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
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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

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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

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)', 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[a] [b] [c] [d] [e]		
Surveys, Sites, Species and Habitats	3. Adequate[a] and up-to-date[b]: a. Desk study has been undertaken[a] b. Phase 1 habitat survey (or equivalent) has been undertaken[c] c. Phase 2 ecology surveys have been undertaken (where necessary)[d]		
	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[a] 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[a]		
	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[a] 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[a]		
	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[a] [c] based on sound professional judgement[a] [b] 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 habitat 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 habitat 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								
Proposed habitat	Area (hectares)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Temporal multiplier	Difficulty multipliers	Habitat units delivered
				Ecological connectivity	Strategic significance	Time to target condition/years	Difficulty of creation category	
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.

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Appendix D Bat Activity Survey Report Land off Main Street, Great Houghton – Brooks Ecological Ltd

Great Houghton

Ecological Impact Assessment

Avant Homes

SLR Project No.: 424.064965.00001

22 February 2024

Bat Activity Survey Report

Land off Main Street, Great Houghton

Harron Homes Yorkshire

Report Reference: ER-5492-02

22/10/2021

Report Title:	Interim Bat Activity Survey Report Land off Main Street, Great Houghton
Report Reference:	ER-5492-02
Written by:	Sam Kitching BSc (Hons) MCIEEM Senior Ecologist
Technical Review:	Christopher Shaw BSc (Hons) MCIEEM Senior Ecologist
QA:	Rob Weston BSc(Hons) MSc MCIEEM Technical Director
Approved for Issue:	Christopher Shaw BSc (Hons) MCIEEM Senior Ecologist
Date:	22/10/2021

Brooks Ecological
Grounded advice

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

CIEEM REGISTERED PRACTICE 2020-2021

smas WORKSAFE

Constructionline

Summary Statement

The Site has been found to provide a commuting route used by low numbers of common pipistrelle bats along its northern boundary, but attracts only very low-level irregular foraging by a limited range of common bat species.

The identified commuting route follows a hedge which will be retained as part of the development as well as being adjacent to an area of open space, providing a buffer from development.

The risk of direct impacts on local bat populations arising from the proposals is considered to be minimal. Residual risk of impact can be mitigated through the implementation of a suitable lighting scheme. There is scope for the project to offer proportionate enhancement for local bat populations.

Introduction

1. Brooks Ecological was commissioned by Harron Homes Yorkshire to carry out detailed Bat Activity Survey at the proposed development Site at Land off Main Street, Great Houghton

2. These surveys are required to provide evidence of the baseline use of the Site by the local bat population, which in turn will then enable mitigation and enhancement strategies to be devised to support a planning application.

3. The scope of the survey has been devised based on an assessment of the habitats present, the results of previous activity surveys and in accordance with current best practice guidelines (Bat Conservation Trust, 2016).

Figure 1 Site location plan

Method

4. Survey and assessment was directed by Sam Kitching BSc (Hons) MCIEEM. Sam has been planning, undertaking and evaluating bat surveys such as this in a professional capacity for 9 years, he is registered to use the Class Survey Licence WML CL18 (Bat Survey Level 2).

5. The objective of the survey was to collect up to date information on the Site's use by local bat populations, so that an accurate assessment of the potential impacts of development could be made. A transect and remote monitoring survey was carried out to collect the following data (Bat Conservation Trust, 2016):

   - The assemblage of bat species using the site;
   - The relative frequency with which the site is used by different species;
   - The nature of activity for different bat species, for example foraging, commuting and roosting.

Survey Conditions

6. Walked transects were undertaken in Spring, Summer and Autumn, during optimal survey conditions. Survey conditions are summarised below:

Table 1 Survey Conditions

Survey	Date	Sunset	Weather	Invertebrate Activity
Spring	27.05.21	21:24	17°- 14°C, clear sky, Beaufort 2	Low
Summer	13.07.21	21:33	18° - 16°C, light cloud, B1	Low
Autumn	20.10.21	17:58	11° - 11°C, clear sky, B2	Low

Transects

7. Transects began around sunset and continued up to two hours after when all bats were thought to have emerged, and thus were actively foraging and commuting.

8. The transects were walked by a team of two surveyors, equipped with a heterodyne detector as well as a Titley Scientific Anabat Express, used to track the transect route and aid species identification. Notes taken during the survey were then used to produce the survey summary in the below figures, where significant activity has been recorded an activity 'heat map' has been produced.

9. Blue shades on the heat map correspond with low activity defined by up to 2 individuals intermittently recorded, yellow tones indicate more prolonged spells of activity by 2 -5 individuals whilst red tones indicate higher and consistent activity levels of 5 or more bats.

Remote Monitoring

10. To supplement data collected during the walked transect, static monitoring device/s (Wildlife Acoustic SM4) were deployed in a strategic location on-site prior to the start of the walked transect.

11. Data collected during the period of remote monitoring has been run through Kaleidoscope Pro software, which can identify bat calls down to species level (except for *Myotid*). Identification is generally correct when using this software; however, results are double checked to ensure accurate data analysis.

12. Every effort is made to split up *Myotid* calls down to species level. This is done by analysing calls on Analook software and looking at parameters such as inter-pulse interval, call duration, slope and maximum / minimum / peak call frequency. However, this can often be difficult when registrations are short in duration, faint or distorted by cluttered environments.

Limitations

13. Static monitoring can only reliably provide information on what species of bat are regularly making use of a site. More detailed information on bat activity, such as frequency of bats, nature of activity (foraging, commuting, flight path), etc. can only be gleaned through walked transects.

14. The frequency of calls recorded can, to some extent, suggest whether activity on site is low, moderate or high, by comparing data collected with that of similar sites that have been surveyed.

15. A single registration can account for up to 15 seconds of continuous bat call. Large batches of registrations can be interpreted in several different ways, i.e. a single bat foraging continuously for only an hour can result in many hundreds of registrations being logged; similarly, many hundreds of bats commuting quickly past the detector can result in the same number of registrations.

Spring Results

Walkover Transect

16. The transect commenced in the Site's south-west corner. The surveyor walked through the farmyard then along the western boundary, following a clockwise route around the western field, with a second pass around the farmyard and an anti-clockwise route was walked around eth eastern field. This route was repeated three times.

17. The only species recorded during the transect was common pipistrelle, and activity was restricted to two discrete areas around the Site.

18. The first bat encountered was seen at 21:55, commuting east to west along the Site's northern hedge line. Over the following few minutes, as the surveyor progressed along this boundary feature five further bats were seen following this route, with one bat noted, returned along this hedge at 22:00. On the second loop of the site one further bat was seen commuting along this route.

19. A single bat was noted foraging within the farmyard the west of the existing barns.

20. The final bat encountered was seen commuting along the western boundary, then away from the site at 22:40.

Figure 2 Summary of bat activity observed during walked transect

Spring Results

Remote Monitoring

21. A single remote detector (Song Meter SM4BAT FS) was deployed in the location as shown in Figure 2. This was left to run for 5 consecutive nights, from 27th to 31st May 2021.

22. Data returned points to only sporadic use of the area of the site in which the monitoring device was located. Two of the monitoring nights recorded zero registration of any species.

23. Registrations of three common and widespread species were recorded, though this is heavily skewed towards registration of common pipistrelle. The other two species being soprano pipistrelle and noctule.

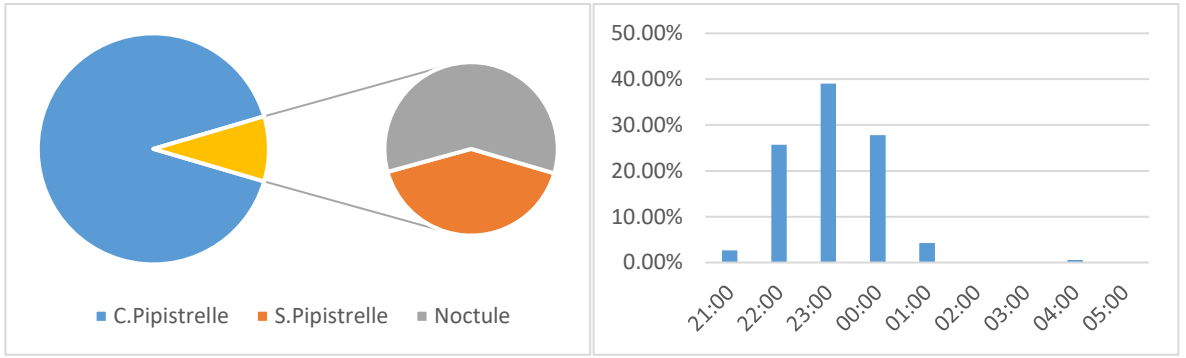
24. Registrations peaked during the middle of the night, this reflects the low levels of activity recorded during the transect undertaken at sunset.

25. The data set suggests small numbers of common pipistrelle forage around various areas of the site on an ad-hoc basis.

Table 2 Total number of registrations logged for each bat species, per day across the spring period.

