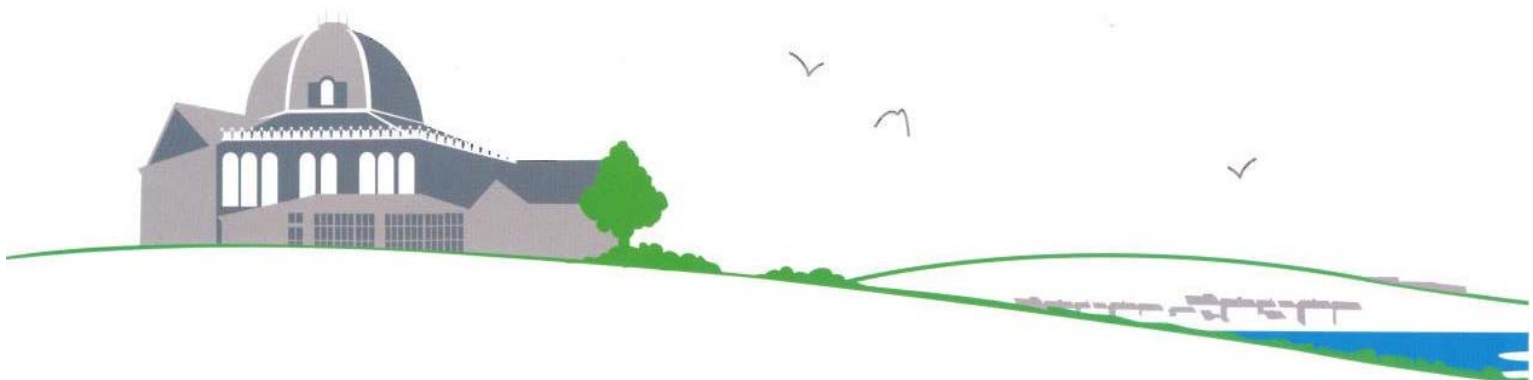




**CLITHEROE AUCTION MART CO LTD; MR J
TAYLOR, MS SARAH HOWARD AND MS SAMANTHA
HOWARD**

**WADDOW VIEW, LAND OFF WADDINGTON ROAD,
CLITHEROE**

ECOLOGICAL ASSESSMENT



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**WADDOW VIEW, LAND OFF WADDINGTON ROAD,
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ECOLOGICAL ASSESSMENT

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This project has been undertaken in accordance with PAA policies and procedures on quality assurance.



Signed: _____

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1. INTRODUCTION

Background

- 1.1 Penny Anderson Associates Ltd (PAA) was commissioned by Clitheroe Auction Mart Co Ltd; Mr J Taylor; Ms Sarah Howard and Ms Samantha Howard as consultant ecologists to carry out ecological assessments for Waddow View, land off Waddington Road, Clitheroe. A number of ecological surveys have been completed over the course of 2012, 2013 and 2014 of the proposed development area (PDA).
- 1.2 The first was by Bowland Ecology Ltd in September 2012. This consisted of an Extended Phase 1 Habitat survey, a water vole survey of the drain bordering the north-western boundary of the PDA and a bat emergence survey of the single storey stone barn that lies within the north-eastern corner of the PDA.
- 1.3 PAA carried out a site walkover survey in August 2013 to verify the results of the 2012 survey, repeated an Extended Phase 1 Habitat survey, evaluated the ecological resource and reviewed the mitigation and enhancement opportunities.
- 1.4 To address concerns expressed by Third Parties and in response to recommendations made by the Planning Inspector following the Public Local Inquiry on 6-9 August and 19 September 2013, a bat survey of a stone barn and a presence of water vole and otter assessment were repeated in 2014.

Aims

- 1.5 The purpose of this report is to describe the survey methods adopted and present the results of all surveys carried out over 2012, 2013 and 2014. It includes, in summary:
 - An updated Extended Phase 1 Habitat survey and associated Desk Study to establish the locations of any statutory and non-statutorily designated sites that may be affected by the proposed development;
 - The results of protected species surveys and assessments for bats, water vole and otter;
 - Assesses the likely impact of the development proposals on ecological receptors within the PDA; and
 - Reviews the mitigation and enhancement opportunities as part of the Masterplan.

Legislative Context

- 1.6 Certain species of animals and plants are classed as European Protected Species under the Conservation of Habitats and Species Regulations 2010 (Habitat Regulations 2010) and are therefore legally protected.
- 1.7 Some species not protected under the Habitat Regulations (2010) are afforded protection separately under the Wildlife and Countryside Act 1981 (as amended), whilst certain species are afforded protection under both the WCA 1981 and the Habitat Regulations 2010.

- 1.8 Additionally, certain habitats and species are listed in the UK's Biodiversity Action Plan (now Section 41 of the NERC Act). Priority Species under the BAP are now referred to as 'species of principal importance' for the conservation of biodiversity in England and Wales (Section 74 of the CRoW Act 2000, and Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.
- 1.9 Regional Biodiversity Action Plans identify priorities for local habitats and species and those listed within the Lancashire BAP are of particular relevance. In England local authorities are required to take measures under the National Planning Policy Framework (NPPF) to protect the habitats of these species and habitats from further decline, to protect species from the adverse effects of development, and refuse planning permission for development that harms these species and habitats unless the need for, or benefit of, the development clearly outweighs the harm.

