Biodiversity Net Gain Assessment

Dodworth Green Lane, Dodworth

Newett Homes Ltd

Prepared by:

SLR Consulting Limited

Unit 2, Newton Business Centre, Thorncliffe Park Estate, Newton Chambers Road, Chapeltown, Sheffield, S35 2PH

SLR Project No.: 424.065401.00001

6 September 2024

Revision: 1

Basis of Report

This document has been prepared by SLR Consulting Limited (SLR) with reasonable skill, care and diligence, and taking account of the timescales and resources devoted to it by agreement with Newett Homes Ltd (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

SLR shall not be liable for the use of or reliance on any information, advice, recommendations and opinions in this document for any purpose by any person other than the Client. Reliance may be granted to a third party only in the event that SLR and the third party have executed a reliance agreement or collateral warranty.

Information reported herein may be based on the interpretation of public domain data collected by SLR, and/or information supplied by the Client and/or its other advisors and associates. These data have been accepted in good faith as being accurate and valid.

The copyright and intellectual property in all drawings, reports, specifications, bills of quantities, calculations and other information set out in this report remain vested in SLR unless the terms of appointment state otherwise.

This document may contain information of a specialised and/or highly technical nature and the Client is advised to seek clarification on any elements which may be unclear to it.

Information, advice, recommendations and opinions in this document should only be relied upon in the context of the whole document and any documents referenced explicitly herein and should then only be used within the context of the appointment.

Table of Contents

Appendices

1.0 Introduction

SLR Consulting was commissioned by Newett Homes Ltd to undertake a Biodiversity Net Gain (BNG) Assessment in support of a planning application for the construction of a small residential development, of five units. on land off Dodworth Green Lane, Dodworth, Barnsley, South Yorkshire, S75 3RY (central OS grid reference SE 31451 05076).

1.1 Statement of intent in respect of BNG

The application site (hereafter referred to as the 'Site') boundary is 0.314 hectares in size; therefore the project is classed as a 'small site' in biodiversity metric terms.

The application was submitted on the 25th of March 2024 (ref 2024/0259), and as mandatory net gain for small sites did not apply until April 2024, the application should deliver a net gain in biodiversity, but not a 10% net gain, in line with policy in the Barnsley Local Plan (2019), 'to protect and enhance Barnsley's natural assets and achieve net gains in biodiversity'.

1.2 Baseline

Baseline data for the application site has been gathered from a number of sources.

- Ecological Impact Assessment, Whitcher Wildlife, 19th January 2023 (Appendix A);
- River Corridor Assessment; Smeeden Foreman, January 2023 (Appendix B); and
- Arboricultural Impact Assessment, Barnes Associates, 23rd August 2024 (Appendix C).

This information was refined and 'ground-truthed' during a site visit carried out by Mr Gary Oliver, Principal Ecologist with SLR Consulting, on the 5th of September 2024.

Mr Oliver is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM), with other 28 years' relevant experience within ecological consultancy.

1.3 Post Development Assessment

The post-development BNG calculation is based upon the Landscape Masterplan Revision B Drawing ref H22-0018_101B), Highstone Design, 5th September 2024 (Appendix D).

1.3.1 Site Overview

The Site consists of a large detached residential property 'Hillside', set within a mature garden, with formal lawned areas, tree belts (most notably a belt of mature horse chestnut and sycamore trees alongside Dodworth Green Road, dense scrub and scattered scrub, patches of tall ruderal vegetation and young self-sown trees.

Although watercourses do not occur on Site, an unnamed stream is culverted beneath the Site for circa 40 metres; it emerges from culvert approximately 0.5m from the south-western Site boundary, and runs for 15 metres within the 10m wide riparian zone that abuts the Site.

The arrangement of the habitats on Site, as well as the wider Site, and their ecological condition, is described in Appendix A and illustrated within Appendix IV of that report.

Information on the ecological condition of the unnamed watercourse is provided in Appendix B.

2.0 Relevant Legislation and Policy

Relevant extracts from Local Planning Policy have been provided below[1].

2.1.1 Barnsley Local Plan

Barnsley Council adopted the Barnsley Local Plan in January 2019. The relevant policies have been outlined below:

Policy BIO1: Biodiversity and Geodiversity

"Development will be expected to conserve and enhance the biodiversity and geological features of the borough by:

- Protecting and improving habitats, species, sites of ecological value and sites of geological value with particular regard to designated wildlife and geological sites of international, national and local significance, ancient woodland and species and habitats of principal importance identified via Section 41 of the Natural Environment & Rural Communities Act 2006 (for list of the species and habitats of principal importance) and in the Barnsley Biodiversity Action Plan;
- Maximising biodiversity and geodiversity opportunities in and around new developments;
- Conserving and enhancing the form, local character and distinctiveness of the boroughs natural assets such as the river corridors of the Don, the Dearne and Dove as natural floodplains and important strategic wildlife corridors;
- Proposals will be expected to have followed the national mitigation hierarchy (avoid, mitigate, compensate) which is used to evaluate the impacts of a development on biodiversity interest;
- Protecting ancient and veteran trees where identified; and
- Encouraging provision of biodiversity enhancements.

Development which may harm a biodiversity or geological feature or habitat, including ancient woodland and aged or veteran trees found outside ancient woodland, will not be permitted unless effective mitigation and/or compensatory measures can be ensured.

Development which adversely effects a European Site will not be permitted unless there is no alternative option and there are imperative reasons of overriding public interest (IROPI)."

[1] Note that the summary provided here is intended for general guidance only and the original policy documents should be consulted for definitive information. For local planning policy relevant to biodiversity the relevant local plans should be consulted.

3.0 Methodology

3.1 Scope

The objectives of this Biodiversity Net Gain (BNG) assessment are to:

- Input all relevant habitat and landscaping information into a BNG calculator and provide notes on the information input into the calculator; and
- Provide a quantitative assessment of biodiversity losses and/ or gains as a result of the proposed residential development to inform the relevant planning authority.

3.2 Baseline Data Collection

3.1.1 UKHab Habitat Survey

A UKHab survey was undertaken on the 5th of September 2024 by Mr Gary Oliver, Principal Ecologist with SLR Consulting. The work was undertaken to identify the broad habitat types present in accordance with the UK Habitat Survey (UKHab) V2.01 methodology[2]. This included a search for irreplaceable habitats such as ancient or veteran trees.

The weather during the surveys was generally clear, with ambient temperatures ranging between 16-18°C, and winds ranging from a light to moderate breeze.

3.1.2 Condition Assessment

Habitat condition assessments were carried out in conjunction with the UKHab survey, through which the quality of habitats were measured using standardised habitat condition assessment criteria, contained within the Statutory Metric Condition Assessment Guidelines[3].

3.1.3 River Condition Assessment Baseline Survey

A MoRPh survey was undertaken by Smeeden Foreman, as reported in Appendix B.

The survey was carried out in accordance with MoRPh survey guidelines[4, 5] and comprised a series of MoRPh5 subreach surveys,

The Preliminary Condition Score for each MoRPh5 subreach is calculated as the sum of the average of the positive condition indicator scores and the average of the negative condition indicator scores for the subreach. The Preliminary Condition Score is combined with information from the River Type desk study and translated into a Final Condition Score (Good, Fairly good, Moderate, Fairly poor or Poor). The Final Condition Score is downgraded by one category if the river is found to be ‘over deep’.

[2] Butcher, B., Carey, P., Edmonds, R., Norton, L., Treweek, J. (2020). The UK Habitat Classification System. V2.01 https://ukhab.org

[3] Statutory Metric Condition Assessments Statutory_Biodiversity_Metric_Condition_Assessments-_Feb24.xlsx (live.com)

[4] Modular River Survey (2022). The MoRPh Survey: Technical Reference Manual, 2022 version.

[5] Gurnell, A.M., England, J., Scott, S.J., Shuker, L.J. (2022). A Guide to Assessing River Condition: Part of the Rivers and Streams Component of the Biodiversity Net Gain Metric.

3.3 Statutory Biodiversity Metric Assessment

In undertaking this BNG assessment, SLR have used the relevant guidance document and Statutory Biodiversity Metric provided by DEFRA[6].

In order to complete the BNG assessment, the areas of all existing habitats on-Site were mapped, during the UKHab survey, and measured 'on the ground' using a tape measure and/ or aerial imagery. This information, along with the results from the corresponding condition assessments, were inputted into the Statutory Biodiversity Metric calculator.

The predicted future biodiversity value of the Site was calculated using the post-development Landscape Masteplan (Appendix D), as provided by the client.

The Statutory Biodiversity Metric follows similar principles to previous biodiversity metrics, using habitat as a proxy for biodiversity and its primary application is to provide planners and developers with a method of establishing how much and what type of habitats should be created or enhanced in order to ensure that the impacts of a development do not result in a net loss of biodiversity. Habitats are assigned the following 'multiplier' scores:

- Distinctiveness: A measure of the type and importance of a habitat;
- Condition: A measure of the present or predicted condition of a habitat type; and
- Strategic significance: How a habitat and its location are regarded within Local Planning Policy.

[6] The Statutory Biodiversity Metric, User Guide, Date: February 2024, Department for Environment, Food and Rural Affairs https://assets.publishing.service.gov.uk/media/65c60e0514b83c000ca715f3/The_Statutory_Biodiversity_Metric_-_User_Guide_.pdf.

4.0 Baseline Ecological Conditions

4.1 Habitats

A map of the habitats present within the Site, and wider area, has been provided in Appendix IV of Appendix A.

Detailed descriptions are provided within that report, as well as in the following subsections.

4.1.1 Modified Grassland (g4)

Modified grassland consists of a short-sward lawn, located to the south of the residential property (Plate 1).

Plate 1: Area of lawn (modified grassland), looking north from southern Site boundary

Species present are perennial ryegrass (*Lolium perenne*); Yorkshire fog (*Holcus lanatus*); annual meadow grass (*Poa annua*); creeping bent (*Agrostis stolonifera*); white clover (*Trifolium repens*); dandelion (*Taraxacum officinale* agg.); daisy (*Bellis perennis*); creeping buttercup (*Ranunculus repens*); and ribwort plantain (*Plantago lanceolata*),

Condition Assessment:

An assessment of the condition criteria confirms that Criteria C, D, E, F and G are met, whilst A and B are not met.

This equates to Moderate Ecological Condition.

The area of modified grassland is 0.12ha.

4.1.2 Bramble Scrub (h3d)

Two patches of bramble (*Rubus fruticosus* agg.) scrub occur on Site.

A rectangular area measuring 10m x 20m (0.02ha) occurs in the south-eastern corner of the Site (Plate 2); although bramble is the dominant species present, small amounts of dog rose (*Rosa canina*) and raspberry (*Rubus idaeus*) were also present, along with occasional rosebay willowherb (*Chamaenerion angustifolium*).

Plate 2: Bramble scrub in the south-eastern corner of the lawn

A larger patch of bramble scrub occurs between the tree line on the western Site boundary and a thin belt of young woodland to the east. Although obscured by the canopy of the trees in places this patch was measured to be 0.07ha in extent (Plate 3).

Although bramble was the dominant species present, nettle (*Urtica dioica*) was also locally frequent.

Plate 3: Bramble scrub to the east of, and beneath, the western tree line

Condition Assessment:

Bramble scrub is automatically assessed to be in Poor Ecological Condition.

4.1.3 Woodland – Other broadleaved woodland (w1g, 30)

An area of woodland, comprising mostly young self-seeded semi-natural woodland, occurs within the Site, often interspersed with scrub, including formal scrub that has been allowed to grow tall.

It is located to the west of the lawned area, separated from the western tree line by the patch of bramble (Plate 4), as well as to the west of the house, and in the south-western corner of the Site.

The woodland/ scrub mosaic here includes young sycamore (*Acer pseudoplatanus*) and ash (*Fraxinus excelsior*); with a single walnut (*Juglans regia*) tree towards the southern Site boundary. Interspersed scrub within the woodland comprises hawthorn (*Crataegus monogyna*); elder (*Sambucus nigra*), silver birch (*Betula pendula*); goat willow (*Salix caprea*); holly (Ilex aquifolium); domestic plum (*Prunus domestica*); Lawson cypress (*Chamaecyparis lawsoniana*); bramble; and blackthorn (*Prunus spinosa*). Smal patches of rhododendron were also recorded, along with snowberry (*Symphoricarpos albus*) particularly in the north, beside the drive leading to the residential property.

Plate 4: Woodland to the west of the lawned area, as seen from the patio of the house

Condition Assessment:

The following points are scored under the woodland criteria: A (age classes – 2 points); B (herbivore damage – 3 points); C (invasive species) – 2 points; D (native tree species) – 3 points; E (cover) – 3 points; F (open space) – 3 points; G (regeneration) – 2 points; H

(health) – 3 points; I (vegetation and ground flora) – 1 point; J (vertical structure) - 2 points; K (veteran trees) – 1 point; L (deadwood) – 1 point; M (disturbance) – 3 points.

29 points (out of 39) are scored.

This equates to a woodland in Moderate Ecological Condition.

This main area of woodland measures 0.047ha in extent.

A smaller area of woodland lies to the south-east of the main house (Plate 5).

Plate 5: Small patch of woodland to the south-east of the main house

This comprises young sycamore and ash, along with pear (*Pyrus communis*), interspersed with bramble.

Condition Assessment:

The following points are scored under the woodland criteria: A (age classes – 1 points); B (herbivore damage – 3 points); C (invasive species) – 3 points; D (native tree species) – 2 points; E (cover) – 3 points; F (open space) – 3 points; G (regeneration) – 2 points; H (health) – 3 points; I (vegetation and ground flora) – 1 point; J (vertical structure) - 1 point; K (veteran trees) – 1 point; L (deadwood) – 1 point; M (disturbance) – 3 points.

28 points (out of 39) are scored.

This equates to a woodland in Moderate Ecological Condition.

This smaller area of woodland measures 0.005ha in total.

4.1.4 Urban – Other developed land: buildings (u1b5)

Two buildings occur on Site: the main dwelling house ‘Hillside’ and a detached garage to the east (Plates 6 and 7 respectively)

The main house has a footprint of approximately 0.024 hectares.

The garage is smaller, with a footprint of 0.002 hectares.

Condition Assessment:

Both structures automatically have Very Poor Ecological Condition.

Plate 6: Main house 'Hillside', as seen from the lawn to the south

Plate 7: Double garage in the east of the Site

4.1.5 Urban – Other developed land (u1b6)

An area of hard-standing occurs to the north-east of the main house, as well as to the east, between the house and the double garage (Plate 8). The Site does not include the narrow access road to the house from Dodworth Green Road seen here on the right.

Plate 8: View of hard-standing to the north of the Site (on the left); the track on the right lies outside of the Site boundary

These areas of hard-standing have a combined area of 0.016ha.

In addition to this, a relatively large patio area lies to the south of the main house (Plate 9).

This patio has a footprint of 0.006 hectares.

A path lies to the south of patio (Plate 10) with a footprint of 0.004 hectares.

Condition Assessment:

All of these areas of sealed surface automatically have Very Poor Ecological Condition.

Plate 9: Patio to the south of the main house (seen here from the east)

Plate 10: Path to the south of the patio pictured above

4.1.6 Tree Line (w1g6)

The row of mature trees along the western Site boundary is classed as a line of trees in UK Hab terms, as the base of the trunks form a strip that is less than 5 metres wide. It is therefore a linear feature, with length but not area in the BNG metric.

The line of trees alongside Dodworth Green Road, on the western Site boundary are separated from the road itself by a tall, stone wall. The trees are tall and mature, and form a continuous canopy (Plate 10).

Plate 11: Line of tree along the western Site boundary, from Dodworth Green Road

Condition Assessment:

The line of trees passes criteria A, B and E, but fails criteria C and D.

This equates to a feature of Moderate Ecological Condition.

The line of trees is 55 metres long.

Whilst other mature/ overgrown hedgerows define the southern and eastern Site boundaries, these essentially appear to lie off-Site, as defined by boundary fencing, overhanging the Stie, rather than being truly on-Site. These features have therefore been excluded from further assessment.

4.1.7 Stream - Other rivers and streams (r2b)

A watercourse is culverted beneath the Site, running diagonally from the central point of the western boundary, south-eastwards, for a distance of approximately 40 metres.

Approximately 0,5 metres beyond the southern Site boundary the watercourse opens up, emerging from a large pipe (Plate 12) and a narrow channel then meanders through semi-

natural woodland for a distance of approximately 15 metres, within the 10 metre wide riparian zone which applies to the Site.

The Smeeden Foreman River Condition Assessment report (Appendix B) states that this watercourse is of Fairly Good Ecological Condition.

Plate 12: Watercourse emerging from culvert, 0.5 metres beyond the southern Site boundary (the wooden fence defomes the Site boundary)

Plate 13: The watercourse then meanders in a south-easterly direction for approximately 15 metres, within 10m of the Site boundary

5.0 Results

5.1 Irreplaceable habitats

No irreplaceable habitats have been identified within the Site.

5.2 BNG baseline habitats and value

Baseline BNG (Biodiversity Net Gain) habitats are summarised in Table 5-1 below.

A description of each baseline habitat and details of which condition assessment criteria were failed are detailed in Section 4 of this report.

Table 5-1: Baseline BNG Value

UK-Hab Code	Baseline Habitat	Baseline Condition	Extent	Biodiversity Units
Area habitats				
g4	Modified grassland	Moderate	0.12 ha	0.48
h3d	Bramble scrub	N/A (Poor)	0.09 ha	0.36
w1g	Woodland – Other broadleaved woodland	Moderate	0.052 ha	0.42
u1b5	Urban – Other developed land (buildings)	N/A	0.026 ha	0.00
U1b6	Urban – Other developed land (hard standing)	N/A	0.026 ha	0.00
Total units				**1.26**
Linear habitats				
W1g6	Line of Trees	Moderate	0.055 km	**0.22**
Linear watercourse habitats				
r2b	Culvert (beneath the Site)	N/A	0.04km	**0.05**
r2b	Stream – Other rivers and streams (off-Site but within the 10m riparian zone)	Fairly Good	0.015 km	**0.23**

5.3 BNG predicted post-development habitats and value

Proposals involve the construction of five detached properties, with an associated access road from the west, into the Site from Dodworth Green Road.

The mature line of trees on the western Site boundary, ostensibly comprising horse chestnut with some sycamore, shall be retained in full, albeit with some lateral reduction and crown lifting to create the access road. No trees are due to be removed to create the access into the Site.

Immediately to the east of the tree line, and to the north and south of the proposed access road, the bramble scrub and young woodland shall be replaced with a form of wildflower grassland. It is proposed that these two areas shall be sown with Emorsgate Seeds EW1

'woodland mixture'[7], or similar. This flower mix contains species such as bluebell (*Hyacinthoides non-scripta*); ramsons (*Allium ursinum*); primrose (*Primula vulgaris*) and red campion (*Silene dioica*) along with a range of other species able to withstand the heavy shading from the adjacent tree line, whilst still providing colour and ecological value. Management would involve a late summer cut, once established, followed by the removal of arisings, though the strip of grassland directly beneath the trees may not require management, other than to removal saplings or invading scrub.

The grassland is likely to attain Moderate Ecological Condition, meeting criteria A to E, but most likely failing criteria F.

The remainder of the Site shall comprise a mixture of the retained house, hard-standing and small area of grassland, new housing and new residential gardens. Although tree planting is proposed, this will only take place within residential gardens, and such planting will therefore only count as part of the garden area.

Table 5-2 details the post-development habitats and their BNG value.

Table 5-2: Post-development BNG value

UK-Hab Code	Post-development habitats	Condition	Extent	Biodiversity Units
Area habitats				
g3c	Other neutral grassland (Emorsgate Seeds EW1 'woodland mix' in west of Site	Moderate	0.076	0.51
g4	Modified grassland (retained lawn immediately south of the retained house, 'Hillside'	Moderate	0.002	0.01
828	Vegetated Garden	N/A (Poor)	0.078 ha	0.14
u1b5	Urban – Other developed land (retained buildings)	N/A	0.026 ha	0.00
u1b6	Urban – Other developed land (retained hardstanding)	N/A	0.026 ha	0.00
w1g	Urban – Other developed land (houses and roads/ other hard-standing)	N/A	0.106 ha	0.00
Total units				**0.66**
Linear hedgerow habitats				
W1g6	Line of Trees	Moderate	0.055km	**0.22**
Linear watercourse habitats				
R2B	Culvert (beneath the Site)	N/A	0.04	**0.05**
r2b	Stream – Other rivers and streams (off-Site but within the 10m riparian zone)	Fairly Good	0.190 m	**0.23**

[7] EW1 Woodland Mixture - Emorsgate Seeds (wildseed.co.uk)

5.4 Biodiversity Net Gain Summary

Table 5-3 summarised the predicted net change in biodiversity units post-development. The full calculations are provided in Appendix E (the statutory metric, supplied in Excel format).

Table 5-1: Biodiversity Net Gain Assessment Summary

Biodiversity Net Gain Unit Type	Baseline Biodiversity Units	Post-Development Biodiversity Units	On-Site Net Change
Habitat units (area)	1.26	0.6	-0.6 units
Hedgerow units (linear)	0.22	0.22	No Change
Watercourse units (linear)	0.28	0.28	No Change

This indicates that, under this scenario, there will be no change in the number of watercourse units or linear habitat units, and a 0.6 biodiversity unit reduction in habitat units.

In order to mitigate for this loss, and to deliver a 1% net gain in habitat units overall, a minimum of 0.61 habitat units shall be delivered off-Site, via a Habitat Bank/ Environment Bank or similar biodiversity credit provider, or through the direct purchase of credits from Barnsley MBC..

The precise delivery details of the BNG units shall be secured by a planning condition requiring the preparation and submission of a Biodiversity Gain Plan.

Appendix A Ecological Impact Assessment, Whitcher Wildlife (January 2024)

Biodiversity Net Gain Assessment

Newett Homes Ltd

6 September 2024

Whitcher Wildlife Ltd.
Ecological Consultants.

GREEN ROAD, DODWORTH.

OS REF: SE 314 050.

ECOLOGICAL IMPACT ASSESSMENT.

Ref No: **220423/EcIA.**

Date: **19th January 2023.**

Cliff Edge, Cliff Road, Darfield, Barnsley, S73 9HR.
Tel. 01226 753271.
info@whitcher-wildlife.co.uk www.whitcher-wildlife.co.uk
Company No. 4401613.

TABLE OF CONTENTS.

1. INTRODUCTION.

1.1. An application is being prepared for the development of an area of land off Green Road, Dodworth.

1.2. 1.2. Whitcher Wildlife Ltd was commissioned to carry out a Preliminary Ecological Appraisal of the site to establish whether there are any issues that may affect the proposed works.

1.3. That survey was carried out on 25th April 2022. During that survey, the site was assessed to provide potential value for foraging and commuting bats and further bat transect and automated surveys were recommended. Those surveys were carried out over a course of six months from May to October inclusive.

1.4. This Ecological Impact Assessment (EcIA) has been prepared based on the findings of the surveys carried out to date and outlines all relevant mitigation and enhancements that will be incorporated into the proposed development.

1.5. Appendices I to III of this report provides additional information on specific species and are designed to assist the reader in understanding the contents of this report.

****

2. SURVEY METHODOLOGY.

2.1. Prior to visiting the site, the survey area was cross referenced to maps and aerial photographs to give a general idea of the habitats and potential issues within the area and to identify potential access and walking routes.

2.2. The survey area was walked where access was agreed and public rights of way were used where no access was agreed. All habitats within and immediately around the survey area were documented and the dominant species within that habitat listed in line with the JNCC Handbook for Phase 1 Habitat surveys.

2.3. The survey area and immediate surrounding area was thoroughly searched for evidence of badger (*Meles meles*) activity by looking for the following signs in line with Harris S, Cresswell P and Jefferies D (1989). *Surveying Badgers*. Mammal Society: -

* Badger setts.
* Badger latrines or dung pits.
* Badger snuffle holes and evidence of foraging.
* Badger paths.
* Badger prints in areas of soft mud.
* Badger hairs caught on fencing.

2.3. The survey area was searched for watercourses and where found all watercourses within the survey area and for approximately 100m in each direction were thoroughly searched for evidence of water vole (*Arvicola amphibius*) activity by looking for the following signs, in line with Dean M, Strachen R, Gow D and Andres R (2016). *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series).* Eds Fiona Mathews and Paul Chanin. The mammal Society, London: -

* Water vole burrows.
* Water vole faeces and latrines.
* Water vole feeding stations.
* Water vole runs.
* Water vole prints in areas of soft mud.
* Water vole lawns.
* Predator field signs.

2.5. The survey area was searched for watercourses and where found all watercourses within the survey area and for approximately 50m in each direction were thoroughly searched for evidence of otter (*Lutra lutra*) activity by looking for the following signs in line with the P Chanin (2003). *Monitoring the Otter* and *Conserving Natura 2000 Rivers: Monitoring Series No10 Guidelines: -*

* Otter prints in soft mud.
* Otter spraints.
* Otter Holts.

2.6. The survey area was searched for watercourses and waterbodies. Where found, and where safe to enter the water, all were thoroughly searched for the presence of crayfish, for approximately 50m in each direction of the site, by searching under rocks and logs. Where stated, crayfish traps were also deployed into the watercourse. All survey work was carried out in accordance with the *Conserving Natural 2000 Rivers Monitoring Series No 1, Protocol for Monitoring the White Clawed Crayfish*.

2.7. The survey area was searched for trees and structures and where found these were checked for potential bat roosting sites in line with Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition)* by looking for the following signs: -

* Holes, cracks or crevices.
* Bat Droppings.

2.8. The land immediately adjacent to the survey area was assessed for bat roosting potential and bat foraging potential. Connective routes and flight lines were also assessed whilst on site and using maps of the area.

2.9. The area within 500m of the survey site was cross referenced to maps to highlight all ponds close to the site. Where possible, all ponds identified were accessed using agreed access or public rights of way to assess the potential for great crested newts (*Triturus cristatus*) to be present.

2.10. The survey area was assessed for the potential for reptiles and suitable reptile habitats. Where applicable the area was also searched for the presence of reptiles.

2.11. Where appropriate, the habitat within and surrounding the survey area was searched for species such as hazel, oak, honeysuckle, bramble and other species which may provide potential habitat for hazel dormice (*Muscardinus avellanarius*). Field signs such as feeding remains and nests were also searched for where possible,

in line with P Bright, P Morris and T Mitchell-Jones *The Dormouse Conservation Handbook 2nd Edition*.

2.12. Where appropriate, the area within and surrounding the survey area was assessed for its potential to house habitat for red squirrels. Field signs of red squirrels were searched for at least every 50m, looking for any dreys, feeding signs or sightings of red squirrels.

2.13. All surveys were carried out in line with the Chartered Institute of Ecological and Environmental Management (CIEEM) survey standards and advice.

2.14. This document is prepared in line with The National Planning Policy Framework (NPPF). This sets out the government policy on biodiversity and nature conservation and places a duty on Planning Authorities to give material consideration to the effect of a development on legally protected species when considering planning applications. The NPPF and the Planning Practice Guidance on "Natural Environment" also promote sustainable development by ensuring that developments take account of the role and value of biodiversity and that it is conserved and enhanced within the development.

2.15. This report is prepared in line with the Natural Environment and Rural Communities (NERC) Act that came into force on 1st Oct 2006. Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England.

