BAT EMERGENCE SURVEY REPORT

at

Land at Leeds Road
Heckmondwike
West Yorkshire
WF16 9DB

Client:
Orion Homes

Client Address:
5 Benton Office Park
Bennet Avenue
Horbury
Wakefield
WF4 5RA

JCA Ref:
22876b/ADo

Date of Report:
29/08/2025



JCA Limited
Arboricultural & Ecological Consultants

Quality Assurance

Version	**Desktop Survey Completed:**		**Site Surveyed:**		**Report Completed:**		**Reviewed:**	
	Date	Name	Date	Name	Date	Name	Date	Name
001	27/08/25	Alex Donovan	26/08/25	Alex Donovan	27/08/25	Alex Donovan	28/08/25 29/08/25	Rebecca Petch-Smith Adam West

This report has been prepared and provided in accordance with the *British Standard 42020: Biodiversity – Code of practice for planning and development 2018* and the *CIEEM's Code of Professional Conduct.*

This Assessment is only valid for the named client and the project described. JCA Limited. accepts no responsibility or liability for the consequences of this document being used for a purpose other than the purpose for which it was commissioned. If the scope of works or timing of the project are altered the advice given in this report may not be valid. Information and data provided within this report is considered accurate at the time of writing.

Provided no significant changes are made to the proposals or on the site (e.g. significant changes to management practices or habitats present) subsequent to the report's issue; this report can be considered valid for 18 months from the date of issue.

As part of membership to our professional body (CIEEM) and EPS licence reporting we are required to provide our biological results to applicable biological record centres. As such, it is our intention to supply biological data collected as part of this assessment, where recorded, to the relevant BRC. If the project is sensitive in nature, we may be able to delay submitting the records until the project enters the public domain, however, this must be discussed with JCA Limited and agreed in writing.

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Summary

JCA Ltd was commissioned by **Orion Homes** to provide ecological advice to inform works at **Land at Leeds Road**, hereafter referred to as 'the site'. The site is located at **Land at Leeds Road, Heckmondwike, WF16 9DB**, Ordnance Survey (OS) National Grid Reference **SE 21493 24760**. The Preliminary Ecological Appraisal (PEA) survey undertaken on 02/06/2025 (22876/FJ) identified buildings with low Bat Roost Potential (BRP) which would be impacted under the scheme. Further surveys were recommended to determine the presence/likely absence of a roost in the buildings.

The purpose of this report is to present the findings of the surveys, an interpretation of the findings and to provide recommendations for undertaking the proposed works in accordance with relevant legislation.

Bats and their roosts are protected under UK law. Development works that are likely to affect bats or their roost sites must be completed under licence from the statutory conservation body, in this case Natural England (NE).

Field surveys were undertaken on 27/08/25 to identify any bat use of the buildings. The surveys found **no** emergence activity from the surveyed building, and **very low** levels of commuting activity around the site.

An evaluation of the site, likely impacts of the scheme upon bats and recommendations for proceeding with works in compliance with legislation are presented in Chapters 4, 5 and 6 of this report.

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1. Introduction

1.1 Background

1.1.1 In May 2025, JCA Ltd was commissioned by **Orion Homes** to undertake a Preliminary Ecological Appraisal (PEA) of a site located at **Land at Leeds Road, Heckmondwike, West Yorkshire, WF16 9DB**, hereafter referred to as 'the site'. The PEA survey identified two buildings on site and no trees with bat roost potential that would likely be disturbed as part of the proposed work.

1.1.2 In July 2025, JCA Ltd. was commissioned by **Orion Homes** to underate one dusk emergence survey on the buildings.

1.2 Details of Proposed Development

1.2.1 The scheme is development proposed on this site is the construction of 51 residential properties.

1.3 Site Location

1.3.1 The site is situated 1.2km north of Heckmondwike centre, at grid reference: SE 21493 24760.

1.3.2 The site is situated in a suburban area and is bordered to the north and east by arable grasslands with hedgerows and scattered trees and to the south and west by residential properties with scattered trees and gardens.

1.4 Previous Studies

1.4.1 The following reports have been undertaken for the site:

- JCA Ltd – Preliminary Ecological Appraisal (PEA), Jul 2025 (22876/JF).
- JCA Ltd – Biodiversity Accounting Assessment (BAA), Jul 2025 (22876a/JF).

1.5 Scope of Works

1.5.1 The following elements of work were included in the bat survey programme:

- Desktop study – a review of historical records of bats in the surrounding area, including the results of recent ecological surveys in the area.
- Field surveys – one dusk survey in appropriate weather conditions, within the bat survey season of 1st May to 31st August, to assess whether bats are using the building to roost in.

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- Ecological report – detailing the survey results, implications for the disturbance of the buildings/trees and recommendations.

