Birtles Riding Centre, Bury

Ecological Appraisal

September 2020

Control sheet

www.bowlandecology.co.uk	2 York Street, Clitheroe, Lancashire, BB7 2DL. 01200 446777	Unit 2, Dye Works, New Lanark, ML11 9DB. 01555 438880
Job number:	BOW17.942 Birtles Riding Centre, Bury	
Title:	Ecological Appraisal	
Client:	Sally Ashworth	
Prepared by:	Sabina Ostalowska, *Ecologist*	
Checked by:	Jeremy James, *Principal Ecologist*	
Date of Issue:	September 2020	
Version:	1	
Revisions:	1 – Updated September 2020 to confirm current site conditions.	
Status:	FINAL	

This report is prepared by Bowland Ecology Ltd for the sole and exclusive use of Sally Ashworth in response to their particular instructions. No liability is accepted for any costs, claims or losses arising from the use of this report or any part thereof for any purpose other than that for which it was specifically prepared or by any party other than Sally Ashworth.

This report has been prepared by an ecological specialist and does not purport to provide legal advice. You may wish to take separate legal advice.

The information which we have prepared and provided is true, and has been prepared and provided in accordance with the BS42020:2013 and the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Bowland Ecology is accredited to Quality Guild (QG) standards in respect of our Quality, Environmental and Health and Safety procedures. The QG is an independent externally audited and accredited system that has been developed according to the principles of ISO9001, ISO14001 and OHAS18001.

Signed (Author)	Signed (QA)
Sabina Ostalowska	

Contents

Executive Summary 1

1. Introduction 2

2. Methodology 3

3. Results 6

4. Evaluation and Assessment of Potential Impacts 11

5. Recommendations 14

References 17

Appendix A – Legal Information 18

Appendix B – Bat Roost Potential Criteria 21

Appendix C – Target Notes 22

Appendix D – Phase 1 Habitat Plan 25

Appendix E – Bat Survey Results 26

Appendix F – Pond Location Plan 27

Appendix G – Suitable Native Species for use in Planting Schemes 28

Appendix H – Information Sheet on Himalayan Balsam 29

Executive Summary

Bowland Ecology Ltd was commissioned by Q+A Planning Ltd to complete an Ecological Appraisal of a land at Birtle Riding Centre Higher Elbut Farm, Elbut Lane, Birtle, Bury (central NGR: SD 83540 12217). The site is subject to the proposals for demolition of all structures on site in order to facilitate a residential development.

An updating survey carried out in September 2020 confirmed that site conditions remain similar to those recorded in previous surveys.

Key ecological features, potential impacts, further survey requirements and outline mitigation measures are summarised in the Table 1 below.

Ecological Feature	Potential Impact	Further surveys if affected	Outline Mitigation
Designated Sites and Habitats of Principal Importance	Disturbance and degradation.	No	Implementation of best practice during site clearance and construction.
Broadleaved plantation woodland, hedgerow and scrub	Disturbance and degradation. Potential loss.	No	Retention of trees/scrub, where this is not possible replacement of the features at a ratio of 2:1.
Invasive species – Himalayan balsam	Spread of non-native invasive species.	No	Avoidance measures or removal.
Foraging and commuting and bats	Loss of foraging and commuting habitat. Light disturbance.	No	Retain or replace lost habitat in new landscaping areas. Sensitive lighting schemes to be developed.
Badger and other mammals	Injuring or killing and entrapment. Loss of foraging and refuge habitat.	No	Precautionary working measures.
Birds	Damage and destroy nests, kill and injure nesting birds. Loss of habitat.	No	Vegetation clearance and building demolition outside of nesting season (March – August inclusive) or pre-clearance nesting bird check by an ecologist required. Retention or replacement of lost habitat.
Common amphibians	Injuring or killing and entrapment should amphibians be present during works.	No	Precautionary working measures.

1. Introduction

1.1 Bowland Ecology Ltd was commissioned to complete an Ecological Appraisal of a land at Birtle Riding Centre Higher Elbut Farm, Elbut Lane, Birtle, Bury (central NGR: SD 83540 12217). The site is subject to the proposals for demolition of all structures on site in order to facilitate a residential development.

1.2 The site lies at the north-eastern edge of Bury, Greater Manchester. The site comprises indoor and outdoor riding arenas, a paddock and areas of hard standing and amenity grassland. The site is bordered by wooden and wire fences with broadleaved woodland and hedgerow on the eastern boundary and scrub on the southern boundary. Wider surrounding habitats include grazed pasture and arable fields with a network of hedgerows and tree lines. Residential properties with associated gardens are also common in the wider surrounding area. The site boundary is shown on the Phase 1 Plan in Appendix D.

1.3 An updating site visit was undertaken on the 2nd September 2020 to make an assessment of current site conditions and identify any changes to ecological interests since the previous survey in 2018.

1.4 The purpose of the surveys was to: 1) identify and map all habitats occurring within the survey area, 2) identify the presence of (or potential for) wildlife interests with particular reference to the need for further surveys and legal requirements (see Appendix A), and 3) provide an ecological assessment, identify potential impacts and provide recommendations pertaining to the proposal.

1.5 This report includes a description of survey methods, habitats and fauna present and outlines recommendations to provide protection and enhancements for biodiversity and protected species.

2. Methodology

2.1 The desk study, extended Phase 1 Habitat survey and Ecological Appraisal followed the Guidelines for Preliminary Ecological Appraisal and the Guidelines for Ecological Report Writing (CIEEM, 2017 a, b), and are in line with the British Standard BS42020:2013 'Biodiversity – Code of practice for planning and development'.

Desk Study

2.2 The aim of the desk study was to identify the presence of statutory and non-statutory wildlife sites within 1 km of the site and any legally protected species or Habitats and Species of Principal Importance for the conservation of biodiversity (Section 41 NERC Act 2006).

2.3 The Multi-Agency Geographic Information for the Countryside (MAGIC) website https://magic.defra.gov.uk/magicmap.aspx) was reviewed for information on locally, nationally and internationally designated sites of nature conservation importance (statutory sites only) on or within 1 km of the site boundary.

2.4 Local records on and within 1 km of the site were obtained following a data search with Greater Manchester Ecology Unit (GMEU)[1].

2.5 Ordnance Survey (OS) maps and aerial photographs (http://maps.google.co.uk/maps) were reviewed to help identify any continuous habitat and any other notable habitats within the surrounding area, together with any ponds within 0.25 km of the site.

2.6 Natural England's great crested newt (*Triturus cristatus*) licensing method statement template (Form WML-A14-2 (version December 2017[2]) advises that, for developments resulting in permanent or temporary habitat loss at distances over 0.25 km from the nearest pond, careful consideration should be given to whether a survey is appropriate. Although the species may use suitable terrestrial habitat up to 0.50 km from a breeding pond, in this instance a 0.25 km search radius was considered appropriate due to low suitability of habitats on site for great crested newt, the relatively small scale of works and localised nature of the effects of the development.

Extended Phase 1 Habitat Survey

2.7 Am extended Phase 1 Habitat survey was carried out by Jack Driver BSc (Hons) on 20th September 2018. The weather was mild (average temperature 14°C), dry, and overcast with a gentle southerly breeze (Beaufort Scale: 1). The survey was updated on the 2nd of September 2020 by Jeremy Jame MSc, BSc (Hons), CEcol, CEnv, MCIEEM. During the 2020 survey the weather was cool (13°C) with light rain.

