are protected while nesting by the Wildlife and Countryside Act 1981 *(as amended)*. This legislation protects wild birds and their eggs from intentional harm, and makes it illegal to intentionally take, damage, or destroy a wild bird nest while it is in use or being built.

6.51 The arable field compartment is less than 4ha in size and is surrounded on three sides by hedgerows and built development. As such, it is considered to be suboptimal for ground nesting birds such as skylark and lapwing, for which more suitable habitats are present to the north and east. Loss of arable habitat from the site is therefore anticipated to result in a negligible impact to ground-nesting species.

6.52 The hedgerows, scattered scrub and semi-mature trees do however provide suitable habitat for a range of common farmland and urban edge bird species. All semi-mature trees, scrub and hedgerow H2 are to be retained as part of the development scheme. Approximately 15m of hedgerow H1 is to be fully lost and approximately 65m of hedgerow H1 to be temporarily lost but replanted.

6.53 Appropriate mitigation and enhancement is to be provided within the GI and POS detailed within the proposed development (detailed in 19235_PA_01 – Illustrative Site Layout). These will include enhancement of existing hedgerow H1 incorporating new tree planting, standard tree planting around the site, scrub planting, new species rich hedgerow planting with standard trees along the sites southern boundary, woodland copse planting and scrub planting. New domestic gardens will also provide new suitable habitat for urban edge species such as dunnock *Prunella modularis*, a S41 Species of Principal Importance.

6.54 All nesting birds, their nests and fledgling young are protected under the Wildlife and Countryside Act, 1981 *(as amended).* Construction works likely to disturb and impact on nesting birds include the initial ground works and vegetation removal. To avoid disturbance to nesting birds any clearance of woody vegetation (hedgerow H1) will be undertaken prior to the bird-breeding season (i.e. avoiding March to September inclusive) to minimise the risk of disturbance to nesting birds. If this is not possible, habitats will be checked prior to removal by an experienced ecologist. If active nests are found, nest sites will be left untouched and suitably buffered from works until all birds have fledged. Specific advice will be provided prior to undertaking the clearance.

6.55 To prevent disturbance to off-site habitats (such as the western property boundary habitats) these should be protected throughout construction.

6.56 It is recommended that a range of bird boxes be provided throughout the site on suitable retained trees and/or new buildings to provide enhanced nesting opportunities for local bird species. These should include a mixture of small hole (26mm and 32mm) designs and open fronted boxes. The provision of such features would be in accordance with NPPF.

6.57 Given the above provisions no significant impact is anticipated to the overall bird assemblage as a result of the proposed scheme.

APPENDIX A: BOTANICAL SPECIES LIST

Abundance is described on the DAFOR scale.

D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare. (LF = Locally Frequent, LD = Locally Dominant)

Arable

Common Name	Scientific Name	DAFOR
Cleavers	*Galium aparine*	R (R afm)
Cock's-foot	*Dactylis glomerata*	R (F afm)
Common nettle	*Urtica dioica*	R (R afm)
Cow parsley	*Anthriscus sylvestris*	R (R afm)
Cut-leaved crane's-bill	*Geranium dissectum*	R
Dandelion	*Taraxacum*	R
False oat-grass	*Arrhenatherum elatius*	R (F afm)
Groundsel	*Senecio vulgaris*	R
Hogweed	*Heracleum sphondylium*	R (R afm)
Meadow foxtail	*Alopecurus pratensis*	R (F afm)
Red dead-nettle	*Lamium purpureum*	R (R afm)
Rough meadow grass	*Poa trivialis*	R (F afm)
Wheat	*Triticum*	D

*afm = arable field margin

Scattered Scrub

Common Name	Scientific Name	DAFOR
Blackthorn	*Prunus spinosa*	D
Bramble	*Rubus fruticosus*	R
Elder	*Sambucus nigra*	R
Hawthorn	*Crataegus monogyna*	D

Appendix B: GCN Habitat Suitability Index on Ponds Located within 500m

	SI -1	SI - 2	SI -3	SI -4	SI -5	SI -6	SI -7	SI -8	SI -9	SI -10			
Pond Number	Geographical Location	Pond Area	Pond Drying	Water Quality	Shade	Fowl	Fish	Ponds	Terrestrial Habitat	Macrophytes	HSI score	Pond Suitability	Predicted Presence
2	1	0.20	0.1	0.33	1	1	1	0.67	0.33	0.95	0.52	Below Average	0.2
3	1	0.05	1	0.33	1	1	0.67	0.72	0.33	0.5	0.52	Below Average	0.2
3.1	1	0.5	1	0.33	1	1	0.67	0.72	0.333	0.5	0.49	Poor	0.03

Appendix C: Automated Bat Static Results Table

Recording Period	Start Date	End Date	Survey Hours	Total Av. per hour	Total Registrations	Common Pipistrelle			Soprano Pipistrelle			Noctule			Pipistrelle Species			Brown Long-eared			Myotis Species			Nathusius' pipistrelle		
						Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour
Spring	16/05/2019	21/05/2019	45:25:35	84.290	3829	3245	1743	71.434	430	203	9.466	137	66	3.016	16	8	0.352	0	0	0.000	0	0	0.000	1	1	0.022
Summer	04/07/2019	09/07/2019	42:19:38	132.397	5604	5460	1411	128.995	106	36	2.504	25	9	0.591	0	0	0.000	10	7	0.236	3	2	0.071	0	0	0.000
		Totals:	87:45:13	107.494	9433	8705	1743	99.198	536	203	6.108	162	66	1.846	16	8	0.182	10	7	0.114	3	2	0.034	1	1	0.011

Appendix D: Biodiversity Offsetting Metric (On-Site)

Biodiversity Impact Assessment Summary

Derived Locally from the Defra Metric
Version 19.0 (01/04/2018)