1.6 Survey and Report Aims

1.6.1 The main aim of the dusk emergence bat survey was to determine the presence/likely absence of roosting bats that will be impacted by the proposed development.

1.6.2 If roosting bats are present, to:

- Identify the species and numbers of bats present.
- Determine the type of roost (e.g. maternity roost, transitional roost, hibernation site, etc).
- Gain sufficient information to allow the potential impacts on bats of the proposed works to be assessed and for appropriate avoidance, mitigation and/or compensation measures to be designed.

1.6.3 The aims of the report presented are to:

- Outline the legislative protection given to bats.
- Report on the findings of a desk-based study undertaken to identify any existing records for bats which are relevant to the site.
- Summarise the findings of the bat surveys and provide an assessment of the potential ecological constraints to the proposed works at the site.
- Provide recommendations for further survey, avoidance, mitigation and/or enhancement where appropriate.

1.7 Legislative Context

1.7.1 In the UK all species of bat and their roosts are fully protected under Schedule 2 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, with additional protection offered under Schedule 5 of the Wildlife and Countryside (WCA) Act 1981 (as amended). This makes it an offence to:

- Deliberately or recklessly capture, injure or kill a bat;
- Deliberately or recklessly disturb in a way that would affect their local distribution or abundance, or affect their ability to survive, breed or rear young;
- Damage or destroy a bat roost (this is an ‘absolute’ offence);
- Intentionally or recklessly obstruct access to a bat roost; and/or
- Possess, control, transport, sell, exchange or offer for sale/exchange any live or dead bat or any part of a bat.

1.7.2 Under this legislation a roost is determined as any structure or place used for shelter. As bats tend to re-use the same roosts, the roost is protected whether the bats are present at the time or not.

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1.7.3 Please see Appendix 1 for a more detailed overview of the UK legislation protecting bats.

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2. Methodology

2.1 Desktop Study

2.1.1 A desktop study was carried out as part of the PEA undertaken by JCA in June 2025. The local biological records centre, West Yorkshire Ecology Service (WYES), was commissioned to provide details of historical protected and notable species records within a 2km radius of the site.

2.1.2 Ordnance Surveys maps (1:25000 scale), MAGIC maps and aerial imagery (Google Earth) were used to assess habitat availability and connectivity in the wider area around the site.

2.2 Field Surveys

2.2.1 The field surveys were planned and conducted with reference to Bat Surveys: Good Practice Guidelines 4thEdition (Collins, 2023). The survey was conducted in August 2025.

2.2.2 The surveys were led by Alex Donovan (JCA Assistant Ecologist) and assisted by Lorraine Spink, Shannon Spink, and Kathy Westwood (Seasonal Surveys).

2.3 Emergence Surveys

2.3.1 Dusk emergence surveys are used to determine the presence or likely absence of bat roosts in buildings or features when the preliminary roost assessment cannot reasonably rule out the presence of roosting bats. They are also used to identify the type of roost where a known roost is present. They can only be completed in the season when bats are most active (May to September, with optimum bat activity between June and August).

2.3.2 During the PEA conducted on 01/07/25 all structures/trees/buildings on site were subject to an internal and external survey to establish the suitability of the structure to support roosting bats in accordance with Collins (2023) and Bats in Tree Roosts (Andrews, H. 2018). Dusk emergence and survey effort is dictated by the category of bat roost potential assigned to a structure or tree during the preliminary bat roost potential assessment. **Table 1** (taken from Collins, J. 2023) summarises the survey effort required for structures to give confidence in a negative result.

Table 1 Recommended minimum number of survey visits for presence/likely absence surveys *(taken from Collins, 2023)*.

Negligible roost suitability	Low roost suitability or PRF-I	Moderate roost suitability	High roost suitability or PRF-M

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No futher survey required	One survey visit. One dusk emergence survey, May to August (structures). No further surveys required (trees).	Two separate dusk emergence survey visits. May to September, with at least one survey between May and August.	Three separate dusk emergence survey visits. May to September, with at least two surveys between May and August
September surveys are both weather- and location-dependent. Conditions may become more unsuitable in these months, particularly in more northerly latitudes, which may reduce the length of the survey season. September surveys are likely to miss maternity roosts due to dispersal before this time but may pick up mating roosts. Multiple survey visits should be spread out to sample as much of the recommended survey period as possible; it is recommended that surveys are spaced out at **least three weeks apart**, preferably more. Survey timings **should consider the prevailing conditions in the year of survey, which will vary geographically**. In years with a cold spring, the surveys should not be started in early May, or all completed in May. The surveys should maximise the possibility of detecting maternity roosts, which can switch roosts between pregnancy and lactation, and the **optimum coverage includes the pre-parturition, post-parturition, and mating periods**. Structures that have been categorised as low potential can be problematic, and the number of surveys required should be judged on a case-by-case basis. In some cases, more than one survey may be needed, particularly where there are several buildings in this category.			

