Sandleford Park, Newbury

PROOF OF EVIDENCE OF DAVID WEST MENV SCI (HONS) CENV MCIEEM ON ECOLOGY MATTERS - APPENDICES

APP/14

Bloor Homes & The Sandleford Farm Partnership

April 2021

Prepared on Behalf of Tetra Tech Limited. Registered in England number: 01959704

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APPENDIX A – WOODLAND ASSESSMENT AND MITIGATION PRINCIPLES

Site:	Sandleford Park, Newbury
Client:	Bloor Homes & The Sandleford Farm Partnership
Job Number:	B024891
Report Type(s):	Woodland Impact Assessment and Mitigation Principles

INTRODUCTION

It is proposed to develop Sandleford Park as mixed housing and appropriate retail facilities, together with a Country Park with public access. Within the site there are seven woodlands, of which Barn Copse, Dirty Ground Copse, Slockett's Copse, High Wood, Crockett Wood and parts of Waterleaze Copse are classified as semi-natural ancient woodland in the Ancient Woodland Inventory (Figure 1). These woodlands comprise the High Wood Complex County Wildlife Site (CWS). These woodlands are one of the main ecological features and will all be retained and managed as part of the Country Park and wider open space within the site.

This report discusses key impact pathways in relation to the woodlands to further qualify the potential for adverse effects, and sets out avoidance or mitigation principles where necessary which will be detailed as part of appropriate Reserved Matters applications.

MINIMISING VISITOR IMPACTS

People are attracted to woodlands, especially woodlands like those at Sandleford Park some of which have some good displays of bluebells in the spring. Many woodland National Nature Reserves such as Leigh Woods NNR/SAC, Burnham Beeches NNR/SAC and Clyde Valley Woodlands NNR, allow public access to the woodlands. It is clear therefore that public access does not inevitably result in significant adverse effects or degradation. It is unlikely that access to the woods at Sandleford Park can be entirely prevented so it is important to minimise the impacts of visitors.

Public access impacts to woodlands may arise from a range of sources (Littlemore & Barlow 2005; Littlemore & Rotherham 2010). For example, exercise, especially with dogs off leads, may result in disturbance to birds and other wildlife, potentially resulting in smaller wildlife populations, construction of mountain bike trails affects soils and destroys ground vegetation, trampling and creation of unofficial paths can lead to loss of vegetation especially in winter when soils are wet and children may make play dens. The sustainable management of the woodlands will therefore aim to minimise these impacts and balance conflicts between wildlife conservation and recreational activities. Importantly, if there is some visitor access to the woods, this will give positive pressure to manage the woodlands appropriately as the visitors will value them, and provide surveillance.

Littlemore & Barlow (2005) listed good practice for managing public access in woods.

- Integrate access policy within management plans for all woods of ecological value, and use information technology to help this to occur.
- Promote effective interpretation, implement environmental education and use non-intrusive management techniques to engage with the public. Addressing crime and public safety issues in urban woodlands will have to be high on the agenda.
- As every wildlife site is unique, so any prescribed management objectives must also be. This way forward will allow the reduction of damage to ecosystems in the countryside without diminishing the visitor experience.
- Habitat conservation priorities (e.g. habitat zoning) can be undertaken in the face of providing a high quality recreational experience without additionally compromising other activities and promoting 'access for all'.

- Effective trail management is the key to managing visitors, from the initial design to subsequent management. Concentrate on ‘critical points’, e.g. steep, wet, worn areas. Surface and drain pathways adequately and locate trails near the perimeter of reserves and in zones that have already been impacted upon.
- Try to encourage specialist users including campers, horse riders and mountain bikers to use specific areas or trails that form part of a pre-defined network.

A woodland public access management plan incorporating these recommendations will form part of the detailed management proposals for the Country Park and open spaces to be submitted at Reserved Matters.

CONTROLLING ACCESS

To control access, the perimeter of each woodland will initially be fenced. The buffer zones around each wood (see below) will also have the outer 7.5 m planted with native shrubs which will develop to form scrub. This will minimise access except at the specific entry points at existing access paths and tracks.

A review of the existing access and paths for the woods was undertaken. There is currently no formal public access to any of the woods via public rights of way, though there was some evidence of visitors in Barn Copse (e.g. litter, cans, small paths). The woods have paths and access tracks used by the farm and pheasant shoot, some of which are either not shown or not shown accurately on existing maps (Figure 2).

Existing paths in the woodlands will be used to provide access. Signage will request visitors stay on the paths in the woodland, and that dogs are kept on leads. The provision and localised upgrading of surfaced paths/boardwalks will avoid trampling damage to flora (in particular) wet flushes and springs, as visitors will prefer to follow made paths which are dry underfoot at wet times of year. Consideration will also be given to fencing of paths.

The woodland paths and tracks will be mapped accurately and assessed for requirements for improving their bases for use as paths; many are already on firm soils. Where firmer bases are needed, the paths will be made of an inert, porous top layer dressed straight onto the ground with no digging of foundations. In the few places where paths cross wet flushes (perhaps 30 m total throughout), boardwalks will be used. All routes will also be subject to update botanical and wildlife surveys (e.g. for badgers) at the Reserved Matters stage to inform detailed design.

Barn Copse

There is one keeper’s path near the north east edge of the wood and another keeper’s track which give access (Figure 2). There is also a hint of a footpath east-west path through the NW arm of the wood which would provide access to view the bluebells if holly is also cleared.

Crook’s Copse

There is only one very short keeper’s path from the south side which goes nowhere. No paths are proposed for this wood to protect sensitive vegetation (carpets of bluebells, though the holly is also extensive and threatens these).

Dirty Ground Copse

There are a series of flushes running downhill along the wood which would be sensitive to trampling. There are two existing paths which could provide access (Figure 2). An S-shaped woodland ride/path ride approximately bisects the wood across some boggy ground. There is also a poorly defined

keeper's vehicle track into the southern corner. Both these proposed paths would require boardwalks to avoid damage to the wet flushes and their flora which are a feature of this wood.

High Wood

Three are many vehicle tracks within the wood associated with the pheasant shoot and pen, which mostly do not match tracks marked on maps (Figure 2). Most of these paths are dry and have been made up with stone/ballast in the muddier parts. All existing tracks within the wood would be acceptable for access.

Slockett's Copse

There is one existing good keeper's vehicle track across the south east corner which is suitable for an access path, though muddy at the south end (requires making up), and there is a second keeper's vehicle track which might require a small amount of improvement (Figure 2).

Waterleaze Copse

There is one vehicle track to the river and small paths south of the two ponds in the northern arm. However, no paths are proposed to prevent access to the more sensitive wet woodlands adjacent to the River Enborne.

Gorse Covert

Although this is not ancient woodland (Figure 1), it can be treated the same as the other woods. The existing ride on the south-east is suitable as a path (Figure 2). An east – west link is proposed on the Parameter and Strategic Landscape and Green Infrastructure (SLGI) Plans. This is suitable subject to further detailed botanical surveys to identify an appropriate route.

WARDENING

The scheme includes the provision of a Warden for the Country Park and woodlands who will have responsibility for helping minimise impacts on a day-to-day basis. Duties would include:

- Stopping children making dens/camps in woods.
- Stopping camping and camp fires in woods.
- Stopping mountain bike track creation in the woodlands.
- Clearing and/or organising litter picking.
- Tracking dumping of garden waste in woodland areas and ensuring removal.
- Removal of non-native species including Schedule 9 plants such as Himalayan cotoneaster *Cotoneaster simonsii*.
- Tree safety assessments.
- Signage in woodlands to limit access to paths.
- Discouraging vandalism of trees.
- Implementing positive woodland management.

BUFFER ZONES

Buffer zones protect ancient woodland and individual ancient or veteran trees from damage. The Standard Advice for protection of ancient woodland (https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences) states that there should be a buffer zone of at least 15 metres to avoid root damage.

The existing buffer zones at Sandleford Park is shown in Figure 3. The majority of the woodland edges have practically no buffer zone with cultivated arable or improved grassland typically cultivated to within 1 m of the wood edge or tracks adjacent to the woodland edges. The woodlands bordering the two central valleys are adjacent to semi-natural wet grasslands which will be retained. The existing buffer zones are on average 14.9 m wide (range 1-99.3m).

The woodland buffer zones for the parameter plan are shown in Figure 4. This demonstrates how the SPD requirement for minimum 15m buffers has been adhered to. This shows that 33% of the total woodland edge has 15m buffers to the proposed development parcels. The SLGI Plan shows how these could be exceeded with only 6% of the woodland edge having the minimum 15m buffer required by the SPD and Standing Advice. The buffer zones on the indicative plan adjacent to the proposed development parcels have widths of up to 39.7m (Figure 5), with much larger buffers where the woodlands are adjacent to the Country Park or open space. This shows there will be an increase in the size of buffers for the woodland parcels.

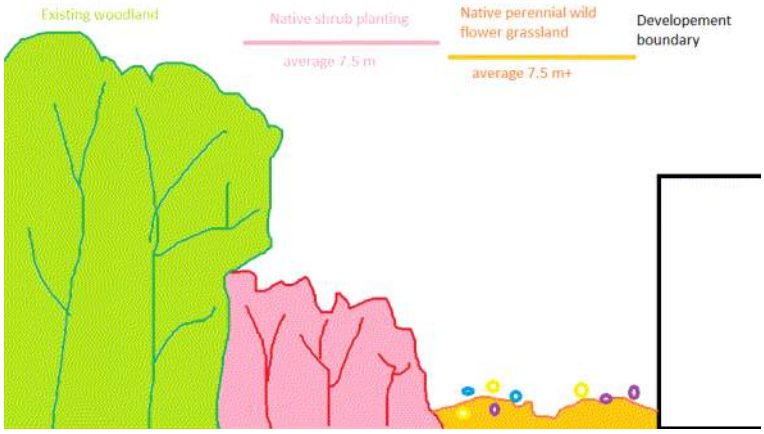
Figure 7 shows the existing adjacent land use to the woodland edges, typically comprising cultivation up to the woodland edge, sometimes with a track. 4021 m (71%) of the woodland edges are currently adjacent to cultivated ground such as arable or improved grassland where there is high potential for fertiliser or herbicide drift into the woodlands (e.g. Willi et al. 2005) , or farm track where farm vehicles may compress the soil and roots. 1662 m (39%) of the woodland edges are adjacent to semi-natural habitats such as marshy grassland which will be retained.

Figure 8. Typical cultivation up to edge of woodland at Sandleford, often with a temporary track which itself is ploughed.

The Standing Advice states that where possible, a buffer zone should contribute to wider ecological networks, be part of the green infrastructure of the area and consist of semi-natural habitats such as woodland, scrub or grassland planted with local and appropriate native species.

The proposals comply with this Standing Advice and state that buffer zones will have either native shrub planting or native shrub planting and open space. A typical profile for where planting is required is shown in Figure 9.

Figure 9. Typical woodland buffer zone profile showing planting of native shrubs adjacent to woodland with perennial wild flower grasslands towards the development.



The shrub plantings will be located immediately adjacent to the woodland to form a scrubby edge with an average width of 7.5+ m and will comprise native species of local provenance (as available) already present on site such as:

- Blackthorn *Prunus spinosa*
- Dog rose *Rosa canina*
- Dogwood *Cornus sanguinea*
- Elder *Sambucus nigra*
- Field rose *Rosa arvensis*
- Goat willow *Salix caprea*
- Guelder rose *Viburnum opulus*
- Hawthorn *Crataegus monogyna*
- Hazel *Corylus avellana*
- Rowan *Sorbus aucuparia*

The open space will comprise perennial wild flower grassland sown with mixed native species of local provenance (as available) suitable for sandy loams and sandy clays such as:

- Bird's-foot trefoil *Lotus corniculatus*
- Cat's-ear *Hypochaeris radicata*
- Common vetch *Vicia sativa*
- Knapweed *Centaurea nigra*
- Lesser stitchwort *Stellaria graminea*
- Meadow buttercup *Ranunculus acris*
- Meadow vetchling *Lathyrus pratensis*
- Mouse-ear *Cerastium fontanum*
- Oxeye daisy *Leucanthemum vulgare*

This can be managed by an annual cut in the autumn with removal of cuttings.

Overall the proposals provide an improvement for protection of the woodlands and an increase in biodiversity value over the current situation, suitable to mitigate the effects of the proposed development.

LINKAGES BETWEEN WOODLANDS

Linkages between habitat (such as green corridors) can be important for maintaining connectivity between populations of plants and animals.

Hedges are widely accepted as being important for linking woodlands together. Hazel dormice are often regarded as sensitive indicators of connectivity as they are dependent on linkages for their populations to function and studies have shown that dormice prefer to be arboreal and are adverse to gaps (Bright et al. 2003). Dormice are however known to cross gaps regularly including roads (Chanin 2012) and experimental studies have shown that dormice can cross much wider gaps of up to 106 m (Mortelliti et al. 2013).

To quantify changes in linkage between woodlands at Sandleford Park, the numbers of linkages have been calculated as the number of existing intact hedges linking woods and compared with the number post-development. Gaps for gates (usually 3 m wide) are included within intact hedges. Gaps more than 20 m are assessed as not linked following the DEFRA (2007) hedgerow survey handbook which uses 20 m as the definition of a gap. Note that the same link, for example between Barn Copse and Dirty Ground Copse, is counted once for each wood (hence twice overall).

The existing linkages are shown in Figure 10 with the numbers of links summarised in Table 1. Each wood has on average 2.7 links to other woods, with a maximum of 5 links for the centrally located Dirty Ground Copse, and none for High Wood. Few of the hedges are currently continuous and many have farm accesses up to 8 m wide though them.

Table 1. Numbers of hedge links between woodlands within site

Wood	Existing hedge links to other woods	Indicative post-development links
Barn Copse	3	3
Crook's Copse	1 indirect	1
Dirty Ground Copse	4 and 1 indirect	5
Gorse Covert	4	4
High Wood	0	3
Slockett's Copse	2 and 2 indirect	3 and 1 indirect
Waterman's Copse	2	3
Total	**19**	**21**

An indicative plan showing how linkages can be improved in the medium to longer term is given in Figure 11. Many of the existing hedges can be improved (certainly for dormice, and also for other species) by fortifying with additional tree and shrub planting across gaps and by doubling their width with planting either side. Gaps in hedges where there are footpaths can be managed by allowing tree branches to grow over the gaps above head height. There is loss of one hedge, which can be compensated for by adding additional links. The addition of new 'stepping stone' woodlands can be used to link ancient woodlands (Woodland Wildlife Toolkit 2021) – these would comprise a series of small planted woodland blocks with small gaps between. These stepping stone blocks will be used to link High Wood in particular which is currently isolated. The average number of links per wood would be 3.0 under these proposals, a small overall increase in numbers of links but with a doubling of capacity.

HYDROLOGY

Changes to ground and surface water drainage has the potential to affect wet woodland communities. The only woodland with significant wet woodland flushes on site is Dirty Ground Copse. The woodland is on a gentle, north-east-facing slope with springs and flushes running downhill at regular intervals to the north-east, often with iron-rich ground water flushing. These flushes are typically lined with remote sedge, creeping buttercup, bugle, enchanter's nightshade and yellow pimpernel, and sometimes have a few alder trees along the sides (Figure 12). These are 2–4 m wide, narrow, impoverished fragments of the W7b Alnus glutinosa –Fraxinus excelsior – Lysimachia nemorum woodland, Carex remota – Cirsium palustre woodland. Where there has been significant fertiliser inflow washed in from the adjacent arable field above, these flushes may also have patches of nettles.

Figure 12. Wet woodland flush in Dirty ground Copse.

Figure 13 shows the watersheds for the woodland parcels on site calculated using LIDAR data to show slope angle and direction. However, the slope shows that for each watershed, surface water will run into the on-site watercourses and does not remain within the woodlands. The Standard Percentage Runoff (SPR) for the site is 47% and as such a little under half the rainfall within each watershed passes through the woodlands. With the proposed drainage strategy, runoff will be controlled and treated before discharging to the watercourses, thus reducing uncontrolled runoff through the woodlands.

The remaining 53% of rainfall which does not run off infiltrates into the ground. There is the potential for a reduction in the volume of rainfall infiltration within the surface water catchments due to an increase in impermeable surfaces (which have an SPR of 100%). These areas (based on the anticipated average of 55% impermeable surfaces within urban parcels used to inform the drainage strategy) are set out in Table 2.

Table 2. Woodland watershed areas and impermeable surfaces.

Wood	Watershed Area (ha)	Proposed Impermeable Surface Area (ha)
Barn Copse	16.79	1.28

Crook's Copse	12.52	3.04
Dirty Ground Copse	10.57	2.69
Gorse Covert	5.70	0.85
High Wood	11.27	0.05
Slockett's Copse	4.97	0.68
Waterleaze Copse	33.11	0.92
Total	94.92	9.53

This shows that for the majority of the woodlands, there is only a small reduction in permeable surface area within the surface water catchment. The greatest reduction is for Crooks Copse and Dirty Ground Copse with 24.32% and 25.49% respectively. However, this only represents a reduction in water from rainfall infiltrating within the surface water catchment. It does not account for other sources of water including from groundwater within Dirty Ground Copse and the watercourse within Crooks Copse. The drainage strategy and Flood Risk Assessment do not predict any change in groundwater conditions on site, indeed all SuDS features have had to be designed to be impermeable to prevent water infiltrating into the features from the existing high water table.

A detailed drainage strategy will be prepared at the Reserved Matters Stage which will be informed by detailed layouts and hydrological information. Where necessary, this will include measures to enable the controlled discharge of treated surface water into woodlands such as Dirty Ground Copse to make sure there is no significant change in hydrological conditions.

POSITIVE WOODLAND MANAGEMENT

COPPICING AND MANAGEMENT OF HOLLY

The Sandleford woodlands have not been managed for decades and would benefit from the introduction of standard traditional woodland such as rotational coppicing management with removal and replacement of standards.

This management should include control of holly *Ilex aquifolium* which has hugely increased in the understory of woods in SE England over the last 50 years, and Sandleford Park is no exception. There are significant holly layers in Barns Copse, Slockett's Copse, Crook's Copse and a few parts of other woods which dominates the woodland shrub layers to the exclusion of the ground flora such as the bluebells. Without management the Sandleford woods will over the next 20-30 years become uniformly dull and overgrown with holly as a shrub and understory tree, resulting in loss of the ground flora. The targeted removal of perhaps 80% of the holly will give a long-term benefit to the overall diversity of the woodlands.

DEER

There is currently little tree regeneration in the woodland due to roe deer browsing with a clear browse line in most woods at about 1.5 m. There will be no need to control the deer as the increase in human presence around the woods will result in a large reduction in deer presence though disturbance resulting in improved tree regeneration within woodlands.

IMPROVEMENTS FROM EXISTING MANAGEMENT

Further improvements will result from a change from the sporting use and in adjacent agricultural use:

The introduction of buffer zones (as above) will eliminates impacts from currently ploughing up to the wood edge and fertiliser and herbicide drift and flow of contaminated ground water into woods.

The removal of the pheasant shoot from High Wood and imposition of sympathetic woodland management will improve the immediate woodland environment in High Wood. Madden & Sage (2020) report localised impacts around release pens such as physical disturbance of soil, nutrient enrichment, reductions in herbaceous plants (especially those of conservation interest) due to damage or enrichment, and reductions in abundance and/or diversity of at least some invertebrate species at or close to release sites.

SUMMARY

Minimising visitor impacts on ancient woodland: A woodland public access management plan will be drawn up incorporating the published recommendations for good practice for managing public access in woods. The sustainable management of the woodlands will minimise impacts and balance conflicts between wildlife conservation and recreational activities.

Controlling access: Fences and scrub planting in buffer zones will be used to limit access. Limited access will be allowed using existing paths and tracks, except for Crook's Copse and Waterleaze Copse. Some path lengths may require surfacing with inert topping to enable dry access, and board walks will be used for the very limited (30 m) sections across boggy ground. Signs will request visitors stay on the paths.

Wardening: The warden will have responsibility for helping minimise impacts on a day-to-day basis by managing how people use the woods (for example preventing camp fires, removal of garden waste and implementing positive woodland management).

Buffer zones: Sandleford Park currently has an average buffer zone of about 14.9 m wide and 71% of the existing woodlands are cultivated to perhaps within 1 m of the woodland border. Post development, all ancient woodlands will have a buffer zone of at least the minimum 15 m wide specified by Standing Advice, with the majority wider. The buffer zones will have either native shrub planting or native shrub planting and open space to provide semi-natural habitats that comply with the Standing Advice.