2. METHODS

Desk Study

- 2.1 As part of the Extended Phase 1 Habitat survey approach a Desk Study was carried out. This consisted of a consultation exercise whereby statutory and non-statutory authorities, wildlife organisations, ecological records repositories and wildlife recorders were contacted to gather local and site-specific ecological information.
- 2.2 The main search zone encompassed a 1.5km area from the centre of the site (OS: SD 454 206). The initial stage of the desk study involved identifying any statutorily designated sites e.g. Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Protection Areas (SPA), Special Areas of Conservation (SAC), and RAMSAR Sites, and any habitats or species that have specific conservation value (e.g. Section 41 species) on, or within 1.5km of the PDA. The locations of any non-statutory sites (e.g. Local Wildlife Sites, Regionally Important Geological Sites) were also sought and an examination of the reasons for their notification carried out.
- 2.3 Biological information was requested from Lancashire County Council. Additionally, a number of other data sources were used, including the Natural England website (<http://www.naturalengland.org.uk/>); the Multi- Agency Geographic Information for the Countryside Interactive Map (MAGIC) (<http://www.magic.gov.uk/website/magic/>); and the National Biodiversity Network (NBN) (<http://www.searchnbn.net/>).
- 2.4 It should be noted that desk study results provide an indication of species presence but they do not confirm the actual absence or presence of any particular species. Protected species are often under-recorded in county wildlife databases.

Extended Phase 1 Habitat Survey

- 2.5 The Extended Phase 1 Habitat survey is based on the methodology of JNCC (2010). Phase 1 Habitat survey is a standard technique for classifying and mapping broad habitat types. During the survey, the presence, or potential presence, of protected species is also noted. The results are reported and presented on an annotated Extended Phase 1 Habitat survey map. This habitat map details the location and extent of all habitat types recorded within the site boundaries.
- 2.6 An initial survey was undertaken on by Alice Helyar (MCIEEM)¹ and Emma Kilduff (ACIEEM) of Bowland Ecology on the 6th March 2012 (Bowland Ecology 2012).
- 2.7 The Extended Phase 1 Habitat survey was repeated by experienced Ecologists Alistair Blackshaw (MCIEEM) and Sacha Rogers (MCIEEM) on 2nd August 2013.
- 2.8 On both occasions target notes were made for any habitat or feature of ecological interest and of any incidental sightings made or evidence recorded of notable species during the survey.

¹ *Chartered Institute of Ecology and Environmental Management*

- 2.9 Details were noted of habitats, for example, grasslands, along with an indication of the relative abundance of each plant species using the 'DAFOR' scale (where D = dominant; A = abundant; F = frequent; O = occasional; R = rare).

Survey Limitations

- 2.10 For both surveys the weather conditions were suitable, being dry with no appreciable wind or rain. The surveys were carried out during the optimum period for completing habitat surveys and the whole of the site was accessible. As a result, a comprehensive assessment of the habitats present and their potential to support legally protected species was possible.

Riparian Mammal Assessment (otter and water vole)

- 2.11 A number of Third Parties reported that otter were present on the PDA as part of the Local Inquiry. No evidence of residence or presence was found during the Extended Phase 1 Habitat survey in 2013. However, because of the concerns expressed a repeat assessment was carried out by ecologists Helen Staton (ACIEEM) and Kelly MacGillivray (ACIEEM) on the 10th June 2014.
- 2.12 There is currently no published methodology for undertaking otter (*Lutra lutra*) surveys although a range of publications relating to otter ecology and conservation do exist (e.g. Environment Agency 1999; Highways Agency 2001; Chanin 2003). Signs indicative of the presence of otters were searched for including otter spraint (faeces), footprints, sign heaps (piles of earth or sand scraped together by an otter), resting sites such as underground 'holts' and above ground 'couches'; and feeding remains e.g. fish carcasses. The survey encompassed suitable riparian habitat to a distance of 10m from the watercourse that cuts across the PDA.
- 2.13 A water vole survey of the drain bordering the north-west boundary of the PDA was carried out in September 2012 by Bowland Ecology. It was considered that the drain offered low potential habitat as it is prone to drying and polluted. No signs of water vole were observed during the survey.
- 2.14 The repeat water vole (*Arvicola amphibious*) survey looked to determine presence/absence. The survey methodology was based on the standard approach given in the *Water Vole Conservation Handbook* (Strachan 2011), with modifications made to suit the particular situation and habitat conditions. Water vole signs were searched for, including latrines, burrows, nests of reeds and sedges, feeding stations of chewed vegetation, pathways, footprints and 'lawns' around burrow entrances. In addition to the above, a number of features of the habitat were recorded, including width, depth and speed of watercourse, bank profile, substrate, amount of shade and vegetation cover, and the dominant plant species present. Any evidence of other riparian mammals, such as mink (*Mustela vison*) or brown rat (*Rattus norvegicus*) were looked for as this can help to inform the assessment of the suitability of the habitat for water vole.

Survey Limitations

- 2.15 Surveys for otter and water vole can be carried out any time of the year. However, it is generally considered that March-October inclusive is the optimum time for water vole assessments.