2.3.3 JCA assigned the following categories to structures and trees that required further survey.

Table 2 Categories of Structures/Trees Surveyed

Structure/tree to be surveyed	Assigned category	Number of surveys required
Building 1	Low	1
Building 2	Low	1

2.3.4 All other buildings/trees on site are considered to have negligible bat roost potential (BRP).

2.3.5 Dusk emergence surveys commence 15 minutes before sunset and end 1.5 hrs after sunset, depending on activity levels recorded during the survey.

2.3.6 During the surveys, the buildings were monitored using Nightfox Whisker night vision binoculars.

2.3.7 Bat calls were monitored using Anabat Scout bat detectors, and subsequently analysed using Anabat Insight. Notes were made on the times of bat calls and any bat activity seen or heard (commuting, foraging, roosting or social calls) to determine the following information:

- Time and species of first and last bat call.
- Location of bats/proximity to the buildings.
- Number and species of bats present (where identification is possible).
- Bat activity levels (foraging, commuting, social calls).
- Number of bats recorded entering/exiting the structures/trees/buildings

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2.4 Survey Constraints

2.4.1 The comprehensiveness of any ecological assessment will be limited by the season in which surveys are undertaken. To determine presence or likely absence of a protected species and their status (i.e. the number of individuals present) usually requires multiple visits at suitable times of the year. The survey conditions and timings were suitable for surveying bats and therefore are not considered to be a limitation to the effectiveness of the surveys.

2.4.2 The weather conditions during the survey are given in **Table 3** below:

Table 3 Weather Conditions during the survey.

Date	Sunset time	Start & finish time	Temp - Start and Finish (°C)		Wind speed (kmh)	Cloud cover (%)	Precipitation	Humidity
26/08/25	20:10	19:55 21:40	20	18	11 W	10	0	57%

2.4.3 The details of this report will remain valid for 18 months. Beyond this period, if the proposed works have not commenced, a new review of the ecological conditions must be undertaken.

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3. Results

3.1 Desktop study

3.1.1 Local Data Centre Records: WYES has been commissioned to provide the records held for bat species within a 2km radius of the survey site. The results have been summarised below. It should be noted that the absence of records should not be taken as confirmation bat species are absent from the search area. Please see **Table 4** below for a summary of the bat records from the last ten years obtained from WYES. **Table 5** summarises all bat roost records within 2km of the site received from WYES.

Table 4 Summary of bat records from the last ten years held by WYES within 2km of the site.

Common Name	Scientific Name	On site	Within 500m	Within 1km	Within 2km	Notes
Brandt's Bat	*Myotis brandtii*	×	×	×	✓	One record from 2018
Unidentified bat of the genus *Myotis*	*Myotis sp.*	×	×	×	✓	Four records from 2017-2022
Leisler's bat	*Nyctalus leisleri*	×	×	✓	✓	Six records from 2020-2023
Noctule Bat	*Nyctalus noctula*	×	×	✓	✓	Six records from 2015-2023
Nyctalus Bat species	*Nyctalus*	×	×	×	✓	One record from 2023
Brown Long-eared Bat	*Plecotus auritus*	×	×	×	✓	Two records from 2017 and 2018.
Nathusius's Pipistrelle	*Pipistrellus nathusii*	×	×	×	✓	Two records from 2023
Common pipistrelle	*Pipistrellus pipistrellus*	×	×	✓	✓	32 records from 2015-2023
Soprano Pipistrelle	*Pipistrellus pygmaeus*	×	×	✓	✓	Nine records from 2017-2023
Unidentified bat of the genus *Pipistrellus*	*Pipistrellus sp.*	×	×	×	✓	Two records from 2021 and 2023

Table 5 Summary of bat roost records held by WYES within 2km of the site.

Common Name	Scientific Name	On site	Within 500m	Within 1km	Within 2km	Notes
Common pipistrelle	*Pipistrellus pipistrellus*	×	✓	×	✓	15 roost records from 2003-2023, including a maternity roost and a hibernation roost.
Unidentified bat of the genus *Pipistrellus*	*Pipistrellus* sp.	×	×	×	✓	One record from 2006
Unidentified bat	*Vespertilionidae*	×	×	✓	✓	Six roost records from 2000-2006, including a maternity roost of 200+ individuals

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3.2 Field Survey

3.2.1 Dusk emergence survey

The results of the surveys are detailed in **Table 6**.

No emergences from the buildings were observed. **Very low** levels of commuting and foraging activity were observed during the survey. Observations were of common pipistrelles *Pipistrellus pipistrellus*.

Table 6 Summary of the survey on 26/08/2025. Sunset time 20:10.

