Austin Foot ecology

Battlemead Common, Maidenhead, Berkshire – Willow Woodland

Preliminary Ecological Appraisal

For Royal Borough of Windsor and Maidenhead

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1. Non-technical Summary

1.1.1. The Royal Borough of Windsor and Maidenhead (RBWM) are exploring the possibility of creating a boardwalk and footpath in the south-east of Battlemead Common (hereafter referred to as "the Site") to create a circular walking route. Austin Foot Ecology was commissioned by RBWM to undertake a Preliminary Ecological Appraisal (PEA) comprising an extended Phase 1 habitat survey and ground-level tree assessment (GLTA) to determine any ecological constraints and opportunities associated with the proposals and the Site.

1.1.2. An extended Phase 1 habitat survey revealed the Site to predominantly comprise plantation broadleaved woodland dominated by willow with areas of semi-natural broadleaved woodland, standing water, running water (the White Brook), tall ruderal vegetation and semi-improved neutral grassland. Badger setts in the north-west of the Site were assessed to determine their current status with Himalayan balsam, an invasive non-native plant, identified in the north of the Site.

1.1.3. All trees were assessed within the Site boundary during the GLTA. Of these 92 trees/tree groups had features suitable for use by roosting bats. The results were as follows:

- 15 trees had high potential to support roosting bats;
- 24 trees had moderate potential to support roosting bats; and
- 53 trees/tree groups had low potential to support a bat roost.

1.1.4. The appraisal of the field surveys found that the Site has the potential to support the following species/species groups (see overleaf for summary table):

- Foraging and sheltering habitats for invertebrates (including stag beetles);
- Habitats for fish (in the White Brook) including European eels and bullhead;
- Foraging, sheltering and overwintering habitats for common toads;
- Sheltering and overwintering habitat for reptiles;
- Roosting, foraging and commuting habitat for bats;
- Badger setts and suitable foraging habitat for badgers; and
- Foraging and sheltering habitat for foxes, deer and hedgehogs.

1.1.5. In the absence of appropriate restrictions/controls the opening of the Site to the public may have an adverse impact upon the use of the Site by protected or notable species. Further survey for bats has been put forward with regard to the felling of trees to allow construction of the boardwalk and to make the area safe for the public. Mitigation measures are included within this report in order to ensure that the proposals remain acceptable in legislative terms in relation to protected species and habitats.

Summary of Protected Species and Species of Conservation Importance Considered in this Assessment

Species/Species Group	Status on Site	Recommendations/Further Action
Invasive flora	An area of Himalayan balsam was identified close to the White Brook in the north of the Site	• A specialist contractor should be employed to remove this plant from this area to prevent future spread along the White Brook to the wider Battlemead Common site or offsite areas.
Invertebrates (stag beetle and other species)	Suitable habitat for stag beetles (a Species of Principal Importance [SPI]) and a range of other invertebrates (some of which are SPIs) are present on Site.	• Pollution prevention measures must be adhered to during works to avoid impacts upon aquatic macroinvertebrates. • Creation of additional dead wood habitats to provide foraging and sheltering habitats for stag beetles.
Fish	Possible presence of fish in White Brook including European eel and bullhead.	• Pollution prevention measures must be adhered to during works.
Common toads	Likely present on Site given habitat present.	• Common toads should be watched for during removal of log and brash piles.
Reptiles	Potentially present given habitats present.	• No further survey required. • Works to be undertaken in late summer when reptiles are active to allow animals to move out of the works area. Works not to be undertake over the winter period (November-March).
Roosting, commuting and foraging bats	Numerous trees were present with the potential to support roosting bats with the Site also providing high quality commuting and foraging habitat.	• Trees requiring felling/pruning should be subjected to further dusk emergence and dawn return to roost surveys depending upon the level of roosting suitability assigned. If roosting bats are found a licence may be required to allow works to proceed lawfully.

Species/Species Group	Status on Site	Recommendations/Further Action
Badgers	Numerous badger setts were located on Site.	• Where the boardwalk is to pass close to outlier setts a 20m buffer will need to be maintained. An ecologist should be consulted with regard to the placement of posts in this area to ensure that damage to a badger sett does not occur. Please note that if this cannot be adhered to then a licence from Natural England may be required to close the sett to ensure works can proceed lawfully. • Setts should be fenced with a minimum of a 10-20m buffer to prevent access to setts by members of the public and dogs etc. Badger gates should be installed in fencing to allow badgers to continue to move freely throughout the Site and wider Battlemead Common area.
Other Mammals (foxes, deer and hedgehogs)	Foxes, hedgehogs and deer are likely present/ were noted during the survey.	• Fencing of some of the woodland habitats will potentially fragment habitat available for these animals. • Hedgehogs should be watched for during removal of logs and brash. Any hedgehogs found should be moved to retained vegetation outside of the works area.

2. Introduction

2.1. Site and Project Description

2.1.1. The Site that is the subject of this report predominantly comprises parcels of woodland in the south-eastern corner of Battlemead Common. The central grid reference is SU 90592, 83577. The Site is bordered to the east by a public footpath and the River Thames, to the west by an Environment Agency flood defence bund with Maidenhead Court and White Brook Business Park beyond, to the north by wetland habitat and grassland within Battlemead Common and to the south by woodland and residential development. The Site covers an area of approximately 3.15ha comprising semi-natural broadleaved woodland, plantation woodland, a stretch of the White Brook, wetland habitat (including a waterbody) and a small area of grassland and tall ruderal vegetation in the north-west. The Site boundary is shown in Figure 1.

2.1.2. The Royal Borough of Windsor and Maidenhead (RBWM) are exploring options to install a pathway/boardwalk (including the reinstatement of a bridge across the White Brook) through the plantation woodland to allow for a circular route to be created around the wider Battlemead Common site. The boardwalk is to be fenced (with dog-proof fencing) either side with fencing also proposed around the perimeter of the Site. This option is being pursued as an alternative to avoid the need for crossing the causeway over the brook to the north (given sensitivities to over-wintering birds). The proposed route of the boardwalk and footpath is shown in Figure 4.

2.2. Ecological Context

2.2.1. A number of ecological surveys have been undertaken on the wider Battlemead Common site and these are summarised below.

2.2.2. An Ecological Appraisal consisting of an ecological desk study, extended Phase 1 habitat survey, River Corridor Survey (RCS) and Habitat Suitability Index (HSI) assessment of waterbodies within the wider Battlemead Common area was undertaken in May 2019 (Austin Foot Ecology, 2019a). The desk study highlighted the presence of a number of protected species and species of conservation importance within a 2km radius of Battlemead Common including invertebrates, fish, amphibians, reptiles, birds, bats, badgers and otters. Some of these species/species groups were known to be or could have been associated with the habitats found in Battlemead Common.

2.2.3. An extended Phase 1 habitat survey revealed Battlemead Common to predominantly comprise semi-improved grassland with areas of broadleaved woodland, plantation broadleaved woodland, scattered mature trees, standing open water, running water (the White Brook), inundation vegetation, tall ruderal vegetation, a length of recently planted species-rich hedgerow and a length of established species-poor native hedgerow. Incidental observations of fauna during the site visit included a number of common and widespread invertebrate and bird species (including evidence of barn owls) and mammals (including foxes, rabbits, roe deer and Muntjac deer). Badger setts were found to be present along with evidence of use of the Brook corridor by North American mink (*Neovision vision*). The ecological appraisal concluded that Battlemead Common had the potential to support the following:

- Foraging and sheltering habitats for invertebrates (including stag beetles);
- Breeding, foraging, sheltering and overwintering habitats for great crested newts and common toads;
- Foraging and sheltering habitat for reptiles;
- Foraging, nesting and overwintering habitat for a diverse assemblage of birds;
- Roosting foraging and commuting habitat for bats;
- Badger setts and suitable foraging habitat for badgers; and
- Foraging and sheltering habitat for foxes, deer and rabbits.

2.2.4. Following (and concurrently with) the Ecological Appraisal the following surveys were also conducted within the Battlemead Common site:

- *Breeding Bird Survey* – A breeding bird survey was undertaken between late April 2019 and mid June 2019 (Austin Foot Ecology, 2019b). This survey identified 44 species of bird as confirmed, probably or possibly breeding on site or the immediate vicinity. The assemblage was dominated by common and widespread species (e.g. thrushes, tits, robins and wrens, etc.). However, twelve species of varying conservation concern were also recorded, including two specially protected (Schedule 1) species; the barn owl and kingfisher (albeit nesting on site was not confirmed for either). Overall, the wetland and woodland areas plus associated corridors of trees, hedgerows and scrub (particularly through the central part of the site) were found to be of most value to breeding bird species in their current form.
- *Overwintering Bird Survey* – An overwintering bird survey was undertaken between September 2019 and March 2020 (Austin Foot Ecology, 2020a). The survey recorded an overall assemblage of 60 species using the site, with many species regularly occurring and some being infrequent or only present in very low numbers. The site was found to have value to wintering birds at the Local level with the central brook corridor and associated wetland areas in the south-east of the site being of greatest value.
- *eDNA Assessment* – Water samples were collected from three waterbodies within the site (assessed as having the potential to support great crested newts) in June 2020 (Austin Foot Ecology, 2020b). This included the waterbody located within the woodland in the south-east of Battlemead Common (the site that is the subject of this report). All samples came back negative confirming an absence of great crested newts from the waterbodies on site.