2.16. This survey was carried out by Ruth Georgiou BSc MCIEEM. Since 2004 Ruth has had experience in a professional capacity as a Wildlife Consultant carrying out ecology surveys and phase I habitat surveys. As a full member of CIEEM Ruth is subject to peer review on an annual basis. Ruth holds Natural England survey licences in respect of bats, great crested newts and white clawed crayfish and has held her own or has been named ecologist on site specific licences for badgers, great crested newts and bats. She also holds a degree in Environmental Science (BSc) and has successfully completed a number of courses run by CIEEM, BCT and FSC in the relative protected species, carrying out phase I habitat surveys and BREEAM assessments.

2.17. Bat Transect/Automated Surveys:

2.17.1. A suitable transect route was identified across the site with stop points identified along the route providing a snapshot of activity in various separate habitats.

2.17.2. The transect route was walked on several occasions throughout the season in line with L Hundt (2012). *Bat Conservation Trust Good Practice Guidelines* based on the value of the habitats present.

2.17.3. During each transect survey static Anabat Express units were erected at several points along the transect route in line with L Hundt (2012). *Bat Conservation Trust Good Practice Guidelines.* These static units remained in place for a period of at least five consecutive days.

2.17.4. All survey work was carried out in line with Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition).*

2.17.5. These surveys were carried out by:

James Campbell MCIEEM. Since 2003 James has had experience in a professional capacity as a Wildlife Consultant carrying out Ecology Surveys and Phase 1 Habitat surveys and is a full member of CIEEM. James holds licences with several licensing bodies including: -

- Natural England Survey Licences in respect of bats, great crested newts, white clawed crayfish and barn owls.
- Scottish Natural Heritage Licences in respect of bats and great crested newts.
- Countryside Council for Wales Licences in respect of bats and great crested newts.

He has also successfully completed numerous courses run by CIEEM, BCT and FSC regarding protected species and in carrying out Phase 1 Habitat surveys. He is also confined spaces trained and qualified to NVQ Level 2 in tree climbing and aerial rescue.

and

Mitchel Greenhalgh, a wildlife consultant with an array of experience in conducting ecological surveys on a variety of flora and fauna in a professional capacity. Mitchel holds a Natural England survey licence in respect of bats and has attended courses run by CIEEM and the FSC. Mitchel also holds a BSc in environmental science attained from the University of Leeds and he is a qualifying member of CIEEM.

****

3. SURVEY RESULTS.

3.1. Data Search Results.

3.1.1. A data search request was submitted to the Barnsley Biological Record Centre for records of protected species or designated sites within 2km of the survey area.

3.1.2. The results show that there are various records of common birds in the area. The most relevant species record is a record of hedgehog within 100m of the survey area. No other relevant species records were provided.

3.1.3. The results also show that there are no statutory designated sites within 2km.

3.1.4. There are five Barnsley Local Wildlife Sites within the 2km radius. The closest of these lies 830m from the closest point of the site. The remaining sites lie further away and extend over the 2km buffer.

3.1.5. A data search request was submitted to the South Yorkshire Bat Group for any existing records of bat roosts within 2km of the survey area.

3.1.6. The results show a number of bat roost records within the 2km radius, but none lie within the red line boundary of the site.

3.1.7. The closest records are four separate Pipistrelle bat roosts recorded in bungalows/houses along Strafford Walk, the closest of which seems to be a property adjacent to the south east corner of the survey area. The rest are located approximately 50m, 200m and 360m from the closest point of the survey area.

3.1.8. There is a record of a maternity bat roost (species unknown) on Nostell Fold approximately 150m from the closest point of the survey area.

3.1.9. The next closest bat roost is located on St Johns Close approximately 185m from the survey area. All other roost records are located in excess of 185m from the closest point of the site.

3.1.10. The species recorded within 2km of the site include Common Pipistrelle, Soprano Pipistrelle, Noctule, Serotine, Leislers, Brown Long Eared, Whiskered, Natterers and Daubentons.

3.1.11. A data search was submitted to the South Yorkshire Badger Group for records of any existing badger setts within 2km of the survey area. The results show there are records of badger setts in the Silkstone and Stainborough area, but no records on or adjacent to the survey area.

3.1.12. Full copies of the data search results can be provided upon request but must not be placed in the public domain.

3.2. The Surveyed Area.

3.2.1. The survey area is located on the edge of the town of Dodworth, surrounded by residential properties, tree lines and open fields. In the wider surrounding area there are areas of woodland and industrial areas.

3.2.2. The aerial map below shows the location of the survey area, circled in red, and the surrounding area.

3.2.3. The survey area comprises three parcels of land owned by three separate properties that lie adjacent, but the existing main properties will be retained with just some of the land associated with them being developed.

3.2.4. The limits of the survey area are outlined in red in the aerial map below.

3.3. Description of Habitats.

3.3.1. Appendix IV of this report contains annotated maps marked up with the varying habitats that are cross referenced to target notes in Appendix V of this report. The habitats are described below, with a condition assessment table provided. The full description of each criteria provided in Appendix VI of this report. The habitats on and adjacent to the site are: -

- Dense Scrub
- Improved Grassland
- Tall Ruderal Herb
- Semi Improved Neutral Grassland
- Bare Ground
- Broadleaved Woodland
- Scattered Trees
- Building

- Running Water
- Species Poor Intact Hedgerow
- Wall
- Fence

3.3.2. Dense Scrub.

3.3.2.1. There are various areas of dense scrub across the site. S1: At the northern end of the site, there is a large garden that has some areas that have been left untended and have become very much overgrown with natural scrub species, predominantly bramble *(Rubus fruticosus)*, with some elder *(Sambucus nigra)*, cleavers *(Galium aparine)*, nettle *(Urtica dioica)*, holly *(Ilex aquifolium)*, privet *(Ligustrum sp)*, dock *(Rumex sp)*, cow parsley *(Anthriscus sylvestris)*, hebe *(Hebe sp)*, rosebay willowherb *(Chamerion angustifolium)* and forsythia *(Forsythia sp)*.

3.3.2.2. The photographs below demonstrate these areas of scrub associated with the garden.

3.3.2.3. S2: There is also some scrub habitat that extends along the banks of the watercourse that flows across the middle of the site. This scrub includes bramble *(Rubus fruticosus)*, elder *(Sambucus nigra)*, hawthorn *(Crataegus monogyna)*, buddleia *(Buddleja sp)* and tree saplings including horse chestnut *(Aesculus hippocastanum)*, sycamore *(Acer pseudoplatanus)* and ash *(Fraxinus excelsior)*. There is a ground flora throughout the scrub habitat that includes nettle *(Urtica dioica)*, rosebay willowherb *(Chamerion angustifolium)*, cleavers *(Galium aparine)*, cow parsley *(Anthriscus sylvestris)*, nettle *(Urtica dioica)*, ivy *(Hedera helix)* and lesser celandine *(Ficaria verna)*.

3.3.2.4. The photographs below show the scrub habitat along the watercourse.

3.3.2.5. S3: Finally, there is an expanse of scrub habitat that extends throughout the area of land on the southern part of the site. This is bramble *(Rubus fruticosus)* scrub that is gradually encroaching across the grassland habitat in the centre of this area. This is partly shown in the photograph below.

3.3.2.6. A summary of the condition assessment of these habitats is provided below:

Condition Assessment Criteria	**Condition Achieved (Y/N)**		
	S1	**S2**	**S3**
1 – Representative of UKHab description	N	N	N
2 – Age range	N	N	N
3 – Non-native species	N	N	N
4 – Edge vegetation	N	N	N
5 – Clearings, glades or rides	N	N	N
Condition Assessment:	**Poor**	**Poor**	**Poor**

3.3.3. Improved Grassland.

3.3.3.1. The areas of improved grassland habitat mapped on the site are areas of grassland that are used as lawns associated with private houses. These are regularly mown and therefore the grassland is very short. This is demonstrated in the photographs below.

3.3.3.2. The species within this habitat are common species that are associated with garden lawns, including perennial ryegrass *(Lolium perenne)*, Yorkshire fog *(Holcus lanatus)*, fescue *(Festuca sp)*, annual meadow grass *(Poa annua)*, clover *(Trifolium repens)*, dandelion *(Taraxacum officinale)*, creeping buttercup *(Ranunculus repens)*, daisy *(Bellis perennis)*, ribwort plantain *(Plantago lanceolata)* and field woodrush *(Luzula campestris)*. There is also some lesser celandine *(Ficaria verna)* growing in this grassland where it extends close to the watercourse that flows across the middle of the site.

3.3.3.3. A summary of the condition assessment of this habitat is provided below:

Condition Assessment Criteria	**Condition Achieved (Y/N)**
1 – Species per m2	N
2 – Sward height	N
3 – Scattered scrub cover	Y
4 – Physical damage	Y
5 – Bare ground	Y
6 – Bracken cover	Y
7 – Non-native species	Y
Condition Assessment:	**Moderate**

3.3.4. Tall Ruderal Herb.

3.3.4.1. There is tall ruderal herb growing in two main areas across the site. TR1: One is along part of the north bank of the watercourse that flows across the middle of the site. This is predominantly nettle *(Urtica dioica)*, rosebay willowherb *(Chamerion angustifolium)* and ivy *(Hedera helix)* with some sparse bramble *(Rubus fruticosus)*. This is shown in the photograph below.

3.3.4.2. TR2: The second area of tall ruderal herb extends along the southern end of the site. This area is generally wet and also lies adjacent to another watercourse that flows along/outside the southern boundary of the survey area. The species growing across this area includes lesser celandine *(Ficaria verna)*, nettle *(Urtica dioica)*, rosebay willowherb *(Chamerion angustifolium)*, cleavers *(Galium aparine)*, Himalayan balsam *(Impatiens glandulifera)*, dock *(Rumex sp)*, garlic mustard *(Alliaria petiolata)*, hairy bittercress *(Cardamine hirsuta)* and ivy *(Hedera helix)*. This area is shown in the photograph below.

3.3.4.3. A summary of the condition assessment of these habitats is provided below:

Condition Assessment Criteria	**Condition Achieved (Y/N)**	
	TR1	**TR2**
1 – Vegetation structure	N	N
2 – Flowering plant species	N	N
3 – Non-native species	Y	N
Condition Assessment:	**Poor**	**Poor**

3.3.5. Semi Improved Neutral Grassland.

3.3.5.1. There is one area of semi improved neutral grassland that lies in the southern part of the site and it is enclosed by dense bramble *(Rubus fruticosus)* scrub that is

gradually superseding the grassland habitat. The grassland is predominantly tufted hair grass *(Deschampsia cespitosa)*, cocksfoot *(Dactylis glomerata)* and meadow foxtail *(Alopecurus pratensis)* with some occasional cow parsley *(Anthriscus sylvestris)*, thistle *(Cirsium sp)*, Yorkshire fog *(Holcus lanatus)*, common hogweed *(Heracleum sphondylium)* and bittercress *(Cardamine sp)*.

3.3.5.2. This grassland appears to have been subject to some level of management in recent history, with historic maps showing that the area has been cut in the past. The species composition suggests that there has been some level of management of this area.

3.3.5.3. A summary of the condition assessment of this habitat is provided below:

Condition Assessment Criteria	**Condition Achieved (Y/N)**
1 – Matches specific grassland type	N
2 – Sward height	Y
3 – Bare ground	Y
4 – Bracken cover	Y
5 – Non-native species	Y
6 – Species per m2	N
Condition Assessment:	**Moderate**

3.3.6. Bare Ground.


The areas of bare ground habitat that have been mapped refer to areas of hard standing drive way and paths associated with the private housing, and areas of bare ground where some investigation works have been carried out and now comprises just bare earth.

3.3.7. Broadleaved Woodland.

3.3.7.1. There is an area of woodland at the southern end of the survey area. This is a small, wooded bank that extends down towards the watercourse that flows along/outside the southern boundary of the site. This bank of trees is linked into other woodland habitat.

3.3.7.2. The woodland habitat is predominantly sycamore *(Acer pseudoplatanus)* trees with some holly *(Ilex aquifolium)*, hawthorn *(Crataegus monogyna)* and willow *(Salix sp)*. The ground flora includes ivy *(Hedera helix)*, lesser celandine *(Ficaria verna)*, cleavers *(Galium aparine)*, bramble *(Rubus fruticosus)* and ferns.

3.3.7.3. A summary of the condition assessment of this habitat is provided below:

Attributes and functional groupings	**Score per indicator**
1 – Age distribution of trees[1]	1
2 – Wild, domestic and feral herbivore damage	3
3 – Invasive plant species[3]	2
4 – Number of native tree species	2
5 – Cover of native tree and shrub species	3
6 – Open space within woodland[4]	3
7 – Woodland regeneration[5]	1
8 – Tree health	3
9 – Vegetation and ground flora	1
10 – Woodland vertical structure[6]	1
11 – Veteran trees[7]	1
12 – Amount of deadwood	1
13 – Woodland disturbance[8]	3
Total:	25
Condition Assessment:	**Poor**

3.3.8. Scattered Trees.

3.3.8.1. There are various scattered trees across the site, predominantly along the boundaries. These include hawthorn *(Crataegus monogyna)*, sycamore *(Acer pseudoplatanus)* and ash *(Fraxinus excelsior)*. Some of these are shown in the photographs below.

3.3.8.2. A summary of the condition assessment of the scattered trees across the site is provided below:

Condition Assessment Criteria	Condition Achieved (Y/N)
1 – Native species	N
2 – Tree canopy	N
3 – Mature/veteran trees	N
4 – Anthropogenic activities	Y
5 – Micro-habitats	Y
6 – Ground vegetation	Y
Condition Assessment:	**Moderate**

3.3.8.3. There are two tree lines associated with the garden habitats. One tree line, referenced TL1, forms a boundary between the two properties at the northern end of the site, which is a line of red cedar *(Thuja plicata)* trees with some elder *(Sambucus nigra)*. This tree line is approximately 12m in height and fairly dense, as shown in the photograph below.

3.3.8.4. There is another treeline, referenced TL2, that extends along the western boundary of the property at the north west end of the site. This is a line of mature horse chestnut trees *(Aesculus hippocastanum)*, as shown in the photograph below.

3.3.8.5. The above tree line links into a tree line that extends along the western bank of the watercourse that flows across the middle of the site (TL3). That tree line is predominantly sycamore *(Acer pseudoplatanus)* with some holly *(Ilex aquifolium)* and ash *(Fraxinus excelsior)* and an understorey of scrub that has already been described in this report.

3.3.8.6. A summary of the condition assessment of these habitats is provided below:

Condition Assessment Criteria	Condition Achieved (Y/N)		
	TL1	**TL2**	**TL3**
1 – Native species	N	N	N
2 – Tree canopy	Y	Y	Y
3 – Mature/veteran trees	N	Y	N
4 – Adjacent vegetation	N	N	N
5 – Tree health	Y	Y	Y
Condition Assessment:	**Poor**	**Moderate**	**Poor**

3.3.9. Building.

There are four structures within the survey area. These include one double garage, one garden shed, one small storage cage and a green house. These are addressed separately in the bat survey results section.

3.3.10. Running Water.

3.3.10.1. There are two watercourses within or close to the survey area. One of these flows straight through the middle of the survey area. This flows through a deep channel that appears to have been deepened to accommodate more water during high levels of rainfall. The banks are mostly shaded and bare or have some ivy *(Hedera helix)*, nettle *(Urtica dioica)* or bramble *(Rubus fruticosus)* growing. The water was very shallow at the time of this survey, an average depth of approximately 5cm with a moderate flow over a stony bed. This watercourse is shown in the photograph below.

3.3.10.2. The other watercourse flows along/just outside the southern boundary of the site. This is a slow flowing watercourse, up to 12cm deep at the time of this survey with a silt bed. It is approximately 1.5m wide and the banks are shallow and mostly shaded with some tall ruderal herb species growing as previously described in this report. This watercourse is shown in the photograph below.

3.3.11. Species Poor Intact Hedgerow.

3.3.11.1. There are three hedgerows within the survey area. The first of these forms a boundary between the gardens of the two properties at the northern end of the site and is referenced H1. It is approximately 27m in length. This hedgerow comprises predominantly hawthorn *(Crataegus monogyna)* with individual stands of sycamore *(Acer pseudoplatanus)*, holly *(Ilex aquifolium)*, rowan *(Sorbus aucuparia)* and yew *(Taxus baccata)*. This hedgerow is approximately 10m high and 4m wide, as shown in the photograph below.

3.3.11.2. There is another small length of hedgerow, referenced H2, on the eastern boundary of the site, only 19m in length. This is a conifer hedge approximately 3m high. This can just be seen in the photograph below.

3.3.11.3. Lastly, there is a hedgerow extending along two sides of an area of improved grassland that is used as a garden area, referenced H3, approximately 35m in length. This is an ornamental laurel *(Laurus nobilis)* hedgerow, approximately 2m high and 1m wide, with a gap in the middle.

3.3.11.4. A summary of the condition assessment of these habitats is provided below:

Attributes and functional groupings	**Condition Achieved (Y/N)**		
	H1	**H2**	**H3**
A1 – Height	Y	Y	Y
A2 – Width	Y	Y	N
B1 – Gap – hedge base	N	N	N
B1 – Gap – hedge base	Y	Y	N
C1 – Undisturbed ground and perennial vegetation	N	N	N
C2 – Undesirable perennial vegetation	N	N	N
D1 – Invasive neophyte species	Y	Y	Y
D2 – Current damage	Y	Y	Y
Condition Assessment:	**Poor**	**Poor**	**Poor**

3.3.12. Wall.

There are various sections of wall across the site. These comprise a mix of low and overgrown brick and stone walls. Some of these are shown in the photographs below.

3.3.13. Fence.

There are various boundary fences around the site, some of which are shown in the photographs below.

3.4. Description of Fauna.

3.4.1. No badger setts or badger field signs were identified within the survey area.

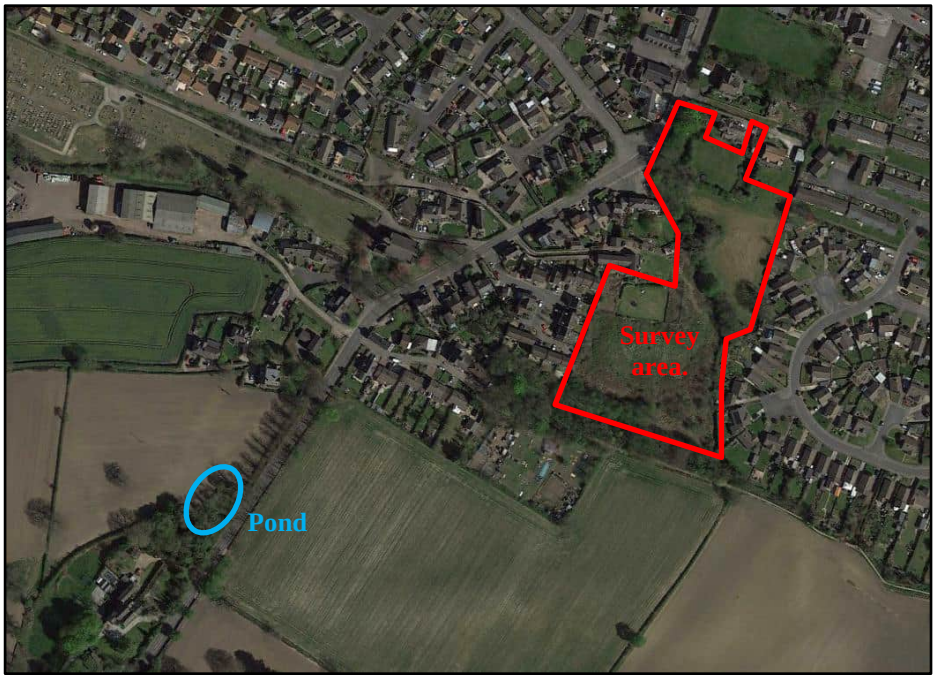
3.4.2. There are two watercourses within the survey area. Both watercourses lack suitable vegetation cover and species that are typically suitable for water voles. No water vole burrows, otter holts or any field signs for these species were identified along either watercourse.

3.4.3. The watercourses are assessed as unsuitable habitat for white clawed crayfish as both watercourses are shown to be heavily fragmented on maps of the area and there are no records for the species in the area.

3.4.4. One pond is shown on maps located approximately 230m from the south west corner of the survey area. This is located on private land and is not visible from the adjacent public road. Therefore, it is not possible to assess the pond for potential for great crested newts. Maps show that the pond is located in a patch of woodland. A main road extends between the pond and the survey area that is likely to act as a barrier to the movement of newts, as well as some other residential houses. If newts were to cross the main road, there is no direct access for them to the site. They would have to move around residential properties and boundaries. For this reason, as there is good terrestrial habitat close to the pond it is assessed as highly unlikely that great

crested newts would be present within the survey area and will not be considered further in this assessment.

3.4.5. The location of the pond in relation to the survey area is shown in the map below.



3.4.6. There are four ‘buildings’ that have been mapped within the survey area. These are each addressed separately below.

3.4.7. Building 1 is a double garage as shown below. This is a single storey building with a flat felt roof and pebble dash walls with wooden fascias. The roof, walls and fascias are all well sealed and therefore this is assessed to provide negligible potential for roosting bats.

3.4.8. Building 2 is a small wooden shed, as shown below. It has a flat, felt covered, wooden roof that is in very poor condition and very much dilapidated. This is assessed to provide negligible potential for roosting bats.

3.4.9. Building 3 is a caged structure, shown below, that is used to lock up garden equipment as shown in the photograph below.

3.4.10. Building 4 is a standard greenhouse that is constructed entirely of glass and very much overgrown on all sides. It provides negligible potential for roosting bats and is shown below.

3.4.11. None of the walls within the survey area provide any suitability for roosting bats.

3.4.12. There are a number of trees within the survey area. It was not possible to undertake a thorough inspection of all trees due to the high number, but no obvious features that provide potential for roosting bats were identified.

3.4.13. Some of the horse chestnut trees along the boundary in the north west corner of the site display some loose bark that could potentially be used by individual opportunistic bats. Also, there are a number of trees that have a cover of ivy on the main trunk. Such trees described above are all assessed to provide low potential for roosting bats.

3.4.14. The survey area was assessed for potential for foraging and commuting bats. The southern part of the site is heavily vegetated with scrub, woodland and trees. This provides some good foraging potential for bats. The northern part of the site is mostly improved grassland that isn't ideal for foraging bats.

3.4.15. The tree lines and hedgerows across the site also provide some potential commuting routes across and around the site.

3.4.16. With the number of bat roost records in close proximity to the site, including a maternity roost, the survey area is assessed to provide moderate suitability for foraging and commuting bats.

3.4.17. There is potential for nesting birds in the vegetation, walls and buildings within the survey area. A nesting bird survey was not included in this initial PEA as the results are only valid for a couple of days but bird activity was noted across the site in the areas of dense vegetation.

3.4.18. The survey area is assessed to provide some potential habitat for reptiles, although the site is relatively isolated from other areas of suitable reptile habitat. The only connectivity to the site is along a the woodland corridor to the south end of the site. There are no records of reptiles in the area. Therefore, it is assessed that there is low potential for low numbers of common reptile species on the site.

3.4.19. The survey area lies outside the natural range of hazel dormouse therefore there are no hazel dormouse present within the survey area.

3.4.20. There are no habitats within the survey area suitable for red squirrel and the site lies outside the natural range of the species.

3.4.21. There are records of hedgehog in the area. The nature of the site provides some potential habitat for hedgehogs, although none were identified during this survey.

3.4.22. Three invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act (1981) were identified within the survey area.

3.4.23. A large clump of rhododendron was identified growing in one of the gardens at the north end of the site, shown in the photograph below.

3.4.24. One cotoneaster plant was identified growing on the eastern site boundary, shown in the photograph below.

3.4.25. Lastly, what appears to be Himalayan balsam seedlings were identified growing on the ground adjacent to the watercourse that flows along/outside the southern boundary of the survey area. These are shown in the photograph below.

3.5. Bat Survey Transect Results.

3.5.1. Transect Survey Results.

3.5.1.1. Six transect surveys were carried out during 2022. These were carried out during the months of May, June, July, August, September and October.

3.5.1.2. The aerial photograph below shows the bat transect survey route and stopping points. During each survey the site is walked, pausing for five minutes at each stopping point and recording bat activity throughout.

3.5.1.3. Each transect was walked by a Whitcher Wildlife Ltd ecologist and holder of a Natural England bat class licence to survey for bats. The surveyor was equipped with a Batbox Duet detector and also an Anabat recorder, which records bat activity for subsequent computer analysis using Analook Software.

3.5.1.4. The table below show the observations of the surveyors and recordings of the Anabats against the route and stopping points.

Table 1. Transect Survey Results, 31st May 2022.

The May transect survey was carried out by James Campbell. Sunset on the night of the survey was at 21.23. The weather at the time of the survey was overcast but still (BWS 1) with a temperature of 14°C at the beginning of the survey.

Location	Time (start-end)	Surveyor Results.	Anabat Recordings.
Stop 1.	21.23-21.28	21.26 Common Pipistrelle flow over the site from the northeast to the southwest.	21.26 Common Pipistrelle. 21.27 Common Pipistrelle.
Walk.	21.28-21.29	No bat activity.	No recordings.
Stop 2.	21.29-21.34	No bat activity.	No recordings.
Walk.	21.34-21.35	No bat activity.	No recordings.
Stop 3.	21.35-21.40	No bat activity.	No recordings.
Walk.	21.40.21.41	No bat activity.	No recordings.
Stop 4.	21.41-21.46	No bat activity.	No recordings.
Walk.	21.46-21.47	No bat activity.	No recordings.
Stop 5.	21.47-21.52	21.49 Common Pipistrelle foraging along the central tree line north to south.	21.49 Common Pipistrelle. 21.50 Common Pipistrelle. 21.50 Common Pipistrelle.
Walk.	21.52-21.53	No bat activity.	No recordings.
Stop 6.	21.53-21.58	No bat activity.	No recordings.
Walk.	21.58-21.59	No bat activity.	No recordings.
Stop 7.	21.59-22.04	No bat activity.	No recordings.
Walk.	22.04-22.06	No bat activity.	No recordings.
Stop 8.	22.06-22.11	No bat activity.	No recordings.
Walk.	22.11-22.12	No bat activity.	No recordings.
Stop 9.	22.12-22.17	No bat activity.	No recordings.
Walk.	22.17-22.18	No bat activity.	No recordings.
Stop 10.	22.18-22.23	No bat activity.	No recordings.
Walk.	22.23-22.24	No bat activity.	No recordings.
Stop 11.	22.24-22.29	No bat activity.	No recordings.
Walk.	22.29-22.30	No bat activity.	No recordings.

Stop 12.	22.30-22.35	No bat activity.	No recordings.
Walk.	22.35-22.36	No bat activity.	No recordings.
Stop 13.	22.36-22.41	No bat activity.	No recordings.
Walk	22.41-22.42	No bat activity.	No recordings.
Stop 14.	22.42-22.47	No bat activity.	No recordings.
Walk.	22.47-22.48	No bat activity.	No recordings.
Stop 15.	22.48-22.53	No bat activity.	No recordings.
Walk.	22.53-22.55	No bat activity.	No recordings.
Stop 16	22.55-23.00	No bat activity.	No recordings.
Walk.	23.00-23.03	No bat activity.	No recordings.

Table 2. Transect Survey Results, 24th June 2022.

The June transect survey was carried out by Mitch Greenhalgh. Sunset on the night of the survey was at 21.40 with the survey extending from 21.40 to 23.10. The weather at the time of the survey was fine with a moderate breeze (BWS 2) with a temperature of 18°C at the beginning of the survey.

