Brooks Ecological
Grounded advice

Ecological Impact Assessment

Main Street, Great Houghton

Harron Homes (Yorkshire) Ltd

Report Reference: ER-5492-03B

02/03/2022

Report Title:	Ecological Impact Assessment Main Street, Great Houghton
Report Reference:	ER-5492-03B
Written by:	Sam Kitching BSc (Hons) MCIEEM Senior Ecologist
Technical Review:	Rob Weston BSc(Hons) MSc MCIEEM Technical Director
QA:	Josh Birchall BSc (Hons) ACIEEM Ecologist
Approved for Issue:	Rob Weston BSc(Hons) MSc MCIEEM Technical Director
Date:	02.03.2022

Brooks Ecological Ltd has prepared this report for the sole use of Harron Homes (Yorkshire) Ltd. The information which we have prepared and provided is in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions. This report does not constitute legal advice. The report is in accordance with the agreement under which our services were performed. No warranty, express or implied, is made as to the advice in this report or any other service provided by us. This report may not be relied upon by any other party except the person, company, agent or any third party for whom the report is intended without the prior written permission of Brooks Ecological Ltd. This report presents a snapshot of the site at the date it was surveyed; the conditions and the species recorded present, or likely absent, can change rapidly. Resurvey is recommended to any third-party seeking reliance on this report. The content of this report may, in part, be based upon information provided by others and on the assumption that all relevant information has been provided by those parties from whom it has been requested. Information obtained from any third party has not been independently verified by Brooks unless otherwise stated in the report. This report is the copyright of Brooks Ecological Ltd. Unauthorised reproduction or usage by any person is prohibited.

Unit A, 1 Station Road, Guiseley,
Leeds, LS20 8BX
01943 884451
admin@brooks-ecological.co.uk
www.brooks-ecological.co.uk
Registered in England Number 5351418

Contents

1. Introduction **5**
2. Method **6**
Scope of Assessment 6
Desk Study 6
Field Survey 6
Assessment Method 7
3. Ecology Baseline **8**
Designated Sites and Conservation Areas 8
Habitats 8
Species and Species Groups 12
4. Description of the Proposed Development **13**
5. Impacts and Effects of Development **14**
6. Mitigation & Residual Effects **19**
7. Biodiversity Net Gain **23**
8. Timing Issues **26**
9. Cumulative Effects **26**
10. Offsite Measures or Compensation **26**
11. Enhancement **26**
12. Monitoring **26**
13. Policy and Legislation **26**
14. Conclusion **26**

Summary

The proposals have engaged with the NPPF Mitigation Hierarchy and have been able to avoid most potential significant effects at the Site.

With the exception of Biodiversity Net Gain, residual significant effects can be mitigated and compensated on site and secured via standard conditions provided in the British Standard BS:42020.

Based on the mitigation and compensation strategy, the proposed development delivers a net loss for biodiversity in both habitat and hedgerow categories. Additional offsetting should be agreed with the LPA.

1. Introduction

1.1.1. Brooks Ecological Ltd was commissioned by Harron Homes (Yorkshire) Ltd to carry out an Ecological Impact Assessment (EcIA) for a Site referred to as land off Main Street, Great Houghton (Grid ref: SE 42947 07037).

1.1.2. The British Standard BS:42020 recommends that a proportional assessment of ecological impacts should be made - such that decision making relating to the NPPF 'mitigation hierarchy', the planning balance', and the use of conditions is suitably informed.

1.1.3. The purpose of the EcIA report is to use the information gathered, alongside the proposals for the Site, to:

- identify any significant effects associated with the proposed development,
- set out any mitigation (including monitoring) required to address these effects, and to ensure compliance with legislation and policy,
- identify suitable enhancement,
- identify measures required to secure mitigation and enhancement,
- identify and assess any residual effects and their legal, policy and development management consequences.

1.1.4. This report adapts the format set out in the Chartered Institute for Ecology and Environmental Management (CIEEM) guidelines for Ecological Report Writing (December 2017).