2.8 The extended Phase 1 Habitat survey followed standard methodology (JNCC, 2010 and CIEEM, 2017). All features of ecological significance were target noted and a colour coded map of the habitats on site has been produced.

2.9 This survey methodology records information on the habitats together with any evidence of and potential for legally protected and notable fauna, in particular:

- potential roosting sites for bats within buildings and trees (identification of suitable cracks and crevices – survey undertaken from the ground level only). An assessment of suitability was undertaken according to the Bat Conservation Trust's Good Practice Guidelines 3rd Edition (Collins, 2016) (Appendix B);

[1] Records from 2000 onwards are included within the report.
[2] https://www.gov.uk/government/publications/great-crested-newts-apply-for-a-mitigation-licence

- assessing the suitability of habitats for other notable and protected species such as nesting birds (including any active or disused nests), reptiles, amphibians, water vole (*Arvicola amphibius*), otter (*Lutra lutra*), badger (*Meles meles*) and invertebrates;
- checking for the most common invasive plant species subject to strict legal control including: Japanese knotweed (*Fallopia japonica*), giant knotweed (*F. sachalinensis*), hybrid knotweed (*F. x bohemica*), giant hogweed (*Heracleum mantegazzianum*), rhododendron (*R. ponticum, R. ponticum x R. maximum* and *R. luteum*) and Himalayan balsam (*Impatiens glandulifera*).

2.10 The survey was completed within the optimum period for Phase 1 Habitat survey (April to September inclusive) (JNCC, 2010), and the entire site was accessible and the majority of habitats largely species-poor. As a result, a valid assessment of the habitats present and their potential to support legally protected species was undertaken.

Environmental DNA Survey

2.11 Environmental DNA (eDNA) survey was undertaken by Jeremy James MSc, BSc (Hons), CEcol, CEnv, MCIEEM (Natural England Class Licence Holder 2015-17546-CLS-CLS) on 12th June 2018. The weather was warm (average temperature 18°C), dry and clear during the survey and there were no constraints to the assessment.

2.12 The survey consisted of an eDNA sample of a single pond (SD 8347 1221; see Appendix F) to determine presence/absence of great crested newt within this pond. The survey method and analysis follows the protocol set out in Biggs *et al.* 2014.

Dusk emergence survey

2.13 A dusk emergence survey was carried out on the 29th July 2019 by a team of experienced bat surveyors comprising: Chris Piner BSc (Hons), Lee Moat and Lucy Pocock. The weather conditions were considered suitable with a light breeze (Beaufort Scale: F1) and a light rain shower. The temperature was 22ºC at the start of the survey. Sunset was at 21:11 and the survey started at 20:56 and finished at 22:41.



Figure 1: Surveyors location in relation to buildings.

2.14 The surveyors positioned themselves to get the best coverage of the buildings at locations shown in Figure 1; focusing in on those areas with the most potential as roosting habitat. The survey was aided by the use of the following bat detectors: Bat Box Duet, Petterson and EM Touch.

Limitations

2.15 Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. Therefore, the survey of the study area has not produced a complete list of plants and animals.

2.16 The list of invasive plant species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) is extensive and these plants are found in a range of different habitats, including aquatic habitats. The extended Phase 1 habitat survey checked, in particular, for the presence of Japanese knotweed, giant knotweed, hybrid knotweed, giant hogweed, rhododendron and Himalayan balsam. There may be other invasive plant species present on the site which were not recorded, but it is considered that this survey is sufficient to identify any significant constraints posed by invasive plants.

3. Results

Designated Sites and Habitats of Principal Importance

3.1 There are no statutory designated wildlife sites within 1 km of the site.

3.2 The site also falls within the Impact Risk Zones (IRZ) for the Lower Red Lees Pasture Site of Special Scientific Interest (SSSI). However, the development of the site does not fall into any of the categories that require consultation with Natural England. Therefore, no further consideration regarding the IRZ is required.

3.3 There are four non-statutory designated Sites of Biological Importance (SBIs) within 1 km of the site;

- Tack Lee and Gristlehurst Woods is located approximately 0.17 km north-east of the site;
- Smethurst and Elbut Woods (West) is located approximately 0.36 km south of the site;
- Smethurst and Elbut Woods (East) is located approximately 0.36 km south of the site; and
- Lomax Wood is located approximately 0.89 km south-east of the site.

3.4 The search MAGIC identified the following HPIs within 1 km of the site: two areas of lowland fens, forty areas of deciduous woodland and two areas of where there is no main habitat but additional habitats identified such as deciduous woodland. additional habitats identified such as fens, reedbeds, lowland meadows/pasture. The closest HPI comprises an area of deciduous woodland located approximately 0.17 km east of the site. Furthermore, two areas of ancient and semi-natural woodland were also identified; the closest of which is located 0.50 km south-east of the site.

3.5 Based on a review of aerial photographs and OS maps there are two ponds located within 0.25 m of the site. These ponds are located 0.03 km west and 0.10 km north of the site. There are also two reservoirs within 0.25 km of the site; 0.08 km and 0.12 km to the north-west. There are also hedgerows, treelines and scrubland in the locality, providing habitat connectivity.

Habitats

3.6 Target notes summarising key interest features for wildlife recorded during the extended Phase 1 Habitat survey are included in Appendix C. The Phase 1 Habitat plan of the site presented in Appendix D includes the locations of the target notes. Plant species nomenclature follows Stace (2010).

3.7 The updating survey in 2020 noted that in general site conditions had not altered significantly since the survey in 2018.Select site photographs from this survey are included against corresponding Target Notes in Appendix C to demonstrate that site conditions remain similar. No additional species or changes to habitats were recorded during the 20202 survey.

<u>Broadleaved plantation woodland</u>

3.8 Broadleaved plantation woodland is present along the eastern site boundary (TN1). Canopy species include silver birch (*Betula pendula*), oak (*Quercus* sp.), hazel (*Corylus avellana*), elder (*Sambucus nigra*) and alder (*Alnus glutinosa*) with understory comprising of rowan (*Sorbus aucuparia*) and crack willow (*Salix fragilis*). A very dense area of hedge bindweed (*Calystegia sepium*) is present at the southern end, whereas Himalayan Balsam (*Impatiens glandulifera*) is scattered within the far north end of the woodland. Other ground flora species recorded include common nettle (*Urtica dioica*),

redshank (*Persicaria maculosa*), broad-leaved dock (*Rumex obtusifolius*) and willowherb (*Epilobium* sp.).

Scrub incl. introduced shrubs

3.9 Fenced off enclosure comprising dense scrub and introduced shrub is situated in the north of the site (TN2). Species present include silver birch, hazel, hawthorn, holly (*Ilex aquifolium*) and non-native invasive Himalayan balsam.

3.10 Occasional hawthorn (*Crataegus monogyna*) scrub is scattered along the western site boundary, just outside the boundary fence.

Hedgerow

3.11 Species-poor hedgerow comprising hawthorn is located just outside the eastern site boundary (TN3). This hedgerow is gappy and outgrown due to a lack of management.