2.2.5. An update breeding bird survey has also been commissioned and is being undertaken between April and mid-June 2021. An assessment of the implications relating to the use of the Site by nesting birds will be fully detailed in the stand-alone bird report following completion of the breeding bird survey and as such this species group will only be briefly considered within this assessment.

2.2.6. Targeted survey effort for otters (*Lutra lutra*) and water voles (*Arvicola amphibius*) along the White Brook (where it passes through the Site) and the woodland habitat (for otters) as well as the adjacent River Thames (where it lies alongside to the Site) is also being undertaken in June 2021 and September 2021. These species will also be fully considered in a separate dedicated report.

2.3. Aims of Study

2.3.1. Austin Foot Ecology was commissioned to undertake a preliminary ecological appraisal (PEA) of the Site comprising an extended Phase 1 habitat survey and ground-level tree assessment (GLTA). The main aims of this report are to:

- Describe the habitats present within the Site;
- Detail the results of the GLTA survey;
- Assess the potential for the Site to support protected or notable species;
- Set out the legislative protection afforded to any habitats present or any species potentially associated with the Site;
- Present a preliminary assessment of any potential ecological impacts of the proposals based on the survey findings and current proposals;
- Provide recommendations for any further surveys if considered necessary; and
- Provide recommendations on potential mitigation and compensation to ensure that the proposals will remain acceptable in legislative terms.

2.3.2. An Ecological Management Plan was prepared for the Site in April 2020 (Austin Foot Ecology, 2020c). As such management prescription for the Site will not be covered within this report.

3. Method

3.1. Survey Area

3.1.1. The Survey Area extended from the bank of the River Thames in the east to the EA flood defence bund in the west. The northern boundary followed the woodland edge with the southern boundary running along tributary of the White Brook (dry at the time of survey) (see Figure 1).

3.2. Extended Phase 1 Habitat Survey

3.2.1. The extended Phase 1 habitat survey was undertaken by Stephen Foot MCIEEM and Ed Austin MCIEEM on 18th May 2021. Habitats within the Site were identified and described following standard JNCC Phase 1 habitat survey methodology as detailed in the Phase 1 Habitat Survey Handbook (JNCC, 2016). This uses a system of codes to describe different habitat types based on the dominant vegetation present. The relative abundance of botanical species present in each habitat type was characterised using the DAFOR scale where D is Dominant, A is Abundant, F is Frequent, O is Occasional and R is Rare. The survey was extended to give particular consideration to the potential of the habitats present to support protected species or species of conservation importance.

3.2.2. The weather conditions during the site visit were largely dry with intermittent showers and partially cloudy skies (cloud cover was 4/8-5/8). A light-moderate breeze was present throughout the survey (Beaufort scale F2-F3) with air temperatures ranging between 14˚C and 16˚C during the survey.

3.3. Ground-Level Tree Assessment

3.3.1. An assessment of the potential for all trees within the Site boundary to support opportunities for roosting bats was undertaken on 30th April 2021. Weather conditions were dry with partially cloudy skies (5/8 cloud cover) with a light breeze (Beaufort Scale F2) and air temperatures ranging between 10˚C and 12˚C.

3.3.2. All trees were inspected from the ground, using binoculars and a high-powered torch as necessary to facilitate the identification and investigation of features offering potential opportunities for roosting bats (e.g. ivy cover, rot holes, woodpecker holes, splits in branches or the trunk and loose or lifted bark, etc.). Information on the type (species) of each tree, estimated height and the location/aspect of potential features was also recorded.

3.3.3. The Bat Conservation Trust has developed a survey protocol (Collins, 2016) which categorises the potential for trees to support roosting bats. Using the categories detailed below, an assessment was made of the potential for each tree/group of trees included within the survey to support roosting bats:

- Known or Confirmed Roost: Confirmed bat roost with field evidence of the presence of bats,
- High Potential: Trees with multiple highly suitable features capable of supporting larger roosts.
- Medium Potential: Trees with definite bat potential supporting fewer features than high potential trees.

- Low Potential: Trees with no obvious potential although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some features which may have limited potential to support bats.
- Negligible Potential: Trees with no potential to support bat roosts (Trees with no obvious features with potential to support a bat roost).

3.4. Survey Limitations

3.4.1. Different plant species are more or less evident at different times of year depending on their growth cycle. A single visit will only therefore capture information representative of the time of year selected. As the Phase 1 habitat survey was completed in May 2021 some later flowering species may, therefore, have been absent or less visually dominant in the sward than during a later survey. However, May is within the optimal period for conducting Phase 1 habitat surveys and the majority of plant species present would have been in evidence at least in their vegetative state such that the habitat types present could be accurately determined. There were therefore no significant limitations to the Phase 1 habitat survey.

3.4.2. The GLTA was undertaken just as trees were coming into leaf. Therefore, it is possible that leaves may have obscured some features offering potential roosting opportunities to bats. However, it was still possible to make an assessment of the trees' potential despite this given the proportion of the tree trunk and branches that were visible. As such it is considered that it was possible to robustly assess the potential of the trees on Site to support roosting bats.

3.5. Personnel

3.5.1. Stephen Foot MCIEEM has worked as a professional ecologist since 2005 and has holds Natural England licences to survey for great crested newts, hazel dormice, bats, barn owls, smooth snakes and sand lizards. During this time, he has undertaken an extensive number of extended Phase 1 habitat surveys throughout the UK surveying a diverse array of habitat types. He is also fully competent in assessing the potential of a site to support protected species and species of conservation importance.

3.5.2. Ed Austin MCIEEM has been in continuous employment as a professional ecologist since 2004 and began his career in environmental consultancy in 2002. He has completed many ecological site assessments and has extensive experience in using the RCS, River Habitat Survey (RHS) and extended Phase 1 habitat survey methods. Prior to becoming a full-time ecologist, Ed was employed as part of a 'fluvial audit' team completing baseline surveys and mapping of major watercourses around the UK. In addition, Ed has undertaken a wide range of projects utilising species-specific survey and assessment techniques (e.g. for amphibians, reptiles, bats, badgers, otters and water voles). He specialises in botanical and ornithological assessment and holds Natural England licences for white-clawed crayfish and great crested newts.

4. Results and Interpretation

4.1.1. This section sets out the results of the desk study and field surveys. The implications of the results are then explored with reference to current legislation.

4.2. Habitats

4.2.1. The following Phase 1 habitat types were recorded during the field survey:

- Semi-natural broadleaved woodland
- Plantation broadleaved woodland
- Scattered trees
- Standing water
- Running water
- Semi-improved grassland
- Tall ruderal vegetation

4.2.2. The distribution of these habitats is shown on Figure 2 with summary descriptions given below. Target notes (TNs) referred to in the text below and on Figure 2 are provided in Appendix 2 along with a selection of photographs.

Semi-natural broadleaved woodland (BW1 and BW2)

4.2.3. A parcel of semi-natural broadleaved woodland was present in the north-west of the Site along the western edge of the White Brook (BW1). The canopy layer of this woodland supported abundant lime (*Tilia* sp.) with frequent Norway maple and occasional pedunculate oak (*Quercus robur*), horse chestnut (*Aesculus hippocastanum*) and poplar (*Populus* sp.). Some willow (*Salix* sp.) and alder (*Alnus glutinosa*) trees were present on the eastern edge of this woodland parcel adjacent to the brook bank. The ground flora comprised frequent to abundant garlic mustard (*Alliaria petiolata*) with occasional common nettle (*Urtica dioica*) and herb Robert (*Geranium robertianum*).

4.2.4. BW2 lay to the north of a barbwire fence to the north of the plantation woodland PBW3. This strip of woodland supported frequent horse chestnut with occasional poplar, lime, willow, Norway maple and ash. The ground flora supported abundant garlic mustard and common nettle. Himalayan balsam (*Impatiens glandulifera*) was noted to be present on the edge of this woodland parcel close to the White Brook.

Plantation broadleaved woodland (PBW1-3)

4.2.5. Three stands of plantation broadleaved woodland were present within the Site. The first of these (PBW1) was located in the north-western corner of the Site to the west of the flood defence bund. The canopy layer of this small parcel of woodland was dominated by white poplar (*Populus alba*) with the ground flora being dominated by common nettle with abundant cleavers. PBW2 was located to the west of the White Brook to the east of the flood defence bund. The canopy layer of this mature woodland parcel was dominated by willow (likely white and crack willow) with occasional mature poplar and pedunculate oak. The shrub layer was sparse within this woodland parcel with rare elder (*Sambucus nigra*) and hawthorn (*Crataegus*

monogyna) present. The ground flora was dominated by common nettle with abundant cleavers and occasional comfrey (*Symphytum officinale*), rough meadow grass (*Poa trivialis*), garlic mustard, lesser celandine (*Ficaria verna*) and remote sedge (*Carex remota*). Large areas of this woodland, particularly close to the brook held standing water supporting a number of aquatic and marginal macrophytes (see TN5 in Figure 2). Species present included locally frequent greater pond sedge (*Carex riparia*) with occasional gypsywort (*Lycopus europaeus*), fool's watercress (*Apium nodiflorum*), water mint (*Mentha aquatica*), water forget-me-not (*Myosotis scorpiodes*) and hemlock water dropwort (*Oenanthe crocata*).