CIEEM

Ecological Impact Assessment (EcIA) Checklist

ALGE Association of Local Government Ecologists

	EcIA Criteria (to ensure decisions are based on adequate information in accordance with Clauses 6.2 and 8.1 of BS42020:2013)	Yes No n/a	Paragraph reference number(s)
Pre-app/ scope	1. Where pre-application advice has been received from the Local Planning Authority and/or an NGO and/ or statutory body (e.g. NE DAS, NRW DAS)[i], it has been fully accounted for in the EcIA		
	2. The scope, structure and content of the EcIA is in accordance with published good practice[ii, iii and iv]		
Surveys, Sites, Species and Habitats	3. Adequate[v] and up-to-date[vi]: a. Desk study has been undertaken[vii] b. Phase 1 habitat survey (or equivalent) has been undertaken[vii] c. Phase 2 ecology surveys have been undertaken (where necessary)[viii]		
	4. All statutory and non-statutory sites likely to be significantly affected are clearly and correctly identified		
	5. All protected or priority species and priority habitats[ix] likely to be significantly affected are clearly and correctly identified, and adequate surveys have been undertaken to inform the baseline		
	6. Any invasive non-native plant species present are clearly and correctly identified		
	7. Where a separate PEA Report states that Phase 2 ecology surveys are required, these have been undertaken in full and results submitted with the application (or lack of such surveys is justified)		
Impacts and Effects	8. The assessment is based on clearly defined development proposals along with relevant drawings/plans (and any plans used are the same version number as those submitted with the application) or 9. The residual ecological effects are considered to be not significant at any geographical scale irrespective of the detailed development proposals, and the assessment is based on a worst-case-scenario		
	10. The report describes and assesses all likely significant ecological effects (including cumulative effects) clearly stating the geographical scale of significance (where relevant)		
Mitigation, Compensation and Enhancement	11. The mitigation hierarchy has been clearly followed[x]		
	12. The report: a. Clearly identifies the proposed mitigation and compensation measures, and explains how these will adequately address all likely significant adverse effects b. Includes, where necessary, proposals for post-construction monitoring c. Recommends how proposed measures may be secured through planning conditions/obligations and/ or necessary licences		
	13. A summary table of proposed mitigation and compensation measures has been provided		
	14. The need for any mitigation licences required in relation to protected species is clearly identified		
	15. Proposals to deliver ecological enhancement/Biodiversity Net Gain have been provided		
Competence/Good Practice	16. Limitations[xi] of the ecological work have been correctly identified and the implications explained		
	17. All relevant key timing issues (e.g. site vegetation clearance or roof removal) that may constrain or adversely affect the proposed timing of development have been identified		
	18. All ecological work and surveys accord with published good practice methods and guidelines OR deviation from such guidelines is made clear and fully justified, and the implications for subsequent conclusions and recommendations made explicit in the report[xii]		
	19. All ecologists and surveyors hold appropriate species licences (where relevant) and/or have all necessary competencies to carry out the work undertaken		
Conclusions	20. The report clearly identifies where the proposed development complies with relevant legislation and policy, highlighting any possible non-compliance issues, and highlighting circumstances where a conclusion cannot be drawn as it requires an assessment of non-ecological issues (such as socio-economic ones)		
	21. The report provides a clear summary of losses and gains for biodiversity, and a justified conclusion of an overall net gain for biodiversity		
	22. Justifiable conclusions[xiii] based on sound professional judgement[xiv] have been drawn as to the significance of effects on any designated site, protected or priority habitat/species or other ecological feature, and a justified scale of significance has been stated		

2. Method

Scope of Assessment

2.1.1. The application site 'the Site' comprises a few a fields located to the north of Great Aughton. The extent of this assessment is the development area within the red line boundary defined in Figure 2.1, overleaf. The actual area surveyed included adjacent habitat within the blue line areas and beyond to provide context to the site.

2.1.2. The assessment uses a 2 km area of search around the Site for records of protected and notable species and locally or nationally designated wildlife sites.

2.1.3. Ecological surveys and reports informing this assessment comprise of the following:

- A Preliminary Ecological Appraisal (PEA) carried out by Brooks Ecological in May 2020. (R-5492-01 June 2021)
- Bat Activity surveys carried out by Brooks Ecological over the 2021 season (ER-5492-02 October 2021)

Desk Study

2.1.4. A full desk study including consideration of local biological records, aerial photographs, local designations and planning guidance has been carried out.

Field Survey

2.1.5. The following dedicated field survey has been carried out at the site. Full details of the methodologies used and the results obtained are contained in the relevant documents referenced opposite. Unless stated otherwise these followed the relevant survey guidelines refenced in reports.