	27.05.21	28.05.21	29.05.21	30.05.21	31.05.21
C.Pipistrelle	0	75	95	0	0
S.Pipistrelle	0	1	6	0	0
Noctule	0	5	4	1	0

Figure 3 Cumulative proportion of registrations per species and total logged for each hour across the spring monitoring period.



Summer Results

Walkover Transect

26. The transect followed the same route as previously walked. Activity patterns were very similar to those observed during the spring transect, albeit at lower levels.
27. Again, all bats encountered were common pipistrelle.
28. The first bat encountered was seen briefly foraging within the farmyard to the west of the barns, before being seen to leave the Site to the west.
29. The only other encounter was that of a single bat seen commuting west to east along the northern hedge. It is considered highly likely that more bats than observed followed this route, as seen during spring, but commuted through the Site at a time when the surveyors were elsewhere on Site.

Figure 4 Summary of bat activity observed during walked transect

Summer Results

Remote Monitoring

30. A single remote detector (Song Meter SM4BAT FS) was deployed in the location as shown in Figure 4. This was left to run for 5 consecutive nights, from 13th to 17th July 2021.

31. As would be expected during the summer months, the number of recorded registrations suggest that activity was notably higher, although still broadly low.

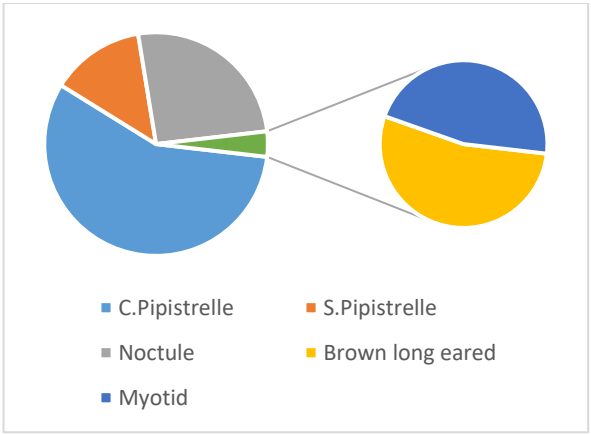
32. During this monitoring period registrations of five species of bat have been recorded at the Site. Again, common pipistrelle is the most frequently recorded, followed by noctule then soprano pipistrelle. Very low numbers of registrations of brown long eared bat and a myotid species (sonograms suggest brandt's bat) were also returned.

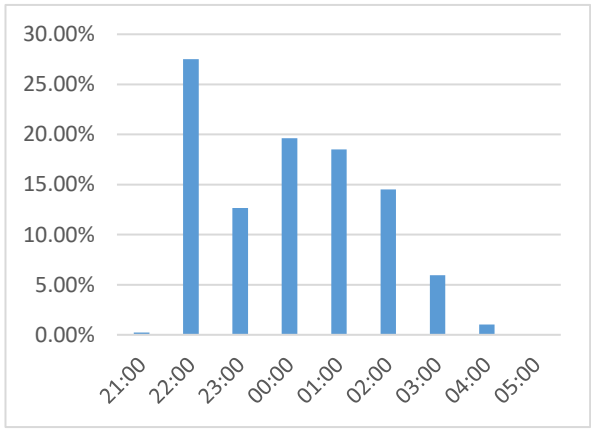
33. As seen during Spring period monitoring recorded registrations are relatively constant throughout the night, without distinct peaks at sunset or sunrise. Similarly, significant variation between monitoring nights is noted ranging from 199 total registrations on one evening down to 111.

Table 3 Total number of registrations logged for each bat species, per day across the spring period.

	13.07.21	14.07.21	15.07.21	16.07.21	17.07.21
C.Pipistrelle	120	76	95	92	53
S.Pipistrelle	19	24	6	40	15
Noctule	27	33	37	58	42
Brown long eared	4	4	3	3	1
Myotid	1	0	6	6	0

Figure 5 Cumulative proportion of registrations per species and total logged for each hour across the summer monitoring period.





Autumn Results

Walkover Transect

34. The transect followed the same route as previously walked.
35. Activity over the course of the survey was very low with only a single common pipistrelle being seen.
36. This bat was noted commuting in a northerly direction along the central hedge before turning into and crossing the open field.

Figure 6 Summary of bat activity observed during walked transect

Autumn Results

Remote Monitoring

37. A single remote detector (Song Meter SM4BAT FS) was deployed in the location as shown in Figure 6. This was left to run for 5 consecutive nights, from 17th to 19th October 2021.

38. Autumn monitoring returned very low numbers of recorded registrations.

39. Common pipistrelle again account for the majority of registrations and again are recorded on a sporadic basis, ranging from only 2 registrations on two monitoring nights to a peak of 63, though all 63 of these registrations were recorded within the space of circa 1 hour suggesting it relates to a solitary bat foraging in close proximity o the device for a period of time.

40. All other species recorded returned registrations in the single digits, and were not recorded on all monitoring nights.

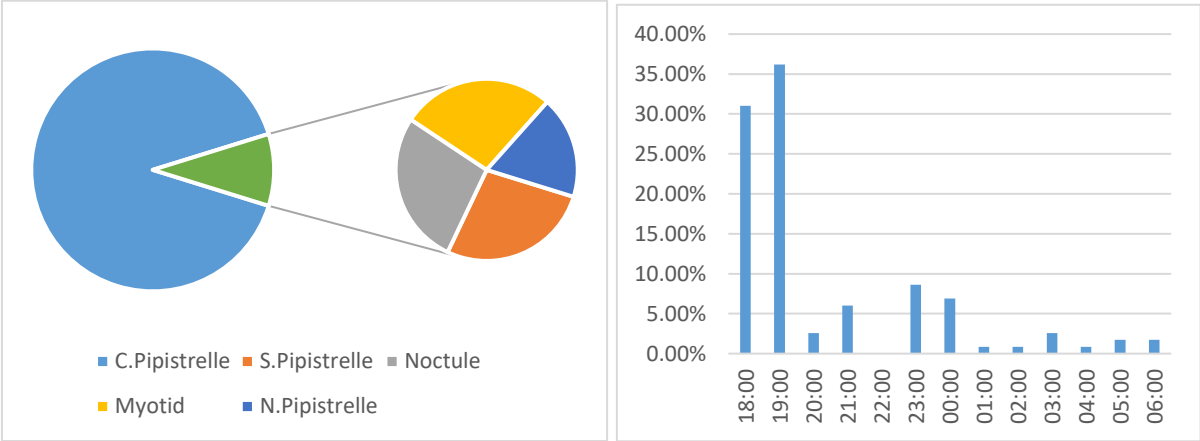
41. Two pipistrelle registrations peaked at 39khz, suggesting these could have been made nathusius pipistrelle, the numbers and distribution of this species in the UK is largely unknown.

42. Significant peaks are seen in recording during the hours closely following sunset. However, this is heavily skewed by the 63 registrations of common pipistrelle recorded in a short time frame. As such, it is not considered reflective of movement to or from a roost.

Table 5 Total number of registrations logged for each bat species, per day across the spring period.

	15.10.21	16.10.21	17.10.21	18.10.21	19.10.21
C.Pipistrelle	2	63	13	24	2
S.Pipistrelle	-	1	-	-	2
Noctule	-	2	1	-	-
Myotid	1	-	-	2	-
N.Pipistrelle	-	-	2	-	-

Figure 7 Cumulative proportion of registrations per species and total logged for each hour across the autumn monitoring period.



Evaluation

43. Evaluation of foraging and commuting habitat is made with reference to Wray *et al* (2010). This uses a scoring system to assess the Site's importance to bats against a geographic frame of reference.

Table 4 Scoring system for valuing commuting and foraging habitat

Geographic Frame of Reference	Score
International	>50
National	41-50
Regional	31-40
County	21-30
District, Local or Parish	11-20
Not Important	1-10

44. Using the above methodology, the Site is assessed as follows:

Foraging

45. Individuals (5) of common species of bat (2). No potential roosts identified nearby (1). Suburban area (2).

46. Total of 10 points. The Site is not important as foraging habitat to local bat populations.

Commuting

47. Small numbers (10) of common species of bat (2). No potential roosts identified nearby (1) with somewhat well-grown and well-connected hedgerows, small field sizes (4)

48. Total of 17 points. The Site is of local value to commuting bats.

49. The assessment method devised by Wray et al indicates that the Site is not of any specific importance to local bat populations as foraging habitat and is only of local value to commuting bats.

50. This corroborates the assessment of data gathered during activity surveys.

Conclusions

51. Walked transects undertaken across Spring and Summer have identified a commuting route regularly used, but by only low numbers of common pipistrelle bat, along the northern hedge line alongside very low-level, irregular foraging by common pipistrelle bats. All observations of foraging activity were recorded in and around the farmyard.

52. Remote monitoring recorded similar low-level activity, but returned registrations of up to six bat species, with common pipistrelle and noctule making up the bulk of this activity.