4.2.6. PBW3 covered the majority of the Site and comprised rows of willow trees planted over grassland (likely used as pasture in the past). The willows ranged from semi-mature to mature in age and were possibly planted for timber use originally. Other trees within this woodland parcel included occasional mature poplar with ash (*Fraxinus excelsior*) and sycamore (*Acer pseudoplatanus*) though these were largely restricted to the eastern boundary of the Site adjacent to SW1 and the footpath along the River Thames. Shrubs were limited within this woodland to small stands of hawthorn with the ground flora being dominated by common nettle with abundant rough meadow grass, frequent cleavers and wavy bittercress (*Cardamine flexuosa*) (Close to the White Brook) and occasional wood dock (*Rumex sanguineus*) false-wood brome (*Brachypodium sylvaticum*) and timothy (*Phleum pratense*).

Standing water

4.2.7. A linear waterbody was located in the east of PBW3. This waterbody was shallow (approx. 20-30cm) with a dense covering of common duckweed (*Lemna minor*). Remote sedge and greater pond sedge were present along the margins with a small stand of orange balsam (*Impatiens capensis*) also noted.

Running water

4.2.8. A stretch of the White Brook runs through willow woodland. The channel in this section of the Brook had a water depth of up to 1m or more (the bed often not being visible) with a soft silt substrate and channel width of approximately 7m to 8m. Banks were of earth material and shallowly sloping into the channel, often being stabilised by the roots of trees. In places the right bank was less definite, with the channel overflowing into the wet woodland beyond. Flow was essentially static or very slow with a lot of slack water sections. A defunct (incomplete) vehicle bridge was noted toward in the northern half of the Site. Marginal vegetation included greater pond sedge, gypsywort and water mint.

Semi-improved grassland

4.2.9. A small area of semi-improved neutral grassland was located in the north-west of the Site. The sward supported a range of grasses herbs and forbs including frequent perennial rye-grass (*Lolium perenne*) and rough meadow grass (*Poa trivialis*) with occasional cock's-foot (*Dactylis glomerata*, Italian rye-grass (*Lolium multiflorum*), Yorkshire fog (*Holcus lanatus*) and soft brome (*Bromus hordeaceus*). Herbs and forbs in this area of the field included abundant dandelion (*Taraxacum* agg)., frequent creeping buttercup (*Ranunculus repens*) with locally frequent shepherd's purse (*Capsella bursa-pastoris*) and occasional yarrow (*Achillea millefolium*),

common vetch (*Vicia sativa*), common field speedwell (*Veronica persica*), common mouse-ear (*Cerastium fontanum*) and prickly sow thistle (*Sonchus asper*).

Tall ruderal vegetation

4.2.10. Tall ruderal vegetation bordered the woodland parcel in the north western corner of the Site. This area was dominated by common nettle with occasional hemlock (*Conium maculatum*), teasel (*Dipsacus fullonum*), creeping thistle (*Cirsium arvense*) and curled dock (*Rumex crispus*). Field forget-me-not (*Myosotis arvensis*), garlic mustard and bramble was also present.

Habitat Summary

4.2.11. The Site consists of a range of habitat types with plantation broadleaved woodland being the dominant habitat type present. The small area of grassland and ruderal vegetation in the north-west present supported common widespread, readily established species and as such have a limited intrinsic ecological value in isolation with the exception of their ability to provide habitats for fauna associated with the Site. However, the semi-natural broadleaved woodland parcels and possibly the White Brook are classified as Habitats of Principal Importance in England on a list drawn up in response to the requirements of Section 41 of the Natural Environment and Rural Communities Act, 2006 (see Appendix 3). In addition, the combination of these semi-natural habitats also increases their value in the local context.

4.3. Protected Species and Species of Conservation Importance

4.3.1. This section presents any evidence of protected species or species of conservation importance identified during the survey and evaluates the potential for the Site to support other species. The relevant legislation for each species or species group is also briefly summarised below with detailed legislation information presented in Appendix 3.

Invasive non-native flora

4.3.2. An area dominated by Himalayan balsam was identified in the north of the Site (see TN6 on Figure 2 and Photograph 12 in Appendix 2).

4.3.3. Himalayan balsam is listed on Schedule 9 of the Wildlife and Countryside Act (WCA) 1981 (as amended). It is an offence to plant or otherwise cause to grow in the wild any plant listed on Schedule 9.

Invertebrates

4.3.4. Piles of deadwood, stumps and fallen trees in BW1, BW2 and PBW3 have potential to be used as breeding, sheltering and foraging habitat by stag beetles and other saproxylic (dead wood living) species. The White Brook is likely to support a range of aquatic macroinvertebrates with the wet woodland habitat also likely to provide additional foraging and sheltering habitat on a seasonal basis. Given the diversity of habitat types present it is likely that there is a range of invertebrate species supported by the Site many of which are likely to be classified as SPIs.

4.3.5. Species of Principal Importance (SPIs) in England on a list drawn up in response to the requirements of Section 41 of the Natural Environment and Rural Communities Act, 2006 (see Appendix 3).

Fish

4.3.6. The White Brook passing through the Site has the potential to support a range of fish species including the European eel (*Anguilla anguilla*) and the bullhead (*Cottus gobio*). The European eel is classified as an SPI and as such its presence could be a material consideration. Impacts upon fish using the watercourse would need to be considered during the construction of a new bridge and associated boardwalk.

Great crested newts

4.3.7. The woodland and ruderal habitats within the Site provide potentially suitable terrestrial habitat for great crested newts (*Triturus cristatus*). However, an eDNA assessment carried out on the waterbody within the woodland and other waterbodies in the wider Battlemead Common site provided a negative result regarding the presence of this species. As such this species will not be considered further in this assessment.

Common toads

4.3.8. Like great crested newts, common toads (*Bufo bufo*) spend a proportion of the year in aquatic habitats where they breed. Outside of the breeding season common toads have a greater migratory range than great crested newts and may move up to several kilometres from water. This species exploits a range of terrestrial habitat types with woodland, scrub and rough grassland all routinely utilised (Baker *et al*, 2011 and Inns, 2009). The woodland and tall ruderal vegetation are considered to provide suitable terrestrial habitat for common toads.

4.3.9. Despite declines in the population, common toads are widely distributed throughout a large range and are probably present in every 10-km square of lowland, mainland Britain (Baker *et al*, 2011). This species has a preference for medium or large waterbodies and tolerates the presence of fish well (Beebee, 2013 and Baker *et al*, 2011). The common toad is a Species of Principal Importance (SPI) in England. Selection of this species was not due to scarcity, rather to recent declines in population size (Baker *et al*, 2011).

Reptiles

4.3.10. Reptiles prefer a mosaic of habitats with a varied vegetation structure providing conditions suitable for both sheltering and foraging (Edgar *et al*, 2010). The mosaic of tall ruderal vegetation and grassland in the north-west of the Site could provide suitable foraging and sheltering habitats for this species group with the woodland habitat and associated brash and log piles providing a potential sheltering and overwintering resource. The White Brook and waterbody are also likely to provide a high-quality foraging habitat for grass snakes (*Natrix helvetica*) a highly mobile species that regularly predates upon fish and amphibians (Vaughan, 2007).

4.3.11. All species of common reptile are protected from killing and injury under the Wildlife and Countryside Act, 1981 (as amended). Reptiles are also classified as SPI's (see Appendix 3).

Breeding birds

4.3.12. An update breeding bird survey is being undertaken for the wider Battlemead Common site. As such breeding birds will not be considered further in this assessment but will be fully discussed within the associated reporting.

Bats

4.3.13. A ground-level assessment of all trees within the Site revealed that 92 trees/tree groups supported features capable of providing roosting opportunities to bats. A summary of the results of this assessment are as follows:

- 15 trees (T14, T17, T21, T41, T43, T51, T55, T58, T60, T63, T73, T74, T80, T81 and T84) were assessed as having a high level of suitability to support a bat roost;
- 24 trees (T4, T7, T11, T18, T23, T30, T40, T42, T46, T50, T52, T59, T61, T62, T66, T69-T71, T75, T76, T78, T85, T87, T89) were assessed as having a moderate level of suitability to support a bat roost; and
- 53 trees/tree groups (T1-T3, T5, T6, T8-T10, T12, T13, T15, T16, T19-T21, T24-T29, T31-T39, T44, T45, T47-T49, T53, T54, T56, T57, G1, G2, T64, T65, T67, T68, T72, T77, T79, T82, T83, G3, T86 and T88) were assessed as having a low level of suitability to support roosting bats.

4.3.14. The remaining trees were assessed as having negligible value to roosting bats. Full details of the assessment are provided in the table in Appendix 1 with the locations of trees shown on Figure 3. Photographs of a selection of potential roosting features are shown in Appendix 2.

4.3.15. In addition, the Site is likely to provide a high-quality foraging and commuting resource for bats given the presence of a diverse range of habitats including woodland, wetland and the proximity to the River Thames. Given the conditions present, it is considered that the Site is likely to provide part of a core foraging resource for bats present in the local landscape.

4.3.16. Both bats and their roosts are afforded protection under the Conservation of Species and Habitats Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended). In broad terms these pieces of legislation jointly mean that the animals themselves are protected against killing, injury, taking (capture) and disturbance. In addition, their places of shelter are protected against damage, destruction and obstruction. Several species of bat are also classified as SPI's (see Appendix 3).