- Walkover / Extended Phase 1 Habitat Survey
- Bat Activity Surveys – Transect and Remote Monitoring

Figure 2.1 Site area under assessment (red line)

Assessment Method

2.1.6. In assessing the significance of effects, we refer to Section 5 of CIEEM (2018) - that a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. In relation to ecological features we consider the following factors in combination, including;

- the feature's value on an ascending scale from Site, to international value
- the site's position in the local landscape,
- its current management and
- its size, rarity or threats to its integrity

2.1.7. There are several tools available to aid this consideration, including established frameworks such as Ratcliffe Criteria or concepts such as Favourable Conservation Status. Also of help is reference to Biodiversity Action Plans in the form of the Local BAP and Section 41 of the NERC Act (2006) to determine if the site supports any Priority Habitats, Habitats of Principal Importance or presents any opportunities in this respect.

2.1.8. The assessment considers the development proposals set out below; from which the potential impacts can be summarised as:

- Vegetation and habitat removal
- Disturbance, pollution or interference arising from the Site's construction
- Disturbance, pollution or interference arising from the Site's operation

2.1.9. This report deals with any significant effects potentially arising from these impacts. It looks at how the mitigation hierarchy can be applied to any effects and the implications of any residual significant effects.

3. Ecology Baseline

3.1.1. A *summary* of the points salient to this assessment are set out below:

Designated Sites and Conservation Areas

3.1.2. Impacts on both Statutory (International and National) and Non-Statutory designations or their interests have been ruled out at PEA Stage.

Habitats

3.1.3. The Site comprises habitats mapped opposite and described in the table overleaf.

Potential future changes to the baseline

3.1.4. The Site's use and ecological baseline will likely be unchanged until the time of the proposed development.

3.1.5. In the absence of re-development, it is assumed that the Site would remain as agricultural land. However, it is assumed that should this residential development proposal not go ahead, further applications would be submitted in future.

3.1.6. If left un-managed/un-grazed, the habitats on site would likely succeed to taller ruderal vegetation and native scrub over time.

Figure 3.1 The Site's habitats

3.1.7. The table below sets out the habitats at this site and their relevance in this assessment.

Table 3.1 Site Habitats Summary

Codes	Habitat Feature	**Notes**	**Valued at what scale**
c1c g4 351 u1c u1b	Habitats of Low or Very Low Distinctiveness.	The vast majority of the Site area is occupied by habitats of low or very low distinctiveness, being dominated by agricultural land – cereal crop and grassland, with additional areas of hard standing and bare ground. These habitats are of very limited species diversity and offer little ecological value. These habitats have relevance to biodiversity at this site on the basis of their extent – mitigation / compensation for any loss of these habitats is dealt with through the Biodiversity Net Gain process and they are not considered further in the EcIA process.	Negligible
h3h	Mixed scrub	Two small pockets of mixed scrub offer the only areas of higher value or higher distinctiveness. Here habitat structure and diversity are higher than found elsewhere on Site. The better of these two areas includes a number of well-established scattered trees. Despite their relative higher value, this is a common habitat type and in this instance, these areas are well isolated from additional habitat of any value. Loss will be mitigated / compensated through the Biodiversity Net Gain process.	Site Level
	Native hedge and native hedge associated with bank or ditch	The Site is bound and split by native hedges typical of agricultural field boundaries. To the northern boundary this is found in association with an earth bank. Hedges are dominated by hawthorn with blackthorn, holly and elder. Ground flora is typical of agricultural field margins.	Site Level

3.1.8. The tables below shows the site's habitats in terms of their measured Extent (ha or km) and Biodiversity Value (Habitat Units)- this is an excerpt from the DEFRA Biodiversity Metric 2.0 Spreadsheet Calculator.

Figure 3.2 Site Habitats as defined in Biodiversity Net Gain calculations – Site Baseline[1].

	Habitats and areas			Habitat distinctiveness	Habitat condition	Ecological connectivity	Strategic significance	Suggested action to address habitat losses	Ecological baseline
Ref	**Broad Habitat**	**Habitat type**	**Area (hectares)**	**Distinctiveness**	**Condition**	**Ecological connectivity**	**Strategic significance**		**Total habitat units**
1	**Cropland**	Cropland - Cereal crops	1.47	Low	N/A -Agricultural	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	3.38
2	**Grassland**	Grassland - Modified grassland	1.65	Low	Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	3.80
3	**Urban**	Urban - Vacant/derelict land/ bareground	0.06	Low	Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	0.14
4	**Urban**	Urban - Artificial unvegetated, unsealed surface	0.27	V.Low	N/A - Other	Low	Within area formally identified in local strategy	Compensation Not Required	0.00
5	**Urban**	Urban - Developed land; sealed surface	0.06	V.Low	N/A - Other	Low	Within area formally identified in local strategy	Compensation Not Required	0.00
6	**Heathland and shrub**	Heathland and shrub - Mixed scrub	0.01	Medium	Moderate	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	0.09
7	**Heathland and shrub**	Heathland and shrub - Mixed scrub	0.03	Medium	Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	0.17
8	**Urban**	Urban - Street Tree	0.004	Low	Moderate	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	0.02
		Total site area ha	**3.55**					**Total Site baseline**	**7.56**

