

BIODIVERSITY ENHANCEMENT PLAN
at
Cummins Turbo Technologies
St Andrews Road
Huddersfield
HD1 6RA

Client:
Farrar Bamforth Associates

Client Address:
51 Trinity Street
Huddersfield
HD1 4DN

Client Contact:
01484 424008 (Tel)

JCA Ref:
13825/JB/JC

Date:
21st August 2018

Quality Assurance

JCA Ref.	Version	Desktop Survey Completed:		Site Surveyed:		Report Completed:		Checked:	
		Date	Name	Date	Name	Date	Name	Date	Name
13825/JB	Biodiversity Enhancement Plan	13/03/18	Jenny Butler	02/11/17	Jenny Butler	19/08/18	Jonathan Cocking	21/08/18	Toby Thwaites

Contents

Quality Assurance	2
Contents	3
1 Introduction	4
1.1 Purpose of the Report	4
1.2 Terms of Reference	5
1.3 Scope of the Report	5
1.4 Details of Proposed Development	5
1.5 Site Description	5
2 Local Biodiversity Action Plan	6
3 Retention of Ecologically Valuable Features	9
3.1 Pre-development	9
3.2 Features to be Retained and Protected	9
4 Habitat Creation	10
4.1 Summary	10
4.2 Shrub Planting	11
5 Faunal Boxes	13
5.1 Summary	13
5.2 Bat Roosting Opportunities	13
5.3 Bird Boxes	14
6 Conclusion	15
6.1 Retention of Ecologically Valuable Features	15
6.2 Habitat Creation	15
6.3 Faunal Boxes	15
6.4 Management and monitoring	15
7 References	16
Appendix 1: Planting Plan	18
Appendix 2: Faunal Boxes Plan	19
Appendix 3: Examples Artificial Bat Box Designs	20
Appendix 4: Examples Artificial Bird Box Designs	21
Appendix 5: Author Qualifications	22

1 Introduction

1.1 Purpose of the Report

- 1.1.1 A Biodiversity Enhancement plan has been requested for **Cummins Turbo Technologies, St Andrews Road, Huddersfield** by Kirklees Council. This is described within Condition 6 of the Decision Notice:

Condition 6: Prior to hereby approved pump house and sprinkler tank being brought into use a Landscape and Ecological Design strategy should be submitted to and approved in writing by the Local Planning Authority. This strategy should include the following detail:

- *Explore and present opportunities for ecological and landscaping enhancement based on site conditions.*
- *Provide details of means of ecological and landscape enhancement on site.*
- *Persons responsible for implementing the works.*
- *Details of initial aftercare and maintenance.*
- *Details for monitoring and remedial measures, including replacement of any trees, shrub or planting that fails or becomes diseased within the first five years from completion.*

The approved proposals and recommendations of the Landscape and Ecological Design strategy shall be implemented in accordance with the approved details prior to the pump house and sprinkler tank being brought into use. All approved features shall be retained in that manner thereafter.

Reason: To ensure the long term viability of the retained and created habitats adjacent to the canal, in the interest of visual amenity and ecological enhancement and protecting, so as to comply with policies D2, BE1, EP11 and R18 of the Kirklees Unitary Development Plan and Chapters 7, 8 and 11 of the National Planning Policy Framework.

- 1.1.2 This report will aim to fulfil the planning conditions set by Kirklees Council, with the ultimate aim of enhancing the site's value to wildlife, through the retention of any existing features of value to wildlife, the creation of new habitats and the provision of new roosting/nesting opportunities within the proposed development.

1.2 Terms of Reference

- 1.2.1 We have been instructed by **Farrar Bamforth Associates** to produce a Biodiversity Enhancement Plan for Cummins Turbo Technologies.
- 1.2.2 For this purpose I have been supplied with the following documents and plans:
- Planning permission for development, application 2017/62/92268/W
 - Canal & River Trust consultation document CRTR-PLAN-2017-22939
 - Site plan, drawing 16-C34-08

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) so that the development takes into account the value of ecosystem services and enhance ecological networks.

1.4 Details of Proposed Development

- 1.4.1 The development proposed at this site is for a pump house and sprinkler tank to be constructed on an in-use commercial property.

1.5 Site Description

- 1.5.1 **Cummins Turbo Technologies, St Andrews Road** is situated 600m northwest of Huddersfield town centre, at grid reference: SE150168.
- 1.5.2 The site is surrounded by predominantly commercial properties, forming a larger industrial estate. To the west of the site is Huddersfield town centre. 300m to the east is the River Colne. The Huddersfield Canal runs adjacent to the western site boundary, connecting the site to further habitats including tree lines, woodland, farmland and parkland.