Badgers

4.3.17. Woodland copses, scrub and hedgerows are preferred locations for setts as they allow badgers to emerge from the setts inconspicuously and young cubs to play near the sett entrances without being visible to potential predators and people (Neal & Cheeseman, 1996). The badger's preferred food source is the earthworm and therefore they predominantly forage on areas of grassland and pasture. Badgers are omnivorous and they supplement their diet with carrion and fruits from hedgerows, trees and shrubs (Neal & Cheeseman, 1996 and Roper, 2001).

4.3.18. Evidence of this species was thoroughly searched for within the Site with survey effort focussed on/within areas of woodland and dense stands of vegetation during the extended Phase 1

habitat survey (particularly along the route of the proposed boardwalk and footpath). As previously noted, evidence of this species was identified with both main and outlier setts sett found. The current status of these setts are described in more detail below:

- Main sett/Annexe (see Target Note 1 and Photograph 7 in Appendix 2 and on Figure 2) – A large sett in the north-western corner of the Site with 14 entrances, 10 of which appeared to be in regular use.
- Outlier sett (Target Note 2) – An outlier sett in the north-west of the Site within woodland BW1 with one partially-used entrance.
- Outlier sett (Target Note 3) – An outlier sett in the north-west of the Site within woodland BW1 with one disused entrance and one entrance showing signs of partial use.
- Outlier sett (Target Note 4) – An outlier sett in the bank of the flood defence bund in the north-west of the Site with one entrance showing signs of partial use.

4.3.19. Both badgers and their setts are protected under the Protection of Badgers Act 1992 making the intentional or reckless destruction, damage or obstruction of a badger sett an offence (see Appendix 3).

Otters and Water voles

4.3.20. A dedicated survey for otters (*Lutra lutra*) and water voles (*Arvicola amphibius*) is being undertaken in late spring/early autumn 2021. As such these species will not be considered further in this assessment.

Other Mammals

4.3.21. A number of deer were observed in the woodland throughout the Site. These included both roe deer (*Capreolus capreolus*) and Muntjac deer (*Muntiacus reevesi*). The woodland also has the potential to provide foraging and sheltering habitat for red foxes (*Vulpes vulpes*) and hedgehogs (*Erinaceus europaeus*).

4.3.22. All wild UK mammals receive limited protection under the Wild Mammals (Protection) Act, 1996 (as amended), see Appendix 3.

4.3.23. In summary, the Site supports or has the potential to support the following species/species groups and these will be carried forward to the recommendations section of this report:

- Invasive flora;
- Invertebrates;
- Fish;
- Common toads;
- Reptiles;
- Roosting, foraging and commuting bats;
- Badgers;
- Other mammals (fox, deer and hedgehogs).

5. Outline Impacts and Recommendations

5.1.1. The presence of species and habitats described in the preceding sections of this report and the legislation relating to them make them a material consideration in the when creating new public access through the willow woodland (the Site).

5.1.2. Therefore, the likely impacts of opening the Site up to the public and creating a walkway through the Site on those species and habitats identified as being present, or likely to be present, within the willow woodland are discussed below. In addition, recommendations for further survey where necessary and the appropriate mitigation and compensation that will be required (where applicable) to ensure that the proposed works comply with legislation are also provided. Management prescriptions for the habitats found on Site are detailed in the Ecological Management Plan prepared previously (Austin Foot Ecology, 2020c) and are therefore not duplicated within this report.

5.2. Habitats

5.2.1. The Site consists of a range of habitat types some of which are of higher intrinsic ecological value. The broad habitats present within the Site are discussed below along with mitigation measures designed to reduce/offset any potential negative impacts.

Semi-natural broadleaved woodland and Plantation Woodland

5.2.2. The majority of areas of semi-natural broadleaved woodland are outside of the proposed footprint of a new footpath/boardwalk. However, the proposed route of the boardwalk in the north-west does encroach into the edge of woodland BW1 (see Figure 4).

5.2.3. In order to facilitate construction of the footpath and boardwalk through the semi-natural broadleaved woodland and the plantation woodland, a number of trees along and either side of the route would likely need to be felled. The extent of tree felling necessary is currently unknown but it is reasonable to assume that a swathe of trees at least 5-10m in width would need to be cleared to allow for construction of the boardwalk and to avoid potential future issues associated with the willow trees and falling branches and public access to the area. The boardwalk would therefore result in fragmentation of the woodland. The removal of trees within the willow plantation would likely open up areas of the woodland to promote growth of ground flora (i.e. some 'glade' creation). In the long term this approach would help with natural regeneration of trees and promote age and structural diversity within the woodland. Where possible trees that are dead, diseased or suppressed along the route of the boardwalk should be a priority.

5.2.4. The dominance of common nettle within the Site is likely the result of the high nutrient levels within the soil and it is recommended that vegetation (common nettle) adjacent to the boardwalk be strimmed regularly and arisings removed to improve botanical diversity.

5.2.5. Advice from an arboriculturalist should be sought with regard to the creation of the boardwalk and removal/pruning of trees. As a guide works should adhere to British Standard: 5837:2012 "*Trees in Relation to Design, Demolition and Construction*" which prescribes the need for the following protection measures:

- Erection of stout fencing around some areas of retained trees in the woodland in advance of works, enclosing the Root Protection Area;
- Prohibition of construction activities, material storage, use of vehicles, fires, etc. within these fenced areas to prevent damage to tree roots and compaction of the soil; and
- Maintenance of an adequate water supply to the trees both during and after construction.

5.2.6. Routine inspections of trees along the boardwalk would need to be undertaken to check for dead or damaged branches for reasons of health and safety. Pruning of trees/branches may therefore be necessary and should be undertaken by appropriately trained personnel once the status of roosting bats/nesting birds has been ascertained.

Running water, standing Water and wetland habitat

5.2.7. The reinstatement of the footbridge across the White Brook and the possible use of machinery to construct the boardwalk would need to be carefully considered. In order to avoid direct impacts upon the White Brook, the waterbody in the east and wetland habitat within the woodland, the general environmental protection measures as listed below must be implemented during the construction of the boardwalk/bridge. Such measures include best environmental practice guidance outlined in the Environment Agency's Pollution Prevention Advice and Guidance (Environment Agency, 2007) (now archived) and those outlined by the Construction Industry Research and Information Association guidance (CIRIA, 2015). The following minimum standards must be adhered to prevent ecological impacts beyond the Site boundary:

- Measures must be taken to prevent dust and other emissions from construction affecting land beyond the Site.
- Chemicals and fuels must be stored in secure containers. Spill kits must be available.
- Noise and vibration must be controlled and kept to the minimum necessary.

5.3. Protected Species and Species of Conservation Importance

Invasive flora

5.3.1. Depending on the layout of the boardwalk and approach to works, there may be a risk of spreading soils containing invasive plant material elsewhere on Site or creating conditions that allow these species to spread further within the Site or off-site. It is recommended that a specialist contractor be enlisted to treat and remove the stand of Himalayan balsam identified in the north of the Site in order to prevent further spread along the banks of the White Brook. Management of this plant can also be undertaken by hand when this plant is in flower (June-July) prior to the formation of seed pods.

Invertebrates

5.3.2. The measures detailed in Section 5.2.7 above must be adhered to in order to avoid possible pollution events that could have an adverse impact upon aquatic macroinvertebrates using the White Brook and wetland habitat within the Site. With the exception of this, the proposals are unlikely to have an adverse impact upon invertebrates currently using the Site. The creation of additional log piles within woodland would provide additional foraging habitats for stag beetle

larvae as well as a foraging resource for saproxylic (deadwood dependant) species. In order to maximise benefit for this species, logs should be partially buried in soil in shady areas (PTES, 2016).

Fish

5.3.3. The measures detailed in Section 5.2.7 must be adhered to in order to avoid possible pollution events that could have an adverse impact upon fish using the White Brook.

Common toads

5.3.4. It is possible that common toads utilise the woodland habitats as a sheltering and foraging resource. However, given the scale and nature of the proposals the scale of the impact upon this species is likely to be limited. It is recommended that common toads be looked out for during construction of the boardwalk when removing root boles and areas of brash/fallen logs. Any common toads found should be carefully moved to retained woodland habitat away from the works area.

Reptiles

5.3.5. The semi-improved grassland and tall ruderal vegetation habitat has the potential to support common species of reptiles. However, given the scale and nature of the proposals, adverse impacts upon this species group are not predicted to occur. It is possible that grass snakes and other species could utilise the woodland habitat as a sheltering and overwintering resource. Therefore, it is recommended that works take place in late summer when reptiles are active (able to move out of the works area) and prior to the winter hibernation period.

Bats

5.3.6. As detailed in the GLTA assessment the Site supports a large number of trees with the potential to support roosting bats. A number of these trees would need to be removed to allow construction of the boardwalk. Given the current status of the majority of trees (willow with broken limbs), climbing of these trees to undertake an aerial inspection would not be possible in the majority of cases. Therefore, trees assessed as having roosting potential that are to be felled would require the following:

- *Trees with high roosting suitability* – Any trees assessed as having a high level of suitability to support a roost would need further targeted survey work in the form of dusk emergence/dawn return to roost surveys. Three survey visits (one of which should be a pre-dawn survey) would need to be undertaken. These survey visits should be separated by at least two weeks and must be undertaken between May and August inclusive (Collins, 2016).
- *Trees with moderate roosting suitability* - Any trees assessed as having a moderate level of suitability to support a roost would also need further targeted survey work in the form of dusk emergence/dawn return to roost surveys. Two survey visits would need to be undertaken. These survey visits should be separated by at least two weeks and must be undertaken between May and August inclusive (Collins, 2016).
- *Trees with low roosting suitability* – Trees assessed as having a low level of roosting potential would need to be soft-felled (felled in sections with sections carefully lowered to

the ground) in the presence of a licenced ecologist. The felling of these trees would be best undertaken in spring or autumn outside of the most sensitive times of the bat's yearly cycle (the maternity and hibernation periods).