Bat Activity Survey

- 2.16 An inspection of the stone barn and a single bat emergence survey was carried out by Bowland Ecology in September 2012. The inspection did not find evidence of bats although common pipistrelle bats were recorded flying around the building. A total of three myotis bat, thought to be brown long-eared, were observed at the apex of the building. The survey did not provide conclusive evidence that bats were roosting in the building.
- 2.17 A further external building inspection was undertaken by PAA in 2013. However, a single emergence survey was not considered sufficient to claim with total confidence that the building is not used as a bat roost. Consequently, a building inspection and dusk and dawn activity survey were considered necessary.
- 2.18 The building inspection and activity survey was carried out by Helen Staton (ACIEEM) and Kelly MacGillivray (ACIEEM), both Natural England survey licence holders in respect of bats and their roosts (Registration Numbers: CLS00439 and CLS00075 respectively). Survey methods followed guidance within the Bat Mitigation Guidelines (Mitchell-Jones 2004) and the Bat Survey Good Practice Guidelines (Hundt 2012).
- 2.19 The building inspection survey was undertaken during daylight hours on 10th June 2014 with the aid of close-focusing binoculars (Avian 8x42: 6.5°), endoscope (ProVision 400), ladders and powerful torches (Clulite 1M candle-power) as required.
- 2.20 The external inspections involved walking slowly around the building and visually inspecting features such as gaps around door frames, gaps under felt/lead flashing, gaps at the wall plates and eaves, any fascia boards, barge boards and soffits, and areas of missing mortar, for any evidence of bat use. These features were also assessed for their potential to provide crevices for roosting bats or access points to other parts of the building, which may also be used for roosting e.g. hay lofts.
- 2.21 The internal inspection of the buildings involved systematically searching and examining all parts of the buildings with potential to support roosting bats and searching for their signs. Such signs of bats that were looked for included the presence of bat droppings, staining on crevices by fat oils or urine, prey residues (e.g. moth and butterfly wings) as well as the bats themselves. Potential access points that were noted included features such as missing brick-work, tiles or mortar, gaps within the brick-work, and any cavities or dark sheltered areas within the building.
- 2.22 The activity survey, dusk with follow on dawn, was carried out 10–11th June 2014. The dusk activity survey commenced 15 minutes prior to sunset, and continued for around 1.5hrs after sunset. The dawn activity survey, commenced 1.5 hrs prior to sunrise, continuing until sunrise when conditions were considered light enough that the likelihood of any bats returning to their roost was very low.
- 2.23 Each surveyor used a *Batbox Duet bat detector*, with a minimum of one AnaBat SD1 detector used per survey to record bat calls for later confirmation of any bat species. A digital thermometer (hygro-thermometer 810-190 www.etilt.com) was used to get an accurate temperature reading for the activity surveys.

Survey Limitations

- 2.24 Immediately prior to the activity survey there were periods of rain, which can suppress bat activity. However, there was no rain during the dusk and dawn surveys and other conditions such as temperature, were appropriate.

3. RESULTS

Desk Study

International and National Statutory Designated Sites

3.1 There are a number of designations under European and national law.

Special Areas of Conservation (SAC)

3.2 A SAC is a European site protected by The Conservation (Natural Habitats &c) Regulations 1994 (as amended). All terrestrial SAC in England are also SSSI. The additional SAC designation is recognition that some or all of the wildlife and habitats are particularly valued in a European context.

3.3 There are **no SAC** within the 1.5km search area.

Special Protection Areas (SPA)

3.4 These sites are strictly protected in accordance with Article 4 of the EC Directive on the conservation of wild birds (79/409/EEC) for rare and vulnerable birds (also known as the Birds Directive).

3.5 There are **no SPA** within the 1.5km search area

Ramsar Sites

3.6 Ramsar sites are designated under the International Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention).

3.7 There are **no Ramsar** sites within the 1.5km search area.

Sites of Special Scientific Interest (SSSI)

3.8 There are over 4,000 SSSI in England, covering around 7% of the country's land area. SSSI aim to represent the country's very best wildlife and geological sites.

3.9 There are two SSSI within the 1.5km search area:

- Coplow Quarry SSSI (SD 751 432) – designated for its geological interest, notably exposures of Coplow Knoll or Chadian age and its associated exposures and echinoderm fauna.
- Salthill and Bellmanpark Quarries SSSI (SD 758 427) – designated for its geological interest, notably Carboniferous limestone, fossiliferous Salthill Bank Beds (Chadian) and Salthill Cap Beds (Arundian).

Non-statutory Designated Sites

Regionally Important Geological and Geomorphological Sites (RIGS)

- 3.10 RIGS, also known as Local Geological Sites and Geodiversity Heritage Sites, are important sites that complement the SSSI coverage and are selected on the basis of their educational, geological, historical and/or aesthetic value. Although not given any statutory protection, RIGS are notified to the Local Planning Departments and may be listed on local authorities' development plans where they are protected via the planning process.
- 3.11 There are **no RIGS** within the 1.5km search area.

Local Wildlife Sites (LWS)

- 3.12 These are non-statutory designated sites administered by local authorities that are important for wildlife and earth heritage at a local (county) level. Local Wildlife Sites are included in Local Plans with a presumption against development. They go by different names regionally and in this region where they are referred to as Biological Heritage Sites (BHS). LWS make a significant contribution to the UK's biodiversity, play an important part in local Biodiversity Actions Plans and help local authorities meet their nature conservation targets.
- 3.13 There are nine non statutory wildlife sites within the 1.5 km search area. These are:
- Dog House Wood (BHS)
 - Primrose Lodge (BHS)
 - River Ribble, London Road to County Boundary (BHS)
 - Salthill Quarry (BHS)
 - Coplow Quarry and Pimlico Road Grasslands (BHS)
 - Cross Hill Quarry (BHS)
 - Sherburn Wood (BHS)
 - Boy Bank (BHS)
 - Clitheroe Castle Knoll (BHS)
- 3.14 The nearest BHS to the site is Castle Knoll, at approximately 500m to the south-west. Due to the distance from the site it is not predicted that any of the BHS sites will be adversely affected by the development.

