Land Adjacent to Lock 38, Marsden

Ecological Impact Assessment

3rd October 2019

Prepared by:

Middleton Bell Ecology, 33 Wilthorpe Road, Barnsley S75 1JA

Document ref: MBE/ECO/2019/24/02				
Purpose and Description	Originated	Checked	Reviewed	Date
For Planning	P Middleton MCIEEM	R Bell MCIEEM	P Middleton MCIEEM	03.10.19

Contents

Site Name Land adjacent to Lock 38	**Location** Off Marsden Lane, Marsden
Document ref: MBE/ECO/2019/24/2	
Local Authority Kirklees Council	**Grid Reference** SE 0524 1185
Surveyor Peter Middleton MCIEEM	**Date of Surveys** 01/02/2016, 08/08/2019, 09/09/19
National Character Area (NCA) The Southern Pennine Fringe (37)	**Designation of Site** Adjacent to Local Wildlife Site

Phase 1 Habitat Types A.1.1.1 Broad leaved semi natural woodland, A3.1 Scattered trees, C.3.1 Tall ruderal, J1.3 Ephemeral, J4 Bare ground
NVC Communities on Site None
Protected/Notable Species, Constraints on Site Location 10m south of Huddersfield Narrow Canal (Local Wildlife Site) and adjacent to River Colne, bats, nesting birds, Schedule 9 invasive plant (Himalayan balsam), disused badger sett
HPIs and SPIs under NERC Act 2006 Lowland Mixed Deciduous Woodland, Various Bat Species
Kirklees BAP Lowland Mixed Deciduous Woodland, Bats

1. Summary

1.1.1 The ecological Impact assessment was commissioned by architect Steve Mitchell on behalf of SB Homes. The site is subject to a planning application for the creation of a camp site, which includes the construction of a toilet building, camping pods and car and camper van parking spaces.

1.1.2 A Preliminary Ecological Appraisal of the site was first undertaken in February 2016 (MEC, 2016). This 2019 report includes an update extended Phase 1 habitat survey, an otter and water vole survey, a single bat activity transect and a single static monitoring bat survey.

1.1.3 The site consists of approximately 0.86ha of land off Marsden Lane. Habitats on site comprise mainly of open canopy largely broad-Leaved woodland and tall ruderal vegetation. Adjacent habitats include the tree lined River Calder and Huddersfield Narrow Canal (a Local Wildlife Site).

1.1.4 Site habitats are not considered to be of intrinsic importance to nature conservation at greater than the local level. The site is considered to be of up to local importance to commuting and foraging bats, however it is not considered to be of greater than site level importance to other species groups. The adjacent canal and river are considered to be of district level importance to a range of floral and faunal species.

1.1.5 The development will result in the loss of part of the woodland and tall ruderal vegetation. However, the impact will be partially offset by the local eradication of Himalayan balsam which now is dominant in the woodland, and the planting of new lengths of native hedgerow. Existing trees will be protected during construction in accordance with measures prescribed in 'British Standard 5837 (2012): Trees in relation to design, demolition and construction'. These measures may be secured through a Planning Condition requiring that an Ecological Design Strategy (EDS) be produced for the scheme.

1.1.6 Survey shows the site is used extensively by a range of bat species, including light averse species. New artificial lighting would have the potential to deter bats from using the site, potentially resulting in impacts of significance at the local level. The client has agreed to restrict site lighting to low level, designed with the sole intention of indicating the routes of key pathways across the site. The proposals are to result in zero light spill across both the canal and River Colne. If new site lighting is kept to an absolute minimum, then it should be possible to restrict impacts on foraging and commuting bats to the site level. A detailed lighting plan, to include a lux plan confirming lighting spill across adjacent vegetation, will need to be developed with the input of an ecologist. This measure could be included in a future EDS.

1.1.7 A pre-works update badger survey will be required prior to development and an Ecological Clerk of Works (ECoW) will need to be present during vegetation removal works. This is necessary in order to safeguard against the residual risk that a previously undiscovered, or newly established, badger sett or otter holt, will be uncovered. Vegetation removal works also should be timed to avoid the breeding bird season or a prior nesting bird check will need to be undertaken by the ECoW.

1.1.8 Ecological enhancements agreed include the installation of bat and bird boxes on site trees.

2. Introduction

2.1.1 The ecological impact assessment was commissioned by architect Steve Mitchell on behalf of the client SB Homes. The site is subject to a planning application for the creation of a camp site which includes the construction of a toilet building, camping pods and car and camper van parking spaces.

2.1.2 A Preliminary Ecological Appraisal of the site was first undertaken in February 2016 (MEC, 2016). This 2019 report includes an update extended Phase 1 habitat survey, an otter *Lutra lutra* and water vole *Arvicola amphibious* survey, a single bat activity transect and a single period of bat static monitoring survey.

2.1.3 The purpose of this report is to present the findings of the ecological survey works undertaken and their implications for the proposed scheme. The report considers the ecological value of the site and presents an assessment of the impacts of the proposed development and provides details of the mitigation and compensation necessary to avoid or reduce these impacts.

2.1.4 Key legislation relating to designated sites and protected species and habitats is detailed in Appendix 4. The implications of legislation are detailed in the body of the report where necessary.

3. Site Description

3.1.1 The site consists of approximately 0.86ha of land off Marsden Lane in Marsden. The site, which is situated between the River Colne and the Huddersfield Narrow Canal, slopes from north to south and has a steep bank which falls away to a level area adjacent to the river. Habitats on site comprise predominantly of open broadleaved woodland together with tall ruderal vegetation and bramble *Rubus fruticosus* agg. scrub in the understorey (see Plates 1 & 2).

Figure 1. The site location, as indicated by red circle

3.1.2 The surrounding area consists of a variety of habitats including the built environment, grassland, upland heath and clough woodland (see Figure 1). The site falls within National Character Area 36: The Southern Pennines. This is a landscape of large-scale sweeping moorlands, pastures enclosed by drystone walls, and gritstone settlements contained within narrow valleys. The area contains internationally important mosaics of moorland habitats that support rare birds such as merlin *Falco columbaris*, short-eared owl *Asio flammeus* and twite *Carduelis flavirostris*.