5.3.7. If bats are seen emerging or returning to roost within the high and moderate potential trees and works cannot be avoided, a European Protected Species (EPS) licence will be required to facilitate their felling/pruning. The results of the activity survey would be used to support a licence application. The licence application would include a method statement setting out how the roosting bats will be safeguarded during works. In this case, roosting provision in the form of bat boxes is likely to be required. In the event that a bat were found during soft-felling of the tree assessed as having low roosting suitability, all works must cease and the advice of an ecologist must be sought.

5.3.8. Adverse impacts upon foraging and commuting bats are not predicted to occur given the scale and nature of the proposals (no lighting is proposed).

Badgers

5.3.9. Use of the Site by badgers has been confirmed and in order to avoid the potential for disturbance to badgers or their setts it is recommended that all setts be fenced with at least a 10-15m standoff to prevent members of the public from gaining direct access to setts. Currently it appears that the boardwalk in the north-west is to be sited very close to the outlier setts (TN2-TN4). Given the close proximity of these setts it is recommended that the route be altered to maintain a 20m standoff in order to avoid disturbance or destruction of badger setts when inserting posts for the boardwalk. An ecologist should be consulted prior to final placement of the posts in the vicinity of the outlier setts.

5.3.10. If the path cannot be altered, as a last resort it may be necessary to explore options to allow closure of one or more of the outliers under licence from Natural England. This licence allows derogation of the legislation protecting badgers and their setts.

5.3.11. It appears that badgers currently have not excavated pathways beneath the dog-proof fencing elsewhere in the wider Battlemead Common site with badgers currently moving beneath five-bar gates to gain access to the wider area. As mentioned above, the new route would necessitate the use of additional fencing to protect the main and outlier setts from disturbance by the public and dogs. In light of this, it will be necessary to install badger gates at intervals within the fencing to allow badgers to continue to move freely throughout the wider Battlemead Common site.

Other Mammals

5.3.12. The fencing of the boardwalk, additional fencing close to badger setts and fencing around the perimeter of the woodland would greatly fragment the woodland habitat making movement through the Site by deer and other species more difficult. It is possible that Muntjac and other mammals (foxes, etc.) could move beneath the boardwalk (depending upon boardwalk height and design). However, the increased use of fencing in this area is likely to make the Site less desirable/suitable for roe deer restricting the availability of the Site to this species.

5.3.13. Hedgehogs should be watched for during removal of logs/brash during construction of the boardwalk. If any hedgehogs are found they should be carefully moved by hand to dense vegetation outside of the proposed works area.

6. Conclusion

6.1.1. The extended Phase 1 habitat survey and GLTA survey work detailed within this report has been undertaken to determine ecological constraints and opportunities associated with the construction of a boardwalk and footpath through an area of willow woodland in the south-east of the wider Battlemead Common site. The Site was found to have the potential to support a number of protected species and species of conservation importance including invasive flora (Himalayan balsam), invertebrates, fish, amphibians, reptiles, breeding birds (discussed in a separate stand-alone report), roosting, commuting and foraging bats, badgers (numerous badger setts were identified some close to the works area), water vole and otters (discussed in a separate stand-alone report), foxes, deer and hedgehogs.

6.1.2. Recommendations have been included within this assessment to ensure that the proposals minimise any possible adverse impacts to habitats and species that may be/are present on Site with further survey for bats likely should trees need to be felled to facilitate construction of the boardwalk. Providing that measures set out in this report are adhered to there are no overriding reasons relating to nature conservation that would preclude the proposals planned for creating a route through the Site. However, there are likely to be residual implications regarding movement through and future use of the Site by roe deer which would not be possible to mitigate.

7. References

Austin Foot Ecology (2019a) *Battlemead Common, Maidenhead - Ecological Appraisal*

Austin Foot Ecology (2019b) *Battlemead Common, Maidenhead – Breeding Bird Survey*

Austin Foot Ecology (2020a) *Battlemead Common, Maidenhead – Overwintering Bird Survey*

Austin Foot Ecology (2020b) *Battlemead Common, Maidenhead – Great Crested Newt eDNA Survey*

Austin Foot Ecology (2020c) *Battlemead Common, Maidenhead – Ecological Management Plan*

Beebee, T (2013) *Amphibians and Reptiles – Naturalists' Handbooks 31 Ecology and Identification*. Pelagic Publishing.

British Standards Institution (2012) *BS5837:2012 Trees in Relation to Design, Demolition and Construction-Recommendations*.

Edgar, P., Foster, J. and Baker, J. (2010). *Reptile Habitat Management Handbook*. Amphibian and Reptile Conservation, Bournemouth.

Baker, J., Beebee T., Buckley, J., Gent, A. and Orchard, D. (2011). *Amphibian Habitat Management Handbook*. Amphibian and Reptile Conservation, Bournemouth.

CIRIA (2015) *Environmental good practice on site (fourth edition*) (C741) Charles, P., Edwards, P (eds). CIRIA, London.

Environment Agency (2014) Pollution Prevention Guidance. Available online: https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg [accessed July 2014].

Harris, S. & Yalden, D. 2008. *Mammals of the British Isles: Handbook, 4th edition*. The Mammal Society. 328-331

JNCC (2016), *Handbook for Phase 1 habitat survey - a technique for environmental audit*. JNCC, Peterborough

Natural England (undated) *Explanatory note on S41 England Biodiversity List* (www.naturalengland.org.uk)

Neal, E., & C. Cheeseman (1996). *Badgers.* T & AD Poyser Natural History Ltd, London

People's Trust for Endangered Species (2016) *Stepping Stones for Stags Factsheet*

Roper T. J et al (2001) Sett use in European badgers *Meles meles*. *Behaviour*, **138** 173-187

Roper T. J (2010) *Badger*. Harper Collins.