Poor semi-improved grassland

3.12 Long narrow paddock comprising of a compacted species-poor semi-improved grassland extends along the western site boundary (TN4). Species recorded include Yorkshire fog (*Holcus lanatus*), rye grass (*Lolium* sp.), meadow buttercup (Ranunculus acris), broad-leaved dock and white clover (*Trifolium repens*)

Amenity grassland

3.13 Narrow strip of amenity grassland is present on a steep mound along the eastern and southeastern edge of the outdoor riding arena (TN5). The grassland has a sward including ribwort plantain (*Plantago lanceolata*), common nettle, common dandelion (*Taraxacum*), bladder campion (*Silene vulgaris*), ivy-leaved toadflax (*Cymbalaria muralis*), lesser periwinkle (*Vinca minor*), herb-Robert (*Geranium robertianum*), ivy (*Hedera helix*), broad-leaved dock, common bistort (*Persicaria bistorta*), coppertips (*Crocosmia* sp.) and butterbur (*Petasites hybridus*).

Bare ground

3.14 Bare ground in a form of gravel and tarmac hard standing is present towards the north of the site (TN6). Ephemeral/short perennial vegetation has developed along fence lines colonising an area of hard standing. Species recorded include white clover, broad-leaved dock, meadow buttercup, daisy (*Bellis perennis*), redshank, perennial snow thistle (*Sonchus arvensis*), creeping thistle (*Cirsium arvense*), common groundsel (*Senecio vulgaris*) and black medic (*Medicago lupulina*). Small areas of scattered waste ground and timber piles were recorded in the southern corner.

3.15 Sandy surface associated with the outdoor riding arena is present in the southern section of the site.

Buildings

3.16 There is a metal-clad building used as an indoor riding arena in the northeaster corner of the site (TN7) and a wooden shed within the dense scrub at the back of the metal shed. Detailed descriptions of the buildings are provided further below.

Fence

3.17 The site is bounded by wire and timber fences. The outdoor riding arena is fenced off by wooden fence and the paddock by electric fence.

Species

Invasive species

3.18 Himalayan balsam within the broadleaved plantation woodland at TN1 and dense scrub at TN2.

Bats

3.19 The data search returned twenty-nine bat records, including common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), noctule bat (*Nyctalus noctule*) and unspecified bat species, within the 1 km of the site. Of these records, seven are of bat roosts; the closes of which is a soprano pipistrelle roost located approximately 0.47 km south-west of the site.

3.20 The trees within the site boundary are considered to have a negligible bat roost potential. This meant that they were found to be lacking any of the potential roosting features such as cracks, crevices, splits, woodpecker holes etc. that are normally utilised by bat species for roosting. This was due to a number of factors including their age (young or semi-mature), size (small) and condition (tall, straight, smooth bark, undamaged) amongst others.

3.21 The metal-clad building at TN7 has a pitched roof covered with corrugated roofing sheets and corrugated metal sheet walls. Sidewall openings extend along the eastern and western elevation of the building providing direct fight access into the interior for bats. Internally, the building is of a metal frame construction with wooden beams and has single-skin metal corrugated sheets on walls. The roof is open to the apex and is constructed of corrugated roofing sheets with felt lining. Spaces between corrugation and metal and wooden beams on west and east walls provide potential roosting site for individual bats. Three (partly cobwebbed, indicating not fresh) bat droppings found on the northern wall and stuck to mirrors. Several bat droppings found on the southern wooden perimeter. Other (small mammal) droppings found on the eastern wall (top of wooden riding perimeter). Given the building construction material, considerable light penetration and limited potential roosting features the building is considered to have **low** potential to support roosting bats.

3.22 No bats were recorded emerging from the buildings during the dusk emergence survey. Bat activity throughout the duration of the survey was low; all activity being commuting and foraging common pipistrelles. Full details of bats recorded during the survey and their behaviour is detailed in Appendix E.

3.23 Areas of grassland and bare ground are likely to provide a relatively poor foraging habitat. The indoor riding arena offers some sheltered foraging habitat, particularly during sub-optimal weather conditions. Furthermore, the broadleaved plantation woodland, hedgerow and scrub on site are connected to other good quality bat foraging and commuting habitat in the landscape. As such, the site is considered to provide **moderate** potential for foraging and commuting bats. The aforementioned habitats provide suitable foraging and commuting habitat for bat species which show a preference for utilising 'edge' habitats. Such species include common pipistrelle and myotid species (*Myotis* spp.), which are flexible in their foraging habitat.

Other mammals

3.24 The data search returned a single record of badger sett located approximately 0.27 km north-east of the site. The site is sub-optimal for sett creation due to its predominantly flat profile and likely regular disturbance from the horse-riding activities. The broadleaved plantation woodland, hedgerow and scrub on the site boundaries offer suitable refuge and foraging habitat and provide connectivity to other suitable habitats in the wider area.

3.25 The data search returned no records for European hedgehog (*Erinaceus europaeus*), listed as Species of Principal Importance (SPI), in the search area. However, it is considered likely that the species is common in the area due to the presence of residential properties with associated gardens and pockets of woodlands which provide suitable foraging and nesting habitat for the species. The broadleaved plantation

woodland, hedgerow, scrub and timber piles on site provide potential refuge and/or foraging habitat for European hedgehog and other small mammals.

Birds

3.26 The desk study returned numerous bird records including the following Schedule 1 species; kingfisher (*Alcedo atthis*) and peregrine falcon (*Falco peregrinus*). Records of bird species covered under section 41 (England) of the NERC Act (2006) were also returned by desk study including; grasshopper warbler *(Locustella naevia*), lesser redpoll (*Carduelis cabaret*), linnet (*Linaria cannabina*), starling (*Sturnus vulgaris*), bullfinch (*Pyrrhula pyrrhula*), spotted flycatcher (*Muscicapa striata*), song thrush (*Turdus philomelos*), skylark (*Alauda arvensis*), reed bunting (*Emberiza schoeniclus*), house sparrow (*Passer domesticus*), herring gull (*Larus argentatus*), curlew (*Numenius arquata*), and grey partridge (*Perdix perdix*).

3.27 Broadleaved plantation woodland, hedgerow and scrub provide song-posts, shelter, and nesting and feeding opportunities for woodland and farmland bird species in the local area. The areas of grassland some provide a foraging resource for certain species of birds such as starlings and thrushes; however, the intensive management and/or use renders it unsuitable for ground-nesting bird species. The metal-clad building provide habitat for nesting birds such as feral pigeon (*Columba livia domestica*) and house martin (*Delichon urbica);* several bird droppings were found on the southern wooden perimeter (species unknown); however no current or previously used nests were recorded during the survey.

Amphibians

3.28 The data search returned five records of common toad (*Bufo bufo*), a SPI, within 1 km of the site. No records for great crested newt were returned by data search.

3.29 There are no ponds within the site but there is a small field pond (P1) approximately 30 m east of the site. This pond has an extensive fringe of emergent reed sweet grass (*Glyceria maxima*) and yellow iris (*Iris pseudacorus*). An area of open water is present between the pond and a tree-lined bank. The overhanging trees cast significant shade over the pond:



Photo showing Pond 1

3.30 P1 has a Habitat Suitability Index (ARG 2010) of 0.69 which is considered to be: *Moderate Habitat that offers opportunities for foraging and shelter but may not be extensive in area and does not completely surround pond.*

Location	Pond area	Pond drying	Water quality	Shade	Fowl	Fish	Ponds	Terr'l habitat	Macrophytes	HSI
1	0.7	0.9	0.33	0.4	0.67	0.67	1	1	0.7	0.69

3.31 The eDNA testing proved negative for great crested newts within pond P1.

3.32 There are further four water features within the 0.25 km of the site (see Appendix F); a review of OS mapping and aerial imagery identified two large reservoirs (P3 and P4), a medium size field pond (P5) and a small ornamental pond (P2); the closest of which (P2) is located approximately 0.10 km north-west of the site.