Site name: Land to the South of Roxton Road, Great Barford
Planning reference number: to be copied from the BIA sheet

Existing	Habitat Area (ha)	Hedgerow impact (km)	Connectivity Features (km)	Habitat Biodiversity Value	Hedgerow Biodiversity Value	Connectivity Biodiversity Value
Onsite Biodiversity Impact	1.88	0.08	0.00	3.76	0.80	0.00
Indirect Biodiversity Impact	0.00	0.00	0.00	0.00	0.00	0.00
Total habitat / linear features impacted	**1.88**	**0.08**	**0.00**	**3.76**	**0.80**	**0.00**
Retained / Created / Enhanced						
Onsite biodiversity retained	0.00	0.08	0.00	0.00	0.32	0.00
Onsite Crea ion	1.88	0.26	0.00	1.83	2.01	0.00
Biodiversity retained and enhanced	0.00	0.08	0.00	0.00	0.48	0.00
Total biodiversity retained/enhanced	**1.88**	**0.42**	**0.00**	**1.83**	**2.81**	**0.00**
Trading Down	n/a	n/a	n/a	0.00	0.00	0.00
Biodiversity Impact	**n/a**	**n/a**	**n/a**	**-1.93**	**2.17**	**0.00**

Habitat Impacts	Loss	Gain	Impact	%age losses	Compensatory Unit loss	Indicative Offset (ha)	WCC Offset units	WCC Offset Contribution
Woodland Habitat	0.00	0 04	0.04					
Grassland Habitat	0.00	0.77	0.77					
Wetland Habitat	0.00	0 00	0.00				-1.93	£81,029
Other Habitat (incl. Built Env)	3.76	1 02	-2.74	100.00	-1.93	Transferred to Wetland		
Total	3.76	1 83	-1.93	100.00	-1.93	0.00	-1.93	**£81,029**
		Trading down	0.00					
			-1.93					

Warwickshire County Council is currently transferring 'Other' habitat loss to Wetland Creation

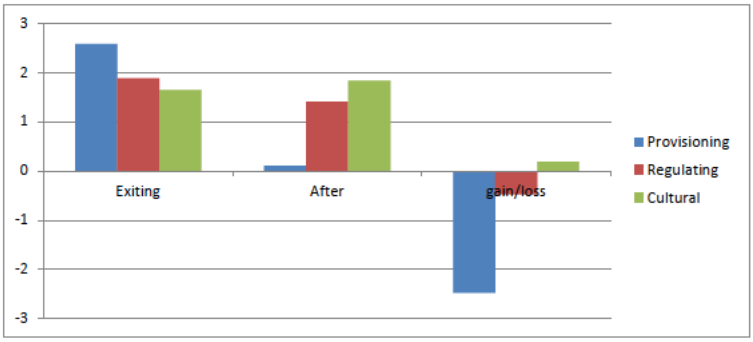
Hedgerow Impacts	Loss	Gain	Trading down	Impact	Unit loss	Indicative Offset (ha)	WCC Offset units	WCC Offset Contribution
Hedgerow	0.80	2 81		2.01				

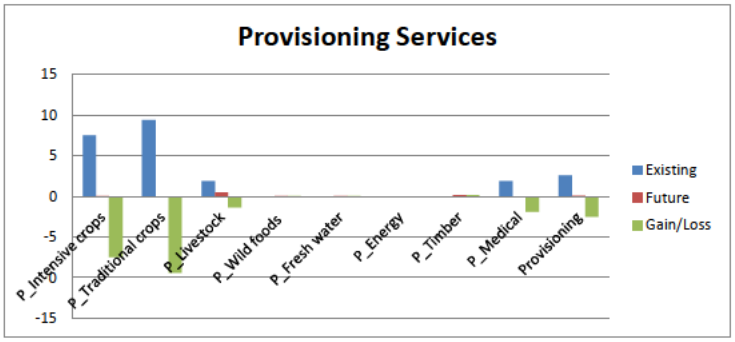
SUMMARY

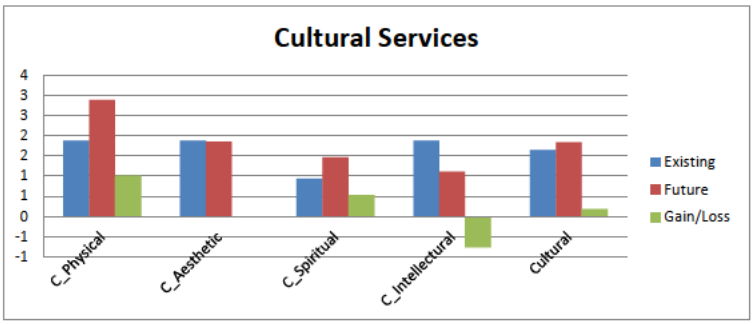
This development will result in -1.93 Habitat Biodiversity Units loss; 2.17 Hedgerow Units gain and 0 Connectivity Biodivesity Units loss

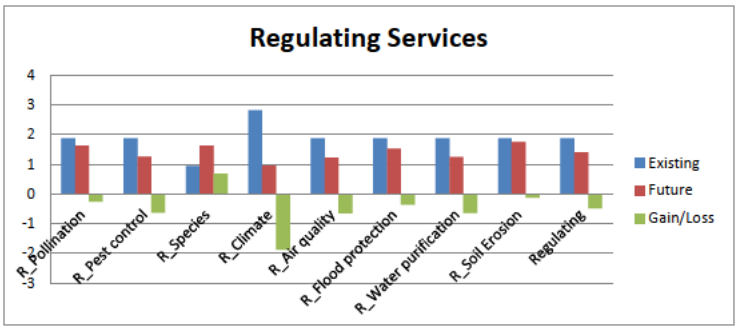
This loss will need to be compensated for, either through a condition or an obligation, via a 'Biodiversity Offsetting Scheme' that compensates for the each habitat and their resepective units. The Biodiversity Offsetting Scheme can be one you have arranged or by a financial contribution of £81029 to Warwickshire County Council.