53. The number of returned registrations suggest that low numbers of bats forage around the Site on an *ad hoc* basis, across various nights and steadily through any given evening.

54. The data collected during this, does not point to the Site being of any significant importance to any particular local bat populations.

Barn Owl

55. A barn owl was seen flying from onsite buildings on all three transect visits – flying in a southerly direction from the southern-most barn on the spring survey, westerly from the small northern most shed on the summer survey and perched on the ridge of the central barn on the autumn visit leaving Site to the southeast. Although it is clear this individual roosts on Site, no evidence of nesting has been identified.

Recommendations

56. Based on findings of transects and remote monitoring, the proposed development is unlikely to impact significantly on the local bat populations.

57. Sensitive design of the masterplan includes a minimum 20m buffer from the northern hedgerow, meaning potential impacts on this commuting route will be negligible. To further minimise any potential impact lighting design should ensure that this corridor buffer is not subject to excessive light spill, and that the existing hedge remains unlit.

58. This buffer area will include surface water attenuation basins, designed to be dry and planted with a species rich seed mix, areas of wildflower grassland and new native trees and shrubs and will offer enhancement to both the identified commuting route and the baseline foraging value of this area of the Site.

59. Vegetated gardens around the proposed development will offer ongoing habitat with capacity to support foraging levels beyond those currently recorded onsite.

60. Bat boxes should be installed in appropriate locations on new buildings.

61. Compensation for the loss of barn owl roosts is not specifically required and the proposed layout does not offer any suitable buildings into, or onto which a barn owl box could be mounted. However, the potential to provide a pole mounted barn owl box in the north east corner of the Site should be explored.

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Appendix E Biodiversity Metric Spreadsheet (provided separately in Excel format)

Great Houghton

Ecological Impact Assessment

Avant Homes

SLR Project No.: 424.064965.00001

22 February 2024

Appendix F Landscape Plan - Rosetta Landscape Design

Great Houghton

Ecological Impact Assessment

Avant Homes

SLR Project No.: 424.064965.00001

22 February 2024

This drawing has been prepared for the purpose of planning approval.

Planting Notes

Topsoil shall be a minimum of 400mm depth over planting beds and graded to fall. Imported topsoil must be BS3882:2007 compliant and existing topsoil must be cultivated in accordance with BS3882:2007. No cultivation should take place in wet/ waterlogged conditions.
Herbicide and cultivation: Topsoil to be treated with two applications of herbicide prior to planting, where necessary, strictly in accordance with the Control of Pesticides Regulations 1986 (as amended 1997, or, otherwise, updated/superseded legislation) and following manufacturer's instructions by qualified staff. The topsoil shall than be cultivated to 150mm depth.
Planting: All planting and turfing shall conform to BS: 3936: 1992 and BS:4428:1989.
Trees: Standard trees to be planted in pits 800x800x450mm or dimensions of rootball, whichever is greater. Heavy and Extra Heavy Standard trees to be planted in pits 1000x1000x600mm or dimensions of rootball, whichever is greater. Alginure soil improver and 150g Enmag (or, equivalent) to be incorporated into the soil of all new tree pits. Trees to be planted centrally within a tree pit. Tree stakes shall be of hazel, chestnut or other approved timber. They shall be round, rough sawn, straight, free from projections, large or edge knots and other defects and be pointed at the lower end. They shall be strong enough not to split when driven into the ground and when ties are nailed to them (both initially and when adjusted). For Feathered trees use 2Nr stakes (1.4m by 75mm) to be driven into ground 800mm, leaving 600mm above ground.. For Selected Standard Trees 2Nr stakes (1.7m by 100mm) and cross bar are required; stakes to be driven 900mm below ground leaving 800mm above ground. For Heavy/ Extra Heavy trees use 2Nr stakes (2.2m x 100mm) with a 400x100x15mm cross bar. Stakes to be driven into ground 1m leaving 1.2m above ground.
Semi-mature/Multi-stemmed trees greater than 5m to be underground guyed. Tree ties shall consist of a solid rubber spacer, hollowed on both sides and twice slotted of such a width that the tree is held away from the stake and/or cross bar, and such that it does not rub against the stake and/or cross bar in any location and fixed so that nails do not scar tree; and 25mm wide rubber or rubber covered canvas strap of such a length to allow 50mm overlap after securing. The strap shall be flexible, slightly elastic and adjustable. Tie Fixing Nails shall be galvanised and not less than 38mm long with 10mm diameter heads.
Container grown shrubs, transplants and whips: Shrubs and transplants shall be planted in pits 300x300x400mm depth), and the backfill shall include 3 litres of peat-free tree and shrub compost. Where two or more shrub species are indicated within a single bed each species shall be randomly mixed throughout the bed in groups of 3/5.
Herbicide: Spot treat with herbicide throughout the maintenance period in accordance with the manufacturer's instructions.
Mulch: Planting beds to receive 75mm depth pulverized ornamental bark mulch. Native woodland/edge plants to be planted with 800g flax fibre mulch mat pinned to soil. Native hedgerow to be planted through 800g flax fibre mulch roll, edges tucked. Ensure the top of the mulch layer is a minimum of 15mm below adjacent pavements and other surfaces, to prevent spillage.
Plant position: Final position of trees and shrubs subject to confirmation of service location and approval of statutory undertakers.
Protection to planting: Native hedgerow plants to be protected by spiral shelters. Native trees and shrubs within mixes to be protected by shelter guards as supplied by Acorn Planting Products Ltd (01508 528763), or equivalent.
Ornamental hedging: Hedges to comprise a single row of plants. 400mm wide trench excavated to take plants and topsoil cultivated to 400mm depth prior to application of fertiliser.
Grass: All turf/seeded areas to be cultivated and levelled as required removing any stones, rubble, subsoil, general construction waste.
Wildflower grassland: To be prepared and cultivated in 100mm depth of nutrient poor soil.
Planting Season: Bare-root shrubs to be planted between mid-November and mid-March dependant upon the planting season.

LEGEND

- Site boundary
- Existing vegetation to be retained
- Existing vegetation to be removed
- Proposed tree Heavy (Standard)
- Proposed tree Selected (Standard)
- Proposed Native Hedge Mix
- Proposed hedge
- Proposed shrub bed
- Proposed grass
- Proposed Naturescape N14 Flowering Lawn mixture sown@5g/m² www.naturescape.co.uk
- Proposed Emorsgate EP1 'Pond Edge Mix' Sown@ 4g/m² www.wildseed.co.uk
- Proposed Native Shrub Mix

Planting Schedule

Proposed Trees

Nr	Code	Tree Name	Specification	Girth	Height
1 -	AaRH	Amelanchier arborea Robin Hill	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
1 -	Ac	Acer campestre	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
4 -	AcE	Acer campestre 'Elsrijk'	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
12 -	AcS	Acer campestre 'Streetwise'	Heavy Standard :Clear Stem 175-200 :RB	12-14cm	350-425cm
1 -	AcS	Acer campestre 'Streetwise'	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
1 -	Ag	Alnus glutinosa	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
5 -	Al	Amelanchier lamarckii	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
4 -	Atg	Acer tataricum ginnala	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
8 -	Bp	Betula pendula	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
1 -	BpD	Betula pendula 'Dalecarlica'	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
4 -	Cb	Carpinus betulus	Heavy Standard :Clear Stem 175-200 :C	12-14cm	350-425cm
8 -	Cmo	Crataegus monogyna	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
6 -	Fs	Fagus sylvatica	Heavy Standard :Clear Stem 175-200 :C	12-14cm	350-425cm
2 -	MJD	Malus 'John Downie'	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
12 -	Pa	Prunus avium	Heavy Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
4 -	Ppa	Prunus padus	Heavy Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
6 -	PPan	Prunus 'Pandora'	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
5 -	Qr	Quercus robur	Heavy Standard :Clear Stem 175-200 :C	12-14cm	350-425cm
3 -	SaJR	Sorbus aucuparia 'Joseph Rock'	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
4 -	Sau	Sorbus aucuparia	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
5 -	Tc	Tilia cordata	Heavy Standard :Clear Stem 175-200 :C	12-14cm	350-400cm
5 -	TcG	Tilia cordata 'Greenspire'	Heavy Standard :Clear Stem 175-200 :RB	12-14cm	350-400cm
Total :102 -					

Proposed Hedges (4/m)

Nr	Code	Tree Name	Specification	Height
59 -	Fs	Fagus sylvatica	C	60-80cm
221 -	Gli	Griselinia littoralis	C	60-80cm
211 -	Pl	Prunus laurocerasus	C	60-80cm
212 -	PvRR	Photinia x fraseri 'Red Robin'	C	60-80cm
Total :703 -				