3.33 In terms of terrestrial habitats, the majority of the habitats within the site comprise existing hard standing/bare ground, built structures and short-sward grasslands which are considered to be habitats of low/negligible value for amphibians including great crested newt. However, the broadleaved plantation woodland, hedgerow and scrub provide potential foraging and refuge habitat for amphibians.

Other species

3.34 The data search returned a single record of brown hare (*Lepus europaeus*), (SPI), and water vole (*Arvicola amphibious*) in the search area. However, no evidence of or suitable habitat for these and any other protected or notable species was identified on site, at the time of the survey.

4. Evaluation and Assessment of Potential Impacts

4.1 An assessment of effects on ecological features has been made using the available design and survey information and the professional judgement of the ecologist. This includes a consideration of the relevant legislation (see Appendix A) and planning guidance. The site is subject to the proposals for demolition of all structures on site in order to facilitate a residential development.

4.2 An update survey completed in September 2020 confirms that site conditions remain similar to the original survey.

Designated Sites and Habitats of Principal Importance

4.3 There are three non-statutory designated wildlife sites, namely Tack Lee and Gristlehurst Woods SBI, Smethurst and Elbut Woods (West) SBI, Smethurst and Elbut Woods (East) SBI, located within 0.40 km of the site and further several areas of deciduous woodland HPI are present within 0.50 km of the site. These SBIs and HPIs are of high ecological value as they provide variety and structural diversity in the local landscape; and potentially habitat for fauna including mammals, birds, amphibians and invertebrates.

4.4 Direct impacts to these sites and HPIs are not anticipated, however, construction activities have the potential to indirectly impact the site through an increase in dust pollution. The smothering effects from the grounding of dust reduce the amount of light available for photosynthesis which can affect the long-term success of plants. Unmitigated impacts upon this wildlife site may result in a negative ecological impact.

4.5 Due to the distance of the remaining HPIs and Lomax Wood SBI from the site, no impacts to the HPIs and SBI are envisaged. Therefore, they are not considered further within this report.

Habitats

4.6 Development of the site has the potential to result in the loss of a number of habitats. Poor semi-improved grassland, amenity grassland, scrub and ephemeral/short perennial vegetation associated with bare ground (hard standing). These habitats are not rare and do not support plant species of conservation importance. Given the extent of surrounding similar habitats, the loss of the aforementioned habitats is not considered to constitute a significant impact. The built structures, fences and bare ground are manmade, easily recreated and of low ecological value; therefore, the loss of this habitat is not considered to constitute any negative ecological impact.

4.7 The proposed development may result in the loss of broadleaved plantation woodland and hedgerow. Whilst offering little intrinsic botanical value and common in the surrounding landscape, woodland and hedgerow offer refuge, nesting and foraging habitat for a variety of species (further described below) and provide corridors for wildlife to disperse and move within the wider environment. Therefore, loss and/or a reduction of these habitats on site has the potential to result in a negative ecological impact, a reduction in biodiversity value of the site and fragmentation of habitats in the area. Furthermore, impacts to any retained trees within woodland/hedgerow may include physical damage to root systems and pollution (fuel spillages incidents, runoff and dust) during site clearance and construction.

Species

Invasive plant species

4.8 Himalayan balsam is present within the site. This species is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and it is an offence to plant or otherwise cause the spread of these species in the wild. Without appropriate mitigation, there is a risk that the development could result in the spread of this species off site which would be unlawful and a negative impact of the scheme.

Bats

4.9 The metal-clad building was considered to have low bat roosting potential due to its construction material, considerable light penetration and limited potential roosting features. Although several bat droppings were found during the internal inspection these do not necessarily prove the presence of a bat roost within the structure but do indicate that the interior of the building is used as a foraging site occasionally. Furthermore, no bats were confirmed emerging from the building during the dusk emergence survey. As such it is considered likely that the building is not used by roosting bats; however, the interior of the building is used as a foraging site for a low number or individual bats particularly during sub-optimal weather conditions.

4.10 During the dusk emergence survey low commuting and foraging activity of common pipistrelle bats was recorded throughout the site. The areas of grassland and bare ground provide relatively poor foraging habitat and therefore conversion of the habitat to gardens with varied planting schemes along with landscape planting could increase the value of the site for foraging bats. However, broadleaved plantation woodland, hedgerow and scrub provide moderate foraging and commuting habitat for bat species. As such, potential removal of these habitats may result in the fragmentation of habitats and a reduction in the availability of bat foraging and commuting habitat which may negatively impact local bat populations. Furthermore, the site is currently unlit as such light pollution associated with site clearance, construction and the completed development is likely to have a negative impact on foraging and commuting bat through avoidance of highly lit areas.

Other mammals

4.11 The site is considered unsuitable for badger sett creation due to its flat profile and likely frequent disturbance. However, a badger sett is present in close proximity to the site (within 0.3km) and given a mobile nature of badgers there is potential for accidental entrapment of individuals within excavations.

4.12 Any removal of broadleaved plantation woodland, hedgerow, scrub and timber piles has the potential to impact small mammals, including European hedgehog, which may hibernate/shelter in these habitats. Therefore, their removal may cause disturbance and/or direct harm to these species and also result in the loss of foraging and refuge habitats. Furthermore, there is potential for accidental entrapment of individuals within excavations during site clearance and construction.

Birds

4.13 The majority of the site is not likely to support a breeding bird assemblage of ecological significance (i.e. rare species) due to the semi-improved nature and low ecological value of habitats present. However, broadleaved plantation woodland, hedgerow and scrub provide suitable nesting and foraging habitat for passerine bird species. Areas of grassland provide some foraging opportunities for bird species that feed on soil invertebrates. The metal-clad building provides habitat for nesting birds such as pigeons and house marten. As such, any impacts upon these habitats may adversely affect the foraging and nesting provision for birds within the site and in the immediate vicinity.

4.14 Furthermore, impacts to nesting birds, in the form of disturbance or killing/injuring, may occur if removal of aforementioned habitats is carried out during the nesting bird season (March – August inclusive).

Amphibians

4.15 The broadleaved plantation woodland, hedgerow and scrub provide potential foraging and refuge habitat for great crested newt and other amphibians. However, there are no water bodies offering potential breeding habitat for great crested newt within or in close proximity to the development site. Although there is a field pond (P1) located approximately 30 m east of the site. Additionally, there are further aquatic habitats within 0.25 km of the site boundary; of these the closest pond to the site (P2) is located approximately 0.10 km north-east of the site. Although, great crested newt can disperse over 1 km of their breeding pond, generally they tend to be present at increasingly low density the further from the pond. An extensive study on great crested newt dispersal has shown that newts usually remained within 60 m of the breeding pond (Malmgren, Jan C. 2002). Furthermore, a study of great crested newts in western France highlighted that 50% of the radio-tracked newts remained within only 15 m of the pond shoreline and 95% remained within a radius of 63 m (Jehle, 2000). Furthermore, no data search returned no great crested newts records in the local area.

4.16 Pond 1 has moderate suitable for the presence of GCN according to the Habitat Suitability assessment and given proximity to the site, if GCN are present in the area it is almost certain that the eDNA survey would have returned a positive result. However, the eDNA testing of this pond returned a negative result for great crested newt. As such, there is no reasonable likelihood of great crested newt being present in association with this pond.