Location	Time (start-end)	Surveyor Results.	Anabat Recordings.
Stop 1.	21:40 – 21:45	No bat activity.	No recordings.
Walk.	21:45 – 21:46	No bat activity.	No recordings.
Stop 2.	21:46 – 21:51	No bat activity.	No recordings.
Walk.	21.51 – 21.52	No bat activity.	No recordings.
Stop 3.	21:52 – 21:57	Two Common Pipistrelle bats continuously foraging along tree line. 21:55 Common Pipistrelle flew over east to west.	21:53 Common Pipistrelle x 3 21:54 Common Pipistrelle x 4 21:55 Common Pipistrelle x 3 21:56 Common Pipistrelle
Walk.	21.57 – 21.58	No bat activity.	No recordings.
Stop 4.	21:58 – 22:03	No bat activity.	No recordings.
Walk.	22:03 – 22:04	No bat activity.	No recordings.
Stop 5.	22:04 – 22:09	No bat activity.	No recordings.
Walk.	22:09 – 22:10	No bat activity.	22:10 Common Pipistrelle x 3

Stop 6.	22:10 – 22:15	No bat activity.	22:11 Common Pipistrelle x 4 22:12 Common Pipistrelle x 3 22:13 Common Pipistrelle x 4 22:14 Common Pipistrelle x 4 22:15 Common Pipistrelle x 4
Walk.	22:15 – 22:16	No bat activity.	22:16 Common Pipistrelle x 5 22:17 Common Pipistrelle x 4 22:18 Common Pipistrelle x 3
Stop 7.	22:16 – 22:21	22:16 – 22:18 Common Pipistrelle foraging along tree line. 22:18 – Common Pipistrelle passed over east to west.	21:19 Common Pipistrelle
Walk.	22:21 – 22:22	No bat activity.	No recordings.
Stop 8.	22:22 – 22:27	No bat activity.	No recordings.
Walk.	22:27 – 22:28	No bat activity.	No recordings.
Stop 9.	22:28 – 22:33	No bat activity.	No recordings.
Walk.	22:33 – 22:34	No bat activity.	No recordings.
Stop 10.	22:34 – 22:39	No bat activity.	No recordings.
Walk.	22:39 – 22:40	No bat activity.	No recordings.
Stop 11.	22:40 – 22:45	No bat activity.	No recordings.
Walk.	22:45 – 22:46	No bat activity.	No recordings.
Stop 12.	22:46 – 22:51	No bat activity.	No recordings.
Walk.	22:51 – 22:52	No bat activity.	No recordings.
Stop 13.	22:52 – 22:57	No bat activity.	No recordings.
Walk	22:57 – 22:58	No bat activity.	No recordings.
Stop 14.	22:58 – 23:03	No bat activity.	No recordings.
Walk.	23:03 – 23:04	No bat activity.	No recordings.
Stop 15.	233:04 – 23:09	No bat activity.	No recordings.
Walk.	23:09 – 23:10	No bat activity.	No recordings.
Stop 16	23:10 – 23:15	No bat activity.	No recordings.
Walk.	23.15 – 23:16	No bat activity.	No recordings.

Table 3. Transect Survey Results, 7th July 2022.

The August transect survey was carried out by Mitch Greenhalgh. Sunset on the night of the survey was at 21.35 with the survey extending from 21.35 to 23.06. The weather at the time of the survey was warm and humid with a temperature of 16°C at the beginning of the survey.

Location	Time (start-end)	Surveyor Results.	Anabat Recordings.
Stop 1.	21:35 – 21:40	No bat activity.	No recordings.
Walk.	21:40	No bat activity.	No recordings.
Stop 2.	21:40 – 21:45	No bat activity.	No recordings.
Walk.	21:45 – 21:46	No bat activity.	No recordings.
Stop 3.	21:46 – 21:51	No bat activity.	No recordings.
Walk.	21:51	No bat activity.	No recordings.
Stop 4.	21:51 – 21:56	No bat activity.	No recordings.
Walk.	21:56 – 21:57	No bat activity.	No recordings.
Stop 5.	21:57 – 22:03	No bat activity.	No recordings.
Walk.	22:03	No bat activity.	No recordings.
Stop 6.	22:03 – 22:08	22:03 Common Pipistrelle passed over west to east. 22:04 Common Pipistrelle foraging along tree line. 22:05 Second bat foraging along tree line.	No recordings.
Walk.	22:08	No bat activity.	No recordings.
Stop 7.	22:08 – 22:13	22:11 Common Pipistrelle continuously foraging overhead.	22:11 Common Pipistrelle x2 22:12 Common Pipistrelle x4 22:13 Common Pipistrelle x2
Walk.	22:13 – 22:14	No bat activity.	No recordings.
Stop 8.	22:14 – 22:19	No bat activity.	22:16 Common Pipistrelle
Walk.	22:19	No bat activity.	No recordings.
Stop 9.	22:19 – 22:24	No bat activity.	No recordings.
Walk.	22:24 – 22:25	No bat activity.	No recordings.
Stop 10.	22:25 – 22:30	No bat activity.	No recordings.
Walk.	22:30 – 22:31	No bat activity.	No recordings.
Stop 11.	22:31 – 22:36	No bat activity.	No recordings.

Walk.	22:36 – 22:7	No bat activity.	No recordings.
Stop 12.	22:37 – 22:42	No bat activity.	No recordings.
Walk.	22:42 – 22:43	No bat activity.	No recordings.
Stop 13.	22:43 – 22:48	No bat activity.	No recordings.
Walk	22:48 – 22:49	No bat activity.	No recordings.
Stop 14.	22:49 – 22:54	No bat activity.	No recordings.
Walk.	22:54 – 22:55	No bat activity.	No recordings.
Stop 15.	22:55 – 23:00	No bat activity.	No recordings.
Walk.	23:00 – 23:01	No bat activity.	No recordings.
Stop 16	23:01 – 23:06	No bat activity.	No recordings.
Walk.	23:06 – 23:07	No bat activity.	No recordings.

Table 4. Transect Survey Results, 7th August 2022.

The July transect survey was carried out by Mitch Greenhalgh. Sunset on the night of the survey was at 20:11 with the survey extending from 20:11 to 21:44. The weather at the time of the survey was clear and warm with a temperature of 19°C at the beginning of the survey.

3.5.6.3. The table below shows the results from the transect survey.

Location	**Time (start-end)**	**Surveyor Results.**	**Anabat Recordings.**
Stop 1.	20:11 – 20:16	Common Pipistrelle flew over north to south	20:12 Common Pipistrelle
Walk.	20:16 – 20:17	No bat activity.	No recordings.
Stop 2.	20:17 – 20:22	20:21 Two Common Pipistrelles foraging along tree line then flew south	20:21 Common Pipistrelle
Walk.	20:22	No bat activity.	No recordings.
Stop 3.	20:22 – 20:27	20:23 Common Pipistrelle foraging along tree line. 20:25 Common Pipistrelle flew over north to south. 20:27 Common Pipistrelle heard not seen.	20:23 Common Pipistrelle x3 20:26 Common Pipistrelle
Walk.	20:27 – 20:28	No bat activity.	No recordings.

Stop 4.	20:28 – 20:33	20:32 Common Pipistrelle heard not seen	20:32 Common Pipistrelle
Walk.	20:33 – 20:34	No bat activity.	No recordings.
Stop 5.	20:34 – 20:39	No bat activity.	No recordings.
Walk.	20:39 – 20:40	No bat activity.	No recordings.
Stop 6.	20:40 – 20:45	20:43 Common Pipistrelle flew east to west along tree line	20:43 Common Pipistrelle
Walk.	20:45 – 20:46	No bat activity.	No recordings.
Stop 7.	20:46 – 20:51	No bat activity.	No recordings.
Walk.	20:51 – 20:52	No bat activity.	No recordings.
Stop 8.	20:52 – 20:57	No bat activity.	No recordings.
Walk.	20:57 – 20:58	No bat activity.	No recordings.
Stop 9.	20:58 – 21:03	No bat activity.	No recordings.
Walk.	21:03	No bat activity.	No recordings.
Stop 10.	21:03 – 21:08	No bat activity.	No recordings.
Walk.	21:08 – 21:09	No bat activity.	No recordings.
Stop 11.	21:09 – 21:14	No bat activity.	No recordings.
Walk.	21:14 – 21:15	No bat activity.	No recordings.
Stop 12.	21:15 – 21:20	No bat activity.	No recordings.
Walk.	21:20 – 21:21	No bat activity.	No recordings.
Stop 13.	21:21 – 21:26	No bat activity.	No recordings.
Walk	21:26 – 21:27	No bat activity.	No recordings.
Stop 14.	21:27 – 21:32	No bat activity.	No recordings.
Walk.	21:32 – 21:33	No bat activity.	No recordings.
Stop 15.	21:33 – 21:38	No bat activity.	No recordings.
Walk.	21:38 – 21:39	No bat activity.	No recordings.
Stop 16	21:39 – 21:44	No bat activity.	No recordings.

Table 5. Transect Survey Results, 6th September 2022.

The September transect survey was carried out by Mitch Greenhalgh. Sunset on the night of the survey was at 19:42 with the survey extending from 19:42 to 21:16. The weather at the time of the survey was warm and humid with a temperature of 19°C at the beginning of the survey.

Location	Time (start-end)	Surveyor Results.	Anabat Recordings.
Stop 1.	19:42 – 19:47	No bat activity.	No recordings.
Walk.	19:47 – 19:48	No bat activity.	No recordings.
Stop 2.	19:48 – 19:53	19:49 Bat seen not heard flying over east to west.	19:49 Common Pipistrelle
Walk.	19:53 – 19:54	No bat activity.	No recordings.
Stop 3.	19:54 – 19:59	19:58 Common Pipistrelle flying east to west along tree line.	19:58 Common Pipistrelle
Walk.	19:59 – 20:00	No bat activity.	No recordings.
Stop 4.	20:00 – 20:05	No bat activity.	No recordings.
Walk.	20:05 – 20:06	No bat activity.	No recordings.
Stop 5.	20:06 – 20:11	No bat activity.	No recordings.
Walk.	20:11	No bat activity.	No recordings.
Stop 6.	20:11 – 20:16	No bat activity.	No recordings.
Walk.	20:16 – 20:17	No bat activity.	No recordings.
Stop 7.	20:17 – 20:22	No bat activity.	No recordings.
Walk.	20:22 – 20:23	No bat activity.	No recordings.
Stop 8.	20:23 – 20:28	No bat activity.	No recordings.
Walk.	20:28 – 20:29	No bat activity.	No recordings.
Stop 9.	20:29 – 20:34	No bat activity.	No recordings.
Walk.	20:34 – 20:35	No bat activity.	No recordings.
Stop 10.	20:35 – 20:40	Common Pipistrelle heard not seen.	No recordings.
Walk.	20:40 – 20:41	No bat activity.	No recordings.
Stop 11.	20:41 – 20:46	No bat activity.	No recordings.
Walk.	20:46 – 20:47	No bat activity.	No recordings.
Stop 12.	20:47 – 20:52	No bat activity.	No recordings.
Walk.	20:52 – 20:53	No bat activity.	No recordings.
Stop 13.	20:53 – 20:58	No bat activity.	No recordings.
Walk	20:58 – 20:59	No bat activity.	No recordings.
Stop 14.	20:59 – 21:04	No bat activity.	No recordings.
Walk.	21:04 – 21:05	No bat activity.	No recordings.
Stop 15.	21:05 – 21:10	No bat activity.	No recordings.
Walk.	21:10 – 21:11	No bat activity.	No recordings.
Stop 16	21:11 – 21:16	No bat activity.	No recordings.

Table 6. Transect Survey Results, 24th October 2022.

The October transect survey was carried out by Mitch Greenhalgh. Sunset on the night of the survey was at 17:51 with the survey extending from 17:51 to 19:26. The weather at the time of the survey was warm and humid with a temperature of 11°C at the beginning of the survey.

Location	Time (start-end)	Surveyor Results.	Anabat Recordings.
Stop 1.	17:51 – 17:56	No bat activity.	No recordings.
Walk.	17:56 – 17:57	No bat activity.	No recordings.
Stop 2.	17:57 – 18:02	No bat activity.	No recordings.
Walk.	18:02 – 18:03	No bat activity.	No recordings.
Stop 3.	18:03 – 18:08	No bat activity.	No recordings.
Walk.	18:08 – 18:09	No bat activity.	No recordings.
Stop 4.	18:09 – 18:14	No bat activity.	No recordings.
Walk.	18:14 – 18:15	No bat activity.	No recordings.
Stop 5.	18:15 – 18:20	No bat activity.	No recordings.
Walk.	18:20 – 18:21	No bat activity.	No recordings.
Stop 6.	18:21 – 18:26	No bat activity.	No recordings.
Walk.	18:26 – 18:27	No bat activity.	No recordings.
Stop 7.	18:27 – 18:32	No bat activity.	No recordings.
Walk.	18:32 – 18:33	No bat activity.	No recordings.
Stop 8.	18:33 – 18:38	No bat activity.	No recordings.
Walk.	18:38 – 18:39	No bat activity.	No recordings.
Stop 9.	18:39 – 18:44	No bat activity.	No recordings.
Walk.	18:44 – 18:45	No bat activity.	No recordings.
Stop 10.	18:45 – 18:50	18:46 Common Pipistrelle heard not seen.	18:47 Common Pipistrelle x2
Walk.	18:50 – 18:51	No bat activity.	No recordings.
Stop 11.	18:51 – 18:56	No bat activity.	No recordings.
Walk.	18:56 – 18:57	No bat activity.	No recordings.
Stop 12.	18:57 – 19:02	No bat activity.	No recordings.
Walk.	19:02 – 19:03	No bat activity.	No recordings.
Stop 13.	19:03 – 19:08	No bat activity.	No recordings.
Walk	19:08 – 19:09	No bat activity.	No recordings.
Stop 14.	19:09 – 19:14	No bat activity.	No recordings.

Walk.	19:14 – 19:15	No bat activity.	No recordings.
Stop 15.	19:15 – 19:20	No bat activity.	No recordings.
Walk.	19:20 – 19:21	No bat activity.	No recordings.
Stop 16	19:21 – 19:26	No bat activity.	No recordings.

3.5.2. Static Survey Results.

3.5.2.1. In combination with each transect survey, two Anabat Express units were mounted on trees. One in the tree line extending across the centre of the site and one to the south due to restricted access. These were left to record bat activity on the site over five consecutive nights. The location and direction of the Anabat Express units are shown on the aerial photograph below.

The tables below summarise the recorded results from the three static Anabat recorders. A further breakdown of these recordings is provided in Appendix IX of this report.

3.5.2.2. May Static Surveys Results.

AB1	Myotis	Noctule	Common Pipistrelle	Soprano Pipistrelle	Total.
31st May			36		36
1st Jun					
2nd Jun	1		2		3
3rd Jun			3		3
4th Jun			1		1
Total.	1		42		43

AB2	Myotis	Noctule	Common Pipistrelle	Soprano Pipistrelle	Total.
31st May			10		10
1st Jun			1		1
2nd Jun					
3rd Jun					
4th Jun			81		81
Total.			92		

3.5.2.3. June Static Surveys Results.

AB1	Myotis	Noctule	Common Pipistrelle	Soprano Pipistrelle	Total.
24th Jun		1	2		3
25th Jun					
26th Jun					
27th Jun					
28th Jun					
Total.		1	2		3

AB2	Myotis	Noctule	Common Pipistrelle	Soprano Pipistrelle	Total.
24th Jun			39		39
25th Jun	1		12		3
26th Jun	5		151		153
27th Jun		2	12		14
28th Jun	1		30		31
Total.	7	2	200		209

3.5.2.4. July Static Surveys Results.

AB1	Myotis	Noctule	Common Pipistrelle	Soprano Pipistrelle	Total.
2nd Jul	4		34		38
3rd Jul			119		119
4th Jul	1		97		98
5th Jul	1		125		126
6th Jul	1		351		352
Total.	7		726		733

AB2	Myotis	Noctule	Common Pipistrelle	Soprano Pipistrelle	Total.
2nd Jul			2		2
3rd Jul			5		5
4th Jul			1		1
5th Jul			3		3
6th Jul			2		2
Total.			13		13

3.5.2.5. August Static Surveys Results.

AB1	Myotis	Noctule	Common Pipistrelle	Soprano Pipistrelle	Total.
27th Aug	12	1	47		60
28th Aug	8		100	1	109
29th Aug	9		28		37
30th Aug	16		52		68
31st Aug	8		36		44
Total.	53	1	263	1	318

AB2	Myotis	Noctule	Common Pipistrelle	Soprano Pipistrelle	Total.
27th Aug		4	30		34
28th Aug	2	4	20	1	27
29th Aug	2	1	3		6
30th Aug	1	1	18		20
31st Aug	2		7		9
Total.	7	10	78	1	96

3.5.2.6. September Static Surveys Results.

AB1	Myotis	Noctule	Common Pipistrelle	Soprano Pipistrelle	Total.
1st Sep	16		46		62
2nd Sep	5		24		29
3rd Sep	12	1	21		34
4th Sep					
5th Sep	1		7	5	13
Total.	34	1	98	5	138

AB2	Myotis	Noctule	Common Pipistrelle	Soprano Pipistrelle	Total.
1st Sep	2	2	21	1	26
2nd Sep		5	19	1	25
3rd Sep	1	5	24		30
4th Sep					
5th Sep		5	3		8
Total.	3	17	67	2	69

3.5.2.7. October Static Surveys Results.

AB1	Myotis	Noctule	Common Pipistrelle	Soprano Pipistrelle	Total.
24th Oct			3		3
25th Oct					
26th Oct			3		3
27th Oct					
28th Oct					
Total.			6		6

AB2	Myotis	Noctule	Common Pipistrelle	Soprano Pipistrelle	Total.
24th Oct		1			1
25th Oct				1	1
26th Oct					
27th Oct					
28th Oct					
Total.		1		1	2

3.5.2.5. Overall Summary of Static Recorder Results.

The table below summarises the bat activity recorded during two static recorder surveys carried out at the peak of the bat activity season.

Overall Summary	Myotis	Noctule	Common Pipistrelle	Soprano Pipistrelle	Total
May	1	0	134	0	135
June	7	3	202	0	212
July	7	0	739	0	746
August	60	11	341	2	414
September	37	18	165	7	227
October	0	1	6	1	8
Total	112	33	1,587	10	1,742

3.5.2.5.1. The results show that the site is predominantly used by Common Pipistrelle bats, with the occasional myotis, noctule and soprano pipistrelle.

3.5.2.5.2. It is acknowledged that AB1 may have failed to record for four of the nights during the June static survey, although when checked after the surveys it was found to be working normally. Despite this, the results overall give a good overall picture of the bat activity across the site.

3.5.2.5.3. The results indicate that the central areas of the site are utilised significantly less than the linear vegetation features, with bats utilising the tree line across the centre of the site; although the numbers of bats recorded overall were surprisingly low considering the number of bat roost records in the vicinity.

3.5.2.5.4. Further analysis of the results show that the majority of the bat calls were recorded in the first couple of hours after sunset and the few hours prior to sunrise. The transect results show that these are limited to individual bats commuting across the site and very little evidence of significant foraging.

3.5.2.4.5. The overall frequency of bat calls recorded on the site is approximately 7.5 calls per hour or a bat passing approximately every eight minutes.

****

4. ASSESSMENT OF IMPACTS, MITIGATION AND RESIDUAL EFFECTS.

4.1. Designated Sites.

4.1.1. Assessment.

The data search results from Barnsley Biological Records Centre show that there are five Barnsley Local Wildlife Sites within 2km. The closest of these lies approximately 830m from the closest point of the site. The proposed development of the site will have no impact on any of the Local Wildlife Sites in the area.

4.1.2. Mitigation.

As there will be no impacts on any designated sites there is no requirement for any mitigation.

4.1.3. Residual Effects.

The proposed development will have **No Negative Residual Impact** on any designated sites within a 2km radius.

4.2. Habitats.

4.2.1. Impact Assessment.

4.2.1.1. The habitats on the site are all locally common habitats with locally common species although they do provide some good value for small fauna and bird species.

4.2.1.2. Biodiversity calculations were carried out using the Biodiversity Metric 3.1 of the habitats that lie within the red line boundary. The baseline on the site was calculated at 8.10 Habitat Biodiversity Units (Bu) and 0.56 Hedgerow Bu, as shown in the tables below.

Habitat Type	Extent (ha)	Distinctiveness	Condition Assessment	Biodiversity units
Bramble scrub	0.13	Medium	Condition Assessment N/A	0.52
Mixed scrub	0.15	Medium	Poor	0.60
Bramble scrub	0.39	Medium	Condition Assessment N/A	1.56
Modified grassland	0.58	Low	Moderate	2.32
Ruderal/Ephemeral	0.04	Low	Poor	0.08
Ruderal/Ephemeral	0.17	Low	Poor	0.34
Other neutral grassland	0.19	Medium	Moderate	1.52
Developed land; sealed surface	0.19	V.Low	N/A - Other	0.00
Other woodland; broadleaved	0.09	Medium	Poor	0.36
Urban Tree	0.1	Medium	Moderate	0.80
Total	**2.03**			**8.10**

Hedgerow Type	Extent (km)	Distinctiveness	Condition Assessment	Biodiversity units
H1 Native Hedgerow	0.03	Low	Poor	0.06
H2 Hedge Ornamental Non Native	0.02	V.Low	Poor	0.02
H3 Hedge Ornamental Non Native	0.02	V.Low	Poor	0.02
TL1 Line of Trees	0.05	Low	Moderate	0.20
TL2 Line of Trees	0.13	Low	Poor	0.26
Total	**0.25**			**0.56**

4.2.1.3. There are also two watercourses within/immediately adjacent to the survey area. The BNG assessment for these is dealt with in a separate report prepared by an accredited person.

4.2.1.4. One of the properties included within the red line boundary will be retained and some trees will be retained where feasible along the watercourse through the middle of the site or around the edges of the site. The remaining habitats will be lost, resulting in an overall loss of 7.90 Bu.

4.2.2. Mitigation.

4.2.2.1. On site mitigation will be provided in the form of retaining as many trees as feasibly possible, and the planting of good range of new habitats across the site, with an aim to ensure green corridors are retained across the site.

4.2.2.2. The amenity POS areas will be seeded with an amenity grassland mix that includes a high percentage of wildflowers that can also tolerate regular mowing. An area of wildflower meadow will also be created in the south east corner that will be managed accordingly for that purpose. Some native bulbs will also be planted within the amenity grassland in the middle of the site.

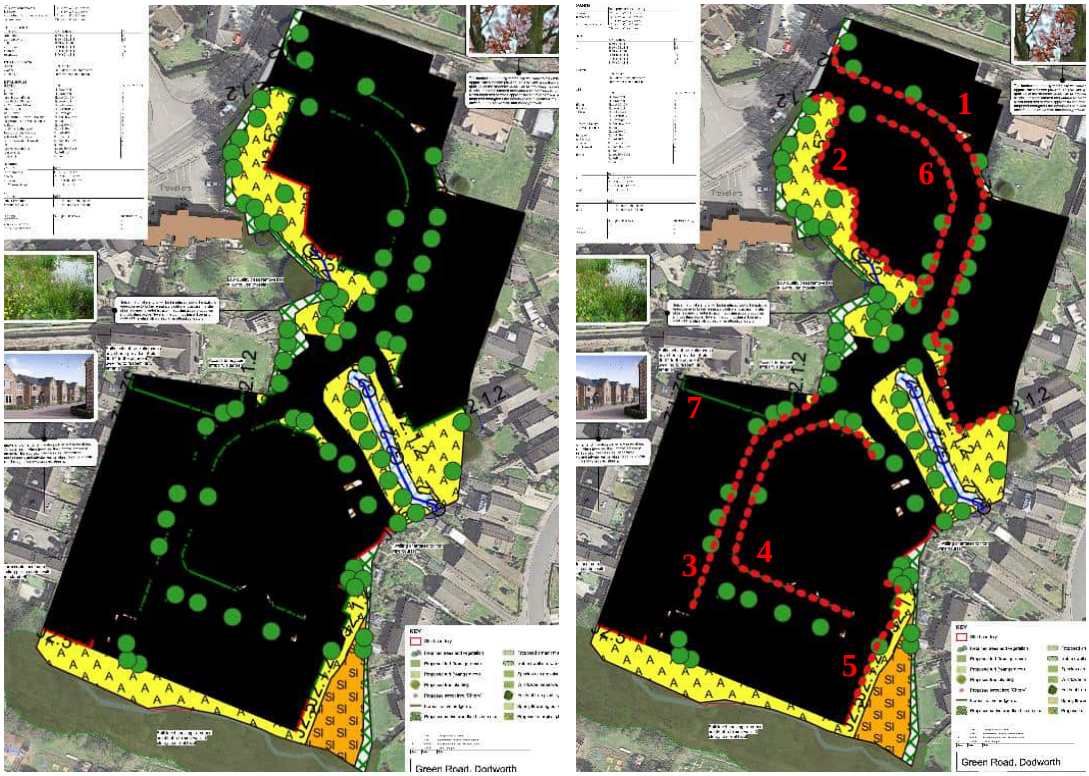
4.2.2.3. Some mixed native scrub will be planted along some of the edges of the site. This will contain at least six species of native scrub species.

4.2.2.4. Some new marginal planting will be carried out along the main stretch of the retained section of watercourse across the middle of the site. This will contain a mix of native marginal species, and for the purpose of the BNG metric, has been classified as ‘Other neutral grassland’.

4.2.2.5. A variety of trees will be planted across the site, all native species including cherry street trees that will provide a valuable source of pollen and bear fruit, which will attract a variety of invertebrates and birds. Some fruit/nut trees will also be planted, as well as a number of standard native species. The trees contribute to creating green corridors across the site.

4.2.2.6. A number of lengths of native hedgerows will be planted throughout the site, in particular along garden boundaries. These will be planted in short lengths, therefore for the purpose of the BNG assessment, the hedgerows have been categorised into six connective routes across the site and are considered as ‘defunct hedgerows’. The maps below demonstrate the six connective defunct hedgerow corridors across the site post development, plus one longer length of intact hedgerow. The map on the left shows the green corridors that will be created across the site. Each hedgerow corridor

is labelled 1-7 on the map on the right, with the corridors defined by the dotted red lines.



4.2.2.7. Therefore, to supplement the number of biodiversity units delivered on the site, the landscaping scheme will deliver a continued functionality of the site for fauna species to utilise.

4.2.2.8. The biodiversity units to be delivered on the site post development is demonstrated in the tables below, outlining what habitats will be retained and created.

Habitat Type	Extent (ha)	Distinctiveness	Condition Assessment	Biodiversity units
Retained habitats:				
Developed land; sealed surface	0.006	V.Low	N/A – Other	0.00
Urban Tree	0.025	Medium	Moderate	0.20
Created habitats:				
Developed land; sealed surface	1.02	V.Low	N/A - Other	0.00

Vegetated garden	0.45	Low	Condition Assessment N/A	0.87
Mixed scrub	0.05	Medium	Fairly Poor	0.27
Modified grassland	0.32	Low	Fairly Good	1.34
Other neutral grassland	0.02	Medium	Fairly Good	0.16
Introduced shrub	0.01	Low	Condition Assessment N/A	0.02
Other neutral grassland	0.05	Medium	Good	0.42
Urban Tree	0.2	Medium	Moderate	0.61
Total				**3.88**

Hedgerow Type	**Extent (km)**	**Distinctiveness**	**Condition Assessment**	**Biodiversity units**
Retained:				
Line of Trees	0.05	Low	Moderate	0.20
Line of Trees	0.11	Low	Poor	0.22
Created:				
Native Hedgerow	0.18	Low	Poor	0.35
Native Hedgerow	0.11	Low	Poor	0.21
Native Hedgerow	0.09	Low	Poor	0.17
Native Hedgerow	0.12	Low	Poor	0.23
Native Hedgerow	0.04	Low	Poor	0.08
Native Hedgerow	0.07	Low	Poor	0.14
Native Hedgerow	0.048	Low	Poor	0.09
Total				**1.69**

4.2.2.9. Once the proposed on site measures have been agreed and approved by the local authority, off site compensation for the loss of biodiversity units will be sought.