2 Local Biodiversity Action Plan

2.1.1 If possible, JCA Ltd aim to 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 **Cummins Turbo Technologies** is the Kirklees BAP.

2.1.2 The habitats within the Kirklees BAP are listed in **Table 1** below:

Table 1: Kirklees Biodiversity Action Plan: Kirklees UK Habitats of Principle Importance

Kirklees Habitats of Principle Importance	
UK BAP Habitats	Key geographical areas in Kirklees
Arable field margins	Pennine foothills
Blanket bog	Uplands
Hedgerows	Pennine foothills
Inland rock outcrop and scree habitats	Valley slopes and quarries in any areas
Lowland dry acid grassland	Valley slopes
Lowland heathland	Valley slopes
Hay meadows	Pennine foothills and mid-altitudinal grasslands
Lowland mixed deciduous woodland	Valley slopes and Pennine foothills
Open mosaic habitats on previously developed land	Urban areas - included in scrub habitat action plan
Ponds	Relevant to occurrence of protected species (white-clawed crayfish, great crested newt, water vole, <i>L.natans</i>)
Reedbeds	Floodplain- included in riverine corridors habitat action plan
Rivers	Floodplain- included in riverine corridors habitat action plan
Traditional orchards	Pennine foothills
Upland flushes, fens and swamps	Uplands
Upland heathland	Uplands
Upland mixed ash woods	Valley slopes (uplands): component of upland oak woodland
Upland mixed oak woods	Uplands
Wet woodlands	Floodplain: also component of lowland mixed deciduous woodland and upland oak woodland
Wood-pasture and parklands	Pennine foothills and valley slopes

Kirklees Local Habitats of Principle Importance	
Local BAP Habitats	Primary Locations in Kirklees
Scrub	Primarily valley slopes and Pennine foothills, but can occur elsewhere. Includes open mosaic habitats on previously developed land (mostly in urban areas).
Other semi-natural grassland (wet/rush pasture and rough grassland)	Mid-altitudinal corridors including reedbeds and rivers
Riverine	Floodplain: corridors includes reedbeds and rivers

2.1.3 The species within the Kirklees BAP are listed in **Table 2** below:

Table 2: Kirklees Biodiversity Action Plan: Kirklees UK Species of Principle Importance

Kirklees Species of Principle Importance	
Birds	
Black Grouse	House Sparrow
Common Bullfinch	Lesser Redpoll
Common Cuckoo	Northern Lapwing
Common Grasshopper Warbler	Red Grouse
Common Linnet	Reed Bunting
Common Starling	Ring Ouzel
Corn Bunting	Sky Lark
Corn Crake	Song Thrush
Eurasian Curlew	Spotted Flycatcher
Eurasian Tree Sparrow	Tree Pipit
European Nightjar	Twite
European Turtle Dove	Willow Tit
Grey Partridge	Wood Warbler
Hawfinch	Yellow Wagtail
Hedge Accentor	Yellow Hammer
Invertebrates	
Northern Wood Ant	Wall Brown
Small Heath	White-Letter Hairstreak

Fish	
Atlantic Salmon	Brown/Seat Trout
Brook Lamprey	River Lamprey
Reptiles and Amphibians	
Adder	Grass Snake
Common Lizard	Great Crested Newt
Common Toad	Slow-worm
Terrestrial Mammals	
Brown Hare	Polecat
Brown Long-Eared Bat	Soprano Pipistrelle
Mountain Hare	Water Vole
Noctule	West European Hedgehog
Otter	

3 Retention of Ecologically Valuable Features

3.1 Pre-development

- 3.1.1 A summary of the habitats and features present in this report can be seen below.
- 3.1.2 The site consists predominantly of hard standing, bordered by metal and concrete post fencing. The site is currently in commercial use, therefore there are no ecologically valuable habitats present on site.
- 3.1.3 All habitats on site were species poor, consisting of only common floral species typical of improved land. Vegetation present on site was minimal, mainly consisting of wasteland floral species bordering the site boundaries.
- 3.1.4 The habitats and features on site were not deemed suitable for supporting rare or protected mammals, birds, amphibians, reptiles, plants or invertebrates, nor will the proposed construction of a pump house and sprinkler system on site impact on the biodiversity of any designated conservation sites. The development may impact on the view from the Huddersfield Canal, which is a locally designated site and SSSI.

