BIODIVERSITY ENHANCEMENT PLAN SURVEY & REPORT

at

Cockley Woods
Liley Lane
Mirfield
West Yorkshire
WF14 8EQ

Client:
SMS Timber Frame

Client Address:
Unit 3, Near Bank
Shelley
Huddersfield
HD8 8LS

Client Contact:
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JCA Ref:
16077b/JE

Date of Report:
17/01/2021

JCA Limited
Arboricultural & Ecological Consultants

Quality Assurance

JCA ref.	**Desktop Survey Completed:**		**Site Surveyed:**		**Report Completed:**		**Checked:**	
	Date	Name	Date	Name	Date	Name	Date	Name
16077b/ JE	08/01/21	Joe Earnshaw	17/12/20	Joe Earnshaw	17/01/21	Joe Earnshaw	18/01/21	Adam West

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

Risk Assessment Completed	
Bio-security Procedure Completed	
Lone Worker Procedure Completed	

Contents

1 Introduction

1.1 Purpose of the Report

1.1.1 A Biodiversity Enhancement Plan has been requested for **Cockley Woods, Liley Lane** by Kirklees Council.

1.2 Terms of Reference

1.2.1 We have been instructed by **SMS Timber Frame** to produce a Biodiversity Enhancement Plan.

1.2.2 For this purpose, I have been supplied with the following documents and plans:

- Ecological Impact Assessment (JCA Ltd., 2019);
- Arboricultural Report, Site Plan (JCA Ltd., 2020a);
- Woodland Management Plan (JCA Ltd., 2020b);
- Bat Roost Potential Report (JCA Ltd., 2020c);
- Bat Activity Survey Report (Messrs MAB Ecology., 2021);
- Bat Roost Survey of Trees (Messrs MAB Ecology., 2021); and
- Five (5) no. Statutory Declarations submitted attesting to the historical use of the development area of part of the site and associated operations.

1.3 Scope of the Report

1.3.1 This report is compiled in accordance with guidance outlined in the *National Planning Policy Framework* (NPPF) (HMSO, 2019) so that the site takes into account the value of ecosystem services and ecological networks.

1.4 Details of Proposed Development

1.4.1 The plan for this site is to extend the operational capacity of the current woodland wedding venue from 15 weddings per year (operating under 'permitted development' parameters) to between 30 and a maximum of around 40 weddings. The client initially had desires to have up to 50 weddings per year in its original business plan, but has since confirmed that 50 weddings is not likely to be realistic practically or logistically.

1.5 Site Description

1.5.1 **Cockley Woods, Liley Lane** is situated approximately 6.8km east of Huddersfield, at grid reference: SE 213 165.

1.5.2 The site is surrounded predominantly by arable land, with a large working quarry

to the west and parkland beyond the quarry.

Figure 1: Google Maps image of **Cockley Woods, Liley Lane** showing the survey site in relation to the surrounding landscape and habitats. Red line indicates site boundary.

1.5.3 It should be noted that the 'site' for the purposes of this survey and reporting, is the entirety of Cockley Wood, not simply the red line of the actual application site (i.e. the area where the development takes place) which amounts to approximately only 10% of the overall Wood. To have surveyed only red line of the development area itself for the purposes of this survey, whilst feasible, may have led to accusation of a distorted view, given the historic hardstanding and the clear mining and other industrial history of this smaller development area. This area still functions and still allows and does not detract from the position that the overall area continues to function as a Wood overall.

1.5.4 Given the unusual historic position on the said part of the woodland containing the proposed development (evidence for which can still be found on these parts of the site), the client asked for assistance and input from the Council's Biodiversity and Ecology representatives in establishing a suitable baseline position. As the baseline habitat/condition has not been determined. It proved best practice to undertake the Biodiversity Metric 2.0 Calculation under the assumed historic status of Cockley Woods as well as, the current status of Cockley Woods.

2 Local Biodiversity Action Plan

2.1.1 JCA Ltd incorporate Local Biodiversity Action Plan (LBAP) habitats within our enhancement plans. We also aim to attract and support LBAP species, through either directly planting LBAP floral species, or creating habitats that will attract these species. The LBAP that covers **Cockley Woods** is the Kirklees Council BAP (The Kirklees Biodiversity Strategy, n.d).

2.1.2 The habitats listed within the Kirklees Council BAP can be seen below in **Table 1.**

Table 1: Habitats listed under Kirklees Council BAP.

LBAP Habitats		
Scrub	Riverine	Other semi-natural grassland (wet/rush pasture and rough grassland);

2.1.3 The species listed within the Kirklees Council BAP can be seen below in **Table 2.**

Table 2: Species listed under Kirklees Council BAP.

LBAP Species			
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
Great crested newts	*Triturus cristatus*	Water vole	*Arvicola terrestris*
White clawed crayfish	*Austropotamobius pallipes*	Twite	*Carduelis flavirostris subsp. bensonorum/pipilans*
Early marsh orchid	*Dactylorhiza incarnate*	Marsh helleborine	*Epipactis palustris*
Northern wood ant	*Formica lugubris*	Floating water plantain	*Luronium natans*

2.1.4 Measures to attract and support LBAP species, through either directly planting LBAP floral species, or creating habitats that will attract these species, will be included within this report.

3 Retention of Ecologically Valuable Features

3.1 Current Site Description

3.1.1 For a comprehensive description of the site's current ecological value please refer to the accompanying Ecological Impact Assessment Report (JCA Ltd., 2019). However, a summary of the habitats and features present on site can be seen below.

3.1.2 As listed below, the site consists of two different habitats (as per Joint Nature Conservation Committee guidelines (2010)).

- Broadleaf woodland (semi-natural); and
- Bare ground.