Vaughan (2007) *The Grass Snake*

8. Figures

Figure 1: Site Location and Survey Boundary

Figure 2: Extended Phase 1 Habitat Survey Results

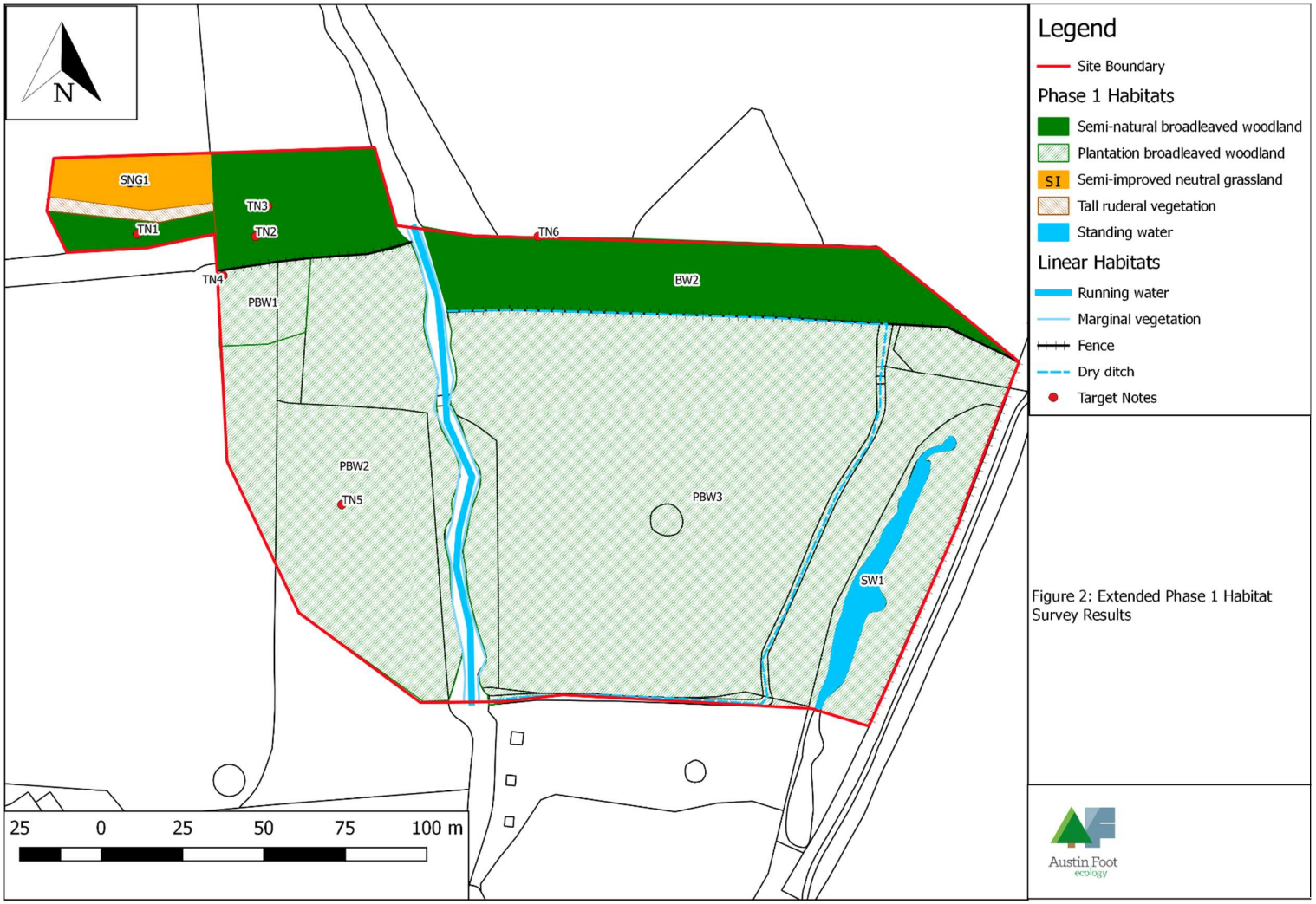


Figure 3: GLTA Survey Results

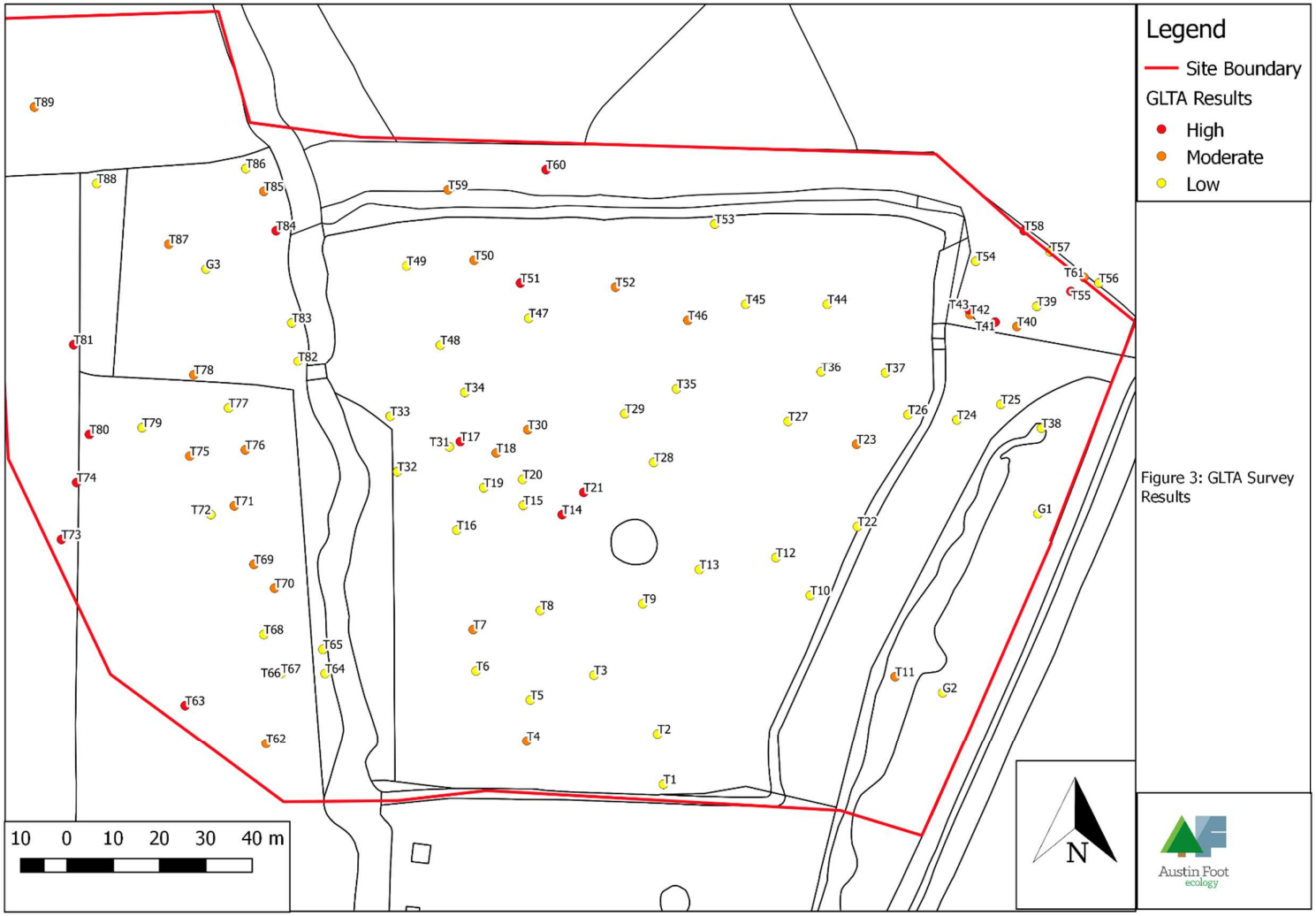
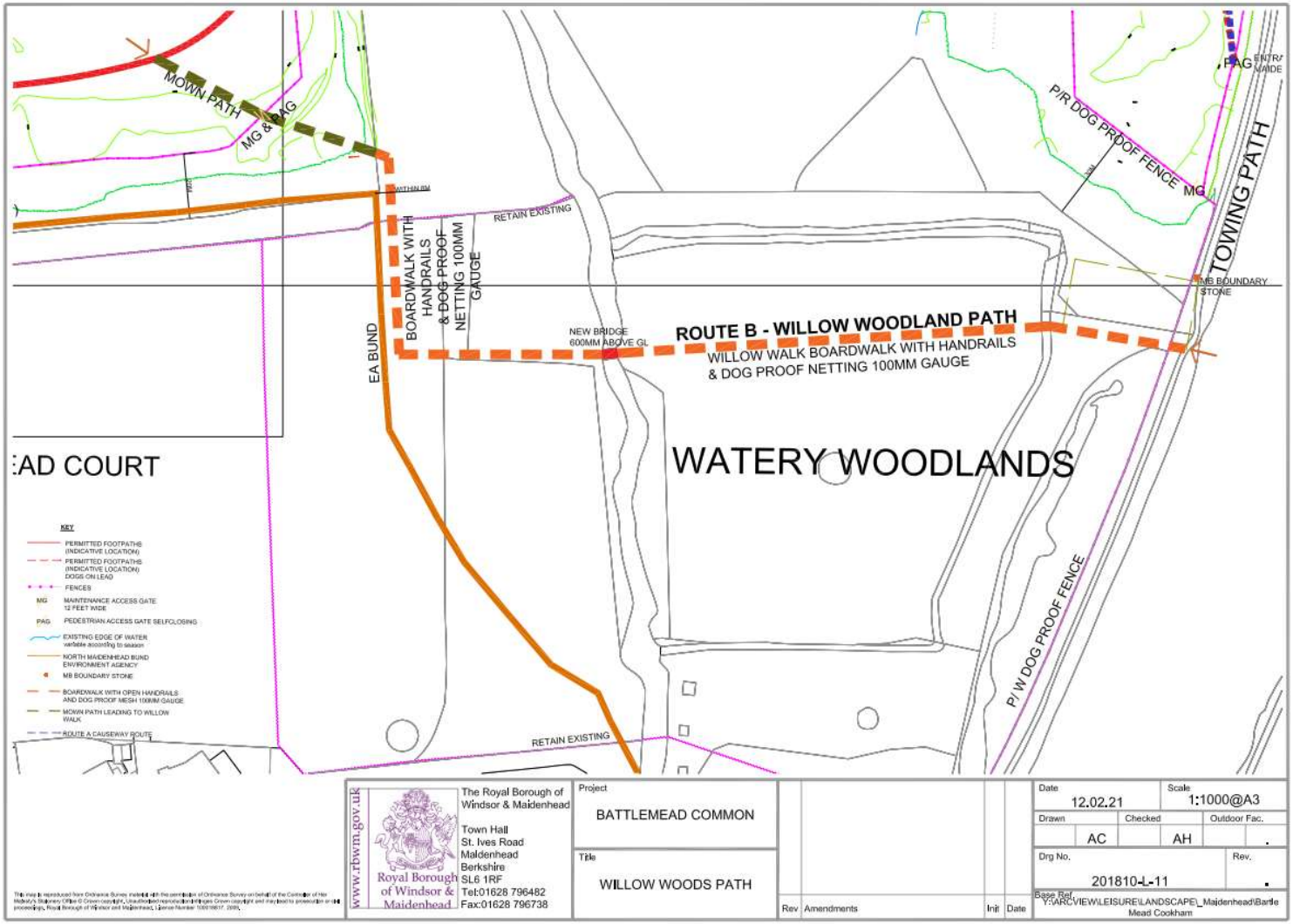


Figure 4: Proposed Footpath/Boardwalk Route



9. Appendix 1 – GLTA Survey Results

Tree Number	Species	Approx. DBH (cm)	Approx. Height (m)	Age	Potential Roost Features (PRFs)				Overall Level of Potential
					Description	Approx. Height above ground level (m)	Position on tree	Aspect (compass bearing)	
T1	Willow	60-80 multi	14-16	Mature	Occlusions in bark	3-5	Stems	East	Low
T2	Willow	100	18-20	Mature	Occlusions in bark	6	Trunk	East	Low
T3	Willow	80-100	16-18	Mature	Occlusion / rot hole in branch	6	Branch	South	Low
T4	Willow	80-100	16-18	Mature	Occlusions	4-5	Trunk and branch	East	Moderate
					Hazard beam	6-8	Branch	East	Low
T5	Willow	60-80	16-18	Mature	Lifted bark, dead wood in canopy and broken branches	8	Branches and trunk	All	Low
T6	Willow	60-80	12-14	Mature	Split branch	4	Branch	South east	Low
T7	Willow	80-100	16-18	Mature	Multiple occlusions and broken branches	6-8	Trunk and branches	West	Moderate
T8	Willow	80-100	16-18	Mature	Occlusions and splits	8-10	Trunk and branches	South	Low
T9	Willow	60-80	16-18	Mature	Split in branch	8	Branch	North east	Low