4.17 Given the above, the risk of encountering great crested newt during site clearance and construction works is considered negligible; however, other more mobile common amphibians such as common frog (*Rana temporaria*) and common toad (SPI) might be encountered during the works. If unmitigated, plant/vehicle movement, as well as ground works, risks causing harm or mortality to common amphibians and accidental entrapment of individuals within excavations.

4.18 The loss of the small amount of terrestrial habitat for common amphibians is not considered to be significant given the abundance of similar and other suitable habitats within the surrounding area.

5. Recommendations

5.1 This section provides the required measures to mitigate the impacts of the proposed development. A key element of the National Planning Policy Framework is to minimise impacts to biodiversity and provide enhancements. Paragraph 170 states that *'Planning policies and decisions should contribute to and enhance the natural and local environment by … minimising impacts on and providing net gains for biodiversity*'. Paragraph 175 also states that '*when determining planning applications, local planning authorities should…" encourage* "*opportunities to incorporate biodiversity improvements in and around developments'*.

5.2 The updating survey in September 2020 confirms that site conditions remain similar to the original surveys, as such the following recommendations are unchanged.

Designated Sites and Habitats of Principal Importance

5.3 Appropriate dust reduction measures will be adhered to throughout the construction period to ensure that the designated sites, and nearby HPIs are not negatively affected during works. These will include;

- Dampening down working areas and haul roads in dry periods;
- Using covered wagons and skips; and
- Keeping roads clean.

Habitats

5.4 It is recommended that existing broadleaved plantation woodland and hedgerow are retained. If these habitats are to be impacted by works, then they will be replaced in a 2:1 ratio. Native and locally appropriate trees and shrubs will be utilised where possible (see Appendix G for suitable species), in preference of ornamental species, which are of lower value to wildlife. Root Protection Zones (RPZ) will be put in place around all trees to be retained on site to avoid any negative ecological impacts to the features.

Species

Invasive species

5.5 To avoid the spread of invasive Himalayan balsam beyond the site boundary, the following measures will be implemented throughout the duration of works:

- All contractors should be made aware of its potential presence and what biosecurity measures should be followed during the works (see Appendix H);
- Where possible, the invasive species should be marked up on site with netting/fencing to ensure that works avoid these areas;
- Where avoidance is not possible, removal and control of invasive species must follow legal requirements and best practice. The contractor will implement measures that will ensure that these species are not spread off site. If soil requires excavation which could potentially be contaminated, it will not be removed from the site unless transported by a registered waste carrier and disposed of at appropriately authorised waste sites. Contractor's boots and vehicle tyres should be washed down prior to leaving site to ensure that seed within the soil is not taken off site; and
- If works occur in areas where Himalayan balsam is present during the growing season (May to September), then these areas should be periodically strimmed to prevent plants to reaching maturity and therefore prevent the release and potential spread of more seeds. This should be undertaken before the plants set seed in June.

Bats

5.6 If any of the habitats highlighted as having value for commuting and foraging bats, e.g. broadleaved plantation woodland, hedgerow and scrub are impacted as part of any works, then they should be replaced on a like for like basis in order to maintain the resources currently present at the site. Any replacement planting should be linked into other habitat features to provide continuous routes through the landscape for commuting bats.

5.7 Where possible, works on site should not result in an increase in the illumination of the site, or any other suitable bat foraging areas. Any new lighting schemes will be designed so that they are 'bat friendly'. Lighting schemes should be designed in accordance with the appropriate guidance to minimise impacts on foraging bats (BCT/IPL, 2018).

Other mammals

5.8 Any excavations that need to be left overnight should be covered or fitted with mammal ramps to ensure that any animals that enter can safely escape. Excavations should be backfilled as soon as possible to minimise the potential for animals to become trapped. Any debris from works should not be left on site. Any small mammals found within the works area during construction should be carefully relocated to a sheltered location with plenty of vegetation cover, in an area off site which will remain undisturbed.

5.9 In addition to the above, the following mitigation, in respect of hedgehog will also be undertaken;

- Provision of artificial or natural hedgehog boxes located in quiet undisturbed areas with ground covering vegetation, preferably against the broadleaved woodland. For example, three or four logs may be arranged to leave an appropriate sized hole for a hedgehog to nest in (big enough for the hedgehog and its nest) and covered with masses of twigs and leaves; and
- The creation of 'hedgehog highways' by leaving holes in boundary fencing to allow the movement of hedgehogs throughout the site.

Birds

5.10 Any vegetation removal and works to the metal-clad building will take place outside the breeding bird season which runs from March until August inclusive, in order to prevent any impacts upon nesting birds. If this is not possible, a check for nesting birds will be undertaken by the project ecologist within 72 hours prior to the commencement of works. If active nests are identified a suitable buffer around the nest will be enforced and the nest left until the young have fledged and are no longer returning to the nest site. Works will only be undertaken once the project ecologist has declared the nest to be no longer in use.

Common amphibians

5.11 There is a possibility for common amphibians to be present on site. To avoid potential impacts to amphibians the following precautionary working methods will be undertaken:

- Before works commence, all contractors must be made aware of the potential for common amphibians to be encountered during works;
- Common amphibians encountered at any time during works will be moved to a safe location away from the works and placed within a similar habitat to which they were found; and
- Any holes or trial pits associated with works will be covered overnight to prevent amphibians and reptiles from becoming trapped within them. If holes must be left open, a means of escape, such as egress boards will be provided.

Enhancement measures

5.12 As designs for the site develop, an ecologist can provide site specific advice on ways to enhance the wildlife value of the final development and contribute towards a net gain in biodiversity. Simple examples of enhancement measures which could be considered and designed into the proposals include (but are not limited to):

- Additional plating of native trees in suitable locations on site;
- Installation of bird nest boxes (1B Schwegler nest boxes or similar, swift boxes) on suitable trees/buildings around the site.
- Creation of wood piles/brash piles from cleared vegetation to attract invertebrates and fungi, providing a good local food source for hedgehogs and possible nesting sites (materials from site works could be used for this purpose);

Re-survey of the Site

5.13 If no works are undertaken on site within 12 months of this survey or if any changes to the proposals are made, a further ecological survey may be necessary (because of the mobility of animals and the potential for colonisation of the site).

References

Amphibian and Reptile Groups of the United Kingdom (May 2010) *ARG UK Advice Note 5 Great Crested Newt Habitat Suitability Index*. ARG

British Standards Institution (2013) *BS 42020:2013 Biodiversity – Code of practice for planning and development*. British Standards Institution, London.

CIEEM (2017a). *Guidelines on Ecological Report Writing*. Chartered Institute of Ecology and Environmental Management, Winchester.

CIEEM (2017b). *Guidelines for Preliminary Ecological Appraisal 2nd Edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

English Nature (2001) *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.

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

Natural England. (2017). Great crested newts: apply for a mitigation licence (A14) [ONLINE] Available at: https://www.gov.uk/government/publications/great-crested-newts-apply-for-a-mitigation-licence (Accessed 21st August 2019).

Institute of Lighting Professionals (2018). *Bats and artificial lighting in the UK.* The Bat Conservation Trust, London.

JNCC (1993 revised 2010) *Handbook for Phase 1 Habitat Survey: A technique for environmental audit (reprint).* Joint Nature Conservation Committee, Peterborough.