3.1.3 Cockley Woods itself is small with a size of 3.5ha. Trees within the woodland are predominantly native and naturalised with species including sycamore (*Acer pseudoplatanus*), elder (*Sambucus nigra*), holly (*Ilex aquifolium*), birch (*Betula sp.*) with the occasional English oak (*Quercus robur*). More recently planted in an area to the north (Compartments 2 and 7) are downy birch (*Betula pubescens*), goat willow (*Salix caprea*), cherry (*Prunus sp.*), hawthorn (*Crataegus monogyna*), oak and ash (*Fraxinus excelsior*). It is thought that the woodland may have begun as an oak and birch woodland, with the oak being removed during the second world war and gradually taken over by the naturalised sycamore (*Acer pseudoplatanus*).

3.1.4 The woodland is consistent throughout with regards to species and age diversity, varying slightly between compartments. The areas most diverse from the rest of the woodland are compartments 3 and 5, which lie to the north and centred in the northern half of the site. This area appears to have been recently planted, with trees being predominantly young with the odd semi-mature specimen and a cluster of early-mature sycamore to the northwest corner at the entrance to the site. The dominant species throughout compartments 2 to 6 is sycamore with the age ranging from semi-mature to early-mature.

3.1.5 Each woodland compartment can be found in **Appendix 1**, and is referenced in accordance to the accompanying Biodiversity Metric 2.0 calculation Microsoft workbook.

3.1.6 There is little in the way of understorey, and natural regeneration has not taken hold. What there is of understorey lies predominantly to the eastern boundary and comprises holly (*Ilex aquifolium*) and elder (*Sambucus nigra*). It is reported that the ground flora comprises of bluebell (*Hyacinthoides non-scripta*) and bracken (*Pteridium aquilinum*) but was not visible during the survey due to the season. Occasional bramble (*Rubus fruticosus*) was noted.

3.1.7 The woodland has been managed for wildlife in the past by the previous owners which includes the addition of bat, bird and owl boxes. The open nature of the

woodland indicates that the woodland has been thinned in the past and it is evident from the number of multiple-stemmed sycamore that coppicing has occurred.

3.1.8 None of the habitats or features on site were deemed suitable for supporting rare or protected mammals, birds (except breeding birds), amphibians, reptiles, invertebrates, nor will the site impact on any designated conservation sites.

3.1.9 The majority of the vegetation on site has the potential to support foraging and nesting birds, this in addition to foraging and commuting bats. The site is relatively inaccessible to hedgehogs (*Erinaceus europaeus*) due to the presence of boundary features. However, several breaks are present within the site's boundary walls/fences providing access points to hedgehogs. The site has the potential to support foraging and nesting hedgehogs.

3.1.10 The entirety of the woodland falls within the Kirklees Wildlife Habitat Network.

3.2 Features to be Retained and Protected

3.2.1 The site contains habitats of moderate conservation value, with the potential for nesting birds identified within the woodland onsite.

3.2.2 The part of the site containing the proposed change of use contains moveable structures. This part of the site is where the mining and industrial history has mainly taken place, albeit there is evidence of this outside this smaller proposed development area. It is intended by the client that some (though not all, due to maintenance and weathering issues) of these moveable structures may be left in situ for most of the time, their presence not impacting on the continued use of the site as woodland. The ceremony area hardstanding has been repaired and covered substantially in bark chippings. It can be seen from the Statutory Declarations referred to, that the area of the development site contained historic hardstanding throughout for many decades, which has been repaired/replaced more recently. Nevertheless, the development area of the overall wood site and the presences of historic hardstanding and the moveable structures, even standing permanently or even semi-permanently, does not prevent this area functioning in ecological/biodiversity terms) substantially as it has for decades, which is part of the woodland, albeit part that has been the subject of mining and other heavy industrial practices historically.

3.2.3 As no development (if indeed any 'operational development' as opposed to a proposed 'change of use' has actually taken place) and certainly no further development is considered to take place on the proposed development area and the whole woodland site and no further low-quality species mainly growing through historic hardstanding are to be removed (the whole of the Woodland is now the subject of a TPO), the proposal for the site consists only of the change of use from the present circa 15 weddings per year (operating under the relevant 'permitted development' conditions) to around 30 weddings per year.

As such, the site is to otherwise now remain untouched and be retained in its

entirety.

3.2.4 The woodland should be enhanced to increase its value to wildlife, then protected and managed to ensure its longevity.

4 Biodiversity Metric 2.0

4.1 Overview

4.1.1 The Biodiversity Metric 2.0 provides a way of measuring and accounting for biodiversity losses and gains resulting from development or land management change.

4.1.2 The metric uses habitat features as a proxy measure for capturing the value and importance of nature. It uses a simple calculation that takes into account the importance of these features for nature: their size, ecological condition, location and proximity to nearby 'connecting' features. The metric enables assessments to be made of the present and forecast future biodiversity value of a site (Natural England, 2019).

4.1.3 A Biodiversity Metric 2.0 exercise has been undertaken as to fully inform this BEP. The calculations have been processed in a Microsoft Excel workbook, which accompanies this report. However, a summary of the main findings is provided below:

4.2 Biodiversity Metric 2.0 Results

4.2.1 **Table 3**, below, shows the baseline habitats on site and their determined ecological value.

Table 3: Baseline habitats on site and their ecological value as categorised by the Biodiversity Metric 2.0 calculator.