4. Methodology

4.1 Data Consultation

4.1.1 West Yorkshire Ecological Records (WYER) were contacted to request the following information for locations within a 2km radius of the site:

- Protected and notable species records
- The boundaries of non-statutory designated sites of nature conservation interest

4.1.2 A search of the Multi-Agency Geographical Information for the Countryside (MAGIC) website was undertaken to determine the following:

- The boundaries of statutory designated sites of nature conservation interest
- The locations of historic European Protected Species (EPS) licences granted by Natural England

4.2 Field Survey

Extended Phase 1 Habitat Survey

4.2.1 The site and the adjacent river and its banks, up to 30m from the development, were initially surveyed on 1st February 2016 and again on 8th August 2019 using extended Phase 1 habitat survey methodology (JNCC, 2010) by the following personnel:

- Peter Middleton (MCIEEM)

4.2.2 Notable, rare or scarce plant species were highlighted if present. Evidence of protected species or species of nature conservation importance was recorded where present at the time of survey. Species recorded are included within the report as appropriate. Information is presented on the Phase 1 plan, using Target Notes (TN) to identify particular features of interest, where appropriate. Additionally, and where possible, habitats were classified using the National Vegetation Classification (NVC), as described in the JNCC National Vegetation Classification – Users Handbook (Rodwell, 2006).

4.2.3 Ariel photographs (Google Earth) were studied to place the site in its wider context and to look for ecological features that would not be evident on the ground during the walkover survey. This is particularly useful for identifying wildlife corridors and ponds but because the latter are often not apparent on aerial photographs, OS 1:25 000 scale maps are also used.

4.2.4 Habitats of Principal Importance (HPIs) and Species of Principal Importance (SPIs) are included on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 were noted together with priority species and habitats as included on the Local Biodiversity Action Plan (LBAP).

Bat Activity Survey

4.2.5 A single bat transect survey and a single period of static detector survey were undertaken.

4.2.6 The following activities were carried out in compliance with relevant Bat Survey Guidelines (Collins 2016):

- A transect survey was undertaken by Peter Middleton (MCIEEM; Class license WML-A34-Level 4, 2017-27977-CLS-CLS) on 9th September 2019 continuing from sunset, until at least two hours after this time.

4.2.7 The transect route was walked at a steady pace, with nine ten-minute-long point counts selected to sample different habitats across the site. The number of bat passes was recorded by species from each walked section (between point counts) and during each point count. A bat pass was considered to comprise a single discrete commuting pass or a period of continuous foraging activity up to 10 seconds in length.

4.2.8 The following equipment was used during the transect survey:

- Wildlife Acoustics EM Touch bat detectors and iPad recorder.

4.2.9 Two Wildlife Acoustic SM4 static detectors were deployed at different locations shown on Figure 2 for a five-night period between 3rd and 8th September 2019. Static monitoring survey basic details are displayed in Table 2.

Figure 2. Static detector locations

Table 2. Bat static monitoring survey basic details

Start date	End date	Location reference	Location Grid Reference	Sunset (h)*	Sunrise (h)*
03.09.19	08.09.19	1	SE0527211913	19:48	06:24
03.09.19	08.09.19	2	SE0521811838	19:48	06:24
*Sunrise and sunset times are taken from the third night of survey					

4.2.10 Analysis of sound files collected on the Wildlife Acoustics SM4 units was undertaken using Wildlife Acoustics Kaleidoscope Pro AutoID software with manual verification.

4.2.11 In order to aid comparison between data collected from different locations during different recording sessions, two Bat Activity Indices (BAI) values were calculated using the formulas below:

BAI bats/night = Bat sound files/number of survey nights

BAI bats/hour = Bat sound files/number of night hours

4.2.12 Static monitoring data collected was inputted into the EcoBat web tool (http://www.ecobat.org.uk). This resource aids evidence-based decision-making by offering a standardised method of interpreting bat activity data by enabling the comparison of static data collected on a site, with that collected from other sites. In this case the collected data was compared with other data collected using similar detectors, located within 200km of the site and on dates ±30 nights of the survey date. Comparison was also compared with other data for which the 'bat pass' definition was the same.

Otter and Water Vole Survey

4.2.13 An otter and water vole survey was undertaken by Peter Middleton and Dr Amanda Murphy on 3rd September 2019. The survey area comprised the River Colne and the Huddersfield Narrow Canal up to 100m east and west of the site. The survey was undertaken from the banks of the canal and within the river channel. Signs of otter and water vole presence were recorded if seen.

4.3 Method of Assessment

4.3.1 The value and sensitivity of ecological features present on site were determined based on the guidance given in 'Guidelines on Ecological Impact Assessment' (CIEEM, 2016). Individual ecological receptors (habitats and species that could be affected by the development) for the scheme were assigned levels of importance for nature conservation. The highest level is international, then decreasing in order of importance through national, regional, county, local and lastly site.

4.4 Survey Limitations

4.4.1 The initial 2016 Phase 1 habitat survey was undertaken in January, which is outside of the survey period for undertaking detailed botanical surveys. However, an updated survey was undertaken in August 2019, in the peak of the botanical survey period.

4.4.2 Identification of bat calls to species level is not always possible and recorded calls may be of variable quality due to a number of factors, for example, the detection range of a

bat detector. However, all such factors are taken into account when interpreting bat survey data and they are not considered to affect the validity or confidence in the results.

5. Ecological Baseline

5.1 Designated Sites

5.1.1 Designated sites present within 2km of the site are detailed in Table 1.

Table 1. Designated sites

Designation	Name	Description	Distance and direction to site
Special Protection Area (SPA), Species Area of Conservation (SAC), Site of Special Scientific Interest (SSSI)	South Pennine Moors	Wading birds, Upland habitats	1km north-northwest
Local Wildlife Site (LWS)	Huddersfield Narrow Canal	Various wetland habitats	10m north
	Green Hill Clough	Broad leaved semi natural- woodland, acid grass and heath	730m north
	Drop Clough	Broad leaved woodland, acid grass and heath	800 north-northeast
	Naze Top Wood	Broad leaved semi natural- woodland, acid grass and heath	1.9km south
	Holme Bank Wood	Broad leaved semi natural- woodland, acid grass and heath	2km south

5.1.2 The application area is located 10m south of the Huddersfield Narrow Canal. The site does not fall within the Kirklees Wildlife Habitat Network (KWHN) and the closest area of Ancient Semi Natural Woodland is located more than 700m from the site.

5.1.3 Records of protected and notable species obtained are discussed in the species sections of the results.

5.2 Habitats

5.2.1 The arrangement of site habitats is shown on the Phase 1 plan in Appendix 2, whilst full list of plant species recorded is provided in Appendix 3.