Protected Species

- 3.15 A large number of records were returned of both Lancashire Key Species and NERC S.41. There are no records of protected species within the PDA boundary.

3.16 An online search carried out by Bowland Ecology revealed the following NERC S. 41 species within the 10km OS grid square SD74. These included:

Bats

- Soprano pipistrelle (*Pipistrellus pygmaeus*), 4 records recorded in 2005 (2), and 2006 (2).

Birds

- Common grasshopper warbler (*Locustella naevia*), 3 records between 2003 and 2009.
- Eurasian curlew (*Numenius arquata*) 78 records between 2001 and 2009.
- Eurasian tree sparrow (*Passer montanus*), 9 records between 2002 and 2009.
- House sparrow (*Passer domesticus*), over 100 records between 2008 and 2009.
- Grey partridge (*Perdix perdix*) 29 records most between 2002 and 2009.
- Lesser redpoll (*Carduelis cabaret*) 14 records between 2002 and 2009.
- Northern lapwing (*Vanellus vanellus*) 74 records between 2001 and 2009.
- Reed bunting (*Emberiza schoeniclus*) 2 records in 2009.
- Ring ouzel (*Turdus torquatus*) recorded between 2004 and 2009.
- Spotted flycatcher (*Muscicapa striata*) 47 records between 2001 and 2009.
- Tree pipit (*Anthus trivialis*) 16 records between 2002 and 2009.

Lepidoptera

- Wall butterfly (*Lasiommata megera*).
- Small heath butterfly (*Coenonympha pamphilus*).
- Duke of Burgundy (*Hamaeris lucina*).
- Cinnabar moth (*Tyria jacobaeae*).
- Latticed heath (*Chiasmia clathrata*).
- Shaded broad-bar (*Scotopteryx chenopodiata*).

- Water vole and hedgehog² and numerous flowering plants are also listed. However, the above have not been recorded within 500m of the PDA although bird and mammal species are likely to be present on the site and within the local area. As stated earlier species are often under-recorded in wildlife databases.

Extended Phase 1 Habitat Survey

Vegetation and Habitats

- 3.17 Please refer to Figure 1 Phase 1 Habitat map and Table 1 list of plant species.

Grassland

- 3.18 The site consists of several grassland fields. The most southerly of the fields was semi-improved grassland, the remainder were improved or species-poor semi-improved. All with the exception of the southerly field has been recently grazed. None of the fields supported grassland of noteworthy ecological value. (See Plates 1 and 2)

Hedgerows

- 3.19 The fields were bounded by hedgerows; two of these on part of the southern boundary and the north east boundary were species-rich and would possibly qualify as 'Important Hedgerow' under the Hedgerow Regulations 1997. Hedgerow species present were pedunculate oak (*Quercus robur*), ash (*Fraxinus excelsior*), crab apple (*Malus sylvestris*), holly (*Ilex aquifolium*), hazel (*Corylus avellana*), bird cherry (*Prunus padus*), elder (*Sambucus nigra*), hybrid willow (*Salix caprea* x *S. viminalis*), alder (*Alnus glutinosa*), elm (*Ulmus* sp. cf. *glabra*), hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*). The majority of hedgerows forming internal field boundaries within the site were subject to management by flailing; those forming the external site boundaries were, on the whole, tall, unmanaged hedgerows. Hedgerows are UK BAP Priority Habitats and provide value wildlife habitats and networks. All of the hedgerows on site were considered to be of at least local value.
- 3.20 Many of the hedgerows contained individual semi-mature and mature trees of varying condition and value, including trees of at least local value with respect to ecology. A number of trees contained suitable features for roosting bats. (See Plates 3, 4, 9 and 10)

Watercourse

- 3.21 The watercourse flowing through the centre of the site had varied channel morphology, a sandy/gravelly substrate with emergent channel vegetation at the upstream end where it was shaded by overhanging trees and becoming more silty and overgrown. Water depth was approximately 5cm with moderate flow. The ditch along the northern site boundary was more or less dry with abundant vegetation cover. No evidence of water vole was noted. The watercourse through the centre of the site was likely to support aquatic invertebrates and fish species. Both watercourses were considered to provide a habitat and networks of local value. (See plates 5 and 6)

² Hedgehogs are partly protected under Schedule 6 of the Wildlife and Countryside Act (1981). It is illegal to trap or kill them without a licence.

Stone Barn

- 3.22 The stone barn in the north-east of the site was in a dilapidated state and unsafe to enter. An external inspection confirmed that there is no internal roof cavity suitable to support brown long eared bat, though it is likely to be used by foraging bats. No evidence of bats such as droppings or feeding remains was observed. The barn was considered to have negligible potential to support 'void' dwelling species such as brown long eared bat. However, crevices in mortar work and gaps beneath roof slates provide opportunities for 'crevice' dwelling bats such as the pipistrelle species. No evidence of barn owl was noted during the external inspection of the stone barn and there were no obvious internal features (when viewed through the door) i.e. exposed beams or ledges suitable for roosting/nesting barn owl. (See plates 7 and 8)
- 3.23 As a result of the uncertainties surrounding use of the barn by bats for roosting as well as concerns expressed by Third Parties and recommendations made by the Planning Inspector a second activity survey was carried out. The results are presented in section 3.27 of this report.