Biodiversity Metric Calculation Tool Reference Number	Biodiversity Metric 2.0 Habitat Type	Total Area on Site (hectares)	Ecological Baseline Habitat Unit
1	Urban - Developed land; sealed surface	0.01	0.00
2	Woodland and forest - Other woodland; broadleaved	0.3	3.04
3	Woodland and forest - Other woodland; broadleaved	0.54	6.83
4	Woodland and forest - Other woodland; broadleaved	0.21	1.59
5	Woodland and forest - Other woodland; broadleaved	0.75	9.49
6	Woodland and forest - Other	0.14	1.77

Biodiversity Metric Calculation Tool Reference Number	Biodiversity Metric 2.0 Habitat Type	Total Area on Site (hectares)	Ecological Baseline Habitat Unit
	woodland; broadleaved		
7	Woodland and forest - Other woodland; broadleaved	0.34	4.30
8	Woodland and forest - Other woodland; broadleaved	0.25	3.16
9	Woodland and forest - Other woodland; broadleaved	0.38	4.81
10	Woodland and forest - Other woodland; broadleaved	0.08	0.61
11	Woodland and forest - Other woodland; broadleaved	0.13	1.64
12	Urban - Vacant/derelict land/ bareground	0.07	0.14
13	Urban - Vacant/derelict land/ bareground	0.13	0.26

4.2.2 **Table 4**, below, shows the baseline habitats on site and their determined condition.

Table 4: Baseline habitat conditions as determined by the Biodiversity Metric 2.0 Habitat Condition Assessment Criteria.

Biodiversity Metric Calculation Tool Reference Number	Biodiversity Metric 2.0 Habitat Type	Habitat Condition	Score	Assessment Criteria Met*	Notes
1	Urban - Developed land; sealed surface	N/A - Other	0	N/A - Other	None
2	Woodland and forest - Other woodland; broadleaved	Moderate	2	Clearly fails at least two of the criteria. Little standing or fallen deadwood present.	No ground flora present (out of season for most species), with

Biodiversity Metric Calculation Tool Reference Number	Biodiversity Metric 2.0 Habitat Type	Habitat Condition	Score	Assessment Criteria Met*	Notes
				Trees of similar age and height structure throughout the woodland.	exception of some bramble and possible evidence of bluebell. Dominate species include birch and sycamore. Average tree age is establishmen t (E). Some semi-mature (S/M) specimens present.
3	Woodland and forest - Other woodland; broadleaved	Fairly Good	2.5	Trees of similar age and height structure throughout the woodland.	No ground flora present (out of season for most species). Dominate species include sycamore, birch and some goat willow. Average tree age is E.
4	Woodland and forest - Other woodland; broadleaved	Fairly Poor	1.5	Trees of similar age and height structure throughout the woodland. Little standing or fallen deadwood present. Remains of planting lines can be seen.	No ground flora present (out of season for most species). Dominate species include sycamore, birch, goat willow. Some

Biodiversity Metric Calculation Tool Reference Number	Biodiversity Metric 2.0 Habitat Type	Habitat Condition	Score	Assessment Criteria Met*	Notes
					English oak noted. Average tree age is E.
5	Woodland and forest - Other woodland; broadleaved	Fairly Good	2.5	Trees of similar age and height structure throughout the woodland.	Dominate species include sycamore. Some downy birch and English oak noted. Average tree age is S/M.
6	Woodland and forest - Other woodland; broadleaved	Fairly Good	2.5	Trees of similar age and height structure throughout the woodland.	Dominate species include sycamore. Some downy birch and English oak noted. Average tree age is S/M. Some E age trees noted.
7	Woodland and forest - Other woodland; broadleaved	Fairly Good	2.5	Little standing or fallen deadwood present.	Ground flora present in the form of bramble, remnants of this year's bracken and areas of grass. Evidence of sycamore coppicing throughout the woodland. Dominate species include

Biodiversity Metric Calculation Tool Reference Number	Biodiversity Metric 2.0 Habitat Type	Habitat Condition	Score	Assessment Criteria Met*	Notes
					sycamore. Average tree age is S/M. Some mature (M) English oak noted along boundary.
8	Woodland and forest - Other woodland; broadleaved	Fairly Good	2.5	Trees of similar age and height structure throughout the woodland.	Evidence of sycamore coppicing throughout the woodland. Dominate species include sycamore. Average tree age is S/M.
9	Woodland and forest - Other woodland; broadleaved	Fairly Good	2.5	Trees of similar age and height structure throughout the woodland.	Ground flora present in the form of limited bramble. Evidence of sycamore coppicing throughout the woodland. Dominate species include sycamore. Average tree age is S/M. Some M specimens present.

Biodiversity Metric Calculation Tool Reference Number	Biodiversity Metric 2.0 Habitat Type	Habitat Condition	Score	Assessment Criteria Met*	Notes
10	Woodland and forest - Other woodland; broadleaved	Fairly Poor	1.5	Trees of similar age and height structure throughout the woodland. Little standing or fallen deadwood present. Some remains of plating lines can be identified.	Ground flora present in the form of grasses (out of season for most species). Dominate species include sycamore. Average tree age is E.
11	Woodland and forest - Other woodland; broadleaved	Fairly Good	2.5	No more than 1 indicators of poor condition are present. Little fallen deadwood.	Ground flora consists of patches of grasses. Dominate species include downy birch. Average tree age is S/M to M.
12	Urban - Vacant/derelict land/ bareground	Poor	1	Most of the condition criteria are being failed.	None.
13	Urban - Vacant/derelict land/ bareground	Poor	1	Most of the condition criteria are being failed.	None.

*Assessment criteria met as per the baseline habitat's associated Condition Assessment Table Criteria.

4.2.3 Please see **Appendix 1** for the location of each Biodiversity Metric 2.0 Habitat Area listed in Tables 3 & 4.

4.2.4 To ensure a net gain in biodiversity is achieved the following measures can be employed:

- Habitat retention;

- Habitat enhancement;
- Habitat creation; and/or
- Habitat area succession.

5 Habitat Retention & Enhancement

5.1 Summary

5.1.1 As per the Mitigation Hierarchy (British Standards Institution (BSI), 2013 ; shown below in **Figure 2**), proposals should seek to avoid impacts; then to mitigate unavoidable impacts, and, as a last resort, to compensate for unavoidable residual impacts that remain after avoidance and mitigation measures.

Figure 2: The mitigation hierarchy (BSI, 2013)

5.2 Woodland Habitats

5.2.1 The entirety of the woodland habitat located within the boundary of Cockley Woods is set for enhancement, with no area of woodland set for removal.