Linkages: The woodlands on site are currently linked by an average of 2.7 links per woodland, but many of the hedges are narrow and with small gaps. By augmenting the existing hedges with planting either side and adding new 'stepping stone' woodland blacks, post development the average number of links per wood would be 3.0, a small overall increase overall but with a doubling of capacity.

Hydrological impacts: Proposed drainage will manage surface water to reduce the rate of uncontrolled runoff through the woodlands. At the detailed design stage, where necessary, SuDS will be used to allow controlled, treated surface water to enter the woodlands to represent existing conditions.

Positive woodland management: Introduction of traditional woodland management such as rotational coppicing (including control of holly) will provide a marked improvement to the woodland habitat. The high levels of deer browsing preventing regeneration will be reduced by public access. The removal of the pheasant shoot from High Wood will allow recovery of that area of woodland.

Document Control			
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Date:	April 2021		
Prepared by: **Dr Tim Rich MCIEEM**		**Checked and Approved by** **David West CEnv MCIEEM**	

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Woodlands

Sandleford Park

Bloor Homes and Sandleford Farm Partnership

F

Legend

- Site boundary
- Ancient and Semi-Natural Woodland © Natural England
- Other woodland

Notes: Basemap = Strategic Landscape and Green Infrastructure Plan Figure 4.3 04627.00005.16.632.13 by SLR

Drawn by: BB
Checked by: DW
Office: Southampton

Figure No. 1
Revision No. A

0 80 160 240 Meters

Scale 1:5,786 @A3

06 April 2021

NGR: 446851E 164553N

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Existing Paths and Tracks

Sandleford Park

Bloor Homes and Sandleford Farm Partnership

F

Legend

- Site boundary
- Woodland boundaries
- Existing woodland paths and tracks

Notes: Basemap = Strategic Landscape and Green Infrastructure Plan Figure 4.3 04627.00005.16.632.13 by SLR

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Figure No. 2

Revision No. A

0 80 160 240 Meters

Scale 1:5,786 @A3

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Existing Buffer Zones

Sandleford Park

Bloor Homes and Sandleford Farm Partnership

F

Legend

- Site boundary
- Woodland boundaries
- Woodland buffers

Notes:

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Figure No. 3
Revision No. A

0 80 160 240 Meters
Scale 1:5,500 @A3

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Woodland Perimeters (Parameter Plan)

F

Sandleford Park

Bloor Homes and Sandleford Farm Partnership

Legend

- Site boundary
- Woodland boundaries
- Perimeter of woodland with 15m buffer (1,967 m or 33% or total woodland edge)
- Perimeter of woodland with more than 15m buffer (3,968 m or 67% of total woodland edge)

Notes: Basemap = 200302 - 14-273-3A (PP02 RevH1) Land Use and Access Parameter Plan

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Figure No. 4

Revision No. A

0 80 160 240 Meters

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Woodland Perimeters (Strategic Landscape and Green Infrastructure Plan)

F

Sandleford Park

Bloor Homes and Sandleford Farm Partnership

Legend

- Site boundary
- Woodland boundaries
- Perimeter of woodland with 15m buffer (345 m or 6% of total woodland edge)
- Perimeter of woodland with more than 15m buffer (5,589 m or 94% of total woodland edge)

Notes: Basemap = Figure 4.3 - Strategic Landscape and Green Infrastructure Plan

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Figure No. 5

Revision No. A

0 80 160 240 Meters

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Proposed Woodland Buffers

Sandleford Park

Bloor Homes and Sandleford Farm Partnership

F

Legend

- Site boundary
- Woodland boundaries
- Woodland buffers

Notes: Basemap = Figure 4.3 - Strategic Landscape and Green Infrastructure Plan

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Figure No. 6

Revision No. A

0 80 160 240 Meters

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Adjacent Land Use

Sandleford Park

F

Bloor Homes and Sandleford Farm Partnership

Legend

- Site boundary
- Woodland boundaries
- Improved (3,952m 66% of grand total)
- Not improved (1,999m 34% of grand total)

Notes:

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Office: Southampton

Figure No. 7

Revision No. A

0 80 160 240 Meters

Scale 1:5,500 @A3

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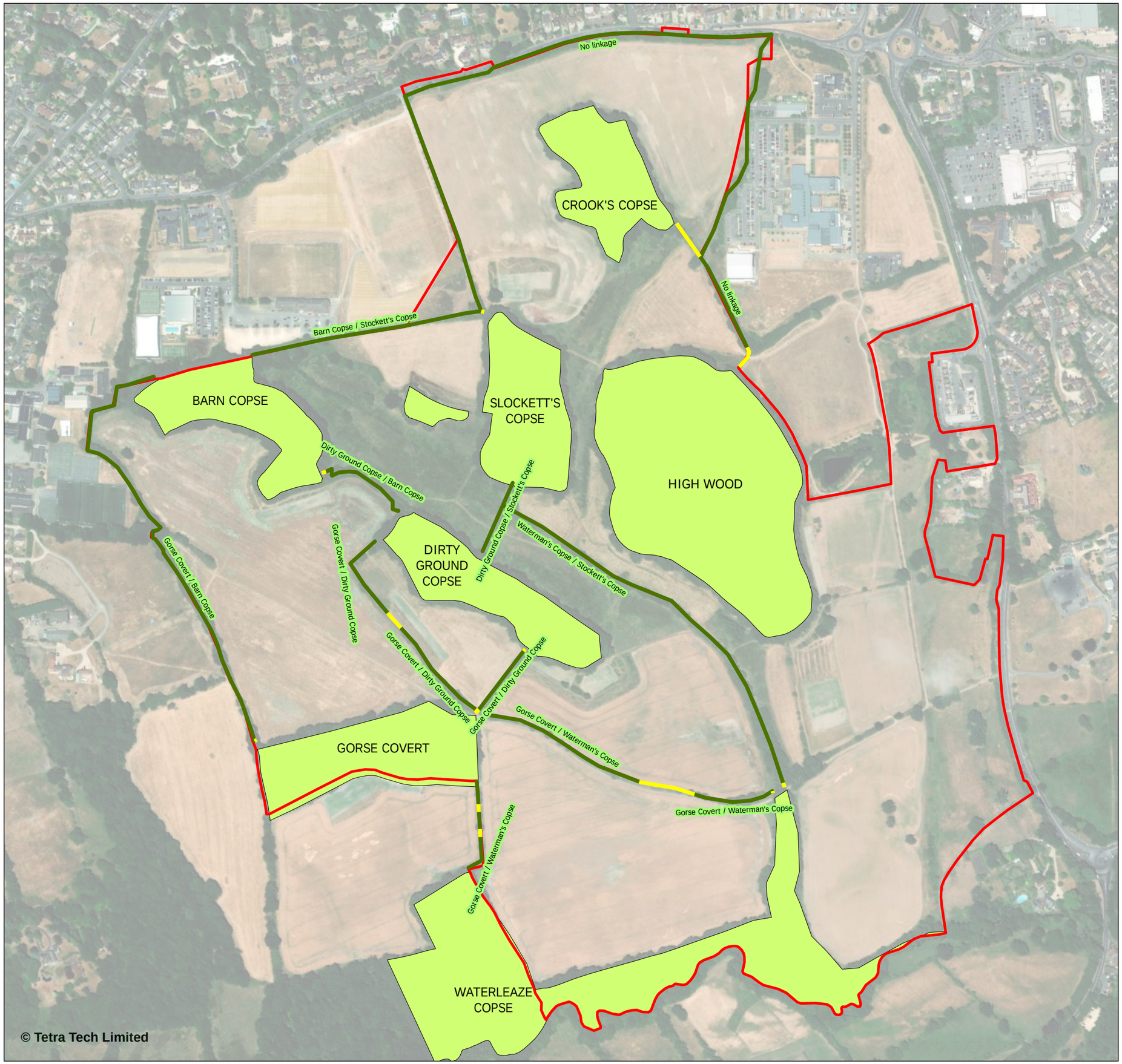

Existing Hedge Linkage

Sandleford Appeal

F

Bloor Homes and Sandleford Farm Partnership

Legend

- Site boundary
- Woodland boundaries
- Hedgerow
- Gap

Notes:

Drawn by: BB
Checked by: TR
Office: Southampton

Figure No. 10
Revision No. A

0 80 160 240 Meters

Scale 1:5,500 @A3

06 April 2021

NGR: 446851E 164553N

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Proposed Hedge Linkage

Sandleford Appeal

Bloor Homes and Sandleford Farm Partnership

F

Legend

- Site boundary
- Intact hedge - native species-poor
- New or reinforced hedge planting
- Gap
- "Stepping stone" woodland/hedge planting

No linkage
No linkage
No linkage
No linkage
CROOK'S COPSE
High Wood / Crook's Copse
Barn Copse / Slockett's Copse
BARN COPSE
SLOCKETT'S COPSE
Dirty Ground Copse / Barn Copse
HIGH WOOD
No linkage
Dirty Ground Copse / Slockett's Copse
DIRTY GROUND COPSE
Waterleaze Copse / Slockett's Copse
No linkage
Gorse Covert / Barn Copse
Gorse Covert / Dirty Ground Copse
No linkage
No linkage
GORSE COVERT
Gorse Covert / Waterleaze Copse
Gorse Covert / Waterleaze Copse
WATERLEAZE COPSE

Notes:

Drawn by: BB
Checked by: TR
Office: Southampton

Figure No. 11
Revision No. A

0 80 160 240 Meters
Scale 1:5,500 @A3

06 April 2021
NGR: 446851E 164553N

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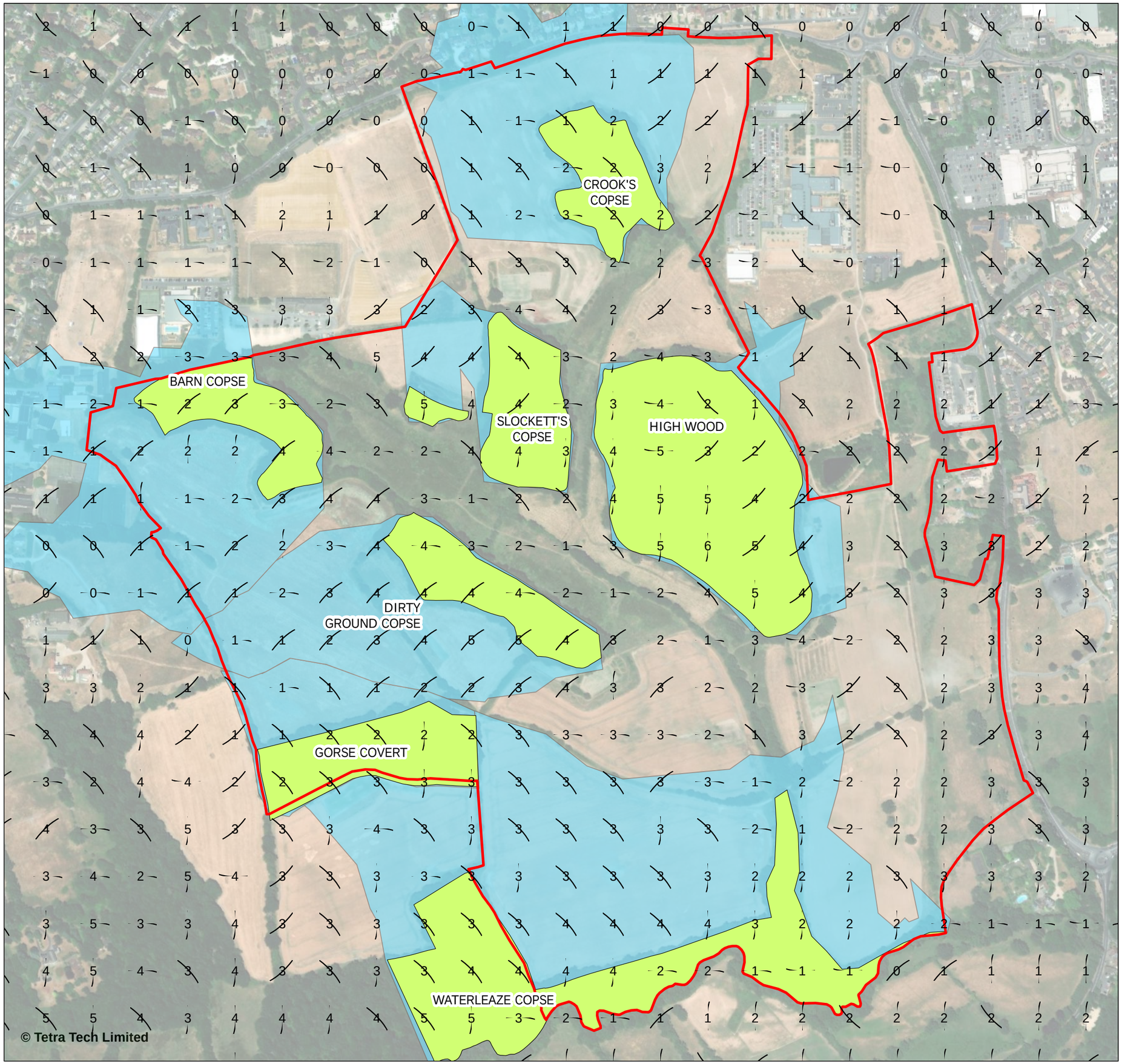

Woodland Watersheds

Sandleford Appeal

F

Bloor Homes and Sandleford Farm Partnership

Legend

- Site boundary
- Woodland boundaries
- Watershed

Slope direction

- Slope direction

Notes:

Drawn by: BB
Checked by: DW
Office: Southampton

Figure No. 13
Revision No. A

0 80 160 240 Meters
Scale 1:5,500 @A3

07 April 2021
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APPENDIX B – BIODIVERSITY NET GAIN ASSESSMENT

Sandleford Park, Newbury

BIODIVERSITY NET GAIN ASSESSMENT

B024891

Bloor Homes & The Sandleford Farm Partnership

March 2021

Prepared on Behalf of Tetra Tech Group Limited. Registered in England number: 6595608

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Document control

Document:	**Biodiversity Net Gain Assessment**
Project:	Sandleford Park, Newbury
Client:	Bloor Homes and Sandleford Farm Partnership
Job Number:	B024891
File Origin:	I:\Projects\Projects A070000 on\A070660-27 Sandleford Park 2020\REPORTS\BNG DEFRA

Revision:	**V2**	**Status:**	**Final**
Date:	April 2021		
Prepared by: Ben Cooke	**Checked by** Kevin Wood GradCIEEM	**Approved By:** David West CEnv MCIEEM	
Description of revision: Revised to use Natural England 2.0 Metric and to include river habitat survey.			

Revision:		**Status:**	
Date:			
Prepared by:	**Checked by:**	**Approved By:**	
Description of revision:			

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EXECUTIVE SUMMARY

Contents	Summary
Site Location	The site is located at Sandleford Park in Newbury, West Berkshire and is centred at Ordnance Survey National Grid Reference SU 46847 64550.
Proposals	Outline planning permission for up to 1,000 new homes; 80 extra care housing units as part of the affordable housing provision; a new two-form entry primary school (D1); expansion land for Park House Academy School; a local centre to comprise flexible commercial floorspace (A1-A5 up to 2,150sq m, B1a up to 200sq m) and D1 use; the formation of new means of access onto Monks Lane; new open space including the laying out of a new country park; drainage infrastructure; walking and cycling infrastructure and other associated infrastructure works.
Existing Site Information	An updated Ecological Appraisal of the site was completed in 2018. Further updated phase 2 surveys for bats, dormice, reptiles, GCN badger and breeding birds were also completed in 2018.
Scope of this Survey(s)	Assess the project biodiversity losses / gains as a result of the proposal site layout and landscaping.
Results	There is anticipated to be a net gain of 165.57 biodiversity units which is an increase of 28.61 % for area-based habitats. In addition, there is anticipated to be a net gain of 1.97 linear units which is an increase of 8.49% in linear habitats. There is no anticipated loss or gain projected for the river units within the site.

GLOSSARY

CEnv	Chartered Environmentalist
CIEEM	Chartered Institute of Ecology & Environmental Management
DEFRA	Department for the Environment, Food and Rural Affairs
MCIEEM	Member of Chartered Institute of Ecology & Environmental Management

1.0 INTRODUCTION

1.1 BACKGROUND

Tetra Tech was commissioned by Bloor Homes and The Sandleford Farm Partnership 2021 to update the Biodiversity Net Gain Assessment for Sandleford Park, Newbury (the site) using The Biodiversity Metric 2.0 (Natural England, 2019a). The site was original assessed using the Biodiversity Impact Assessment Calculator in use by Warwickshire County Council (Martland, 2014).

The purpose of this assessment is to quantify the biodiversity value of the site prior to development, and the predicted value post development. This is measured in biodiversity units calculated according to the habitats present and their size, distinctiveness and condition. Risk factors are taken into account when quantifying habitats post-development. This enables the quantitative calculation of the predicted change in biodiversity value as a result of the proposed development, with the objective of achieving a net gain in biodiversity.

This report has been prepared by Project Ecologist Ben Cooke.

1.2 SITE LOCATION

The site is located at Sandleford Park in Newbury, West Berkshire and is centred at Ordnance Survey National Grid Reference SU 46847 64550. The survey area, hereafter referred to as the 'site', is shown on Figure 1 and comprised of agricultural fields with areas of grassland and several copses of ancient woodland dispersed throughout. A central valley runs from the north-western corner of the site towards the River Enborne at the site's southern boundary.

1.3 DEVELOPMENT PROPOSALS

Outline planning permission for up to 1,000 new homes; 80 extra care housing units as part of the affordable housing provision; a new two-form entry primary school (D1); expansion land for Park House Academy School; a local centre to comprise flexible commercial floorspace (A1-A5 up to 2,150sq m, B1a up to 200sq m) and D1 use; the formation of new means of access onto Monks Lane; new open space including the laying out of a new country park; drainage infrastructure; walking and cycling infrastructure and other associated infrastructure works. Matters to be considered: Access.

The scheme has evolved through ecological survey and input to design; as such, wildlife corridors are retained in and around the site. All of the woodland blocks are retained, together with the stream corridors (albeit with valley crossings), and the majority of the hedgerows and mature trees.

1.4 PURPOSE OF THE REPORT

The purpose of this report is to:

- Assess the distinctiveness and condition of the vegetation types and other habitats; and
- Present biodiversity off-setting calculations based on the submission landscape strategy (Sandleford Park, Newbury - Combined Strategic Landscape and Green Infrastructure Plan Figure 4.3, SLR 2021)

2.0 METHODOLOGY

2.1 BIODIVERSITY OFFSETTING GUIDANCE

The assessment has been made using The Biodiversity Metric 2.0 (Natural England, 2019a), in conjunction with the user guide (Natural England, 2019b).

2.2 HABITAT ASSESSMENT

Habitats on site pre-development and to be retained, created or enhanced post-development are identified in accordance with the categories specified for UKHab (UK Habitat Classification Working Group, undated).

2.3 AREA AND LENGTH

The area of identified habitats is calculated in hectares (ha), ignoring linear features such as hedgerows or ditches (the area should be measured to the centre line of such features). The length of linear features is measured separately in km.

2.4 DISTINCTIVENESS

Each habitat is assigned a score for distinctiveness. Distinctiveness includes parameters such as species richness, diversity, rarity (at local, regional, national and international scales) and the degree to which a habitat supports species rarely found in other habitats (Treweek et al., 2010). The categories for distinctiveness within the metric are shown within the Natural England, *The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value: technical supplement* (Natural England, 2019c).

Table 1: Categories and score for distinctiveness

Categories	Score
Very High (Section 41 Priority Habitats that are threatened, internationally scarce and require conservation action)	8
High (Section 41 Priority Habitats)	6
Medium (Semi-natural habitats not classified as Priority Habitat)	4
Low (Habitat of low biodiversity value)	2
Very Low (Little or no biodiversity value)	0

2.5 CONDITION

2.5.1 Habitat and Hedge

The condition of each habitat is assessed using the methods set out in the *Biodiversity Metric 2.0: Auditing and accounting for biodiversity value: technical supplement* (Natural England, 2019c).