[1] Our report provides an estimate of the sites baseline value in Biodiversity Units. This is based on thorough assessment at the time of survey and using the information available at this time. In this assessment we have used the latest version of DEFRA's Biodiversity Metric Tool, the UK Habitats Classification and relevant guidance (DEFRA 2021). This assessment requires subjective judgments to be made in terms of habitat type and condition and could be open to other interpretations. Reliance on the Unit Score, or conversion of this into a monetary value, would be at the developer's own risk.

	UK Habitats - existing habitats			Habitat distinctiveness	Habitat condition	Ecological connectivity	Strategic significance		Ecological baseline
Baseline ref	**Hedge number**	**Hedgerow type**	**length KM**	**Distinctiveness**	**Condition**	**Ecological connectivity**	**Strategic significance**	**Suggested action to address habitat losses**	**Total hedgerow units**
1		Native Hedgerow	0.19	Low	Good	Low	Within area formally identified in local strategy	Same distinctiveness band or better	1.311
2		Native Hedgerow - Associated with bank or ditch	0.08	Medium	Moderate	Low	Within area formally identified in local strategy	Like for like or better	0.736
3		Native Hedgerow	0.22	Low	Moderate	Low	Within area formally identified in local strategy	Same distinctiveness band or better	1.012
4		Native Hedgerow - Associated with bank or ditch	0.08	Medium	Moderate	Low	Within area formally identified in local strategy	Like for like or better	0.736
5		Native Hedgerow	0.17	Low	Moderate	Low	Within area formally identified in local strategy	Same distinctiveness band or better	0.782
		Total Site length/KM	**0.74**					**Total Site baseline**	**4.58**

Species and Species Groups

3.1.9. Potential constraints relating to relevant groups were investigated through the surveys listed above. Those highlighted are of relevance to the Site and are referenced later in the assessment.

Table 3.2 Summary of relevant faunal issues

Species/ Group (Feature)	Notes	Valued at what scale
Bats	Seasonal activity surveys identified a commuting route along the Site's northern boundary used by low numbers of common pipistrelle bats and confirmed low level foraging by common species, focussed around the southern farm-yard. Monitoring returned a very low number of registrations possibly attributable to nathusius pipistrelle. Site of limited importance to bats. No potential bat roost features noted.	**Local Level**
Birds	Barn owl was observed using buildings on Site during ach bat activity transect though no evidence of nesting at the Site was identified. This individual is likely to use onsite grassland and open space as part of its hunting grounds Old hedgerows and the small number of trees within these will support a typical range of nesting birds and provide opportunities for foraging. Standard precautions apply regarding clearance of vegetation.	**Local Level**

4. Description of the Proposed Development

4.1.1. The planning application seeks permission for 87 dwellings with associated spine road, drainage infrastructure, and public open space.

4.1.2. Whilst much of the Site will be cleared for development, land along the northern boundary will be retained as public open space.

4.1.3. Existing boundary hedgerows, and much of the central hedge, will be retained, though a number of breaks will be required in the central and western hedgerows to facilitate development.

4.1.4. Proposals have had the opportunity to respond to the findings of the PEA and have built in all potential avoidance - in terms of layout. The following sections examine impacts resulting from the proposals which could not be avoided.

4.1.5. Impacts are assessed on the basis of the Effects which result on the valued habitats, species or Site's which have been identified above.

Figure 4.1 Site layout (Drawing Reference 563 SK10, Rev – O, Feb 2022).

5. Impacts and Effects of Development

5.1.1. Figure 5.1 shows the development footprint in relation to the mapped habitats (black hatch).

5.1.2. The development footprint shows the sum extent of proposed built development and associated clearance works.

5.1.3. Although an area of open space will be retained to the north of the Site surface water attenuation basins will be dug in this part of the Site, it is therefore assumed that all habitats (with the exception of retained hedges) will be cleared or temporarily lost.

5.1.4. The entire Site, with the exception of four trees, will be cleared.

Figure 5.1 Development footprint in relation to existing on-Site habitats

5.1.5. Figure 5.2 summarise the impacts of development on existing vegetation.

5.1.6. Areas shown in red and orange will be cleared of existing vegetation and subject to extensive earthworks, which will result in the permanent loss of baseline habitats.