3.2 Features to be Retained and Protected

- 3.2.1 The site contains only habitats of low conservation value, with no features deemed likely to support protected species. The site is currently in commercial use, with strict health and safety requirements due to the continual use of heavy plant machinery on site.
- 3.2.2 As a consequence of 3.1, nothing on site is deemed worthy of special retention.

4 Habitat Creation

4.1 Summary

- 4.1.1 As the site contains only habitats of low conservation value, there is scope to enhance the site's wildlife value post development.
- 4.1.2 The site is currently in commercial use with the entirety of the site being a mixture of hard standing or buildings. The site is in continual use, with heavy machinery, high levels of human activity and numerous floodlights being used. The site is active during working hours; there is a reduced level of activity on the site during the evening to early morning period as the site does not run night shift workers or night production lines.
- 4.1.3 As the site is in commercial use, there is limited scope for improving the biodiversity on site; however a small staff garden area may be created (subject to health and safety approval). Gardens can support a surprising and diverse array of wildlife (Owen 1991). There are number of practices that can maximise biodiversity in gardens and these practices are particularly relevant to this site. When installing a garden area for staff, minimizing practices such as the use of pesticides is recommended. Predominantly native shrubs have been selected.
- 4.1.4 The location of the proposed new staff garden area can be seen at **Appendix 1**.
- 4.1.5 Although this garden area will greatly improve the site's overall biodiversity, other options have been included elsewhere which will also improve the site's value for supporting wildlife.

4.2 Shrub Planting

- 4.2.1 Shrub and hedgerow planting is not feasible on the wider site due to its commercial use. The wider site has numerous underground cables and pipe work, preventing digging on the site. The wider site is not able to support any new planting areas.
- 4.2.2 The staff garden will be a raised garden area, located near to the canal (see **Appendix 1**).
- 4.2.3 The recommended shrubs listed in **Table 2** below are for the garden area.
- 4.2.4 Shrub borders and hedgerows cannot be planted on the wider site due to the number of electrical cables located underground and from a safety point of view no excavation works can take place which is why the raised garden area is proposed.
- 4.2.5 Species Selection: The species have been selected for their hardiness, amenity value and their value to local wildlife, either in the form of flowers, berries, seeds or shelter. Species that are poisonous such as Spindle have been avoided.
- 4.2.6 Shrub Specifications: The following table details the specification for the newly planted shrubs:

Table 2: Mixed shrub planting at 1m spacing.

Botanical Name	Common Name	Size at purchase	No's Required (approx.)
<i>Cornus sanguinea</i>	Dogwood	60 to 90 cm	5
<i>Corylus avellana</i>	Hazel	60 to 90 cm	4
<i>Ilex aquifolium</i>	Holly	60cm Containerised	4
<i>Lonicera periclymenum</i>	Honeysuckle	1.2m Containerised	3
<i>Rhamnus cathartica</i>	Buckthorn	Whips	3
<i>Viburnum opulus</i>	Guelder rose	60 to 90 cm	4
<i>Euonymus europaeus</i>	Spindle tree	60 to 90 cm	3
<i>Hedera helix</i>	Wild Ivy	1.2m Containerised	2
<i>Buddleia globulus</i>	Globe Buddleia	60cm Containerised	2
Total			30

- 4.2.7 Shrub Planting Implementation: Recommendations for good shrub planting practice are given below:

- **Site Preparation**: It is recommended that the shrub planting scheme is implemented after the completion of the development. The shrub beds must be installed before the shrubs are planted, care should be taken during development to ensure that soils within these beds are not contaminated with cement or other building materials.

Loosen the soil to eliminate compaction and improve drainage. If the existing topsoil is of poor quality, a fertile, freely draining soil with neutral or slightly acidic pH should be imported.

- **Planting Hole:** Subject to design the garden will be raised above existing levels and a good quality topsoil will be imported onto site.
- **Planting:** The top layers of compost should be scraped away when planting container grown plants, with the point where the roots flare out being near the soil surface. Place the shrub in the centre of the hole and carefully refill ensuring soil is positioned between and around all of the roots in order to eliminate any and all air pockets. Firm the soil around the shrub gently, avoiding compacting the soil.
- **Mulching:** Well rotted woodchip mulch should be applied around the base of each shrub to a depth of no more than 75mm. This will conserve water close to the soil surface and inhibit weed growth.
- **Timing:** Planting should be carried out during the dormancy period for deciduous species (November to February).
- **Positioning:** Shrubs within the amenity bed should be planted **1m** apart, ideally with at least 1 example of each species planted within each bed. In larger shrub beds, shrubs should be planted in small groups (3-4) of the same species.
- **Management:** trimming of the planted shrubs will need to be carried out annually once they are established. The best time to do this is during late winter.