Proposed Shrubs

Nr	Code	Plant Name	Height	Cntr (l)	Nr/m2
111 -	BtAN	Berberis thunbergii 'Atropurpurea Nana'	40-60cm	5L	3/m²
28 -	CaS	Cornus alba 'Sibirica'	60-80cm	5-7.5L	3/m²
35 -	CBM	Ceanothus 'Blue Mound'	30-40cm	5L	3/m²
41 -	Ct	Choisya ternata	30-40cm	5L	3/m²
50 -	EEG	Euonymus fortunei 'Emerald Gaiety'	30-40cm	5L	4/m²
12 -	EfEG	Euonymus fortunei 'Emerald 'n' Gold'	30-40cm	5L	4/m²
16 -	EfSQ	Euonymus fortunei 'Silver Queen'	20-30cm	2L	4/m²
32 -	Hr	Hebe rakaiensis	30-40cm	5-7.5L	4/m²
49 -	HRE	Hebe 'Red Edge'	20-30cm	2L	4/m²
18 -	Hs	Hebe 'Sutherlandii'	30-40cm	5L	4/m²
31 -	LaH	Lavandula angustifolia 'Hidcote'	30-40cm	5L	4/m²
41 -	LnBG	Lonicera nitida 'Baggesen's Gold'	30-40cm	5L	4/m²
51 -	LnMG	Lonicera nitida 'May Green'	30-40cm	5L	3/m²
41 -	PfoRR	Photinia fraseri 'Red Robin'	40-60cm	5L	3/m²
73 -	PIOL	Prunus laurocerasus 'Otto Luyken'	40-60cm	5L	3/m²
73 -	PoRL	Physocarpus opulifolius 'Red Lady'	40-60cm	5L	4/m²
18 -	PSY	Pyracantha saphyr 'Yellow'	40-60cm	5L	3/m²
62 -	SoP	Salvia officinalis 'Purpurascens'	20-30cm	2L	4/m²
36 -	SoT	Salvia officinalis 'Tricolor'	20-30cm	2L	4/m²
44 -	Vmi	Vinca minor	20-30cm	2L	4/m²
19 -	Vt	Viburnum tinus	30-40cm	5L	3/m²
Total :881 -					

Proposed Grasses

Nr	Code	Plant Name	Nr/m2
42 -	DcGo	Deschampsia cespitosa 'Goldtau'	4/m²
45 -	MsRC	Miscanthus sinensis 'Red Chief'	3/m²
43 -	PvI	Pennisetum villosum	4/m²
Total :130 -			

Native Hedge Mix (5/m)

Nr	Code	Plant Name	Root	%
86 -	Ac	Acer campestre	BR	5%
321 -	Cav	Corylus avellana	BR	20%
478 -	Cm	Crataegus monogyna	BR	30%
163 -	Ia	Ilex aquifolium	BR	10%
321 -	Ps	Prunus spinosa	BR	20%
163 -	Sc	Salix caprea	BR	10%
86 -	Vo	Viburnum opulus	BR	5%
Total :1618 -				

Native Shrub Mix (0.5/m2)

Nr	Code	Plant Name	Root	%
70 -	Cav	Corylus avellana	BR	30%
49 -	Cmo	Crataegus monogyna	BR	20%
26 -	Ia	Ilex aquifolium	BR	10%
49 -	Ps	Prunus spinosa	BR	20%
26 -	Sc	Salix caprea	BR	10%
26 -	Vo	Viburnum opulus	BR	10%
Total :246 -				

Rev A: Revised in line with client comments 20feb24 (RP)

Base: Avant Homes 'Planning Layout' 4206-04-C received 06Feb24

PROJECT	Main Street, Great Houghton		
TITLE	Detailed Landscape Proposals (1 of 2)		
CLIENT	Avant Homes		
DATE	15 Feb 24	SCALE 1 : 250	SHEET A0
DRAWN	BP	DRAWING NO	4025/2
CHECKED	BP	REVISION	A

ROSETTA LANDSCAPE DESIGN
Landscape Architects
Swallow's Nest, Main Street
Askham Richard, York, YO23 3PT
Telephone +44 (0)1904 500410
Email design@rosettalandscape.co.uk
Web www.rosettalandscape.co.uk

This drawing has been prepared for the purpose of planning approval.

Planting Notes

Topsoil shall be a minimum of 400mm depth over planting beds and graded to fall. Imported topsoil must be BS3882:2007 compliant and existing topsoil must be cultivated in accordance with BS3882:2007. No cultivation should take place in wet/ waterlogged conditions.
Herbicide and cultivation: Topsoil to be treated with two applications of herbicide prior to planting, where necessary, strictly in accordance with the Control of Pesticides Regulations 1986 (as amended 1997, or, otherwise, updated/superseded legislation) and following manufacturer's instructions by qualified staff. The topsoil shall than be cultivated to 150mm depth.
Planting: All planting and turfing shall conform to BS: 3936: 1992 and BS:4428:1989.
Trees: Standard trees to be planted in pits 800x800x450mm or dimensions of rootball, whichever is greater. Heavy and Extra Heavy Standard trees to be planted in pits 1000x1000x600mm or dimensions of rootball, whichever is greater. Alginure soil improver and 150g Enmag (or, equivalent) to be incorporated into the soil of all new tree pits. Trees to be planted centrally within a tree pit. Tree stakes shall be of hazel, chestnut or other approved timber. They shall be round, rough sawn, straight, free from projections, large or edge knots and other defects and be pointed at the lower end. They shall be strong enough not to split when driven into the ground and when ties are nailed to them (both initially and when adjusted). For Feathered trees use 2Nr stakes (1.4m by 75mm) to be driven into ground 800mm, leaving 600mm above ground.. For Selected Standard Trees 2Nr stakes (1.7m by 100mm) and cross bar are required; stakes to be driven 900mm below ground leaving 800mm above ground. For Heavy/ Extra Heavy trees use 2Nr stakes (2.2m x 100mm) with a 400x100x15mm cross bar. Stakes to be driven into ground 1m leaving 1.2m above ground.
Semi-mature/Multi-stemmed trees greater than 5m to be underground guyed. Tree ties shall consist of a solid rubber spacer, hollowed on both sides and twice slotted of such a width that the tree is held away from the stake and/or cross bar, and such that it does not rub against the stake and/or cross bar in any location and fixed so that nails do not scar tree; and 25mm wide rubber or rubber covered canvas strap of such a length to allow 50mm overlap after securing. The strap shall be flexible, slightly elastic and adjustable. Tie Fixing Nails shall be galvanised and not less than 38mm long with 10mm diameter heads.
Container grown shrubs, transplants and whips: Shrubs and transplants shall be planted in pits 300x300x400mm depth), and the backfill shall include 3 litres of peat-free tree and shrub compost. Where two or more shrub species are indicated within a single bed each species shall be randomly mixed throughout the bed in groups of 3/5.
Herbicide: Spot treat with herbicide throughout the maintenance period in accordance with the manufacturer's instructions.
Mulch: Planting beds to receive 75mm depth pulverized ornamental bark mulch. Native woodland/edge plants to be planted with 800g flax fibre mulch mat pinned to soil. Native hedgerow to be planted through 800g flax fibre mulch roll, edges tucked. Ensure the top of the mulch layer is a minimum of 15mm below adjacent pavements and other surfaces, to prevent spillage.
Plant position: Final position of trees and shrubs subject to confirmation of service location and approval of statutory undertakers.
Protection to planting: Native hedgerow plants to be protected by spiral shelters. Native trees and shrubs within mixes to be protected by shelter guards as supplied by Acorn Planting Products Ltd (01508 528763), or equivalent.
Ornamental hedging: Hedges to comprise a single row of plants. 400mm wide trench excavated to take plants and topsoil cultivated to 400mm depth prior to application of fertiliser.
Grass: All turf/seeded areas to be cultivated and levelled as required removing any stones, rubble, subsoil, general construction waste.
Wildflower grassland: To be prepared and cultivated in 100mm depth of nutrient poor soil.
Planting Season: Bare-root shrubs to be planted between mid-November and mid-March dependant upon the planting season.