4.2.3. Residual Effects.

The number of units that the landscaping of the site will deliver is 3.88 area habitat Bu and 1.69 linear habitat Bu. This equates to an overall loss of 4.22 area habitat Bu and a net gain of 1.31 linear habitat Bu. Taking into account the functionality of the site that the landscaping plan will deliver, it is assessed that the development will have a **Moderate Negative Residual Impact** on the habitats at a site level.

4.3. Species – Bats.

4.3.1. Assessment.

4.3.1.1. There are a number of buildings within the survey area and various walls that all provide negligible potential for roosting bats and therefore the development of the site will have no impacts on roosting bats in any structures.

4.3.1.2. There are a number of trees within the survey area. None were identified to provide any significant potential for roosting bats, although the row of horse chestnut trees in the north west of the site have some loose bark that provide some low potential for roosting bats and there are a number of ivy covered trees throughout the survey area that also provide low potential for roosting bats. There will be a requirement to remove some of these trees with low bat roost potential to facilitate the development and access onto the site.

4.3.1.3. The site was initially assessed to provide moderate potential for foraging and commuting bats due to the habitats across the site and as there are a number of known bat roosts in close proximity to the site, including a maternity roost.

4.3.1.4. The subsequent bat transect and automated surveys concluded that the level of bat activity across the site is surprisingly low, mostly limited to Common Pipistrelle bats. The bats that do use the site tend to utilise the tree line along the watercourse across the middle of the site.

4.3.1.5. There will be a requirement to create a road crossing over that watercourse to connect the north and south areas of the site, which will require the removal of some of the trees along the watercourse corridor.

4.3.2. Mitigation.

4.3.2.1. Mitigation will be provided in the first place by retaining as many healthy trees on the site as feasibly possible.

4.3.2.2. Where there is a requirement to fell the small number of horse chestnut trees and any other trees with ivy, in line with the Bat Conservation Trust Good Practice Guidelines, these will be soft felled by cutting the trees down in sections, gently lowering each section to the ground and leaving in situ on the ground for a minimum of twenty-four hours before chipping or removing from site.

4.3.2.3. Although the bat activity surveys do not show that the site is of any high significance to foraging and commuting bats, the landscaping for the site has been designed in a way to maintain some good connective routes for bats across the site, maintaining commuting corridors that connect the northern part of the site to the adjacent habitats to the south. A significant green corridor along the watercourse will also be retained. The new road crossing over the watercourse will create a gap that is less than 10m in width, with some overhanging trees that will help to bridge the gap. This is not considered as a fragmentation of the habitat.

4.3.2.4. The planting schedule for the site will attract a variety of invertebrate species that will be a good food source for bats.

4.3.2.5. In addition to the above, a sensitive lighting scheme will be implemented across the site that will ensure that any external lighting will be downward directional and directed away from any green corridors across the site.

4.3.3. Residual Effects.

With the above mitigation measures in place it is assessed that there will be **No Negative Residual Impact** on roosting, foraging or commuting bats at a site level as a result of the proposed development.

4.4. Species – Nesting Birds.

4.4.1. Assessment.

There is potential for nesting birds throughout survey area in the vegetation, walls and buildings. The nesting bird season extends from March to September each year. Any proposed vegetation/site clearance during the nesting bird season could potentially have a high impact on nesting birds.

4.4.2. Mitigation.

4.4.3. Where possible initial site clearance or vegetation clearance will be carried out outside the nesting bird season. Where it is necessary to undertake such works within the nesting bird season, these works will be immediately preceded by a nesting bird survey. Any active nests found, as well as a suitable buffer around them, will be left undisturbed until the young have fledged from the nest.

4.4.4. The landscaping for the site will include the planting of some scrub and trees that will provide some mitigation for the loss of nesting opportunities for birds on the site.

4.4.3. Residual Effects.

With the above mitigation measures in place there will be a **No Negative Residual Impact** on nesting birds at a site level.

4.5. Species – Reptiles.

4.5.1. Assessment.

The site is assessed to provide limited potential for low numbers of individual reptiles therefore it is assessed that the proposed works could potentially have a low impact on reptiles.

4.5.2. Mitigation.

4.5.2.1. All personnel working on site will be briefed on the identification of reptiles and their potential presence on site in line with the toolbox talk document provided at the end of this report.

4.5.2.2 Clearance of dense ground vegetation, such as the scrub habitats, will initially be carried out to a minimum of 150mm to avoid harming fauna species at ground level, including reptiles. This will encourage any animals to move away from the area and make it less attractive before the area is then cleared down to the ground level.

4.5.2.3. In the event that a reptile is found during the works, it will be left to escape the area unharmed and on its own accord before the works proceed.

4.5.2.4. In the unlikely event that high numbers (5+) or hibernating reptiles are found, professional advice will be sought from an experienced ecologist who will assess the remaining works and will advice how to proceed.

4.5.3. Residual Effect.

With the above precautionary measures in place, there is **unlikely to be any residual impact** on reptiles at a site level.

4.6. Species – Hedgehogs.

4.6.1. Assessment.

There is potential for hedgehogs to be present on the site, in particular the areas of dense scrub where hedgehogs may take shelter.

4.6.2. Mitigation.

4.6.2.1. Clearance of dense ground vegetation, such as the scrub habitats, will initially be carried out to a minimum of 150mm to avoid harming fauna species at ground level, including hedgehogs. This will encourage any animals to move away from the area and make it less attractive before the area is then cleared down to the ground level.

4.6.2.2. The landscaping proposals will retain corridors across the site for hedgehogs to use and gaps 13cm x 13cm wide will be created in the base of the boundary fences between the gardens that extend up to the site boundaries. These will be signposted as hedgehog highways in an attempt to encourage residents to maintain these features.

4.6.3. Residual Effects.

With the above mitigation in place, at the most there could potentially be a **low negative impact** on hedgehogs at a site level.

4.7. Species – Invasive Plants.

4.7.1. Assessment.

4.7.1.1. Rhododendron, cotoneaster and Himalayan balsam were all identified growing within the survey area. These are invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act (1981). It is an offence to allow or cause these plants to spread into the wild.

4.7.1.2. Rhododendrons spread via lateral horizontal growth and therefore, when any part of this plant is removed, if it is not disposed of or destroyed appropriately it can allow the plant to spread.

4.7.1.3. Cotoneaster plants spread via seeds in the berries that are normally present on the plant during the autumn and winter months. Berries can also drop to the ground around the plant contaminating the ground.

4.7.1.4. Himalayan balsam plants spread via seeds that are held in the seed pods during late summer/autumn and when touched the seed pods eject the seeds up to 7m from the plant. Therefore any ground within 7m of the plants is potentially contaminated with seeds.

4.7.1.5. Any works that will make contact with the ground or these plants could result in and moving the plants and soils around and off the site could cause the plants to spread.

4.7.2. Mitigation.

4.7.2.1. Until such time that all invasive plants have been eradicated from the site, exclusion zones will be put in place around all invasive plants and contaminated soils to prevent machinery and personnel from entering those areas.

4.7.2.2. The cotoneaster plants will be removed from the site at a time of year when no berries are present on the plants. The plants will be removed in their entirety, including the root system.

4.7.2.3. The Himalayan balsam plants will be removed at a time when there are no seed pods present on the plants.

4.7.2.4. All potentially contaminated soils around the plants will be excavated and disposed of as contaminated waste. All machinery and equipment that comes into contact with those soils in the process, will be washed in situ before leaving the area. All washed arisings will be caught in a membrane and disposed of as contaminated waste.

4.7.3. Residual Effect.

4.7.3.1. By implementing the above mitigation, this will result in the eradication of invasive plant species from the site, without causing the plants to spread and will therefore have a **high positive impact** at a site level.

****

5. BIODIVERSITY ENHANCEMENT MEASURES.

5.1. In line with the NPPF some biodiversity enhancements for fauna species will be provided on the site.

5.2. This will be achieved by providing integrated swift boxes into at least 10% of the new buildings on the site and integrated bat boxes into at least 10% of the new buildings on the site.

5.3. Integrated bat boxes will be the Habibat Bat Box – Custom Facing, similar to shown adjacent. Six of these will be incorporated into gable ends of the new buildings, at least 4m above ground level where they are away from any direct artificial light interference.

5.4. Six pairs of integrated swift boxes will be provided, similar to that shown adjacent. These will again be positioned in the walls of the new buildings. These will be positioned close to the eaves, away from any regular disturbance and not above windows or doors to prevent a build-up of droppings on the cills.

5.5. Log piles will be provided in or along the edges of the native scrub planting on the site. At least two log piles will be created on the site.

5.6. Two hedgehog houses will be placed within the newly planted scrub habitat on the site. One will be positioned on the eastern edge of the site and the other on the western edge of the site.

****

Prepared by:	
Ruth Georgiou. BSc, MCIEEM.	Date: 19th January 2023.

Checked by:	
Derek Whitcher, BSc, MCIEEM, MCMI	Date: 20th January 2023.

6. REFERENCES.

Chartered Institute of Ecology and Environmental Management. 2017. ***Guidelines for Preliminary Ecological Appraisal, Second Edition.*** CIEEM, Hampshire.

Chartered Institute of Ecology and Environmental Management. 2017. ***Guidelines for Ecological Report Writing, Second Edition.*** CIEEM, Hampshire.

1981. ***Wildlife and Countryside Act.*** *http://www.legislation.gov.uk/ukpga/1981/69* (accessed 18/02/16)

2000. ***Countryside and Rights of Way Act.***
http://www.legislation.gov.uk/ukpga/2000/37/contents.

2017. ***The Conservation of Habitats and Species Regulations.***
http://www.legislation.gov.uk/uksi/2010/490/contents/made.

2012. ***National Planning Policy Statement.***
https://www.gov.uk/government/publications/national-planning-policy-framework--2

Anon. 1995. ***Biodiversity: the UK Steering Group report. Vol 2: Action Plans.*** HMSO, London.

Joint Nature Conservation Committee. 2004 (ed.). ***Handbook for Phase 1 habitat survey: A technique for environmental audit.*** JNCC, Peterborough.

1992. ***Protection of Badgers Act.*** *https://www.legislation.gov.uk/ukpga/1992/51/contents*.

Harris S, Cresswell P and Jefferies D. 1989. ***Surveying Badgers.*** Mammal Society. London.

Dean M, Strachen R, Gow D and Andres R (2016). ***The Water Vole Mitigation Handbook*** (The Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The mammal Society, London

Chanin P. 2003(a). ***Ecology of the European Otter.*** Conserving Natura 2000, Ecology Series No.10. English Nature, Peterborough.

Chanin P. 2003(b) ***Monitoring the Otter Lutra.*** Conserving Natura 2000 Rivers Monitoring Series No. 10. English Nature, Peterborough.

Peay S. 2003. ***Monitoring the White-Clawed Crayfish Austropotamobius pallipes.*** Conserving Natura 2000 Rivers Monitoring Series No. 1. English Nature, Peterborough.

English Nature. 2001. ***Great Crested Newt Mitigation Guidelines.***

Langton T, Beckett C, Foster J. 2001. ***Great Crested Newt: Conservation Handbook.*** Froglife, Suffolk.

Oldham et al. 2000. ***Great Crested Newt Habitat Suitability Assessment. ARG UK Advice Note 5, May 2010.***

Collins J. (ed.) 2016. ***Bat Surveys for Professional Ecologist: Good Practice Guidelines.*** 3rd ed. The Bat Conservation Trust, London.

English Nature. 2004. ***Bat Mitigation Guidelines.*** English Nature, Peterborough, UK.

BTHK 2018. ***Bat Roosts in Trees – A Guide to Identification and Assessment for Tree-Care and Ecology Professionals.*** Exeter: Pelagic Publishing.

BOCC4 Eaton et al. 2015. ***Birds of Conservation Concern 4: The Population Status of Bird's in the UK, Channel Islands and Isle of Man.***

Joint Nature Conservation Committee. 2004. ***Common Standards Monitoring Guidance for Birds.*** 2004 ed. JNCC, Peterborough.

Froglife. 1999. ***Froglife Advice Sheet 10: Reptile Survey.*** Froglife, London.

Bright P, Morris P, Mitchell-Jones T. 2006. ***The Dormouse Conservation Handbook*** 2nd edition. English Nature, Peterborough.

Joint Nature Conservation Committee. 2004 (ed.). ***Common Standards Monitoring Guidance for: Reptiles and Amphibians.*** JNCC, Peterborough.

Joint Nature Conservation Committee. 1996. ***UK Strategy for Red Squirrel Conservation.*** JNCC, Peterborough.

Appendix I. BAT INFORMATION.

Ecology

There are currently 18 species of bat residing in Britain, 17 of which of which are known to breed here. They are extremely difficult to identify in the hand and even more so in flight.

All appear to be diminishing in numbers, probably due to habitat change and shortage of food, caused by pesticides, as insects are their sole diet.

As their diet consists solely of insects, bats hibernate during the winter when their food source is at its most scarce. They will spend the winter in hollow trees, caves, mines and the roofs of buildings.

Certain species, particularly the pipistrelle (the commonest and most widespread British bat) can quickly adapt to man-made structures and will readily use these to roost and to rear their young.

Surveys

During walkover surveys, bat roosts can be identified by looking for:

- Suitable holes, cracks and crevices within any building, tree or other structure.
- Bat droppings along walls, window cills, or on the ground.
- Prey remains, such as insect wings.

Further investigations can be made using endoscopes, by carrying out aerial inspections of trees or by conducting bat activity surveys during dusk and dawn over summer months.

Legislation

Bats are protected under Appendix II and III of the Bern Convention (1982), Schedule 5 and 6 of the Wildlife and Countryside Act (1981), Annex IV of the Habitats Directive (some species under Annex II), Annex II of the Conservation of Habitats and Species Regulations (2010) and EUROBATS agreement. Numerous species are also listed under section 41 of the Natural Environment and Rural Communities Act (2006) making them species of principal importance.

All bats and their roosts are therefore protected in the UK. This makes it an offence to kill, injure or take any bat, to interfere with any place used for shelter or protection, or to intentionally disturb any animal occupying such a place.

The UK has designated maternity and hibernacula areas as Special Areas of Conservation (SAC's) under the Habitats Directive. Implementation of the UK Biodiversity Action Plan also includes action for a number bat species and the habitats which support them.

Where development proposals are likely to affect a bat roost site, a licence is required from Natural England.

Appendix II. NESTING BIRD INFORMATION.

Ecology

The nesting season will vary according to the weather each year but generally commences in March, peaks during May and June and continues until September. It is also worth remembering that some birds nest in trees and scrub, but others are ground nesting or prefer man- made structures or buildings.

Surveys

Nesting bird surveys search for potential nest sites in vegetation, buildings etc. Potential nesting sites are observed over a suitable period of time for bird movements or calling male birds that would indicate the presence of a nest. The presence of a nest can be identified from the field signs without the necessity to see the nest itself, thereby avoiding any disturbance of the nests. The best way to avoid this issue is to plan for vegetation clearance to be carried out outside the bird-nesting season.

Legislation

Nesting birds are protected under The Wildlife and Countryside Act 1981.

Part 1. -(1) Of the Act states that: - If any person intentionally: - kills, injures or takes any wild bird; takes, damages or destroys the nest of any wild bird while that nest is in use or being built; or takes or destroys an egg of any wild bird, he shall be guilty of an offence.

Part 1. -(5) of the Act states that: - If any person intentionally: - disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on, or near a nest containing eggs or young; or disturbs young of such a bird, he shall be guilty of an offence and liable to a special penalty.

The Countryside and Rights of Way Act 2000 amends the above by inserting after “intentionally” the words “or recklessly”.

Appendix III. INVASIVE PLANT SPECIES INFORMATION.

Ecology

The Government has acknowledged the problems that can be caused by non-native invasive species. In 2008 the Government launched "The Invasive Non-Native Species Framework Strategy for Great Britain". The strategy provides a framework for a more co-ordinated approach to invasive species management. It seeks to create a stronger sense of shared responsibility across government, key organisations, land managers and the public.

The Non-Native Species Secretariat has been established to oversee the implementation of the strategy. Details of the secretariat including risk assessments and action plans for some species are available at www.nonnativespecies.org.

In general, there are four basic methods of controlling weeds; mechanical, chemical, natural and environmental.

- ***Mechanical control*** *includes cultivation, hoeing, pulling, cutting, raking, dredging or other methods to uproot or cut weeds.*
  Where this method is used all plant material must be considered "controlled waste" and must be disposed of properly.
- ***Chemical control*** *uses approved herbicides.*
- ***Natural control*** *uses pests and diseases of the target weed to weaken it and prevent it from becoming a nuisance.*
- ***Environmental control*** *works by altering the environment to make it less suitable for weed growth, for example by increasing or decreasing water velocity.*

Surveys

A site will be searched for invasive plant species growing on site, from mature plants to new shoots. A site will also be searched for dead stems indicating that plants that may have seasonally died back are present.

Legislation

Invasive species listed under Schedule 9 are prohibited from release into the wild. Schedule 9, Section 14(2) prohibits 'planting' or 'causing to grow' in the wild of any plant listed in Part 2 of Schedule 9.

The following is a list of all the species of plant listed under Schedule 9 of The Wildlife and Countryside Act 1981.

Common Name	**Scientific Name**	**England & Wales**	**Scotland**
Alexanders, Perfoliate	*Smyrnium perfoliatum*	✓	
Algae, Red	*Grateloupia luxurians*	✓	
Archangel, Variegated Yellow	*Lamiastrum galeobdolon subsp. Argentatum*	✓	
Azalea, Yellow	*Rhododendron luteum*	✓	
Balsam, Himalayan	*Impatiens glandulifera*	✓	
Cotoneaster	*Cotoneaster horizontalis*	✓	
Cotoneaster, Entire Leaved	*Cotoneaster integrifolius*	✓	
Cotoneaster, Himalayan	*Cotoneaster simonsii*	✓	
Cotoneaster, Hollyberry	*Cotoneaster bullatus*	✓	
Cotoneaster, Small Leaved	*Cotoneaster microphyllus*	✓	
Creeper, False Virginia	*Parthenocissus inserta*	✓	
Creeper, Virginia	*Parthenocissus quinquefolia*	✓	
Dewplant, Purple	*Disphyma crassifolium*	✓	
False-acacia	*Robinia pseudoacacia*		✓
Fanwort	*Cabomba caroliniana*	✓	✓
Fern, Water	*Azolla filiculoides*	✓	✓
Fig, Hottentot	*Carpobrotus edulis*	✓	✓
Garlic, Three-Cornered	*Allium triquetrum*	✓	
Hogweed, Giant	*Heracleum mantegazzianum*	✓	✓
Hyacinth, water	*Eichhornia crassipes*	✓	✓
Kelp, Giant	*Macrocystis angustifolia*	✓	✓
Kelp, Giant	*Macrocystis integrifolia*	✓	✓
Kelp, Giant	*Macrocystis laevis*	✓	✓
Kelp, Giant	*Macrocystis pyrifera*	✓	✓
Kelp, Japanese	*Laminaria japonica*	✓	✓

Knotweed, Giant	*Fallopia sachalinensis*	✓	
Knotweed, Hybrid	*Fallopia japonica x Fallopia sachalinensis*	✓	
Knotweed, Japanese	*Fallopia japonica*	✓	
Knotweed, Japanese	*Polygonum cuspidatum*		✓
Leek, Few-flowered	*Allium paradoxum*	✓	✓
Lettuce, water	*Pistia stratiotes*	✓	✓
Montbretia	*Crocosmia x crocosmiiflora*	✓	
Parrot's-feather	*Myriophyllum aquaticum*	✓	
Pennywort, Floating	*Hydrocotyle ranunculoides*	✓	
Potato, Duck	*Sagittaria latifolia*	✓	
Primrose, Floating Water	*Ludwigia peploides*	✓	
Primrose, Water	*Ludwigia grandiflora*	✓	
Rhododendron	*Rhododendron ponticum*	✓	
Rhubarb, Giant	*Gunnera tinctorial*	✓	
Rose, Japanese	*Rosa rugosa*	✓	
Salvinia, Giant	*Salvinia molesta*	✓	✓
Seafingers, Green	*Codium fragile*	✓	
Seafingers, Green	*Codium fragile tomentosoides*		✓
Seaweed, Californian Red	*Pikea californica*	✓	✓
Seaweed, Hooked Asparagus	*Asparagopsis armata*	✓	✓
Seaweed, Japanese	*Sargassum muticum*	✓	✓
Seaweeds, Laver (except native species)	*Porphyra sp. except -* *P. amethystea* *P. leucosticta* *P. linearis* *P. miniata* *P. purpurea* *P. umbilicalis*	✓	✓
Shallon	*Gaultheria shallon*		✓
Stonecrop, Australian swamp	*Crassula helmsii*	✓	✓
Wakame	*Undaria pinnatifida*	✓	✓
Waterweed, Curly	*Lagarosiphon major*	✓	✓
Waterweeds	*All species of the genus Elodea*	✓	

Appendix IV. ANNOTATED MAP OF THE SURVEY AREA – PRE DEVELOPMENT

Site: Green Road, Dodworth	Prepared by: Ruth Georgiou. BSc, MCIEEM
Reference: 220423	Date: 27th April 2022

Appendix V. ANNOTATED MAP OF THE SURVEY AREA – POST DEVELOPMENT

PostDevelopmentScatteredTrees

PostDevelopmentLinearHabitats

~~32.2~~ G2.2 - Running water - mesotrophic

~~J2.1.2~~ J2.1.2 - Intact hedge - species-poor

~~J2.5~~ J2.5 - Wall

PostDevelopmentHabitats

A2.1 - Scrub - dense/continuous

B2.2 - Neutral grassland - semi-improved

F2.1 - Marginal and inundation - marginal vegetation

J1.2 - Cultivated/disturbed land - amenity grassland

J1.4 - Introduced shrub

J3.6 - Developed area -buildings, hard landscaping (70%) and vegetated gardens (30%)

Site: Green Road, Dodworth

Prepared by: Ruth Georgiou. BSc, MCIEEM

Reference: 220423

Date: 19th January 2023

Appendix VI. TARGET NOTES.

T1 – Building 3.
T2 – Building 4.
T3 – Rhododendron plant.
T4 – Building 2.
T5 – Building 1.
T6 – Cotoneaster plant.
T7 – Area of Himalayan balsam.

Appendix VII. HABITAT CONDITION ASSESSMENT CRITERIAS.

Scrub:

Condition Assessment Criteria	
1	Habitat is representative of UKHab description (where in its natural range). There are at least three woody species, with no one species comprising more than 75% of the cover (except common juniper, sea buckthorn or box, which can be up to 100% cover).
2	There is a good age range – all of the following are present: seedlings, young shrubs and mature shrubs.
3	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and species indicative of sub-optimal condition make up less than 5% of ground cover.
4	The scrub has a well-developed edge with scattered scrub and tall grassland and/or herbs present between the scrub and adjacent habitat(s).
5	There are clearings, glades or rides present within the scrub, providing sheltered edges.

Improved Grassland:

Condition Assessment Criteria	
1	There must be 6-8 species per m2. If a grassland has 9 or more species per m2 it should be classified as a medium distinctiveness grassland habitat type. **NB - this criterion is essential for achieving moderate condition.**
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.
3	Some scattered scrub (including bramble) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of shrubs with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.
4	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.
5	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens).
6	Cover of bracken less than 20%.
7	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981).

Tall Ruderal Herb:

Condition Assessment Criteria	
CORE CRITERIA - applicable to **all urban habitat types:**	
1	Vegetation structure is varied, providing opportunities for insects, birds and bats to live and breed. A single ecotone (i.e. scrub, grassland, herbs) should not account for more than 80% of the total habitat area.
2	There is a diverse range of flowering plant species, providing nectar sources for insects. These species may be either native, or non-native but beneficial to wildlife. **NB - To achieve GOOD condition, criterion 2 must be satisfied by native species only (rather than non-natives beneficial to wildlife). Note that Biodiverse green roofs are exempt from this requirement, and can include non-native sedums, as set out in footnote 1.**
3	Invasive non-native species (Schedule 9 of WCA) cover less than 5% of total vegetated area. **NB - To achieve GOOD condition, criterion 3 must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).**
ADDITIONAL CRITERION - only applicable to **Open mosaic on previously developed land** habitat type:	
4a	The site shows spatial variation, forming a mosaic of at least four early successional communities (a) to (h) PLUS bare substrate AND pools. (a) annuals; (b) mosses/liverworts; (c) lichens; (d) ruderals; (e) inundation species; (f) open grassland; (g) flower-rich grassland; (h) heathland.
ADDITIONAL CRITERION - only applicable to **Bioswale and SUDS** habitat types:	
4b	The water table is at or near the surface throughout the year. This could be open water or saturation of soil at the surface.
ADDITIONAL CRITERION - only applicable to **green roof** habitat types (select as necessary):	
4c1	**Intensive green roofs** – have a minimum of 50% native and non-native wildflowers - 70% of the roof area is soil and vegetation (including water features)
4c2	**Biodiverse green roofs** - have a varied depth of 80 - 150mm at least 50% is at 150mm and is planted and seeded with wildflowers and sedums or is pre-prepared with sedums and wildflowers. To achieve Good condition some additional habitat, such as sand piles, logs etc should be present.

Semi Improved Neutral Grassland:

Condition Assessment Criteria	
1	The appearance and composition of the vegetation closely matches characteristics of the specific grassland habitat type (see UKHab definition). Wildflowers, sedges and indicator species for the specific grassland habitat type are very clearly and easily visible throughout the sward. **NB - This criterion is essential for achieving moderate condition for non-acid grassland types only.**
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.
3	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.
4	Cover of bracken less than 20% and cover of scrub (including bramble) less than 5%.
5	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981). Combined cover of species indicative of sub-optimal condition1 and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area.
Additional Group (non-acid types only)	
6	There are greater than 9 species per metre squared. **NB - This criterion is essential for achieving good condition (non-acid grassland types only**).