Tree Number	Species	Approx. DBH (cm)	Approx. Height (m)	Age	Potential Roost Features (PRFs)				Overall Level of Potential
					Description	Approx. Height above ground level (m)	Position on tree	Aspect (compass bearing)	
T10	Willow	80-100	14-16	Mature	Cavity in trunk	2-3	Trunk	South	Low
T11	Willow	100-120	18-20	Mature	Cavity in branch	10-12	Branch	North	Moderate
T12	Willow	60-80	14-16	Mature	Occlusions	6-8	Branches	North	Low
T13	Willow	60-80	16-18	Mature	Cavity in trunk	6-8	Trunk	West	Low
T14	Willow	60-80	18-20	Mature	Split in trunk	6-8	Trunk	South	High
T15	Willow	60-80	16-18	Mature	Occlusion	8-10	Trunk	South	Low
T16	Willow	80-100	18-20	Mature	Occlusions	6-8	Trunk and branches	East	Low
T17	Willow	40-60	16-18	Mature	Split in branch	12-14	Branch	South	High
T18	Willow	30-50	10-12	Semi-mature	Split in trunk	2	Trunk	North west	Moderate
T19	Willow	40-60	14-16	Mature	Hole in trunk	4-6	Trunk	West	Low
T20	Willow	60-80	16-18	Mature	Occlusion in branch	12-14	Branch	East	Low
T21	Willow	60-80	16-18	Mature	Occlusion in branch	12-14	Branch	South	Low
T22	Alder	80-100	16-18	Mature	Woodpecker holes	6-8	Trunk	South	High
T23	Willow	40-60	14-16	Mature	Occlusion/ rot hole	4-6	Trunk	West	Moderate
T24	Willow	80-100	16-18	Mature	Dense ivy cover	All	Trunk	All	Low
T25	Sycamore	40-60	10-12	Semi-mature	Dense ivy cover	All	Trunk	All	Low
T26	Willow	40-60	12-14	Mature	Occlusion	4-6	Trunk	North	Low
T27	Willow	60-80	14-16	Mature	Hazard beam	6-8	Branch	South east	Low
T28	Willow	40-60	14-16	Mature	Rot hole	4-6	Trunk	West	Low
T29	Willow	60-80	16-18	Mature	Hazard beam	6-8	Branch	South	Low

Tree Number	Species	Approx. DBH (cm)	Approx. Height (m)	Age	Potential Roost Features (PRFs)				Overall Level of Potential
					Description	Approx. Height above ground level (m)	Position on tree	Aspect (compass bearing)	
T30	Willow	60-80	16-18	Mature	Hazard beams and occlusions	10-14	Trunk and branches	East	Moderate
T31	Willow	60-80	16-18	Mature	Occlusion	6-8	Trunk	North	Low
T32	Willow	60-80	16-18	Mature	Split in branch	6-8	Branch	North	Low
T33	Willow	60-80	14-16	Mature	Hazard beam	8-10	Branch	West	Low
T34	Willow	60-80	16-18	Mature	Hazard beam	6-8	Branch	East	Low
T35	Willow	60-80	16-18	Mature	Occlusion	6-8	Trunk	South west	Low
T36	Willow	40	12-14	Semi-mature	Occlusion	6-8	Trunk	East	Low
T37	Willow	40-60	12-14	Mature	Hazard beam	8-10	Branch	East	Low
T38	Stump	100-120	4-6	Mature	Dense ivy and hollow trunk	All	Trunk	All	Low
T39	Sycamore	30-40	10-12	Semi-mature	Rot hole	5-6	Trunk	North	Low
T40	Poplar	120-140	20-22	Mature	Deadwood in canopy and rot hole on branch	16-18	Branches	South	Moderate
T41	Ash	40-60 two stems	8-10	Mature	Woodpecker holes	6-8	Trunk	South	High
T42	Ash	40-60 two stems	14-16	Mature	Rot hole	8-10	Trunk	North	Moderate
T43	Poplar	120-140	20-22	Mature	Woodpecker holes	16-18	Trunk	South	High
T44	Willow	60-80	12-14	Mature	Occlusion	6-8	Branch and trunk	East	Low
T45	Willow	40-60	14-16	Mature	Occlusion	4-6	Branch	North	Low

Tree Number	Species	Approx. DBH (cm)	Approx. Height (m)	Age	Potential Roost Features (PRFs)				Overall Level of Potential
					Description	Approx. Height above ground level (m)	Position on tree	Aspect (compass bearing)	
T46	Willow	40-60	12-14	Mature	Occlusion, splits and hazard beam	4-8	Trunk and branches	East	Moderate
T47	Willow	60-80	16-18	Mature	Occlusion	4	Trunk	West	Low
T48	Willow	40-60	16-18	Mature	Occlusion	6-8	Trunk	East	Low
T49	Willow	60-80	16-18	Mature	Occlusion	4-6	Trunk	South	Low
T50	Willow	40	12-14	Mature	Woodpecker hole	4	Trunk	South	Moderate
T51	Willow	60-80	14-16	Mature	Split in trunk and woodpecker hole on east	0-4	Trunk	South	High
T52	Willow	60-80	16-18	Mature	Split in trunk	4-6	Trunk	East	Moderate
T53	Willow	40-60	14-16	Mature	Occlusions in branch	6-8	Branch	South east	Low
T54	Sycamore	60-80	14-16	Mature	Dense ivy cover	All	Trunk	All	Low
T55	Poplar	80-100	16-18	Mature	Woodpecker holes	14-16	Trunk	West	High
T56	Lime	60-80	12-14	Mature	Dense ivy cover	All	Trunk	All	Low
T57	Horse chestnut	80-100	16-18	Mature	Rot hole	6-8	Branch	East	Low
T58	Poplar	120-140	20-22	Mature	Woodpecker holes and rot holes	18-20	Branch	West	High
T59	Ash	60-80 two stem	10-12	Mature	Rot hole	2-4	Trunk	South	Moderate
T60	Poplar	120-140	10-12	Mature	Woodpecker hole	8-10	Trunk	West	High

Tree Number	Species	Approx. DBH (cm)	Approx. Height (m)	Age	Potential Roost Features (PRFs)				Overall Level of Potential
					Description	Approx. Height above ground level (m)	Position on tree	Aspect (compass bearing)	
T61	Poplar	120-140	20-22	Mature	Dead wood in canopy rot hole south	18-20	Trunk	All	Moderate
G1	Sycamore x 4	80-100	20-22	Mature	Dense ivy cover	All	Trunk	All	Low
G2	Ash x 3	40-60	16-18	Mature	Dense ivy cover	All	Trunk	All	Low
T62	Willow	40-60	10-12	Mature	Split in trunk	2-4	Trunk	North	Moderate
T63	Willow	60-80	14-16	Mature	Woodpecker holes	6-8	Trunk	East	High
T64	Willow	40-60	14-16	Mature	Occlusion	2-4	Trunk	West	Low
T65	Willow	60-80	14-16	Mature	Occlusion	6-8	Trunk	North west	Low
T66	Willow	60-80	14-16	Mature	Hazard beam	6-8	Branch	South	Moderate
T67	Willow	40-60	14-16	Mature	Hazard beam	2-4	Branch	West	Low
T68	Willow	60-80	14-16	Mature	Occlusion	4-6	Trunk	West	Low
T69	Willow	60-80	14-16	Mature	Occlusions	8-10	Branches	North	Moderate
T70	Willow	40-60	10-12	Mature	Split in trunk	6-8	Trunk	West	Moderate
T71	Willow	60-80	12-14	Mature	Split in branch	4-6	Branch	West	Moderate
T72	Willow	80-100	16-18	Mature	Occlusion	6-8	Branch	East	Low
T73	Willow	100-120	18-20	Mature	Woodpecker holes, rot hole and deadwood	10-12	Trunk	West	High
T74	Willow	100-120	18-20	Mature	Woodpecker holes, hazard beam and deadwood	8-10	Branch	South	High
T75	Willow	60-80	16-18	Mature	Woodpecker hole	4-6	Trunk	East	Moderate
T76	Willow	40-60	8-10	Mature	Woodpecker holes	4-6	Trunk	North	Moderate