This approach determines how many of the condition criteria descriptions for each habitat type are met or are not met. For each habitat type, thresholds then apply for the numbers of condition criteria that must be met. For instance, if two or more of the 10 condition criteria for Ditches are not met, then the condition should be assigned as Moderate.

This is used as a guide but may be superseded where appropriate by other evidence and best ecological judgement. Where this is the case, additional information is provided in the tables used to the condition assessment.

Conditions and associated scores in the DEFRA 2.0 Metric are as follows:

- Good: 3
- Fairly Good: 2.5
- Moderate: 2
- Fairly Poor: 1.5
- Poor: 1
- N/A Agriculture: 1
- N/A: 0

A number of lower distinctiveness habitats including cropland and urban habitats are assigned default values and do not require a detailed condition assessment.

2.5.2 River

The condition of rivers is assessed using the methods set out in *A Guide to Assessing River Condition – Part of the Rivers and Streams Component of the Biodiversity Net Gain Metric* (Gurnell et al, 2020).

The condition assessment for rivers is split into two sections; Desk Study and Field Survey. Each section uses a series of criteria to generate two outcomes an Indicative River Type (in the case of the Desk Study) and a Provisional Condition Score (in the case of the Field Survey).

Desk Study

Eight river type indicators are combined to determine Indicative River Type. Five indicators are assessed by desk study (A1 -A5) while three are automatically estimated from the field survey data (A6 -A8). These eight indicators are summarised in Table 2.

Table 2: Indictors used to assess river type and function

Source	Code	Name
Desk Study	A1	Braiding Index
Desk Study	A2	Sinuosity Index
Desk Study	A3	Anabranching Index
Desk Study	A4	Level of Confinement
Desk Study	A5	Valley Gradient
Field Survey	A6	Bedrock Reaches
Field Survey	A7	Coarsest Bed Material Size Class
Field Survey	A8	Average Alluvial Bed Material Size Class

There are a total of 15 river types; canals and navigable rivers, large rivers (approx. wider than 20 m) and 13 river planform-bed material types (A to M). The 13-river planform-bed material types are summarised in Table 3.

Table 3: Indicative Platform-bed River Types

River Type	Geological Category	Geological Sub-category	Physical Morphology
A	Bedrock or Coarse Alluvial	Bedrock	Straight-sinuous
B		Boulder	Straight-sinuous
C		Cobble	Straight-sinuous
D		Gravel (Sand)	Straight-sinuous
E	Other Alluvial	Gravel	Island braided-wandering
F			Straight-sinuous
G			Meandering
H		Sand	Straight-sinuous
I			Meandering
J			Anabranching / Anastomosing
K		Silt / Clay	Straight-sinuous
L			Meandering
M			Anabranching / Anastomosing

Field Survey

A MoRPh survey is used to collect information in the field for subreach(es) of a river. The aim of the MoRPh survey is to survey at least 20 % of the total river length within the site. The surveys assessment information on short lengths (or modules) of a river that are approximately twice the river width. A subreach survey is comprised of five contiguous MoRPh module surveys to gather information for subreaches 50, 100, 150 and 200 m in length (250 m for canals, navigable and large rivers) according to the width of the river. MoRPh surveys included the river and all habitat within a radius of 10 m.

A Provisional Condition Score is assessed using 32 condition indicators, split between four morphological features (Bank Top, Bank Face, Channel- Water Margin and Channel Bed). Each river condition indicator is assigned a score of 0 to +4 (positive indicators) or 0 to -4 (negative indicators). These 32 condition indicators are listed in Table 4 with all negative indicators listed in italics.

Table 4: Indictors used to assess

Location	Code	Condition Description
Bank Top	B1	Vegetation Structure
	B2	Tree Feature
	B3	Water Related Features
	B4	*NNPS Cover*
	B5	*Managed Ground Cover*
Bank Face	C1	Riparian Vegetation Structure
	C2	Tree Feature
	C3	Natural Bank Profile Extent

	C4	Natural Bank Profile Richness
	C5	Natural Bank Material Richness
	C6	Bare Sediment Extent
	C7	*Artificial Bank Profile Extent*
	C8	*Reinforcement Extent*
	C9	*Reinforcement Material Severity*
	C10	*NNPS Cover*
Channel – Water Margin	D1	Aquatic Vegetation Extent
	D2	Aquatic Morphotype
	D3	Physical Feature Extent
	D4	Physical Feature Richness
	D5	*Artificial Features*
Channel Bed	E1	Aquatic Morphotype Richness
	E2	Tree Features Richness
	E3	Hydraulic Features Richness
	E4	Natural Features Extent
	E5	Natural Features Richness
	E6	Material Richness
	E7	*Siltation*
	E8	*Reinforcement Extent*
	E9	*Reinforcement Severity*
	E10	*Artificial Features Severity*
	E11	*NNPS Extent*
	E12	*Filamentous Algae Extent*

The Preliminary Condition Score for each MoRPh5 subreach is calculated as the sum of the average positive condition indicator scores and the average of the negative condition indicator scores.

A Final Condition Score is then assigned in accordance with the river type under assessment.

Final Condition scores in the River Condition Section of the DEFRA 2.0 Metric are as follows:

- Good: 5
- Fairly Good: 4
- Moderate: 3
- Fairly Poor: 2
- Poor: 1

2.6 CONNECTIVITY

As the Biodiversity Metric 2.0 is a beta version, the assessment the connectivity score applied to habitats is restricted. As stated in Section 2.17 of the technical supplement (Natural England, 2019c):

"…all High and Very High distinctiveness habitats is to be assigned a Medium connectivity multiplier; other habitats a low connectivity multiplier'.

2.7 RISK FACTORS

As part of any proposed habitat creation and restoration, risk factors must be considered to correct for disparity, delay or risk, these are:

- Time to target condition; and,
- Difficulty of restoration / creation.

To take this into account, creation of a habitat which will take many years to get to target condition or is difficult to recreate would have a reduced biodiversity value compared to the same habitat already in situ. Therefore, to compensate for loss of that original habitat a larger area would be required as an offset.

Default values are provided for a range of habitats as part of the DEFRA 2.0 metric. These may be altered if informed by knowledge of the site and proposed management prescriptions.

3.0 RESULTS

The data used to inform the condition assessments for the habitats pre- and post-development and calculations from the DEFRA 2.0 Metric are provided in Appendix C to Appendix H.

The pre-development habitats, linear features and rivers have been mapped in accordance with the JNCC Phase 1 as shown in Figure 2. These were converted into UKHab using the DEFRA 2.0 Metric conversion tool and with reference to the relevant UKHab habitat descriptions.

The post-development habitats, linear features and rivers shown in Figure 3 and the target conditions they are realistically likely to achieve would be:

- Woodland and Forest – Lowland mixed deciduous woodland. Target condition moderate.
- Woodland and Forest – Wet woodland. Target condition good.
- Woodland and Forest – Other woodland; broadleaved. Target condition good.
- Wetland – Purple moor grass and rush pastures. Target condition moderate.
- Grassland – Other neutral grassland (JNCC – marshy grassland). Target condition good.
- Grassland – Other neutral grassland (JNCC – semi-improved neutral grassland). Target condition moderate.
- Lakes – Ponds (Priority Habitat). Target condition poor.
- Urban – Developed land; sealed surface. Target condition n/a – other
- Urban – Vegetated gardens. Target condition poor.
- Line of trees – Target condition moderate
- Native hedgerow – Target condition moderate
- Native hedgerow with trees – Target condition moderate; and
- Rivers and Streams (Other) – Target condition moderate.

It is not possible to accurately determine the ratio of Urban – Developed land; sealed surface to Urban – Vegetated gardens within the development proposals as the application is only Outline. A precautionary estimate of 30 % Urban – Vegetated gardens has therefore been used. The figure is considered to be much higher than this (40 %+), but to avoid potentially over-estimating the units that can be gained, 30 % has been used.

The headline results are provided in Table 2. This shows that with the implementation of the Strategic Landscape and Green Infrastructure Strategy, achievement of the condition of the proposed habitats in the landscape strategy (Appendix B) the development proposals will achieve an increase in habitat units of 165.57 (28.61 %) and an increase of 1.97 linear units (8.49%). Further assessment will be required at the detailed design stage once detailed layouts and landscape proposals are available. However it is clear from this assessment that the scheme is capable of delivering a significant gain for biodiversity.

There is no new river habitat proposed for creation nor is there any proposed loss of river habitat as a result of the development proposals. Proposed crossings do not result in any change in the river condition (the valley crossing is not wide enough to result in significant shading and the addition of a culvert to the Crooks Copse link is not significant as the watercourse is already culverted for much of its length). In addition, the implementation of enhancements to the river habitat are not considered to increase the habitat's condition beyond its current level (moderate). The development proposals will therefore result in no change to the number of river units within the site.

Table 5: Headline results

Categories	Habitat Type	Units
On site baseline	Habitat units	578.65
	Hedgerow units	23.24
	River units	15.46
On site post-intervention (Including habitat retention, creation, enhancement & succession)	Habitat units	744.21
	Hedgerow units	25.21
	River units	15.46
Off-site baseline	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation, enhancement & succession)	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (Including all on site & off-site habitat retention / creation)	Habitat units	165.57
	Hedgerow units	1.97
	River units	0.00
Total net % change (Including all on site & off-site habitat creation and retained habitats)	**Habitat units**	**28.61 %**
	Hedgerow units	**8.49%**
	River units	**0.00 %**

4.0 REFERENCES

- Gurnell, M, A., Scott, J, S., England, J., Gurnell, D., Jefferies, R., Shuker, L and Wharton, G. Assessing river condition: A multiscale approach designed for operational application in the context of biodiversity net gain. River Research and Applications, 2020; 36, 1559-1578.
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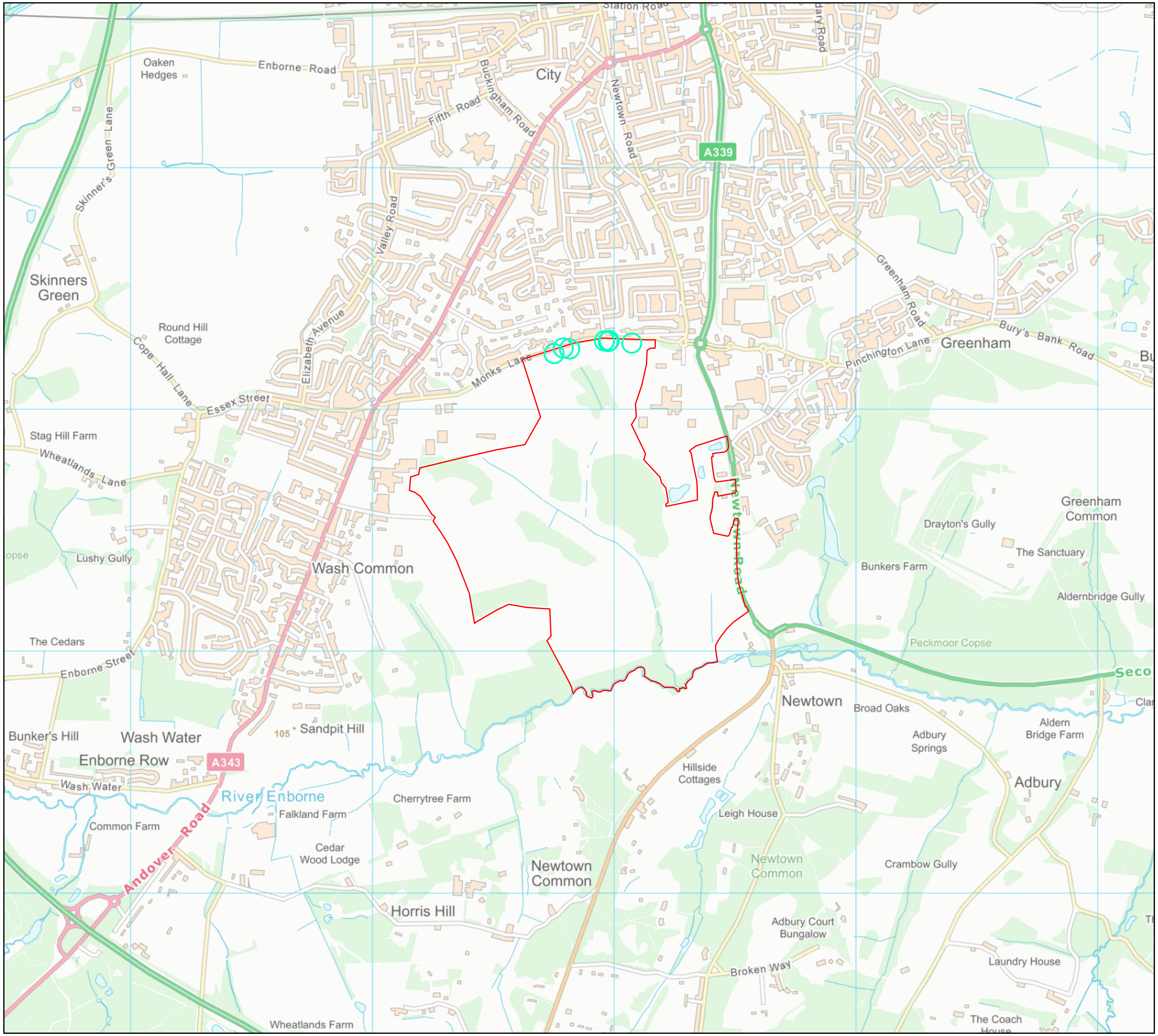
- WYG, (2019a), Sandleford Park, Newbury: Ecological Appraisal, Report of behalf of Bloor Homes and Sandleford Farm Partnership, (Appendix F1), Project Number – A070660-24.
- WYG, (2019b), Sandleford Park, Newbury: Ecological Mitigation and Management Plan, Report of behalf of Bloor Homes and Sandleford Farm Partnership, (Appendix F18), Project Number – A070660-24.

FIGURES

Figure 1 – Site Location Plan
Figure 2 – Pre-development UKHAB Plan
Figure 3 – Post-development UKHAB Plan



Rev	Date	Notes
A	27/11/19	Initial map production

Legend

Site boundary

Grass snake location

0 100 200 400 Metres

N

Site Location Plan

Sandleford Park
Bloor Homes & Sandleford Farm Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:15,000	A070660-26	Figure 1	A

Drawn by:	Drawn date:	Approved by:
Maddie Errington	27/11/2019	Jonathan Jackson

Pre-development UKHab Plan

Sandleford Park

F

Bloor Homes and Sandleford Farm Partnership

Legend

- Site boundary
- Cropland – Cereal crops
- Grassland – Modified grassland
- Grassland – Other neutral grassland
- Heathland and shrub – Mixed scrub
- Lakes – Ponds (Priority Habitat)
- Sparsely vegetated land – Ruderal / Ephemeral
- Wetland – Purple moor grass
- Woodland and forest – Wet Woodland
- Woodland and forest – Lowland mixed deciduous wood
- Urban – Developed land; sealed surface
- Urban – Vacant / derelict land / bare ground
- Urban – Sustainable urban drainage features
- Native hedgerow
- Native hedgerow with Trees
- Line of Trees
- River and Streams – Other

Notes:

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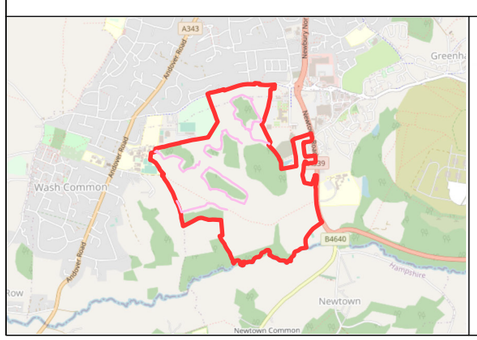
Checked by: BC
Office: Southampton

Figure No. 2
Revision No. A

0 80 160 240 Meters
Scale 1:5,500 @A3

07 April 2021

NGR: 446853E 164545N



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Post-development UKHab Plan

Sandleford Park

Bloor Homes and Sandleford Farm Partnership

F

Legend

- Site boundary
- Grassland – Other neutral grassland
- Urban - Amenity grassland
- Urban – Developed land; sealed surface
- Urban – Sustainable urban drainage features
- Lakes - Ponds (Priority Habitat)
- Woodland and forest – Wet Woodland
- Woodland and forest – lowland mixed deciduous woodland
- Native hedgerow
- Native hedgerow with Trees
- Line of Trees
- River and Streams – Other

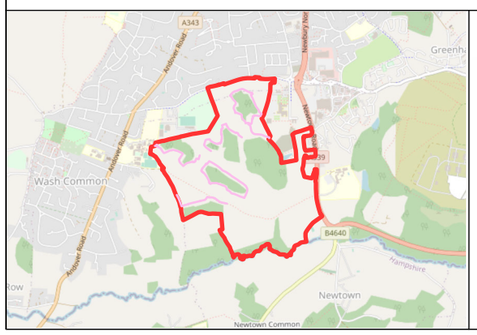
Notes:

Drawn by: BB
Checked by: BC
Office: Southampton

Figure No. 3
Revision No. A

0 80 160 240 Meters
Scale 1:5,500 @A3

07 April 2021
NGR: 446853E 164546N



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APPENDIX A – REPORT CONDITIONS

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The report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections'. Environmental conditions can vary, and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times. No investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather-related conditions. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions. The “shelf life” of the Report will be determined by a number of factors including; its original purpose, the Client’s instructions, passage of time, advances in technology and techniques, changes in legislation etc. and therefore may require future re-assessment.

The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Tetra Tech accept no liability for issues with performance arising from such factors.

APPENDIX B – SLGI PLAN

LEGEND

- Application 3A redline
- Proposed development footprint
- Existing woodland to be retained.
- Existing local wildlife sites (LWS) to be retained
- Existing ancient woodland to be retained (Note 2)
- Existing trees to be retained
- Existing trees to be removed
- Proposed structure and woodland planting
- Proposed advanced structure and woodland planting
- Proposed tree planting reflecting historic vegetation pattern
- Proposed community orchard planting
- Existing hedges to be retained
- Existing hedges to be removed
- New or reinforced hedge planting
- Existing watercourse
- Existing attenuation pond dry / wet
- Proposed SuDS attenuation basin
- Amenity grassland including informal kickabout / picnic areas
- Meadow grassland
- Wet meadow grassland
- Informal route: e.g. mown grass path
- Main footpath route: 2m wide unsealed surface
- Existing track / footpath to be retained.
- Dedicated recreational route: 2m wide e.g. gravel/ bark (no dig construction)
- Sandleford Mile
- Foraging trail
- Trim trail
- Interpretation board / map of country park
- NEAP / LEAP — Designated equipped play area
- Natural play trail
- Vantage points with seating
- Dormouse crossing and Bat hopover
- Main access route with avenue planting
- Pedestrian access links

Scale: 1:2500@A1

0 50 100 150 200 250m

Note:
1) Gorse Covert and Brickkiln Copse are not designated ancient woodland.
2) Ancient woodland areas retained with 15m buffer.