5 Faunal Boxes

5.1 Summary

- 5.1.1 In total **four** bat boxes and **two** bird boxes have been recommended. The location of each faunal box to be erected can be seen at **Appendix 2**.

5.2 Bat Roosting Opportunities

- 5.2.1 All British bat species are protected by both UK and EU legislation. This is in response to the declines experienced by many bat species over the past century. The cause of the decline could be linked to a number of factors, including habitat loss, pesticide over-use, habitat fragmentation, loss of roost sites and roost disturbance.
- 5.2.2 The Common Pipistrelle is listed within the County BAP and is one of the most abundant bat species in the UK. It is also the species most likely to roost within modern buildings. The boxes incorporated into this enhancement plan are suitable for Common Pipistrelles, however they have been aimed at the species most likely to inhabit the adjacent habitats around the Huddersfield Canal.
- 5.2.3 The site is adjacent to the Huddersfield Canal, due to the close proximity of the site to a protected waterbody, boxes suitable for roosting Daubenton's bats or Natterer's bats are recommended. Daubenton's bats and Natterer's bats are known to favour waterbodies and forage insects around waterbodies such as rivers, ponds and canals. The boxes recommended should be positioned in close proximity to the canal, away from any floodlights or spotlights, providing roosting opportunities for the bat species utilising the habitat adjacent to Cummins Turbo Technologies' site. Recommended boxes include: 1FQ Schwegler Bat Roost for external walls, 1WQ Schwegler Summer and Winter Bat Roost, 2F Schwegler Bat Box General Purpose or Beaumaris Woodstone Bat Box.
- 5.2.4 Box Selection & Positioning: There is a wide range of different bat boxes available, including both internal and external designs. External designs include the traditional wooden and woodcrete boxes. Internal designs include boxes that can be built into the walls, with a front that mimics the brickwork of the building, essentially becoming invisible. Other roost opportunities include cutting slots into soffit boxes, using bat bricks that lead into cavity walls and using lifted tiles to allow access into the loft. The boxes recommended above are external boxes, which should be positioned on brick or stone buildings in close proximity to the Huddersfield Canal. Boxes should be positioned on the west, south or east of a building. South facing aspects are usually preferred.
- 5.2.5 **Bat Boxes** should be positioned at least 5m high with their front facing north, southwest or southeast (as recommended by the BCT). 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.

- 5.2.6 Where lighting is required, conditions should be imposed to ensure the impact of the lighting on the bats is kept to a minimum. Lighting will be situated away from areas of both retained and new trees and shrubs. Any lighting should be of a low level of luminance. The use of low pressure sodium lamps or high pressure sodium lamps is recommended instead of mercury or metal halide lamps. Overall levels on site should be as low as planning permits. Lighting column height near hedgerows or trees should be kept to a minimum as this reduces the ecological impact. Where lighting can be directed downwards at a more acute angle, taller columns can be used. Please refer to the Bat Conservation Trust's Bats and Lighting in the UK (2009).

5.3 Bird Boxes

- 5.3.1 In the UK there are approximately 600 species of bird, each occupying a different habitat and present in a different region of the country. A small number of these regularly visit gardens and will quickly adopt 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. Due to the site providing limited nesting opportunities for UK bird species it is recommended that standard bird boxes are installed to maximise the chance of birds nesting on site, which would enhance the biodiversity of the site.
- 5.3.2 Standard bird boxes: Birds such as most tit species, tree sparrows and nuthatches prefer standard nest boxes with a small hole opening and a perch at the entrance. The size of hole can vary depending on the bird species, and can be reinforced with metal hole guards to prevent predators accessing eggs or chicks within the boxes.

6 Conclusions and Recommendations

6.1 Retention of Ecologically Valuable Features

- 6.1.1 The site contains only habitats of low conservation value, with no features deemed likely of supporting protected species, other than nesting birds.
- 6.1.2 There is nothing on site worthy of specific retention.

6.2 Habitat Creation

- 6.2.1 It is proposed to create a small staff garden area. This will be subject to a detailed design but will contain the features detailed in **Section 4** of this Biodiversity Enhancement Plan.
- 6.2.2 **Section 4.2** gives recommendations on wildlife friendly shrub and climber species that will be used in order to maximise the biodiversity of the site.

6.3 Faunal Boxes

- 6.3.1 **Four** bat boxes will be positioned around the site, within the new buildings and on a number of suitably sized existing trees and suitable locations are marked at **Appendix 2**.
- 6.3.2 **Two** bird boxes will be erected onto the buildings on site. The recommended location of each faunal box can be seen at **Appendix 2**.