5.2.2 The woodland habitat contributes to the resilience of the Kirklees Wildlife Habitat Network; and provides opportunities for bats, birds and hedgehogs (JCA Ltd., 2019). As a result, it is planned that the woodland is enhanced and has a management plan in place to increase its value to fauna in the local area.

5.2.3 As such, a Woodland Management Plan (JCA., 2020b) has been developed to facilitate and guide the planned enhancement of the woodland. Key features of the management plan includes:

- Maintaining long term tree cover;
- Bringing the woodland back under a management strategy;
- Ensure habitat connectivity (and therefore the Kirklees Wildlife Habitat Network) is maintained through strengthening the Green Corridor effects of the woodland is secured into the future;

- The retention of fallen and standing deadwood, as this is a key component of a healthy woodland structure. Deadwood contributes towards the ground layer and ultimately the nutrient cycle. Any wood removed during the planned tree works should be utilised within the woodland to provide habitat piles; and

- Improve floral diversity of the site, which in turn aids faunal diversity of the woodland through the thinning of sycamore, and re-stocking with native oak species.

5.2.4 Through the enhancement measures detailed within the Woodland Management Plan (JCA., 2020b), **Table 5** below details the woodland compartments to be enhanced, and their ecological value post-enhancement.

Table 5: Woodland compartments on site and their ecological value as categorised by the Biodiversity Metric 2.0 calculator, post-enhancement.

Biodiversity Metric Calculation Tool Reference Number	Total Area on Site (hectares)	Ecological Habitat Unit (Baseline)	Ecological Habitat Unit (post-enhancement)
2	0.3	3.04	3.39
3	0.54	6.83	7.47
4	0.21	1.59	1.80
5	0.75	9.49	10.38
6	0.14	1.77	1.94
7	0.34	4.30	4.70
8	0.25	3.16	3.46
9	0.38	4.81	5.26
10	0.08	0.61	0.69
11	0.13	1.64	1.80

5.2.5 The Biodiversity Metric 2.0 has calculated a total net percentage **increase in habitat units** of **9.69%,** this is a total net **increase of 3.65 habitat units.** This has been calculated through the input of the baseline habitat conditions and area coverage, and the input of the habitat type, condition and area coverage of those habitats to be created onsite.

5.2.6 Further details of the Biodiversity Metric 2.0 calculations can be found within the Biodiversity Metric 2.0 Calculator Tool Microsoft Excel workbook, accompanying this report.

5.2.7 It is important to highlight that Tables 3 – 5 have been calculated on the habitats currently present, including their condition assessment. To be thorough however, and as described above in this report, as the site has a history of both mixed use and management, in order to satisfy the Council and all concerned, a second Biodiversity Metric 2.0 calculation has been undertaken, in order to provide a very worst scenario.

5.2.8 This calculation has made using the assumption that the entirety of Cockley Woods has had little to no human intervention in its use and management. The results of this Biodiversity Metric 2.0 calculation under these conditions achieved a biodiversity net gain of 6.77%. This calculation however is limited both in its validity and its connection to Cockley Woods overall. This is due to the calculation being undertaken with a series of assumptions as to the historic status of the wood (though now evidenced and working historic assumptions), against something that no longer remains.

6 Faunal Boxes

6.1 Summary

6.1.1 In total **24** bat boxes, **25** bird boxes, **2** hedgehog shelters and **2** insect log pile have been recommended. The location of each faunal provision to be installed can be seen in **Appendix 2.**

6.2 Bat Roosting Provisions

6.2.1 All UK bat species are protected by UK legislation. This is in response to the declines experienced by many bat species over the past century. The cause of the decline can be linked to a number of factors, including habitat loss, pesticide over-use, habitat fragmentation, loss of roost sites and roost disturbance.

6.2.2 The desktop study conducted as part of the site's Ecological Impact Assessment (JCA Ltd., 2019) identified that common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *P. pygmaeus* and noctule bats *Nyctalus noctula* are present within the habitats in proximity to the site. Two of these bat species (noctule bats and soprano pipistrelle) are listed within the Kirklees Habitat Action Plan (Kirklees Council, n.d). Therefore, the types of bat boxes recommended for the site will provide roosting opportunities for a range of bat species.

6.2.3 Box Selection & Positioning: The number and specification of the recommended boxes are detailed in **Table 6** below. Their locations within Cockley Woods is unable to be detailed at this point, due to the planned tree thinning within the Woodland Management Plan (JCA,.2020b). Bat box locations will be detailed upon successful completion of any recommended tree works.

6.2.4 Should the bat roosting provisions included within this report not be suitable, there is a wide range of options available to pursue. Should this be the case, an ecologist should be contacted as soon as possible in the planning process to ensure provisions for roosting bats remain as part of the proposed development.

Table 6: Bat roosting opportunities to be installed.

Bat Brick/Box	Number to be Installed	Description	Details
1FD Schwegler Bat Box (or a comparable design) 	12*	The Schwegler 1FD has been developed specifically for smaller bats as both the interior and the type and size of the entrance hole match the requirements of smaller species. It features a special layout inside, such as a domed roof, an increased interior height and two grooved internal wooden front panels with precise spacing between them. This model has proved highly effective as a nursing area. The front panel can be removed for cleaning and inspection. This box is designed to be sited on trees using the galvanised steel hanger and aluminium nail provided. Schwegler bat boxes are backed by conservation organisations, government agencies and forestry experts and have the highest occupation rates of all nest boxes. They are carefully designed to mimic natural roost sites and to provide a stable environment.	Dimensions Height: 360mm Diameter: 160mm Weight: 4.8kg
Schwegler 2FN Bat Box (or a comparable design) 	12*	The 2FN bat box has two entrances - one at the front and one at the rear against the tree. It has a domed roof to allow the bats to form roosting clusters for warmth, and an increased internal height. This design has proved highly successful with larger bat species including noctule and Bechstein's bats *Myotis bechsteinii*. This bat box is also designed to be effective against small predators and excludes draughts and light. Due to the opening on the bottom, this bat box does not require cleaning. It is manufactured from long-lasting WoodCrete, which should last for at least 20-25 years.	Dimensions Height: 360mm Diameter: 160mm Weight: 4.9kg

* The 24 bat boxes proposed should be installed onto 8 trees within the site boundary in clusters of 3. These clusters should comprise of a mix of both the Schwegler 1FD and 2FN.