Green Link
Monks Lane
CROOK'S COPSE
Newbury College
Newtown Road (A339)
Existing rugby pitch retained
Spine road
Newbury Rugby Football Club
Crook's Copse Line
CONSENTED NEWBURY COLLEGE EXTENSION
LINK ROAD
COUNTRY PARK: CENTRAL VALLEY
LEAP
Valley Crossing
COUNTRY PARK: NORTHERN VALLEY
HIGHWOOD COPSE PRIMARY SCHOOL SITE
BARN COPSE
SLOCKETT'S COPSE
Parkhouse School and Sports College: safeguarded expansion area
Potential machinery store / office for the Country Park
HIGH WOOD
Warren Road
Proposed key Green Corridor (minimum 8m, max 20m wide).
LEAP
DIRTY GROUND COPSE
St Gabriel's School
Car parking for country park
Existing Public Right of Way upgraded to shared footpath and cycle link: 3m width
NEAP
REPTILE RECEPTOR SITE
RETAINED VIEW CORRIDOR
SANDLEFORD PRIORY
BRICKKILN COPSE
GORSE COVERT
Note 1
COUNTRY PARK: MEADOWS
REPTILE RECEPTOR SITE
REPTILE RECEPTOR SITE
WATERLEAZE COPSE
River Enborne

Sandleford Park, Newbury
Strategic Landscape and Green Infrastructure Plan

SLR global environmental solutions

Figure 4.3

Scale 1:2500 @ A1

04627.00005.16.632.13

APPENDIX C: A-1 SITE HABITAT BASELINE

Table 6: Woodland and forest – Lowland mixed deciduous woodland

Habitat Condition:			
Moderate – Clearly fails at least two of the assessment criteria and does not match the description given for a poor condition woodland.			
Distinctiveness:			
Medium: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	This should be an area of trees with complete canopy cover	X	
2	Native species are dominant. Non-active and invasive species account for less than 10 % of the vegetation cover.	X	
3	A diverse age and height structure of the trees	X	
4	Free from damage [bark stripping; browse line; damaged shoot tips] (in the last five years) from stock or wild mammals with less than 20% of vegetation being browsed.		X
5	There should be evidence of successful (i.e. not browsed off before it gets well established) tree regeneration such as seedlings, saplings and young trees.		X
6	Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps	X	
7	Wetland habitat if they exist within the wood has little sign of drainage or channel straightening		X
8	The area is protected from damage by agricultural and other adjacent operations		X
9	There should be no evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction)		X
10	Invasive non-native plants are below 5 %	X	
11	No signs of significant nutrient enrichment present.	X	
12	More than 3 different native trees and 3 shrub species in an average 10 m radius		X
	Total	**6**	**6**

Table 7: Woodland and forest – Wet woodland

Habitat Condition:		
Moderate – Invasive non-native species (Himalayan Balsam) represent 5 – 20 % of the ground cover		
Distinctiveness:		
Medium: Default score		
No.	**Condition Description**	**Pre-development Condition Met**

Habitat Condition:			
		Yes	No
1	This should be an area of trees with complete canopy cover	X	
2	Native species are dominant. Non-active and invasive species account for less than 10 % of the vegetation cover.	X	
3	A diverse age and height structure of the trees	X	
4	Free from damage [bark stripping; browse line; damaged shoot tips] (in the last five years) from stock or wild mammals with less than 20% of vegetation being browsed.	X	
5	There should be evidence of successful (i.e. not browsed off before it gets well established) tree regeneration such as seedlings, saplings and young trees.	X	
6	Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps	X	
7	Wetland habitat if they exist within the wood has little sign of drainage or channel straightening	X	
8	The area is protected from damage by agricultural and other adjacent operations	X	
9	There should be no evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction)	X	
10	Invasive non-native plants are below 5 %		X
11	No signs of significant nutrient enrichment present.	X	
12	More than 3 different native trees and 3 shrub species in an average 10 m radius	X	
	Total	**10**	**1**

Table 8: Heathland & shrub – Mixed scrub

Habitat Condition:			
Poor – dense scrub, the single wooded species cover is greater than 75%, the habitat has major differences between what is described in the relevant habitat classifications and what is visible on site.			
Distinctiveness:			
Medium: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	Condition assessment criteria for scrub habitats	X	
2	There are at least three woody species, with no one species comprising more that 75% of the cover (except common juniper, sea buckthorn or box, which can be 100% cover)		X
3	There is a good age range – a mixture of seedlings, saplings, young shrubs and mature shrubs.		X
4	Pernicious weeds and invasive species makeup less than 5 % of the ground cover	X	

Habitat Condition:			
5	The scrub has well-developed edge with un-grazed tall herbs.		X
6	There are many clearing and glades within scrub.		X
	Total	**2**	**4**

Table 9: Wetland – Purple moor grass and rush pastures

Habitat Condition:			
Moderate – Clearly fails at least one of the criteria			
Distinctiveness:			
Medium: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	There is no artificial drainage, which would include ditches that are now revegetated and streams that have been depend and widened.	X	
2	The water level and its management should result in surface water throughout the year.	X	
3	Cover of undesirable species (common nettle, docks, creeping/spear thistles, common ragwort and Indian (Himalayan) balsam) should be less than 10%.	X	
4	Cover of scrub should be less than 10%.	X	
5	Cover of bare ground should be less than 10%.	X	
6	No more than 25% of the fen area should have a continuous cover of litter (i.e. dead vegetation).	X	
7	On bogs sphagnum moss cover should be between 40% - 100%. Heathers and cottongrasses should be at least frequent. Cover of dwarf shrubs between 20% and 75% (except when bogmosses (Sphagnum) or other wetland indicators are dominant), with at least two dwarf shrub species frequent.		X
8	Flowering cottongrass plants frequent in spring (where present), or flowering heather plants at least frequent in autumn (where present).		X
9	Reedbed vegetation should include at least 60% common reeds.		X
	Total	**6**	**3**

Table 10: Grassland – Other neutral grassland

Habitat Condition:		
Poor – The grassland fails most of the associated habitat criteria.		
Distinctiveness:		
Low: Default score		
No.	**Condition Description**	**Pre-development Condition Met**

Habitat Condition:			
		Yes	No
1	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.		X
2	The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e. as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.		X
3	Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.		X
4	Undesirable species and physical damage is below 5% cover.	X	
5	Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).		X
6	Cover of bracken less than 20% and cover of scrub and bramble less than 5%.	X	
	Total	**2**	**4**

Table 11: Grassland – Modified grassland

Habitat Condition:			
Poor – The grassland fails most of the associated habitat criteria.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.		X
2	The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e. as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.		X
3	Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.		X

Habitat Condition:			
4	Undesirable species and physical damage is below 5% cover.	X	
5	Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).		X
6	Cover of bracken less than 20% and cover of scrub and bramble less than 5%.	X	
	Total	**2**	**4**

Table 12: Sparsely vegetated land - Ruderal

Habitat Condition:			
Poor – Tall ruderal, ruderal habitat with low biodiversity			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
Limestone Pavement			
1	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.	n/a	n/a
2	The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e. as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.	n/a	n/a
3	Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.	n/a	n/a
4	Undesirable species and physical damage is below 5% cover.	n/a	n/a
Rock Outcrops and Scree			
5	Cover of bracken, scrub and trees less than 25%.	n/a	n/a
6	Cover of weed (for example, creeping and spear thistles, docks, brambles, common ragwort and common nettle) or non-native species less than 1%.	n/a	n/a
7	Less than 50% of live leaves (broad-leaved plants), fronds (ferns) or shoots (dwarf shrubs) show signs of grazing or browsing.	n/a	n/a
	Total	**n/a**	**n/a**

Table 13: Lakes – Ponds (Priority)

Habitat Condition:			
Poor – Fails the majority of the assessment criteria.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	Are of good water quality, with clear water (substrate can be seen) and no obvious sign of pollution in the water body.		X
2	The water body should have semi natural riparian land for at least 10 m from the pond edge.		X
3	Non-woodland ponds should be dominated by plants, be they submerged or floating (note dominance of duckweed is a sign of eutrophication).	n/a	n/a
4	Non-woodland ponds [i.e. that have always been open] should not be shaded more than 50 %.	n/a	n/a
5	Many ponds will be fishless, those which naturally contain fish should not be stocked and should contain a native fish assemblage.		X
6	Ponds should not be artificially connected to other water bodies, e.g. ditches.		X
7	Pond water levels should be able to fluctuate naturally throughout the year.	X	
8	Non-native species should be absent.	X	
9	Less than 10 % of the pond should be covered with duckweed or filamentous algae.	X	
	Total	**3**	**4**

Table 14: Cropland – Cereal crops

Habitat Condition:			
N/A - Other			
Distinctiveness:			
Very Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
No condition assessment required.			
	Total	**N/A**	

Table 15: Urban – Developed land; sealed surface

Habitat Condition:
N/A - Other

Habitat Condition:			
Distinctiveness:			
Very Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
No condition assessment required.			
	Total	**N/A**	

Table 16: Urban – Vacant / derelict land / bare ground

Habitat Condition:			
Poor – The majority of the condition criteria are being failed.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	Known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added which in turn has led to a low nutrient environment		X
2	The site contains some vegetation. This will comprise of early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of (a) annuals, or (b) mosses/liverworts, or (c) lichens, or (d) ruderals, or (e) inundation species, or (f) open grassland, or (g) flower-rich grassland, or (h) heathland.		X
3	The site contains unvegetated, loose bare substrate and pools may be present and desirable.		X
4	The site shows spatial variation, forming a mosaic of one or more of the early successional communities (a)–(h) above plus bare substrate or pools.		X
	Total	**0**	**4**

Table 17: Urban – Sustainable urban design feature

Habitat Condition:
Good – Vegetation provides multiple opportunities for a high number of species to live and breed, plant species are flowering extensively and so providing ready nectar sources for insects and insects and butterflies are common and using the site extensively.
Distinctiveness:
Low: Default score

Habitat Condition:			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	Known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added which in turn has led to a low nutrient environment		X
2	The site contains some vegetation. This will comprise of early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of (a) annuals, or (b) mosses/liverworts, or (c) lichens, or (d) ruderals, or (e) inundation species, or (f) open grassland, or (g) flower-rich grassland, or (h) heathland.	X	
3	The site contains unvegetated, loose bare substrate and pools may be present and desirable.	X	
4	The site shows spatial variation, forming a mosaic of one or more of the early successional communities (a)–(h) above plus bare substrate or pools.	X	
	Total	**3**	**1**

Sandleford Park, Newbury

A-1 Site Habitat Baseline

Condense / Show Columns | Condense / Show Rows

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	Habitats and areas			Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Suggested action to address habitat losses	Ecological baseline	Retention category biodiversity value							
Ref	Broad Habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier		Total habitat units	Area retained	Area enhanced	Area succession	Baseline units retained	Baseline units enhanced	Baseline units succession	Area lost	Units lost
1	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	25.27	High	6	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Same habitat required	348.73		25.27		0.00	348.73	0.00	0.00	0.00
2	Woodland and forest	Woodland and forest - Wet woodland	1.32	High	6	Moderate	2	Medium	Moderately connected habitat	1.1	Within area formally identified in local strategy	High strategic significance	1.15	Same habitat required	20.04		1.32		0.00	20.04	0.00	0.00	0.00
3	Heathland and shrub	Heathland and shrub - Mixed scrub	1.02	Medium	4	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required	4.08				0.00	0.00	0.00	1.02	4.08
4	Wetland	Wetland - Purple moor grass and rush pastures	0.32	V.High	8	Poor	1	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	Bespoke compensation likely to be required	2.94	0.32			2.94	0.00	0.00	0.00	0.00
5	Grassland	Grassland - Other neutral grassland	13.11	Medium	4	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required	52.44		13.11		0.00	52.44	0.00	0.00	0.00
6	Grassland	Grassland - Modified grassland	22.9	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required	45.80		12.82		0.00	25.64	0.00	10.08	20.16
7	Sparsely vegetated land	Sparsely vegetated land - Ruderal/Ephemeral	2.41	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required	4.82				0.00	0.00	0.00	2.41	4.82
8	Lakes	Lakes - Ponds (Priority Habitat)	0.3	High	6	Moderate	2	Low	Unconnected habitat	1	Location ecologically desirable but not in local strategy	Medium strategic significance	1.1	Same habitat required	3.96	0.3			3.96	0.00	0.00	0.00	0.00
9	Cropland	Cropland - Cereal crops	47.04	Low	2	N/A - Agricultural	1	N/A	Assessment not appropriate	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required	94.08				0.00	0.00	0.00	47.04	94.08
10	Urban	Urban - Developed land; sealed surface	0.01	V.Low	0	N/A - Other	0	N/A	Assessment not appropriate	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Compensation Not Required	0.00				0.00	0.00	0.00	0.01	0.00
11	Urban	Urban - Sustainable urban drainage feature	0.05	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required	0.10	0.05			0.10	0.00	0.00	0.00	0.00
12	Urban	Urban - Vacant/derelict land/ bareground	0.83	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required	1.66				0.00	0.00	0.00	0.83	1.66
13																							
14																							
15																							
		Total site area ha	114.58											Total Site baseline	578.65	0.67	52.52	0.00	7.00	446.84	0.00	61.39	124.80

APPENDIX D: A-2 SITE HABITAT CREATION

Table 18: Woodland and forest – Other woodland; broadleaved

Habitat Condition:			
Good – Meets at least ten of the condition criteria with only minor variation.			
Distinctiveness:			
Medium: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	This should be an area of trees with complete canopy cover	X	
2	Native species are dominant. Non-active and invasive species account for less than 10 % of the vegetation cover.	X	
3	A diverse age and height structure of the trees	X	
4	Free from damage [bark stripping; browse line; damaged shoot tips] (in the last five years) from stock or wild mammals with less than 20% of vegetation being browsed.	X	
5	There should be evidence of successful (i.e. not browsed off before it gets well established) tree regeneration such as seedlings, saplings and young trees.	X	
6	Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps	X	
7	Wetland habitat if they exist within the wood has little sign of drainage or channel straightening		X
8	The area is protected from damage by agricultural and other adjacent operations	X	
9	There should be no evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction)	X	
10	Invasive non-native plants are below 5 %	X	
11	No signs of significant nutrient enrichment present.	X	
12	More than 3 different native trees and 3 shrub species in an average 10 m radius	X	
	Total	**11**	**1**

Table 19: Grassland – Other neutral grassland (JNCC – Marshy grassland)

Habitat Condition:		
Good – Meets all of the condition criteria with only minor variation.		
Distinctiveness:		
Low: Default score		
No.	**Condition Description**	**Pre-development Condition Met**

Habitat Condition:			
		Yes	No
1	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.	X	
2	The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e. as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.	X	
3	Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.	X	
4	Undesirable species and physical damage is below 5% cover.	X	
5	Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).	X	
6	Cover of bracken less than 20% and cover of scrub and bramble less than 5%.	X	
	Total	**6**	**0**

Table 20: Grassland – Other neutral grassland (JNCC – Semi-improved neutral grassland)

Habitat Condition:			
Moderate – Semi-improved grassland occurs on a wide range of derived from higher quality Priority Habitat grassland habitats in poor condition. The habitat clearly fails at least one of the condition criteria.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.		X
2	The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e. as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.	X	
3	Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See	X	

Habitat Condition:			
	relevant Habitat Classification for details of indicator species for specific habitat.		
4	Undesirable species and physical damage is below 5% cover.	X	
5	Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).	X	
6	Cover of bracken less than 20% and cover of scrub and bramble less than 5%.	X	
	Total	**5**	**1**

Table 21: Urban – Sustainable urban design feature

Habitat Condition:			
Good – Vegetation provides multiple opportunities for a high number of species to live and breed, plant species are flowering extensively and so providing ready nectar sources for insects and insects and butterflies are common and using the site extensively.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	Known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added which in turn has led to a low nutrient environment		X
2	The site contains some vegetation. This will comprise of early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of (a) annuals, or (b) mosses/liverworts, or (c) lichens, or (d) ruderals, or (e) inundation species, or (f) open grassland, or (g) flower-rich grassland, or (h) heathland.	X	
3	The site contains unvegetated, loose bare substrate and pools may be present and desirable.		X
4	The site shows spatial variation, forming a mosaic of one or more of the early successional communities (a)–(h) above plus bare substrate or pools.	X	
	Total	2	2

Table 22: Urban – Amenity grassland

Habitat Condition:
Poor - Amenity grassland with a similar species description for agricultural grassland (Dominated by few fats-growing grasses on fertile, neutral soils. It is frequently characterised by an abundance of rye-grass *Lolium* spp (above 25 % cover) and white clover *Trifolium repens*).
Distinctiveness:
Low: Default score

Habitat Condition:			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.		X
2	The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e. as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.		X
3	Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.		X
4	Undesirable species and physical damage is below 5% cover.	X	
5	Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).	X	
6	Cover of bracken less than 20% and cover of scrub and bramble less than 5%.	X	
	Total	**3**	**3**

Table 23: Urban – Vegetated garden

Habitat Condition:			
N/A - Other			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
No condition assessment required.			
	Total	**N/A**	

Table 24: Urban – Developed land; sealed surface

Habitat Condition:		
N/A - Other		
Distinctiveness:		
Very Low: Default score		
No.	**Condition Description**	**Pre-development Condition Met**

Habitat Condition:			
		Yes	No
No condition assessment required.			
	Total	**N/A**	
4	The site shows spatial variation, forming a mosaic of one or more of the early successional communities (a)–(h) above plus bare substrate or pools.	X	
	Total	**3**	**1**

Sandleford Park, Newbury

A-2 Site Habitat Creation

Condense / Show Columns | Condense / Show Rows

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Post development/ post intervention habitats																
						Ecological connectivity			Strategic significance			Temporal multiplier		Difficulty multipliers		
Proposed habitat	Area (hectares)	Distinctiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Time to target condition/years	Time to target multiplier	Difficulty of creation category	Difficulty of creation multiplier	Habitat units delivered
Woodland and forest - Other woodland; broadleaved	3.12	Medium	4	Moderate	2	Medium	Moderately connected habitat	1.1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	30	0.343	Medium	0.67	6.32
Grassland - Other neutral grassland	1.4	Medium	4	Moderate	2	Medium	Moderately connected habitat	1.1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	10	0.700	Low	1	8.63
Grassland - Other neutral grassland	21.8	Medium	4	Moderate	2	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	10	0.700	Low	1	122.13
Urban - Developed land; sealed surface	17.7	V.Low	0	N/A - Other	0	N/A	Assessment not appropriate	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	0	1.000	Low	1	0.00
Urban - Vegetated garden	7.58	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	1	0.965	Low	1	14.63
Urban - Sustainable urban drainage feature	1.12	Low	2	Good	3	Medium	Moderately connected habitat	1.1	Location ecologically desirable but not in local strategy	Medium strategic significance	1.1	5	0.837	Medium	0.67	4.56
Urban - Amenity grassland	16	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	1	0.965	Low	1	30.88
Totals	68.72														Total Units	187.14

APPENDIX E: A-3 SITE HABITAT ENHANCEMENT

Table 25: Woodland and forest – Lowland mixed deciduous woodland

Current Habitat Condition:			
Moderate – Clearly fails at least two of the assessment criteria and does not match the description given for a poor condition woodland.			
Proposed Habitat Condition:			
Good – Meets at least ten of the condition criteria with only minor variation.			
Distinctiveness:			
Medium: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	This should be an area of trees with complete canopy cover	X	
2	Native species are dominant. Non-active and invasive species account for less than 10 % of the vegetation cover.	X	
3	A diverse age and height structure of the trees	X	
4	Free from damage [bark stripping; browse line; damaged shoot tips] (in the last five years) from stock or wild mammals with less than 20% of vegetation being browsed.	X	
5	There should be evidence of successful (i.e. not browsed off before it gets well established) tree regeneration such as seedlings, saplings and young trees.	X	
6	Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps	X	
7	Wetland habitat if they exist within the wood has little sign of drainage or channel straightening		X
8	The area is protected from damage by agricultural and other adjacent operations	X	
9	There should be no evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction)	X	
10	Invasive non-native plants are below 5 %	X	
11	No signs of significant nutrient enrichment present.	X	
12	More than 3 different native trees and 3 shrub species in an average 10 m radius	X	
	Total	**11**	**1**

Table 26: Woodland and forest – Wet woodland

Current Habitat Condition:
Moderate – Invasive non-native species (Himalayan Balsam) represent 5 – 20 % of the ground cover

Current Habitat Condition:			
Proposed Habitat Condition:			
Good – Meets at least ten of the condition criteria with only minor variation.			
Distinctiveness:			
Medium: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	This should be an area of trees with complete canopy cover	X	
2	Native species are dominant. Non-active and invasive species account for less than 10 % of the vegetation cover.	X	
3	A diverse age and height structure of the trees		X
4	Free from damage [bark stripping; browse line; damaged shoot tips] (in the last five years) from stock or wild mammals with less than 20% of vegetation being browsed.	X	
5	There should be evidence of successful (i.e. not browsed off before it gets well established) tree regeneration such as seedlings, saplings and young trees.	X	
6	Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps	X	
7	Wetland habitat if they exist within the wood has little sign of drainage or channel straightening	X	
8	The area is protected from damage by agricultural and other adjacent operations	X	
9	There should be no evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction)	X	
10	Invasive non-native plants are below 5 %	X	
11	No signs of significant nutrient enrichment present.	X	
12	More than 3 different native trees and 3 shrub species in an average 10 m radius	X	
	Total	**11**	**1**

Table 27: Grassland – Other neutral grassland (JNCC – Marshy grassland)

Current Habitat Condition:			
Poor – The grassland fails most of the associated habitat criteria.			
Proposed Habitat Condition:			
Good – Meets all of the condition criteria with only minor variation.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**