Stace, C. (2010) *New Flora of the British Isles*. Third Edition. Cambridge University Press, Cambridge.

Appendix A – Legal Information

This report provides guidance of potential offences as part of the impact assessment. This report does not provide detailed legal advice and for full details of potential offences against protected species the relevant acts should be consulted in their original forms i.e. The Wildlife and Countryside Act, 1981, as amended, The Countryside and Rights of Way Act 2000, The Natural Environment and Rural Communities Act, 2006 and The Conservation of Habitats and Species Regulations 2017.

Species	Legislation	Offences	Notes on licensing procedures and further advice
Species that are protected by European and national legislation			
Badgers	Protection of Badgers Act 1992	Willfully kill, injure or take a badger; Intentionally or recklessly damage, destroy or obstruct access to a badger sett; Disturb a badger in its sett. It is not illegal to carry out disturbance activities in the vicinity of setts that are not occupied.	Where required, licences for development activities involving sett loss, damage or disturbance are issued by Natural England (NE). Licences for activities involving watercourse maintenance, drainage works or flood defences are issued under a separate process. Licences are normally not granted from December to June inclusive because cubs may be present within setts. https://www.gov.uk/badgers-protection-surveys-and-licences
Bats *European protected species*	Conservation of Habitats and Species Regulations 2017 Reg 41	Deliberately[1] capture, injure or kill a bat; Deliberate disturbance[2] of bats; Damage or destroy a breeding site or resting place used by a bat. The protection of bat roosts is considered to apply regardless of whether bats are present.	An NE licence in respect of development is required in England. https://www.gov.uk/bats-protection-surveys-and-licences *European Protected Species: Mitigation Licensing- How to get a licence* (NE 2010) *Bat Mitigation Guidelines* (English Nature 2004) *Bat Workers Manual* (JNCC 2004) *BS8596:2015 Surveying for bats in trees and woodland* (BSI, 2015)
	Wildlife and Countryside Act 1981 (as amended)[4] S.9	Intentionally or recklessly[3] obstruct access to any structure or place used for shelter or protection or disturb a bat in such a place.	Licence from NE is required for surveys (scientific purposes) that would involve disturbance of bats or entering a known or suspected roost site.

Species	Legislation	Offences	Notes on licensing procedures and further advice
Birds	Conservation of Habitats and Species (Amendment) Regulations 2012	N/A	Authorities are required to take steps to ensure the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of the upkeep, management and creation of such habitat. This includes activities in relation to town and country planning functions.
	Wildlife and Countryside Act 1981 (as amended)[4] S.1	Intentionally kill, injure or take any wild bird; Intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built; Intentionally take or destroy the nest or eggs of any wild bird.	No licences are available to disturb any birds in regard to development. Licences are available in certain circumstances to damage or destroy nests, but these only apply to the list of licensable activities in the Act and do not cover development. General licences are available in respect of 'pest species' but only for certain very specific purposes e.g. public health, public safety, air safety. https://www.gov.uk/wild-birds-protection-surveys-and-licences https://www.gov.uk/prevent-wild-birds-damaging-your-land-farm-or-business
	Wildlife and Countryside Act 1981 (as amended)[4] S.9	Intentionally or recklessly[3] obstruct access to any structure or place used for shelter or protection or disturb a great crested newt in such a place.	Licences issued for science (survey), education and conservation by NE.
Other species			
Rabbits, foxes and other wild mammals.	Wild Mammals (Protection) Act 1996	Intentionally inflict unnecessary suffering to any wild mammal.	Natural England provides guidance in relation to rabbits (Technical Information note TIN003, Rabbits- management options for preventing damage, July 2007) and foxes (which are also protected under the Wildlife and Countryside Act 1981 from live baits and decoys, see Species Information notes SIN003 (2011), *Urban foxes* and SIN004 (2011)

[1]Deliberate capture or killing is taken to include "accepting the possibility" of such capture or killing [2]Deliberate disturbance of animals includes in particular any disturbance which is likely a) to impair their ability (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of hibernating or migratory species, to hibernate or migrate; or b) to affect significantly the local distribution or abundance of the species to which they belong. Lower levels of disturbance not covered by the Conservation of Habitats and Species Regulations 2017 remain an offence under the Wildlife and Countryside Act 1981 although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided. Thus deliberate disturbance that does not result in either (a) or (b) above would be classed as a lower level of disturbance. [3]The term 'reckless' is defined by the case of Regina versus Caldwell 1982. The prosecution has to show that a person deliberately took an unacceptable risk, or failed to notice or consider an obvious risk. [4] The Wildlife and Countryside Act (1981) has been updated by various amendments, including the Countryside and Rights of Way Act 2000 and the Natural Environment and Rural Communities Act 2006. A full list of amendments can be found at http://jncc.defra.gov.uk/page-1377.

Site Designation	Legislation	Protection	Guidance
Local Sites	There is no statutory designation for Local Sites.	Local Sites are given protection through policies in the Local Development Plan.	Development proposals that would potentially affect a Local Site would need to provide a detailed justification for the work, an assessment of likely impacts, together with proposals for mitigation and restoration of habitats lost or damaged. Further guidance can be found in the National Planning Policy Framework and the accompanying joint Circular (ODPM Circular 6/2005 & Defra Circular 01/2005) to PPS9 for England, which is still valid.

Habitats & Species	Legislation	Guidance
Species and Habitats of Principal Importance for the Conservation of Biodiversity	Natural Environment & Rural Communities Act 2006 S.40 (which superseded S.74 of the Countryside & Rights of Way Act 2000).	S.40 of the NERC Act 2006 sets out the duty for public authorities to conserve biodiversity in England. Habitats and species of principal importance for the conservation of biodiversity are identified by the Secretary of State in consultation with NE, are referred to in S.41 of the NERC Act for England. The list of habitats and species was updated in 2008: http://webarchive.nationalarchives.gov.uk/20140605090108/http:/www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx The habitats and species listed are not necessarily of higher biodiversity value, but they may be in decline. Habitat Action Plans and Species Action Plans are written for them or are in preparation, to guide their conservation. Ecological impact assessments should include an assessment of the likely impacts to these habitats and species.
Himalayan balsam	Wildlife and Countryside Act 1981 (as amended) S.14	It is illegal to plant these species or otherwise cause them to grow or spread in the wild. *Guidance on Section 14 of the Wildlife and Countryside Act, 1981* (Defra, 2010)

Appendix B – Bat Roost Potential Criteria

Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape (Collins, 2016).

Suitability	Description of Roosting Habitat	Commuting & Foraging Habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitats to be used on a regular basis or by a larger number of bats (i.e. unlikely to be suitable maternity or hibernation). A tree of sufficient size and age to contain potential roosting features but with none seen from the ground, or feature seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions, and surrounding habitat but unlikely to support a roost of high conservation status.	Continuous habitat connected to the wider landscape that could be used by bats for commuting, such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging, such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis, and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous high quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats, such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close and connected to known roosts.