6.2.5 **Bat boxes** should be positioned at least 5m high, in groups of three, with their front facing north, southwest and southeast (as recommended by the Bat Conservation Trust). This will allow each box to gain a different amount of warmth from the sun, creating a range of different environmental conditions for bats to choose from. The selected boxes should be constructed of WoodCrete (or similar) in order to increase their life expectancy.

6.3 Bird Nesting Provisions

6.3.1 In the UK there are approximately 600 species of birds. Many birds regularly visit gardens and will quickly adopt to new nest boxes, but only when the right box design is selected and situated correctly. Each species prefers a specific nest box design, with different dimensions and hole sizes.

6.3.2 The Ecological Impact Assessment (JCA Ltd., 2019), was unable to successfully identify woodland bird species that may benefit from the inclusion of bird boxes specific to their species. This was due to the records being either historic or includes records of bird species that would usually roost within buildings. For this reason, a range of bird boxes have been recommended that include standard and open-fronted nest boxes. This with the exception of barn owls (*Tyto alba*) recorded within 1km of the site boundary in 2018, for which a nest box suitable for this species has been recommended.

6.3.3 Box Selection & Positioning: The number and specification of the recommended boxes are detailed in **Table 7** below. Their locations within Cockley Woods is unable to be detailed at this point, due to the planned tree thinning within the Woodland Management Plan (JCA,.2020b). Bird box locations will be detailed upon successful completion of any recommended tree works.

Table 7: Bird nesting opportunities to be installed.

Bird Box	Number to be Installed	Description	Details
Eco Barn Owl Nest Box	1	The Eco Barn Owl Nest Box is constructed almost entirely out of recycled plastic with the exception of the wooden base. The recycled plastic means that this nest box is extremely robust, requires virtually no maintenance and has a long life expectancy. The wooden base, made from FSC certified chip-board, absorbs moisture from the nest and should be	Dimensions Height: 670mm Width: 660mm Depth: 530mm

		replaced every few years. The black and green colouration ensures the nest box blends into its surroundings. The curved roof integrates with the sides of the box and overlaps the back and the front of the box to ensure the inside of the box remains dry.	Weight: 9.5kg
Vivara Pro Barcelona WoodStone Open Nest Box (or comparable design) 	12*	Unlike a traditional wooden nest box, these boxes will not rot away or deteriorate and are guaranteed for 10 years. This robust material safeguards against attacks from predators such as woodpeckers, cats and squirrels, whilst also providing a well-insulated interior with a consistent internal temperature (important for breeding). These open nest boxes are suitable for wrens, robins, spotted flycatchers, pied and grey wagtails, song thrushes and blackbirds. These nest boxes have a removable front panel for easy cleaning. We recommend cleaning the boxes out at the end of each breeding season may encourage them to be used again in future years, as it reduces parasites. We recommend using hot water rather than chemicals to remove any parasites that remain.	Dimensions Height: 240mm Width: 190mm Length: 175mm
Vivara Pro Seville 32mm WoodStone Nest Box (or comparable design)	12*	Unlike a traditional wooden nest box, these boxes will not rot away or deteriorate and are guaranteed for 10 years. This robust material safeguards against attacks from predators such as woodpeckers, cats and squirrels, whilst also providing a well-insulated interior with a consistent internal temperature (important for breeding). These 32mm hole nest boxes are suitable for blue tits, tree sparrows, house sparrows, great tits, blue tits, nuthatches, coal tits and pied flycatchers and they are available in brown, green or grey to	Dimensions Height: 310mm Width: 200mm Length: 200mm Weight: 6.9kg Entrance hole diameter: 32mm

		complement both natural woodland and garden settings. These nest boxes have a removable front panel for easy cleaning. We recommend cleaning the boxes out at the end of each breeding season may encourage them to be used again in future years, as it reduces parasites. We recommend using hot water rather than chemicals to remove any parasites that remain.	
* The 24 bird boxes proposed should be installed onto 8 trees within the site boundary in clusters of 3.			

6.3.4 Bird boxes on trees should be installed in clusters facing in a northerly to easterly direction, thus avoiding strong sunlight and wet winds. Boxes should be installed as to ensure birds have a clear flight path to the bird box without any clutter directly in front of the entrance.

6.4 Invertebrate Provisions

6.4.1 Insects are the primary food source for many rare and/or protected animals that regularly visit gardens. Therefore, encouraging insects into a site will then attract their rare and/or protected predators.

6.4.2 Many insect species will hibernate over winter, including butterflies, ladybirds and lacewings; of which hibernate in leaf litter or other plant debris. However, residents tend to over-maintain their gardens, often tidying these features away in the autumn. Therefore, these species can be encouraged to stay at the site all year round by erecting suitably designed towers, boxes and/or log piles (Kirby, 2013).

6.4.3 To ensure the site maintains its' value for invertebrates**, 2 insect log piles** should be placed on site. An example of an insect log pile is shown below in **Figure 3**, and their proposed location on site shown in **Appendix 2**. A similar insect log pile design may also be constructed through the careful piling of any wood collected during the planned tree thinning works.

Figure 3: Insect log pile (can be created through own design)

6.4.4 Plenty of wildlife makes its home in dead wood, and other animals use it as a source of food. In woodlands, fallen wood occurs naturally and many species have adapted to use this habitat. But in our increasingly tidy countryside, fallen and dead wood is not so common.