Location	Number of observations	Species identified and number of recordings	Time of first detection	Time before/after sunset	Activity recorded	Emergence location
1	6	Common pipistrelle	20:48	38 min after	Commuting	None
2	7	Common pipistrelle	20:48	38 min after	Commuting	None
3	5	Common pipistrelle	20:48	38 min after	Commuting	None
4	3	Common pipistrelle	20:48	38 min after	Commuting	None

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4. Interpretation of Survey Results

4.1.1 **No** bats were observed emerging from the surveyed building. The available evidence suggests that bats are not currently roosting within the surveyed building.

4.1.2 The number of commuting passes/foraging activity recorded during the surveys suggests a very low activity level in this area of the site.

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5. Impacts of the Scheme

5.1.1 The survey did not record any use of the building by roosting bats, and it is considered unlikely that the scheme will result in an offence under relevant legislation (see section 1.7 and Appendix 1).

5.1.2 The PRFs in the building, however, remain available to bats for use in the future. Works affecting the building will reduce the number of roosting opportunities available to local bat populations.

5.1.3 The proposed works have the potential to disturb foraging and commuting bats on and around the site. Obtrusive light from the scheme would have negative impacts on the value of the site for commuting and foraging bats.

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6. Recommendations

6.1.1 In the unlikely event a bat is found within any of the trees or buildings on site at any time of year, either prior to or during the scheme, works should cease immediately, and the advice of an appropriately qualified, experienced, and licensed ecologist should be sought. Mitigation and compensation measures to reduce the impact on bats would be required.

6.1.2 It is recommended that no night working take place and no additional lighting be used at the site to avoid disturbance to commuting bats. If it is necessary to install additional lighting on site, these should be fitted with hoods, cowls, or shields to direct light into the working areas only.

6.1.3 Artificial light is known to deter bats from entering lit areas. The development must incorporate a wildlife sensitive lighting scheme. In particular, obtrusive light is to be prevented from reaching potential foraging and commuting routes, both from new exterior and interior lights. All lighting installed as part of the development will be in line with Guidance Note 08/23 Bats and Artificial Lighting at night. The following will be required:

- LED lighting will be used and light levels will be kept as low as possible. Metal halide, fluorescent sources will not be used.
- Lighting will be directed to where it is required.
- Only luminaires with no light output above 90 degrees and/or an upward light ratio of 0% and with good optical control will be used, luminaires will always be mounted on the horizontal, i.e. no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers.
- Internal lighting within the new rooms will be recessed where installed in proximity to windows to reduce glare and light spill.
- Light sources will emit minimal ultra-violet light, peak higher than 550nm and be of a warm white spectrum (ideally <2700 Kelvin).
- The use of bollard or low-level downward directional luminaires is strongly discouraged.
- Providing the Lighting Strategy is adhered to, there will be an insignificant effect on the bat assemblage from lighting during the operational phase.

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7. References

Guidance:

Andrews, H. (2018). *Bat Roosts in Trees*. Pelagic Publishing, Exeter.

Collins (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines 4th edition*. Bat Conservation Trust, London.

Institute of Lighting Professionals and Bat Conservation Trust (2023). *Guidance Note 08/23: Bats and artificial lighting in the UK*. ILP, Rugby.

Institute of Lighting Professionals (2019). *Guidance Note 09/19: Domestic exterior lighting: getting it right!* ILP, Rugby.

Institute of Lighting Professionals (2021). *Guidance Note 01/21*: *The Reduction of Obtrusive Light*. ILP, Rugby.

Mitchell-Jones, A.J. & McLeish, A.P (2012). *The Bat Workers' Manual.* Pelagic Publishing, Exeter.

Mitchell-Jones, A.J. (2004). *Bat Mitigation Guidelines.* English Nature, Peterborough.

Relevant Legislation:

Wildlife and Countryside Act 1981 (WCA)

- http://jncc.defra.gov.uk/page-3614
- https://www.legislation.gov.uk/ukpga/1981/69/contents

The Conservation of Habitats and Species Regulations 2017 (CHSR)

- https://www.legislation.gov.uk/uksi/2017/1012/contents/made

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (CHSR)

- https://www.legislation.gov.uk/uksi/2019/579/contents/made

Natural Environment and Rural Communities Act 2006 (NERC)

- https://www.legislation.gov.uk/ukpga/2006/16/contents

Countryside and Rights of Way Act 2000 (CRoW)

- https://www.legislation.gov.uk/ukpga/2000/37/contents

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Appendices

Appendix 1: Legislation Pertaining to the Protection of Bats

All bat species have, for some time, been protected under **Schedule 5: Animals which are Protected** and **Schedule 6: Animals which may not be Killed or Taken by Certain Methods** of the **Wildlife & Countryside Act 1981**. However, the effective protection for bats now comes from **Schedule 2 European Protected Species of Animals** of **The Conservation of Habitats and Species Regulations (CHSR) 2017**, which is retained in UK lay post-Brexit by **CHSR (Amendment) (EU Exit) 2019**. Changes to legislation, and devolution, mean the law is difficult to summarise succinctly across the UK, but the strong legal protection for bats and roosts remains.