LEGEND

- Site boundary
- Existing vegetation to be retained
- Existing vegetation to be removed
- Proposed tree Heavy (Standard)
- Proposed tree Selected (Standard)
- Proposed Native Hedge Mix
- Proposed hedge
- Proposed shrub bed
- Proposed grass
- Proposed Naturescape N14 Flowering Lawn mixture sown@5g/m² www.naturescape.co.uk
- Proposed Emorsgate EP1 'Pond Edge Mix' Sown@ 4g/m² www.wildseed.co.uk
- Proposed Native Shrub Mix

Plant Codes - See drawing 4025/2 for full schedule

Proposed Trees

Code	Tree Name
AaRH	Amelanchier arborea Robin Hill
Ac	Acer campestre
AcE	Acer campestre 'Elsrijk'
AcS	Acer campestre 'Streetwise'
AcS	Acer campestre 'Streetwise'
Ag	Alnus glutinosa
Al	Amelanchier lamarckii
Atg	Acer tataricum ginnala
Bp	Betula pendula
BpD	Betula pendula 'Dalecarlica'
Cb	Carpinus betulus
Cmo	Crataegus monogyna
Fs	Fagus sylvatica
MJD	Malus 'John Downie'
Pa	Prunus avium
Ppa	Prunus padus
PPan	Prunus 'Pandora'
Qr	Quercus robur
SaJR	Sorbus aucuperia 'Joseph Rock'
Sau	Sorbus aucuparia
Tc	Tilia cordata
TcG	Tilia cordata 'Greenspire'

Proposed Hedges (4/m)

Code	Tree Name
Cb	Carpinus betulus
Fs	Fagus sylvatica
Gli	Griselinia littoralis
Pl	Prunus laurocerasus
PxfRR	Photinia x fraseri 'Red Robin'

Proposed Shrubs

Code	Plant Name
BtAN	Berberis thunbergii 'Atropurpurea Nana'
CaS	Cornus alba 'Sibirica'
CBM	Ceanothus 'Blue Mound'
Ct	Choisya ternata
EEG	Euonymus fortunei 'Emerald Gaiety'
EfEG	Euonymus fortunei 'Emerald N' Gold'
EfSQ	Euonymus fortunei 'Silver Queen'
Hr	Hebe rakaiensis
HRE	Hebe 'Red Edge'
Hs	Hebe 'Sutherlandii'
LaH	Lavandula angustifolia 'Hidcote'
LrBG	Lonicera nitida 'Baggesen's Gold'
LrMG	Lonicera nitida 'May Green'
PfxRR	Photinia fraseri 'Red Robin'
PlOL	Prunus laurocerasus 'Otto Luyken'
PoRL	Physocarpus opulifolius 'Red Lady'
PSY	Pyracantha saphyr 'Yellow'
SoP	Salvia officinalis 'Purpurascens'
SoT	Salvia officinalis 'Tricolor'
Vmi	Vinca minor
Vt	Viburnum tinus

Proposed Grasses

Code	Plant Name
DcGo	Deschampsia cespitosa 'Goldtau'
MsRC	Miscanthus sinensis 'Red Chief'
Pvil	Pennisetum villosum

Native Hedge Mix (5/m)

Code	Plant Name
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Cav	Corylus avellana
Cm	Crataegus monogyna
Ia	Ilex aquifolium
Ps	Prunus spinosa
Sc	Salix caprea
Vo	Viburnum opulus

Rev A: Revised in line with client comments 20feb24 (RP)

Base: Avant Homes 'Planning Layout' 4206-04-C received 06Feb24

PROJECT	Main Street, Great Houghton		
TITLE	Detailed Landscape Proposals (2 of 2)		
CLIENT	Avant Homes		
DATE	15 Feb 24	SCALE 1 : 250	SHEET A0
DRAWN	BP	DRAWING NO	4025/3
CHECKED	BP	REVISION	A

ROSETTA LANDSCAPE DESIGN
Landscape Architects
Swallow's Nest, Main Street
Askham Richard, York, YO23 3PT
Telephone +44 (0)1904 500410
Email design@rosettalandscape.co.uk
Web www.rosettalandscape.co.uk

Appendix G Tree Survey – AWA Tree Consultants

Great Houghton

Ecological Impact Assessment

Avant Homes

SLR Project No.: 424.064965.00001

22 February 2024

TREE CONSULTANTS

ARBORICULTURAL REPORT

to BS 5837:2012 at:

Main Street,
Great Houghton,
Barnsley
S72 0AZ

Prepared for:
Avant Homes Yorkshire

Date: *October 2023*

Reference: *AWA5651*

Institute of Chartered Foresters
Registered Consultant

Office: 0114 272 1124 Mobile: 0776 631 0880 Email: info@awatrees.com Website: awatrees.com
Union Forge, 27 Mowbray Street, Sheffield, S3 8EN. AWA Tree Consultants Limited. Company No. 8520123. Registered in England & Wales.

Contents

1. Introduction

1.1 Instructions and Brief

1.1.1 We were instructed by Avant Homes Yorkshire to visit the site and prepare our findings in a report.

1.1.2 The report is required in accordance with BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations,* to provide detailed, independent, arboricultural advice on the trees present, in the context of potential development.

1.2 Survey Details

1.2.1 The survey took place during September 2023.

1.2.2 The trees were surveyed visually from the ground using "Visual Tree Assessment" techniques and in accordance with the guiding principles of British Standard 5837:2012.

1.2.3 Any additional off-site trees that could impact a new development design have been included in the tree survey parameters.

1.2.4 We have been provided with a topographical survey with tree positions plotted. Where surveyed trees were not included on the topographical survey the tree positions were plotted using enhanced GPS technology (1-2m accuracy) and laser distance measurer.

1.2.5 This report has been prepared by Adam Winson, Chartered Arboriculturist, MSc, BSc (Hons), MICFor, MArborA, Principal and Director of AWA Tree Consultants Ltd.

1.2.6 The tree survey data collection was carried out Sophie Beckerman, BA (Hons), Level 4 Diploma in Arboriculture, Arboriculturist at AWA Tree Consultants Ltd.

1.2.7 Full qualifications and experience are included within **Appendix 1**. Explanatory details regarding the survey methodology are included within **Appendix 2**. A full explanation of the tree data can be found at **Appendix 3**. Full details of all the trees surveyed are found in **Appendix 4**. For tree locations please refer to the Tree Constraints Plan at **Appendix 5**.

2. The Site

2.1 Location and Description

2.1.1 The site is located on Main Street, Great Houghton.

2.1.2 The site is on agricultural land and comprises an old farmyard with associated farm buildings and 2 large fields. The west is bordered by a residential road, the north and east by farmland and the south by a farmyard and farm buildings.

2.1.3 The approximate area of the survey is highlighted in the (2022 Google Earth) image below:

3. The Trees

3.1 Legal

3.1.1 The following advice is for guidance purposes only. Some trees are protected by legislation, and it is essential that the legal status of trees is established prior to carrying out works to them. Unauthorised work to protected trees could lead to prosecution, resulting in enforcement action such as fines or a criminal record. Tree Preservation Orders, Conservation Areas, Planning Conditions, Felling Licences or Restrictive Covenants legally protect many trees in the UK.

3.1.2 An online search was undertaken with Barnsley Metropolitan Council on 04/10/23 to check whether any trees at the site are protected by a Tree Preservation Order or are located within a Conservation Area. As of this date no trees at the site are protected by a Tree Preservation Order or are within a Conservation Area.

3.1.3 Due to the large potential penalties for illegally carrying out work to protected trees, before authorising any tree works a further check should be made with the Local Planning Authority to confirm if any trees are covered by a Tree Preservation Order or are within a Conservation Area. If either applies, then statutory permission is required before any works can take place (unless such work is approved as part of full planning permission).

3.1.4 The Multi-Agency Geographical Information for the Countryside (MAGIC) website was used to search for areas of ancient woodlands listed on the Ancient Woodland (DEFRA 2021), and a check for catalogued Ancient and Veteran trees using the woodland trust ancient tree inventory (ATI) (Woodland Trust 2021). It was confirmed that there are no designated ancient woodlands or veteran or ancient trees within the survey area.

3.1.5 Trees provide a wide range of habitats for many species, some of which are legally protected such as bats, nesting birds, badgers and dormice. It is essential that appropriate care is taken to ensure that this legislation is not contravened.

3.1.6 When appointing a tree surgeon, only properly qualified and experienced companies should be used, who have adequate Public Liability and Employer's Liability Insurance.

3.1.7 All tree work should be carried out according to British Standard 3998:2010 Tree Work - Recommendations.

3.2 Tree Survey Results

3.2.1 The tree survey revealed 15 items of woody vegetation, comprised of 6 individual trees and 9 tree groups or hedges.

3.2.2 Of the surveyed trees: 1 tree is retention category 'B', and 14 trees are retention category 'C', (explanatory details regarding the retention categories are included at Appendix 3).

3.2.3 Full details of the surveyed trees, tree groups and hedges are provided in the attached tree data schedule at Appendix 4. General comments are provided below:

3.2.4 The significant tree cover within the site is concentrated on the southwestern boundary, where there is a mixed species group of semi-mature trees.

3.2.5 Much of the site contains little of arboricultural significance, having been under agricultural use in the recent past.

3.2.6 Species diversity at the site is relatively good. There is a range of species making up the tree group along the southwestern boundary, including Sycamore, Beech and Cherry and a managed group of Cypress. Field boundaries are predominantly Hawthorn hedges.

3.2.7 Most of the trees are semi-mature with only a single mature tree, a Sycamore, T2.

3.2.8 G3 collectively provides good screening between the road and the site and is therefore of moderate amenity value.

3.2.9 Within G3 are two individual trees, T2, a Sycamore, and T15, a Beech. These are the largest two trees on site with good long-term prospects and provide moderate amenity value.

3.2.10 Most trees and tree groups are of low value and should not pose any significant constraint on the development potential of the site.

3.2.11 Some trees were covered in dense Ivy or were inaccessible (as detailed in Appendix 4). In such cases measurements were estimated and the condition values are indicative only.