6.4.5 It is best placed in a shady spot, so that it remains cool and damp (RSPB, n.d).

6.5 Hedgehog Provisions

Hedgehog Shelters

6.5.1 Hedgehog numbers have declined by 90% over the past 50 years due to several factors including habitat loss, fragmentation and parasites.

6.5.2 Providing shelter for hedgehogs within green spaces will encourage this species to visit the site and utilise the natural space. Therefore, **2 hedgehog shelters** should be included (locations shown in **Appendix 2**).

6.5.3 Hedgehog shelters are simple to construct and should be situated in a sheltered, undisturbed area preferably under vegetation with dried leaves or hay placed inside for bedding (Bunnell, 2014).

6.6 Management and monitoring

6.6.1 Monitoring of faunal boxes and wildlife features over a 5-year period is recommended. Monitoring is key to understanding how habitat and wildlife features are being used by wildlife on site after the development. Without monitoring, and effective and adaptive management scheme cannot be

maintained and revised.

7 Ecological Recommendations

7.1 Lighting

7.1.1 The site is suitable for bats and hedgehogs (JCA Ltd., 2019), both of which are nocturnal species sensitive to lighting.

7.1.2 As such, the following lighting guidance measures have been provided in line with recommendations provided by the Institute of lighting Professionals (ILP) and the Bat Conservation Trust (BCT) (ILP & BCT, 2018). The proposed development should seek to:

- Use lighting which is functional and directional only.
- Ensure lighting will not illuminate features of ecological interest such as retained hedgerows, trees or woodlands.
- Prohibit the use of floodlight style lighting onsite. Any lights present must be on timers/motion sensors and not permanently turned on during hours of darkness (from sunset to sunrise).
- Plant natural shrub buffers to minimise light spill onto the site's adjacent habitats.
- Maintain dark zones on site to preserve wildlife areas of low light pollution.
- Use the minimum light levels necessary for the relevant task/function, this may equate to reducing light intensity, and/or using the minimum number of light sources or minimum column height.
- Use hoods, louvres or other luminaire design features to avoid light spill onto retained and newly created areas of vegetation likely to be used by foraging and commuting bats.
- Use narrow spectrum light sources where possible to lower the range of species affected by lighting, specifically avoiding shorter wavelength blue light, using instead warm/neutral colour temperature of <4,200 kelvin lighting (BCT, 2009).
- Use light sources that emit minimal ultra-violet light to avoid attracting night-flying invertebrate species which in turn may attract bats to the light (BCT, 2009).
- Use recessed internal light fixtures.

8 Conclusion

8.1.1 JCA Limited (Ltd.) have been instructed to produce a Biodiversity Enhancement Plan (BEP) in association with **Cockley Woods.**

8.1.2 The plan for the site is to extend the operational capacity of the current woodland wedding venue from the limited temporary use of the development site operating under 'permitted development tolerances.

8.1.3 In accordance with Chapter 15 of the NPPF, the Local Plan Policy LP30 and as a means to quantify the loss and retention of the habitats on site, a Biodiversity Metric 2.0 exercise was undertaken as part of this BEP.

8.1.4 As per the BS 42020 (BSI, 2013) sites should following the mitigation hierarchy, thereby retaining habitats as the first option, minimising impact as the second and, if these options are not available, providing compensatory measures.

8.1.5 The Biodiversity Metric 2.0 assessment and calculation identified the site to have a baseline of 37.64 habitat units under the current status of Cockley Woods. This Biodiversity Enhancement Plan will ensure that the site will have a **Biodiversity Net Gain of 9.69%.** This will see an increase of 3.65 in habitat units. Additionally, the Biodiversity Metric 2.0 assessment and calculation identified the site to have a **Biodiversity Net Gain of 6.77%** in habitat units under the historic status of the site. Both calculations meet the requirements outlined in Kirklees Local Plan Policy LP 30 and Chapter 15 of the NPPF.

8.1.6 Notwithstanding that the proposed permanent change of use is limited to only a small part of the woodland, given the slightly unusual situation and peculiar history of the site, this Biodiversity Net Gain has been achieved through the enhancement of the entirety of the woodland habitat onsite. This is to also be facilitated through the inclusion of the current Woodland Management Plan (JCA., 2020b).

8.1.7 The site has potential to support bats, birds and hedgehogs. As a result, **24 bat boxes**, **24 bird boxes**, **2 hedgehog shelters and 2 insect log piles** have been recommended. The location of each proposed faunal box can be seen in **Appendices 2**

8.1.8 Monitoring of faunal boxes and wildlife features over a 5-year period is recommended to ensure they are being effective. Should it be identified that the ecological provisions are no longer fit for purpose, revisions should be made to the management plan of the site.

8.1.9 The site is suitable for bats and hedgehogs (JCA Ltd., 2019), both of which are nocturnal species sensitive to lighting. As such, guidance relating to appropriate lighting on site has been provided in **Section 7.1**.