5.1.7. Areas marked red will then be built out, either as sealed surfaces (roads, footpaths, parking, play areas) or as school buildings.

5.1.8. Following development, areas marked orange will be landscaped including the provision of attenuation basins and species rich grassland.

Figure 5.2 Summary of impacts on existing habitats

Table 5.1 lists the anticipated Impacts and Effects associated with the proposals.

	Impact	**Stage**
1	**Habitat will be removed** from the Site by clearance and soil stripping using heavy machinery.	*Clearance*

	Significant Effects - in the absence of mitigation	**Acting on**	**Acting at scale (Maximum)**
1a	**Direct habitat loss**. There will be a loss of habitat generally which will be managed through the Biodiversity Net Gain process. Habitat loss will affect connectivity through and around the Site. Habitat loss will be likely to affect identified features of the Site.	Mixed Scrub Birds Bats	Local
1b	**Damage to retained habita**t such as by storage of clearance machinery or materials in these areas. The northern hedge has been identified as providing a corridor used by local bat populations, impacting the functionality of this corridor may impact commuting routes used by these bats.	Hedgerows Bats Birds	Local
1c	**Disturbance**. The noise and activity at the Site will render it and areas immediately off-site inhospitable to wildlife during this period, specifically bats using the northern hedge. Wildlife in this area is likely to be habituated to noise levels associated with the urban fringe.	Birds Bats	Local
1d	**Pollution**. There is the potential for sediment or chemicals to be released from the Site, or into retained habitat during this stage.	Off-Site Hedgerows	Site
1e	Potential effects on **Protected Species**. Precautions will be required to ensure that impacts on bats, nesting birds, and the spread of Invasive Non-Native Species (INNS) can be avoided.	Protected Species	Criminal Offence

	Impact	Stage
2	**Construction activities** will take place over a 1-2 year period. Construction of roads and sewers will be followed by footings and then above ground construction of buildings.	*Construction*

	Significant Effects - in the absence of mitigation	Acting on	Acting at scale (Maximum)
2a	**Damage to retained habitat** such as by storage of machinery or materials in these areas. The northern hedge has been identified as providing a corridor used by local bat populations, impacting the functionality of this corridor may impact commuting routes used by these bats.	Hedgerows Bats Birds	Local
2b	**Disturbance**. The noise and activity at the Site will render it and areas immediately off-site inhospitable to wildlife during this period.	Birds Bats	Local
2c	**Pollution**. There is the potential for sediment or chemicals to be released from the Site during this stage.	Off-site	Local

	Impact	Stage
3	**Landscaping activities** will take place period during the construction period and will, be phased around completion of roads and housing.	*Construction*

	Significant Effects - in the absence of mitigation	Acting on	Acting at scale (Maximum)
3a	**Damage to retained habitat** such as by storage of machinery or materials in these areas. The northern hedge has been identified as providing a corridor used by local bat populations, impacting the functionality of this corridor may impact commuting routes used by these bats. Access will be required to retained areas to commence management and in itself could result in damage.	Hedgerows Bats	Local
3b	**Pollution**. There is the potential for sediment or chemicals to be released from the Site during this stage.	Off-site	Local

3c	**Inappropriate habitat creation or management** techniques could mean that the proposals fail to deliver on BNG commitments	All habitats and species	Local

	Impact	**Stage**
4	**The Site will be populated.** Units will be inhabited, and traffic and services will access the Site regularly. Pedestrian access across the Site and along rights of way will increase. Presence of domestic pets will increase. Retained and created habitat will be managed by the Site Management Company.	*Operation*

	Significant Effects - in the absence of mitigation	**Acting on (feature)**	**Acting at scale (Maximum)**
4a	**Damage to retained and created habitat** such as by inappropriate use, littering, release of invasive species.	All habitats	Local
4b	**Disturbance**. The noise and activity at the Site will be present of a lower order and will likely be tolerable to species habituated to the sub-urban conditions prevailing locally. The presence of dogs and cats will result in some predation and displacement, but this area will already be affected by these species to a lesser degree.	Birds	Site Off-site
4c	In the **absence of correct management** retained and created habitats will not provide the necessary biodiversity units committed to through the BNG process.	All habitats	Local

6. Mitigation & Residual Effects

6.1.1. Where feasible, the **avoidance** of unnecessary impacts has been considered at the design stage and worked into the Site Layout plan. The proposals will incorporate the following **mitigation** in relation to the identified **effects** above, as illustrated below and set out in Table 6.1 overleaf.