Woodland:

Condition Assessment Criteria				
Indicator:		Good (3 points)	Moderate (2 points)	Poor (1 point)
1	**Age distribution of trees[1]**	Three age classes present	Two age classes present	One age class present
2	**Wild, domestic and feral herbivore damage**	No significant browsing damage evident in woodland[2]	Evidence of significant browsing pressure is present in 40% or less of whole woodland	Evidence of significant browsing pressure is present in 40% or more of whole woodland
3	**Invasive plant species[3]**	No invasive species present in woodland	Rhododendron or laurel not present, other invasive species < 10% cover	Rhododendron or laurel present, or other invasive species > 10% cover
4	**Number of native tree species**	Five or more native tree or shrub species found across woodland parcel	Three to four native tree or shrub species found across woodland parcel	None to two native tree or shrub species across woodland parcel
5	**Cover of native tree and shrub species**	> 80% of canopy trees and >80% of understory shrubs are native	50-80% of canopy trees and 50-80% of understory shrubs are native	< 50% of canopy trees and <50% of understory shrubs are native
6	**Open space within woodland[4]**	10 – 20% of woodland has areas of temporary open space, unless woodland is <10ha in which case lower threshold of 10% does not apply	21- 40% of woodland has areas of temporary open space	More than 40% of woodland has areas of temporary open space
7	**Woodland regeneration[5]**	All three classes present in woodland; trees 4-7cm dbh, saplings and seedlings or advanced coppice regrowth	One or two classes only present in woodland	No classes or coppice regrowth present in woodland
8	**Tree health**	Tree mortality less than 10%, no pests or diseases and no crown dieback	11% to 25% mortality and/or crown dieback or low risk pest or disease present	Greater than 25% tree mortality and or any high risk pest or disease present
9	**Vegetation and ground flora**	Ancient woodland flora indicators present	Recognisable NVC plant community present	No recognisable NVC community

10	**Woodland vertical structure[6]**	Three or more storeys across all survey plots or a complex woodland	Two storeys across all survey plots	One or less storey across all survey plots
11	**Veteran trees[7]**	Two or more veteran trees per hectare	One veteran tree per hectare	No veteran trees present in woodland
12	**Amount of deadwood**	50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Between 25% and 50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Less than 25% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps
13	**Woodland disturbance[8]**	No nutrient enrichment or damaged ground evident	Less than 1 hectare in total of nutrient enrichment across woodland area and/or less than 20% of woodland area has damaged ground	More than 1 hectare of nutrient enrichment and/or more than 20% of woodland area has damaged ground

Scattered Trees:

Condition Assessment Criteria	
1	The tree is a native species(or more than 70% within the block are native species).
2	The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).
3	The tree is mature[2] or veteran[3] (or more than 50% within the block are mature[2] or veteran[3]).
4	There is little or no evidence of an adverse impact on tree health by anthropogenic activities such as vandalism or herbicide use. There is no current regular pruning regime so the trees retain >75% of expected canopy for their age range and height.
5	Micro-habitats for birds, mammals and insects are present e.g. presence of deadwood, cavities, ivy or loose bark
6	More than 20% of the tree canopy area is oversailing vegetation beneath.

Line of Trees:

Condition Assessment Criteria	
1	More than 70% of trees are native species.
2	Tree canopy is predominantly continuous with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide.
3	Includes one or more mature[1] or veteran[2] tree.
4	There is an undisturbed naturally vegetated strip of at least 6 m on both sides to protect the line of trees from farming and other anthropogenic operations.
5	At least 95% of the trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.

Species Poor Hedgerow:

Attributes and functional groupings	Criteria	Description
A1. Height	>1.5 m average along length	The average height of woody growth estimated from base of stem to the top of shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees. Newly laid or coppiced hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice). A newly planted hedgerow does not pass this criterion (unless it is > 1.5 m height).
A2. Width	>1.5 m average along length	The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees. Outgrowths (e.g. blackthorn suckers) are only included in the width estimate when they >0.5 m in height. Laid, coppiced, cut and newly planted hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice[4]).

B1. Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	This is the vertical gappiness of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook).
B1. Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	This is the vertical gappiness of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook).
C1. Undisturbed ground and perennial vegetation	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: - measured from outer edge of hedgerow, and - is present on one side of the hedge (at least)	This is the level of disturbance (excluding wildlife disturbance) at the base of the hedge. Undisturbed ground should be present for at least 90% of the hedgerow length, greater than 1m in width and must be present along at least one side of the hedge. This criterion recognises the value of the hedge base as a boundary habitat with the capacity to support a wide range of species. Cultivation, heavily trodden footpaths, poached ground etc. can limit available habitat niches.
C2. Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	The indicator species used are nettles (Urtica spp.), cleavers (Galium aparine) and docks (Rumex spp.). Their presence, either singly or together, should not exceed the 20% cover threshold.
D1. Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	Neophytes are plants that have naturalised in the UK since AD 1500. For information on neophytes see the JNCC website and for information on invasive non-native species see the GB Non-Native Secretariat website.
D2. Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	This criterion addresses damaging activities that may have led to or lead to deterioration in other attributes. This could include evidence of pollution, piles of manure or rubble, or inappropriate management practices (e.g. excessive hedge cutting).

Appendix VIII. PROPOSED LANDSCAPING.

Appendix IX. BAT AUTOMATED SURVEY RESULTS.

31st May to 1st June.

AB1

Time	Common Pipistrelle	Total Calls
21		
22	1	1
23	33	33
00		
01		
02	1	1
03	1	1
04		
05		
Grand Total	36	36

AB2

Time	Common Pipistrelle	Total Calls
21	8	8
22		
23		
00		
01		
02		
03		
04	2	2
05		
Grand Total	10	10

1st – 2nd June.

AB1

No bats recorded.

AB2

Time	Common Pipistrelle	Total Calls
21	1	1
22		
23		
00		
01		
02		
03		
04		
05		
Grand Total	1	1

2nd – 3rd June.

AB1

Time	Common Pipistrelle	Myotis	Total Calls
21	1		1
22	1		1
23			
00			
01		1	1
02			
03			
04			
05			
Grand Total	2	1	3

AB2

No bats recorded.

3rd – 4th June.

AB1

Time	Common Pipistrelle	Total Calls
21		1
22	1	
23		
00		
01		
02		
03	1	1
04	1	1
05		
Grand Total	3	3

AB2

No bats recorded.

4th – 5th June.

AB1

Time	Common Pipistrelle	Total Calls
21		
22	1	1
23		
00		
01		
02		
03		
04		
05		
Grand Total	1	1

AB2

Time	Common Pipistrelle	Total Calls
21	6	6
22	69	69
23	1	1
00		
01		
02		
03	1	1
04	4	4
05		
Grand Total	81	81

24th – 25th June.

AB1

Time	Common Pipistrelle	Noctule	Total Calls
21			
22		1	1
23			
00			
01	1		1
02			
03	1		1
04			
05			
Grand Total	2	1	3

AB2

Time	Common Pipistrelle	Total Calls
21		
22	16	16
23	2	2
00	1	1
01	4	4
02	9	9
03	6	6
04	1	1
05		
Grand Total	39	39

25th – 26th June.

AB1

No bats recorded.

AB2

Time	Common Pipistrelle	Myotis	Total Calls
21			
22	10	1	11
23	2		2
00			
01			
02			
03			
04			
05			
Grand Total	12	1	13

26th – 27th June.

AB1

No bats recorded.

AB2

Time	Common Pipistrelle	Myotis	Total Calls
21			
22	60	5	65
23	11		11
00	22		22
01			
02	2		2
03	33		33
04	23		23
05			
Grand Total	151	5	156

27th – 28th June.

AB1

No bats recorded.

AB2

Time	Common Pipistrelle	Noctule	Total Calls
21			
22	11		11
23	1		1
00			
01			
02			
03			
04		2	2
05			
Grand Total	12	2	14

28th – 29th June.

AB1

No bats recorded.

AB2

Time	Common Pipistrelle	Myotis	Total Calls
21			
22	28	1	29
23	1		
00			
01			
02			
03	1		1
04			
05			
Grand Total	30		30

2nd – 3rd July.

AB1

Time	Common Pipistrelle	Myotis	Total Calls
21			
22	32	3	35
23	1		1
00			
01		1	1
02			
03	1		1
04			
05			
Grand Total	34	4	38

AB2

Time	Common Pipistrelle	Myotis	Total Calls
21			
22	32	3	35
23	1		1
00			
01		1	1
02			
03	1		1
04			
05			
Grand Total	34	4	38

3rd – 4th July.

AB1

Time	Common Pipistrelle	Total Calls
21	36	36
22		
23	7	7
00	18	18
01	13	13
02	26	26
03	16	16
04	3	3
05		
Grand Total	119	119

AB2

Time	Common Pipistrelle	Total Calls
21	1	1
22	3	3
23		
00		
01		
02		
03		
04	1	1
05		
Grand Total	5	5

4th – 5th July.

AB1

Time	Common Pipistrelle	Myotis	Total Calls
21			
22	1		1
23	10		10
00	10		10
01	31	1	32
02	3		3
03	5		5
04	37		37
05			
Grand Total	97	1	98

AB2

Time	Common Pipistrelle	Total Calls
21		
22		
23		
00		
01		
02		
03		
04	1	1
05		
Grand Total	1	1

5th – 6th July.

AB1

Time	Common Pipistrelle	Myotis	Total Calls
21			
22	38		38
23	31		31
00	7		7
01	1		1
02	10		10
03	38		38
04		1	1
05			
Grand Total	125	1	126

AB2

Time	Common Pipistrelle	Total Calls
21		
22		
23		
00		
01		
02	1	1
03	1	1
04	1	1
05		
Grand Total	3	3

6th – 7th July.

AB1

Time	Common Pipistrelle	Myotis	Total Calls
21			
22	114	1	115
23	80		80
00	30		30
01			
02	49		49
03	56		56
04	22		22
05			
Grand Total	351	1	352

AB2

Time	Common Pipistrelle	Total Calls
21		
22	2	2
23		
00		
01		
02		
03		
04		
05		
Grand Total	2	2

27th – 28th August.

AB1

Time	Common Pipistrelle	Myotis	Noctule	Total Calls
20	42	1		43
21	1			1
22	1			1
23				
00	1			1
01		4		4
02		3		3
03	1	1	1	3
04		3		3
05	1			1
Grand Total	47	12	1	60

AB2

Time	Common Pipistrelle	Noctule	Total Calls
20	3	1	4
21			
22	1		1
23		2	2
00			
01			
02			
03		1	1
04			
05	26		26
Grand Total	30	4	34

28th – 29th August.

AB1

Time	Common Pipistrelle	Myotis	Soprano Pipistrelle	Total Calls
20	59	1		60
21	2			2
22				
23				
00	4	2		6
01	1	3		4
02		1		1
03	1	1		2
04				
05	33		1	34
Grand Total	100	8	1	109

AB2

Time	Common Pipistrelle	Myotis	Noctule	Soprano Pipistrelle	Total Calls
19	1				1
20	2	1	3	1	7
21	1				1
22					
23	1				1
00					
01					
02					
03			1		1
04					
05	15	1			16
Grand Total	20	2	4	1	27

29th – 30th August.

AB1

Time	Common Pipistrelle	Myotis	Total Calls
20	28		28
21			
22			
23			
00			
01		1	1
02			
03		2	2
04		2	2
05		4	4
Grand Total	28	9	37

AB2

Time	Common Pipistrelle	Myotis	Noctule	Total Calls
20		1		1
21	2			2
22	1		1	2
23				
00				
01				
02		1		1
03				
04				
05				
Grand Total	3	2	1	6

30th – 31st August.

AB1

Time	Common Pipistrelle	Myotis	Total Calls
20	50		50
21	4		4
22			
23			
00			
01			
02	1		1
03		4	4
04		3	3
05	1	9	9
Grand Total	52	16	68

AB2

Time	Common Pipistrelle	Myotis	Noctule	Total Calls
20		1		1
21	1			1
22	1		1	2
23	1			1
00	1			1
01				
02				
03				
04				
05	14			14
Grand Total	18	1	1	20

31st August – 1st September.

AB1

Time	Common Pipistrelle	Myotis	Total Calls
20	21		21
21			
22			
23			
00		1	1
01	1	2	3
02		2	2
03		1	1
04		1	1
05	14	1	15
Grand Total	36	8	44

AB2

Time	Common Pipistrelle	Myotis	Total Calls
20		2	2
21	2		2
22	1		1
23	2		2
00			
01			
02			
03			
04			
05	2		2
Grand Total	7	2	9

1st – 2nd September.

AB1

Time	Common Pipistrelle	Myotis	Total Calls
20	29		29
21		2	2
22			
23		3	3
00		3	3
01		3	3
02		1	1
03		1	1
04		2	2
05	17	1	18
Grand Total	46	16	62

AB2

Time	Common Pipistrelle	Myotis	Noctule	Soprano Pipistrelle	Total Calls
20			1		1
21	3		1		4
22	2				2
23		1			1
00	1				1
01					
02					
03					
04		1			1
05	15			1	16
Grand Total	21	2	2	1	26

2nd – 3rd September.

AB1

Time	Common Pipistrelle	Myotis	Total Calls
19	7		7
20	9		9
21			
22			
23			
00			
01			
02	1	2	3
03			
04	1	1	2
05	6	2	8
Grand Total	24	5	29

AB2

Time	Common Pipistrelle	Myotis	Noctule	Soprano Pipistrelle	Total Calls
20	1		1		2
21	1		1		2
22					
23	1		1		2
00	1				1
01	1				1
02	1				1
03			1		1
04	4				4
05	9		1	1	11
Grand Total	19		5	1	25

3rd – 4th September.

AB1

Time	Common Pipistrelle	Myotis	Noctule	Total Calls
19	5			5
20	5		1	6
21				
22	1			1
23	1			1
00		2		2
01	1	3		4
02		2		2
03	3	2		5
04	1	1		2
05	4	2		6
Grand Total	21	12		34

AB2

Time	Common Pipistrelle	Myotis	Noctule	Total Calls
19	2			2
20	2		2	4
21		1		1
22			1	1
23	1			1
00				
01			2	2
02				
03				
04				
05	18			18
06	1			1
Grand Total	24	1	5	

4th – 5th September.

AB1

No bats recorded.

AB2

No bats recorded.

5th – 6th September.

AB1

Time	Common Pipistrelle	Myotis	Soprano Pipistrelle	Total Calls
19	1			1
20		1	4	5
21			1	1
22	1			1
23	5			5
Grand Total				

AB2

Time	Common Pipistrelle	Noctule	Total Calls
20	1	4	
21	1	1	
22			
23	1		
00			
01			
02			
03			
04			
05			
Grand Total			

24th – 25th October.

AB1

Time	Common Pipistrelle	Total Calls
21	2	2
22		
23		
00		
01		
02		
03		
04	1	1
05		
Grand Total	3	3

AB2

Time	Noctule	Total Calls
21	1	1
22		
23		
00		
01		
02		
03		
04		
05		
Grand Total	1	1

25th – 26th October.

AB1

No bats recorded.

AB2

Time	Soprano Pipistrelle	Total Calls
21	1	1
22		
23		
00	1	1
01		
02		
03		
04		
05		
Grand Total	2	2

26th – 27th October.

AB1

Time	Common Pipistrelle	Total Calls
21	1	1
22	2	2
23		
00		
01		
02		
03		
04		
05		
Grand Total	3	3

AB2

No bats recorded.

27th – 28th October.

AB1

No bats recorded.

AB2

No bats recorded.

28th 29th October.

AB1

No bats recorded.

AB2

No bats recorded.

Toolbox Talk: Reptiles

Whitcher Wildlife Ltd

Ecological Consultants

Identification: Grass Snakes.

The grass snake can be up to 120cm long. It is generally dark green in colour but may occasionally appear grey with vertical black bars and spots that run along its sides. There is usually a yellow marking around the neck.

Identification: Adders.

The adder is the only native species that is venomous, but it is rarely harmful to humans. Adult adders are generally up to 66cm long. Back ground colouration is a light shade of grey or brown with a black zigzag marking along the length of the back. As with all reptiles, colouration varies and becomes duller as sloughing (skin shedding) approaches.

Identification: Slow Worms.

Slow worms grow to around 45cm in length. The males and females display a marked difference in colour when fully grown. In general, the species displays colouring that varies from light brown, dark brown, grey, bronze or brick red with the females often displaying a dark vertebral stripe and both males and females displaying occasional markings on the flanks.

Identification: Common Lizards.

Common lizards grow to around 16cm. They are grey brown to dark brown, often with a darker streak that may run the entire length of the spine. A continuous dark band bordered by light yellow or white spots is often seen on either side of the body. The underside of the males is egg yolk yellow to orange spotted with black. Females are yellowish grey.

Other Reptiles.

In addition to the reptiles outlined on this document, there are also two other reptile species in Great Britain, the smooth snakes and the sand lizard. These reptiles are a lot less common than the four species covered with the smooth snake being predominantly found on heathland in southern England and the sand lizard found throughout Great Britain in coastal dune areas.

These species are also afforded a higher level of protection because they are European Protected Species.

Habitat.

Maintaining the right body temperature is vital to reptiles' survival. In the morning they find a warm basking site to heat up their bodies and then later they may move back into the shade so as not to overheat. Hence, reptiles require a habitat that provides a range of suitable refugia for shelter such as dense vegetation, rubble or log piles, or crevices and open areas for basking such as bare ground, rocks or railway ballast shoulders. During hot summers reptiles may be found in damper, cooler sites. Reptiles hibernate, spending the winter in burrows or under logs protected from the cold and predators.

When disturbed in their natural habitat reptiles will usually move away quickly.

Legislation.

Reptiles are protected under Schedule 5 of the Wildlife and Countryside Act 1981. They received greater protection following reviews of the schedules published in 1988 and 1991. This means they are protected against intentional or recklessly killing and injuring and against sale or transporting for sale.

If reptiles are identified during works, stop all works and contact Whitcher Wildlife Ltd directly on 01226 753271 or at info@whitcher-wildlife.co.uk

Appendix B River Condition Assessment, Smeeden Foreman (January 2024)

Biodiversity Net Gain Assessment

Newett Homes Ltd

6 September 2024

SF3364 | Land off Dodworth Green Road, Dodworth

RIVER CONDITION ASSESSMENT AND BIODIVERSITY NET GAIN SUMMARY

January 2023 | For Planning

SMEEDEN FOREMAN

Landscape Architecture • Ecology • Arboriculture

Somerset House, Low Moor Lane, Scotton, Knaresborough, North Yorkshire, HG5 9JB
www.smeedenforeman.co.uk tel: 01423 863 369

Quality Assurance

Job Title: Land off Dodworth Green Road, Dodworth			**Job Number:** SF3364	
Document title: River Condition Assessment and Biodiversity Net Gain Summary				
Issue	**Date**	**Prepared by**	**Checked by**	**Approved by**
Original	January 2023	JS	CW	CW

Name:	**Initials:**	**Status:**	**Licence number(s):**
Catherine White *Associate Ecologist*	CW	BSc (Hons) MA (LD) CMLI MCIEEM	Bats: 2016-24337 (Class 2) GCN: 2015-19280 (Class 1)
Jonathan Siberry *Senior Ecologist*	JS	BSc (Hons) MCIEEM	Bats: 2020-44500 (Class 1) GCN: 2018-38304 (Class 1) Barn owl: CL29/00512

REVISION HISTORY

Original report issued 19th January 2023

CONTENTS

LIST OF FIGURES AND TABLES

1.0 INTRODUCTION

1.1 Smeeden Foreman Limited has been commissioned by Newett Homes to undertake a River Condition Assessment (RCA) and associated Biodiversity Net Gain (BNG) calculations for their site at 'Land off Dodworth Green Road, Dodworth (central grid reference SE 31440 05004), hereafter referred to as the 'site'.

1.2 This report details the methodology and results of the RCA and associated BNG calculations, which will further inform the site-wide BNG assessment for the site.

1.3 The principle of 'net gain' is set out in the National Planning Policy Framework (NPPF July 2021):

Paragraph 174: '*Planning policies and decisions should contribute to and enhance the natural and local environment by:…*

d) minimising impacts on and providing ***net gains for biodiversity****, including by establishing coherent ecological networks that are more resilient to current and future pressures;'*

Paragraph 179: ''*To protect and enhance biodiversity and geodiversity, plans should:*

b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable ***net gains for biodiversity.'***

Paragraph 180: *When determining planning applications, local planning authorities should apply the following principles:*

d) development whose primary objective is to conserve or enhance biodiversity be supported; while opportunities to incorporate biodiversity improvements in and around developments should be integrated as part of their design, especially where this can secure measurable ***net gains for biodiversity*** *or enhance public access to nature where this is appropriate.*

1.4 The requirement for developers to secure a minimum biodiversity net gain of 10% is currently progressing through the legislative process within the Environment Bill.

1.5 The current Barnsley Local Plan (2019) does not include policy with specific reference to BNG or the delivery of measurable net gains; however, one of the objectives of the Local Plan is to *"protect and enhance Barnsley's natural assets and achieve net gains in biodiversity".*

1.6 It is understood that a Biodiversity Net Gain design should improve the extent or condition of biodiversity affected by a project. It should not result in lost or damaged features being replaced by features of lower biodiversity value. The mitigation hierarchy principle of avoid – minimise – remediate – compensate should be followed within the design process with irreplaceable features retained.

1.7 Site proposals are for the development of 51 residential dwellings with associated infrastructure and landscaping. Infrastructure works include for the creation of a roadway over a stream which runs centrally through the site, by way of culverting a section of the stream.

2.0 THE SITE

2.1 The site is located to the east of Dodworth Green Road, Dodworth and comprises a series of irregular shaped fields, split by a small watercourse running west-east across the site. A second watercourse is located to the south of the site, within 10m of the application boundary. Please refer to *Figure 1* for the site location.

2.2 The stream which runs centrally through the site (Stream 1) is unnamed and is culverted both on the entry and exit points on the site boundaries. From reviewing Ordnance Survey maps, these culverts seem to be significant in length and it is not clear where the stream re-emerges from the culvert. The stream on site therefore appears to be the only open section of this watercourse within a significant distance from the site.

2.3 The stream to the south of the site (Stream 2) is culverted upstream near to residential properties off Ratten Row, Dodworth, but is visible again near Dodworth cemetery. Further upstream of the site, the stream appears to be fed by smaller agricultural ditches / streams, located adjacent to arable fields. Any further upstream watercourse connections are unclear. Downstream of the site, the stream continues to flow eastwards until it reaches South Street, Dodworth, where it is culverted. Beyond this, it is unclear where the stream re-emerges from the culvert.

3.0 RIVER CONDITON ASSESSMENT

Methodology

3.1 Whilst the calculation of biodiversity units for Rivers and Streams, to inform BNG, is undertaken with reference to *The Biodiversity Metric 3.1 User Guide* (Panks *et al.* April, 2022a) and *Technical Supplement* (Panks *et al.* April, 2022b) as for terrestrial habitats, the assessment of river condition is calculated via a RCA, an assessment specific to Rivers and Streams. The RCA is undertaken upon any rivers and streams located within a proposed site boundary or where a site boundary is located within the riparian zone of any given river or stream (with the riparian zone defined as the area within 10m of the bank top). The RCA comprises a combination of a desk-based assessment (which indicates 'River Type') and field survey (to assess the 'condition' of the river), as summarised in Panks *et al.* (April 2022b) and detailed within Gurnell *et al.,* (August, 2021).

3.2 The desk-based assessment assigns the river or stream into one of 13 river types, based upon a homogenous 'reach' that contains the site of interest. The reach is identified using current Ordnance Survey maps (1:10,00 scale) and / or aerial photographs, and will typically include areas upstream and downstream of the site of interest. The start and end point of a reach is defined where one of the following are encountered:

- a major tributary (e.g., likely to contributing > 10% flow in the river/stream)
- a major artificial barrier (e.g., > 5m tall - likely to significantly change flow or sediment movements)
- a distinct and persistent change in planform (e.g., meandering to straight / slightly sinuous)

3.3 Two alternative river types can be assigned to a river by the surveyor for rivers that are too large or deep for the riverbed to be adequately surveyed (Large River) or for rivers that are too heavily modified to conform to one of the other river types (Navigable Rivers and Canals).

3.4 The field element comprises a series of five MoRPh (**Mo**dular **R**iver **Ph**ysical) surveys (Gurnell *et al. 2022*.) undertaken on contiguous lengths (modules) of a river. The length of each MoRPh module is approx. twice the river width. Completing five contiguous MoRPh modules provides a 'sub-reach'. Where required, the sub-reach survey of five modules is repeated until at least 20% of the total river length under consideration is surveyed, or to allow for characterisation of any notable variations in the river character. The field survey information is subsequently input into the MoRPh web application which, along with consideration of the desk-based assessment, automatically provides an overall condition classification.

3.5 The field survey was undertaken on 23rd August 2022 by trained and certified surveyor Jonathan Siberry MCIEEM (Senior Ecologist). The weather was warm and dry, with no significant precipitation events having taken place within 48 hours of the survey.

Limitations

3.5.1 Due to the presence of dense vegetation (scrub) in areas of Modules 2, 3 and 4 (Stream 1), the banks and river channel were partially obscured. As such, care was taken by the surveyor to accurately note all visible features and where necessary, assumptions were made for the modules based upon the visible features / characteristics and the surveyor's professional judgement.

Results

3.6 The reach, sub-reach and module locations are shown on *Figure 2*. It should be noted that for Stream 1, the reach does not extend beyond the site boundary due to the presence of culverts of significant lengths both upstream and downstream of the site.

3.7 A summary of values attributed to the RCA are summarised in Table 1 below, along with condition score and final condition classification. Full survey details from each MoRPh module or MoRPh5 group can be provided, upon request.

Table 1: Summary of the River Condition Assessment Values

River / Stream Name	Reach	Sub-reach	Module Length (m)	River Shape	Average Width (m)	River Category	A1: Braiding Index	A2: Sinuosity Index	A3: Anabranching Index	A4: Level of Confinement	A5: Reach Valley Gradient	A6: Bedrock Reach?	A7: Coarsest Bed Material	A8: Average Bed Material	River Type	Condition Score	Condition Class
Stream 1	Traveller's Inn – Stratford Walk	Traveller's Inn	10	1.36	0.98	Other River / Stream	1	1.14	1	Unconfined	0.085	No	Boulder	Silt	Type D	1.98	Fairly Good
Stream 2	Dodworth Cemetery – South Street	Ratten Row	10	0.45	2.5	Other River / Stream	1	1.02	1	Unconfined	0.022	No	Boulder	Silt	Type D	1.42	Fairly Good

3.8 Both Stream 1 and Stream 2 achieve a condition score of Fairly Good.

4.0 BIODIVERSITY NET GAIN ASSESSMENT – RIVERS & STREAMS

Methodology

4.1 The DEFRA Biodiversity Metric v3.1 has been used to carry out the BNG calculation for rivers and streams, with reference made to *The Biodiversity Metric 3.1 User Guide* (Panks *et al.* April, 2022a) and *Technical Supplement* (April, 2022b). The Metric has been developed by Natural England, the Department for Environment, Food and Rural Affairs (DEFRA) and the Environment Agency with input from various environmental NGOs, developers, councils and other interested parties.

4.2 The condition of rivers and streams is determined via a RCA, as detailed within Section 3.0. Values for distinctiveness are pre-set within the Metric spreadsheet; strategic significance has been allocated as either 'high' where appropriate actions have been identified within Locals Plans, Local Nature Recovery Strategies, River Basin Management Plans, Catchment Plans, a Catchment Planning System or where the river or stream is noted as a Priority Habitat for Restoration, or 'low' where no appropriate actions are identified, with reference to Table 9-5 of the Biodiversity Metric v3.1 User Guide (Panks *et al.* 2022a). Values for watercourse and riparian encroachment have been selected based upon the guidance provided within Table 9-3 and 9-4 of the Biodiversity Metric v3.1 User Guide (Panks *et al.* 2022a).

Baseline

4.3 Details of the on-site streams are summarised in Table 2 along with the length measurements for each river / stream type and any necessary justifications. Baseline habitats have been mapped and measured using scaled GIS drawings (*Figure 3*). Please refer to Section 3.0 for a summary of the condition assessment for each stream.

Table 2: Site Habitat Baseline – Rivers & Streams

Ref No.	River Type	Length (km)	Distinctiveness (pre-set)	Condition	Strategic significance	Watercourse Encroachment	Riparian Encroachment	Justification/notes
1	Other River and Stream	0.135	High	Fairly Good	High – Within Local Plans	No Encroachment	Major	Rivers and streams are listed as a local priority habitat within the Barnsley Biodiversity Action Plan. No watercourse encroachment but residential buildings are present within 4m of the stream.
2	Other River and Stream	0.115	High	Fairly Good	High – Within Local Plans	Minor	Minor	Rivers and streams are listed as a local priority habitat within the Barnsley Biodiversity Action Plan. Outflow pipes present but less than 5% of the streambank is engineered. A footpath is located approx. 6m from the stream but comprises less than 10% of the riparian zone area.