3.2.12 The tree Root Protection Area (RPA) for each tree has been plotted as a polygon centred on the base of the stem. Due to the presence of roads, structures, topography (and past tree management) the RPA is likely to be a simplified representation of the tree roots actual morphology and disposition. However, detailed modifications to the shape of the RPA would

largely be based on conjecture and so have been avoided.

3.2.13 Some lower value tree, hedge and shrub groups do not have RPAs detailed on tree plans. The detailed extent and spread of these low value groups, in conjunction with the tree schedule, is sufficient to assess the associated potential constraints.

3.3 Photographs

Photo 1: T2 from south east

Photo 2: G3 from southeast

Photo 3: T15 on edge of group (G3) from east

Photo 4: T4, T6 and T7 and G5 from south

Photo 5: T14 from west

Photo 6: G3 from west

3.4 Arboricultural Development Advice

3.4.1 The higher value retention category 'A' and 'B' trees and tree groups should be retained, where possible, and incorporated into any new development design.

3.4.2 Where suitable, those category 'C' trees, tree groups and hedges with reasonable future prospects should be retained as part of any new development. However, care should be taken to avoid misplaced tree retention. Attempts to retain too many or unsuitable trees on a site can result in excessive pressure on the trees during demolition or construction work, or post-completion demands for their removal.

3.4.3 If required by the development proposals, occasional lower value, retention category 'C' trees, tree groups and hedges could be removed, and replacement planting would largely mitigate their losses.

3.4.4 The tree Root Protection Area (RPA), detailed on the Tree Constraints Plan at Appendix 5, should be used as a layout design tool, to inform on the area around a tree where the protection of the roots and soil structure is treated as a priority.

3.4.5 If construction of new buildings is required within the RPA of retained trees it may be possible to employ special foundation design such as mini/ micro pile and suspended beam foundations or cantilevered foundations.

3.4.6 Construction of hard surfaces, for drives and paths, within the RPA can have negative impacts on tree roots. However, the potential negative impacts can often be overcome or minimised by employing a 'no-dig' type construction method with a porous final surface.

3.4.7 The design of the new development should consider tree crown positions in relation to any new dwellings. The dappled shade of a tree is more pleasant than the deep shadow of a building, and some shade from trees may be beneficial. In particular, deciduous trees give shade in summer but allow access to sunlight in winter. Whilst either shade or sunlight might be desirable, depending on the potential use of the area affected, the design should avoid unreasonable obstruction of light and should give adequate provision for future tree growth.

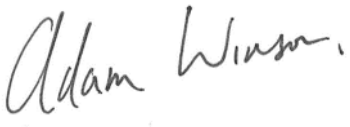
3.4.8 The retained trees may require protection by fencing in accordance with BS 5837:2012, during the development phase.

3.4.9 If required by the Local Planning Authority, an associated Arboricultural Method Statement, detailing protective fencing specifications and construction methods close to the retained trees can be provided.

4. Signature

I trust this report provides all the required information.

Signed



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Adam Winson, *Chartered Arboriculturist, MSc, BSc (Hons), MICFor, ACIEEM*

4th October 2023

AWA Tree Consultants Limited
Union Forge
27 Mowbray Street
Sheffield
S3 8EN

www.awatrees.com

Appendices

Appendix 1: Authors Qualifications & Experience

Adam Winson, *Chartered Arboriculturist, MSc, BSc (Hons), MICFor, MArborA, ACIEEM, QTRA Registered*
Adam is the company Director and Principal Consultant. He has a mix of the highest-level academic qualifications and relevant work experience. He has worked within the tree care profession for over 20 years and was awarded an MSc in Arboriculture and Urban Forestry, with distinction. Adam is a Chartered Arboriculturist and a Registered Consultant with the Institute of Chartered Foresters, a Professional Member of the Arboricultural Association and he has original research published by the UK Forestry Commission. His work ranges from individual expert tree inspections to managing trees on major infrastructure projects. His work often involves trees with preservation orders or litigation, and he has appeared as a tree expert, at planning appeal hearings up to the crown court. Adam also regularly undertakes locum Tree Officer work for several Local Planning Authorities.

James Brown, *BSc (Hons) Arboriculture, MArborA, PTI (Lantra), QTRA Registered*
James is a highly experienced and qualified Arboricultural Consultant. He has a BSc (Hons) in Arboriculture, attaining first class honours, as well as being awarded the Institute of Chartered Foresters student award. He is a Professional Member of the Arboricultural Association, an Associate of the Institute of Chartered Foresters, and he is working towards becoming a Chartered Arboriculturist. James joined AWA in 2016, he has many years' experience as an Arboricultural Consultant, he previously worked in Europe's largest container tree nursery and he has experience of local authority Tree Officer work.

James Godfrey, *BA (Hons), FdSc Arboriculture and Tree Management, TechArborA, PTI (Lantra), QTRA Registered*
James has had extensive arboricultural experience working as an arborist within the public and private sector. While working at AWA, James completed his FdSc in Arboriculture and Tree Management, graduating with a distinction and was also awarded for achieving the highest overall mark in his year. James has used his arboricultural knowledge to inform and carry out accurate tree surveys and produce detailed reports that aim to balance appropriate tree retention with the requirements of landowners.

Joe Thomas, *MSci Biology, Award L4 Arboriculture, TechArborA, QTRA Registered*
Joe achieved a first class degree in Biology with an integrated Masters (MSci) from the University of Sheffield. Additionally, he has a Level 4 Award in Arboriculture. Joe joined AWA after an Urban Forestry role with the Sheffield and Rotherham Wildlife Trust and Sheffield City Council, where he gained a variety of experience in different aspects of the arboriculture sector.

James Boyle, *HND Level 5 Arboriculture and Urban Forestry, QTRA Registered*
Jim joined AWA after having worked within the tree care profession for several years, alongside studying at college and university. During this time he gained a wealth of experience and achieved a variety of practical qualifications within the tree care industry. Jim has studied Arboriculture and Urban Forestry at Merrist Wood College in Surrey, Plumpton College in Sussex and University of Highlands and Islands in the Scottish Highlands, where he achieved a distinction in the Higher National Diploma Level 5.

Lucy Garbutt, *MSc Animal Behaviour, BSc (Hons) Biology, CIEEM membership*
Lucy graduated with a masters degree in Animal Behaviour from the UK's highest rated university, St Andrews of Scotland, immediately following the completion of her BSc degree in Biology from Lancaster University. Lucy has experience in botany and plant science and moved into arboriculture after previous experience of protected species and botanical surveys with a large environmental consulting company.

Sophie Beckerman, *BA (Hons), Dip Arboriculture Level 4, TechArborA*
Sophie has more than 10 years' experience as an arborist, working for a variety of private companies as well as undertaking tree management with Sheffield City Council Ranger Service and The Wildlife Trust. Her expertise in arboriculture is demonstrated in the practical NPTC qualifications gained, and her excellent knowledge is reflected in the L4 diploma in Arboriculture, which she completed while working. Her roles as a climbing arborist and team leader included estimating for jobs and project management, supervising tree contracting teams - ensuring that work is carried out safely and efficiently and that health and safety standards are adhered to, and risk assessments are carried out.

Appendix 2: Survey Methodology and Limitations of Report

The survey was undertaken in accordance with British Standard 5837:2012 *Trees in relation to design, demolition and construction – Recommendations.* The trees were assessed objectively and without reference to any proposed site layout. The trees were surveyed from the ground using 'Visual Tree Assessment' (VTA) methodology. VTA is appropriate and is endorsed by industry guidance. It is used by arboriculturists to evaluate the structural integrity of a tree, relying on observation of trees biomechanical and physiological features. Measurements are obtained using a diameter tape, clinometer, laser distometer and loggers tape. Where this is not practical measurements are estimated. Tree groups have been identified in instances as defined in BS 5837:2012. Shrubs and insignificant trees may have been omitted from the survey.

This report represents a BS 5837:2012 tree survey and should not be accepted as a detailed tree safety inspection report; however, tree related hazards are recorded and commented upon where observed, yet no guarantee can be given as to the absolute safety or otherwise of any individual tree. All recommended tree work must be to BS 3998:2010 - '*Tree Work: Recommendations'*.

The findings and recommendations contained within this report are valid for a period of twelve months from the date of survey. The author shall not be responsible for events which happen after this time due to factors which were not apparent at the time, and the acceptance of this report constitutes an agreement with these guidelines and terms.

Appendix 3: Explanation of Tree Descriptions

HEIGHT of the tree is measured from the stem base in metres. Where the ground has a significant slope the higher ground is selected.

CROWN HEIGHT is an indication of the average height at which the crown begins.

STEM DIAMETER is measured at 1.5 metres above (higher) ground level. Where the tree is multi-stemmed at this point; the diameter is measured close to ground level or else a combined stem diameter is calculated.

CROWN SPREAD is measured from the centre of the stem base to the tips of the branches in all four cardinal points.

AGE CLASS of the tree is described as young, semi-mature, early-mature, mature, or over-mature.