It is an offence across the UK to:

- deliberately or recklessly capture, injure or kill a bat
- deliberately or recklessly disturb in a way that would affect their local distribution or abundance, or affect their ability to survive, breed or rear young
- damage or destroy a bat roost (breeding site, resting place, or any place used for shelter or protection, this is an 'absolute' offence)
- disturb bats while occupying a bat roost
- intentionally or recklessly obstruct access to a bat roost
- impair their ability to survive, breed, reproduce, or to rear or nurture their young
- impair their ability to hibernate or migrate
- possess, control, transport, sell, exchange or offer for sale/exchange any live or dead bat or any part of a bat, or publish or cause to be published any advertisements likely to be understood as conveying the buying or selling, or intention to buy or sell, any of those things.

'Deliberately' in this context may be interpreted as someone who, although not intending to capture/injure or kill a bat, performed the relevant action, being sufficiently informed and aware of the consequence his/her action will most likely have.

In this interpretation, a bat roost is "any structure or place which any wild [bat]...uses for shelter or protection". Because bats tend to reuse the same roosts, legal opinion is that the roost is protected whether or not the bats are present at the time.

For full legislative context, see:

- CHSR 2017 Part 3: Protection of Species, Sections 42-45: Protection of Animals.
- WCA Part 1: Wildlife, Sections 9-12: Protection of other animals and prevention of poaching.

Additionally, the following species are listed as priority species under **Section 41** of the **Natural Environment and Rural Communities (NERC) Act 2006**, designating them as species of principal importance for the purpose of conserving biodiversity:

- Barbastelle bat *Barbastella barbastellus*
- Bechstein's bat *Myotis bechsteinii*
- Noctule *Nyctalus noctula*
- Soprano pipistrelle *Pipistrellus pygmaeus*
- Brown long-eared bat *Plecotus auritus*
- Greater horseshoe bat *Rhinolophus ferrumequinum*
- Lesser horseshoe bat *Rhinolophus hipposideros*

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Appendix 2: Site Plan and Surveyor Locations

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Site name & address

Land at Leeds Road, Heckmondwike, WF16 9DB

Key

- Red Line Boundary
- Surveyor Locations

Buildings

- Low Bat Roost Potential
- Negligible Bat Roost Potential

Potential Roosting Features

1 - Gap in eaves
2 - Gap under ridge tile
3 - Lifted tile
4 - Missing mortar
5 - Broken tile

Scale 0 7.5 15 m

Site: Land at Leeds Road	Client: Orion Homes
Project: Bat Emergence Survey	Author: ADo
Plan ref: 22876b/ADo	Revision: 001

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Appendix 3: Proposed Development Plan

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Planting Schedule

Proposed Trees

Nr	Code	Tree Name	Specification	Girth	Height
6 -	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
3 -	AcS	Acer campestre 'Streetwise'	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
2 -	Ag	Alnus glutinosa	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
4 -	Bp	Betula pendula	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
2 -	Cb	Carpinus betulus	Heavy Standard :Clear Stem 175-200 :C	12-14cm	350-425cm
6 -	Pa	Prunus avium	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
2 -	SaCR	Sorbus aucuparia 'Cardinal Royal'	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

Total :30 -

Proposed Hedges (4/m)

Nr	Code	Tree Name	Specification	Girth	Height
292 -	Fs	Fagus sylvatica	C		60-80cm
241 -	Gli	Griselinia littoralis	C		60-80cm

Total :533 -

Proposed Shrubs

Nr	Code	Plant Name	Height	Cntr (l)	Nr/m2
64 -	BtAN	Berberis thunbergii 'Atropurpurea Nana'	40-60cm	5L	3/m²
29 -	CBM	Ceanothus 'Blue Mound'	30-40cm	5L	3/m²
9 -	Ct	Choisya ternata	30-40cm	5L	3/m²
112 -	EfEG	Euonymus fortunei 'Emerald 'n' Gold'	30-40cm	5L	4/m²
59 -	EfSQ	Euonymus fortunei 'Silver Queen'	20-30cm	2L	4/m²
18 -	HMW	Hebe 'Mrs Winder'	20-30cm	2L	4/m²
86 -	LaM	Lavandula angustifolia 'Munstead'	20-30cm	2L	4/m²
54 -	LnMG	Lonicera nitida 'May Green'	30-40cm	5L	3/m²
148 -	PE	Potentilla fruticosa 'Elizabeth'	20-30cm	2L	4/m²
32 -	PfxRR	Photinia fraseri 'Red Robin'	40-60cm	5L	3/m²
41 -	PlOL	Prunus laurocerasus 'Otto Luyken'	40-60cm	5L	3/m²
64 -	Vd	Viburnum davidii	30-40cm	5L	4/m²
74 -	Vmi	Vinca minor	20-30cm	2L	4/m²