4.4 Inputting the above site habitat baseline information into the Metric Calculation Tool provides the excerpts shown below in Tables 3, 4 and 5.

Table 3: River Baseline On-site – Metric Calculation Tool

C-1 Site River Baseline

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

Existing river type			Habitat distinctiveness		Habitat condition		Strategic significance			Watercourse encroachment		Riparian encroachment		Suggested action	Ecological baseline	Retention category biodiversity value					
Baseline ref	River type	Length (km)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic significance	Extent of encroachment	Multiplier	Extent of encroachment	Multiplier		Total river units	Length retained	Length enhanced	Units retained	Units enhanced	Length Lost	Units Lost
1	Other Rivers and Streams	0.135	High	6	Fairly Good	2.5	Within Local Plans	High strategic significance	1.15	No Encroachment	1	Major	0.75	Restore	1.75		0.113	0.00	1.46	0.02	0.28
2	Other Rivers and Streams	0.115	High	6	Fairly Good	2.5	Within Local Plans	High strategic significance	1.15	Minor	0.8	Minor	0.95	Restore	1.51		0.115	0.00	1.51	0.00	0.00
3																					
4																					
5																					
6																					
7																					
		0.25													3.25	0.00	0.23	0.00	2.97	0.02	0.28

4.5 On-site baseline units for rivers and streams, as calculated within the Metric, equate to a total of **3.25 units.**

Post-development

4.6 Based upon the proposed planning layout and landscape masterplan (Drawing Ref. H22-0018_001D), there will be no additional watercourse creation and the condition of the streams would also not change. As such, the change in river units would be a loss of 0.72 units (22.12%). However, recommendations have been provided by Smeeden Foreman to the client with regards to increasing the condition of the on-site streams. Enhancements to Stream 1 were agreed upon and would increase the condition of Stream 1 from 'Fairly Good' to 'Good'. This condition increase would be achieved through:

1) the addition of large wood (greater than 1m long and 10cm diameter) to the bank top and stream bed in Module 1 (the northern extent of the on-site section of Stream 1); and,
2) the removal of large trash throughout the on-site section of Stream 1.

4.7 Delivery of the above-listed enhancements would reduce the loss of river units on site, resulting in an overall 0.57 river unit loss (17.63%).

4.8 Table 4 summarises proposed watercourse (culvert) creation, whilst Table 5 summarises proposed watercourse changes / enhancements. Please refer to *Figure 4* for the location of post-development river / stream habitats.

Table 4: River Creation on Site – Metric Calculation Tool

C-2 Site River Creation

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

	Proposed habitats		Habitat distinctiveness	Habitat condition	Strategic significance	Temporal multiplier		Difficulty multipliers	Watercourse encroachment	Riparian encroachment	River units delivered
Baseline ref	River type	Length (km)	Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation	Extent of encroachment	Extent of encroachment	
1	Culvert	0.022	Low	Poor	Low potential/action not identified in any plan	Standard time to target condition applied	1	Low	Major	Major	0.02
2											
3											
4											
5											
		0.02									0.02

Table 5: River Changes / Enhancement on Site – Metric Calculation Tool

C-3 Site River Enhancement

Condense / Show | Condense / Show Rows | Main Menu | Instructions

	Baseline habitats		Post development/ post intervention habitats											
			Change in distinctiveness and condition			Habitat distinctiveness	Habitat condition	Strategic significance	Temporal multiplier		Difficulty multipliers	Watercourse encroachment	Riparian encroachment	
Baseline ref	Baseline habitat	Proposed River Type (Pre-populated can be overridden)	Distinctiveness movement	Condition movement	Length (km)	Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of enhancement	Extent of encroachment	Extent of encroachment	River units delivered
1	Other Rivers and Streams	Other Rivers and Streams	High - High	Fairly Good - Good	0.113	High	Good	Delivery within Local Plans	Standard time to target condition applied	2	Medium	Minor	Major	1.32
2	Other Rivers and Streams	Other Rivers and Streams	High - High	Fairly Good - Fairly Good	0.115	High	Fairly Good	Delivery within Local Plans	Standard time to target condition applied	1	Medium	Minor	Moderate	1.35
					0.23									2.66

Table 6: Headline Results – Metric Calculation Tool

On-site baseline	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	3.25
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	2.68
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	0.00%
	Hedgerow units	0.00%
	River units	-17.63%
Off-site baseline	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	-0.57
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	0.00%
	Hedgerow units	0.00%
	River units	-17.63%
Trading rules Satisfied?	Yes ✓	

5.0 SUMMARY

5.1 One stream (Stream 1) is present on site, splitting the site in two and flowing west-east. A second watercourse is located to the south of the site, within 10m of the application boundary, also flowing west-east.

5.2 The current Barnsley Local Plan (2019) does not include policy with specific reference to BNG or the delivery of measurable net gains; however, one of the objectives of the Local Plan is to *"protect and enhance Barnsley's natural assets and achieve net gains in biodiversity"*.

5.3 Both streams (Stream 1 and Stream 2) have been assessed being of 'Fairly Good' condition.

5.4 Watercourse and riparian encroachment will increase for both streams as a result of the proposed residential development and there would not be any enhancements of either stream as a result of the proposed layout; however, targeted enhancements will be adopted within Stream 1 (the inclusion of 'large wood' on the bank top / within the channel and the removal of large trash from the stream). These enhancements will result in a condition increase from 'Fairly Good' to 'Good' for Stream 1. As such, the anticipated net change in river units as a result of the proposed development is a loss of 0.57 units (-17.63%).

5.4.1 Commitment to long term future management of Stream 1 will be required to achieve the habitat conditions aimed for and should be undertaken in accordance with a site-specific Biodiversity and Ecological Management Plan (BEMP), or similar. The provision of these details can be provided by condition.

6.0 REFERENCES

Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020a) *The UK Habitat Classification User Manual Version 1.1* at http://ukhab.org

Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020) *UK Habitat Classification– Habitat Definitions V1.1* at http://ukhab.org

Edwards J, Knight M, Taylor S & Crosher I. E (May 2020) 'Habitat Networks Maps, User Guidance v.2', Natural England.

Gurnell, A.M., England, J., Scott, S.J. and Shuker, L.J. (2021) *A Guide to Assessing River Condition: Part of the Rivers and Streams Component of the Biodiversity Net Gain Metric*, Published August 2021.

Gurnell, A.M., England, J., Shuker, L.J. and Wharton, G., (2022) *The MoRPh Survey: Technical Reference Manual 2022 Version,* Available at: https://modularriversurvey.org/citizen-science-help/ [Accessed November 2022].

Panks, S., White, N., Newsome, A., Nash, M., Potter, J., Heydon, M., Mayhew, E., Alvarez, M., Russell T., Cashon, C., Goddard, F., Scott, S.H., Heaver, M, H. Scott, S.J., Treweek, J., Butcher, B., and Stone, D., (2022a). *Biodiversity metric 3.1: Auditing and accounting for biodiversity – User Guide.* Natural England. Published April 2022.

Panks, S., White, N., Newsome, A., Nash, M., Potter, J., Heydon, M., Mayhew, E., Alvarez, M., Russell T., Cashon, C., Goddard, F., Scott, S.H., Heaver, M, H. Scott, S.J., Treweek, J., Butcher, B., and Stone, D., (2022b). *Biodiversity metric 3.1: Auditing and accounting for biodiversity – Technical Supplement.* Natural England. Published April 2022.

FIGURES

FIGURE 1: SITE LOCATION PLAN

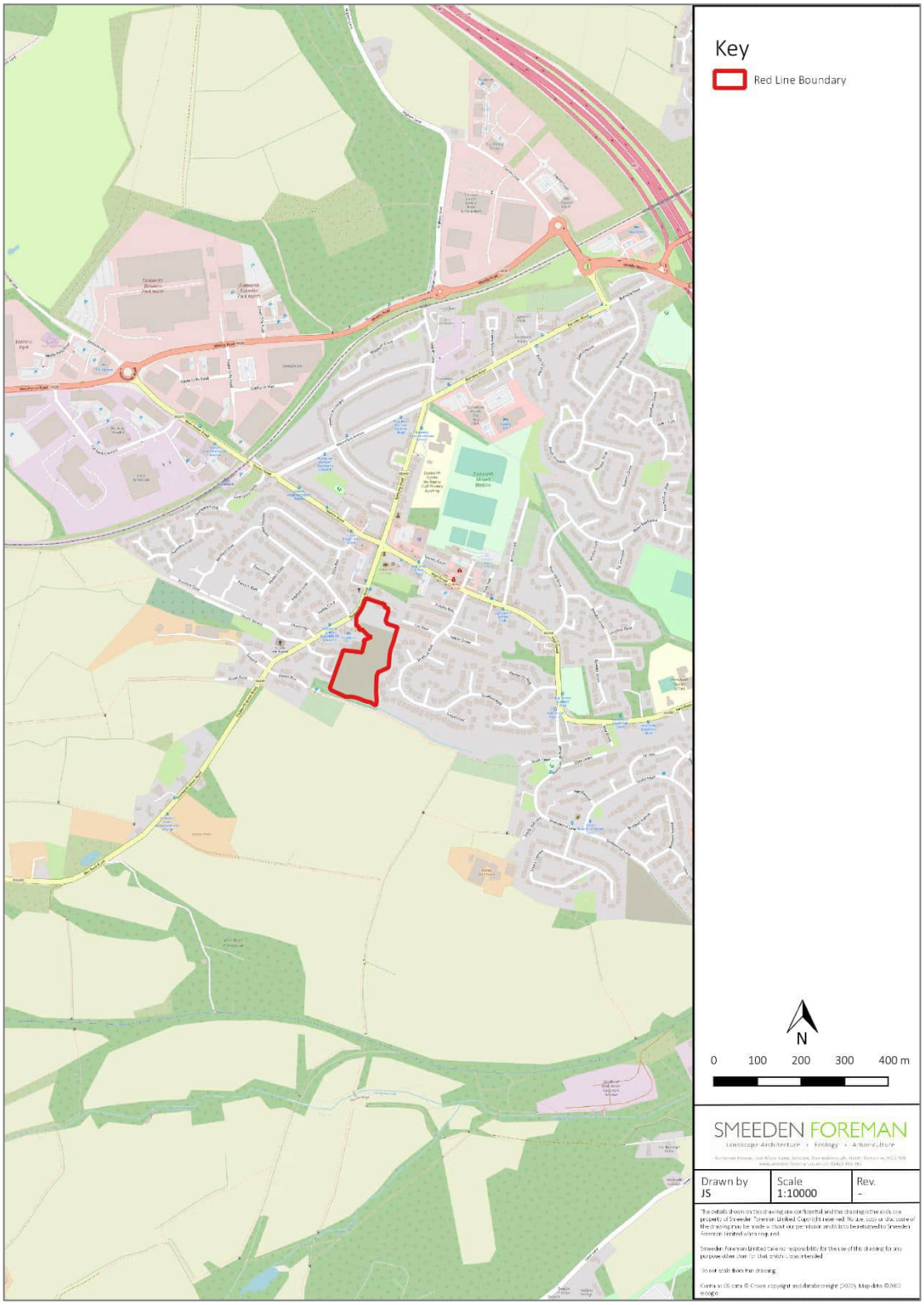


FIGURE 2: REACH, SUB-REACH AND MODULE LOCATIONS

FIGURE 3: PRE-DEVELOPMENT HABITATS – RIVERS & STREAMS

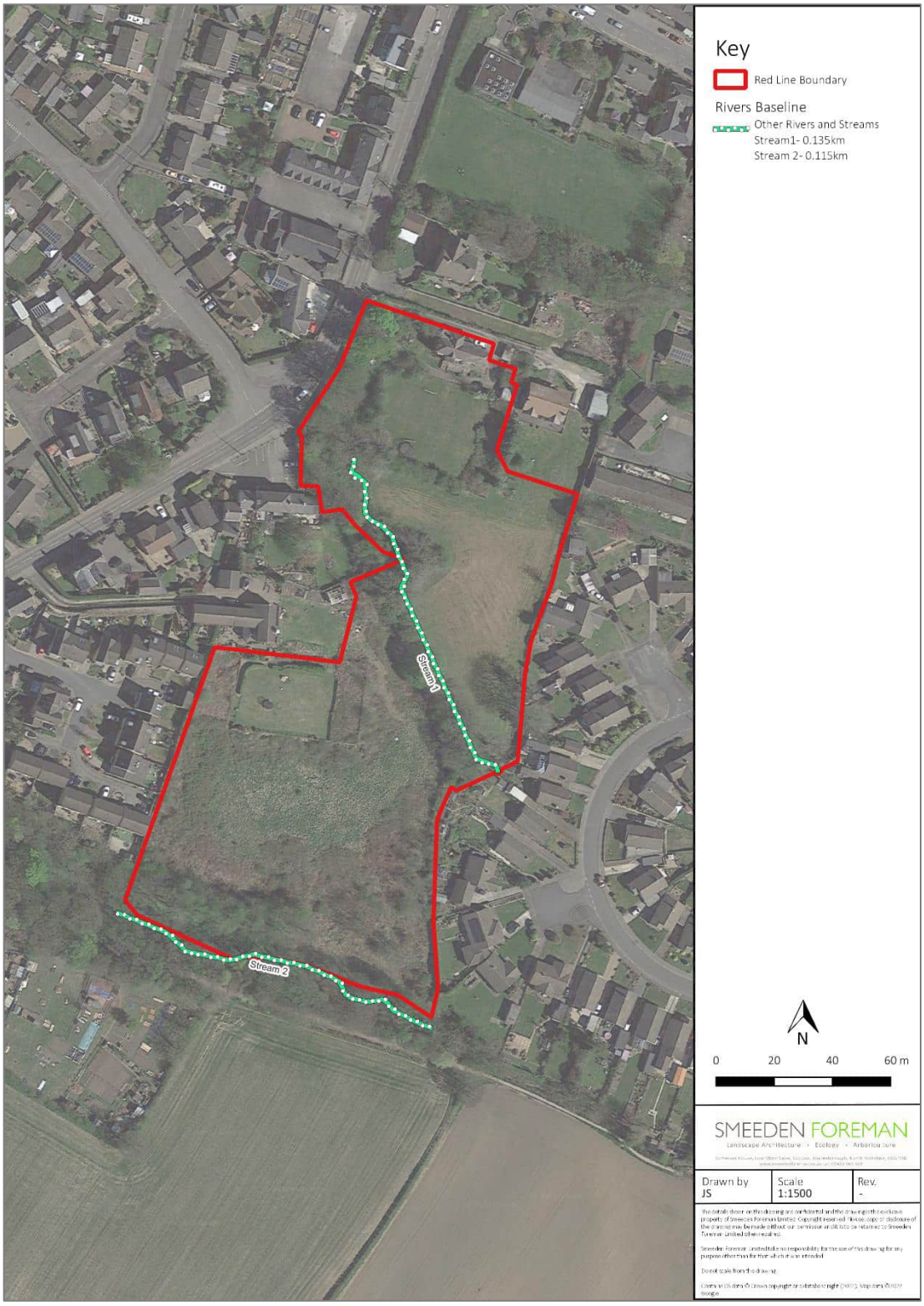


FIGURE 4: POST-DEVELOPMENT HABITATS – RIVERS & STREAMS

Appendix C Arboricultural Impact Assessment, Barnes Associates (August 2024)

Biodiversity Net Gain Assessment

Newett Homes Ltd

15 September 2024

Ground Floor
5 St James Square
Boroughbridge YO51 9AS
T 01423 322371
E info@barnesassociates.co.uk
W barnesassociates.co.uk
Company number 10438116
Registered in England and Wales

Arboricultural Impact Assessment

At: Dodworth, Barnsley, S75 3RR

For: Newett Homes

Date: 23/08/2024

Reference: BA230623

DOCUMENT CONTROL

Surveyed by*	Matt Metcalfe and Lloyd Barnes			**Report date**	22/08/2024
Prepared by*	Matt Metcalfe				
Reviewed by*	Sue Barnes				
Revision	A	**Date**	23/08/2024	**Notes:**	
	* Refer to qualifications and experience appendix				

VALIDATION STATEMENT FOR LPA REGISTRATION

This report contains information relating to the proposed building development at Dodworth, Barnsley, S75 3RR.

For Local Planning Authority (LPA) validation purposes, this report contains the following:

- An **Arboricultural Impact Appraisal** of the proposed development, detailing trees to be retained and the proposed protection measures (Impact Appraisal).
- Appended information on trees and protection methods (Appendices)

TABLE OF CONTENTS

APPENDICES

SUMMARY OF TREE INFORMATION

The Proposal. This arboricultural impact appraisal accompanies the planning application at Dodworth, Barnsley, S75 3RR as detailed in the extract of the block plan copied opposite.

Tree Information. This impact assessment is based upon our Tree Assessment reference BA230623TS, which includes information on the trees condition and minimum protection requirements – attached in APPENDIX – PLANS.

The Scheme. Details and shown on the Implication Assessment Plan reference BA230623AIA – in APPENDIX – PLANS.

General Tree Losses. The site currently hosts ST1 and T16 categorised as U in line with BS5837:2012 and these should be removed due to safety concerns.

Tree losses to enable the scheme.

	A	B	C	U
Individual Tree loss	0	3	2	0
Entire Group loss	0	1	4	0
Partial Group loss	0	0	0	0
Entire Hedge loss	0	0	0	0
Partial Hedge loss	0	0	0	0

Tree pruning to enable development: Tree pruning of retained trees is required and outlined within BA230623_AIA

Replacement Trees: Tree planting schemes are included within the scheme.

Trees Protection: The scheme does enter the Root Protection Areas of retained trees, where it may be defendable with alternative construction methods and specialist design.

This assessment considers the potential conflicts with existing trees, along with protection recommendations which are detailed on the Tree Protection Plan reference BA230623TPP – in APPENDIX – PLANS.

General protection can be easily achieved by erecting and maintaining Tree Protection Fencing (TPF) to restrict access close to trees and establishing and maintaining Construction Exclusion Zones.

Ground Protection where changes extend into the Root Protection Area, can be adopted to provide temporary or permanent access.

These protection methods can, if required, be expanded upon within a conditional Arboricultural Method Statement.

Providing appropriate protection is installed the risks to trees can be controlled enabling trees to continue to screen the site to help provide separation between the site, neighbouring properties, and the public realm.

IMPACT ASSESSMENT

This assessment describes how the proposal will affect trees and any impact this will have on local amenity and character.

Tree Constraints. Typically, trees can offer constraints to potential layouts. Ideally, the requirements of the trees and the proposal should be considered at the design stage. A general guide to potential tree constraints is included in APPENDIX – TREE CONSTRAINTS.

Limiting Damage to Trees. Care has been taken regarding the retention of large, mature, over-mature or veteran trees which become enclosed within the new development. Achieving successful integration has required careful consideration during the design stages and has considered the constraints offered by trees and follows the general guidelines, included in APPENDIX – DESIGN CONSIDERATIONS.

General Risks to Trees. The development process does have the potential to both damage existing trees and compromise tree planting opportunities through the severance of roots or changes to the soil levels, volume, or structure. A general guide to potential tree damage is included in APPENDIX – RISKS TO TREES DURING CONSTRUCTION.

Protection of Trees. The potential for conflicts between the proposal can be defended through the adoption of tree protection to help protect the RPA and maintain sufficient space to enable the confident retention of trees. In general, tree protection requires a combination of protective fencing, ground protection, and the adoption of building design, materials, and techniques that can sustain normal growth, further details included in APPENDIX – TREE PROTECTION.

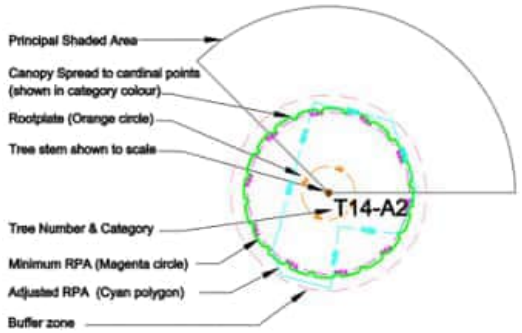
Retained trees need to be considered as part of any site changes and protected from the potentially negative effects of alterations or construction. Where

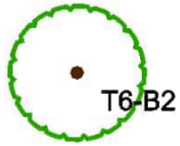
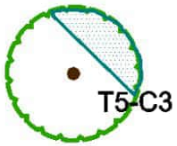
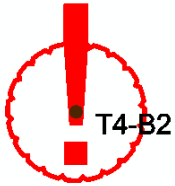
protection is not possible removal and replacement of a tree with a suitable landscaping scheme could offset losses and improve the overall levels of screening and biodiversity.

Legislative Protection.

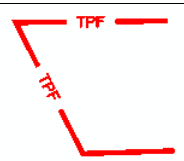
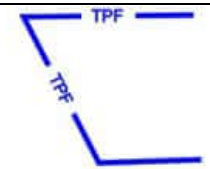
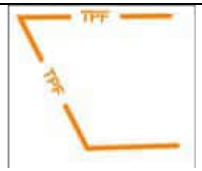
Type of Check	Body	Date	Status
Tree Preservation Orders	Barnsley Borough Council	22/08/2024	TPO's on western and southern boundary
Conservation Area	Barnsley Borough Council	22/08/2024	N/A
National Park	Natural England http://tinyurl.com/3n2u3cdd	22/08/2024	N/A
Listed Buildings	Historic England https://historicengland.org.uk/listing/the-list/	22/08/2024	N/A
National Landscapes, Ancient Woodlands/other Woodland Habitats	DEFRA Magic Map https://magic.defra.gov.uk/magicmap.aspx	22/08/2024	N/A
Ancient Trees	Woodland Trust Ancient Tree Inventory https://ati.woodlandtrust.org.uk/tree-search/	22/08/2024	N/A

Tree Management requirements



Management	Symbol
Retained tree	
Tree pruning outlined within marked quadrant. Trees works in line with BS3998:2010	
Tree to be removed due to condition/location- not scheme related	
Tree to be removed to enable the scheme.	

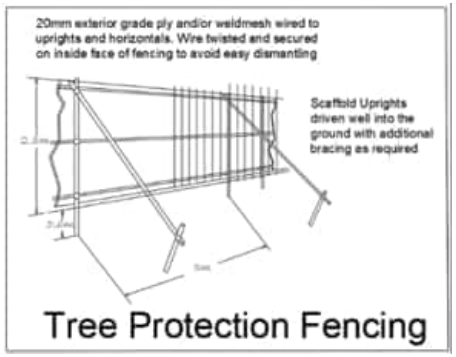
Tree Protection Measures.

Protection method	Symbol
High Risk Tree Protection Fencing Type 1 (TPF)	
Moderate Risk Tree Protection Fencing Type 2 (TPF)	
Low Risk Tree Protection Fencing Type 3 (TPF)	
Construction Exclusion Zones (CEZ)	
Tree Precautionary Zone (TPZ)	
Stem Protection Box (SPB)	

Reducing Risks to Trees. Potential conflicts between the proposal and the existing trees do exist where site levels and significant material changes extend into the Root Protection Area and protection is not used.

Foreseeable risks to the retained trees can be largely defended through the use of Tree Protective Fencing (TPF) outside the Root Protection Areas indicated by the magenta circle around retained trees, or adjusted cyan area. The location of **(TPF)** as shown below is included on the Arboricultural Impact Assessment Plan - APPENDIX – PLANS.

Examples of protective fencing types are included on the plan, the final choice for these barriers should be agreed within an Arboricultural Method Statement, though for construction of this type TPF1 should be used, an example of which is shown below from the BS5837, an alternative suitable for such a scheme is also shown. This product provides ease of access to operatives due to no bracing required and acts a dust / visual barrier.



Example above showing tree protection fencing 1 (BS5837:2012)

Example above showing tree protection fencing by the use Heras Steel Boarding. https://www.heras-mobile.co.uk/fencing/steelhoard

Tree Protection Fencing (TPF) is to be used to define the location of **Construction Exclusion Zones (CEZ)** which are indicated by red net hatching shown opposite and on the Tree Protection Plan BA230623TPP attached as APPENDIX – PLANS.

The final details are to be agreed within an Arboricultural Method Statement, which shall detail access and activity within the **Tree Precautionary Zone (TPZ).**

Principally, protection of retained trees will avoid excavation and minimise soil level changes and limit access by use of Tree Protection Fencing to limit access and avoid the effects of compaction and works within these areas.

Potential conflicts through the removal of existing hard surfacing shall be controlled using appropriate techniques and ground protection this should be detailed within an arboricultural method statement, to avoid direct damage and compaction and contamination of the soils.

The potential conflicts from traditional 'Cut and Fill' construction can be readily defended through the adoption of lower impact methods as outlined within BS5837:2012. Techniques and materials, which limit excavation and minimise soil level or compaction changes will need to be adopted within the Tree Precautionary Zone.

The principal protection requirements are shown on the Arboricultural Impact Assessment Plan BA230623AIA attached as APPENDIX – PLANS.

Where hard surfacing is required close to trees, BS5837:2012 and the principles of Arboricultural Practice Note 12, through the Trees to Development, AAIS 2007, [APN 12] regarding "No-Dig" surfacing will be employed, although incorporating improvements to the construction methods.

Location of Services. Services may be located within the RPA or close to retained trees, if required they should be located outside the RPA of retained trees. Where there is not an alternative and they need to enter the RPA, they can be readily defended by adopting low impact methods for installation. Ideally, services that are required will be installed away from trees.

Underground services near to trees will need to be installed in accordance with the guidance given in BS5837 together with the National Joint Utilities Group Volume 4 [NJUG4]: 2007. Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees (Issue 2).

Location of landscape areas within RPA. Where RPA's of retained trees enter the proposed landscape areas of the proposal, these areas should always be protected from compaction and level changes.

Post Development Pressure. Considering the layout and height of the buildings, some pruning will be required to prevent direct damage only and no other pressures are expected. Leaf litter will not cause additional conflict to the users and would not oblige the council to give consent for inappropriate tree works.

Conclusion.

Retained trees will need to be considered as part of the site and protected at every stage of the scheme from the potentially negative effects of groundworks and construction.

Foreseeable risks to the retained trees can be readily defended through the creation of Construction Exclusion Zones which will restrict access to the Root Protection Areas.

Where access into these areas is required, protection of the ground can be achieved through the establishment of Tree Precautionary Zones where required. as detailed on the Arboricultural Impact Assessment Plan - APPENDIX – PLANS.

Matt Metcalfe
Lead Surveyor/Consultant/UAS Pilot
FdSc Arboriculture
Arboricultural Association Professional Member (*M.Arbor.A)*
VALID Tree Risk Validator

APPENDICES

APPENDIX – CONSULTANT BRIEF QUALIFICATIONS AND EXPERIENCE

Mr Ian Barnes - Director
RCArbor.A, F.Arbor.A, C.Hort, CEnv,
Arboricultural Association Registered Consultant, Fellow Arboricultural Association, Chartered Horticulturalist, Chartered Environmentalist.
Professional member Consulting Arborist Society.
BSc (Hons), Arboriculture and Urban Forestry, HND Arboriculture. NDHt/Arb, Cert Arb L4 (ABC), ISA TRAQ Trained, QTRA Licensed

Ian has been in the Horticulture and Arboricultural industry since 1985. He has experience in commercial horticulture, Local Authority, and Highway Authority tree surveying. He has been a commercial Arboricultural climber for 15 years. He ran in partnership a tree and landscape contracting business for over 15 years. He has been a full time Arboricultural consultant since 2007. His main area of works are trees and development (BS5837) and advanced tree assessments using various advanced techniques. He is a qualified tree risk assessor and experienced in trees and subsidence claims. He is a trainer in the UK for Fakopp equipment, Sonic and Electronic tomography, and Dynaroot and Static Tree pulls. He is also director of a hi-tech arborist/ landscape equipment and training company Tree Diagnostics - providing training to arborists in advanced assessments. He undertakes ground-penetrating radar (Tree Radar) scans.