Protected Species

- 3.24 No evidence of, or potential for other protected or notable species including otter, badger, amphibians, reptiles and terrestrial invertebrates was noted during the Extended Phase 1 Habitat survey. However, during the Local Inquiry a number of Third Parties had commented that otter had been seen in the vicinity of the PDA. As a consequence a repeat assessment for water vole and otter was carried out.

Riparian Mammal Assessment (water vole and otter)

- 3.25 Although there are sections where the banks would seem suitable for burrows and the riparian vegetation ostensibly is suitable there is evidence that the water quality is poor. No evidence of water vole presence was found.
- 3.26 Since the restriction of agricultural pesticides the otter population has grown and there has been a significant increase in their distribution (Crawford 2010). The River Ribble and its habitats support a rich assemblage of flora and fauna including salmon (*Salmo salar*), sea trout (*Salmo trutta spp.*) otter and water vole. However, the river is approximately 400m to the west of the PDA and although otter do travel overland, the watercourse and drain to the north of the PDA currently provide poor habitat. No evidence of otter presence or residence was found during the assessment.

Bat Activity Survey

Building Inspection

- 3.27 The surveyed barn is a small, two-storey, dilapidated solid stone building, with a pitched tiled roof. Attached on the southern side of the building is a single storey lean-to with a pitched corrugated roof. The majority of the stonework is intact although there are large cracks in the walls. On the western elevation is an open doorway that has missing stones above the wooden lintel which extends the opening on this elevation. On the north gable end there is an open hay door with a partially rotten wooden lintel above. The south gable end has an open doorway and the doors and windows to the lean-to are all open or missing. The roof is in a poor condition with substantial holes along the western face.

- 3.28 Internally, the building has a mezzanine level which is wooden in construction although in a dilapidated state. It was deemed unsafe for full inspection. The floors of the building are covered in debris and dirt making finding evidence of bat utilisation difficult. However, three scattered bat droppings were found on top of rubble on the floor.
- 3.29 The tiles of the roof are thought to hold low potential for bat roosting as although they are large stone tiles, the dilapidated and unstable condition of the roof may deter bats from roosting beneath them. The stone walls themselves hold a higher potential for bat roosting as internal crevices may lead into the network of the stone walls. The building is draughty, light and exposed to the elements due to its dilapidated condition.

Activity Survey

Table 2. Dates and weather conditions

| Date | Survey Type | Sunrise/ Sunset | Start Time | End Time | Weather |
|----------|----------------|--------------------|------------|----------|---|
| 10.06.14 | Dusk emergence | 21:39 | 21:15 | 23:00 | Heavy rain shower prior to the start of the survey. Rain stopped until approx 22:20 when light rain started until the end of the survey. Temperature 12.3°C humidity 83% at survey start, 11.8°C and 90% humidity by survey end. Cloud cover rose from 20 – 100%. |
| 11.06.14 | Dawn Re-entry | 04:39 | 03:10 | 04:40 | Dry with a light breeze. Temperature 12.5°C, humidity 85% at survey start, 12.3°C and 90% humidity by survey end. Cloud cover remained at 100%. |

- 3.30 Surveyors were positioned on the north and south corners of the building and regular checks were made into the building during both the dusk and dawn survey. The Anabat SD1 recorder was left inside the barn overnight and between the two surveys. This was to record activity levels inside the barn throughout the night.
- 3.31 Table 3 below provides a summary of the bat activity results, taken from surveyor's field observations and the Anabat data.

Table 3. Summary of Bat Activity results

| Survey | Species | Time recorded between | Total number of passes | Notes |
|--------|---------|-----------------------|------------------------|---|
| Dusk | Pip45 | 21:56 - 23:00 | 65 | Foraging around the barn throughout survey. Bats flying through and within the barn, although no bats emerged. First bats flew onto the site from a northerly direction. Also foraging within gardens north of the site and along the hedgerow. |

| Survey | Species | Time recorded between | Total number of passes | Notes |
|------------------|---------|-----------------------|------------------------|--|
| | Noctule | 22:54 | 1 | One pass near the end of the survey. Bat not seen. |
| Overnight | Pip45 | 23:00 - 03:10 | 163 | Constant foraging recorded on Anabat SD1 |
| Dawn | Pip45 | 03:10 - 04:22 | 28 | Two bats foraging around barn and along hedgerow north of the barn. 04:22 both bats left the site and headed towards the houses north of the site where it is thought they are roosting. |

- 3.32 No bats were seen to emerge from or re-enter the barn. It is thought that the bats recorded onsite are roosting nearby, potentially in one of the houses north of the site. Bats were recorded foraging within the barn and flying through.
- 3.33 The surveys have concluded that bats are not utilising the barn as a roost but for foraging only. The droppings recorded during the internal inspection are thought to be as a result of foraging bats. No evidence of a night/feeding perch was recorded (if the building was used as a feeding perch feeding remnants i.e. moth and butterfly wings and clustered rather than scattered droppings would be expected). As a result, no further surveys will be required and the building can be demolished without the need of a Natural England EPSL.
- 3.34 However, as it has been demonstrated that bats are using the building for foraging, it is recommended that any demolition work is to be undertaken during the winter months (September to February inclusive) to avoid the optimum bat activity period (May to August inclusive). This approach is recommended as bats are a highly mobile species and may temporarily roost in or beneath suitable roosting features during the summer active season.