6.4 Management and monitoring

- 6.4.1 A suitably qualified Ecologist will oversee the installation of all faunal boxes.
- 6.4.2 A suitably qualified Ecologist will oversee the design and installation of the garden area.
- 6.4.3 Monitoring of faunal boxes and wildlife features over a 5 year period will be done by a suitably qualified Ecologist. This is key to understanding how habitat and wildlife features are being used by wildlife on site after the development.
- 6.4.4 It is recommended that once a garden design is available, a full management plan is created to inform the site managers what is required on site to maintain biodiversity.

7 References

Ausden, M. (2007) *Habitat management for conservation: A handbook of techniques*. Oxford, United Kingdom: Oxford University Press, USA.

Bat Mitigation Guidelines (Jan. 2004). A. J. Mitchell-Jones. English Nature.

Bat Survey Guidelines: Good Practice Guidelines (2007). Bat Conservation Trust (BCT).

Bat Workers Manual (3rd Edition 2004). A. J. Mitchell-Jones & A. P. McLeish. Joint Nature Conservation Committee (JNCC).

Bunnell, T. (2014) *The disappearing Hedgehog*. United Kingdom: Independent Publishing Network.

Kirby, P. (2013) *Habitat management for invertebrates: A practical handbook*. Exeter: Pelagic Publishing.

Perrow, M.R. (2008) *Handbook of ecological restoration: Volume 1, principles of restoration: V. 1: Principles of restoration*. Edited by Martin R. Perrow and Anthony J. Davy. Cambridge, United Kingdom: Cambridge University Press.

Websites:

Bat Conservation Trust (BCT). <<http://www.bats.org.uk/>>

Google Maps. <<http://maps.google.co.uk/>>

Multiple-Agency Geographic Information for the Countryside (MAGIC). <<http://www.magic.gov.uk/>>

National Biodiversity Network (NBN) Gateway. <data.nbn.org.uk>

Natural England. <<http://www.naturalengland.org.uk/>>

Nature on the Map. Natural England. <www.natureonthemap.org.uk>

Relevant Legislation:

Wildlife and Countryside Act 1981 <<http://jncc.defra.gov.uk/page-3614>>

Conservation (Natural Habitats, &c.) Regulations 1994 (The Habitats Directive) (Amended 2010)
<<http://www.legislation.gov.uk/uksi/2010/490/contents/made>>

Countryside and Rights of Way Act 2000
<http://www.legislation.gov.uk/ukpga/2000/37/pdfs/ukpga_20000037_en.pdf?view=interweave>

Appendices

Appendix 1: Garden Location

This is the Cummins Turbo Technologies site, indicating in yellow the location of the staff garden.



Appendix 2: Faunal Boxes Plan

This is the Cummins Turbo Technologies site in relation to the Huddersfield Canal.