5.2.2 Site habitats are not considered to be of intrinsic importance to nature conservation at greater than the local level. The site is considered to be of up to local importance to commuting and foraging bats, however it is not considered to be of greater than site level importance to other species groups. The adjacent canal and river are considered to be of district level importance to a range of floral and faunal species.

5.2.3 A detailed description of the site and adjacent habitats and the site's potential to support protected and notable species is provided below.

A1.1.1 Semi-Natural Broadleaved Woodland

5.2.4 There are many trees on site which are in excess of five metres several of which are somewhat mature together with many which have previously been coppiced. The woodland is of an open character (see Figure 2) with goat willow *Salix caprea* being abundant, together with occasional sycamore *Acer psuedoplatanus*, ash *Fraxinus excelsior* and silver birch *Betula pendula*. Tree species found in smaller quantities include hawthorn *Crataegus monogyna*, hybrid willow *Salix caprea x cineraea* and pendunculate oak *Quercus robur* (see Plate 1). The ground flora is dominated by Himalayan balsam *Impatiens glandulifera* (see Plate 1).

Plate 1. Willow trees with Himalayan balsam in field layer

Plate 2. Tall ruderal (nettle) adjacent to track on north site boundary

A3.1 Scattered Trees

5.2.5 Several scattered goat willows are present in the area of tall ruderal vegetation on the south slope, down to the River Colne (see Appendix 2).

C3.1 Tall Ruderal

5.2.6 The entire ground flora of the open woodland comprises tall ruderal vegetation or scattered bramble scrub, with the bramble dominant in only a few places. There are small areas dominated by rosebay *Chamerion angustifolium* and large areas adjacent to the track with abundant nettle *Urtica dioica*, but by far the most abundant species is the annual and invasive Schedule 9 species Himalayan balsam *Impatiens glandulifera* (see Plate 3)

Plate 3. Ground dominated by Himalayan balsam in August 2019

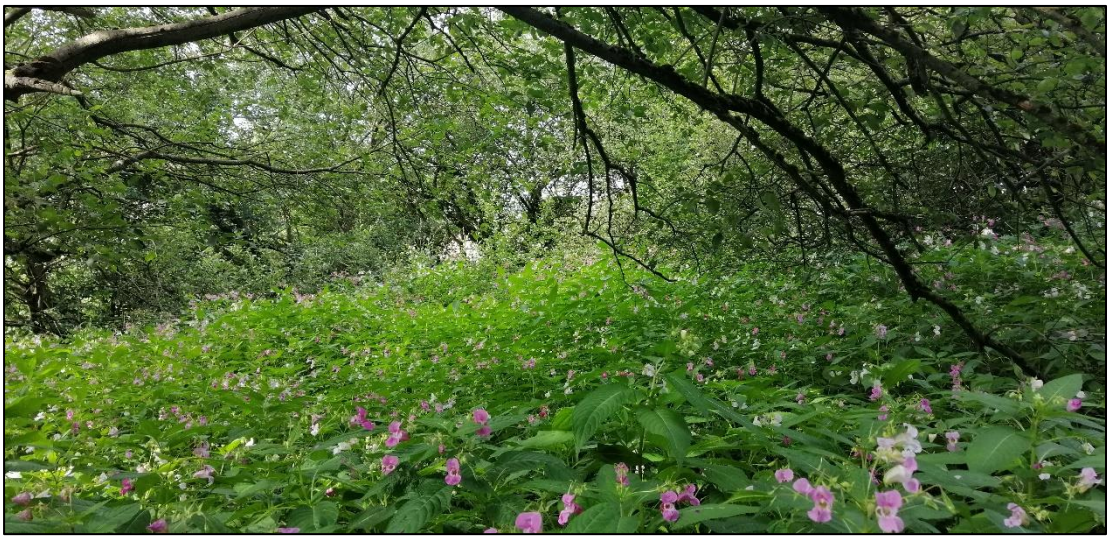


Plate 4. Woodland photographed in February 2016

J1.3 Ephemeral & J4 Bare Ground

5.2.7 A recently cleared area (see Plate 5) comprises bare ground with ephemeral pioneer vegetation around its periphery. The vegetation largely comprises creeping bent *Agrostis stolonifera* and Yorkshire fog *Holcus lanatus* together with docks *Rumex* spp.,

nettle, perennial ryegrass *Lolium perenne*, white clover *Trifolium repens* and hybrid willowherb *Epilobium* spp present.

Plate 5. Bare ground and Ephemeral

5.3 Species and Species Groups

Amphibians

5.3.1 No Great Crested Newt (GCN) *Triturus cristatus* records were provided by WYER for locations within a 2km radius of the site. No historic GCN EPS mitigation licences have been issued for locations within 2km of the site.

5.3.2 There are no ponds within 1km of the site. Given the lack of records and knowledge of their apparent local absence, GCN are not considered to be a receptor to the proposed scheme. Common amphibian species may however be present in the wider area.

Badger

No badger *Meles meles* records were provided by WYER for any locations within a 2km radius of the site. A badger sett was located on site during the survey in February 2016 (see Plate 5 & Appendix 2). The sett however, appeared to be unused in February 2016 as there are no tracks on site and the holes were partially filled with debris and leaves. The sett was located during the August 2019 survey of the site and it remains unused. A single probable snuffle hole was located near the river during the August 2019 survey.

Plate 5. Disused badger sett - 2016

Bats

Historic records

5.3.3 West Yorkshire Ecological Record Centre provided 56 historic bat records for locations within 2km of the site, with no records related to the site itself. Bat species positively identified in the data consultation comprised common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Daubenton's bat *Myotis daubentonii*, brown long-eared bat *Plecotus auritus*, noctule *Nyctalus noctula*, Leisler's bat *Nyctalus leisleri*, whiskered bat *Myotis mystacinus* and Natterer's bat *Myotis nattereri*. The closest roost to site comprised a common pipistrelle roost, recorded in 2015 from a location 185m from the site.

5.3.4 Two historic EPS licences have been issued for locations with 2km of the site. The nearest was issued in 2015 to allow the destruction of a common pipistrelle resting place within a location approximately 1200m west of the site.

Bat roosting potential on site

5.3.5 A mill race is also present which comprises a drystone arch/culvert approximately 0.6m high x 2m wide, across a water filled ditch (see Plate 6). The interior of this feature was not directly inspected, however, from the entrance it was possible to see a large number of potential crevice roost locations. This feature was considered to offer moderate bat roost potential, including potential for use by roosting bats during the hibernation period.