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Appendices

Appendix 1: Site Plan

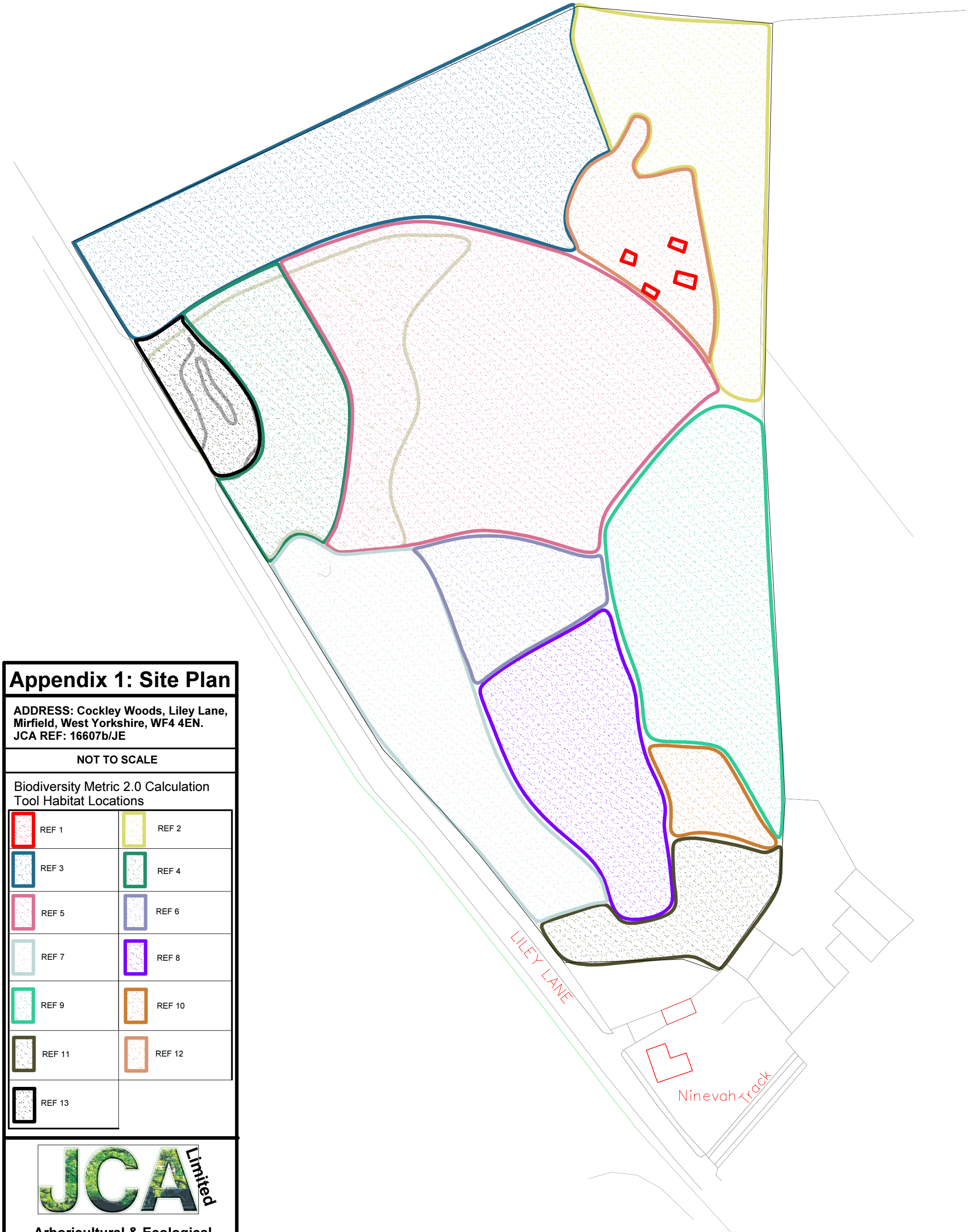
Appendix 1: Site Plan

ADDRESS: Cockley Woods, Liley Lane, Mirfield, West Yorkshire, WF4 4EN.
JCA REF: 16607b/JE

NOT TO SCALE

Biodiversity Metric 2.0 Calculation Tool Habitat Locations

REF 1	REF 2
REF 3	REF 4
REF 5	REF 6
REF 7	REF 8
REF 9	REF 10
REF 11	REF 12
REF 13	



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Appendix 2: Faunal Boxes Plan

Appendix 2:
Faunal Box Locations

ADDRESS: Cockley Woods,
Liley Lane, Mirfield,
WF4 4EN.
JCA REF: 16607b/JE

NOT TO SCALE

Key	
	Building
	Insect Log Pile
	Hedgehog Shelter
	Site Boundary

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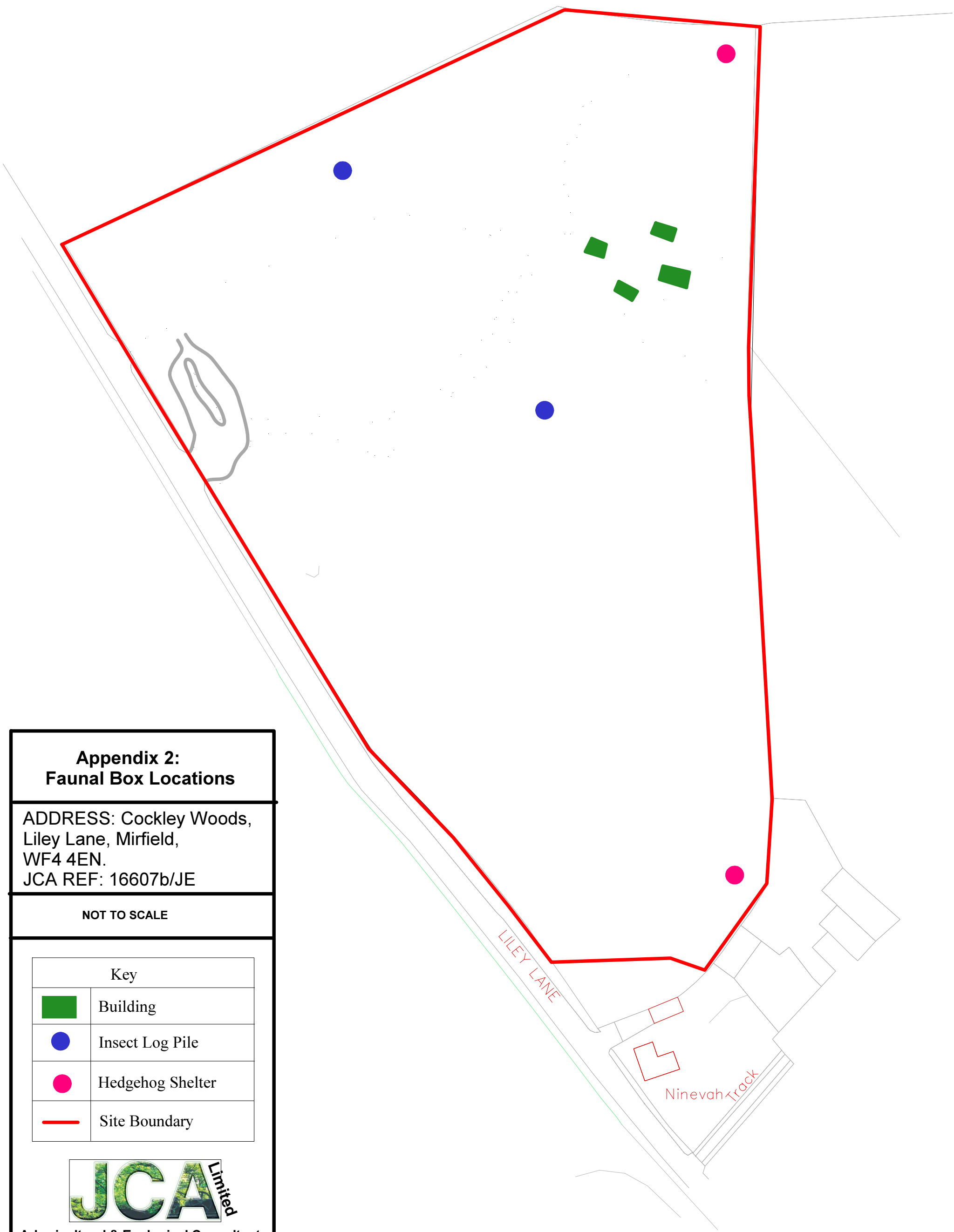