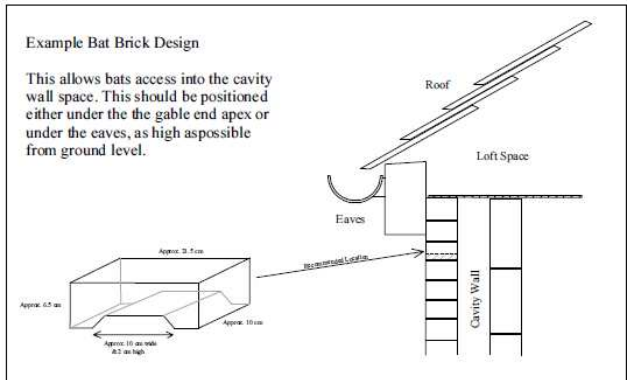
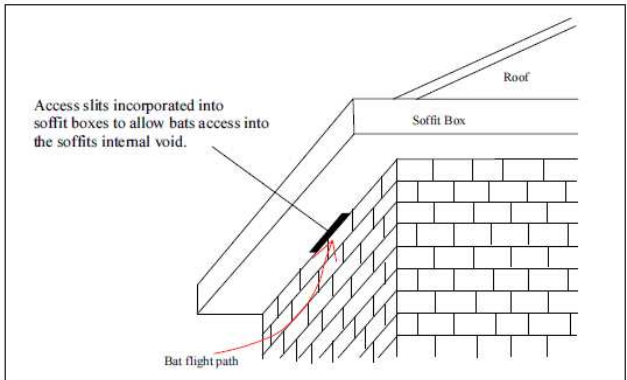
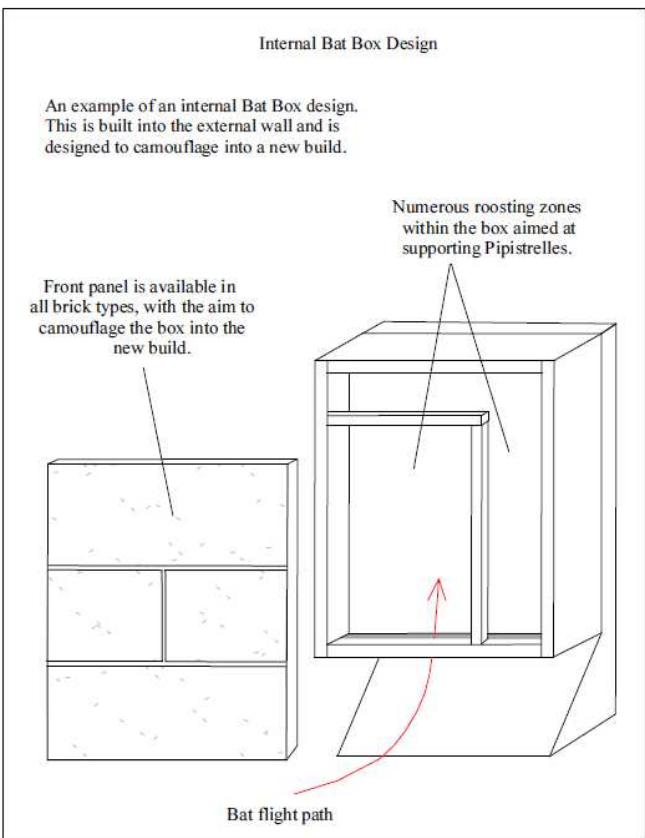
The yellow asterisks indicate suggested locations for bird boxes.

The red asterisks indicate suggested locations for bat boxes.

Boxes should be positioned on brick or stone buildings where possible, away from floodlighting.