5.3.6 Several trees on site offer moderate bat roost potential, with the location of these trees denoted by Target Note 2 (Appendix 2 and Plate 7). All the features are considered to have been caused by bacterial infection (Disease & Decay PRFs, see Plate 7).

Plate 6. Mill race located adjacent to River Calder

Plate 7. Example of tree with moderate bat roost potential (2016)

Bat transect

5.3.7 9th September 2019 – (Sunset 19:39) – The temperature at the beginning of monitoring was 13ºC, and calm with 100% cloud. The weather conditions remained largely the same throughout the monitoring and it remained dry. Forty-seven minutes after the start of the survey it began to drizzle. It continued to drizzle for the remainder of the survey and the other conditions remained the same.

5.3.8 Common pipistrelle and Daubenton's bat were confirmed as present on site during the transect survey, with other *Myotis* species potentially also using the site. High levels of bat activity (classed as >10 bat passes) were recorded from point count locations (see 4 and 7, Appendix 5) adjacent to the canal and the River Calder, with a moderate level of activity recorded from the site interior at point count location 2 (Appendix 5). Lower levels of bat activity were recorded from other locations in the interior of the site. No bats were recorded after 21:13. The eight passes recorded from P2 relatively early on in the survey comprised mostly commuting common pipistrelles flying in an easterly direction.

Static monitoring survey

5.3.9 The breakdown of static monitoring survey data by recording site is provided in Appendix 6.

5.3.10 A total of 7202 sound files were recorded across both static detector positions. These calls were assigned to either common pipistrelle (7017 sound files), bats of a *Myotis* species (167 sound files), brown long-eared bat (9 sound files), Leisler's bat (6 sound files), soprano pipistrelle (2 sound files) or noctule (1 sound file). The *Myotis* calls were not positively identified to species level, given the difficulty in confidently undertaking this work. It is however noted that Wildlife Acoustics Kaleidoscope Pro AutoID software identified calls fitting the typical parameters of whiskered bat *Myotis mystacinus*, from both static locations.

5.3.11 Far higher levels of common pipistrelle activity (6000 of the 7202 sound files – 113 sound files/ hour) were recorded from Location 2 (Figure 2) in the site interior, relative to Location 1, near the northeast corner of the site. Common pipistrelle was also recorded closer to sunset (within 6 minutes) and sunrise (within 15 minutes) from Location 2 relative to Location 1, indicating this location is closer to nearby roost site/s. This observation tallies with the recording during the transect of commuting bats flying in an easterly direction close to this location, presumably from roost locations in buildings to the southwest of the site. Slightly higher level of *Myotis* bat activity were also recorded from Location 2, with similar levels of brown long-eared bat activity recorded from both locations. Leisler's bat and soprano pipistrelle were recorded from Location 1 only, with noctule recorded from Location 2 only.

5.3.12 Comparison undertaken using the EcoBat web resource (Appendix 7) showed that common pipistrelle activity in both locations was consistently at a high level. In addition, the level of *Myotis* activity was at a consistently medium/high level in both recording locations. The activity recorded from other bat species was generally classed as being at a low level.

Bat summary

5.3.13 The presence or absence of roosting bats on site has not been confirmed, however, there is potential for bats to roost within several site trees or within the mill race culvert, close to the southern boundary of the site.

5.3.14 Bat activity surveys show that bats made extensive use of the site, with particularly high level of common pipistrelle activity. It is notable that light averse species, notably included bats of the *Myotis* genus, also made extensive use of the site interior during the survey period. Bats appear to forage extensively within the site, with this area also likely to comprise a well-used commuting route for bats.

Birds

5.3.15 No bird Species of Principal Importance on the NERC Act 2006 or birds on the red list of the Birds of Conservation Concern (Eaton *et al*., 2015) were recorded from the site.

5.3.16 Bird species recorded on site during the site visit in 2019 included great spotted woodpecker *Dendrocopus major*, robin *Erithacus rubecula* and coal tit *Periparus ater*. The list is not exhaustive, and the site has the potential to support a greater number of common resident species and summer migrants.

Otter & Water vole

5.3.17 No records Otter *Lutra lutra* or water vole were provided by WYEC for locations within a 2km radius of the site.

5.3.18 A survey of the river and canal along the section adjacent to the application site plus 100m both east and west of the site revealed several otter spraints both below and above a weir on the river adjacent to the site. No signs of otter were recorded on the canal and no signs of water vole were recorded on either the river or canal. Neither the site nor the north riverbank offer good suitability for use by resting otter as it largely comprises Himalayan balsam.

White clawed crayfish

5.3.19 No records of white clawed crayfish were provided by WYEC for locations within a 2km radius of the site. White clawed crayfish are not considered to be a receptor to the proposed scheme.

Reptiles

5.3.20 No reptile records were provided by WYER for any locations within 2km site. Given the lack of records, reptiles are not considered likely to be a receptor to the proposed scheme.

Invasive species

5.3.21 Himalayan balsam dominates the majority of the ground on site. This species is a non-native invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Invertebrates

5.3.22 The common and widespread habitats present on site are unlikely to support especially diverse or uncommon assemblages of invertebrate species.

Plants

5.3.23 The habitats present do not include long-established unimproved grasslands, Ancient Woodlands or other diverse botanical communities and protected or priority plant species are unlikely to be present.

Table 2. Ecological importance of each habitat, species or species group on site and adjacent

Habitat, Species or Species Group	Ecological value
A1.1.1 Woodland	Local
C3.1 Tall ruderal	Site
Amphibians	Site
Badger	Site
Bats	Local
Birds	Site
Invasive species	Himalayan balsam present
Invertebrates	Site
Otter	Site
Plants	Site
Reptiles	Unlikely to be present
Water vole	Not present
White clawed crayfish	Unlikely to be present in the River Colne

6. Assessment

6.1 Proposals

6.1.1 The proposed development comprises the creation of a camp site which includes the construction of a compost toilet building, four camping pods, camper van parking spaces (5 No.), a wood store, a new camp-fire area and 12 parking spaces. Semi natural habitats that will be lost, comprising areas of semi natural broad-leaved woodland and tall ruderal, with new hedges to be planted.

6.1.2 The assessment of impacts is based upon the proposed plan entitled: Proposed Camping Site at land adjacent to Lock 38, off Marsden Lane, William Best 2018-541-03 B.