Mrs Sue Barnes- Director
CMLI, F.Arbor.A, C.Hort, CEnv, MBALI
Chartered Landscape Architect, Fellow Arboricultural Association, Chartered Horticulturalist, Chartered Environmentalist, Registered Designer BALI.
FdSc Arboriculture, NDHt/Arb
Professional Member Consulting Arborist Society, Affiliate member RIBA,

Sue has been in the Horticulture / Arboricultural industry since 1986. She has experience in amenity parks and gardens and has been a head gardener for Local Health Authority. In partnership she ran a tree contracting and landscape design and build company for 15 years and also has been a tree and landscape consultant full time since 2007. Her main area of works is detailed commercial planting design, specifications (NBS), tree planting specifications and Arboricultural management, Trees on development sites BS5837 reports and plans. Experienced in trees and subsidence and also legal and planning conditions in regard to trees and landscapes. Experienced in large scale landscape design for Housing developers, commercial schemes along with school design primarily detailed planting plans. Specialist landscape surveyor – Poisonous plants / invasives. LVIA Landscape Visual Impact Assessments. Tree and Landscape planning locum consultant for Local authorities. Sue assists in undertaking ground-penetrating radar (Tree Radar) scans along with assisting with other further investigation works on trees such as tomography scans and assists in dynamic and static tree tests.

Mr Matt Metcalfe – Lead Surveyor/Consultant/UAS Pilot
M.Arbor.A
Professional member of the Arboricultural Association,
City and Guilds NPTC assessor/ Instructor
FdSc Arboriculture, National Diploma in Arboriculture, Level 5 Certificate in Education.
VALID tree risk validator
GVC Commercial Drone Pilot
IOSH Managing Safety in the Workplace

Matt has worked in the Arboricultural Industry since 2000, Firstly, as a climbing arborist in both the public and private sector. In 2009 Matt started teaching Arboriculture at a land-based college in York and became a City and Guilds NPTC assessor. In 2013 he became a course manager and internal verifier for the level 2 work-based learning-apprenticeships where later he became a senior course manager overseeing the management of other arboricultural courses. In 2018 he became a fulltime consulting arborist and provides advanced tree assessment training, undertakes BS5837 tree surveys, Arboricultural safety audits and is a trained tree risk assessor/validator. He undertakes ground-penetrating radar (Tree Radar) scans along with other further assessments on trees such as tomography, dynamic tree testing and static tree pulls. In 2021 he undertook the A2CoC and GVC Drone licences and carries out drone surveys of trees which also includes 2D and 3D mapping of sites. Also, in 2021 mat completed IOSH Managing safety in the workplace.

Mr Trevor Grigg – Consulting Arborist
Technical member of the Arboricultural Association,
Cert Arb L4 (ABC)
NC Horticulture (Arboriculture)
Lantra Professional Tree Inspector
QTRA Licensed

Since 2004, Trevor has been involved in Arboriculture firstly as a climbing arborist, then as an Arboricultural Officer for a local authority. He has gained experience of working with a wide range of clients, from residential tree owners to schools, Parish Councils and Highways departments providing a variety of tasks and requests such as risk assessments, management plans and replanting schemes. Trevor joined Barnes Associates in 2021 with a view to widening his experience of trees in relation to developments and further investigations of trees using the specialist equipment available.

Mr John Evans – Consulting Arborist
Technical member of the Arboricultural Association,
Forestry and Arboriculture Level 3
Lantra Professional Tree Inspector

For the past six years, John has been a climbing arborist, firstly working freelance for utility and domestic clients, then joining Darlington Borough Council. Whilst working for the council, he continued his professional development and working below and observing Darlingtons Tree Officer. John was very excited to move into a role with Barnes Associates to continue his development, learning how to use the advanced tree surveying equipment and developing into BS5837 report writing.

Mr Benjamin Stoker - Project Coordinator/ Arb Surveyor/A2CoC UAS Pilot
Technical member of the Arboricultural Association
Forestry and Arboriculture Level 3
FdSc Arboriculture (ongoing)
Lantra Professional Tree Inspector

Ben started with Barnes Associates as a student placement whilst studying for his level 3 in Arboriculture and currently completing his foundation degree in Arboriculture. With a background originally in hospitality, his role of project coordinator has developed over the years, supporting clients and helping things run smoothly. His professional development is ongoing with studies for the FdSc in Arboriculture and progressing his career as a surveyor under mentorship from the Barnes Team.

Mr Jim Barnes – Arboricultural Surveyor
Technical member of the Arboricultural Association,
Extended Diploma Level 3 in Arboriculture & Forestry

Jim completed his Level 3 Extended Diploma in 2017 to become a commercial tree climber and tree care assistant as part of a private company. He gained experience of dealing with the latest, most invasive pest in Southern England, the Oak Processionary Moth, carrying out aerial decontamination and collection. He performed tree care works for District Councils and Highways, the Environment Agency through to medium to large scale forestry clearance and planting schemes. He has also undertaken plant healthcare throughout the country, using the latest modern technology and methods from soil aeration/decompaction works, utilising Air-Spade for root/ground care investigation, and remedial works to soil and/or roots in sensitive and hard to access locations. He then set up his own tree care company, focusing on proper care and management and carrying out remedial soil/ground works, general Arboricultural and tree surgery; coping with a range of clients and meeting the Local Authorities policies with managing planning applications and necessary aftercare, working to BS:3998:2010 standards. Before this he was involved within the Consulting industry from a young age, assisting with walkthrough tree assessments and further investigation works such as Tomography. He is now looking forward to expanding his education within the consulting industry by furthering his technical knowledge of further investigations and working towards advancing in BS5837 surveys.

Mr Lloyd Barnes – Arboricultural Surveyor
Technical member of the Arboricultural Association,
Extended Diploma Level 3 in Arboriculture & Forestry

Lloyd completed his Level 3 Extended Diploma in 2020 and then started working for a small private tree surgery firm, carrying out all aspects of tree work from tree management to soil care and everything in between in domestic, highway, and forestry settings. He has worked for large councils, Environment Agency, Forestry Commission, large development sites with large planting schemes and aftercare. He then set up his own tree care business focusing on the care and management of trees, undertaking works to BS3998:2010 standards. He also got into the specialist area of soil/ ground care management for trees. He worked with a wide range of clients throughout the time of running the business, dealing with all sorts of problems that come with running your own business. He has grown up being surrounded by the arboricultural industry. He now undertakes walk-round tree risk assessments and further assessments using sonic and electrical impedance tomography, expanding his knowledge, experience, and education in these areas. He is advancing into BS5837 surveys, working with numerous architects and developers.

APPENDIX - DESIGN CONSIDERATIONS

Care is needed regarding the retention of large, mature, over-mature or veteran trees which become enclosed within the new development. Where such trees are retained, adequate space should be allowed for their long-term physical retention and future maintenance. However, such retentions are seen as beneficial, helping to contribute to climate change resilience, amongst other benefits of habit and biodiversity. Achieving successful integration of large species trees requires careful consideration at the conceptual and design stages and specialist arboricultural input.

Design Considerations. To enable a realistic assessment of the probable impacts of any proposed development on the trees, and vice versa, the characteristics and condition of the trees should be taken into account. To maximize the probability of successful tree retention, the following factors are considered:

- Shading of Buildings. This can be a problem, particularly where there are rooms which require natural light.
- Shading of Open Spaces & Gardens. Enjoyment of outdoor spaces normally requires direct sunlight for at least for part of the day. However, *shading can be desirable to reduce glare or excessive solar heating, or to provide for comfort during hot weather.*
- Privacy and screening. The retention of trees helps to reduce overlooking by neighbours or to mitigate undesirable views, such as busy roads, railway lines or industrial premises.
- Direct damage. Below ground, damage to structures can occur because of incremental root and stem growth. In addition, above ground damage can occur to trees and structures by the continuous whipping of branches against the fabric of a building. Therefore, this needs to be considered to avoid the need for frequent remedial pruning or other maintenance.
- Future pressure for removal. The relationship of buildings to large trees can cause apprehension to occupiers or users of nearby buildings or spaces, resulting in pressure for the removal of the trees. Buildings and other structures should be sited to allow adequate space for a tree's natural development, with due consideration given to its predicted height and canopy spread.
- Seasonal nuisance. Trees are naturally growing and shedding organisms. Leaves of some species can cause problems, particularly in the autumn, by blocking gullies and gutters. Fruit can cause slippery patches or accumulations of honeydew, which can be damaging to surfaces. These aspects should also be considered.

In general, developments close to trees needs to maintain the site, and particularly the soils, close to the current prevailing conditions and avoid significant changes. However, a development is achievable providing the 8 key points listed below can be incorporated into the proposal's design: -

1. Available Space, the proposal should consider the available space both now and in the future, and avoid the need to remove large diameter branches and stems whilst providing sufficient space for future growth.
2. Foundations, the proposal will need to offer support to the structures with the need for minimal excavation to avoid tree root severance, typically a pile and beam or partial cantilever solution could be considered following the advice of a structural engineer.
3. The Building, particularly the underside of the proposal, will need to be above the current soil level to avoid compaction, excavation and ensure continued soil hydration and aeration. Typically, either a timber frame or block and beam can be adopted to achieve this relatively simply.
4. Ground Protection needs to be a principal theme running throughout the proposal with the current ground being protected from Excavation, Cultivation or Compaction and should remain wherever possible close to its current condition. This can be significantly simplified through the adoption of timber frame construction avoiding the need for potentially damaging heavy weights and potential noxious material such as concrete blocks, bricks and chemicals such as cements to be used near trees.

5. Services for the proposal should be located outside the Root Protection Area to avoid the need for excavation. Where new services are required within the Root Protection Area, these should adopt low impact methods of installation such as moling. Ideally, existing site utilities should be either isolated and retained in situ where they extend into the RPA or recycled or upgraded where this can be done without excavation.

6. Hard surfacing will typically be required unless it can be substituted for decking or above ground walkways. Hard surfacing will need to be installed without the need for excavation and should be porous to allow continued soil hydration and aeration. Typically, either a porous paving system or gravel supported by a NO-dig foundation such as Cell-Web can be adopted to achieve this.

7. Building use, within the proposal, available light should help inform the building design, layout and its use. Ideally, windows and views should be directed away from trees and toward open areas. In addition, the use of secondary or passive light through light reflecting tubes should be considered to help reduce the negative aspects of large trees.

8. Building maintenance will be required, particularly where canopies of trees extend close to or above the roofline, causing maintenance difficulties due to leaf and organic matter build up in the gutters and down pipes. This problem needs to be designed out as far as possible by the addition of filters in the gutters to restrict the access to leaves and small twigs.

The design should take account of the effects of any tree loss required to implement the design, and any potentially damaging activities proposed near retained trees. This might include the removal of existing structures and hard surfacing, the installation of new hard surfacing and the installation of services.

APPENDIX - RISKS TO TREES DURING CONSTRUCTION

The following operations are all very damaging to trees. I have included a poster that demonstrates these points, and this might be useful for full circulation:

Compaction of the soil - Compaction will destroy the soil structure by removing the spaces between soil particles preventing the uptake of oxygen and nutrients. Compaction is caused by storage of materials, including bricks, soil, gravel and cement, and even a single vehicle movement will cause damage. Compacted ground will also affect soil drainage, which may then cause waterlogging.

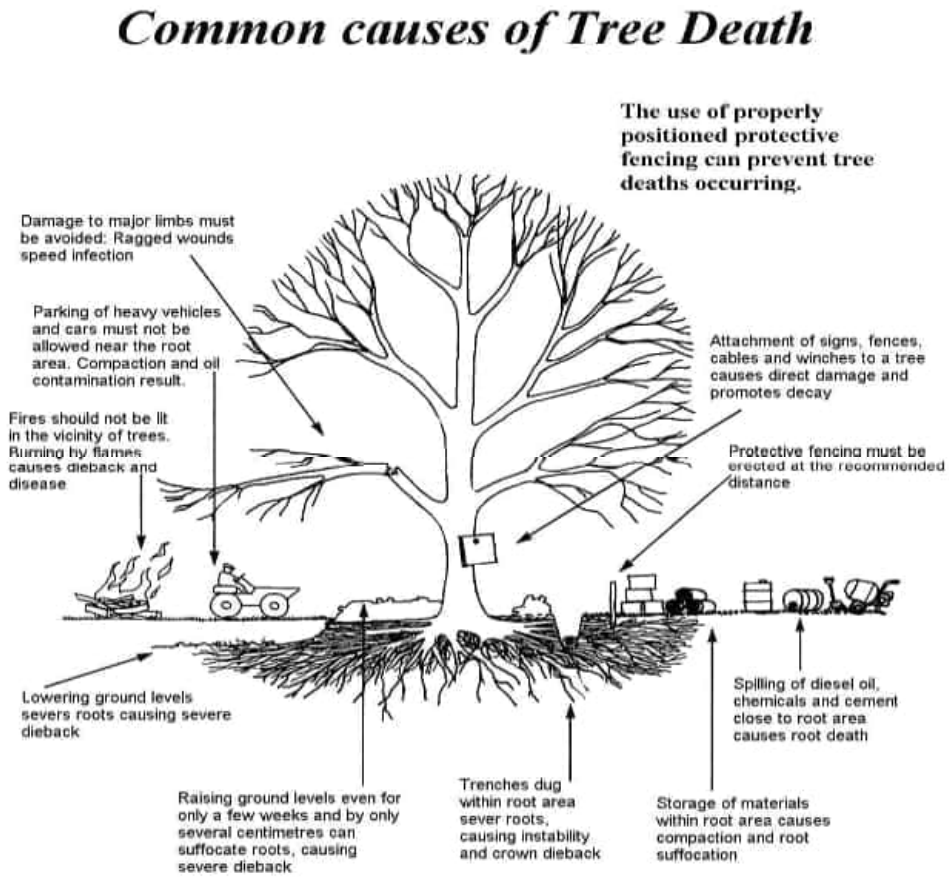
Excavations - any excavations close to the tree are likely to cause root severance. The closer excavations occur to the tree the more severe the damage. Root severance will lead to loss of vigour of the tree, reduce uptake of water and nutrients, allow access for decay organisms, and increase likelihood of wind throw.

Ground level changes - both reduction and raising of soil levels will be detrimental even if this is only by a few centimetres. Reducing ground levels will sever roots and can increase the drainage of a site thereby reducing water availability. Raising ground levels will cause compaction, suffocate roots and damage fibrous roots.

Impact damage - this can be caused by machinery - including torn branches and damage to bark and trunks. This will lead to entry for decay organisms and reduced vigour.

Soil contamination - this can be caused by spillage of oil, fuel and chemicals, and mixing cement or other materials. Allow for sloping ground – keeping toxic material downhill from trees and aim to store them 10m from the Protected Zone to allow for leaching through the soil.

Fires - both the intense heat and direct flame will damage the trees causing loss and damage to both major roots and fibrous roots. Intense heat will damage the trees vascular system under the bark even if the bark does not appear burnt.



APPENDIX - TREE CONSTRAINTS

Legal constraints. Trees can be protected by planning legislation in several ways. These include being located within a National Park or on a Site of Special Scientific Interest, located within the grounds of a listed building, conservation area or by being subject to a current Planning condition. In general, the main type of protection for trees adopted by the Local Planning Authority (LPA) on potential development sites is the Tree Preservation Order (TPO).

The protection of trees is a duty of the LPA under the Town and Country Planning act 1990 and aims to encourage rational discussion and consideration of trees within the design process. The following guidelines are proposed to encourage rational discussion and consideration of trees within the design process. Legislation indicates that protection should be used to protect healthy trees that are likely to have a reasonable safe useful life expectancy. Generally, those classified with a condition rating of (A) Excellent & (B) Good are worthy of a TPO. Those classified (C) Fair are generally poorer and therefore unlikely to qualify for a TPO on grounds of poor appearance, management issues or unlikely to have a sufficient safe life expectancy. Those trees classified (U) are Unsuitable for retention, generally contain structural defects, have a short safe useful life expectancy or are dangerous and therefore would not qualify for a TPO as indicated within the legislation.

The presence of a TPO should be expected upon development sites for the above reasons. It can however only be regarded as a material consideration, as can any other tree or significant natural feature, and cannot be used as a means of preventing development. Any trees protected or otherwise, which are located on or close to the site can be expected to be regarded as a material consideration or offer a design constraint within the development process.

General Constraints posed by existing trees. The constraints imposed by trees, both above and below ground should inform the site layout design, although it is recognized that the competing needs of development mean that trees are only one factor requiring consideration.

Certain trees are of such importance and sensitivity as to be major constraints on development or to justify its substantial modification. 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.

Our tree survey schedule in APPENDIX – BS5837 TREE SCHEDULE & EXPLANATORY NOTES and the tree survey plan in APPENDIX - PLANS includes the relevant constraint information, plotted around each of the categories A, B and C trees and included information on shading and the minimum Root Protection Area (RPA), in addition to a suggested limit for construction.

Typically, development should endeavour to retain category A & B trees and category C trees where they can be either improved and included in low risk areas or help improve biodiversity.

Ideally, structures should be located outside areas of shading and the recommended construction limit (Minimum Root Protection Areas plus an additional 2 metres) of trees to be retained should inform the development. However, in some cases the existing site layout has impacted on the trees, in particular when existing structures or hard surfacing extend or have been installed in the root protection areas. To help understand this I have colour coded the principal Structures, Hard Surfacing, Services, Earthworks and areas of High water content on the tree survey plan in APPENDIX - PLANS

However, where there is an overriding justification for construction within the RPA, technical solutions might be available that prevent damage to the tree(s). If operations within the RPA are proposed additional information can be provided to demonstrate that the tree(s) can remain viable and offer mitigation measures such as but not limited to, improvements to the soil environment that is to be used by the tree for growth.

APPENDIX - TREE PROTECTION

Protection of retained trees. The successful retention of trees depends on the quality of the protection and the administrative procedures to ensure those protective measures remain in place while there is a risk of damage. An effective means of doing this is through an arboricultural method statement that can be specifically referred to in a planning condition. A method statement for this site should ideally be agreed. Implementation of a method statement will allow all the retained trees to survive without any adverse impact and allow them to continue to contribute to local amenity and character.

Limiting Threats to Trees. To help reduce the potential impact of site changes BS5837:2012 recommends in Section 3.7 that a Root Protection Area (RPA) is included as a layout design tool. This protected area is based upon the Root Protection Area - a point equivalent to 12 times the trunk diameter. This indicates the minimum area around a tree deemed to contain sufficient roots and rooting volume to sustain the tree's viability, though ideally the offset shown as the Construction Limit should be adopted to provide additional space and enable trees to thrive.

Tree Protection: where retained trees need to be protected this is most easily achieved by establishing a Construction Exclusion Zone (CEZ) as part of a Tree Protection Zone (TPZ) to protect the roots and aerial parts as recommended in BS5837:2012 – further details upon request. Within this area, retained trees need to be protected from the effects of site changes and in particular excessive root severance, soil level changes or soil compaction.

Appropriate site organisation and management are essential following the adage of '*Prevention is better than Cure*'. Unfortunately, tree damage can easily occur and although it is costly to repair, it comes with few guarantees.

Inside the exclusion area of the fencing, the following actions need to be avoided: -

- No linear mechanical excavation whatsoever.
- No excavation by any other means without arboricultural site monitoring.
- No hand digging without a written Method Statement having first been approved in writing by the consulting arboriculturist.
- No lowering of levels for any purpose (except removal of grass sward by hand).
- No construction of a sealed hard surface (except where agreed with the arborist)
- No storage of plant or materials.
- No storage or handling of any chemical, including cement washings.
- No vehicular access.
- No fire lighting.

In addition to the above, further precautions are necessary adjacent to trees: -

- A 10m separation distance shall be observed between any tree and substances injurious to tree health, including fuel, oil, bitumen, cement (including cement washings), builders' sand, concrete mixing and other chemicals.
- No fire shall be lit such that flames come within 5m of tree foliage; this shall be taken to mean a fire separation distance of 20m from any tree's canopy.

Protective Fencing: Based on tree survey data, Root Protection Area (RPA) have been calculated for the trees identified for retention and included in the tree schedule in Appendix C. The RPA's are designed to protect at least a functional minimum of tree root mass in order to ensure that the trees survive the construction process. Tree protection will need to

be installed following the initial tree works and before the onset of any demolition or ground works. The RPA should remain in position for the whole of the construction and demolition phase.

Protection fencing is highlighted on the Impact assessment Plan.

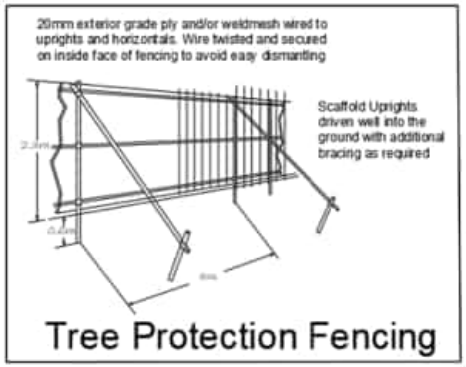
Severe Risk Area's - Stem Protection (TST).

To be protected from impact damage by Boarding or Plywood Boxes constructed clear of the stem. Boxes are to contain compressible material to absorb shock loading. To be located where vehicles may come into direct contact with existing trees.

High Risk - Tree Protection Fencing (TPF1)

Alternative TPF1 – upon agreement only.
Ideal for where space is limited. Posts are fixed into ground.

High Risk - Tree Protection Fencing (TPF1)



This is to be provided by Braced Heras Fencing or solid panels. Post-holes shall be excavated by powered hand auger or low ground-pressure plant working of ground protection or outside the Precautionary Zone. Alternative more traditional post supports such as the Heras Steadfast system with an additional brace can be used where this can be pinned into position and fitted with an Anti-Tamper Coupler.

Protection Fencing (TPF2)

This is to be erected as a temporary barrier to protect areas designated for later construction or landscaping the Precautionary Zone. This shall consist of Heras type panels mounted onto rubber/concrete 'boots' as shown opposite.

Low Risk - Protection Fencing (TPF3)

This is to be erected as a visual barrier to protect areas designated for no or later construction. Consisting either stock fencing, post and rail fencing, Chestnut Pale fencing or Orange Extruded Plastic Netting.

Ground Protection (Temporary): Access across the RPA, if this is required this can be achieved for the duration of the development phase in such a way, which will reduce the potential negative effects of compaction.

No Dig-Ground Protection GP1 - Option 1

For lower traffic areas, where heavy vehicles are expected, substitute compacted stone infill with a temporary above ground Trackway. This avoids the need for excavation and limits the weight of material build up and limits compaction when installed with compressible sub-surface.

Ground Protection GP2 - Option 1

Where pedestrian-operated plant up to a gross weight of 2t are forecasted, proprietary, interlinked ground protection boards are available, such as DuraDeck or Ground Guard. These can limit compaction when installed with compressible sub-surface.

No Dig-Ground Protection GP1 - Option 2

For high use areas or were heavy vehicles are expected, substitute traditional dig out and compacted stone infill with an above ground Cellweb or similar, to avoid the need for excavation and limit compaction – may be retained as a porous sub base for hard Surfacing within the scheme.

No Dig-Ground Protection GP1 - Option 3

Void forming system such as Permavoid or ArborRaft act as a protection to the tree roots and avoid the need for excavation. These systems also limit the weight of material build up and can be installed with compressible sub-surface. – may be retained as a porous subbase for hard surfacing within the scheme.

Ground Protection GP2 - Option 2

For more permanent small plant and pedestrian movements ground protection in the form of a single thickness of scaffold boarding supported by scaffold, as opposite, can be adopted to bridge areas and avoid compaction.

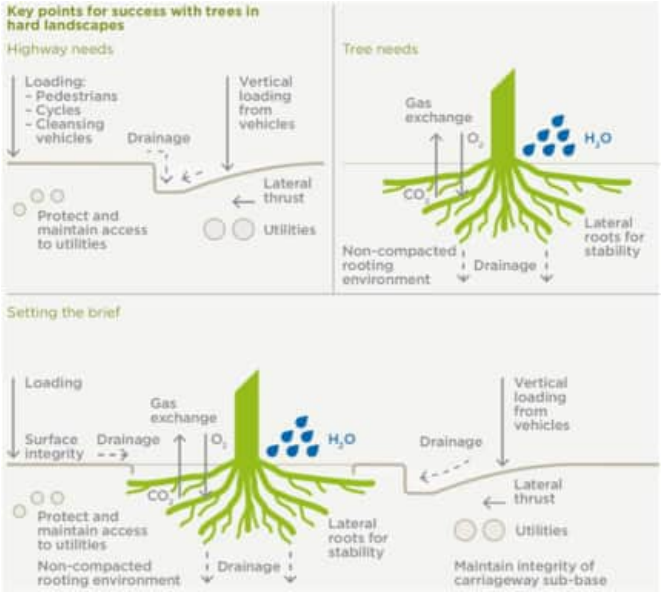
Ground Protection GP3

For Pedestrian movements ground protection in the form of a single thickness of scaffold boards or plywood on top of a compressible layer (Woodchip) laid onto a geotextile, or supported can be used to form the access or provide a sub base to other ground protection.

Ground Protection (Permanent): The creation of Hard Surfacing within or close to trees offers a risk to trees through compaction, excavation, soil level changes or contamination and these need to be avoided or appropriately defended as indicated opposite, so that underlying soils can continue to allow the ingress of water and exchange of gas between the soil and the atmosphere. Protective measures can be adopted successfully to help retain trees and this information should be agreed within Arboricultural Method Statement.

To counter risks, all hard surfacing shall be above the existing ground within the Root Protection Area using a porous sub-base or by bridging to support f a permanent porous surface/wearing course. This will maintain continued gaseous exchange and water ingress as outlined in the opposite brief copied from Tree in the Hard Landscape (TDAG).

On the majority of sites, substituting traditional compacted stone infill with ArborRaft or Cellweb as described above will provide appropriate protection. Alternatives may include grates, a suspended pavement or road by installing pre-cast elements avoiding largescale excavation and limiting the weight of material build up. Alternatively, a cast concrete slab or above ground concrete deck supported by piles can be adopted for sites with difficult access, soils or strata as shown in the examples below.