ECOSYSTEM SERVICES ANALYSIS









For any questions with regard to biodiversity impact and this development please contact Warwickshire County Council Ecological Services:
email: planningecology@warwickshire.gov.uk or telephone 01926 418060

Warwickshire, Coventry & Solihull - Habitat Impact Assessment Calculator

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

Local Planning Authority:	
Site name:	Land to the South of Roxton Road, Great Barford
Planning application reference number:	
Assessor:	
Date:	

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 01926 418060

	Existing habitats on site Please enter all habitats within the site boundary			**Habitat distinctiveness**		**Habitat condition**		**Habitat Biodiversity Value**						
								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)*	*Distinctiveness*	*Score*	*Condition*	*Score*	*Area (ha)*	*Existing value*	*Area (ha)*	*Existing value*	*Area (ha)*	*Existing value*	*Comment*
		Direct Impacts and retained habitats			A		B	C	A x B x C = D		A x B x E = F	G	A x B x G = H	
	J11	Other: Arable	1.88	Low	2	Poor	1	0.00		0.00		1.88	**3.76**	
		Total	1.88				Total	0.00	0.00	0.00	0.00	1.88	3.76	J
													∑D + ∑F + ∑H	
											Site habitat biodiversity value		3.76	

Before/after impact	**Indirect Negative Impacts** Including off site habitats	K	Value of loss from indirect impacts K x A x B = Li, Lii	Li - Lii
Before				
After				
Before				
After				
Before				
After				
Before				
After				
Before				
After				
	Total	0.00		0.00 M

	HIS = J + M
Habitat Impact Score (HIS)	3.76

	Proposed habitats on site (Onsite mitigation)			Target habitats distinctiveness		Target habitat condition			Time till target condition		Difficulty of creation / restoration		Habitat biodiversity value	
T. Note	code	Phase 1 habitat description	*Area (ha)*	*Distinctiveness*	*Score*	*Condition*	*Score*		*Time (years)*	*Score*	*Difficulty*	*Score*	***Habitat biodiversity value***	***Comment***
		Habitat Creation	N		O		P			Q		R	(N x O x P) / Q / R	
	n/a	Built Environment: Gardens (lawn and planting)	0.56	Low	2	Poor	1		3 Years	1.1	Low	1	**1.02**	
	n/a	Built Environment: Buildings/hardstanding	0.91	none	0	Poor	1		3 Years	1.1	Low	1	**0.00**	
	J12	Grassland: Amenity grassland	0.30	Low	2	Poor	1		3 Years	1.1	Low	1	**0.55**	
	A112	Woodland: Broad-leaved plantation	0.04	Medium	4	Poor	1		32+ years	3	Medium	1.5	**0.04**	
	B22	Grassland: Semi-improved neutral grassland	0.02	Medium	4	Moderate	2		15 years	1.7	Medium	1.5	**0.06**	Marginal vegetation
	B22	Grassland: Semi-improved neutral grassland	0.05	Medium	4	Moderate	2		15 years	1.7	Medium	1.5	**0.16**	Attenuation basin
		Total	**1.88**											
		Habitat Enhancement						Existing value S (= F)					((NxOxP)-S)/Q/R	
		Total	**0.00**								Trading down correction value		0.00	
											Habitat Mitigation Score (HMS)		**1.83**	
													HBIS = HMS - HIS	
											Habitat Biodiversity Impact Score		**-1.93**	Loss
											Percentage of biodiversity impact loss		51.33	

	Loss	Gain	Impact
Woodland Habitat	0.00	0.04	**0.04**
Grassland Habitat	0.00	0.77	**0.77**
Wetland Habitat	0.00	0.00	**0.00**
Other Habitat (including Built Environment)	3.76	1.02	**-2.74**
Total	3.76	1.83	**-1.93**
		Trading down	**0.00**
			-1.93

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

This sheet calculates the impacts to hedges and lines of trees in and around the site.

These units are not transferrable as compensation for either the Habitat or Connectivity Impact Assessment scores.

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 Hedgerow features on site		Hedgerow distinctiveness		Hedgerow condition assessments									Hedgerow Biodiversity Value: Hedgerow features to be retained with no change within development		Hedgerow features to be retained and enhanced within development		Hedgerow features to be lost within development	
T. Note	code	Hedgerow habitat description	*Feature length (km)*	*Distinctiveness*	*Score*	*A1*	*A2*	*B1*	*B2*	*C1*	*C2*	*D1*	*D2*	*Condition Score*	*Length (km)*	*Existing value*	*Length (km)*	*Existing value*	*Length (km)*	*Existing value*
		Direct Impacts and retained features			A										C	A x B x C = D	E	A x B x E = F	G	A x B x G = H
	H1	Hedges: non species rich hedge	0.16	Low	2	Pass	Pass	Pass	Pass	Fail	Fail	Pass	Pass	2			0.08	**0.32**	**0.08**	**0.32**
	H2	Hedges: non species rich hedge	0.08	Low	2	Pass	Fail	Fail	Fail	Fail	Fail	Pass	Pass	1	0.08	**0.16**				
		Total	0.24											Totals	0.08	0.16	0.08	0.32	0.08	0.32
																				∑D + ∑F + ∑H
																		Site Hedge Biodiversity Value		0.80
Before/after impact		**Indirect Negative Impacts**	K												Value of loss from indirect impacts: K x A x B = Li, Lii	Li - Lii				
	Before																			
	After																			
	Before																			
	After																			
	Before																			
	After																			
	Before																			
	After																			
	Before																			
	After																			
		Total	0.00													0.00 M				HIS = J + M
																			Hedge Impact Score (HIS)	0.32