PHYSIOLOGICAL CONDITION is classed as good, fair, poor, or dead. This is an indication of the health of the tree and takes into account vigour, presence of disease and dieback.

STRUCTURAL CONDITION is classed as good, fair or poor. This is an indication of the structural integrity of the tree and takes into account significant wounds, decay and quality of branch junctions.

LIFE EXPECTANCY is classed as; less than 10 years, 10-20 years, 20-40 years, or more than 40 years. This is an indication of the number of years before removal of the tree is likely to be required.

Retention Categories

A (marked in green on Appendix 5) = retention most desirable. These trees are of very high quality and value with a good life expectancy.

B (marked in blue on Appendix 5) = retention desirable. These trees are of good quality and value with a significant life expectancy.

C (marked in grey on Appendix 5) = trees which could be retained. These trees are of low or average quality and value, and are in adequate condition to remain until new planting could be established.

U (marked in red on Appendix 5) = trees unsuitable for retention. These trees are in such a condition that any existing value would be lost within 10 years.

	Tree Species			Measurements				Crown (m)					Tree Condition				Value		Management
Tree ID	*Common Name*	*Latin Name*	*Maturity*	*Height (m)*	*Stems*	*Stem Diameter (mm)*	*Estimated*	*Crown height*	*N*	*E*	*S*	*W*	*Roots*	*Stem*	*Crown*	*Comments*	*Physiological*	*Structural*	*Life Expectancy*	*Amenity*	*Category*	*Works*
G1	Leyland Cypress	***Cupressus x leylandii***	Semi-mature	7	10	100	Yes	0.5	See plans				Boundary group of leylandii approx 5 m wide, trimmed on road side, extending 1 m beyond fence. Dense undergrowth prevented detailed inspection				Fair	Fair	20 to 40 yrs	Low	C	No works required in current site context
T2	Sycamore	***Acer pseudoplatanus***	Mature	15	6	350	Yes	1	7.5	6.5	6.5	7	Exposed roots. Girdled roots	Multiple stemmed. at base. Old pruning wounds. Stubs. Tight union. Partially included bark. Cup-like union collecting dirt/water. Minor cavities	Minor deadwood	Overhanging road and pavement to northwest. Large union with included bark at base holding water.	Good	Fair	>40 yrs	Moderate	B	No works required in current site context
G3	Cherry	***Prunus avium***	Semi-mature	14	10	200	Yes	1	See plans				Boundary group of mostly Cherry and Beech, with occasional Sycamore and Willlow and some smaller Hawthorn. Good screening between site and road/ houses. Overhanging adjacent footpath. Dense undergrowth prevented detailed inspection				Fair	Fair	20 to 40 yrs	Moderate	C	No works required in current site context
T4	Willow	***Salix sp.***	Semi-mature	10	1	250	No	0.5	5	4	3	4	Limited access around base	Single stemmed. Vertical. Stubs. Minor cavities	Minor deadwood. Minor dieback	Undergrowth prevented detailed inspection of base and stem. Overhangs pavement to northwest	Fair	Fair	20 to 40 yrs	Low	C	No works required in current site context
G5	Hawthorn, Elder, Blackthorn	***Crataegus monogyna, Sambucus nigra, Prunus spinosa***	Semi-mature	3.5	10	80	Yes	0	See plans				Managed boundary hedge. Mostly Hawthorn, occasional Elder and Blackthorn. Road to west.				Fair	Fair	20 to 40 yrs	Low	C	No works required in current site context

AWA TREE CONSULTANTS

	Tree Species			Measurements				Crown (m)					Tree Condition						Value		Management
Tree ID	*Common Name*	*Latin Name*	*Maturity*	*Height (m)*	*Stems*	*Stem Diameter (mm)*	*Estimated*	*Crown height*	*N*	*E*	*S*	*W*	*Roots*	*Stem*	*Crown*	*Comments*	*Physiological*	*Structural*	*Life Expectancy*	*Amenity*	*Category*	*Works*
T6	Cypress	***Cupressus sp.***	Young	7	1	100	Yes	1	1.5	1.5	1.5	1.5	Limited access around base	Single stemmed. Vertical	Normal	Single Cypress growing within hedge. Visibility largely obscured by hedge and undergrowth. Plotted approximately	Good	Fair	20 to 40 yrs	Low	C	No works required in current site context
T7	Willow	***Salix sp.***	Semi-mature	7	1	300	No	1	4	4	4	4	Limited access around base	Single stemmed. Vertical	Minor deadwood. Minor dieback	Undergrowth prevented detailed inspection of base and stem. Overhangs pavement to northwest	Fair	Fair	20 to 40 yrs	Low	C	No works required in current site context
G8	Hawthorn, Elder, Blackthorn	***Crataegus monogyna, Sambucus nigra, Prunus spinosa***	Semi-mature	3.5	10	80	Yes	0	See plans				Managed boundary hedge. Mostly Hawthorn, occasional Elder and Blackthorn.				Fair	Fair	20 to 40 yrs	Low	C	No works required in current site context
G9	Hawthorn, Elder, Blackthorn	***Crataegus monogyna, Sambucus nigra, Prunus spinosa***	Semi-mature	3.5	10	80	Yes	0	See plans				Managed boundary hedge. Mostly Hawthorn, occasional Elder and Blackthorn.				Fair	Fair	20 to 40 yrs	Low	C	No works required in current site context
G10	Hawthorn, Elder, Blackthorn	***Crataegus monogyna, Sambucus nigra, Prunus spinosa***	Semi-mature	7	10	100	Yes	0	See plans				Unmanaged boundary hedge. Mostly Hawthorn, occasional Elder and Blackthorn. On raised banking				Fair	Fair	20 to 40 yrs	Low	C	No works required in current site context
G11	Hawthorn, Elder, Blackthorn	***Crataegus monogyna, Sambucus nigra, Prunus spinosa***	Semi-mature	1.8	10	80	Yes	0	See plans				Managed boundary hedge between two fields. Mostly Hawthorn, occasional Elder and Blackthorn. Recently trimmed.				Fair	Fair	20 to 40 yrs	Low	C	No works required in current site context

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	Tree Species			Measurements				Crown (m)					Tree Condition					Value		Management
Tree ID	*Common Name*	*Latin Name*	*Maturity*	*Height (m)*	*Stems*	*Stem Diameter (mm)*	*Estimated*	*Crown height*	*N*	*E*	*S*	*W*	*Roots*	*Stem*	*Crown*	*Comments*	*Physiological*	*Structural*	*Life Expectancy*	*Amenity*	*Category*	*Works*
G12	Hawthorn, Elder, Blackthorn	***Crataegus monogyna, Sambucus nigra, Prunus spinosa***	Semi-mature	2.5	10	80	Yes	0	See plans				Managed boundary hedge. Mostly Hawthorn, occasional Elder and Blackthorn. Recently trimmed.				Fair	Fair	20 to 40 yrs	Low	C	No works required in current site context
G13	Hawthorn, Elder, Blackthorn	***Crataegus monogyna, Sambucus nigra, Prunus spinosa***	Semi-mature	2	10	80	Yes	0	See plans				Managed boundary hedge. Mostly Hawthorn, occasional Elder and Blackthorn. Recently trimmed.				Fair	Fair	20 to 40 yrs	Low	C	No works required in current site context
T14	Cherry	***Prunus avium***	Semi-mature	14	1	240	No	1.5	3.5	3.5	3	2.5	Ground level changes. Root damage/ loss. Trenching/ excavations. Soil compaction	Single stemmed. Vertical. Bark damage. Minor decay	Normal	Soil and bricks piled around base. Recent ground level changes. Elder growing immediate to south and stone wall immediately beyond that. Western crown in contact with farm building.	Good	Good	20 to 40 yrs	Moderate	C	No works required in current site context
T15	Beech	***Fagus sylvatica***	Semi-mature	16	1	300	No	1	5	3.5	2.5	3	Limited access around base	Single stemmed. Vertical	Minor deadwood	Larger Beech within group. Overhanging gateway and road/pavement. Growing into lampost to northwest	Good	Good	>40 yrs	Moderate	C	No works required in current site context

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Appendix 5:
Tree Constraints Plan

Main Street, Great Houghton, Barnsley S72 0AZ
Ref AWA5651

BRITISH STANDARD 5837:2012
RETENTION CATEGORIES
Definitions of these categories can be found in Appendix 2 of the report.