6.1.2. Habitat creation and management will need to be applied to the proposals to achieve the calculated BNG position are set out (and committed to) in the plan below. These themes would need to be the subject of a suitable Biodiversity Management which would provide a means of achieving the required habitats and condition.

6.1.3. Achieving the required Biodiversity Net Gain position will ensure that effects relating to habitat loss are addressed - both in respect of the habitats identified as valued features, and also the lower value habitats which would previously have been scoped out of Impact Assessments. Our impact assessment therefore only highlights where habitats present place a particular constraint on the protection of, or delivery of habitats on Site; or on off-set agreements.

6.1.4. Planning permission for the Site would be anticipated tom be subject to standard conditions requiring the production of the following documents:

- A BS:42020 Biodiversity Management Plan (BMP).
- A BS:42020 Construction Environmental Management Plan (CEMP: Biodiversity)
- A Lighting Plan

Table 6.1 lists the mitigation put in place to address the effects identified in table 5.1

	Impact	**Stage**
1	**Habitat will be removed** from the Site by clearance and soil stripping using heavy machinery.	*Clearance*

	Significant Effects - in the absence of mitigation	**Mitigation / Compensation**	**Residual Magnitude**
1a	**Direct habitat loss**.	Complies with Biodiversity Net Gain policy. The BMP will detail the provision and management of created habitat including POS to the north, this will negate potential impact on bats commuting along this hedge line. The BMP will detail the provision of bird nesting and bat roosting features	**Minor Negative** (BNG loss to be offset elsewhere or through financial contribution)
1b	**Damage to retained habita**t such as by storage of clearance machinery or materials in these areas.	The CEMP will detail installation of barrier fencing to protect retained habitats. This will cover specific impacts on the northern hedge and prevent fragmentation of the existing bat commuting route identified here.	**Neutral**
1c	**Disturbance**. The noise and activity at the Site will render it, and areas immediately off-Site, inhospitable to wildlife during this period.	The CEMP will detail time limits to work on Site and the installation of screened fencing to limit visual disturbance of sensitive habitat.	**Minor Negative**
1d	**Pollution**. There is the potential for sediment or chemicals to be released from the Site, or into retained habitat during this stage.	The CEMP will detail the location of bunded compounds for storage of machinery and materials	**Neutral**
1e	Potential effects on **Protected Species**. Precautions will be required to ensure that impacts on bats, nesting birds, and the spread of Invasive Non-Native Species (INNS) can be avoided.	The CEMP will detail necessary pre-works checks for nesting birds.	Avoided entirely.

	Impact	Stage
2	**Construction activities** will take place over a 1-2 year period. Construction of roads and sewers will be followed by footings and then above ground construction of buildings.	*Construction*

	Significant Effects - in the absence of mitigation	Mitigation / Compensation	Residual Magnitude
2a	**Damage to retained habitat** such as by storage of machinery or materials in these areas.	The CEMP will detail installation of barrier fencing to protect retained habitat – creating a Biodiversity Protection Zone bordering the northern hedgerow. This will cover specific impacts on the northern hedge and prevent fragmentation of the existing bat commuting route identified here.	**Neutral**
2b	**Disturbance**. The noise and activity at the Site will render it, and areas immediately off-Site, inhospitable to wildlife during this period.	The CEMP will detail time limits to work on Site and the installation of screened fencing to limit visual disturbance of sensitive habitat.	**Minor Negative**
2c	**Pollution**. There is the potential for sediment or chemicals to be released from the Site during this stage.	The CEMP will detail location of bunded compounds for storage of machinery and materials	**Neutral**

	Impact	Stage
3	**Landscaping activities** will take place period during the construction period and will, be phased around completion of roads and housing.	*Construction*

	Significant Effects - in the absence of mitigation	Mitigation / Compensation	Residual Magnitude
3a	**Damage to retained habitat** such as by storage of machinery or materials in these areas. Access will be required to retained areas to commence management, and in itself could result in damage.	The CEMP will detail installation of barrier fencing to protect retained habitat and any precautions required in accessing the Biodiversity Protection Zone. This will cover specific impacts on the northern hedge and prevent fragmentation of the existing bat commuting route identified here. The BMP will specify habitat creation and management activities.	**Neutral**