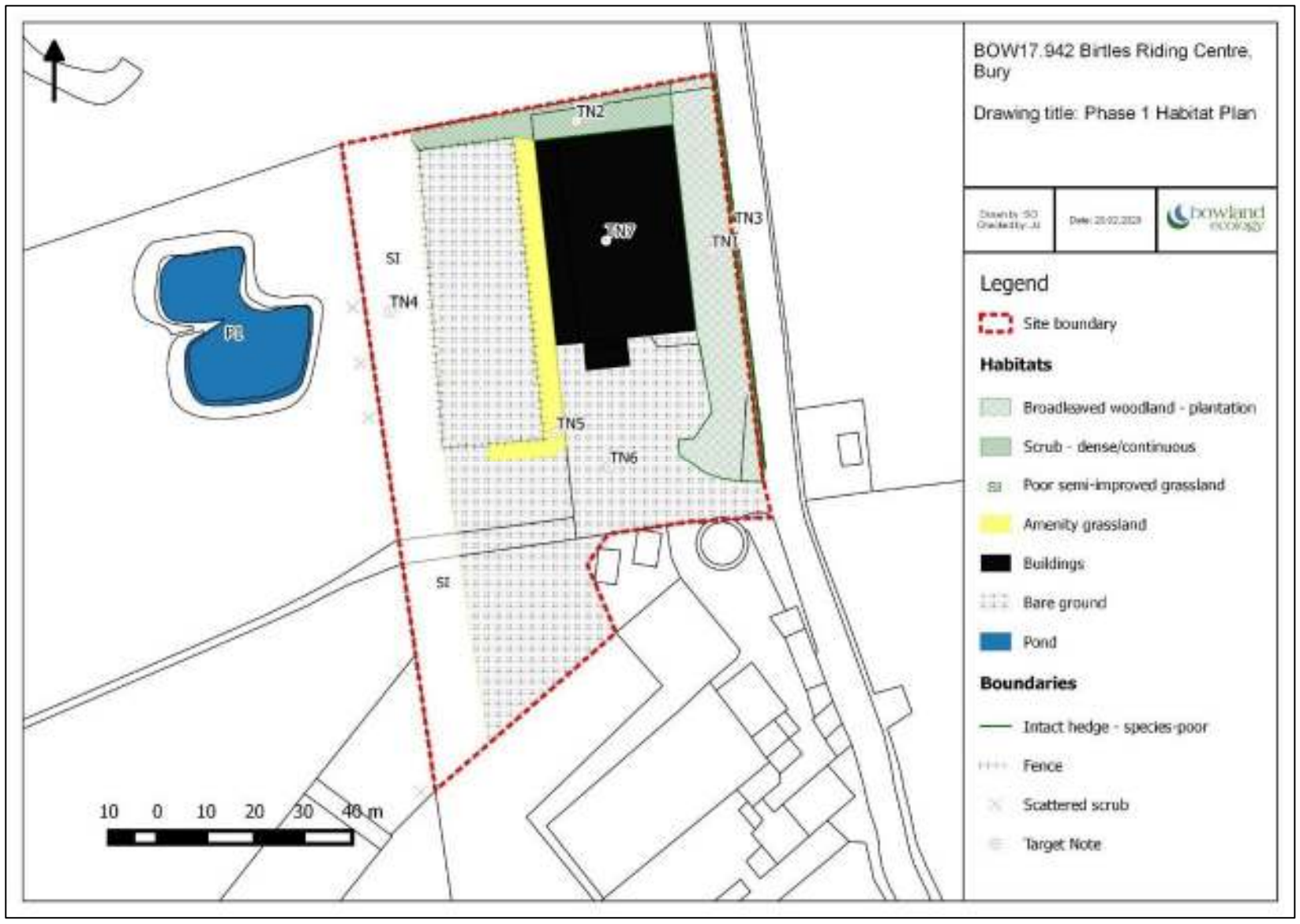
Appendix C – Target Notes

No	Description	Photograph
1	Broadleaved plantation woodland along the eastern site boundary. Canopy species include silver birch, oak, hazel, elder and alder with understory comprising of rowan and crack willow. A very dense area of hedge bindweed is present at the southern end whereas Himalayan Balsam is scattered within the far north end of the woodland. Other ground flora species recorded include common nettle, redshank, broad-leaved dock and willowherb. Piles of wood chippings with fungi growth were recorded at the southern side of the woodland.	  **2020** 
2	Fenced off enclosure comprising dense scrub and introduced shrub in the north of the site. Species present include silver birch, hazel, hawthorn, holly and non-native invasive Himalayan balsam.	
3	Species-poor hedgerow comprising hawthorn located just outside the eastern site boundary. This hedgerow is gappy and outgrown due to a lack of management.	No photo provided.

No	Description	Photograph
4	Long narrow paddock comprising of a compacted poor semi-improved grassland along the western site boundary. Species recorded include Yorkshire fog, rye grass, meadow buttercup, broad-leaved dock and white clover.	 **2020** 
5	Narrow strip of amenity grassland with artificially placed rocks present on a steep mound along the eastern and south-eastern edge of the outdoor riding arena. The grassland has a sward rich in herbs, including ribwort plantain, common nettle, common columbine, dandelion, bladder campion, ivy-leaved toadflax, lesser periwinkle, herb-Robert, ivy, broad-leaved dock, common bistort, coppertips and butterbur.	 **2020** 

No	Description	Photograph
6	Bare ground in a form of gravel and tarmac hard standing present towards the north of the site. Ephemeral/short perennial vegetation has developed along fence lines colonising an area of hard standing. Species recorded include white clover, broad-leaved dock, meadow buttercup, daisy, redshank, perennial snow thistle, creeping thistle, common groundsel and black medic. Small areas of scattered waste ground and timber piles were recorded in the southern corner.	
7	A metal-clad building in the north-eastern corner of the site. Internally, Three (partly cobwebbed, indicating not fresh) bat droppings found on the northern wall and stuck to mirrors. Several bat droppings found on the southern wooden perimeter, as well as bird droppings. Other (small mammal) droppings found on the eastern wall (top of wooden riding perimeter). No sign of owl splashes.	  **2020** 

Appendix D – Phase 1 Habitat Plan



Appendix E – Bat Survey Results

Lucy Pocock (Surveyor 1)		
Time	Species	Activity
21:32	Common pipistrelle	Pass overhead foraging
21:33	Common pipistrelle	Pass overhead foraging
21:36	Common pipistrelle	Pass overhead foraging
21:38	Common pipistrelle	Pass overhead foraging
21:44	Noctule	Pass overhead foraging
21:48	Common pipistrelle	Pass overhead foraging
21:49	Common pipistrelle	Foraging
21:50	Common pipistrelle	Foraging
21:51	Common pipistrelle	Foraging
21:52	Common pipistrelle	Foraging
21:54	Common pipistrelle	Foraging
21:56	Common pipistrelle	Foraging
22:01	Myotis sp.	Commuting
22:07	Common pipistrelle	Foraging
22:08	Myotis sp.	Foraging
22:19	Common pipistrelle	Foraging
22:22	Myotis sp.	Foraging
22:24	Myotis sp.	Foraging
22:30	Common pipistrelle	Foraging
22:34	Common pipistrelle	Foraging
22:39	Common pipistrelle	Foraging
22:40	Common pipistrelle	Foraging
Chris Piner (Surveyor 2)		
21:09	Common pipistrelle	Heard not seen (HNS)
21:11	Common pipistrelle	Foraging to the east
21:29	Common pipistrelle	Commuting west-east over building
21:44	Common pipistrelle	Commuting west-east
21:48	Common pipistrelle	Flew into building through large gap at the top
21:50	Common pipistrelle	Social calling HNS
21:55	Common pipistrelle	Flew north and entered building
21:58	Common pipistrelle	Foraging
22:00	Common pipistrelle	Foraging
22:08	Common pipistrelle	HNS
22:19	Unknown	Foraging to the east
22:39	Common pipistrelle	HNS
Lee Moat (Surveyor 3)		
21:54	Common pipistrelle	Foraging
22:18	Common pipistrelle	Commuting (HNS)
22:19	Common pipistrelle	Commuting (HNS)
22:26	Common pipistrelle	Commuting (HNS)
22:34	Common pipistrelle	Commuting (HNS)