Appendix 3: Author Qualifications

Principal Consultant and Managing Director

Jonathan Cocking
F.R.E.S., Tech. Cert. (Arbor.A), PDipArb (RFS) FArborA CBiol MSB. MICFor.
Jonathan is a Registered Consultant and Fellow of the Arboricultural Association and sits on its Professional Committee. He has 31 years' experience in the Arboricultural profession and served for eight years as Senior Arboriculturist with a large local authority before establishing JCA in 1997. Jonathan has since developed JCA's portfolio of services and its extensive client base. He is a Chartered Biologist, a Chartered Arboriculturalist and an Expert Witness with much experience of litigation work.

Technical Director

Toby Thwaites
BSc (Hons), HND (Arboriculture).
Toby joined JCA in 1998 after graduating in Ecology at the University of Huddersfield and has since graduated in Arboriculture at the University of Central Lancashire. A former JCA team leader and Consulting Arboriculturist, Toby is now Technical Director and oversees all office and on-site activities at JCA and is on hand to offer technical support and advice.

Consulting Staff: Ecology

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

Joe Earnshaw, Assistant Ecologist
BSc (Hons), MSc Biodiversity and Conservation, Qualifying CIEEM member.
Joe joined the ecology department of JCA in 2018 after taking part in JCA's student training programme. He initially obtained a bachelor's degree in animal management from Askham Bryan College, York. He has since furthered his education and brings to the company an MSc in Biodiversity and Conservation from the University of Leeds. Joe has expertise in aquatic invasive species identification and control. Joe holds a Natural England Level 1 bat survey class licence and a CSCS card.

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

Signed

.....
Joe Earnshaw *Qualifying CIEEM Member*
17/01/2021

Reviewed by

.....

Adam West
18/01/2021

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

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ECOLOGICAL SERVICES

Ecological Pre-Planning Services

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

Ecological Post-Planning Services

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

ARBORICULTURAL SERVICES

Guidance for Architects & Developers

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

Advice for Engineers, Loss Adjusters and Insurers

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

Advice for Local Authorities and Social Housing

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

Tree Advice for the Legal Profession

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

Veteran Tree Management

- Ancient Woodland Management
- Veteran Tree Management

Tree Health and Pest and Disease Management

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

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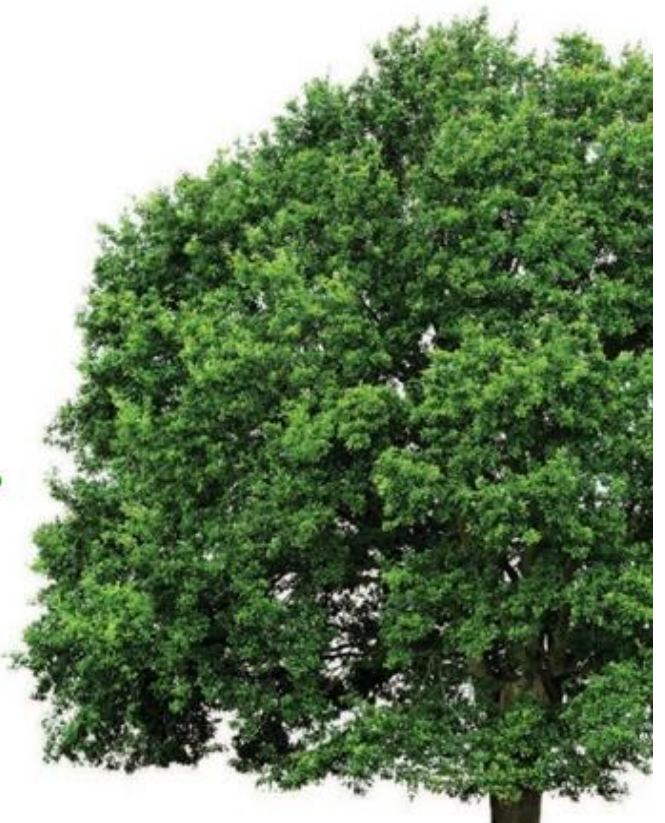

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