Total :790 -

Proposed Grasses

Nr	Code	Plant Name	Cntr (l)	Nr/m2
67 -	DcGo	Deschampsia cespitosa 'Goldtau'		4/m²
157 -	Pvil	Pennisetum villosum		4/m²

Total :224 -

Native Hedge Mix (5/m)

Nr	Code	Plant Name	Root	Height	%
18 -	Ac	Acer campestre	BR	80-100cm	5%
69 -	Cav	Corylus avellana	BR	80-100cm	20%
103 -	Cm	Crataegus monogyna	BR	80-100cm	30%
35 -	Ia	Ilex aquifolium	BR	80-100cm	10%
69 -	Ps	Prunus spinosa	BR	80-100cm	20%
35 -	Sc	Salix caprea	BR	80-100cm	10%
18 -	Vo	Viburnum opulus	BR	80-100cm	5%

Total :347 -

Native Shrub Mix (0.5/m2)

Nr	Code	Plant Name	Root	Height	%
44 -	Cav	Corylus avellana	BR	80-100cm	30%
30 -	Cmo	Crataegus monogyna	BR	80-100cm	20%
15 -	Ia	Ilex aquifolium	BR	80-100cm	10%
30 -	Ps	Prunus spinosa	BR	80-100cm	20%
15 -	Sc	Salix caprea	BR	80-100cm	10%
15 -	Vo	Viburnum opulus	BR	80-100cm	10%

Total :149 -



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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 BS3882:2015 compliant and existing topsoil must be cultivated in accordance with BS3882: 2015. 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 must be in accordance with BS3936 1992: Nursery Stock and BS 8545 2014 Trees from Nursery to Independence

Trees: All tree planting should conform to BS8545:2014. 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.

Tree ties: All tree ties to be Green-Tech Hoolfast Natural Tree Ties. Natural tree tie is made entirely of natural fibres and is fully bio-degradable. A spacer by formed using the Natural tree tie itself. It will not strangle the tree and will bio-degrade as the tree establishes itself.

Native Woodland / Shrub areas: Soil depth shall consist of 300mm topsoil and 600mm subsoil (in accordance with BS3882: 2015).

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 / shrub / hedgerow plants to be planted with Greenfix Mulch Mat - Type 11. Mulch Mats are 100% biodegradable with an approximate three year lifespan. Mulch Spats are ready-cut for individual plant production with a centre hole for plant protection. Mats pinned to soil.

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, trees and shrubs within mixes to be protected by Green-tech Bio-Earth Tree Shelter. The Bio-Earth Tree Shelter is made from a special water-proof FSC-approved cardboard which is 100% biodegradable, recyclable, and compostable. Lifespan is typically 3 years. Once the tree / shrub has established enough to no longer need it, the Bio-Earth Tree Shelter can be left to safely biodegrade.

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.

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 Emorsgate EM2 Standard General Purpose Meadow Mixture Sown @ 4g/m² www.wildseed.co.uk
- Proposed Native Shrub Mix

Base: Orion Homes 'Site Plan' Layout X received 22May25

Drawing No H2 2504 01	Drawn by BP	Date 23 May 25	Project Leeds Road, Heckmondwike
Revision -	Checked by SH	Scale 1:500@A0	Client Orion Homes

Drawing: Detailed Landscape Proposals

Status: -

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Note: Dimensions to be checked on site. All in metres unless stated otherwise. Do not scale for construction purposes.

Appendix 4: Photographic Evidence



Photo 1: Location 1 – before sunset



Photo 2: Location 1 – after sunset



Photo 3: Location 2 – before sunset



Photo 4: Location 2 – after sunset



Photo 5: Location 3 – before sunset



Photo 6: Location 3 – after sunset

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Photo 7: Location 4 – before sunset



Photo 8: Location 4 – after sunset

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Appendix 5: Bat Survey Calendar

Figure 1: Survey timings calendar (taken from BCT: Bat surveys for professional Ecologists, Good Practice Guidelines; 4th Edition).

Survey type	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
Daytime Bat Walkover (DBW)												
PRA – structures[a]												
Emergence survey for maternity or summer roosts[b]												
Emergence survey for transitional/ occasional roosts[b]												
Re-entry surveys[c]												
Emergence survey for mating roosts[b]												
Hibernation survey – structures[a]												
GLTA[d]												
PRF inspection survey – trees												
Ground-level bat activity survey – night-time walkover surveys and automated/static												
Pre-, during and post-hibernation – automated/static bat activity survey												
Swarming survey[e]												
Back-tracking survey												
Trapping and radio-tagging survey[f]												

= optimal period = sub-optimal period

= weather or location dependent (i.e. may not be suitable due to spring and autumn conditions in any one year or in more northerly latitudes). Note that October emergence surveys are not acceptable in Scotland.