		Proposed hedge features on site (Onsite mitigation)		Target hedge distinctiveness		Hedgerow condition assessments										Time till target condition		Difficulty of creation / restoration		*Linear biodiversity value*
T. Note	code	Phase 1 habitat description	*Length (km)*	*Distinctiveness*	*Score*	*A1*	*A2*	*B1*	*B2*	*C1*	*C2*	*D1*	*D2*	*Condition Score*		*Time (years)*	*Score*	*Difficulty*	*Score*	
		Hedgerow Creation	N		O												Q		R	(N x O x P) / Q / R
	H1 repla	Hedges: species rich hedge with trees	0.07	High	6	Pass	Pass	Pass	Pass	Fail	Fail	Pass	Pass	2		10 years	1.4	Low	1	**0.56**
	South	Hedges: species rich hedge with trees	0.16	High	6	Pass	Pass	Pass	Pass	Fail	Fail	Pass	Pass	2		10 years	1.4	Low	1	**1.33**
	Orn	Hedges: non species rich hedge	0.04	Low	2	Fail	Pass	Pass	Pass	Fail	Fail	Pass	Pass	2		5 years	1.2	Low	1	**0.12**
		Total	0.26	ERROR - Total length of hedge created must equal total area of hedge lost																
		Hedgerow Enhancement													Existing value S (= F)					((N x O x P) - S) / Q / R
	H1	Hedges: species rich hedge with trees	0.08	High	6	Pass	Pass	Pass	Pass	Fail	Fail	Pass	Pass	2	**0.32**	5 years	1.2	Low	1	**0.48**
		Total	0.08															Trading down correction value		0.00
																		Hedge Mitigation Score (HMS)		**2.49**
																			HBIS = HMS - HBIS	
																		Hedge Biodiversity Impact Score	2.17	Gain
																		Percentage of linear impact loss		

KEY	
	No action required
	Action required
	Drop-down menu
	Calculation
	Automatic lookup
	Overall Gain
	Overall Loss

Appendix E: Biodiversity Offsetting Metric (Off-Site) (Agreement yet to be confirmed)

Biodiversity Impact Assessment Summary

Warwickshire County Council

Derived Locally from the Defra Metric
Version 19.0 (01/04/2018)

Site name: **Off-site Land (Land to the South of Roxton Road, Great Barford)**
Planning reference number: **to be copied from the BIA sheet**

Existing	Habitat Area (ha)	Hedgerow Impact (km)	Connectivity Features (km)	Habitat Biodiversity Value	Hedgerow Biodiversity Value	Connectivity Biodiversity Value
Onsite Biodiversity Impact	1.50	0.00	0.00	3.30	0.00	0.00
Indirect Biodiversity Impact	0.00	0.00	0.00	0.00	0.00	0.00
Total habitat / linear features impacted	**1.50**	**0.00**	**0.00**	**3.30**	**0.00**	**0.00**
Retained / Created / Enhanced						
Onsite biodiversity retained	0.10	0.00	0.00	0.30	0.00	0.00
Onsite Creation	1.50	0.00	0.00	6.00	0.00	0.00
Biodiversity retained and enhanced	0.00	0.00	0.00	0.00	0.00	0.00
Total biodiversity retained/enhanced	**1.60**	**0.00**	**0.00**	**6.30**	**0.00**	**0.00**
Trading Down	n/a	n/a	n/a	0.00	0.00	0.00
Biodiversity Impact	**n/a**	**n/a**	**n/a**	**3.00**	**0.00**	**0.00**

Habitat Impacts	Loss	Gain	Impact	%age losses	Compensatory Unit loss	Indicative Offset (ha)	WCC Offset units	WCC Offset Contribution
Woodland Habitat	0.00	2.86	2.86					
Grassland Habitat	0.00	3.14	3.14					
Wetland Habitat	0.00	0.00	0.00					
Other Habitat (incl. Built Env)	3.00	0.00	-3.00			Transferred to Wetland		
Total	3.00	6.00	3.00	0.00	0.00	0.00	0.00	£0
		Trading down	0.00					
			3.00					

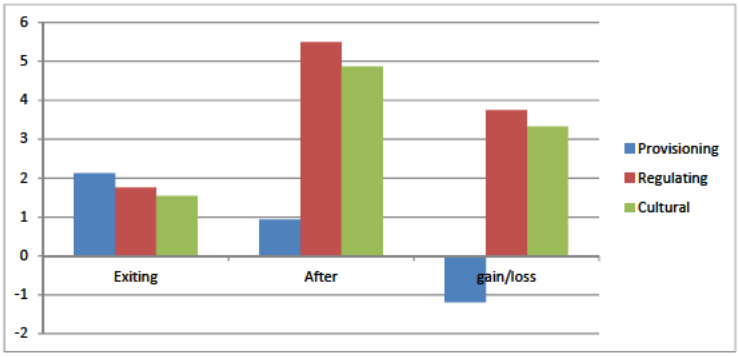
Warwickshire County Council is currently transferring 'Other' habitat loss to Wetland Creation

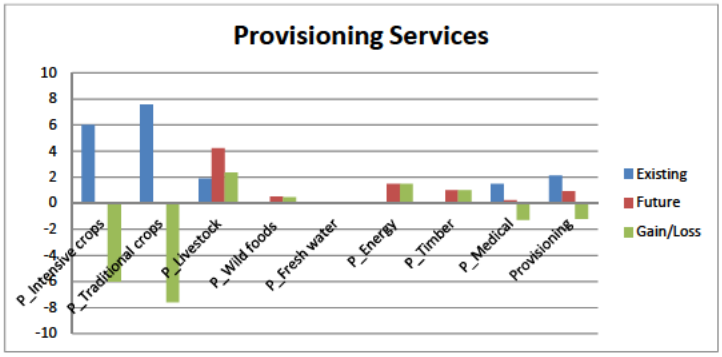
Hedgerow Impacts	Loss	Gain	Trading down	Impact	Unit loss	Indicative Offset (ha)	WCC Offset units	WCC Offset Contribution
Hedgerow	0.00	0.00		0.00				