SCALE: 1:500 PAPER: A1

	CATEGORY A: HIGH VALUE RETENTION MOST DESIRABLE
	CATEGORY B: MODERATE VALUE RETENTION DESIRABLE
	CATEGORY C: LOWER VALUE COULD BE RETAINED
	CATEGORY U: UNSUITABLE FOR RETENTION
	RPA: ROOT PROTECTION AREA
	TREE STEM

Appendix H Barnsley Biological Records Centre (BBRC) Data Records

Great Houghton

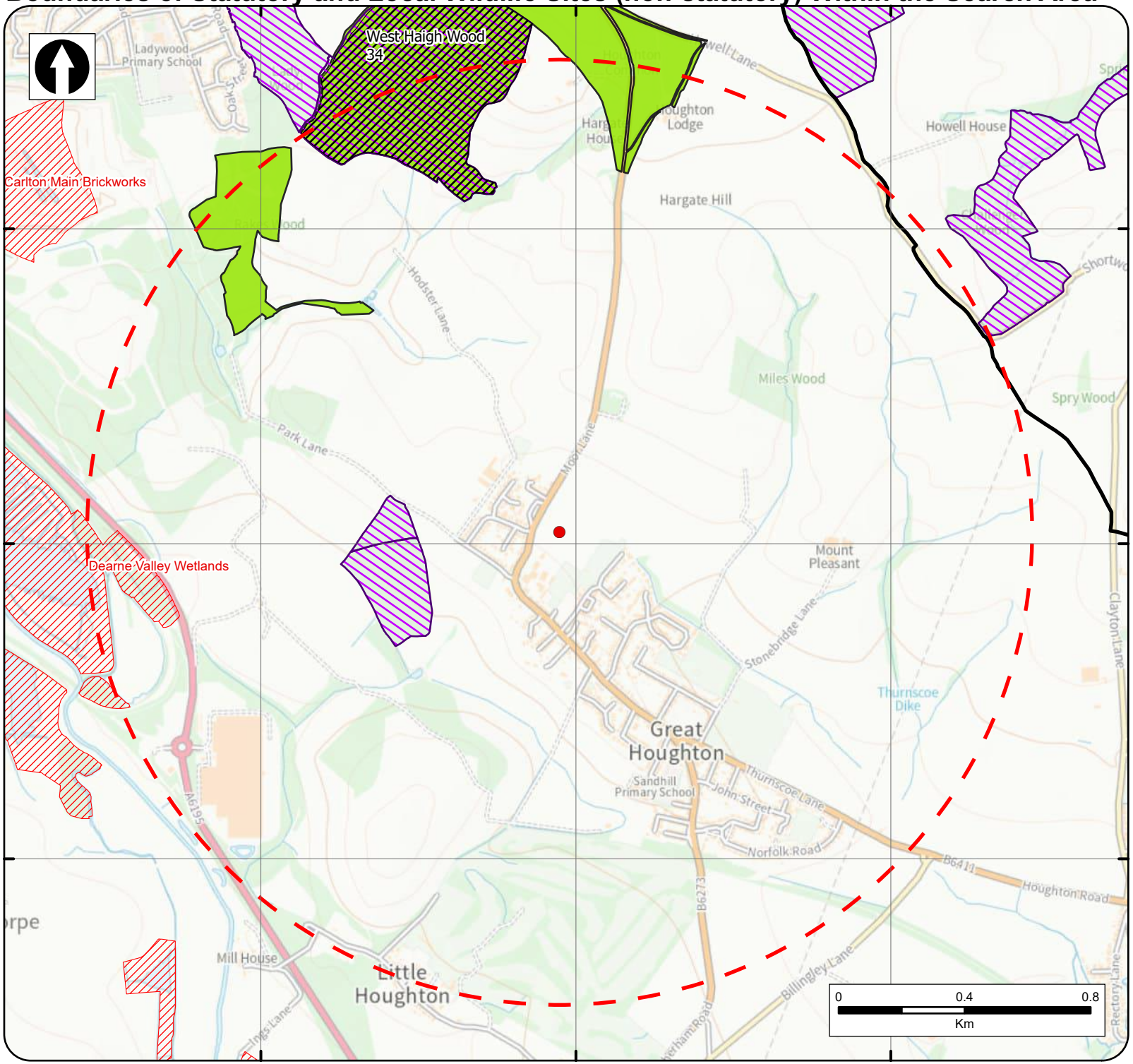
Ecological Impact Assessment

Avant Homes

SLR Project No.: 424.064965.00001

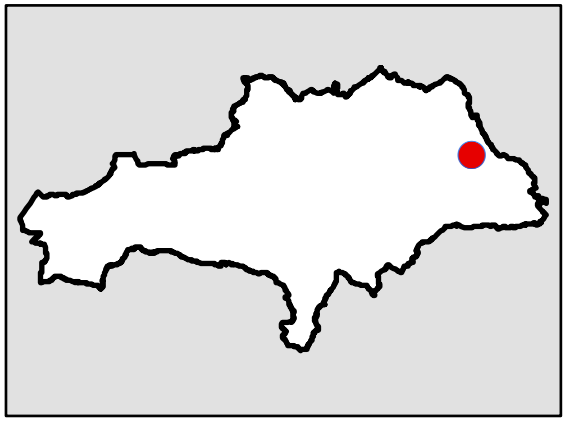
22 February 2024

Boundaries of Statutory and Local Wildlife Sites (non-statutory) Within the Search Area

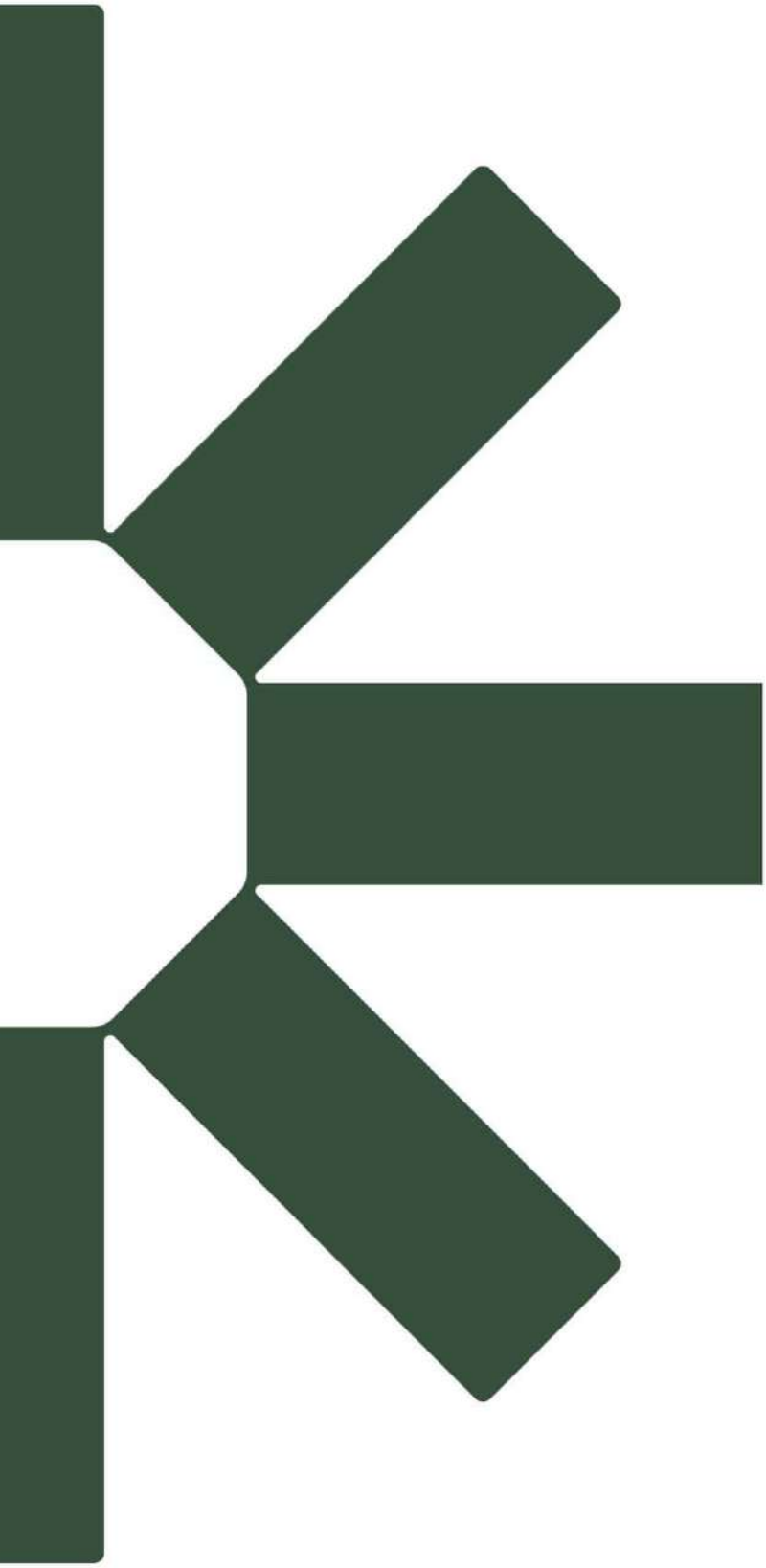


Great Houghton

- Centre of Search Area
- SSSI (England) © Natural England
- LNR NEngland
- Ancient Woodland Natural England
- Barnsley Boundary
- Local Wildlife Sites - Barnsley
- 1.5km radius



BARNSLEY Metropolitan Borough Council



Making Sustainability Happen