Current Habitat Condition:			
1	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.	X	
2	The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e. as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.	X	
3	Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.	X	
4	Undesirable species and physical damage is below 5% cover.	X	
5	Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).	X	
6	Cover of bracken less than 20% and cover of scrub and bramble less than 5%.	X	
	Total	**6**	**0**

Table 28: Grassland – Other neutral grassland (JNCC – Semi-improved neutral grassland)

Current Habitat Condition:			
Poor – The grassland fails most of the associated habitat criteria.			
Proposed Habitat Condition:			
Moderate – Semi-improved grassland occurs on a wide range of derived from higher quality Priority Habitat grassland habitats in poor condition. The habitat clearly fails at least one of the condition criteria.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
1	The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.		X
2	The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e. as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.	X	
3	Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout	X	

Current Habitat Condition:			
	the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.		
4	Undesirable species and physical damage is below 5% cover.	X	
5	Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).	X	
6	Cover of bracken less than 20% and cover of scrub and bramble less than 5%.	X	
	Total	**5**	**1**

	Baseline habitats	Post development/ post intervention habitats										
		Change in distinctiveness and condition			Area (hectares)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Temporal multiplier	Difficulty multipliers	Habitat units delivered
Baseline ref	Baseline habitat	Proposed habitat (Pre-populated but can be overridden)	Distinctiveness change	Condition change				Ecological connectivity score	Strategic significance	Time to target condition/years	Difficulty of enhancement category	
1	Woodland and forest - Lowland mixed deciduous woodland	Woodland and forest - Lowland mixed deciduous woodland	High - High	Moderate - Good	25.27	High	Good	Medium	Area/compensation not in local strategy/ no local strategy	20	High	360.55
2	Woodland and forest - Wet woodland	Woodland and forest - Wet woodland	High - High	Moderate - Good	1.32	High	Good	Medium	Area/compensation not in local strategy/ no local strategy	15	Medium	20.84
5	Grassland - Other neutral grassland	Grassland - Other neutral grassland	Medium - Medium	Poor - Moderate	13.11	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	10	Low	89.16
6	Grassland - Modified grassland	Grassland - Other neutral grassland	Low - Medium	Lower Distinctiveness Habitat - Moderate	12.82	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	10	Low	79.51
				Total site area	52.52						Enhancement total	550.07

APPENDIX F: B-1 SITE HEDGE BASELINE

Table 29: Line of trees (Hedgerow A)

Habitat Condition:			
Good – Mature trees with continuous canopy (Mature tree is at least a third of expected fully mature height & gaps make up less than 10 % of total length and /or there are no canopy gaps greater than 5 m).			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.		X
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.		X
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.		X
	Total	**3**	**4**

Table 30: Line of trees (Hedgerow B)

Habitat Condition:			
Poor – Broken canopy (Gaps make up more than 10 % and / or gaps are more than 5 m in length).			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.		X

Habitat Condition:			
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.	X	
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.		X
	Total	**4**	**3**

Table 31: Line of trees (Hedgerow C)

Habitat Condition:			
Good – Mature trees with continuous canopy (Mature tree is at least a third of expected fully mature height & gaps make up less than 10 % of total length and /or there are no canopy gaps greater than 5 m).			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.		X
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.		X
	Total	**4**	**3**

Table 32: Native hedgerow (Hedgerow D)

Habitat Condition:
Poor – Fails more than four attributes and both attributes in more than one functional group.
Distinctiveness:
Low: Default score

Habitat Condition:			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.		X
A2	Average width above 1.5 m along length.		X
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	X	
B2	Gaps make up less than 10% of length and none greater than 5 m.		X
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.		X
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.		X
	Total	**2**	**6**

Table 33: Native hedgerow with trees (Hedgerow E)

Habitat Condition:			
Moderate – No more than four attributes have been failed.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.		X
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	X	
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.	X	
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.		X
	Total	**5**	**3**

Table 34: Native hedgerow with trees (Hedgerow F)

Habitat Condition:			
Moderate – No more than four attributes have been failed and fails both attributes in a maximum of one functional group.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	X	
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.		X
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.		X
	Total	**5**	**3**

Table 35: Native hedgerow (Hedgerow G)

Habitat Condition:			
Moderate – No more than four attributes have been failed and fails both attributes in a maximum of one functional group.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.		X
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	X	
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.		X

Habitat Condition:			
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.		X
	Total	**4**	**4**

Table 36: Line of trees (Hedgerow H)

Habitat Condition:			
Poor – Broken canopy (Gaps make up more than 10 % and / or gaps are more than 5 m in length).			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.		X
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.		X
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.		X
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**3**	**4**

Table 37: Line of trees (Hedgerow I)

Habitat Condition:		
Good – Mature trees with continuous canopy (Mature tree is at least a third of expected fully mature height & gaps make up less than 10 % of total length and /or there are no canopy gaps greater than 5 m).		
Distinctiveness:		
Low: Default score		
No.	**Condition Description**	**Pre-development Condition Met**

Habitat Condition:			
		Yes	No
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.		X
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**5**	**2**

Table 38: Line of trees (Hedgerow J)

Habitat Condition:			
Good – Mature trees with continuous canopy (Mature tree is at least a third of expected fully mature height & gaps make up less than 10 % of total length and /or there are no canopy gaps greater than 5 m).			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.	X	
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total		

Table 39: Line of trees (Hedgerow K)

Habitat Condition:			
Good – Mature trees with continuous canopy (Mature tree is at least a third of expected fully mature height & gaps make up less than 10 % of total length and /or there are no canopy gaps greater than 5 m).			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.		X
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.		X
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.	X	
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**5**	**2**

Table 40: Line of trees (Hedgerow L)

Habitat Condition:			
Poor – Broken canopy (Gaps make up more than 10 % and / or gaps are more than 5 m in length).			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.		X
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.		X
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.		X

Habitat Condition:			
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**3**	**4**

Table 41: Line of trees (Hedgerow M)

Habitat Condition:			
Good – Mature trees with continuous canopy (Mature tree is at least a third of expected fully mature height & gaps make up less than 10 % of total length and /or there are no canopy gaps greater than 5 m).			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.		X
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.		X
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.	X	
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**5**	**2**

Table 42: Native hedgerow (Hedgerow N)

Habitat Condition:
Moderate – No more than four attributes have been failed and fails both attributes in a maximum of one functional group.
Distinctiveness:
Low: Default score

Habitat Condition:			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.		X
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	X	
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.		X
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.	X	
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**5**	**2**

Table 43: Native hedgerow with trees (Hedgerow P)

Habitat Condition:			
Moderate – No more than four attributes have been failed and fails both attributes in a maximum of one functional group.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.		X
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	X	
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.		X
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	

Habitat Condition:		
Total	**5**	**3**

	UK Habitats - existing habitats			Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance				Ecological baseline	Retention category biodiversity value					
Baseline ref	Hedge number	Hedgerow type	length KM	Distinctiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Suggested action to address habitat losses	Total hedgerow units	Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost
1	A	Line of Trees	0.629	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	3.774	0.629		3.774	0	0	0
2	B	Line of Trees	0.109	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	0.218		0.109	0	0.218	0	0
3	C	Line of Trees	0.463	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	2.778	0.444		2.664	0	0.019	0.114
4	D	Native Hedgerow	0.126	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	0.252		0.126	0	0.252	0	0
5	E	Native Hedgerow with trees	0.212	Low	2	Moderate	2	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	0.848		0.185	0	0.74	0.027	0.108
6	F	Native Hedgerow with trees	0.94	Low	2	Moderate	2	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	3.76		0.787	0	3.148	0.153	0.612
7	G	Native Hedgerow	0.697	Low	2	Moderate	2	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	2.788		0.523	0	2.092	0.174	0.696
8	H	Line of Trees	0.335	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	0.67		0.106	0	0.212	0.229	0.458
9	I	Line of Trees	0.611	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	3.666	0.611		3.666	0	0	0
10	J	Line of Trees	0.147	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	0.882	0.114		0.684	0	0.033	0.198
11	K	Line of Trees	0.252	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	1.512	0.252		1.512	0	0	0
12	L	Line of Trees	0.309	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	0.618		0.3	0	0.6	0.009	0.018
13	M	Line of Trees	0.1	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	0.6	0.1		0.6	0	0	0
14	N	Native Hedgerow	0.11	Low	2	Moderate	2	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	0.44		0.11	0	0.44	0	0
15	O	Native Hedgerow with trees	0.108	Low	2	Moderate	2	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	0.432		0.058	0	0.232	0.05	0.2
16																					
17																					
18																					
19																					
20																					
		Total Site length/KM	5.15											Total Site baseline	23.24	2.15	2.30	12.90	7.93	0.69	2.40

APPENDIX G: B-2 HEDGE CREATION

Table 44: Line of trees (Hedgerow O)

Habitat Condition:			
Good – Mature trees with continuous canopy (Mature tree is at least a third of expected fully mature height & gaps make up less than 10 % of total length and there are no canopy gaps greater than 5 m).			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.		X
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.	X	
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.	X	
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**6**	**1**

Sandleford Park, Newbury

B-2 Site Hedge Creation

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		Proposed habitats		Habitat distinctiveness		Habitat condition		Multipliers									
								Spatial quality						Temporal multiplier		Difficulty of creation multiplier	Hedge units delivered
								Ecological connectivity			Strategic significance						
Baseline ref	New hedge number	Habitat type	Length km	Distinctiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Time to target condition/years	Time to target multiplier		
1		Native Hedgerow	0.143	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	10	0.700	1	0.60
2																	
3																	
4																	
5																	
6																	
7																	
		Creation Length/KM	0.14														0.60

APPENDIX G: B-3 SITE HEDGE ENHANCEMENT

Table 45: Line of trees (Hedgerow B)

Current Habitat Condition:			
Poor – Broken canopy (Gaps make up more than 10 % and / or gaps are more than 5 m in length).			
Proposed Habitat Condition:			
Good – Mature trees with continuous canopy (Mature tree is at least a third of expected fully mature height & gaps make up less than 10 % of total length and /or there are no canopy gaps greater than 5 m).			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.	X	
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.	X	
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**7**	**0**

Table 46: Native hedgerow (Hedgerow D)

Current Habitat Condition:
Poor – Fails more than four attributes and both attributes in more than one functional group.
Proposed Habitat Condition:
Good – No more than two failures in total and no more than one in any functional group.
Distinctiveness:
Low: Default score

Current Habitat Condition:			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	X	
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.	X	
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.	X	
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**8**	**0**

Table 47: Native hedgerow with trees (Hedgerow E)

Current Habitat Condition:			
Moderate – No more than four attributes have been failed.			
Proposed Habitat Condition:			
Good – No more than two failures in total and no more than one in any functional group.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	X	
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.	X	
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	

Current Habitat Condition:			
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**7**	**1**

Table 48: Native hedgerow with trees (Hedgerow F)

Current Habitat Condition:			
Moderate – No more than four attributes have been failed and fails both attributes in a maximum of one functional group.			
Proposed Habitat Condition:			
Good – No more than two failures in total and no more than one in any functional group.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	X	
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.	X	
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**7**	**1**

Table 49: Native hedgerow (Hedgerow G)

Current Habitat Condition:
Moderate – No more than four attributes have been failed and fails both attributes in a maximum of one functional group.
Proposed Habitat Condition:
Good – No more than two failures in total and no more than one in any functional group.
Distinctiveness:
Low: Default score

Current Habitat Condition:			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	X	
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.	X	
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**7**	**1**

Table 50: Line of trees (Hedgerow H)

Current Habitat Condition:			
Poor – Broken canopy (Gaps make up more than 10 % and / or gaps are more than 5 m in length).			
Proposed Habitat Condition:			
Good – Mature trees with continuous canopy (Mature tree is at least a third of expected fully mature height & gaps make up less than 10 % of total length and /or there are no canopy gaps greater than 5 m).			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.	X	
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X

Current Habitat Condition:			
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**6**	**1**

Table 51: Line of trees (Hedgerow L)

Current Habitat Condition:			
Poor – Broken canopy (Gaps make up more than 10 % and / or gaps are more than 5 m in length).			
Proposed Habitat Condition:			
Good – Mature trees with continuous canopy (Mature tree is at least a third of expected fully mature height & gaps make up less than 10 % of total length and /or there are no canopy gaps greater than 5 m).			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.	X	
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**6**	**1**

Table 52: Native (Hedgerow N)

Current Habitat Condition:
Moderate – No more than four attributes have been failed and fails both attributes in a maximum of one functional group.
Proposed Habitat Condition:
Good – No more than two failures in total and no more than one in any functional group.
Distinctiveness:

Current Habitat Condition:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	X	
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.	X	
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.	X	
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**7**	**0**

Table 53: Native hedgerow with trees (Hedgerow P)

Current Habitat Condition:			
Moderate – No more than four attributes have been failed and fails both attributes in a maximum of one functional group.			
Proposed Habitat Condition:			
Good – No more than two failures in total and no more than one in any functional group.			
Distinctiveness:			
Low: Default score			
No.	**Condition Description**	**Pre-development Condition Met**	
		Yes	**No**
A1	Average height above 1.5 m along length.	X	
A2	Average width above 1.5 m along length.	X	
B1	Gap between ground and base of canopy below 0.5 m for 90% of length.	n/a	n/a
B2	Gaps make up less than 10% of length and none greater than 5 m.	X	
C1	Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.	X	
C2	Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.		X

Current Habitat Condition:			
D1	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.	X	
D2	Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.	X	
	Total	**7**	**0**

Baseline Habitats														Post development/ post intervention habitats																			
															Change in distinctiveness and condition																		
Baseline ref	Baseline habitat	Length KM	Baseline distinctiveness band	Baseline distinctiveness score	Baseline condition category	Baseline condition score	Baseline connectivity	Baseline connectivity	Baseline connectivity score	Baseline strategic significance category	Baseline strategic significance score	Baseline habitat units	Suggested action	Proposed	Distinctiveness movement	Condition movement	Length KM	Distinctiveness	Score	Condition	Score	Ecological connectivity			Strategic significance			Temporal multiplier		Difficulty Multipliers		Hedge units delivered
																									Strategic significance	Strategic significance	Strategic position multiplier	Time to target condition/years	Time to target multiplier	Difficulty of enhancement Category	Difficulty of Enhancement Multiplier	
2	Line of Trees	0.109	Low	2	Poor	1	Low	Unconnected habitat	1	Low Strategic Significance	1	0.218	Same distinctiveness band or better	Line of Trees	Low - Low	Poor - Good	0.109	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	30	0.343	Low	1	0.37
4	Native Hedgerow	0.126	Low	2	Poor	1	Low	Unconnected habitat	1	Low Strategic Significance	1	0.252	Same distinctiveness band or better	Native Hedgerow	Low - Low	Poor - Good	0.126	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	10	0.700	Low	1	0.60
5	Native Hedgerow with trees	0.212	Low	2	Moderate	2	Low	Unconnected habitat	1	Low Strategic Significance	1	0.848	Same distinctiveness band or better	Native Hedgerow with trees	Low - Low	Moderate - Good	0.185	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	20	0.490	Low	1	0.92
6	Native Hedgerow with trees	0.94	Low	2	Moderate	2	Low	Unconnected habitat	1	Low Strategic Significance	1	3.76	Same distinctiveness band or better	Native Hedgerow with trees	Low - Low	Moderate - Good	0.787	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	20	0.490	Low	1	3.92
7	Native Hedgerow	0.697	Low	2	Moderate	2	Low	Unconnected habitat	1	Low Strategic Significance	1	2.788	Same distinctiveness band or better	Native Hedgerow	Low - Low	Moderate - Good	0.523	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	10	0.700	Low	1	2.82
8	Line of Trees	0.335	Low	2	Poor	1	Low	Unconnected habitat	1	Low Strategic Significance	1	0.67	Same distinctiveness band or better	Line of Trees	Low - Low	Poor - Good	0.326	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	30	0.343	Low	1	0.36
12	Line of Trees	0.309	Low	2	Poor	1	Low	Unconnected habitat	1	Low Strategic Significance	1	0.618	Same distinctiveness band or better	Line of Trees	Low - Low	Poor - Good	0.3	Low	2	Good	3	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	30	0.343	Low	1	1.01
																Total site breath	2.30															#VALUE!

APPENDIX H: C-1 SITE RIVER BASELINE

Table 54: River and Streams – Other, Enborne Sandleford North-East

Habitat Condition:		
Moderate		
River Type:		
Other Alluvial / Straight-sinuous		
Indictors	**Condition Description**	**Score**
Bank Top		
B1	Vegetation Structure	1
B2	Tree Feature	0
B3	Water Related Features	4
B4	NNPS Cover	0
B5	Managed Ground Cover	0
Bank Face		
C1	Riparian Vegetation Structure	2
C2	Tree Feature	1
C3	Natural Bank Profile Extent	3
C4	Natural Bank Profile Richness	2
C5	Natural Bank Material Richness	1
C6	Bare Sediment Extent	1
C7	Artificial Bank Profile Extent	0
C8	Reinforcement Extent	0
C9	Reinforcement Material Severity	0
C10	NNPS Cover	0
Channel – Water Margin		
D1	Aquatic Vegetation Extent	3
D2	Aquatic Morphotype	1
D3	Physical Feature Extent	1
D4	Physical Feature Richness	1
D5	Artificial Features	0
Channel Bed		
E1	Aquatic Morphotype Richness	2
E2	Tree Features Richness	1
E3	Hydraulic Features Richness	1
E4	Natural Features Extent	1

Habitat Condition:		
E5	Natural Features Richness	1
E6	Material Richness	2
E7	Siltation	-1
E8	Reinforcement Extent	0
E9	Reinforcement Severity	0
E10	Artificial Features Severity	-4
E11	NNPS Extent	0
E12	Filamentous Algae Extent	0

Table 55: River and Streams – Other, Sandleford North-West

Habitat Condition:		
Moderate		
River Type:		
Other Alluvial / Straight-sinuous		
Indictors	**Condition Description**	**Score**
Bank Top		
B1	Vegetation Structure	1
B2	Tree Feature	0
B3	Water Related Features	4
B4	NNPS Cover	0
B5	Managed Ground Cover	0
Bank Face		
C1	Riparian Vegetation Structure	1
C2	Tree Feature	1
C3	Natural Bank Profile Extent	2
C4	Natural Bank Profile Richness	1
C5	Natural Bank Material Richness	1
C6	Bare Sediment Extent	0
C7	Artificial Bank Profile Extent	0
C8	Reinforcement Extent	0
C9	Reinforcement Material Severity	0
C10	NNPS Cover	0
Channel – Water Margin		
D1	Aquatic Vegetation Extent	3
D2	Aquatic Morphotype	1
D3	Physical Feature Extent	0

Habitat Condition:		
D4	Physical Feature Richness	0
D5	Artificial Features	0
Channel Bed		
E1	Aquatic Morphotype Richness	3
E2	Tree Features Richness	1
E3	Hydraulic Features Richness	3
E4	Natural Features Extent	2
E5	Natural Features Richness	1
E6	Material Richness	3
E7	Siltation	-3
E8	Reinforcement Extent	0
E9	Reinforcement Severity	0
E10	Artificial Features Severity	0
E11	NNPS Extent	0
E12	Filamentous Algae Extent	0

Table 56: River and Streams – Other, Sandleford Central

Habitat Condition:		
Moderate		
River Type:		
Other Alluvial / Straight-sinuous		
Indictors	**Condition Description**	**Score**
Bank Top		
B1	Vegetation Structure	2
B2	Tree Feature	1
B3	Water Related Features	4
B4	NNPS Cover	0
B5	Managed Ground Cover	-2
Bank Face		
C1	Riparian Vegetation Structure	3
C2	Tree Feature	2
C3	Natural Bank Profile Extent	3
C4	Natural Bank Profile Richness	4
C5	Natural Bank Material Richness	1
C6	Bare Sediment Extent	3
C7	Artificial Bank Profile Extent	0

Habitat Condition:		
C8	Reinforcement Extent	0
C9	Reinforcement Material Severity	0
C10	NNPS Cover	0
Channel – Water Margin		
D1	Aquatic Vegetation Extent	2
D2	Aquatic Morphotype	2
D3	Physical Feature Extent	0
D4	Physical Feature Richness	0
D5	Artificial Features	0
Channel Bed		
E1	Aquatic Morphotype Richness	1
E2	Tree Features Richness	2
E3	Hydraulic Features Richness	2
E4	Natural Features Extent	1
E5	Natural Features Richness	1
E6	Material Richness	2
E7	Siltation	0
E8	Reinforcement Extent	0
E9	Reinforcement Severity	0
E10	Artificial Features Severity	-4
E11	NNPS Extent	0
E12	Filamentous Algae Extent	0