Appendix F – Pond Location Plan



Appendix G – Suitable Native Species for use in Planting Schemes

Scientific name	Common Name	Scientific name	Common Name
Large trees		**Large shrubs**	
Alnus glutinosa	Alder	*Cornus sanguinea*	Dogwood
Betula pendula	Silver birch	*Euonymus europaeus*	Spindle
Carpinus betulus	Hornbeam	*Hippophae rhamnoides*	Sea buckthorn
Fagus sylvatica	Beech	*Juniperus communis*	Juniper
Fraxinus excelsior	Ash	*Ligustrum vulgare*	Wild privet
Ilex aquifolium	Holly	*Rhamnus cathartica*	Buckthorn
Pinus sylvestris	Scots pine	*Rosa caesia*	Hairy dog rose
Populus nigra	Black poplar	*Rosa canina*	Dog rose
Quercus petraea	Sessile oak	*Rosa micrantha*	Small-flowered sweet briar
Quercus robur	English oak	*Rosa stylosa*	Short-styled field rose
Salix alba	White willow	*Rosa tomentosa*	Harsh downy rose
Salix fragilis	Crack willow	*Salix myrsinifolia*	Dark-leaved willow
Tilia cordata	Small leaved lime	*Salix purpurea*	Purple willow
Tilia platyphyllos	Large-leaved lime	*Salix aurita*	Eared willow
Ulmus glabra	Wych elm	*Sorbus leptophylla*	Welsh whitebeam
Ulmus minor	small-leaved elm	*Viburnum lantana*	Wayfaring tree
Ulmus procera	English elm	*Viburnum opulus*	Guelder rose
Medium trees		**Medium shrubs**	
Betula pubescens	Downy birch	*Cytisus scoparius*	Broom
Crataegus monogyna	Hawthorn	*Rosa agrestis*	Small-leaved sweet briar
Populus tremula	Aspen	*Rosa arvensis*	Field rose
Prunus avium	Wild cherry	*Rosa mollis*	Soft downy rose
Prunus padus	Bird cherry	*Rosa rubiginosa*	Sweet briar
Salix caprea	Goat willow	*Rosa sherardii*	Sherard's downy rose
Salix pentandra	Bay willow	*Sorbus anglica*	English whitebeam
Salix triandra	Almond willow	*Ulex europaeus*	Gorse
Sorbus aria	Whitebeam	*Ulex gallii*	Western gorse
Sorbus aucuparia	Rowan		
Sorbus domestica	Wild service tree		
Taxus baccata	Yew		
Small trees		**Small shrubs**	
Acer campestre	Field maple	*Rosa pimpinellifolia*	Burnet rose
Arbutus unedo	Strawberry tree	*Ruscus aculeatus*	Butchers broom
Buxus sempervirens	Box	*Salix herbacea*	Dwarf willow
Corylus avellana	Hazel	*Salix lanata*	Woolly willow
Crataegus laevigata	Midland hawthorn	*Salix lapponum*	Downy willow
Malus sylvestris	Crab apple	*Salix myrsinites*	Whortle-leaved willow
Prunus spinosa	Blackthorn	*Salix reticulata*	Net-leaved willow
Pyrus cordata	Plymouth pear		
Frangula alnus	Alder buckthorn		
Salix cinerea	Grey willow		
Salix viminalis	Osier		
Sambucus nigra	Elder		

Appendix H – Information Sheet on Himalayan Balsam

Himalayan Balsam

Information, legal responsibilities and best practice for the construction industry

bowland ecology

Legal Information

In England it is illegal to plant or cause the spread of Himalayan balsam in the wild. If Himalayan balsam is taken away from the site of origin, the plant and its associated materials, e.g. soil, become classed as controlled waste and must be disposed of at an authorised landfill site. Furthermore, powers are given to environmental authorities to enter into control agreements and orders with landowners, in order to ensure action is taken to control non-native invasive species on their land.

Legislation governing the movement and spread of Himalayan balsam in England includes the following;

- Wildlife and Countryside Act 1981 (as amended) Section 14;
- Environmental Protection Act 1990 S33 & 44; and
- Infrastructure Act 2015 Sections 23 to 25.

Impacts

Himalayan balsam is a non-native, rapidly colonising plant. It negatively impacts the growth and success of native plants, as dense stands grow quickly and prevent other plants from successively germinating and producing flowers. The species rapidly dominates an area, creating dense monoculture stands, commonly observed on river banks, but also within woodland and other habitats with damp ground.

Management of Himalayan balsam

- Prior to commencement of any works on site all staff on site should be made aware of the presence and location of Himalayan balsam on site and all stands of Himalayan balsam, including a 7 m buffer zone should be marked out with hi-visibility fencing;
- Prior to the plant setting seed in June it should be strimmed to the ground to prevent the dispersal of seeds;
- The use of mechanical plant over infected areas should be kept to a minimum;
- Biosecurity measures should be implemented whilst on site to prevent cross contamination. This includes the cleaning of footwear and machinery, prior to, and on completion of each working window to ensure that Himalayan balsam is not taken off or spread around the site.
- Himalayan balsam is classed as controlled waste. As such, all arisings and potentially contaminated soil from the plant must be disposed of in an appropriate manner to ensure that the waste does not cause pollution of the environment.

Distribution & Spread

Himalayan balsam is widely distributed across most of lowland England and Wales and many parts of Scotland and Ireland.

Each plant produces approximately 2,500 seeds and when mature the seeds open 'explosively if disturbed' and can project several meters from the parent plant. Furthermore, the seeds also float, making watercourses a perfect vector for their dispersal.



Useful references & guides:

GB non-native species secretariat
http://www.nonnativespecies.org/home/index.cfm
Prevent harmful weeds and invasive non-native plants spreading
https://www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants

Key ID Features


Young seedling


Reddish leaves


Single stem


Flower heads/seed pods


Flower head


Reddish stem


Short roots


Dense stand


Dead stand

Identifying Himalayan balsam

Himalayan balsam, also referred to as Indian balsam (*Impatiens glandulifera*) is a tall, annual plant. As a mature plant it can grow up to 3 m in height and is easily recognisable with pink/purple flowers, a fleshy stem, turning more pink/red in the summer, with lanceolate shaped, long, green leaves tinged with pink. In summer, the plant forms dense stands, commonly along watercourses and other damp habitats.

In late July/August exploding seed pods appear. The pods enable the plant to disperse seeds up to distance of 7 m from the mature plant, enabling the effective spread of the plant in the wild.

As an immature plant it is more difficult to identity. Seedlings begin to appear in March, and in winter, when the plant dies back it can resemble the remains of hay.

References: Botanical Society of Britain & Ireland, 2017, GB non-native species secretariat, RPS group Plc.
Bowland Ecology Ltd. 2 York Street, Clitheroe, Lancashire, BB7 2DL

Version 1 November 2017