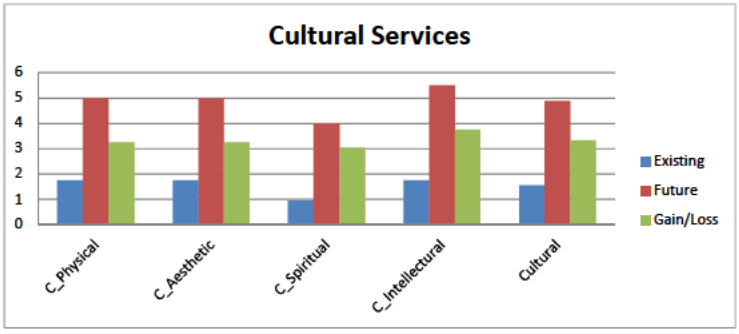
SUMMARY

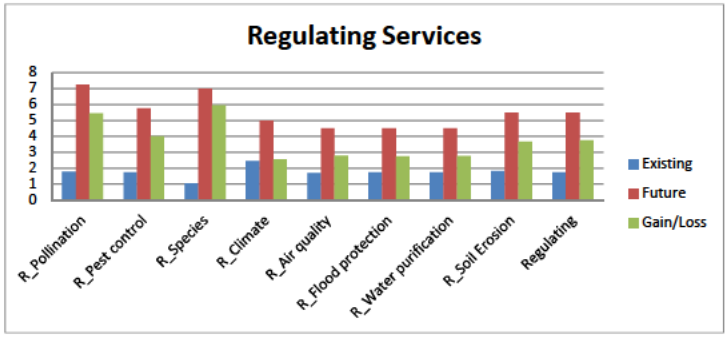
This development will result in 3 Habitat Biodiversity Units gain; 0 Hedgerow Units loss and 0 Connectivity Biodivesity Units loss

ECOSYSTEM SERVICES ANALYSIS









For any questions with regard to biodiversity impact and this development please contact Warwickshire County Council Ecological Services:
email: planningecology@warwickshire.gov.uk or telephone 01926 418060

Warwickshire, Coventry & Solihull - Habitat Impact Assessment Calculator

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

Local Planning Authority:	
Site name:	Land (Land to the South of Roxton Road, Great
Planning application reference number:	
Assessor:	
Date:	

Please fill in both tables

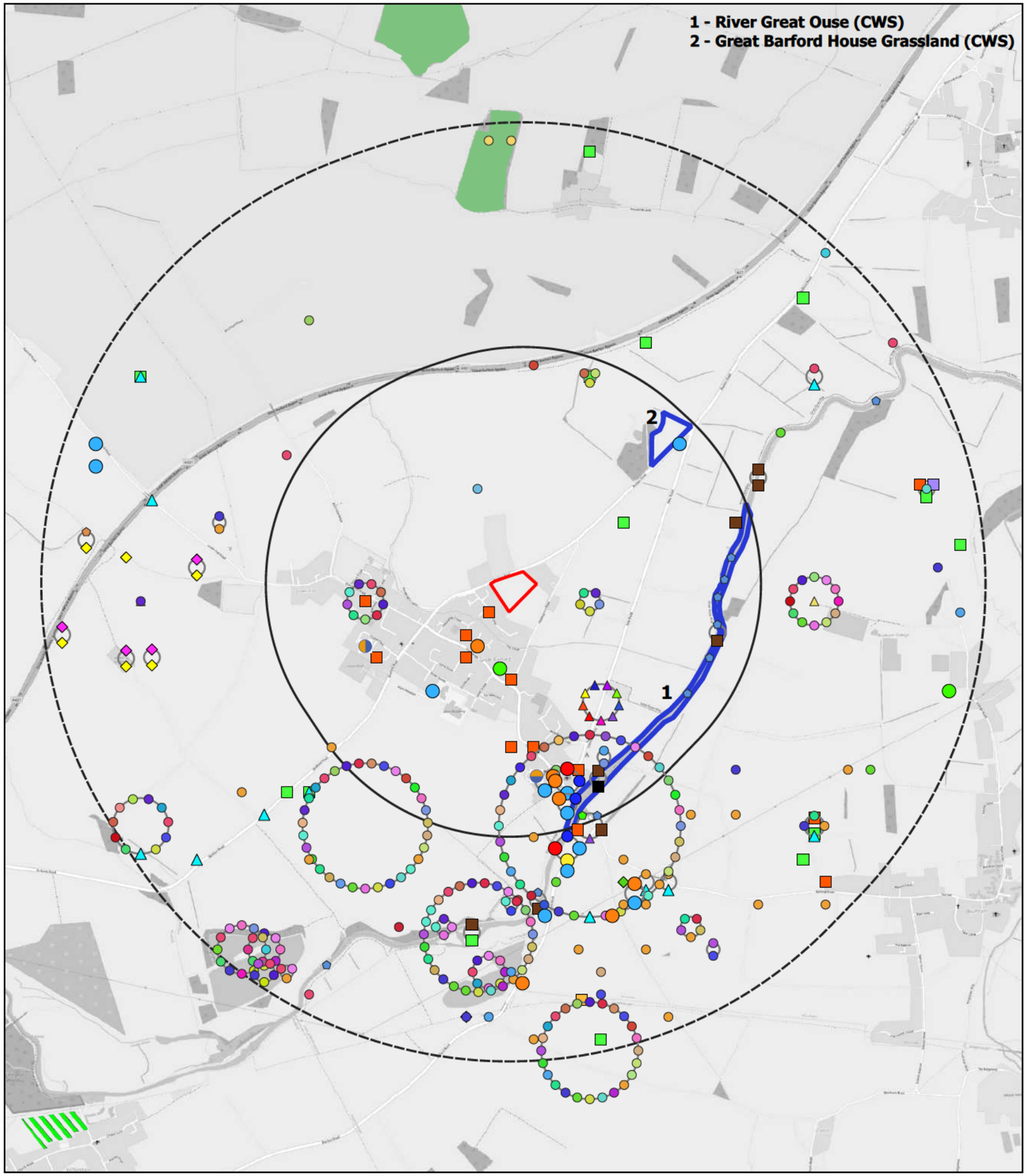
Please do not edit the formulae or structure
To condense the form for display hide vacant rows, do not delete them
If additional rows are required, or to provide feedback on the calculator please contact WCC Ecological Services 01926 418060