= it is not acceptable to trap bats when they are heavily pregnant and have dependent pups. Mothers need to optimise foraging due to the physiological demands of pregnancy and lactation, and pups need to be regularly fed. Interrupting these activities could potentially have an impact on breeding success in the year in question. The timing of birth can vary between years – it may be as early as the end of May or as late as the start of August, therefore caution should be exercised and local information gained on birth dates before trapping activities are carried out during the summer months. Any information gained and decisions made should be kept as a record.

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Appendix 6: Glossary

Activity surveys - are used to assess the level of bat activity at a site. This can be done either by using equipment such as an AnaBat device, or manually walking around a site with a heterodyne detector, documenting the number of bat passes and interceptions.

Dawn surveys - begin around 2 hours before and up to sunrise when bats are returning to their roosts from foraging, and swarming behaviour can be seen close to roost entrances.

Dusk surveys - begin around 30 minutes before sunset and up to 2 hours afterwards. These are done in order to see bats emerging from their roost sites at night.

Echolocation – is a system similar to sonar that allows bats to travel and forage even in total darkness. Bats make a call and then listen to the returning echoes in order to build up a map of their surrounding area. This allows bats to gauge the identity and distance of an object by how long the echo takes to return to them.

Habitat - the ecological or environmental area that is inhabited by a particular species of animal, plant or other type of organism.

Hibernation - is a state of inactivity and metabolic depression characterized by lower body temperature, slower breathing, and lower metabolic rate. Hibernating animals conserve energy, especially during winter when food is short, tapping energy reserves, i.e. body fat, at a slow rate.

Hibernacula - typically consist of underground sites, such as caves and cellars, which remain relatively cold and humid. Bats will hibernate to conserve energy over the winter months when falling temperatures cause a drop in the abundance of insects. These will typically be colonised around November to around March.

Insectivorous – is when an organism feeds exclusively on insects.

Nocturnal - a behaviour characterized by being active during the night and sleeping during the day.

Maternity roosts – colonised around late May early June and consist of mature females and their young. These roosts need to be warm and quiet, and are used up until around August, with females typically leaving first and then the young.

Mating roosts – mating begins around late October to November. Males of most species use special mating calls to attract females. These can include purrs, clicks and buzzing.

Roost – a site where bats live during the day, rear young and hibernate. These can be in man made structures, such as buildings, bridges, tunnels, cellars and mines, or natural features such as mature trees and caves.

Roosts in buildings – many types of buildings will be used by bats. The most likely sites are agricultural buildings (e.g. farmhouses and barns), buildings with exposed wooden beams (greater than 20cm thick), buildings with weather boarding and/or hanging tiles, and buildings close to woodland and/or water.

Roosts in trees – these are typically in mature trees with deep sheltered cracks, under loose sections of bark, or in woodpecker holes.

Species – a group of organisms in which all members can interbreed and produce viable offspring.

Summer roosts (non-breeding) - these are generally occupied by groups of males and immature females during the summer, and are usually only occupied for a short period before the group moves to another location.

Swarming – a behaviour exhibited by bats returning to their roost sites at dawn. Bats can be seen repeatedly flying to and from the roost entrance, making it much easier for consultants to identify where roosts are on a building or structure.

Temporary/Transitory roosts – These are used after hibernation (March – April) before mature females disperse to maternity roosts and male/immature females colonise summer (non-breeding) roosts. Similarly, temporary roosts form before hibernation (August -October).

Underground Roosts – these are typically used during the winter and can be mines, caves, tunnels or cellars.

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Appendix 7: Author Qualifications

Adam West, Principal Ecologist

BSc (Hons) Animal and Wildlife Management

Adam joined JCA to lead the expanding ecology department. Having returned to education as a mature student, Adam studied Countryside Management for two years before undertaking a Batchelor's degree, for which he was awarded First Class Honours. Adam has many years' experience in ecological consultancy, working on projects ranging from individual planning applications to national infrastructure projects. Adam holds a Natural England Level 1 great crested newt survey class licence, a Natural England Level 2 bat survey class licence (and the Scottish and Welsh equivalents) and a CSCS card.

Alex Donovan, Assistant Ecologist

MBiol BSc (Hons) Biology (Industrial)

Alex joined JCA in 2023 after graduating from the University of Leeds with a First Class Honours Integrated Master's degree in Biology, including an industrial placement year working in the Uplands Research Department of the Game and Wildlife Conservation Trust. Alex is a CIEEM Qualifying Member, and a member of the BTO's Bird Ringing Scheme and Nest Record Scheme. Alex holds a Natural England barn owl survey licence, and is working towards additional survey licences for bats, great crested newts, and white-clawed crayfish.