6.2 Assessment of Effects, Mitigation Measures and Enhancements

6.2.1 The assessment of effects and mitigation measures are considered in relation to habitat, species or species group.

Designated sites

6.2.2 The site is located within approximately 10m of Huddersfield Narrow Canal LWS. This site has a well-established track running alongside and already experiences a high number of visitors. The existing track will act as a buffer between the proposed campsite and canal helping to prevent direct impacts of the proposed development upon the designated site.

6.2.3 Indirect impacts upon the canal as a result of increased human presence and associated noise are expected to be minimal given the existing high level of human use of this area.

Habitats

6.2.4 The development will result in the loss of some of the woodland trees and tall ruderal vegetation, however, the impact will be partially offset by the local eradication of Himalayan balsam which now is dominant in the woodland. The proposals include the planting of approximately 40m of native hedgerows and these measures, together with Himalayan balsam removal proposals may be secured through a Planning Condition requiring that an Ecological Design Strategy (EDS) be produced for the scheme. Retained trees will be protected during construction in accordance with measures prescribed in 'British Standard 5837 (2012): Trees in relation to design, demolition and construction'. Root Protection Zones (RPZ's) will be calculated and implemented to prevent harm to these features.

6.2.5 There is also limited potential for the proposed development to result in a pollution incident which, if it entered the River Colne, could affect downstream habitats. In order to minimise the risk of a pollution incident impacting either the canal or river, it is advised that the best construction practice and environmental management guidelines are followed. These guidelines include CIRIA guidance (Conolly and Charles, 2005) and various DEFRA/Environmental Agency guidelines (2016) that have replaced the Pollution Prevention Guidelines (Environment Agency, 2007).

Species and Species Groups

Badger

6.2.6 No actively used badger setts were present on site during the August 2019 survey of the site. however. this species may occasionally use the site for foraging and commuting. It is also possible that badger will re-establish or establish setts on site. As a result, a repeat badger survey of the site will be undertaken prior to commencement of the new campsite being constructed. An Ecological Clerk of Works (ECoW) will also deliver a Toolbox Talk on badger to site staff prior to vegetation clearance with this ECoW remaining on site during clearance to check for previously unrecorded setts beneath areas of bramble and dense stands of Himalayan balsam. This measure should be included in the EDS.

Bats

6.2.7 Roosting bats are subject to strict legal protections as detailed in Appendix 4. Neither site trees offering bat roost potential, or the mill race adjacent to the River Calder will be impacted by the proposed scheme. Roosting bats are subject to strict legal protections as detailed in Appendix 4.

6.2.8 The bat activity survey work undertaken has demonstrated that the site is used extensively by commuting and foraging bats, including several bat species which are known to be extremely light averse (*Myotis* spp. and brown long-eared bat).

6.2.9 New artificial lighting has the potential to deter commuting and foraging bats from using the site, potentially resulting in impacts of significance to nature conservation at the local level. The client has agreed to restrict site lighting to low level, designed with the sole intention of indicating the routes of key pathways across the site. The proposals are to result in zero light spill across both the canal and River Colne as shown in Appendix 8. If new site lighting is kept to an absolute minimum then it should be possible to restrict impacts on foraging and commuting bats to the site level, however, a detailed lighting plan, to include a lux plan, would be required to demonstrate this. The detailed lighting plan would require the input of an ecologist and could be included in an Ecological Design Strategy (EDS).

6.2.10 Enhancements for bats will include the provision of three bat boxes installed on trees adjacent to the river.

Birds

6.2.11 Nesting birds are subject to legal protection (Appendix 4) which amongst other things makes it an offence to take, damage or destroy a bird nest. In the absence of mitigation, the removal of site trees has potential to result in the destruction of active nests. Consequently, if they are removed during the bird nesting period (March-August (inclusive) then these works will be preceded by nesting bird check to be undertaken by an ecologist.

6.2.12 Enhancements for birds will be provided through the installation of three bird boxes installed close to the bat boxes, on trees adjacent to the River Colne, this will prevent the bat boxes from being occupied by birds. The measures are expected to be secured through a planning condition requiring an Ecological Design Strategy (EDS).

Invasive species

6.2.13 A plan needs to be formalised for the eradication of Himalayan balsam. This species is included on Schedule 9 of the Wildlife and Countryside Act (1981) as amended. Consequently, it is an offence to plant or otherwise cause this plant species to grow in the wild (Appendix 4). The measures to control Himalayan balsam may be secured through a planning condition requiring an EDS.

Otter

6.2.14 Riverbank vegetation will not be disturbed. An ECoW will deliver a Toolbox Talk on otter to site staff prior to other vegetation clearance with this person remaining on site during clearance as a precaution, in the unlikely event that previously unrecorded holts are discovered beneath dense stands of Himalayan balsam or bramble. This measure should be included in the EDS.

6.3 Conclusions and Residual Effects

6.3.1 If the mitigation and enhancement recommendations detailed to in this document are enacted in full, then it is assessed that no significant residual effects need result from the scheme as proposed.

7. References

Collins J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines. The Bat Conservation Trust.

Connolly S and Charles P. (2005) Environmental Good Practice Pocket Book. CIRIA, London.

Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746.

Environment Agency (2007) Pollution Prevention Guidelines – Works and maintenance in or near water: PPG5. Now retracted, but available from: https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg

Froglife (1999). Froglife Advice Sheet 10: reptile survey. Froglife, London.

Gent T and Gibson S (2003). Herpetofauna Workers Manual. JNCC, Peterborough.

Harris S, Cresswell P and Jefferies D (1989). Surveying Badgers. Mammal Society.

CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

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

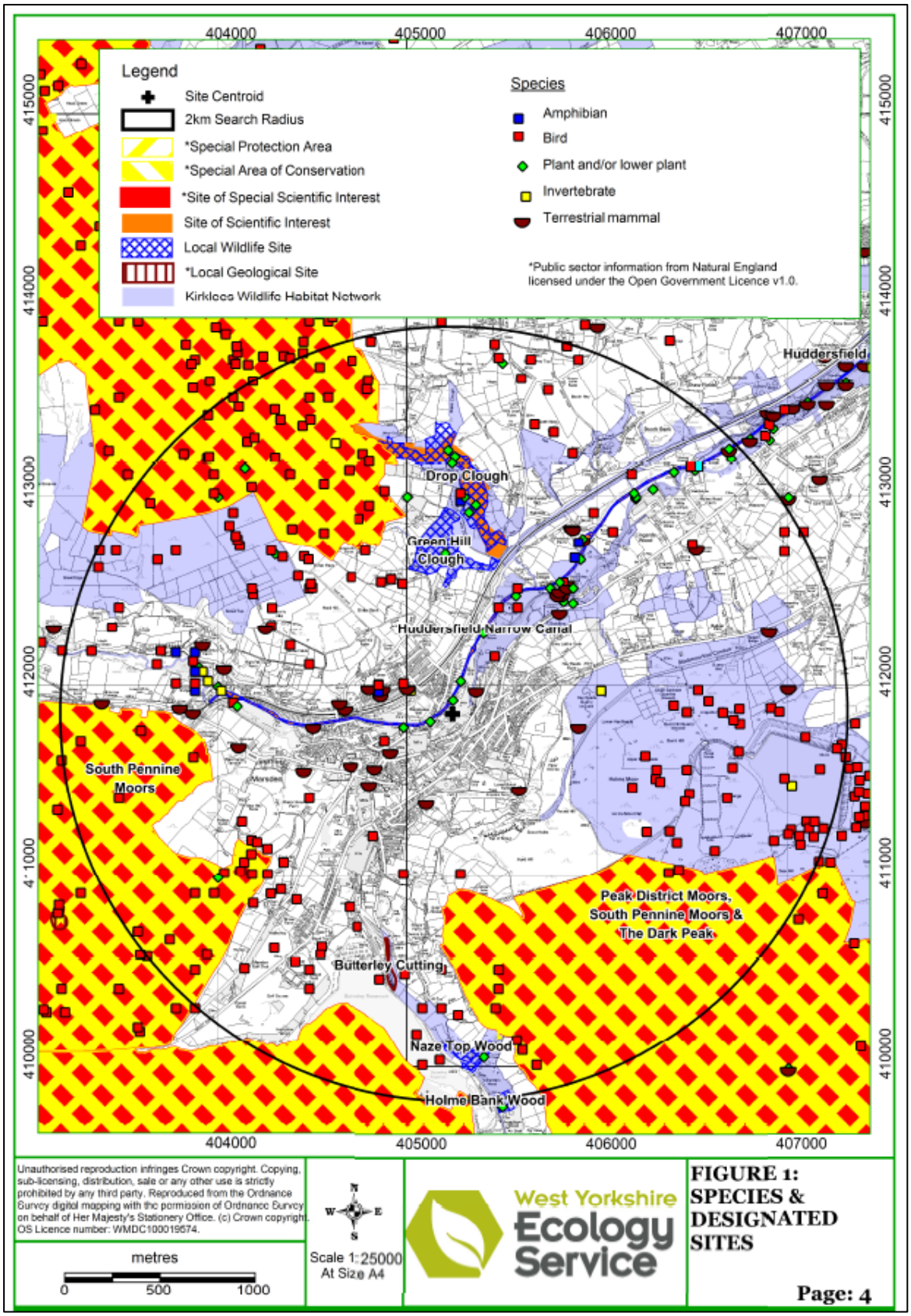
Joint Nature Conservation Committee (2010). Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit. Reprinted by JNCC, Peterborough.

MEC (2016) Land off Warehouse Hill Road, Preliminary Ecological Appraisal. Middleton Ecological Consultancy, Barnsley.

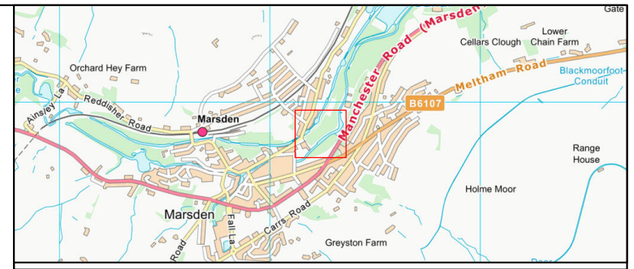
Mitchel- Jones AJ (2004) Bat Mitigation Guidelines, English Nature.

Rodwell JS (2006), NVC Users' Handbook. JNCC.

Appendix 1. Designated Sites Plan



Appendix 2. Phase 1 Plan



Survey Information	
	Site boundary
Phase 1 Habitat Survey	
	Semi-natural broadleaved woodland
	Tall ruderal
	Ephemeral short perennial
	Bare ground
	Scattered tree
X	Target note

Target Note:
[1] Disused badger sett
[2] Trees with moderate bat roost potential
[3] Mill race (outlet)

N

0 5 10 20
Metres

PROJECT TITLE

LAND ADJACENT TO LOCK 38, MARSDEN

DRAWING TITLE

Figure 1. Phase 1 Habitat Plan

VER	DATE	REMARKS	Drawn	Checked
1.4	10/09/19	Phase 1	MP	PM

DRAWING NUMBER:
MIDDLETONBELLECOLOGY/Lock38Marsden/Phase 1

SCALE	PLOT SIZE	DATUM	PROJECTION
1:800	A3	OSGB	BNG

Middleton Bell Ecology
33 Wilthorpe Road, Barnsley, South Yorkshire, S75 1JA
www.middletonbellecology.co.uk
T: 01226 286282

Appendix 3. Plant Species Recorded on Site

Full Species List		
English Name	**Scientific Name**	**DAFOR Rating**
A1.1.1 Broad leaved Semi Natural Woodland		
Goat willow	*Salix caprea*	A
Hybrid willow	*Salix caprea x cineraea*	O
Hedge bindweed	*Calystegia sepium*	O
Holly	*Ilex aquifolium*	R
Himalayan balsam	*Impatiens glandulifera*	D
Nettle	*Urtican dioica*	Loc A
Bramble	*Rubus fruticosus*	Loc D
Silver birch	*Betula pendula*	O
Sycamore	*Acer psuedoplatanus*	O
Broad buckler fern	*Dryopteris dilatata*	Loc F
Elder	*Sambucus nigra*	R
Cherry Laurel	*Prunus laurocerasus*	R
Penunculate oak	*Quercus robur*	R
Rhododendron	*Rhododendron ponticum*	R
Garden privet	*Ligustrum ovalifolium*	R
Hawthorn	*Crateagus monogyna*	R
C3.1Tall Ruderal		
Nettle	*Urtica dioica*	Loc D
Rosebay	*Chamerion angustifolium*	Loc D
Cock'sfoot	*Dactylis glomerata*	F
Dandelion	*Taraxicum officinale*	O
Hogweed	*Heracleum sphondilium*	O
Bramble	*Rubus fruticosus*	F
Yorkshire fog	*Holcus lanatus*	O
Broad leaved dock	*Rumex obtusifolius*	O
False oat-grass	*Arhenatherum elatius*	O
Cleavers	*Gallium aperine*	Loc A
Creeping buttercup	*Ranunculus repens*	R
Male fern	*Dryopteris filix-mas*	Loc F
Spear thistle	*Cirsium vulgare*	O
Canadian fleabane	*Conyza canadensis*	R
Creeping thistle	*Cirsium arvense*	Loc A
Lesser burdock	*Arctium minus*	R
Common bent	*Agrostis capillaris*	R
Ribwort plantain	*Plantago lanceolata*	R
Great plantain	*Plantag major*	R
Hybrid willowherb	*Epilobium x*	O