4. APPRAISAL OF THE ECOLOGICAL EFFECTS

- 4.1 In terms of the proposed development the key ecological issues and constraints to be taken into account in site layout, design and management are:

Species-rich and Other Hedgerows

- 4.2 Hedgerows are a UK BAP Priority Habitat and valuable to wildlife, providing feeding and nesting opportunities birds and foraging and commuting corridors for bats. They also add ecological connectivity to the landscape joining areas of greenspace and they are means of genetic exchange for species. The internal hedgerows are assessed as species-poor, unmanaged (or managed by flailing) and these will be removed as part of the proposed development. However, the boundary hedgerows, which includes two hedgerows assessed as species-rich and likely to qualify as 'Important' under the Hedgerow Regulations 1997, will be retained.

- 4.3 It was demonstrated during the bat activity surveys that the hedgerow along the northern boundary is an important foraging and commuting route for bats in the area. This will be retained.

Trees

- 4.4 There are a number of trees scattered around the PDA and many as standards in the hedgerows. Most are native deciduous trees and include ash, common alder and goat willow. Two mature trees are assessed as having high potential as bat roosts and there are a number assessed as having moderate potential (refer to Figure 1 and Plates 9 and 10). The high potential and the majority of the moderate potential trees are in the boundary hedgerow or in the riparian corridor of the watercourse and these will be retained. Any tree planting as part of the landscaping scheme will be of native species.

Watercourse and Ditch

- 4.5 The watercourse is to be retained and enhanced as a wildlife green corridor. This will be an integral wildlife link in the network of retained hedgerows. Planting will be of native species and whenever possible of local provenance.

Habitats

- 4.6 Presently, the PDA consists of improved and semi-improved agricultural grassland which taken with the other ecological features, is an area considered to be of 'local' value for ecology. Nevertheless, any development will inevitably lead to the loss of greenspace. A number of open areas are integrated into the Masterplan, acknowledging the provision of greenspace is important in providing recreational space, visual amenity and wildlife habitat. An appropriate mechanism for management of greenspaces and ecological areas is needed if the ecological value of the site is to be maintained.

- 4.7 The creation of buffer strips of swards of grasses and herbs is just one approach that improves the visual appearance and the biodiversity of an area. Grasslands, and even more formally designed forms of public planting e.g. roadside trees, are valuable to wildlife. Grassed areas tend to have a high soil biomass, and earthworms and other soil fauna provide food for birds and may even form part of the feeding territory of badgers. Other mammals, such as foxes and hedgehogs, will benefit from the provision of new greenspace.

Improvements for Wildlife

- 4.8 Although open areas in an urban setting are planned and organised spaces, they need not necessarily be ecologically impoverished. Wherever possible and appropriate, planting will be of native species and of local provenance i.e. seeds or plants that can be traced back to a wild site. This is particularly important for trees as it has been shown that native trees, adapted to local soils, can withstand dry weather better and have evolved in association with native flora and fauna. Trees are in themselves microhabitats, providing feeding, nesting and shelter for wildlife (Agate 2000, Moffat 2006).
- 4.9 Although outside the control of the developer, it should be recognised that there will be a substantial increase in open greenspaces because of the large area given to gardens. It is usual for residents to plant trees, shrubs and flowering plants that potentially provide shelter, food, nesting opportunities for birds and form habitats for a wide range of species throughout the year. Gardens now form a major habitat in the UK, covering more land area than nature reserves (Du Feu 2005).
- 4.10 Other measures to attract and sustain wildlife can be introduced. This includes the provision of bat and bird boxes. Bat boxes are artificial roosts that encourage bats, which can be of various designs to accommodate different species. These can be added to the outside of buildings and trees and integrated in to the design of buildings. Examples include the Ibstock enclosed bat box for brick cavity walls, the Forticrete bat box for concrete outer walls, the Schwegler bat access panel 1FE and the Schwegler bat tube 1FR, both for insertion into brick walls (Gunnell *et al.* 2013). If situated strategically (for example, away from any external lighting around the building), these would provide suitable roosting opportunities for crevice-dwelling species and could be incorporated into the building design.
- 4.11 Similarly, bird boxes designed to attract a variety of species can be positioned on buildings. Nest boxes can be particularly valuable in situations where holes and cavities are few in newly constructed buildings. There is a wide range available that can be integrated into the structure of buildings as well as those that can be added following construction.
- 4.12 The Masterplan confirms that the majority of features of ecological value will be retained.