Sandleford Park, Newbury

C-1 Site River Baseline

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Existing river type			Habitat distinctiveness		Habitat condition		Strategic significance			Sugested action	Ecological baseline
Baseline ref	River type	length KM	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier		Total river units
1	Rivers & Streams (Other)	0.375	Medium	4	Moderate	3	Within River Basin Management Plan	High strategic significance	1.15	Avoid	5.175
2	Rivers & Streams (Other)	0.145	Medium	4	Moderate	3	Within River Basin Management Plan	High strategic significance	1.15	Avoid	2.001
3	Rivers & Streams (Other)	0.6	Medium	4	Moderate	3	Within River Basin Management Plan	High strategic significance	1.15	Avoid	8.28
4											
5											
	Total site length KM	1.12								Total Site	15.46

Retention category biodiversity value						Comments	
Length retained	Length enhanced	Units retained	Units enhanced	Length impacted	Units Lost	Assessor Comments	Reviewer comments
0.375		5.175	0	0	0		
0.145		2.001	0	0	0		
0.6		8.28	0	0	0		
1.12	0.00	15.46	0.00	0.00	0.00		

APPENDIX C – ECOLOGICAL MITIGATION AND MANAGEMENT PLAN

Sandleford Park, Newbury

ECOLOGICAL MITIGATION AND MANAGEMENT PLAN

B024891

Bloor Homes and Sandleford Farm Partnership

April 2021

Prepared on Behalf of Tetra Tech Group Limited. Registered in England number: 6595608

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Document control

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GLOSSARY

ASPT	Average Score Per Taxon
BMWP	Biological Monitoring Working Party
BTO	British Trust for Ornithology
CEMP	Construction Environmental Management Plan
CEMMP	'Combined' Ecological Mitigation and Management Principles (Sandleford Park and Sandleford Park West
CIEEM	Chartered Institute of Ecology & Environmental Management
CRoW Act	Countryside and Rights of Way Act 2000
ECoW	Ecological Clerk of Works
EMMP	Ecological Mitigation and Management Plan
EPSL	European Protected Species Licence
GCN	Great crested newt
GradCIEEM	Graduate Member of Chartered Institute of Ecology & Environmental Management
Habitat Regulations	Conservation of Habitats and Species Regulations 2017
HAP	Habitat Action Plan
Hedgerow Regulations	Hedgerow Regulations 1997
HPI	Habitat of Principal Importance
JNCC	Join Nature Conservancy Council
LBAP	Local Biodiversity Action Plan
LPA	Local Planning Authority
MCIEEM	Member of Chartered Institute of Ecology & Environmental Management
NE	Natural England
NERC Act	Natural Environment and Rural Communities Act 2006
NPPF	National Planning Policy Framework
RSPB	Royal Society for the Protection of Birds
SAP	Species Action Plan
SuDs	Sustainable Urban Drainage System

1.0 INTRODUCTION

1.1 BACKGROUND

Tetra Tech was commissioned by Bloor Homes and the Sandleford Farm Partnership on 4th December 2018 to produce an Update EMMP of the site known as Sandleford Park, Newbury. It addresses the following items with a view to maintaining and enhancing the biodiversity value of the site in the long-term:

1. Mitigation for the protected and notable habitats and species that may be impacted by the proposals;
2. Management of retained, enhanced and created habitats.

This report has been prepared by Project Ecologist, Ben Cooke and the conditions pertinent to it are provided in Appendix A.

1.2 SITE LOCATION

The site is located at Sandleford Park in Newbury, West Berkshire and is centred at Ordnance Survey National Grid Reference SU 46847 64550. The survey area, hereafter referred to as the 'site', is shown on Figure 1 and comprises of agricultural fields with areas of grassland and several copses of ancient woodland dispersed throughout. A central valley runs from the north-western corner of the site towards the River Enborne at the site's southern boundary.

For details of the development description, please see the main ES chapter.

1.3 DEVELOPMENT PROPOSALS

Outline planning permission for up to 1,000 new homes; 80 extra care housing units as part of the affordable housing provision; a new two-form entry primary school (D1); expansion land for Park House Academy School; a local centre to comprise flexible commercial floorspace (A1-A5 up to 2,150sq m, B1a up to 200sq m) and D1 use; the formation of new means of access onto Monks Lane; new open space including the laying out of a new country park; drainage infrastructure; walking and cycling infrastructure and other associated infrastructure works. Matters to be considered: Access.

The scheme has evolved through ecological survey and input to design; as such, wildlife corridors are retained in and around the site. All of the woodland blocks are retained, together with the stream corridors (albeit with valley crossings), and the majority of the hedgerows and mature trees.

1.4 CONTEXT OF THE MANAGEMENT PLAN

This EMMP is based on the results of the previous surveys and reports WYG carried out at the site, as well as update surveys completed during 2018. The surveys conducted to inform this Plan are as follows:

- Appendix F1: Ecological Appraisal
- Appendix F2: Great Crested Newt Survey Report
- Appendix F3: Reptile Presence/ Likely Absence Survey
- Appendix F4: Breeding Bird Survey
- Appendix F5: Barn Owl Survey
- Appendix F6: Nightjar Survey
- Appendix F7: Bat Roost Assessment of Trees & Bats Hibernation Survey
- Appendix F8: Bat Emergence/ Return Survey
- Appendix F9: Bat Activity Report
- Appendix F10: Hazel Dormouse Survey Report
- Appendix F11: Badger Survey Letter Report

- Appendix F12: Terrestrial Invertebrates Survey Report
- Appendix F13: Aquatic Invertebrate Survey Report
- Appendix F14: White-clawed Crayfish Survey Report
- Appendix F15: Otter and Water Vole Survey Report
- Appendix F16: Fungus Survey Report
- Appendix F17: Woodland National Vegetation Classification Survey Report
- Appendix F20: Proposed Residential Development Lighting Assessment
- Appendix F21: Net Gain Assessment
- Appendix F22: Grassland National Vegetation Classification Survey Report
- Appendix F23: Arable Plants Survey Report

It is also worth mentioning the below surveys, completed to provide further information within an ES addendum for 15/02300/OUTMAJ. Although these areas will not be impacted by the revised redline boundary, where findings are of relevance to the EMMP, they are discussed.

- Warren Road, Extended Phase 1 Habitat Survey (WYG, 2016a)
- Warren Road, Nocturnal bat emergence / return surveys of trees (WYG, 2016b)
- A339 Link Road, Extended Phase 1 Habitat Survey (WYG, 2016c)
- A339 Link Road, Climbed inspection of trees for bats (WYG, 2016d)
- A339 Link Road, Nocturnal bat emergence / return surveys of trees (WYG, 2016e)
- Warren Road and A339 Bat activity surveys (WYG, 2016f)

1.5 PLAN LAYOUT

- The EMMP first summarises the ecological baseline for the site. This information is presented in Section 2.0.
- Section 3.0 outlines the mitigation and prescribes management for retained and created habitats within the site boundary. Paragraph 170 of the *National Planning Policy Framework* (NPPF, 2018) states that: '*Planning policies and decisions should contribute to and enhance the natural and local environment by…. minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures'*. Enhancements are included within the masterplan, particularly within the Country Park area of the site. This commitment to biodiversity augmentation is a central facet of the Masterplan design.
- Section 4.0 outlines the mitigation prescriptions for the protected species identified on site.
- Sections 5.0 and 6.0 **Error! Reference source not found.** present information on scheduling management activities and monitoring of the features of the site respectively.

This EMMP will guide detailed EMMPs to be produced to inform each future reserved matters application. Future phase-specific EMMPs will be based on up to date survey information, and updated as management continues on the site, likely to include a revision in year 5, with management prescriptions for a further 10 years, and reassessment at the end of this period.

In addition, a set of 'Combined' Ecological Mitigation and Management Principles have been produced (Appendix F19) to cover both Sandleford Park, and the adjacent Sandleford Park West application areas.

2.0 METHODOLOGY

2.1 HABITATS

The UkHab habitats present within the site boundary can be viewed in Figure 1, and include:

- Woodland and Forest – Lowland mixed deciduous woodland
- Woodland and Forest - Wet woodland
- Heathland and Shrub - Mixed scrub
- Woodland and Forest – Other woodland; broadleaved
- Hedges (Line of trees, Native Hedgerow and Native hedgerow with trees)
- Grassland – Other neutral grassland
- Grassland – Modified grassland
- Sparsely vegetated land – Ruderal
- Lakes – Ponds (Priority)
- Urban – Sustainable urban design feature
- River and Streams – Other
- Cropland – Cereal crops
- Urban – Vacant / derelict land / bare ground
- Urban – Developed land; sealed surface

2.1.1 Woodland and Forest – Lowland Mixed Deciduous Woodland

There are seven main woodland blocks on-site, which form a network of semi-natural broadleaved woodland habitats in proximity to each other and largely connected by hedgerows and wide grassy tracks and banks. The central core of woodlands is set in a confined valley system and within a mosaic of wet grassland and semi-improved acidic grassland.

The woodlands are currently managed for game purposes and several have large pheasant release pens within them and feeding stations scattered throughout. No visible evidence of sylvicultural practices were found during the survey apart from clearance for game shooting rides and the tidying of fallen trees.

All the woodlands on-site are considered to fulfil the criteria for the definition of the Lowland Mixed Deciduous Woodland UK Habitat of Principal Importance (HPI) as they are over 0.25ha and support characteristic plant communities.

All the woodlands with the exception of Gorse Covert, assessed during the NVC woodland survey (Appendix F17) are classified as ancient woodland.

2.1.2 Woodland and Forest - Wet Woodland

An area of wet woodland (alder carr) has been identified within Waterleaze Copse within the southern extent of the site.

2.1.3 Heathland and Shrub – Mixed Scrub

There are areas of dense/ scattered scrub present throughout the site boundary, with the stands consisting predominantly of bramble. Areas of scattered scrub are situated along the western extent of the site and the field margins of the compartments within the eastern extent of the site. Areas of dense scrub are distributed more widely throughout the site although confined to the eastern half of the site.

2.1.4 Woodland and Forest – Other Woodland; broadleaved

There are a number of broadleaved scattered trees present within the site boundary, including some which are considered to be veteran trees due to their size and condition. In particular these are present within the eastern half of the site along the access tracks traversing the site.

2.1.5 Hedges (Line of trees, Native hedgerow and Native hedgerow with trees)

There is an extensive hedgerow network across the site (Figure 1) which consists of a combination of species-poor, species-rich, intact and defunct hedgerows. Two hedgerows (Hedgerow A and Hedgerow E) are considered likely to be '*important*' under the Hedgerow Regulations (see Appendix A) due to the presence of standard trees and seven woody species together with woodland indicator species in the ground layer. Hedgerow A is located along the western boundary of the site and Hedgerow E is located along the north eastern boundary of the site (shown on Figure 1).

These hedgerows form important corridors connecting woodlands and other habitats over the site and provide commuting routes for nocturnal animals such as bats.

2.1.6 Grassland – Other neutral grassland

The majority of the wet grassland habitats are located together within the centre of the site, encompassing several fields partitioned by hedgerows and streams, the grassland is very wet and mire-like in places. Springs and base-rich flushes emerge into the valley where the mires reach their greatest extent and are found slightly upslope away from the stream and valley bottom. A smaller strip of wet grassland is located within a field compartment at the eastern extent of the site.

The meadows straddle the stream which flows north-south towards the River Enborne and are encircled by the ancient woodland copse. Together the woodland and wet grassland form an important habitat and feature for this site.

A National Vegetation Classification (NVC) survey was completed in 2018 (Appendix F22). The marshy grasslands were found to range in quality from some fairly uniform species-poor Yorkshire fog-dominated grasslands on the drier ground to mixed soft rush pastures on the wetter ground to some diverse sharp-flowered rush stands on the flat valley bottoms on the wettest soils (see Figure 2).

The sharp-flowered rush stands were considered to be the vegetation type M23 *Juncus effusus/acutiflorus* (rush species) – *Galium palustre* (marsh bedstraw) rush-pasture which forms part of the Purple Moor Grass and Rush Pastures HPI. The other marshy grassland types are generally regarded as a modified grassland types of lower botanical interest.

The small area of Purple Moor Grass and Rush Pastures HPI along the valley bottoms at Sandleford (0.445 ha) contains 16% of the known Berkshire resource of this habitat so is assessed as being of County Importance.

2.1.7 Grassland – Modified grassland

This habitat is predominantly confined to field compartments along the eastern boundary some of which are utilised by grazing cattle. The species recorded historically within these compartments include; false oat grass, ox-eye daisy, crested dogs-tail, cock's-foot, perennial ryegrass, yarrow, spear thistle, soft brome, meadow foxtail, common nettle, creeping thistle, common sorrel, sheep fescue, dock sp., creeping bent, groundsel and meadow buttercup.

2.1.8 Sparsely vegetated land - Ruderal

Tall ruderal habitat is present within the site boundary located throughout the site. The largest extent is located within the area surrounding the ponds at the north eastern extent of the site, adjacent to Newtown Road. Species present within these areas include; common nettle, thistle sp. and white dead nettle. Saplings are also present within the aforementioned area including field maple, hawthorn, silver birch and hazel.

2.1.9 Lakes – Ponds (Priority)

There are six ponds present on-site. Many have little emergent aquatic vegetation and are shaded by surrounding woodland habitat. Several of the waterbodies were found to be dry or almost completely

devoid of water. There are larger ponds located in Waterleaze Copse, whilst these are shaded, both ponds support emergent aquatic vegetation including water mint.

2.1.10 Urban – Sustainable urban design feature

There are two SuDS present within the eastern extent of the on-site, both were found to be dry or almost completely devoid of water.

2.1.11 River and streams - Other

The River Enborne which runs along the site's southern boundary is bordered by wet woodland (alder carr) which grades to elevated areas supporting damp to dry acidic woodland. The stream is shaded for much of its length as such the emergent and aquatic vegetation communities appear to be sparse.

The River Enborne at the site is recognised as a UK Priority Habitat by TVERC and is structurally varied with a range of riverine features, including point bars, riffles, glides, pools and meandering bends. At several points, high earth-cliff banks have developed.

A stream tributary of the River Enborne runs through a central valley (to the south of Slockett's Copse and High Wood and to the north of Barn Copse and Dirty Ground Copse) before flowing into Waterleaze Copse. The stream bed is a mosaic of silt, bedrock and pebbles. The banks are heavily wooded in sections with dense scrub in places. The drain which flows into the stream flows through an open marshy field with stands of rush. The stream and drain both peter out into wet flushes in their upper reaches.

Some springs and seepages are present in the valleys and woodland areas and are described in the water resources chapter (Chapter 11). They are considered to be fed from a combination of surface run off and infiltration to ground.

2.1.12 Cropland – cereal crops

A significant proportion of the site is utilised for the growing of arable crops, with their agricultural use having changed regularly as recorded during previous surveys. All arable field compartments at the time of the survey had to some degree been recently ploughed and left fallow; as such a low level of grass growth had begun to encompass several of these fields. In several fields, areas of maize have been planted for game cover.

Botanical surveys of arable plants have been completed in 2011, 2014 and 2018 (Appendix F23). The 2018 results were broadly similar to previous surveys, with some changes due to the different crops, natural turnover of species and differences in timing of the surveys.

The site is not rich in arable weeds and is assessed as being of Local value only. None of the arable weeds present are protected species listed under Schedule 8 of the Wildlife & Countryside Act 1981 (as amended). Five of the arable weeds are listed in the Berkshire Rare Plant Register (field woundwort, thorn apple, great brome, medium-flowered winter-cress and fool's parsley) (Crawley, 2005).

Under the IUCN threat categories, with the exception of sand spurrey which is Vulnerable, and field woundwort, which is Near Threatened, all the native species and archeophytes (species thought to have been introduced to the UK prior to the 16th century), are of Least Concern. The arable field margins are not considered to qualify as HPI.

2.1.13 Urban – vacant / derelict land / bare ground

A series of tracks are situated on-site; one runs centrally from east to west across the entirety of the site and another within the eastern extent of the site running from north to south. The latter emanates from the Newbury college campus before connecting to the former track.

2.1.14 Urban – developed land; sealed surface

There are two buildings on-site; a stable and a pre-fabricated office building located within the eastern extent of the site.

2.2 SPECIES

2.2.1 Great Crested Newt

Great crested newt presence / likely absence surveys have been previously completed on waterbodies on-site and within 500m of the site (2011, 2013 and 2015). No great crested newts were recorded during these surveys. In 2017, eDNA sampling was completed on P11 (the only accessible water body that was not dry at the time of the eDNA survey), which returned a negative result for the presence of GCN. As such, GCN are considered likely to be absent from the site (Appendix F2).

2.2.2 Reptiles

Reptile presence / likely absence surveys have previously been completed on-site, most recently in 2018 (Appendix F3). A low population of slow worm, grass snake and common lizard were recorded at the site. As the habitats and their composition on-site has remained relatively unchanged it is assumed that these species are potentially present within all areas of suitable habitat.

2.2.3 Bats: Activity

Bat activity surveys have been completed on-site in 2011, 2013, and 2016-2017 (Appendix F9). Up to eight species of bat were found to be using the habitats within the northern part of the site during 2016-17, including two recorded passes of a barbastelle. The majority of the site was found to support commuting or foraging bats to some extent as there were a number of commuting and foraging routes along hedgerows tracks, woodland edges, between woodlands and along field margins. Surveys completed in 2011 and 2013 found up to 13 species of bat using the habitats across the Sandleford Park site. The species recorded were common pipistrelle, soprano pipistrelle, Nathusius pipistrelle, serotine, Leisler's, noctule, Natterer's, Daubenton's, a Myotis species (most likely a whiskered / Brandt's), an unidentified Myotis bat, a long-eared bat and potentially a barbastelle.

2.2.4 Bats: Roosts

Buildings

An open stable (TN3) (Figure 1) the building is open with a wooden beam structure and numerous cracks and crevices is located at the eastern extent of the site. The field compartment in which the stable is situated is currently grazed by cattle. The building is considered to offer low potential to support roosting bats and was subject to nocturnal surveys in 2014 and 2015 which found no bats to be using the building at the time of the survey.

A small pre-fabricated office building (Figure 1) is also located at the eastern extent of the site to the north of the stable. There were no features noted which would allow access to the interior of the building or provide a suitable crevice for roosting and no roof void was present, in addition the building is utilised regularly and is therefore considered to be of negligible potential to support roosting bats (Appendix F7).

Trees

The site comprises seven ancient woodland compartments and fields bisected by several treelines and hedgerows within which there are numerous mature trees with potential roosting features (e.g. cracks and crevices) for bats. In addition, there are a number of notable individual scattered trees throughout the site.

The majority of these individual trees are clustered primarily into three assemblages.

- The first is a group of oaks situated within the eastern extent of the site, parallel to the east of High Wood and adjacent to the off-site recycling centre.
- The second is a group of mature oaks situated within the south eastern extent of the site.
- The third is located to the west of Slockett's Copse.

During the course of previous assessments conducted on-site, a total of nine bat roosts (Figure 2) have been confirmed within individual trees on-site (Appendix F8).

2.2.5 Badgers

The continued presence of badgers on-site was confirmed with the main sett situated within High Wood found to remain active. The majority of the additional identified setts (classified as either subsidiary or outlier) previously identified on-site were found to be inactive during the course of the most recent survey (Appendix F11).

Badger Setts

A total of 17 badger setts have been identified on and within 30m of the proposed development site. These setts were classified into three categories; main, subsidiary and outlier. A single active main sett with a total of 17 excavations (of which ten were considered active) was identified within High Wood. The remaining 16 setts, comprising two subsidiary and 14 outlier setts. All of these setts with the expectation of a subsidiary sett located in proximity to the main sett described above were considered to be inactive or disused at the time of the survey.

Badger Foraging and Commuting

Snuffle holes were identified on-site in close proximity of the main sett however no latrines were identified during the course of the survey.

2.2.6 Hazel Dormice

The presence of dormice on-site was confirmed during surveys completed in 2014, however update surveys completed in 2017 did not confirm presence (Appendix F10).