Rebecca Petch-Smith, Graduate Ecologist

MBiol (Hons) Zoology

Rebecca joined JCA in 2025 after spending 18 months in the teaching industry. Prior to this she graduated from the University of Leeds with a 2:1 Honours Integrated Master's degree in Zoology. As part of her degree programme, Rebecca spent time in Kenya conducting surveys on African ungulates. Rebecca began assisting on bat emergence surveys in 2024, after which, she gained employment as a Graduate Ecologist at JCA Ltd. She is currently conducting Preliminary Ecological Appraisals, Bat Scope Surveys and Biodiversity Net Gain Assessments and working towards her protected species licence.

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The information and advice which we have prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and bona fide opinions.

Signed

.....

Alex Donovan *MBiol BSc (Hons)*

27/08/2025

Reviewed by

.....

Rebecca Petch-Smith *MBIOL BSc (Hons)*

28/08/2025

Reviewed by

.....

Adam West *ACIEEM, BSc (Hons)*

29/08/2025

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For and on behalf of ***JCA Ltd***

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ECOLOGICAL SERVICES

Ecological Pre-Planning Services

- Phase 1 Habitat Surveys
- Great Crested Newt eDNA Sampling
- Protected species: Bat, Wintering and Nesting Bird, Amphibian, Otter, Water Vole, White-Clawed Crayfish, Dormice and Reptile Surveys.
- Preparation for Environmental Impact Assessment (EIA)
- Invasive Species Surveys
- Code for Sustainable Homes
- Butterfly & Insect Surveys

Ecological Post-Planning Services

- Biodiversity Enhancement Plans
- Protected Species Mitigation
- Ecological Management (Bat and Bird box installation and inspection)
- Planting Schemes
- Monitoring of bird or bat boxes.

ARBORICULTURAL SERVICES

Guidance for Architects & Developers

- British Standard 5837 Surveys
- Arboricultural Implications Assessments (AIA)
- Arboricultural Method Statements (AMS)

Advice for Engineers, Loss Adjusters and Insurers

- Tree Surveys for Subsidence
- Heave Assessment
- Tree Root Identification

Advice for Local Authorities and Social Housing

- Tree Safety Surveys
- Specialist Decay Detection
- Landscape and Orchard Design

Tree Advice for the Legal Profession

- Subsidence Litigation
- Personal Injury and Accident Investigation
- Expert Witness, Planning Inquiries and Appeals

Veteran Tree Management

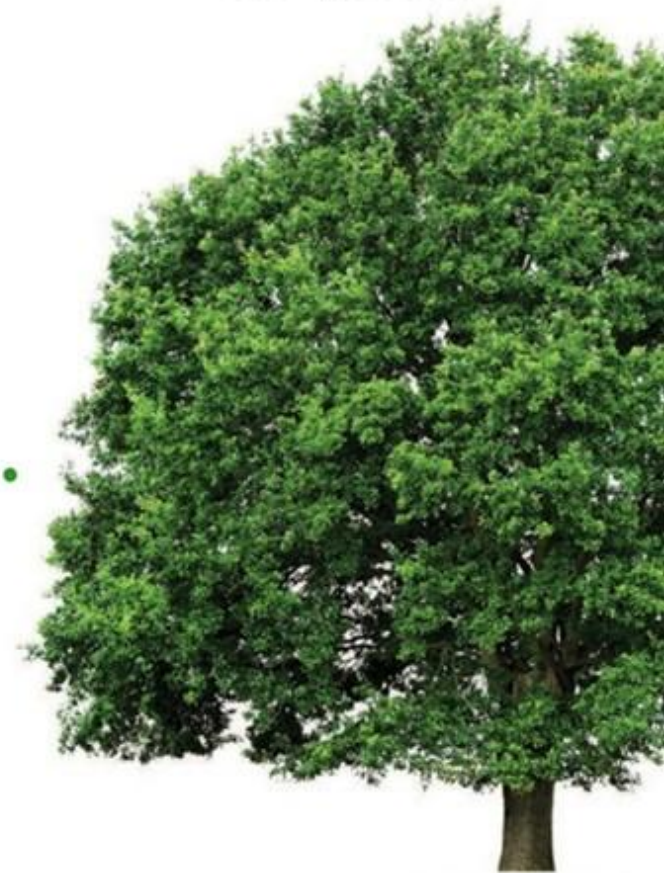
- Ancient Woodland Management
- Veteran Tree Management

Tree Health and Pest and Disease Management

- Pest and Disease Surveys
- Tree Health Checks
- Disease Mitigation and Control

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Arboricultural & Ecological Consultants



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