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TABLE

Table 1. Phase 1 Plant Species List

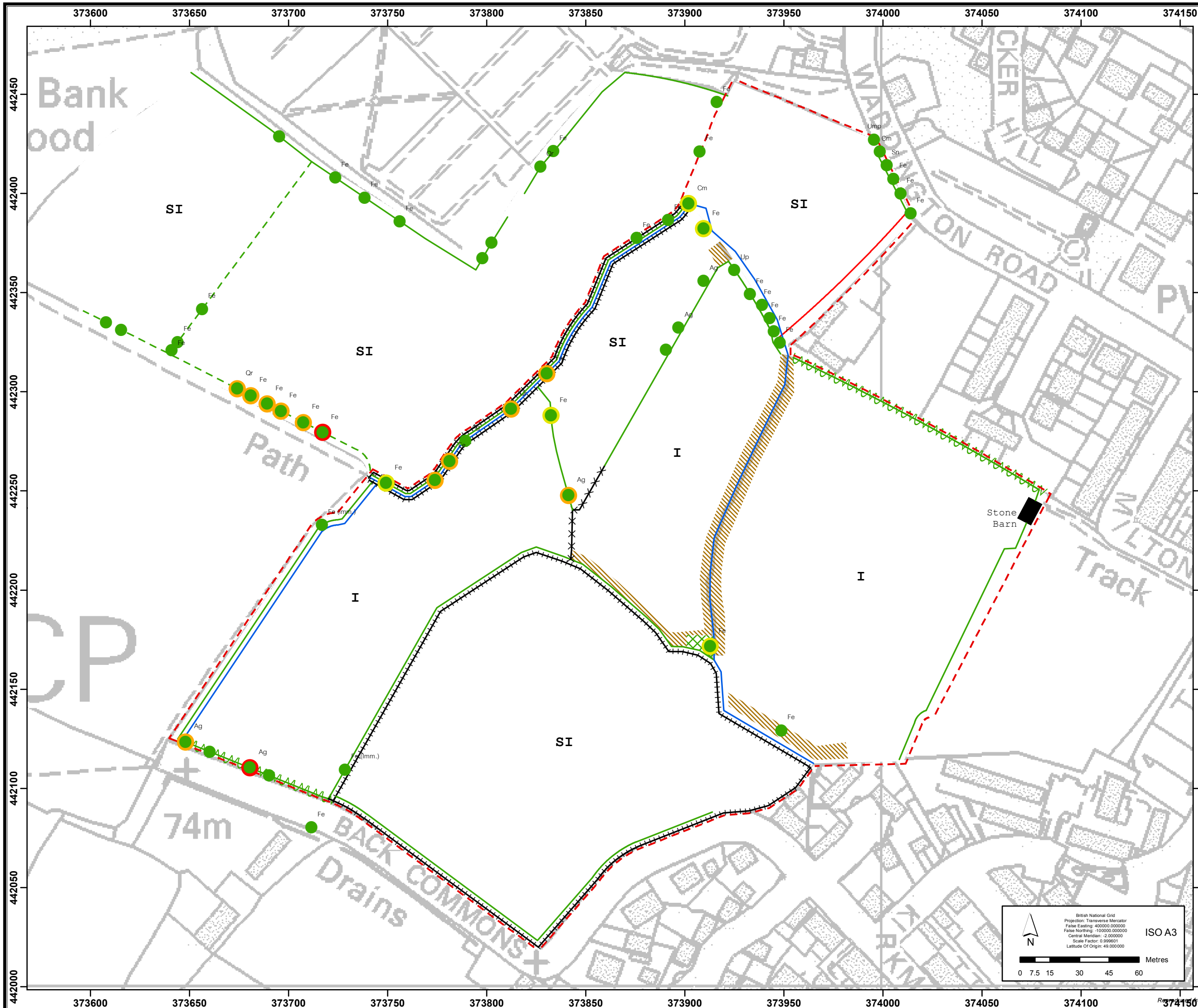
| English Name | Latin Name | Grasslands | Tall Ruderal | Trees/Hedges | Stream |
|--|---------------------------------------|------------|--------------|--------------|--------|
| Woody species | | | | | |
| Alder | <i>Alnus glutinosa</i> | | | o | |
| Ash | <i>Fraxinus excelsior</i> | | | f | |
| Bird cherry | <i>Prunus padus</i> | | | o | |
| Blackthorn | <i>Prunus spinosa</i> | | | o | |
| Crab apple | <i>Malus sylvestris</i> | | | r | |
| Dog rose | <i>Rosa canina</i> | | | o | |
| Elder | <i>Sambucus nigra</i> | | | o | |
| Elm species | <i>Ulmus sp. (cf glabra)</i> | | | r | |
| Elm species | <i>Ulmus sp. (cf procera)</i> | | | r | |
| Grey willow/Sallow | <i>Salix cinerea</i> | | | o | |
| Hawthorn | <i>Crataegus monogyna</i> | | | f | |
| Hazel | <i>Corylus avellana</i> | | | o | |
| Holly | <i>Ilex aquifolium</i> | | | o | |
| Horse chestnut | <i>Aesculus hippocastanum</i> | | | o | |
| Hybrid willow | <i>Salix caprea x Salix viminalis</i> | | | o | |
| Pedunculate oak | <i>Quercus robur</i> | | | o | |
| Willow sp. | <i>Salix sp.</i> | | | o | |
| Grasses, sedges, rushes and ferns | | | | | |
| Cock's-foot | <i>Dactylis glomerata</i> | f | | | |
| Common bent | <i>Agrostis capillaris</i> | f | | | |
| Common couch | <i>Elytrigia repens</i> | | o | | |
| Creeping bent | <i>Agrostis stolonifera</i> | o | | | |
| Creeping thistle | <i>Cirsium arvense</i> | o | | | |
| Crested dog's tail | <i>Cynosurus cristatus</i> | a | | | |
| False oat-grass | <i>Arrhenatherum elatius</i> | | f | | f |
| Hairy sedge | <i>Carex hirta</i> | o | | | |
| Lesser pond-sedge | <i>Carex acutiformis</i> | r | | | |
| Male-fern | <i>Dryopteris filix-mas</i> | | | o | |
| Marsh foxtail | <i>Alopecurus geniculatus</i> | f | | | |
| Meadow foxtail | <i>Alopecurus pratensis</i> | a | | | |
| Perennial rye-grass | <i>Lolium perenne</i> | a | | | |
| Red fescue | <i>Festuca rubra</i> | f | | | |
| Reed canary-grass | <i>Phalaris arundinacea</i> | | | | f |
| Smooth meadow-grass | <i>Poa pratensis</i> | | | o | |
| Soft-rush | <i>Juncus effusus</i> | o | | | |
| Tall fescue | <i>Schedonorus arundinacea</i> | o | | | |
| Timothy | <i>Phleum pratense</i> | f | | | |
| Tufted hair-grass | <i>Deschampsia caespitosa</i> | f | | | |
| Yorkshire fog | <i>Holcus lanatus</i> | a | | | |
| Herb species | | | | | |
| Amphibious bistort | <i>Persicaria amphibia</i> | | | | f |
| Bittersweet | <i>Solanum dulcamara</i> | | f | | |
| Bramble | <i>Rubus fruticosus agg.</i> | | f | | |
| Brooklime | <i>Veronica beccabunga</i> | o | | | |
| Common mouse-ear | <i>Cerastium fontanum</i> | o | | | |
| Common nettle | <i>Urtica dioica</i> | | o | | o |
| Cow parsley | <i>Anthriscus sylvestris</i> | | f | | |
| Creeping buttercup | <i>Ranunculus repens</i> | a | | | o |
| Dandelion | <i>Taraxacum officinale agg.</i> | f | | | |
| Dog's mercury | <i>Mercurialis perennis</i> | | | o | |
| Field horsetail | <i>Equisetum arvense</i> | | | | o |
| Garlic mustard | <i>Alliaria petiolata</i> | | | | r |
| Great willowherb | <i>Epilobium hirsutum</i> | | f | | f |
| Groundsel | <i>Senecio vulgaris</i> | r | | | |
| Hedge woundwort | <i>Stachys sylvatica</i> | | o | | |
| Herb-Robert | <i>Geranium robertianum</i> | | | o | |
| Himalayan balsam | <i>Impatiens glandulifera</i> | | | | f |
| Hogweed | <i>Heracleum sphondylium</i> | | f | | |
| Ivy | <i>Hedera helix</i> | | | f | |
| Lords-and-Ladies | <i>Arum maculatum</i> | | | o | |
| Marsh ragwort | <i>Senecio aquaticus</i> | r | | | |
| Meadowsweet | <i>Filipendula ulmaria</i> | | o | | o |