2.2.7 Otter and Water Vole

An otter and water vole presence/ likely absence survey was completed in 2013. The presence of otter was confirmed utilising the River Enborne along the site's southern boundary, in the form of feeding remains and a spraint. There were no active holts identified on-site or within 100m of the boundary.

Water voles were confirmed along the same river with a small number of burrows and latrines noted. During the botanical surveys completed in 2014, a water vole was seen near the ponds at the eastern extent of the site near Newtown Road. The presence of water vole were again confirmed along the River Enborne with footprints noted along the northern bank in 2018 (Appendix F15). The footprints were noted in close proximity to the previous features confirming the presence of the species on-site in 2013. No signs of the presence of otter were noted in 2018.

2.2.8 Breeding Birds

Surveys have identified a range of notable bird species and birds of medium conservation concern on-site and the site is considered to offer suitable habitat for breeding birds (Appendix F4).

2.2.9 Barn Owls

Barn owls have previously been confirmed roosting within trees on-site (Appendix F5) with the central and eastern regions of the site considered to offer suitable foraging habitat (see Figure 2 for locations of potential roosts on-site).

2.2.10 Nightjars

Nightjars surveys were conducted in 2011, 2014 and 2018 based on anecdotal evidence that nightjars occasionally utilise the site (Appendix F6). No nightjars were identified on-site, as nightjars are usually associated with heathland and open woodland the habitat on-site is considered sub-optimal for breeding nightjars.

2.2.11 Aquatic Invertebrates

The locally important species golden-ringed dragonfly was identified within the stream on-site in 2011 and 2014, but was not noted in 2018, likely due to lower water levels as a consequence of a lack of rain (Appendix F13).

A low number of bullheads (fish) were caught within the stream during the aquatic invertebrate sampling but they do not form part of the BMWP and ASPT scores. Bullheads are listed on Schedule II of the Conservation of Habitats and Species Regulations 2017 and are a UK Priority Species under Section 41 of the NERC Act.

2.2.12 White-clawed Crayfish

White clawed crayfish surveys were completed on-site in 2013, however no white-clawed crayfish were identified during this survey (Appendix F14). As signal crayfish remains were found along the River Enborne during an otter and water vole survey in 2013, it is considered likely that white-clawed crayfish are absent from the site.

2.2.13 Terrestrial Invertebrates

Terrestrial invertebrate surveys were completed in 2011, 2014 and 2018 (Appendix F12). Habitats on site have changed little on site since the initial terrestrial invertebrate survey undertaken in 2011, consequently the assemblage of terrestrial invertebrates has also remained similar during this period, although fewer species were recorded in 2018, and a number of notable species previously recorded on site were not recorded in 2018. Species not recorded in 2018 but within previous years are considered likely to be still present on site as habitats remain largely unchanged.

Using the invertebrate habitat significance criteria defined by Colin Plant (undated) this site has been assessed as being of County Importance due to the diversity of terrestrial invertebrates recorded with the potential for the habitats to support other protected or notable species.

Red Data Book species, including the nationally notable picture-wined fly *Orellia falcata* and the nationally scare *Pipiza lugubris* (a hoverfly) across a range of habitats (e.g. wetland and woodland). Woodland insects were considered to be poorly represented.

3.0 HABITATS MANAGEMENT AND MITIGATION

The development of the site will retain and create new habitats. The management and / or creation of habitats at the site will include the following UKHab habitats:

- Woodland and Forest – Lowland mixed deciduous woodland
- Woodland and Forest – Wet woodland
- Woodland and Forest – Other woodland; broadleaved
- Hedges – Line of trees, native hedgerows and native hedgerows with trees
- Grassland – Other neutral grassland (JNCC - Marshy Grassland)
- Grassland – Other neutral grassland (JNCC - Semi-improved neutral grassland)
- Lakes – Ponds (Priority Habitat)
- Urban – Sustainable urban design feature
- Urban – Amenity grassland
- Rivers and Streams (Other)

3.1 WOODLAND AND FOREST – LOWLAND MIXED DECIDUOUS WOODLAND

1. This should be an area of trees with complete canopy cover

As shown within the current landscape proposals for the development all of the woodlands within the site will be retained. The canopy cover of this habitat within the site is therefore not subject to proposals that would reduce the current coverage substantially (clearance works of non-native tree species are proposed, as described below).

2. Native species are dominant. Non-native and invasive species account for less than 10 % of the vegetation

New planting within the woodland will comprise exclusively of native species to help ensure that the woodland remains predominantly composed of such species.

Clearance works of non-native species are also proposed which in tandem with new planting will help to achieve the dominance of native species within the woodlands on site. Stands of sycamore trees are present in Barns Copse to an extent not found in the remaining woodlands and their presence is considered detrimental to the ground flora. Removal of sycamore over a 5-year period which is considered low value is to be removed within the woodland to increase light into the canopy to increase ground flora, and potential creation of glades if value to invertebrates.

Removal of invasive species where found within the woodland are also proposed and are described in detail below within this section.

3. A diverse age and height structure of the trees

Clearance works (as those described above) will open areas within the woodland for new tree planting. These areas of proposed planting will thereby increase the diversity of age and size within the woodland as trees in various life stages will exist simultaneously.

4. Free from damage [Bark stripping; Browse line; Damage shoot tips] (in the last five years) from stock or wild mammals with less than 20% of vegetation being browsed.

As no livestock are proposed to have access to the site then the threat to vegetation from browsing is expected to be from wild mammals. It is proposed that woodland will be protected from damage through the inclusion of fencing, tree guards and pruning.

Roe deer *Capreolus capreolus*, are considered to browse trees up to a height of approximately 1.1 m, therefore the installation of fencing and tree guards exceeding this height is recommended to prevent access and browsing. Tree guards are recommended to be no shorter than 1.2 m with fencing no shorter than 1.5 m (Hodge and Pepper, 1998).

Fencing should be well maintained being monitored annual for signs of deterioration and damage. Should any of these signs be recorded the fencing should be promptly repaired in order to sustain protections.

These measures are also considered to mitigate for damage caused by other wild mammals recorded within the site including bank voles *Myodes glareolus*, rabbits *Oryctolagus cuniclus* and grey squirrels *Sciurus carolinensis*.

5. There should be evidence of successful (i.e. not browsed off before it gets well established) tree regeneration such as seedlings, saplings and young trees

As stated above it is proposed that areas of new planting will be protected from damage through a combination of the fencing, tree guards and pruning.

The proposed fencing could comprise structures such as deer fencing or less permanent fencing structures. Temporary fencing can be used in lieu of deer fencing and left in-situ for approximately three years when it is expected that the regrowth is taller than 1.5 metres (Forestry Commission, 2015).

6. Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps.

Dead wood will be retained in-situ where practicable and where not adjacent to public footpaths. In these instances, the minimum amount of dead wood will be removed that is concordant with public safety. These dead trees will also be allowed to develop natural cavities and rot holes which will, in time, provide additional breeding and roosting habitat for owls and bats.

7. Wetland habitat if they exist within the wood has little sign of drainage or channel straightening.

There will be no alterations to any wetland habitat within the woodlands.

8. The area is protected from damage by agricultural and other adjacent operations

Footpaths through the woods will largely follow existing tracks which will encourage the public to avoid walking through dense stands of bracken which could potentially harbour deer ticks. The existing tracks will be mapped accurately to inform future reserved matters applications and assessed for any requirement to improve their bases for use as paths (some of the muddier parts of tracks in High Wood have already been improved with ballast).

Sections of boardwalk will be installed as part of the footpath creation to cross areas of wet ground within the various woodland areas to prevent trampling of sensitive plant communities, in particular Dirty Ground Copse where the Berkshire-scarce thin-spiked wood-sedge grows in a wet flush adjacent to an existing woodland track.

It is not considered that ancient woodland indicator species will be impacted by creating footpaths as these are located along existing tracks, however if ancient woodland indicator species are to be impacted either the plant itself or the seed bank will be translocated to the areas of the woodland which have been cleared of bramble and sycamore, which is currently of lower botanical value. In the event the seedbank will be translocated this will be scraped off during autumn and early winter to minimise damage to soil and plants.

The woodlands may require fencing in some areas, although this will be dealt with at reserved matters.

Interpretation boards will be installed in prominent locations to provide wildlife information about the woodlands. It is expected that if members of the public have an understanding and appreciation of the wildlife interest, they will be more likely not to enter and damage this important wildlife habitat.

The information boards will be assessed every year by the management company to ensure that the quality of information dissemination is not impaired by weathering / vandalism. Damaged boards will be replaced.

The Sustainable Urban Drainage System (SuDS) measures outlined in the Water Resources Chapter (Chapter 11) seek to avoid adverse impacts due to changes in water quality or quantity. Connections

between woodlands, e.g. along hedge lines, have been retained and enhanced wherever possible within the proposals.

The establishment of 15 m minimum buffer zones (or larger in the Country Park) surrounding the woodland will help shield these habitats from surrounding impacts. These buffer zones will be clearly fenced using Heras style fencing to prevent impacts, such as those arising from inappropriate storage of materials during the construction phase.

9. There should be no evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction).

As mentioned above the creation of footpaths will direct the public through woodland and discourage them from wondering through the woodland and causing the impacts described above.

The removal of game production and agricultural practices within the site will help to reduce the potential impacts described above resulting from grazing livestock and the use of vehicles within the woodland.

10. Invasive non-native plants are below 5%.

Himalayan balsam *Impatiens glandulifera* growing within Waterleaze Copse, and Himalayan cotoneaster *Cotoneaster simonsii* in Slockett's Copse will require removal.

Himalayan balsam

Prior to construction commencing, the removal of Himalayan balsam should commence along the River Enborne (within Waterleaze Copse, TN13, Figure 1). The plants will be removed by hand pulling, which is an effective way of removing adult plants and is more environmentally friendly than chemical control which risks impacting the adjacent watercourses and damaging the notable ancient woodland ground flora of this area. Removal activities should, if possible, begin before seeding; therefore, ideally, removal should commence in mid-April and continue through the growing season.

It is also recommended that the growth of the population of Himalayan balsam is monitored prior to removal. Any removal would need to be coordinated with the Environment Agency as it is considered likely that the population on site is the result of plants and/or seeds being washed down the River Enborne during flood events.

Himalayan cotoneaster

Prior to construction commencing, the removal of Himalayan cotoneaster will take place in Slockett's Copse (Figure 1). The plant, if small enough can be removed by hand pulling, or can be excavated by hand and disposed of as waste for incineration.

11. No signs of significant nutrient enrichment present

The removal of game production and agricultural practices within the site as a result of the proposed development should greatly reduce the level nutrient enrichment to which the woodland currently has potential to be exposed.

12. More than three different native trees and three shrub species in an average 10 m radius

Proposals for new native species planting within the woodlands will help to increase diversity. Management (including clearance work) and monitoring of existing species within the woodland will also help to achieve the level of biodiversity stated within the condition above.

The huge increase of holly *Ilex aquaifolium* in the understory of unmanaged woods in SE England over the last 50 years indicates that the Sandleford Park woods, without management over the next 20-30 years, may become uniformly dull and overgrown with holly as both a shrub and understory tree, resulting in dense shade and loss of ground flora plants such as the bluebells. This is already in Barn Copse where the north-west arm of the wood has a very poor ground flora due to shade from holly. Holly management will give a long-term benefit to the overall diversity of the woodlands.

Monitoring of the existing bluebell populations will take place annually in the spring (April to early May) to assess whether Spanish bluebells *Hyacinthoides hispanica* or hybrids between Spanish and native bluebells *Hyacinthoides non-scripta* are becoming established through garden escapes or dumped

garden waste. Spanish bluebells or hybrids will be removed if and when encountered. This is to maintain the genetic integrity of the native bluebell population.

3.2 WOODLAND AND FOREST – WET WOODLAND

1. **This should be an area of trees with complete canopy cover**

The wet woodland will be retained in its entirety within the final development. The canopy cover of this habitat within the site is therefore not subject to proposals that would reduce the current coverage.

2. **Native species are dominant. Non-native and invasive species account for less than 10 % of the vegetation**

Removal of Himalayan balsam within the wet woodland are proposed and are described in detail within Section 3.1 above.

3. **A diverse age and height structure of the trees**

The wet woodland is considered to be a stable habitat type which would not require extensive management, and which can be left to mature through non-intervention. As such no new tree planting proposed, therefore, the age and height structure is not considered to change from its current state.

4. **Free from damage [Bark stripping; Browse line; Damage shoot tips] (in the last five years) from stock or wild mammals with less than 20% of vegetation being browsed.**

As no livestock are proposed to have access to the site then the threat to vegetation from browsing is expected to be from wild mammals. It is proposed that woodland will be protected from damage through the inclusion of fencing and pruning.

The integrity of fencing (approx. 1.5 m), which separates the wet woodland will be checked by the management company on an annual basis to ensure that access is limited. Damaged sections will be replaced.

5. **There should be evidence of successful (i.e. not browsed off before it gets well established) tree regeneration such as seedlings, saplings and young trees**

As stated above it is proposed that the wet woodland will be protected from damage through a combination of the fencing and pruning.

6. **Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps.**

Washed up dead wood will be left and allowed to rot in situ to provide habitat for invertebrates. As public access will be excluded, mature trees will be allowed to senesce and decay naturally, as also will dead or dying branches on living trees (except where these overhang footpaths in which instance they will be removed).

7. **Wetland habitat if they exist within the wood has little sign of drainage or channel straightening.**

There is potential for impacts to the wet woodland habitat to occur as a result of changes to the drainage regime during construction. A detailed SuDS scheme has been developed (See Water Resources Chapter). This takes into account flow attenuation and water quality to maintain the water level within the wet woodland and to prevent pollutants impacting this habitat. This will retain the damp, humid conditions required by the Lateral Cryphaea *Cryphaea heteromalla* moss population in Waterleaze Copse.

8. **The area is protected from damage by agricultural and other adjacent operations**

All designated footpaths through the wet woodland will be on raised board walks, the precise routes are to still be agreed but the boardwalks will be diverted away to prevent trampling of sensitive plant communities and nesting birds.

The wet woodland may require fencing to prevent members of the public from entering, trampling and disturbing the flora and fauna of this habitat, although this detail will be agreed at reserved matters.

An interpretation board will be installed in a prominent location on the fence to provide wildlife information about the wet woodland. It is expected that if members of the public have an understanding and appreciation of the wildlife interest, they will be more likely not to enter and damage this important wildlife habitat.

9. There should be no evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction).

As mentioned above the creation of footpaths will direct the public through woodland and discourage them from wondering through the woodland and causing the impacts described above.

The removal of game production and agricultural practices within the site will also help to reduce the potential impacts described above from livestock and game birds.

10. Invasive non-native plants are below 5%.

A small population of the invasive Himalayan balsam was recorded from Waterleaze Copse in an area directly adjacent to the River Enborne. The recommendations for removal are detailed within Section 3.1 above.

11. No signs of significant nutrient enrichment present.

The use of fertilisers close to the wet woodland will be avoided to prevent contaminated run-off during storm events from reaching this habitat, including the River Enborne. This will reduce the possibility of eutrophication of plant communities within the wet woodland and will retain the currently low population of algae growing on tree trunks along the River Enborne corridor. The Lateral Cryphaea moss is considered to be vulnerable to overgrowth by algae at this site as only a small population of the moss was recorded.

The removal of game production and agricultural practices within the site as a result of the proposed development should also help reduce the level nutrient enrichment to which the wet woodland is exposed.

12. More than three different native trees and three shrub species in an average 10 m radius

Proposals for new native species planting within the woodland will help to increase diversity. Management and monitoring of existing species within the woodland will also help to achieve the level of biodiversity stated within the condition above. For example, stands of umbelliferous plant species (such as hogweed and cow parsley) will also be retained as these provide valuable nectar and pollen resources for wood-dwelling invertebrates such as beetles.

3.3 WOODLAND AND FOREST – OTHER WOODLAND; BROADLEAVED

The majority of the single scattered mature trees will be retained on-site along with a suitable buffer. The majority of these are present within the Country Park (including the majority of those considered to be veteran / notable; however, there are some mature trees present within the works areas; such as within the central area of marshy grassland. Six of the trees with potential to be impacted (by the proposals, or by arboricultural recommendations, not proposed within the current planning application) have been found to have the potential to support nesting barn owls, and nine trees/groups of trees identified as bat roosts (See Figure 2). Recommendations for these trees have been provided in Sections, 4.4, 4.7 and 4.8.

The integrity of the mature trees will be assessed during the construction phase and on an annual basis alongside the management of the central valley wildlife area (refer to Section 3.6). The assessment will be completed in accordance with the British Standard 5837:2012 ‘Trees in Relation to Design, Demolition and Construction – Recommendations’ (BSI, 2012).

An ecologist will be consulted for all necessary pruning works required for health and safety reasons. If features offering potential to support roosting bats or nesting barn owls will be impacted by pruning works, further surveys will be completed, and necessary mitigation will be implemented.

Should new tree planting fail, it will be replaced during the next suitable planting period for that species. This will be undertaken in the dormant season (November to March inclusive) annually for five years post construction (alongside the monitoring of dormouse nest box and vegetated arches as detailed within Section 4.6.1).

3.4 HEDGES – LINE OF TREES, NATIVE HEDGEROWS & NATIVE HEDGEROWS WITH TREES

A1. Average height above 1.5 m along length.

The hedges will be allowed to grow to the above height specified under the proposed management conditions. It is accepted that unsafe trees and limbs in the vicinity of footpaths may require removal to make them safe for house owners and members of the public using the site.

A2. Average width above 1.5 m along length.

The hedges will be allowed to grow to the above width specified under the proposed management conditions. It is accepted that unsafe trees and limbs in the vicinity of footpaths may require removal to make them safe for house owners and members of the public using the site.

B1. Gap between ground and base of canopy is below 0.5 m for 90% of length.

The proposed management regimes (including cutting) proposed for the hedges within the site will clear an area greater than 0.5 m from the ground to the base of the canopy.

This condition is not applicable to the line of trees which exist and / or are proposed for the site (Hedgerows A, B, C, H, I, J, K, L, M and O as shown in Figure 1).

B2. Gaps make up less than 10% of length and none greater than 5 m.

Retained hedgerows which have gaps present (Hedgerow B and F, Figure 1) will be infilled with native hedgerow species, comprising hawthorn, hazel, blackthorn, field maple and elder. Strengthening the hedgerows will have the additional benefit of preventing members of the public from walking through existing gaps, thereby reducing damage and disturbance to hedgerow flora and fauna.

Post-construction, the existing hedgerows will be maintained and enhanced for their nature conservation interest. Plants which have failed to establish will be replaced during the dormant season (November to March).

This condition is not considered to be met by the following hedges with the site as shown in Figure 1; Hedgerow O.

C1. Over 1 m width of undisturbed perennial vegetation for over 90% of length on at least one side.

During construction hedgerows will be retained within the site, wherever possible, together with a 3m buffer.

Herbaceous vegetation will be encouraged to grow up around the base of the planted shrubs and hedges, as this provides cover and foraging habitat for birds and small mammals. Dense bushes should encourage nesting birds and aid their escape from predators.

C2. Plant species indicative of nutrient enrichment dominate less than 20% cover of perennial vegetation.

The removal of agricultural practices from the site should help to decrease the level of nutrient input into the site thereby reducing the level of species indicative of enriched soils.

This condition is not considered to be met by the following hedges with the site as shown in Figure 1 as they are located adjacent or within areas of amenity grassland; Hedgerow E, F, H, L and P)

D1. Over 90% of the hedgerow and undisturbed ground is free of invasive non-native or neophyte species.

The prevention of colonisation by invasive exotics (e.g. butterfly bush) will be achieved by removing saplings as and when they are recorded in a manner appropriate to the species.

D2. Over 90% of the hedgerow and undisturbed ground is free of damage caused by human activities.

It is proposed that any pollution noted in the vicinity of the hedgerow is cleared as soon as possible. Timing and frequency of hedgerow cutting is important; cutting every two years instead of each year will result in increased berry production in the second year for most shrub species. Hedgerows will be cut between November and February inclusive to prevent impacts to nesting birds.

3.5 GRASSLAND – OTHER NEUTRAL GRASSLAND (JNCC – MARSHY GRASSLAND)

1. **The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.**

Detailed management of the grassland will be provided in the phase-specific Country Park EMMP. However, it is likely to include either an annual hay cut in late September to 150mm in height or grazing, to be agreed with the LPA.