3b	**Pollution**. There is the potential for sediment or chemicals to be released from the Site during this stage.	The CEMP will define the location of bunded compounds for storage of machinery and materials	**Neutral**
3c	**Inappropriate habitat creation or management** techniques could mean that the proposals fail to deliver on BNG commitments	The BMP will detail; the planting and management required to achieve BNG commitments. This will include monitoring so that evidence can be provided, or remedial action can put in place as required.	**Neutral**

	Impact	**Stage**
4	**The Site will be populated.** Units will be inhabited, and traffic and services will access the Site regularly. Pedestrian access across the Site and along rights of way will increase. Presence of domestic pets will increase.	*Operation*

	Significant Effects - in the absence of mitigation	**Mitigation/Compensation**	**Residual Magnitude**
4a	**Damage to retained and created habitat** such as by inappropriate use, littering, release of invasive species.	Landscaping has been designed to accommodate public access and buffering of sensitive habitats has been designed in.	**Minor Positive**
4b	**Disturbance**. The noise and activity at the Site will be present of a lower order and will likely be acceptable to species habituated to the sub-urban conditions prevailing locally. The presence of dogs and cats will result in some predation and displacement.	Landscaping is designed to maximise the amount of habitat which groups such as birds can use for cover, and to provide connectivity. New nesting (for birds) and roosting (for bats) will	**Minor Negative**
4c	In the **absence of correct management** retained and created habitats may not provide the necessary biodiversity units committed to through the BNG process.	The BMP will provide full details of habitats to be created and their suitable management. The BMP will include monitoring so that evidence can be provided, or remedial action can put in place as required.	**Minor Positive**
4d	**Exclusion of wildlife** from the developed Site – physically or through the lack of provided habitat	The BMP will specify measures required to ensure ongoing connectivity through the Site	**Minor Negative**

7. Biodiversity Net Gain

7.1.1. There will be a requirement for the proposals to secure **Biodiversity Net Gain (BNG)** (in accordance with BS: 8683) at a level determined by the Local Planning Authority (LPA in line with their own policies and guidance in the NPPF). This is likely to equate to 10%.

7.1.2. Any shortfall in Units will need to be off-set through the creation of Units off-Site by direct works, or through contribution to a strategic fund operated by the LPA or a third party. An agreement detailing any off-setting required would be the subject of a condition of planning.

7.1.3. Calculations setting out the position of the proposals in relation to BNG are set out below. These are based on the Proposed Site Plan available at this time. Habitat types which will need to be applied to the proposals to achieve the calculated BNG position are set out (and committed to) in the plan opposite. These would be covered by a standard Landscape Masterplan. For the purposes of mapping the residential development area has been mapped as suburban mosaic, this area has been put through the Metric calculator as a 70:30 split of developed land and vegetated garden as per guidance in DEFRA 3.0.

7.1.4. Achieving the required Biodiversity Net Gain position will ensure that effects relating to habitat loss are addressed - both in respect of the habitats identified as valued features, and also the lower value habitats which would historically have been scoped out of Impact Assessments.

Net Gain Calculations

7.1.5. The proposals will lead to an overall net loss in habitat units, with a shortfall of 1.59 Habitat Units (-21.04%) and shortfall of 3.42 hedgerow units (-64.29%) predicted.

7.1.6. The client has been provided with a full copy of the Biodiversity Metric 2.0 Calculation Tool.

Figure 7.1 Post development habitat types

Table 7.1 Habitat Creation Summary extracted from Biodiversity Metric 2.0 Calculator tool

7.1.7. The table below shows the Site's habitats in terms of their measured extent (ha or km) and Biodiversity Value in Habitat Units. These are an excerpt from the DEFRA Biodiversity Metric 2.0. Spreadsheet Calculator. Although The DEFRA Biodiversity Metric 3.0 was released during production of this report, the Site's assessment and design has all been based on the categories and values in DEFRA 2.0 - the guidance reproduced below and provided with the 3.0 version is followed here:

Post Development Habitat Creation

Post development/ post intervention habitats								
				Ecological connectivity	Strategic significance	Temporal multiplier	Difficulty multipliers	
Proposed habitat	**Area (hectares)**	**Distinctiveness**	**Condition**	**Ecological connectivity**	**Strategic significance**	**Time to target condition/years**	**Difficulty of creation category**	**Habitat units delivered**
Grassland - Modified grassland	0.43	Low	Moderate	Low	Within area formally identified in local strategy	10	Low	1.39
Grassland - Other neutral grassland	0.31	Medium	Moderate	Low	Within area formally identified in local strategy	10	Low	2.00
Urban - Artificial unvegetated, unsealed surface	0.05	V.Low	N/A - Other	Low	Within area formally identified in local strategy	0	Low	0.00
Urban - Built linear features	0.7	V.Low	N/A - Other	Low	Within area formally identified in local strategy	0	Low	0.00
Urban - Developed land; sealed surface	1.06	V.Low	N/A - Other	Low	Within area formally identified in local strategy	0	Low	0.00
Urban - Vegetated garden	1	Low	Poor	Low	Within area formally identified in local strategy	1	Low	2.22
Urban - Street Tree	0.21	Low	Moderate	Low	Within area formally identified in local strategy	27	Low	0.37
Totals	**3.55**							**5.97**