| | | | | | |
|-----------------------|----------------------------------|---|---|--|---|
| Redshank | <i>Persicaria maculosa</i> | o | | | |
| Rosebay willowherb | <i>Chamerion angustifolium</i> | | | | o |
| Silverweed | <i>Potentilla anserina</i> | r | | | |
| Smooth hawk's-beard | <i>Crepis capillaris</i> | o | | | |
| Spear thistle | <i>Cirsium vulgare</i> | o | | | |
| Upright hedge-parsley | <i>Torilis japonica</i> | | r | | |
| Wavy bitter-cress | <i>Cardamine flexuosa</i> | | | | r |
| Yellow-cress species | <i>Rorippa sp (cf palustris)</i> | | | | r |

DAFOR Key

d = dominant
a = abundant
f = frequent
o = occasional
r = rare

FIGURE



Legend

- Site boundary
- Scrub - dense/continuous
- I Improved grassland
- SI Poor semi-improved grassland
- Other, tall herb
- Amenity grassland
- Building
- Running water
- Hedge - species-rich
- Intact hedge - species-poor
- Defunct hedge - species-poor
- Fence
- Wall
- Boundary removed
- Tree (High bat potential)
- Tree (Moderate bat potential)
- Tree (Low bat potential)
- Tree (Negligible bat potential)

British National Grid
 Projection: Transverse Mercator
 False Easting: 400000.000000
 False Northing: -100000.000000
 Central Meridian: -2.000000
 Scale Factor: 0.999601
 Latitude Of Origin: 49.000000

ISO A3

0 7.5 15 30 45 60 Metres

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Project Name: **Waddow View, Clitheroe**

Discipline: **Ecology**

Title: **PHASE I HABITATS**

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|-------------------------------------|----------------------|
| Scale: 1:1,800 | Drawing No. Figure 1 |
| Drawn By: DHI | Originator: SRG |
| | Date: 01/07/2014 |
| PAA Ref: G:\DIAS01_Waddow_View\Maps | Revision: 1.1 |

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PLATES



Plate 1. Semi-improved grassland.



Plate 2. Semi-improved grassland with unmanaged hedge.



Plate 3. Hedge forming field boundary. Managed by flailing.



Plate 4. Species-poor hedgerow. Standard tree at corner of hedge.



Plates 5. Watercourse channel with debris.



Plate 6. Moderate flow in channel, vegetated banks.



Plate 7. Stone barn exterior.



Plate 8. Stone barn interior.



Plate 9. Semi-mature deciduous tree with high bat potential.



Plate 10. A number of standard semi-mature trees on PDA boundary.

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