D = Dominant, **A** = Abundant, **F** = Frequent, **O** = Occasional, **R** = Rare

Appendix 4. Relevant Legislation and Planning Policy

Wildlife legislation relating to statutory designated sites and species is summarised in Table A1 and A2 below. This legal information is intended for summary only, and the original legal documents should be consulted if a detailed understanding is required.

Table A1. Legislation relating to designated sites and habitats

Designated Site	Legal Status
Special Area of Conservation (SAC)	SACs are strictly protected areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed in Annexes I and II of the EC Habitats Directive. The Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 are the legal instrument for implementing the Habitats Directive in the UK. SACs are of at least European importance to nature conservation.
Special Protection Area (SPA)	SPAs are strictly protected sites classified in accordance with Article 4 of the EC Directive on the Conservation of Wild Birds (79/409/EEC), also known as the Birds Directive. They are classified for rare and vulnerable birds, listed in Annex I of the Birds Directive, and for regularly occurring migratory species. The Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 are the legal instrument for implementing the Birds Directive in the UK. SPAs are of at least European importance to nature conservation.
Site of Special Scientific Interest (SSSI)	SSSIs are the national suite of sites providing statutory protection for the best examples of the UK's flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs have been re-notified under the Wildlife and Countryside Act 1981 (as amended). Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000. SSSIs are of at least national importance to nature conservation
Local Wildlife Site (LWS)	While they have no direct legal status, Local Wildlife Sites are considered important enough to receive recognition within the planning system. National planning policy requires local authorities to identify Local Wildlife Sites and provide for their protection through local policy.

Table A2. Legislation relating to species

Species	Legal Status
European protection	
European Protected Species (EPS) (including bats, Great Crested Newt (GCN), otter and hazel dormouse)	These animal species and their breeding sites or resting places are protected under Regulation 41 of the Conservation of Habitats and Species Regulations 2017, which makes it illegal to: • Intentionally or deliberately capture, injure or kill any such animal or to deliberately take or destroy their eggs; • Deliberately disturb such an animal;

Species	Legal Status
	• Damage or destroy a breeding site or resting place of such an animal. European Protected Species (EPS) licences can be granted by Natural England in respect of development to permit activities that would otherwise be unlawful under the Conservation Regulations, providing that the following 3 tests (set out in the EC Habitats Directive) are passed: • The development is for reasons of overriding public interest; • There is no satisfactory alternative; and • The favourable conservation status of the species concerned will be maintained and/or enhanced. Under Regulation 9(5) of the Conservation Regulations, Planning Authorities have a legal duty to 'have regard to the requirements of the EC Habitats Directive in the exercise of their functions'. This means that they must consider the above 3 tests when determining whether Planning Permission should be granted for developments likely to cause an offence under the Conservation Regulations. As a consequence, Planning Applications for such developments must demonstrate that the 3 tests will be passed. Natural England also allow sites to be registered on the Bat Low Impact Class Licence to permit activities that would otherwise be unlawful under the Conservation Regulations where the 3 tests can be passed and the bat roosts to be impacted are of low conservation status.
National protection	
European Protected Species and other species including water vole and white clawed crayfish	These animals receive full protection under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000), which makes it illegal (subject to exceptions) to: • Intentionally kill, injure or take any such animal; • Intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any such animal; and • Intentionally or recklessly disturb such animals while they occupy a place used for shelter or protection.
Common amphibians and reptile species	These animals receive limited protection under The Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000), which makes it illegal to intentionally kill or injure any such animal.
Badger	The Protection of Badgers Act 1992 makes it illegal to wilfully kill or injure a Badger or attempt to do so and also make it illegal to intentionally or recklessly interfere with a Badger sett. This includes damaging or destroying a sett, obstructing access to a sett and disturbing a Badger while it is occupying a sett. Licences can be granted by Natural England to permit sett closure and/or disturbance between July and November inclusive.
Schedule 1 birds	Special penalties relate to offences concerning birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). In addition to the offences detailed above relating to all wild birds, it is

Species	Legal Status
	illegal to intentionally or recklessly disturb any Schedule 1 bird or their dependent young while nesting.
All bird species	All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000), which makes it illegal (subject to exceptions) to: • Intentionally kill, injure or take any wild bird; • Take, damage or destroy the nest (whilst being built or in use) or eggs of any wild bird.
Invasive species	The Wildlife and Countryside Act 1981 (as amended) contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9 of the Act. In relation to Schedule 9 plants it is an offence to plant or otherwise cause these plant species to grow in the wild.

Species and Habitats of Principal Importance
Planning authorities have a duty under Section 40 of the NERC Act 2006 to have regard to priority species and habitats in exercising their functions including development control and planning. In compliance with Section 41 of the NERC Act, the Secretary of State has published a list of species and habitats considered to be of principal importance for conserving biodiversity in England under the UK Post-2010 Biodiversity Framework. This is known as the list of Habitats and Species of Principal Importance (HPI/SPI). The HPI/SPI list is used to guide planning authorities in implementing their duty under the NERC Act.

National Planning Policy Framework
The National Planning Policy Framework for England was revised in 2018. This document states that plans should 'promote the conservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity'. It also puts an emphasis on refusing development which would result in the 'loss or deterioration of irreplaceable habitats (such as ancient woodland)' unless there are 'wholly exceptional reasons and a suitable mitigation strategy exists'.

Local Biodiversity Action Plans
The HPI/SPI list included on Section 41 of the NERC Act 2006 is supported by a series of Local Biodiversity Action Plans (LBAPs), usually set up on a local authority local authority administrative boundary basis. Each LBAP identifies those habitats and species considered to be most important in that area (usually referred to as priority habitats and species). Commonly, an LBAP will identify a number of habitats and species for which "action plans" have been prepared.