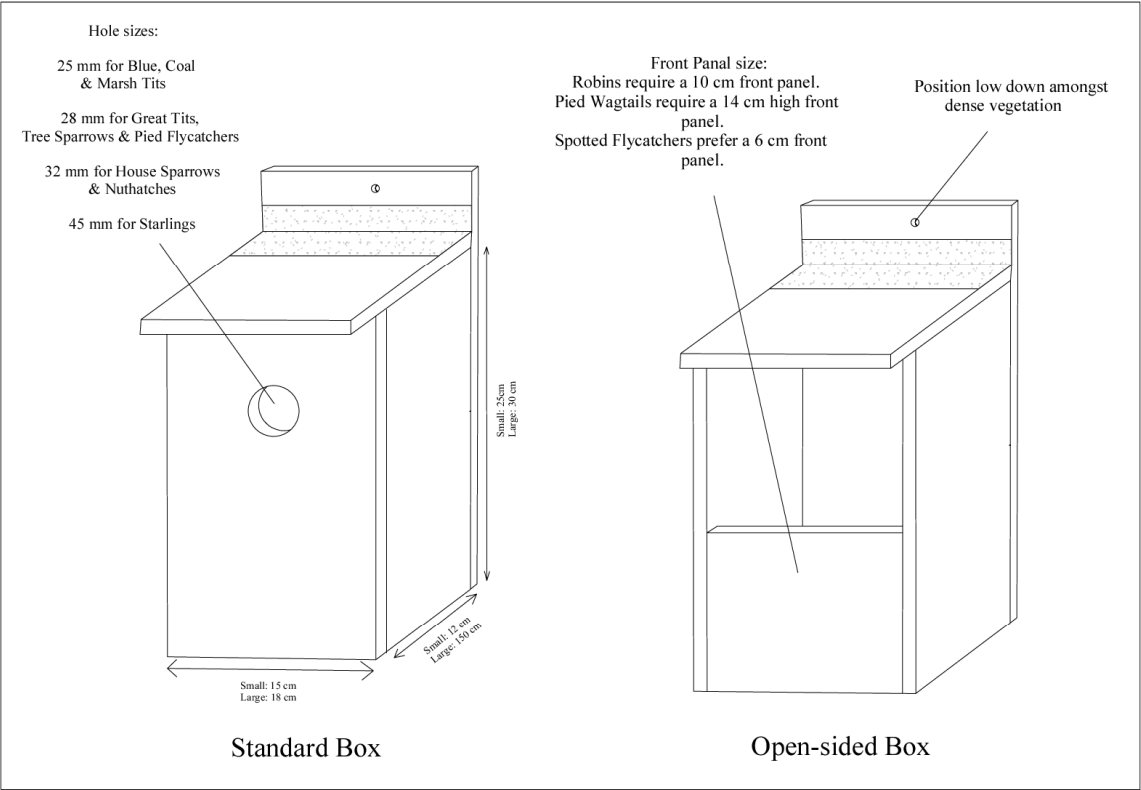


Appendix 3: Examples Artificial Bat Box Designs

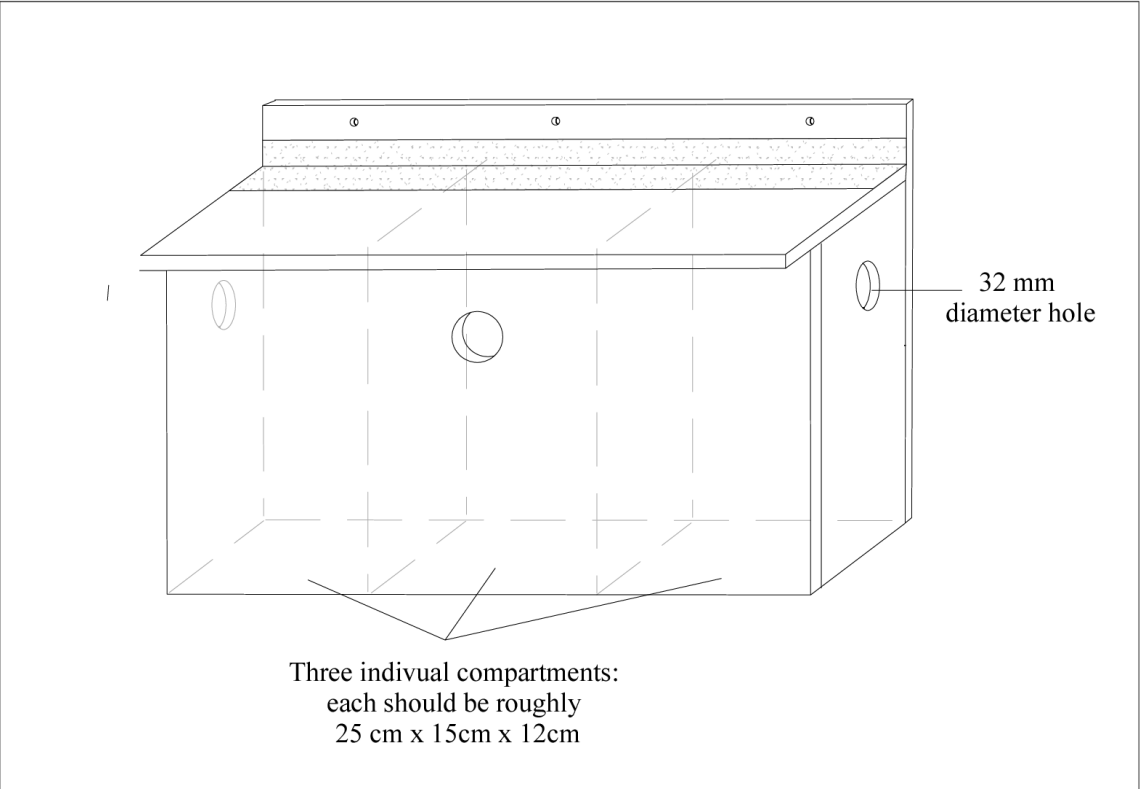


Appendix 4: Examples Artificial Bird Box Designs

An example of two different bird box designs



An example of a House sparrow box design



Appendix 5: 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: Arboriculture

Toby Parsons *Cert. Arb. (RFS), Tech. Cert. (Arbor.A).* Toby joined JCA after spending 6 years working as a senior climber for various Arboricultural contractors in the East Midlands and the South-West. He has gained the Level 2 Certificate in Arboriculture (RFS) and an Arboricultural Technicians Certificate. Toby is LANTRA certified in Professional Tree Inspection.

Scott Reid *ND (Arboriculture and Forestry).* Scott joined JCA after working with other consultancy companies in the south of England. He specialises in trees in relation to development and holds a National Diploma, various NPTC qualifications and is currently studying for his Level 4 Diploma in Arboriculture.

Andrew Bussey. Andrew joined JCA having spent 12 years working as a tree surgeon for various private companies and a Local Authority. He has various NPTC qualifications, is QTRA qualified and is currently studying for his Arboricultural Technicians Certificate.