Tree Number	Species	Approx. DBH (cm)	Approx. Height (m)	Age	Potential Roost Features (PRFs)				Overall Level of Potential
					Description	Approx. Height above ground level (m)	Position on tree	Aspect (compass bearing)	
T77	Willow	40-60	12-14	Mature	Split in branch	8-10	Branch	South	Low
T78	Willow	60-80	16-18	Mature	Woodpecker holes	6-8	Trunk	East	Moderate
T79	Willow	40-60	12-14	Mature	Rot hole	8-10	Branch	North	Low
T80	Willow	100-120	18-20	Mature	Woodpecker holes	10-12	Trunk	North east	High
T81	Pedunculate oak	100-120	14-16	Mature	Multiple rot holes	4-10	Trunk and branches	All	High
T82	Willow	80-100	16-18	Mature	Deadwood and lifted bark in canopy	14-16	Branches	All	Low
T83	Willow	40-60	10-12	Mature	Split in trunk	2-4	Trunk	South	Low
G3	Willow x 5	20-40	12-14	Semi-mature	Splits and cavities in trunks	4-6	Trunk	North	Low
T84	Willow	80-100 two stems	16-18	Mature	Cavity in trunk and woodpecker hole	4-6	Trunk	South	High
T85	Willow	80-100	16-18	Mature	Woodpecker hole	8-10	Trunk	South	Moderate
T86	Willow	20-40	6-8	Semi-mature	Split in trunk	4-6	Trunk	East	Low
T87	Willow	40	8-10	Semi-mature	Split in trunk	4-6	Trunk	East	Moderate
T88	Pedunculate oak	120-140	14-16	Mature	Dense ivy cover	All	Trunk	All	Low

Tree Number	Species	Approx. DBH (cm)	Approx. Height (m)	Age	Potential Roost Features (PRFs)				Overall Level of Potential
					Description	Approx. Height above ground level (m)	Position on tree	Aspect (compass bearing)	
T89	Poplar	100-120	6-8 stump	Mature	Hollow trunk and cavities	6-8	Trunk	South	Moderate

10. Appendix 2 – Target Notes and Photographs

10.1. Target Notes

Target Note 1

10.1.1. A main badger sett in the north-west of the Site. This sett had 10 well-used entrances with four entrances showing signs of partial use.

Target Note 2

10.1.2. An outlier badger sett with a single entrance showing signs of partial use.

Target Note 3

10.1.3. An outlier sett with two sett entrances, one showing signs of partial use and one currently disused.

Target Note 4

10.1.4. An outlier badger sett with one entrance showing signs of partial use within the banks of an EA flood defence bund.

Target Note 5

10.1.5. Wet woodland habitat within PBW2 supporting a range of aquatic macrophytes.

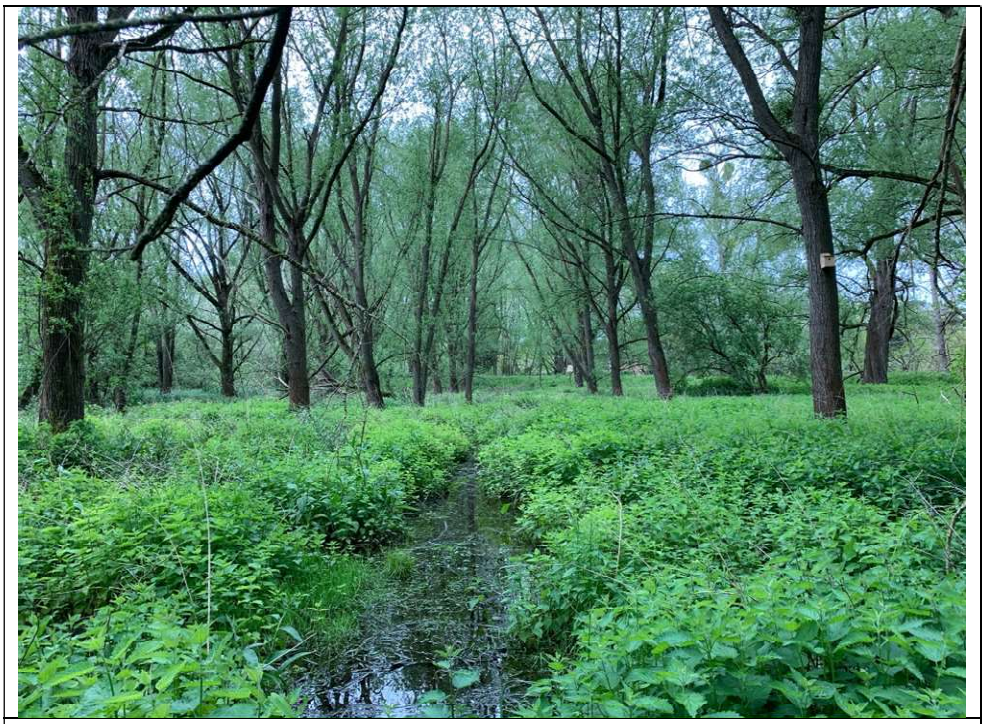
Target Note 6

10.1.6. An area of Himalayan balsam in the north of the Site close to the White Brook.

10.2. Photographs

Photograph 1: Semi-improved grassland (SNG1) in the north-west of the Site.

Photograph 2: Plantation broadleaved woodland (PBW1) in the northwest of the Site.



Photograph 3: Plantation broadleaved woodland PBW2 in the west of the Site.

Photograph 4: Plantation broadleaved woodland (PBW3) covering the majority of the Site.

Photograph 5: Waterbody SW1 in the east of the Site.

Photograph 6: The White Brook

Photograph 7: The main badger sett (TN1).

Photograph 8: Tree T14 with high roosting suitability

Photograph 9: Tree T41 ash with multiple woodpecker holes offering a high quality roosting feature.

Photograph 10: Tree T1 with occlusions in bark (a typical feature of the willow trees on Site) offering low roosting suitability.

Photograph 11: Tree T66 a hazard beam (split branches) common to many trees on Site offering low roosting suitability.

Photograph 12: Himalayan balsam in the north of the Site

11. Appendix 3 – Relevant Legislation

11.1.1. This section briefly summarises the relevant legislation pertaining to habitats and species mentioned within this report. Please note that the following text does not constitute legal advice.

11.2. European Legislation (Bats)

11.2.1. The original (1994) "Habitat Regulations" transposed the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC) into national law. The Conservation of Habitats and Species Regulations 2017 (as amended) consolidates the various amendments that have been made to the Regulations.

11.2.2. "European protected species" (EPS) are those which are present on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended) and includes all UK bat species. These species are subject to the provisions of Regulation 41 of those Regulations. All EPS are also protected under the Wildlife and Countryside Act 1981 (as amended). Taken together, these pieces of legislation make it an offence to:

- *Intentionally or deliberately capture, injure or kill any wild animal included amongst these species*
- *Possess or control any live or dead specimens or any part of, or anything derived from these species*
- *deliberately disturb wild animals of any such species*
- *deliberately take or destroy the eggs of such an animal, or*
- *intentionally, deliberately or recklessly damage or destroy a breeding site or resting place of such an animal, or obstruct access to such a place*

11.2.3. For the purposes of paragraph (c), disturbance of animals includes in particular any disturbance which is likely—

- *to impair their ability to survive, to breed or reproduce, or to rear or nurture their young,*
- *or in the case of animals of a hibernating or migratory species, to hibernate or migrate; or*
- *to affect significantly the local distribution or abundance of the species to which they belong.*

11.2.4. Although the law provides strict protection to these species, it also allows this protection to be set aside (derogation) through the issuing of licences. The licences in England are currently determined by Natural England (NE) for development works. In accordance with the requirements of the Regulations (2017), a licence can only be issued where the following requirements are satisfied:

- *The proposal is necessary 'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'*
- *'There is no satisfactory alternative'*

- *The proposals 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range*

11.3. National Legislation

Species and Habitats of Principal Importance

11.3.1. Priority species are those species shown on the England Biodiversity List published by the Secretary of State in accordance with Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Planning authorities have a duty under Section 40 of the NERC Act to have regard to priority species and habitats in exercising their functions including development control and planning.

Common Reptiles

11.3.2. The common, widespread species of reptile (slow worm, grass snake, adder and common lizard) are protected through Sections 9(1) and 9(5) of the Wildlife and Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000, making it an offence to:

- Intentionally or recklessly kill or injure any reptile*;*
- Sell, offer for sale, possess or transport for the purchase of sale or publish advertisements to buy or sell any reptile*.*

11.3.3. Reptiles across the UK have undergone significant declines in recent years and all species of reptile within the UK are now included on the list of species of principal importance prepared in response to Section 41 of the Natural Environment and Rural Communities (NERC) Act, 2006. This legislation placed a duty on the Secretary of State to publish, review and revise lists of living organisms in England that are of principal importance for the purpose of conserving biodiversity. The NERC Act also required the Secretary of State to take, and promote the taking of, steps to further the conservation of the listed organism.

Badgers

11.3.4. Badgers are protected under the Protection of Badgers Act 1992. This makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. A licence can be granted by Natural England to permit works that would otherwise result in an offence (e.g. to allow sett closure where activities close by may otherwise result in disturbance or damage to the sett).

Wild Mammals (Protection Act, 1996 (as amended)

11.3.5. Under the Wild Mammals (Protection) Act 1996 it is an offence to cause unnecessary suffering to wild mammals, including crushing and asphyxiating. This Act is primarily concerned with animal welfare and aims to prevent cruelty. As a result, offences include those actions with the intent to inflict unnecessary suffering. A wild mammal includes any mammal which is not domestic or captive. Red foxes, wild deer and other mammals such as rabbits are therefore covered by the Act.

Invasive flora (Himalayan balsam)

11.3.6. Plant species listed on Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended). It is illegal to plant or other cause to grow in the wild any plant included on Schedule 9 of the WCA. Note that the Department for Environment Food and Rural Affairs (DEFRA) do not consider planting of Schedule 9 species in private gardens, estates and amenity planting as 'planting in the wild' so long as reasonable measures are taken to confine them to the cultivated area (i.e. to prevent spread into the wild).