Construction within the Root Protection Area: The creation of structures within or close to trees offers a risk to trees through compaction, excavation, soil level changes or contamination and again these need to be avoided or appropriately defended so that underlying soils can continue to allow the ingress of water and exchange of gas between the

soil and the atmosphere. Protective measures can be adopted successfully to help retain trees and this information should be agreed within Arboricultural Method Statement. The work is in line with best practice guidance detailed in section 7.5.2 and 7.5.5 of BS5837:2012 Trees in relation to design, demolition and construction – Recommendations, that states:

Section 7.5.2 recommends Root damage can be minimized by using:

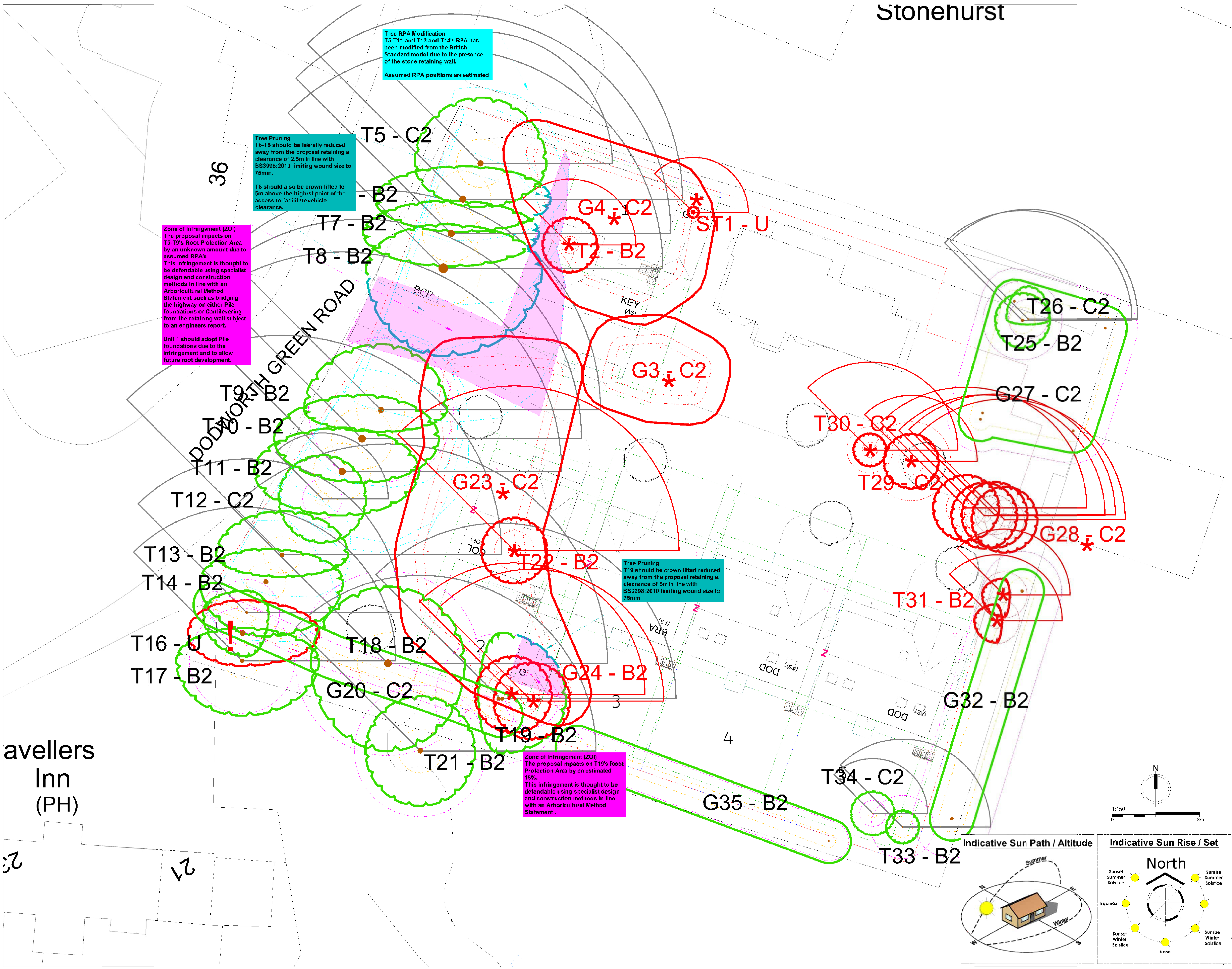
- piles, with site investigation used to determine their optimal location whilst avoiding damage to roots important for the stability of the tree, by means of hand tools or compressed air soil displacement, to a minimum depth of 600 mm.
- beams laid at or above ground level, and cantilevered as necessary to avoid tree roots identified by site investigation.

In section 7.5.5 the standard states - Where piling is to be installed near to trees, the smallest practical pile diameter should be used, as this reduces the possibility of striking major tree roots, and reduces the size of the rig required to sink the piles. If a piling mat is required, this should conform to the parameters for temporary ground protection given in 6.2.3. Use of the smallest practical piling rig is also important where piling within the branch spread is proposed, as this can reduce the need for access facilitation pruning. The pile type should be selected bearing in mind the need to protect the soil and adjacent roots from the potentially toxic effects of uncured concrete, e.g. Sleeved bored pile or screw pile.

Example 1 -Screw Piles. Using the hydraulic rotation motor, the screw pile can be installed from outside the outside the Root protection area. Usually, heavy buildings that need several piles to be installed use this method of installation before being joined by a beam.

Example 2 – Thrust or Bored Piles. Small plant piles can be installed within Root protection area. To enable heavy buildings to be supported several smaller piles can be connected to form a pile cap providing improved support as shown below.

Tree Impact Appraisal Plan – BA230623AIA (A1 Plan Attached)


Stonehurst
36
Tree RPA Modification
T5-T11 and T13 and T14's RPA has been modified from the British Standard model due to the presence of the stone retaining wall.
Assumed RPA positions are estimated
Tree Pruning
T6-T8 should be laterally reduced away from the proposal retaining a clearance of 2.5m in line with BS3998:2010 limiting wound size to 75mm.
T8 should also be crown lifted to 5m above the highest point of the access to facilitate vehicle clearance.
Zone of Infringement (ZOI)
The proposal impacts on T5-T9's Root Protection Area by an unknown amount due to assumed RPA's
This infringement is thought to be defendable using specialist design and construction methods in line with an Arboricultural Method Statement such as bridging the highway on either Pile foundations or Cantilevering from the retaining wall subject to an engineers report.
Unit 1 should adopt Pile foundations due to the infringement and to allow future root development.
T5 - C2
T6 - B2
T7 - B2
T8 - B2
G4 - C2
ST1 - U
T2 - B2
BCP
KEY (AS)
G3 - C2
DODWORTH GREEN ROAD
T9 - B2
T10 - B2
T11 - B2
T12 - C2
T13 - B2
T14 - B2
T16 - U
T17 - B2
T18 - B2
G20 - C2
T21 - B2
T19 - B2
G23 - C2
T22 - B2
G24 - B2
Tree Pruning
T19 should be crown lifted reduced away from the proposal retaining a clearance of 5m in line with BS3998:2010 limiting wound size to 75mm.
Zone of Infringement (ZOI)
The proposal impacts on T19's Root Protection Area by an estimated 15%.
This infringement is thought to be defendable using specialist design and construction methods in line with an Arboricultural Method Statement.
BRA (AS)
DOD (AS)
G35 - B2
T26 - C2
T25 - B2
G27 - C2
T30 - C2
T29 - C2
G28 - C2
T31 - B2
G32 - B2
T34 - C2
T33 - B2
avellers Inn (PH)
21
1
2
3
4
N
1:150
0
8m
Indicative Sun Path / Altitude
Summer
Winter
N
E
S
W
Indicative Sun Rise / Set
North
Sunset Summer Solstice
Sunrise Summer Solstice
Equinox
Sunset Winter Solstice
Sunrise Winter Solstice
Noon

Individual Tree Symbols

T14-A2

Tree Management Requirements

Trees to be retained within the scheme and protected in line with the guidelines set out in BS5837.

Tree Group Hedge & Woodland Shelterbelt

Zone of Infringement- (ZOI) Indicated by Magenta shading. Areas of conflict within RPA's of retained trees.

Trees to be retained and protected in line with BS5837 though requiring facilitation pruning. Pruning to be in line with BS3998.

Trees to be removed to enable the scheme to be carried out as proposed. All works to be undertaken in line with BS3998.

Trees identified as U category requiring management, irrespective of scheme

Revision	Date	Description
P	22/08/2024	Preliminary Issue

Notes

Plan is based upon the supplied topographical Survey Plan. Copies of this plan are available in CAD Formats .dwg & .dxf upon request.

Drainage/Utility layout not provided.

Existing/Proposed level data not provided.

Excavation dimensions/battering not provided.

No detailed cross sections/drawings provided of structures.

Client: Newett Homes

Project: Dodworth,Barnsley,S75 3RR

Title: Arboricultural Impact Assessment

Drawing No: BA230623AIA Status: P

Scale: 1:150 @ A1

Date: 22/08/2024

Drawn: MM Checked: SB Approved: SB

BARNES associates Ltd
SURVEY MANAGE IMPROVE
Ground Floor 5 St James Square
Boroughbridge YO51 9AS
T 01423 322371
E info@barnesassociates.co.uk
W barnesassociates.co.uk
Company number 10438116
Registered in England and Wales

TREE MANAGEMENT REQUIRED TO ENABLE SCHEME: REFER TO BA230623AIA

Est	Tag No.	Name	Age	Height (m)	Height (m)	North (m)	South (m)	East (m)	West (m)	Condition	Life Exp (Yrs)	BS5837 Category	Diameter (mm)	Stem No.	Tree works to enable the scheme	Arboricultural Impact and Protection Measures	Risk	Rootplate (m)	Root Protection Radius (m)	Root Protection Area (m^2)
Est DBH	ST1	Common Plum	M	5	0	0.5	0.5	0.5	0.5	Poor	10 or less	U	400	1	Remove to enable the scheme	Loss of a high stump.	Minimal	1.6	4.8	72.39
Est DBH	T2	Lawson Cypress	EM	6	0	2.5	2.5	2.5	2.5	Good	20 or more	B2	100 100 100 100	4	Remove to enable the scheme	Loss of a good category tree.	Insignificant	0.8	2.4	18.1
Est Pos,Est DBH	G3	Sycamore, European Holly, Goat Willow, Elder , Rhododendron	SM	8	1	3	3	3	3	Fair	10 or more	C2	100	1	Remove entire group to enable the scheme	Loss of a fair category group which is thought to be self seeded.	Minimal	0.4	1.2	4.52
Est Pos,Est DBH	G4	Sycamore, European Holly, Elder , Rhododendron	SM	8	1	3	3	3	3	Fair	10 or more	C2	75	1	Remove entire group to enable the scheme	Loss of a good category group which is thought to be self seeded.	Minimal	0.3	0.9	2.55
	T5	Horse Chestnut	M	12	1	6	6	4	6	Poor	10 or less	C2	550	1	None	RPA infringement unable to calculate accurately due to offset RPA. Tree Protection Fencing Tree Precautionary Zone Construction Exclusion Zone.	Slight	2.2	6.6	136.87
Est Height	T6	Sycamore	M	20	5	3	8	3	8	Good	20 or more	B2	640	1	Lateral reduction from the proposal in line with BS3998:2010 by 2.5m limiting wound size to 75mm	RPA infringement unable to calculate accurately due to offset RPA. Tree Protection Fencing Tree Precautionary Zone Construction Exclusion Zone.	Insignificant	2.56	7.68	185.32

Est	Tag No.	Name	Age	Height (m)	Height (m)	North (m)	South (m)	East (m)	West (m)	Condition	Life Exp (Yrs)	BS5837 Category	Diameter (mm)	Stem No.	Tree works to enable the scheme	Arboricultural Impact and Protection Measures	Risk	Rootplate (m)	Root Protection Radius (m)	Root Protection Area (m^2)
Est Height	T7	Sycamore	M	20	5	3	8	3	8	Good	20 or more	B2	650	1	Lateral reduction from the proposal in line with BS3998:2010 by 2.5m limiting wound size to 75mm	RPA infringement unable to calculate accurately due to offset RPA. Tree Protection Fencing Tree Precautionary Zone Construction Exclusion Zone.	Insignificant	2.6	7.8	191.16
Est Spread,Est Height	T8	Horse Chestnut	M	20	3	4	9	8	7	Good	20 or more	B2	870	1	Lateral reduction from the proposal in line with BS3998:2010 by 2.5m limiting wound size to 75mm. Crown lift above access point/highway facilitating 5m for vehicles.	RPA infringement unable to calculate accurately due to offset RPA. Tree Protection Fencing Tree Precautionary Zone Construction Exclusion Zone.	Minimal	3.48	10.44	342.46
Est Spread,Est Height,Est DBH	T9	Horse Chestnut	M	20	3	6	6	2	7	Good	20 or more	B2	550	1	None	RPA infringement unable to calculate accurately due to offset RPA. Tree Protection Fencing Tree Precautionary Zone Construction Exclusion Zone.	Minimal	2.2	6.6	136.87
Est Height,Est Spread,Est DBH	T10	Sycamore	M	20	6	4	7	4	8	Good	20 or more	B2	700	1	None	Tree Protection Fencing Tree Precautionary Zone Construction Exclusion Zone.	Insignificant	2.8	8.4	221.7
Est Height,Est Spread,Est DBH	T11	Sycamore	M	20	6	4	7	4	8	Good	20 or more	B2	650	1	None	Tree Protection Fencing Tree Precautionary Zone Construction Exclusion Zone.	Insignificant	2.6	7.8	191.16

Est	Tag No.	Name	Age	Height (m)	Height (m)	North (m)	South (m)	East (m)	West (m)	Condition	Life Exp (Yrs)	BS5837 Category	Diameter (mm)	Stem No.	Tree works to enable the scheme	Arboricultural Impact and Protection Measures	Risk	Rootplate (m)	Root Protection Radius (m)	Root Protection Area (m^2)
	T12	Horse Chestnut	EM	6	2	4	4	4	4	Fair	10 or more	C2	150	1	None	Tree Protection Fencing Construction Exclusion Zone.	Insignificant	0.6	1.8	10.18
Est Spread,Est Height	T13	Horse Chestnut	EM	20	2	4	6	2	6	Good	20 or more	B2	420	1	None	Tree Protection Fencing Construction Exclusion Zone.	Insignificant	1.68	5.04	79.81
Est Spread,Est Height	T14	Horse Chestnut	EM	20	2	3	7	5	6	Good	20 or more	B2	450	1	None	Tree Protection Fencing Construction Exclusion Zone.	Insignificant	1.8	5.4	91.62
Est Spread,Est Height	T15	Sycamore	EM	14	3	2	2	4	4	Good	20 or more	B2	250	1	None	Tree Protection Fencing Construction Exclusion Zone.	Insignificant	1	3	28.28
Est Pos,Est DBH,Est Spread	T16	Common Ash	M	16	5	3	7	3	5	Poor	10 or less	U	500	1	Remove due to safety	Loss of poor tree.	Moderate	2	6	113.11

Est	Tag No.	Name	Age	Height (m)	Height (m)	North (m)	South (m)	East (m)	West (m)	Condition	Life Exp (Yrs)	BS5837 Category	Diameter (mm)	Stem No.	Tree works to enable the scheme	Arboricultural Impact and Protection Measures	Risk	Rootplate (m)	Root Protection Radius (m)	Root Protection Area (m^2)
Est Spread,Est Height,Est DBH	T17	Horse Chestnut	EM	14	2	3	7	5	6	Good	20 or more	B2	400	1	None	Tree Protection Fencing Construction Exclusion Zone.	Insignificant	1.6	4.8	72.39
Est Height,Est Spread,Est DBH	T18	Common Ash	M	20	5	7	7	8	7	Good	20 or more	B2	700	1	None	Tree Protection Fencing Construction Exclusion Zone.	Insignificant	2.8	8.4	221.7
Est Pos,Est Height,Est Spread	T19	Common Walnut	EM	16	2	6	6	5	2	Good	20 or more	B2	350 350	2	Crown lift above outbuilding to facilitate 5m ground clearance.	RPA infringement 15%. Tree Protection Fencing Tree Precautionary Zone Construction Exclusion Zone.	Insignificant	1.98	5.94	110.86
Est Pos,Est DBH	G20	Sycamore, Common Hawthorn	SM	5	0	2	2	2	2	Fair	10 or more	C2	100	1	None	Tree Protection Fencing Construction Exclusion Zone.	Insignificant	0.4	1.2	4.52

Est	Tag No.	Name	Age	Height (m)	Height (m)	North (m)	South (m)	East (m)	West (m)	Condition	Life Exp (Yrs)	BS5837 Category	Diameter (mm)	Stem No.	Tree works to enable the scheme	Arboricultural Impact and Protection Measures	Risk	Rootplate (m)	Root Protection Radius (m)	Root Protection Area (m^2)
Est Pos,Est DBH,Est Spread	T21	Sycamore	EM	16	3	5	5	5	5	Good	20 or more	B2	500	1	None	Tree Protection Fencing Construction Exclusion Zone.	Insignificant	2	6	113.11
Est Pos	T22	Silver Birch	EM	15	2.5	3	3	3	3	Good	20 or more	B2	150	1	Remove to enable the scheme	Loss of a good category tree.	Insignificant	0.6	1.8	10.18
Est Pos,Est DBH	G23	Sycamore, Common Hawthorn, European Holly, Elder , Rhododendron	SM	8	1	3	3	3	3	Fair	10 or more	C2	100	1	Remove entire group to enable the scheme	Loss of a fair category group which is thought to be self seeded.	Minimal	0.4	1.2	4.52
Est Pos,Est DBH,Est Spread	G24	Leyland Cypress	EM	12	1	3.5	3.5	3.5	3.5	Good	20 or more	B2	200	1	Remove entire group to enable the scheme due to excessive pruning required to retain.	Loss of a good category group.	Insignificant	0.8	2.4	18.1
Est DBH,Est Height,Est Pos,Est Spread	T25	Sycamore	EM	10	1	2.5	2.5	2.5	2.5	Good	20 or more	B2	300	1	None	Tree Protection Fencing Construction Exclusion Zone.	Minimal	1.2	3.6	40.72
	T26	Common Ash	SM	10	2.5	3	2	0.5	2	Fair	10 or more	C2	150	1	None	Tree Protection Fencing Construction Exclusion Zone.	Minimal	0.6	1.8	10.18
Est DBH,Est Group Numbers,Est Pos,Est Spread	G27	Common Ash, Common Plum, Elder	EM	10	0.5	2	2	2	2	Fair	10 or more	C2	250	1	None	Tree Protection Fencing Construction Exclusion Zone.	Minimal	1	3	28.28

Est	Tag No.	Name	Age	Height (m)	Height (m)	North (m)	South (m)	East (m)	West (m)	Condition	Life Exp (Yrs)	BS5837 Category	Diameter (mm)	Stem No.	Tree works to enable the scheme	Arboricultural Impact and Protection Measures	Risk	Rootplate (m)	Root Protection Radius (m)	Root Protection Area (m^2)
Est DBH,Est Group Numbers,Est Pos,Est Spread	G28	Sycamore, Common Ash	SM	11	0.5	3	3	3	3	Fair	10 or more	C2	150	1	Remove entire group to enable the scheme	Loss of a fair category group	Slight	0.6	1.8	10.18
	T29	Common Pear	M	6	0.5	2.5	2.5	2.5	2.5	Poor	10 or more	C2	300	1	Remove to enable the scheme	Loss of fair category tree.	Minimal	1.2	3.6	40.72
	T30	Common Ash	SM	8	0.5	1.5	1.5	1.5	1.5	Fair	10 or more	C2	175	1	Remove to enable the scheme	Loss of fair category tree.	Insignificant	0.7	2.1	13.86
	T31	Common Plum	EM	6	0.5	1.5	0.5	2	2	Fair	20 or more	B2	175	1	Remove to enable the scheme due to excessive pruning requirements to retain.	Loss of good category tree.	Insignificant	0.7	2.1	13.86
Est DBH,Est Group Numbers,Est Pos,Est Spread	G32	Sycamore, Common Ash, Apple, Elder , Leyland Cypress	M	9	0.5	2	2	2	2	Fair	20 or more	B2	300	1	None	Tree Protection Fencing Construction Exclusion Zone.	Minimal	1.2	3.6	40.72
	T33	Silver Birch	EM	8	0.5	1.5	1.5	1.5	1.5	Good	20 or more	B2	170	2	None	Tree Protection Fencing Construction Exclusion Zone.	Insignificant	0.96	2.88	26.06
	T34	Goat Willow	EM	5	0.5	2	2	2	2	Fair	10 or more	C2	100	1	None	Tree Protection Fencing Construction Exclusion Zone.	Insignificant	0.4	1.2	4.52

Est	Tag No.	Name	Age	Height (m)	Height (m)	North (m)	South (m)	East (m)	West (m)	Condition	Life Exp (Yrs)	BS5837 Category	Diameter (mm)	Stem No.	Tree works to enable the scheme	Arboricultural Impact and Protection Measures	Risk	Rootplate (m)	Root Protection Radius (m)	Root Protection Area (m^2)
Est DBH,Est Group Numbers,Est Pos,Est Spread	G35	Sycamore, Common Hawthorn, Common Ash, Elder , Rowan, Common Juniper, Leyland Cypress	EM	7	0.5	2	2	2	2	Good	20 or more	B2	150	1	None	Tree Protection Fencing Construction Exclusion Zone.	Insignificant	0.6	1.8	10.18

BARNES associates ltd
SURVEY MANAGE IMPROVE

Tree Diagnostics®

Ground Floor
5 St James Square
Boroughbridge YO51 9AS
T 01423 322371
E info@barnesassociates.co.uk
W barnesassociates.co.uk
Company number 10438116
Registered in England and Wales

TREE SURVEYS

Health & Safety Surveys
Risk Assessments
Homebuyer (Mortgage and Insurance)
Veteran & Venerable Trees
Legal & Law (TPO & Valuations)

ADVANCED ASSESSMENTS

Decay & Defect Scans
Tree Stability Checks
Tree & Plant Health Care
Root Detection & Mapping
Aerial Inspections

PLANNING & DEVELOPMENT

BS5837 Tree Surveys
Impact Assessments
Method Statements
Planning Conditions
CAD Plans (2D & 3D)

LANDSCAPE ARCHITECTURE

Commercial Landscape Design
LVIA (Landscape Visual Impact Assessments)
Landscape Management
Garden Design
Green Infrastructure

AA Registered Consultant
Arboricultural Association Fellow Member
ISA Qualifications
VALID Tree Risk-Benefit Validator
Chartered Institute of Horticulture
QTRA Licensed User
BALI Registered
Landscape Institute Registered Practice

Appendix D Landscape Masterplan, Highstone Design (September 2024)

Biodiversity Net Gain Assessment

Newett Homes Ltd

15 September 2024

Trees with seasonal interest to form an attractive gateway

Formal hedgerows to the front of private gardens ot define private realms

DODWORTH GREEN ROAD

BCP

G

1

HOV+

BRA

BRA

DOD

DOD

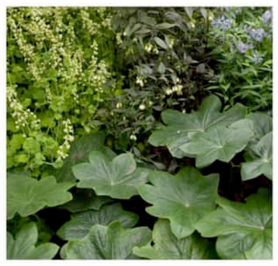
2

3

4

5

Attractive shade tolerant shrub mixes proposed within the scheme



Climbing plants such as clematis proposed along new garden walls.

Attractive, low maintenance shrub planting for new homes

KEY

- Site boundary
- Removed trees and vegetation
- Retained trees and vegetation
- Root protection areas
- Proposed turf (front gardens)
- Proposed turf (rear gardens)
- Proposed garden tree planting
- Proposed street tree (Cherry)
- Formal low hedgerow
- Proposed native hedge
- Proposed ornamental shrub
- Thorny shrub & climbers
- Species rich grassland (Emorsgate EW1 - Woodland Mixture)
- Spring flowering bulbs

Rev	Date	Note
B	05.09.24	Updated to reflect layout changes
A	11.03.24	Updated to include turning head

Dodworth Green Road, Dodworth

N

Landscape Masterplan

DWG Ref. H22-0018_101B | Drwn/Chcked By: SW | Scale - 1:1,000 @ A2 | Date: 05/09/24 | Client: Newett Homes

NEWETT HOMES

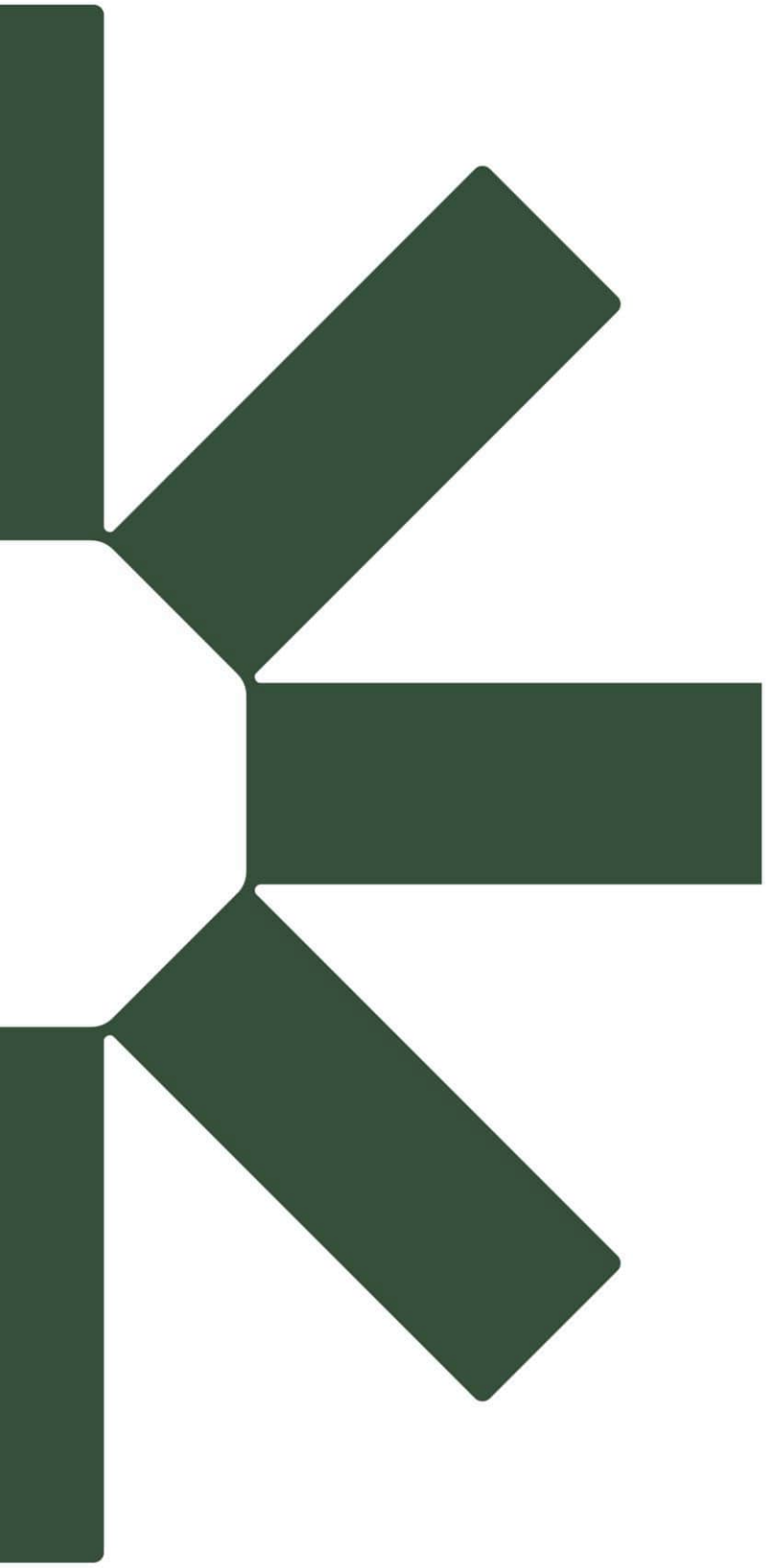
HIGHSTONE DESIGN

Appendix E Biodiversity Net Gain Calculation (provided separately in Excel format)

Biodiversity Net Gain Assessment

Newett Homes Ltd

15 September 2024



Making Sustainability Happen