Phil Humeniuk *FdSc (Arboriculture).* Phil joined JCA having spent 3 years working for various tree surgery companies and as a Tree Officer for a Local Authority. He also has several years experience working as a consultant both for JCA and for another consultancy. Phil obtained his foundation degree in Arboriculture at the University of Central Lancashire and has various NPTC's and is LANTRA certified in Professional Tree Inspection.

Emily Wilde *FdSc (Arboriculture).* Emily joined JCA having previously worked for various private tree surgery and consultancy companies over the past 8 years. She initially obtained a ND in Forestry & Arboriculture, followed by a FdSc in Arboriculture at Askham Bryan College, York. Emily has various NPTC certificates and is QTRA qualified.

Mick Eltringham *ND (Forestry).* Mick joined JCA after spending 12 years working in the industry for various private companies in the north and south of England. He has also spent the last five years working as a consultant for two canopy research projects in the Amazon Rainforest, working with Oxford University and the University of Arizona. He has various NPTC Qualifications.

Charles Cocking *(FdSc Arboriculture).* Charles joined JCA in January 2014 as an Apprentice having previously worked for the company on a part time basis during 2013. Charles obtained his Foundation Degree in Arboriculture at Askham Bryan College, York, and is now part of our qualified Arboricultural consultancy team.

Consulting Staff: Ecology

David Bodenham *BSc Ind (Hons) Zoology, MSc Biodiversity and Conservation.* David joined JCA as an addition to the expanding ecology department. An advocate of evidence based conservation, he studied Zoology (Ind) at University and moved onto an MSc in Biodiversity and Conservation where he gained the myriad of skills needed as an ecologist. With over 7 years of experience, David specialises in bat and amphibian ecology.

Jenny Butler *Bsc (Hons) Environmental Science.* Jenny joined JCA's ecology department in 2017, bringing with her a bachelor degree in Environmental Science from Bangor University. Jenny has previously worked as an Environmental Consultant for an Agri- Environment company and as a freelance ecological consultant. Jenny specialises in great crested newt and bat ecology.

Amanda Beck *Cert He in Field Ecology.* Amanda joined JCA's ecology department in 2018, previously working as a freelance Ecological Consultant in North Wales and Liverpool and as a trainee Ecologist in South Wales. Amanda has extensive practical experience in surveying for botanical, amphibians, terrestrial and marine mammals along with invertebrate research work. She has practical experience in habitat management and creation and is a CIEEM student member.

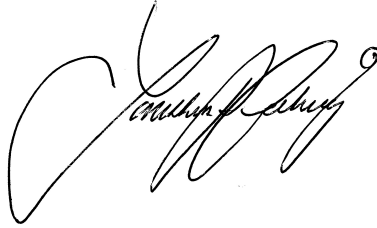
Administrative Staff

Sue Guest Administrative Team Leader.
Catherine Cocking Accounts Manager.
Lisa Hampson Marketing Manager.

Simeon Haigh *BSc (Hons).* IT Director.
Lorraine Spink Administrative Assistant.

I hope that this scheme and methodology provides all the necessary information, but should any further advice be needed please do not hesitate to contact the author.

Signed



.....
Jonathan Cocking *FRES PDipArb(RFS) FArborA CBiol MIBiol.*

19th August 2018

Proofread by



.....
Toby Thwaites *BSc (Hons) HND (Arboriculture)*

21st August 2018

For and on behalf of **JCA Ltd**

Registered Office:

**Unit 80
Bowers Mill
Branch Road
Barkisland
Halifax
HX4 0AD**

**Tel. 01422 376335
Fax. 01422 376232
Email: jon@jcaac.com**

JCA Ltd. Arboricultural and Ecological Consultants

Professional Tree and Ecology Advice nationwide

ARBORICULTURAL SERVICES

Guidance for Architects and Developers

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

Tree Advice for the Legal Profession

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

Advice for Engineers, Loss Adjusters and Insurers

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

Veteran Tree Management

- Ancient Woodland Management
- Veteran Tree Management

Advice for Local Authorities and Social Housing

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

Tree Health and Pest and Disease Management

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

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

Ecological Post-Planning Services

- Biodiversity Enhancement Plans
- Protected Species Mitigation
- Ecological Management (Bat and Bird box installation and inspection)

HEAD QUARTERS:

Unit 80 Bowers Mill,
Branch Road,
Barkisland,
Halifax, HX4 0AD.

Tel: 01422 376335
Mobile: 07778 391986
Email: jon@jcaac.com
Website: www.jcaac.com