Hedgerow Creation (in addition to 1.79 retained units)

						Spatial quality		Temporal multiplier	
		Proposed habitats		Habitat distinctiveness	Habitat condition	Ecological connectivity	Strategic significance		Hedge units delivered
Baseline ref	**New hedge number**	**Habitat type**	**Length km**	**Distinctiveness**	**Condition**	**Ecological connectivity**	**Strategic significance**	**Time to target condition/years**	
		Hedge Ornamental Non Native	0.16	V.Low	Poor	Low	Within area formally identified in local strategy	1	0.00
		Native Species Rich Hedgerow	0.02	Medium	Moderate	Low	Within area formally identified in local strategy	5	0.10
		Creation Length/KM	**0.18**						**0.10**

8. Timing Issues

8.1.1. Other than the standard constraint surrounding nesting birds and vegetation clearance, no specific timing issues are foreseen.

9. Cumulative Effects

9.1.1. No in-combination effects have been identified.

10. Offsite Measures or Compensation

10.1.1. The scheme is expected to result in a net loss for biodiversity on-site, and as such off-site measures of compensation will be required by the LPA to conform with Net Gain policy. This should be agreed with the LPA through Condition.

11. Enhancement

11.1.1. Opportunities to provide enhancement, and how to secure this, have been identified in Figure 6.1 and Table 6.1 above and will be detailed in the BMP and Landscaping Plan documents to be produced as a standard condition of planning.

12. Monitoring

12.1.1. The CEMP document will detail the role of an Ecological Clerk of Works (ECoW) in overseeing protection measures.

12.1.2. The BMP document will identify any management specific monitoring which might be required in respect of habitat enhancement proposed.

13. Policy and Legislation

13.1.1. Given the implementation of the mitigation set out above, it is anticipated that the proposals will comply with the relevant policy and legislation relating to wildlife and ecology.

14. Conclusion

14.1.1. Mitigation to be agreed by standard conditions of planning will be able to address all significant effects resulting from the development.

14.1.2. The scheme will deliver a net loss for biodiversity on site, for both habitats and hedgerows. Further compensation should be agreed with the LPA. The shortfall in Habitat Units can be compensated for through a financial contribution to the LPA or through a third party land bank. There is scope to include additional hedgerow length within the proposed development, providing the required gain on Site.

References

Andrews H. L. (2011) *A habitat key for the assessment of potential bat roost features in trees.*

Bat Conservation Trust (2016*) Bat Surveys for Professional Ecologists* – Good Practice Guidelines

BSI (2013) British Standards Institute *BS 42020:2013 Biodiversity — Code of Practice for Planning and Development*.

CIEEM (2017) *Guidelines for Ecological Report Writing* 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.

CIEEM (2017) *Guidelines for Preliminary Ecological Appraisal*, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*, 3rd edition. Chartered Institute of Ecology and Environmental Management, Winchester

DEFRA (2021) Biodiversity Metric 3.0 Auditing and accounting for biodiversity Calculation tool macro free

DEFRA (2021) Biodiversity Metric 3.0 Technical Supplement (1)

DEFRA (2021) Biodiversity Metric 3.0 User Guide

English Nature (2004) *Bat Mitigation Guidelines*. English Nature, Peterborough.

Harris S, Jefferies D, Cheeseman C and Booty C (1994). *Problems with Badgers*, revised 3rd Edition. *RSPCA*, ISBN 0-901098-04-3

Gent T and Gibson S, 2003, *Herpetofauna Workers' Manual*, JNCC

IEA. (1995). *Guidelines for Baseline Ecological Assessment*. Chapman and Hall

Hill et al. 2005, *Handbook of Biodiversity Methods*. Cambridge

JNCC (2004) *The Bat Workers Manual*. 3rd Edition.

JNCC (2010). *Handbook for Phase 1 Habitat Survey: A technique for environmental audit*.

Ratcliffe, D.A. (1977) *A Nature Conservation Review*, Cambridge University Press