Appendix 5. Bat Transect Plan

405200

405300

411900

411800

Pp (5), Md (5), M. (1)

Pp (2)

Pp (1)

Pp (2)

Pp (3), M. (1)

Pp (11), M. (3)

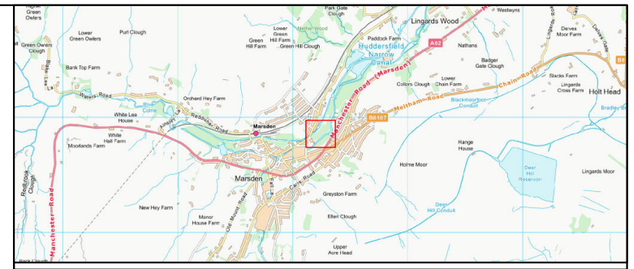
M. (1), Pp (1)

Pp (1)

Pp (2)

Pp (1)

Pp (8)



Survey Information	
	Site boundary

Transect Walking Section - Count (all species)	
	0 bat passes
	1-5 bat passes
	6-10 bat passes;
	>10 bat passes

Point Count (all species)	
	0 bat passes
	1-5 bat passes
	6-10 bat passes
	>10 bat passes

Point Count - Timings

[1] 19:39 -19:49
[2] 19:50 - 20:00
[3] 20:03 - 20:12
[4] 20:15 - 20:25
[5] 20:27 - 20:37
[6] 20:39 - 20:49
[7] 20:50 - 21:00
[8] 21:03 - 21:13
[9] 21:15 - 21:25

Survey Information:
Start position - point count location
Start -
Finish -
Sunset -

Species Codes:
Md - Daubenton's bat
M. - Myotis (unidentified)
Pp - Common pipistrelle

N

0 10 20
Metres

PROJECT TITLE

LAND ADJACENT TO LOCK 38, MARSDEN

DRAWING TITLE

Figure 1 . Bat Transect Plan 9th September 2019

VER	DATE	REMARKS	Drawn	Checked
1.1	12/09/19	Bats - Transect	MP	PM

DRAWING NUMBER:

Redlands/Bats/Transect

SCALE	PLOT SIZE	DATUM	PROJECTION
1:850	A3	OSGB	BNG

Middleton Bell Ecology
33 Wilthorpe Road, Barnsley, South Yorkshire, S75 1JA
www.middletonbellecology.co.uk
T: 01226 286282

Appendix 6. Bat Static Monitoring Summary Data

Location reference	Grid Ref	Start date	Species	Total no sound files	Nights recorded	First bat (h)	Last bat (h)	Sunset	Sunrise	Bats/ night	Max sound files/ night	Min. sound files/ night	Bats/ hour	Night hours total
1	SE0527211913	03.09.19	*Myotis* spp.	67	5	20:43	05:28	19:48	06:24	13.4	19	7	1.27	52.80
1	SE0527211913	03.09.19	*Nyctalus leisleri*	6	3	20:53	04:37	19:48	06:24	1.2	3	0	0.11	52.80
1	SE0527211913	03.09.19	*Pipistrellus pipistrellus*	1017	5	20:01	06:04	19:48	06:24	203.4	418	32	19.26	52.80
1	SE0527211913	03.09.19	*Pipistrellus pygmaeus*	2	2	20:42	20:42	19:48	06:24	0.4	1	0	0.04	52.80
1	SE0527211913	03.09.19	*Plecotus auritus*	8	4	21:05	03:00	19:48	06:24	1.6	4	0	0.15	52.80
2	SE0521811838	03.09.19	*Myotis* spp.	100	5	20:13	05:26	19:48	06:24	20.0	30	11	1.89	52.80
2	SE0521811838	03.09.19	*Nyctalus noctula*	1	1	21:02	21:02	19:48	06:24	0.2	1	0	0.02	52.80
2	SE0521811838	03.09.19	*Pipistrellus pipistrellus*	6000	5	19:54	06:09	19:48	06:24	1200.0	2028	358	113.64	52.80
2	SE0521811838	03.09.19	*Plecotus auritus*	1	1	01:47	01:47	19:48	06:24	0.2	1	0	0.02	52.80

Appendix 7. EcoBat Analysis

Location 1

Location	Date	Species	Passes	Percentile	Activity Level	Reference Range Size
Location 1	03/09/2019	*Myotis* spp.	7	53	medium	96
Location 1	04/09/2019	*Myotis* spp.	12	66	medium/high	96
Location 1	05/09/2019	*Myotis* spp.	19	74	medium/high	96
Location 1	06/09/2019	*Myotis* spp.	20	76	medium/high	96
Location 1	07/09/2019	*Myotis* spp.	9	57	medium	96
Location 1	03/09/2019	Leisler's bat	3	33	low/medium	12
Location 1	04/09/2019	Leisler's bat	2	23	low/medium	12
Location 1	06/09/2019	Leisler's bat	1	1	low	12
Location 1	03/09/2019	Common pipistrelle	184	95	high	162
Location 1	04/09/2019	Common pipistrelle	175	94	high	162
Location 1	05/09/2019	Common pipistrelle	418	98	high	162
Location 1	06/09/2019	Common pipistrelle	208	96	high	162
Location 1	07/09/2019	Common pipistrelle	32	81	high	162
Location 1	04/09/2019	Soprano pipistrelle	1	1	low	85
Location 1	05/09/2019	Soprano pipistrelle	1	1	low	85
Location 1	04/09/2019	Brown long-eared bat	1	1	low	23
Location 1	05/09/2019	Brown long-eared bat	1	1	low	23
Location 1	06/09/2019	Brown long-eared bat	4	41	medium	23
Location 1	07/09/2019	Brown long-eared bat	2	23	low/medium	23

Location 2

Location	Date	Species	Passes	Percentile	Activity Level	Reference Range Size
2	43711	*Myotis* spp.	16	71	medium/high	96
2	43712	*Myotis* spp.	11	62	medium/high	96
2	43713	*Myotis* spp.	15	70	medium/high	96
2	43714	*Myotis* spp.	28	79	medium/high	96
2	43715	*Myotis* spp.	30	80	high	96
2	43712	Noctule	1	1	low	92
2	43711	Common pipistrelle	1306	100	high	162
2	43712	Common pipistrelle	1319	100	high	162
2	43713	Common pipistrelle	2028	100	high	162
2	43714	Common pipistrelle	989	99	high	162
2	43715	Common pipistrelle	358	97	high	162
2	43714	Brown long-eared bat	1	1	low	23

Appendix 8. Lighting Constraints Plan