	Existing habitats on site Please enter all habitats within the site boundary			**Habitat distinctiveness**		**Habitat condition**		**Habitat Biodiversity Value**						
								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)*	*Distinctiveness*	*Score*	*Condition*	*Score*	*Area (ha)*	*Existing value*	*Area (ha)*	*Existing value*	*Area (ha)*	*Existing value*	***Comment***
		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	
	J11	Other: Arable	1.50	Low	2	Poor	1	0.00		0.00		1.50	**3.00**	
	B6	Grassland: Poor semi-improved grassland	0.10	Medium-Low	3	Poor	1	0.10	0.30					
		Total	1.60				Total	0.10	0.30	0.00	0.00	1.50	3.00	J
													$\sum D + \sum F + \sum H$	
											Site habitat biodiversity value		3.30	

Before/after impact	**Indirect Negative Impacts** Including off site habitats	K	Value of loss from indirect impacts K x A x B = Li, Lii	Li - Lii
Before				
After				
Before				
After				
Before				
After				
Before				
After				
Before				
After				
	Total	0.00		0.00 M
				HIS = J + M
				Habitat Impact Score (HIS) 3.00

	Proposed habitats on site (Onsite mitigation)		Target habitats distinctiveness		Target habitat condition			Time till target condition		Difficulty of creation / restoration		***Habitat biodiversity value***	
T. Note	code	Phase 1 habitat description	*Area (ha)*	*Distinctiveness*	*Score*	*Condition*	*Score*		*Time (years)*	*Score*	*Difficulty*	*Score*		***Comment***
		Habitat Creation	N		O		P			Q		R	(N x O x P) / Q / R	
	B22	Grassland: Semi-improved neutral grassland	1.00	Medium	4	Moderate	2		15 years	1.7	Medium	1.5	**3.14**	
	A22	Woodland: Scattered scrub	0.50	Medium	4	Moderate	2		10 years	1.4	Low	1	**2.86**	
		Total	**1.50**											
		Habitat Enhancement						Existing value S (= F)					((NxOxP)-S)/Q/R	
		Total	**0.00**								Trading down correction value		0.00	
											Habitat Mitigation Score (HMS)		**6.00**	
													HBIS = HMS - HIS	
											Habitat Biodiversity Impact Score		**3.00**	Gain
											Percentage of biodiversity impact loss			

	Loss	Gain	Impact
Woodland Habitat	0.00	2.86	**2.86**
Grassland Habitat	0.00	3.14	**3.14**
Wetland Habitat	0.00	0.00	**0.00**
Other Habitat (including Built Environment)	3.00	0.00	**-3.00**
Total	3.00	6.00	**3.00**
		Trading down	**0.00**
			3.00



Key:

- Site Boundary
- 1km Site Boundary Buffer
- 2km Site Boundary Buffer
- County Wildlife Sites (CWS)
- Ancient Woodland
- Brown Long-Eared Bat
- Common Pipistrelle
- Daubenton's Bat
- Noctule
- Soprano Pipistrelle
- Unidentified bat species
- Unidentified pipistrelle species
- Unidentified pipistrelle species roost
- American Mink
- Brown Hare
- Eurasian Badger
- Eurasian Badger Sett
- European Otter
- European Water Vole
- Harvest Mouse
- West European Hedgehog
- Common Lizard
- Common Frog
- Great Crested Newt
- Smooth Newt
- Floating Pennywort
- Indian Balsam
- Japanese Knotweed
- Beaded Chestnut
- Blood-vein
- Brown-spot Pinion
- Deep-brown Dart
- Dot Moth
- Mottled Rustic
- Rosy Rustic
- Rustic
- Sallow
- Small Heath
- Barn Owl
- Barnacle Goose
- Black-headed Gull
- Brambling
- Bullfinch
- Common Gull
- Common Tern
- Corn Bunting
- Cuckoo
- Dunnock
- Fieldfare
- Gadwall
- Goldeneye
- Great Northern Diver
- Green Sandpiper
- Grey Partridge
- Grey Wagtail
- Greylag Goose
- Herring Gull
- House Martin
- House Sparrow
- Kestrel
- Kingfisher
- Lapwing
- Lesser Black-backed Gull
- Lesser Redpoll
- Lesser Spotted Woodpecker
- Linnet
- Mallard
- Marsh Harrier
- Marsh Tit
- Meadow Pipit
- Merlin
- Mistle Thrush
- Mute Swan
- Osprey
- Oystercatcher
- Peregrine
- Pink-footed Goose
- Pintail
- Red Kite
- Redwing
- Reed Bunting
- Ringed Plover
- Shelduck
- Skylark
- Snipe
- Song Thrush
- Spotted Flycatcher
- Starling
- Stock Dove
- Swift
- Tawny Owl
- Teal
- Turtle Dove
- Wigeon
- Willow Warbler
- Yellow Wagtail
- Yellowhammer

client
Lone Star Land Ltd

project
Land South of Roxton Road,
Great Barford

drawing title
SITE LOCATION & CONSULTATION RESULTS PLAN

scale @ A3
1:20000

drawn
MPG/MPG

issue
19/7/2019

drawing / figure number
Figure 1

rev
8954-E-01

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masterplanning ■ environmental assessment ■ landscape design ■ urban design ■ ecology ■ architecture ■ arboriculture

0 500 1000 m

K \8900\8954\QG S\Plans\Consultations\8954 E 01 Site Location & Consultation Results Plan qgs

Key:

- Site Boundary
- A — Cultivated/disturbed land - arable
- Domestic Boundary
- Intact hedge - species-poor
- Fence
- Scrub - scattered line
- Scrub - scattered
- Broadleaved tree

client
Lone Star Land Ltd

project
Land South of Roxton Road, Great Barford

drawing title
PHASE 1 HABITAT PLAN

scale @ A3 1:1000 | drawn MPG/MPG | issue 19/7/2019

drawing / fgure number **Figure 2** | rev **8954-E-02**

0 25 50 m

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K \8900\8954\QG S\Plans\Phase 1 Plans\8954 E 02 Phase 1 Habitat Plan qgs

Key:

- Site Boundary
- 50m Site Boundary Buffer
- 250m Site Boundary Buffer
- 500m Site Boundary Buffer

Pond

- GCN eDNA Positive
- No Access for eDNA Survey
- Isolated from Site

Ponds P1 & P4 considered isolated from site due to distance and significant barriers in-between for dispersal of GCN.

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0 100 200 300 400 500 m

K \8900\8954\QG S\Plans\Waterbodies\8954 E 03 Waterbody Location Plan qgs

client
Lone Star Land Ltd

project
Land South of Roxton Road,
Great Barford

drawing title
WATERBODY LOCATION & eDNA SURVEY RESULTS PLAN

scale @ A3 1:5000 | drawn MPG/MPG | issue 19/7/2019

drawing / figure number **Figure 3** | rev **8954-E-03**

Key:

- Site Boundary
- Start point
- Finish point
- Point Count (with ref.)
- Transect Route
- Flight Path
- Spring Static Location

Bat Contacts
- Common Pipistrelle
- Soprano Pipistrelle

P an Ref.	T me	Bat Spec es	Passes	Behav our
PCA	21:22-21:27	No Bats		
PCB	21:30-21:35	No Bats		
PCC	21:38-21:43	Ref. 1, 2		
1	21:41	Soprano p p stre e	1	P
2	21:43	Common p p stre e	1	P
PCD	21:46-21:51	Ref. 3, 4		
3	21:48	Common p p stre e	1	P
4	21:49	Soprano p p stre e	1	P
PCE	21:56-22:01	No Bats		
5	22:02	Soprano p p stre e	Mu t.	F
PCF	22:06-22:11	No Bats		
PCG	22:14-22:19	Ref. 6		
6	22:19	Common p p stre e	2	F
7	22:23	Common p p stre e	1	C
PCH	22:24-22:29	No Bats		
PCI	22:34-22:39	Ref. 8, 9		
8	22:35	Soprano p p stre e	1	C
9	22:37	Common p p stre e	1	C
10	22:42	Common p p stre e	1	C
PCJ	22:43-22:48	Ref. 11		
11	22:47	Soprano p p stre e	1	C
12	22:49	Soprano p p stre e	4	F
13	22:51	Soprano p p stre e	1	C, S
14	22:54	Soprano p p stre e	1	C
PCK	22:55-23:00	Ref. 15		
15	22:55	Common p p stre e	1	C, S
PCL	23:04-23:09	No Bats		
16	23:11	Common p p stre e	1	C

C - Commuting, F - Foraging, P - Pass, S - Socia Ca ing

client
Lone Star Land Ltd

project
Land South of Roxton Road,
Great Barford

drawng title
BAT TRANSECT & STATIC LOCATION PLAN (SPRING 2019)

scale @ A3 1:1000 | drawn MPG/MPG | issue 19/7/2019

drawng / fgure number **Figure 4** | rev **8954-E-04**

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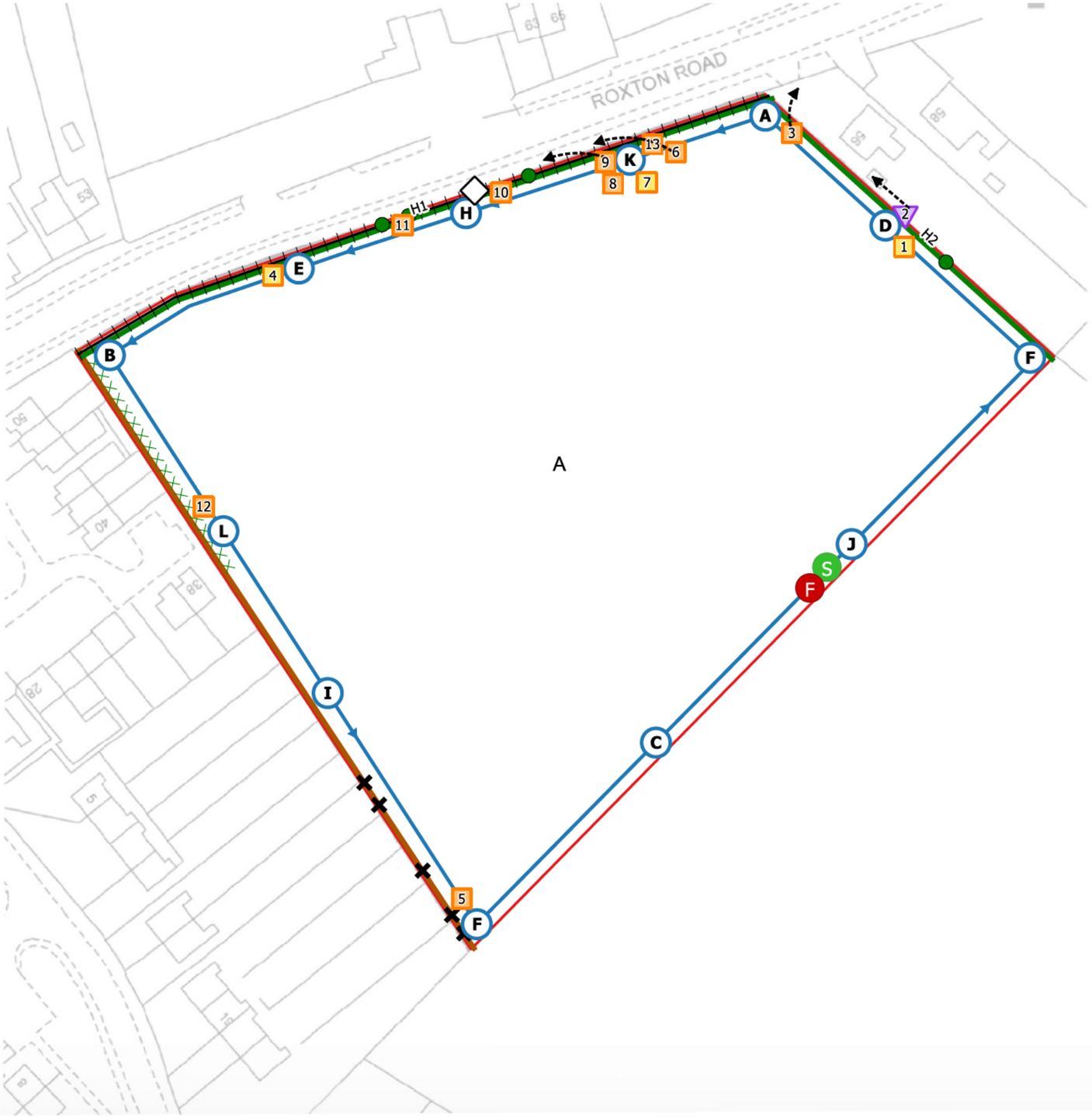
0 25 50 m

K \8900\8954\QG S\Plans\Bat Transects & Emergence\8954 E 04 Bat Transect & Static Location Plan (Spring 2019) qgs



Key:

- Site Boundary
- Start point
- Finish point
- Point Count (with ref.)
- Transect Route
- Flight Path
- Summer Static Location

Bat Contacts
- Common Pipistrelle
- Soprano Pipistrelle
- Noctule

P an Ref.	T me	Bat Spec es	Passes	Behav our
PCA	21:28-21:33	No Bats		
PCB	21:38-21:43	No Bats		
PCC	21:48-21:53	No Bats		
PCD	21:58-22:03	Ref. 1, 2		
1	21:58	Soprano p p stre e	4	F
2	22:00	Noctu e	3	F
3	22:04	Common p p stre e	2	P
PCE	22:07-22:12	Ref. 4		
4	22:12	Soprano p p stre e	3	P
PCF	22:16-22:21	Ref. 5		
5	22:18	Common p p stre e	1	F
PCG	22:23-22:28	No Bats		
PCH	22:32-22:37	No Bats		
PCI	22:39-22:44	No Bats		
PCJ	22:50-22:55	No Bats		
6	22:58	Common p p stre e	4	F
PCK	23:01-23:06	Ref. 7, 8, 9		
7	23:01	Soprano p p stre e	1	F
8	23:02	Common p p stre e X2	4	F
9	23:03	Common p p stre e	3	P
10	23:07	Common p p stre e	1	P
11	23:08	Common p p stre e	3	P
PCL	23:11-23:16	Ref. 12		
12	23:15	Common p p stre e	5	F
13	23:20	Common p p stre e	3	P

C - Commuting, F - Foraging, P - Pass, S - Socia Ca ing

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masterplanning ■ environmental assessment ■ landscape design ■ urban design ■ ecology ■ architecture ■ arboriculture

0 25 50 m

client
Lone Star Land Ltd

project
Land South of Roxton Road,
Great Barford

drawng title
BAT TRANSECT & STATIC LOCATION PLAN (SUMMER 2019)

scale @ A3 1:1000 | drawn MPG/MPG | Issue 19/7/2019

drawng / fgure number **Figure 5** | rev **8954-E-05**

K \8900\8954\QG S\Plans\Bat Transects & Emergence\8954 E 05 Bat Transect & Static Location Plan (Summer 2019) qgs

Key:

- Additional Land Site Boundary
- Additional Land Biodiversity Offsetting Boundary (1.6ha)
- SI Neutral grassland - semi-improved (1ha)
- SI Retained Poor semi-improved grassland (0.1ha)
- Scattered scrub (0.5ha)

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0 25 50 75 100 m

client
Lone Star Land Ltd

project
Land South of Roxton Road, Great Barford

drawing title
PROPOSED OFF-SITE BIODIVERSITY OFFSETTING HABITATS PLAN

scale @ A3 1:1500 | drawn MPG/AJC/KDG | issue 19/7/2019

drawing / figure number **Figure 6** | rev **8954-E-06**

K \8900\8954\QG S\Plans\Phase 1 Plans\8954 E 06 Proposed Off site Biodiversity Offsetting Habitats Plan qgs