2. **The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e. as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.**

AS mentioned above detailed management of the grassland will be provided in the phase-specific Country Park EMMP. However, it is likely to include either an annual hay cut in late September to 150mm in height or grazing, to be agreed with the LPA.

3. **Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.**

Given the proposed management methods for the maintenance and creation of grassland habitat described in this section above the following condition will be met.

4. **Undesirable species and physical damage is below 5% cover.**

This habitat will be incorporated into the public open space at the site, which will comprise designated paths through the area, however these will not exceed 5% of the area. Management will discourage members of the public from entering parts of the wildlife area that are of highest ecological value (i.e. grassland, hedgerows, trees and ponds) whilst allowing the public to appreciate the wildlife in this area.

5. **Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).**

To minimise any potential damage caused by increased recreational pressure the footpaths across the site will be clearly marked, The marked pathways should help to restrict movement to these areas.

6. **Cover of bracken less than 20% and cover of scrub and bramble less than 5%.**

Once a year, the presence of scrub and bracken in the tall grassland will be monitored. Scrub and or bracken will be removed if it is encroaching into the tall grassland habitat to the detriment of the grassland flora. A small amount of scrub will be tolerated to provide shelter and bird nesting habitat. An optimum baseline scrub level will be determined by the ecologist and long-term photo-monitoring from a fixed vantage point. This will be carried out to determine levels of scrub encroachment from the baseline.

Management of the marshy grassland is likely to include either an annual hay cut in late September to 150mm in height or grazing, to be agreed with the LPA.

3.6 WETLAND – PURPLE MOOR GRASS AND RUSH PASTURES

1. **There is no artificial drainage which would include ditches that are now revegetated and streams that have been depend and widened.**

Following the construction of crossing points over the drain or stream, the banks will be reinstated to the same height and profile and allowed to vegetate naturally from the surrounding area. This will help to maintain the stream and ditch in as natural condition as possible.

There are no artificial drainage systems which runs through the habitat. The nearest drainage system is the tributary of the River Enborne runs adjacent to the south of this habitat. There no proposals to alter the structure of the tributary.

2. **The water level and its management should result in surface water throughout the year.**

The area currently contains surface water throughout the year, there are no management proposals which are currently proposed to impact this condition criteria.

3. **Cover of undesirable species (common nettle, docks, creeping / spear thistles, common ragwort and Indian (Himalayan balsam) should be less than 10 %.**

Monitoring of the habitat is proposed to inform future habitat maintenance of the Country Park. Regularly monitoring should identify if and when the coverage of the above species exceeds 10 %. Should this occur these species should be removed in a non-chemical manner. The procedure for the removal of Himalayan balsam is described in Section 3.1.

4. **Cover of scrub should be less than 10 %**

Monitoring of the habitat is proposed to inform future habitat maintenance of the Country Park. Regularly monitoring should identify if and when the coverage of the scrub exceeds 10 %. Should this occur these species should be removed in a non-chemical manner.

5. **Cover of bare ground should be less than 10 %**

Monitoring of the habitat is proposed to inform future habitat maintenance of the Country Park. Regularly monitoring should identify if and when the coverage of bare ground exceeds 10 %. Should this occur measures will be implemented to help re-establish the loss of vegetation. These methods will be specific to the cause which may vary and therefore cannot be described at the current time.

In addition, there are no footpaths proposed to intersect the area Wetland – Purple Moor Grass and Rush Pasture identified on site. It is considered that there will be negligible impact to this habitat from increased recreational pressure in the area resulting from the proposed development.

6. **No more than 25 % of the fen area should have a continuous cover of litter (i.e. dead vegetation)**

The are no proposal for further tree planting within the vicinity of this habitat. The existing trees are not considered substantial in number or size to produce a constant coverage greater than 25 % of the total area of the habitat.

7. **On bogs sphagnum moss cover should be between 40 % - 100 %. Heathers and cottongrass should be at least frequent. Cover of dwarf shrubs between 20 % and 75 % (except when bogmosses (Sphagum) or other wetland indicators are dominant), with at least two dwarf shrub species frequent.**

There are currently no proposals for new planting to be conducted within the habitat and therefore no projected increase in the coverage of the species described in the above condition.

8. **Flowering cottongrass plants frequent inspiring (where present), or flowering heather plants at least frequent in autumn (where present).**

There are currently no proposals for new planting to be conducted within the habitat and therefore no projected increase in the coverage of the species described in the above condition.

9. Reedbed vegetation should include at least 60 % common reeds

There are currently no proposals for new planting to be conducted within the habitat and therefore no projected increase in the coverage of the species described in the above condition.

3.7 GRASSLAND – OTHER NEUTRAL GRASSLAND (JNCC – SEMI-IMPROVED NEUTRAL GRASSLAND)

1. The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.

The south eastern part of the site which is currently arable will be established as tall grassland which will be managed for reptiles and other species such as barn owl, bat and badger foraging during the operational stage of the development which will form the Country Park. The ground will be subjected to a light scarification for the top six inches of soil (the scarification will not impact the ground deeper than 6 inches to avoid exposing nutrient rich soils). Following ground preparation, the grassland will be laid on a fine tilth. These areas will be planted with a grass seed mix comprising species which are present within the existing habitats that are proposed to be lost as a result of the development, thus providing suitable habitat for reptiles. The grass seed mix will be dominated by fine-leaved grass species such as fescues (*Festuca spp.*) and bents (*Agrostis spp.*) which provides good quality reptile foraging habitat. The ground will be prepared between November and March with seeding taking place in the spring. It is considered likely that the restored habitat will be sufficiently established in a single growing season.

2. The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e. as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.

Detailed management of the grassland will be provided in the phase-specific Country Park EMMP. However, it is likely to include either an annual hay cut in late September to 150mm in height or grazing, to be agreed with the LPA.

Two skylark plots (4m x 5m) will be created within the Country Park. Seeds will be collected of the three notable arable plants in development areas (green pigweed, green field speedwell and subspecies of fool's-parsley) and these seeds will be sown in the skylark plots. The soil containing the seed bank within the receptor site will be managed to stimulate seed germination.

Arable plants seed will be collected and stored over winter. Prior to the translocation, the skylark plots will be rotovated and tilled. Collected seed will be sown in Spring and allowed to become established. The management of the arable field will entail disturbance of the habitat following the arable plants growing period and following fledging of nesting skylarks i.e. post-October.

It is proposed that, in addition to the sowing of the arable plant seed, as described above, the associated seed bank, is translocated to skylark plots. This will involve the following:

A tracked digger with a wide bladed bucket will remove the vegetation and soil supporting the notable species as marked out by the survey. Soil to a depth of approximately 500mm will be moved to ensure that as much of the seed bank as possible is translocated.

The soil and plants will then be placed in a transportation vehicle appropriate for the site conditions and quantity of soil to be moved. It is important to keep the vegetated side facing upwards at all times, and an effort made to preserve the structure of the soil.

The receptor site conditions will match the donor site exactly as both sites are within the same site context. Therefore, it is anticipated that the translocation will be successful.

The translocated soil from the donor site must be placed at the centre of the pits at the receptor site, with an effort made to ensure that the structure of the soil is disturbed as little as possible and the vegetation side remains facing upwards. Gaps will be filled in with loose soil and watering can be done if required.

The receptor site area must then be left untouched until the following Autumn, when normal management designed to maintain site conditions for the arable annual plants can recommence. Current management, which should continue, comprises ploughing over winter.

3. **Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.**

Given the proposed management methods for the maintenance and creation of grassland habitat described in this section above the following condition will be met.

4. **Undesirable species and physical damage is below 5% cover.**

Retained grassland will be protected through the erection of Heras fencing around the areas of proposed development during the construction stage. These areas will be incorporated into the public open space at the site, which will comprise designated paths through the area. Management will discourage members of the public from entering parts of the wildlife area that are of highest ecological value (i.e. grassland, hedgerows, trees and ponds) whilst allowing the public to appreciate the wildlife in this area.

Fences will be erected along the south-eastern and south-western boundaries of site to prevent trespassing into existing adjoining properties.

Japanese knotweed will be removed along the eastern boundary (TN11, Figure 1). It is recommended that advice from Japanese knotweed contractors is sought regarding the most appropriate method to remove this species from the site. It should be noted that under the Environmental Protection Act 1990, soil contaminated with Japanese knotweed would be classed as controlled waste and must be disposed of safely at an appropriately licensed landfill site.

5. **Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).**

To minimise any potential damage caused by increased recreational pressure the footpaths across the site will be clearly marked, the marked pathways will restrict movement to these areas.

6. **Cover of bracken less than 20% and cover of scrub and bramble less than 5%.**

Once a year, the presence of scrub and bracken in the tall grassland will be monitored. Scrub and or bracken will be removed if it is encroaching into the tall grassland habitat to the detriment of the grassland flora. A small amount of scrub will be tolerated to provide shelter and bird nesting habitat. An optimum baseline scrub level will be determined by the ecologist and long-term photo-monitoring from a fixed vantage point. This will be carried out to determine levels of scrub encroachment from the baseline.

The establishment of the grassland will be monitored for competitive weeds, which will be spot sprayed where necessary or hand pulled. This will be undertaken every two months during the main growing period April to September for two years post sowing.

3.8 LAKES – PONDS (PRIORITY HABITAT)

1. **Are of good water quality, with clear water (substrate can be seen) and no obvious sign of pollution in the water body.**

All appropriate pollution prevention control methods will be employed throughout the development process so as to avoid pollution entering the watercourses on site and flowing into the River Enborne.

When the development work is undertaken, appropriate methods will be employed to avoid and reduce to an absolute minimum any siltation or runoff taking place, particularly when creating the crossings points over the watercourse. This can be partly achieved by making sure that all excavated material is not stored adjacent to the watercourses themselves.

2. **The water body should have semi-natural riparian land for at least 10 m from the pond edge.**

As the waterbodies are located within woodland (Waterleaze Copse) the surrounding habitat is not proposed to be managed and converted to riparian habitat.

3. **Non-woodland ponds should be dominated by plants, be they submerged or floating (note dominance of duckweed is a sign of eutrophication).**

The standing water within the site are located within Waterleaze Copse therefore the above condition has not been considered in relation to this habitat.

4. **Non-woodland ponds [i.e. that have always been open] should not be shaded more than 50 %.**

The standing water within the site are located within Waterleaze Copse therefore the above condition has not been considered in relation to this habitat.

5. **Many ponds will be fishless, those which naturally contain fish should not be stocked and should contain a native fish assemblage.**

There are currently no proposals to remove fish stocked within the two waterbodies should they be identified.

6. **Ponds should not be artificially connected to other waterbodies, e.g. ditches**

The ponds are connected to the tributary of the River Enborune which runs through the site. There are no plans to impact the watercourse and the waterbody will therefore remain connected.

7. **Pond water levels should be able to fluctuate naturally throughout the year**

The waterbodies are already considered to fluctuate naturally throughout the year. There are no proposals considered as part of the development which would impact this occurrence.

8. **Non-native species should be absent**

New Zealand pygmyweed will be removed from Pond 1 (the northernmost pond within Waterleaze Copse, TN12, Figure 1) and this could be done by mechanical / manual control which is a short-term solution. It could also be removed using chemicals, but it is recommended that advice from invasive weed specialists is sought regarding the most appropriate method to remove this species.

Monitoring to check that these invasive species have been successfully removed from the site. This will comprise a spot check on an annual basis every year for five years post development. If invasive species continue to be present, additional treatment will be required, and this period of monitoring will need to be extended.

9. **Less than 10 % of the pond should be covered with duckweed or filamenlous algae.**

Duckweed and filamenlous algae were not recorded as across the surface of the waterbodies throughout the site. The presence of these species should be monitored during construction and post-construction as this may indicate eutrophication. As mentioned in Section 3,2 above it is proposed that fertilisers will not be used in proximity to woodland.

3.9 URBAN – SUSTAINABLE URBAN DESIGN FEATURE

1. **Known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added which in turn has led to a low nutrient environment.**

There are no known evidence or indications recorded which would suggest that the soil within which the SuDS are proposed to be created or already exist within the site have been removed or severely modified.

2. **The site contains some vegetation. This will comprise of early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of (a)**

annuals, or (b) mosses/liverworts, or (c) lichens, or (d) ruderals, or (e) inundation species, or (f) open grassland, or (g) flower-rich grassland, or (h) heathland.

The SuDS are proposed to be constructed within areas of grassland on site. These grassland areas will be managed and maintained as described within Sections 3.5 and 3.7 above. Therefore, early successional communities of open grassland and flower-rich grassland will be contained within the newly created SuDS.

3. **The site contains unvegetated, loose bare substrate and pools may be present and desirable.**

There are no proposed management conditions for the SuDS on site to maintain these features as unvegetated and / or containing loose substrate.

4. **The site shows spatial variation, forming a mosaic of one or more of the early successional communities (a)–(h) above plus bare substrate or pools.**

The grassland areas within which the SuDS will be created, managed and maintained (as described within Sections 3.5 and 3.7 above) should ensure that the above criteria is met.

3.10 URBAN – AMENITY GRASSLAND

1. **The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.**

The habitat is expected to have a similar species description for agricultural grassland. These grasslands are dominated by few fats-growing grasses on fertile, neutral soils. The species composition is frequently characterised by an abundance of rye-grass *Lolium* spp (above 25 % cover) and white clover *Trifolium repens*. Given this description it is not considered that the habitat will be a clearly and easily recognisable example.

2. **The appearance and composition of the vegetation on site should very closely match the characteristics for the specific Priority Habitat [i.e. as described by either the Phase 1 Habitat Classification or the UK Habitat Classification], with species typical of the habitat representing a significant majority of the vegetation.**

Given the proposed description of the amenity grassland at the site; the habitat is not considered to meet the above criteria.

3. **Wildflowers, sedges and indicator species for the specific Priority grassland habitat are very clearly and easily visible throughout the sward and occur at high densities in high frequency. See relevant Habitat Classification for details of indicator species for specific habitat.**

Given the proposed description of the amenity grassland at the site; the habitat is not considered to meet the above criteria.

4. **Undesirable species and physical damage is below 5% cover.**

Retained grassland will be protected through the erection of Heras fencing around the areas of proposed development during the construction stage.

These areas will be incorporated into the public open space at the site, which will comprise designated paths through the area.

5. **Cover of bare ground greater than 10% (including localised areas, for example, rabbit warrens).**

To minimise any potential damage caused by increased recreational pressure the footpaths across the site will be clearly marked, the marked pathways should help to restrict movement to these areas.

6. **Cover of bracken less than 20% and cover of scrub and bramble less than 5%.**

Once a year, the presence of scrub and bracken in the tall grassland will be monitored. Scrub and or bracken will be removed if it is encroaching into the tall grassland habitat to the detriment of the grassland flora. A small amount of scrub will be tolerated to provide shelter and bird nesting habitat. An optimum baseline scrub level will be determined by the ecologist and long-term photo-monitoring from a fixed vantage point. This will be carried out to determine levels of scrub encroachment from the baseline.

The establishment of the grassland will be monitored for competitive weeds, which will be spot sprayed where necessary or hand pulled. This will be undertaken every two months during the main growing period April to September for two years post sowing.

3.11 RIVERS AND STREAMS (OTHER)

As described within Section 3.1 above the removal of Himalyan balsalm along the River Enborne will be completed prior to construction.

Mitigation proposals are outlined in detail in the Water Resources Chapter (Chapter 11) for the effects of increased impermeable areas. The surface water management proposals will incorporate unlined source control, secondary and tertiary SUDS drainage features to allow infiltration of run off wherever possible to maximise infiltration and recharge. Pipes or culverts to convey stream flows beneath road crossing points will be adequately sized with capacity to convey unrestricted flows downstream. In summary, the surface water management proposals will minimise the hydrological impacts to existing springs and streams as well as mitigating the effects on groundwater recharge.

Silt will be removed from selected sections of the stream beds to provide deeper water areas, and refuge habitats in times of low water level for aquatic invertebrates. The removal should be conducted from mid-August to October to also avoid disturbance to spawning fish (e.g. bullhead, see Appendix F13) and breeding birds (Environment Agency, 2010).

When the bridge construction works are undertaken, appropriate methods will be employed to avoid and reduce, to an absolute minimum, any siltation or runoff taking place, particularly when creating the crossings points over the watercourses. This can be partly achieved by making sure that excavated material is not stored adjacent to the watercourses themselves.

Following the construction of crossing points over the drain or stream the banks will be reinstated to the same height and profile and allowed to vegetate naturally from the surrounding area. This will help to maintain the stream and ditch in as natural condition as possible

A single managed access point will be provided to the edge of the River Enborne, the treatment of the footpath will be determined with West Berkshire Local Planning Authority as will the exact location of the entrance point into the River Enborne. Mitigation for footpaths will be addressed for ancient woodland indicator species as detailed in section 3.1.1.

4.0 PROTECTED SPECIES MITIGATION

4.1 GREAT CRESTED NEWT

4.1.1 Pre and During Construction Mitigation Measures

Great crested newts have not been recorded on the site; however suitable habitat for this species does exist within the site boundary. A reptile displacement is to be conducted at the site, which will be undertaken during the great crested newt active season, and it is considered that in the unlikely event that great crested newts are using the terrestrial habitat on site, they will be detected during this displacement. In the event that a great crested newt is recorded, a great crested newt European Protected Species mitigation licence will be obtained from Natural England before any further works can commence.

As a precaution, all site clearance staff will be made aware of the low risk of finding great crested newts during works. The following procedure will be followed by all staff throughout the duration of works should a great crested newt be found:

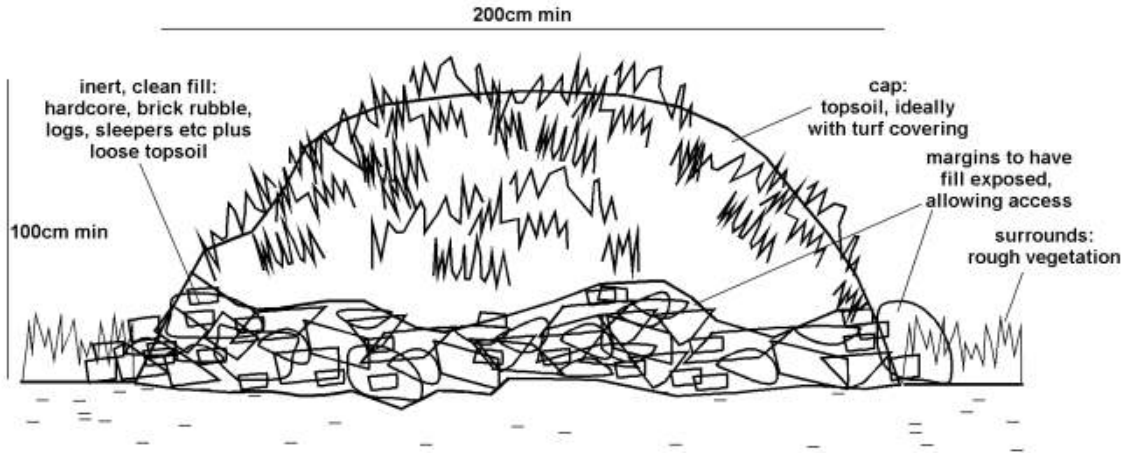
- Stop all work activities immediately.
- Do not attempt to handle the great crested newt.
- Contact the project ecologist.
- Wait for further instruction from the ecologist before proceeding with any further works.

4.1.2 Post-construction Recommendations for Enhancements

Enhancements for reptiles have been incorporated into the proposed development site in order to increase the habitat suitability and provide commuting routes through the site; these enhancements would also be of benefit to great crested newts in the event that they move onto this land in the future. It is proposed that the following enhancements are considered for the site to benefit great crested newts in the long term:

- Four hibernacula have been incorporated into the proposed development site as part of the reptile mitigation for the site. These hibernacula will also enhance the habitats at the site for great crested newts. Design of hibernacula is presented in Drawing 1, below.

Drawing 1 (Taken from the Great Crested Newt Mitigation Guidelines 2001).



- The country park will comprise tall grassland, which will be grazed or cut once a year in late September. This will provide suitable commuting habitat for great crested newts. Existing gappy hedgerows will be in-fill planted with native species.

4.1.3 Post-construction Monitoring

Great crested newts were not recorded during surveys completed for the site. Therefore, no monitoring for this species is recommended.

4.2 REPTILES

Given that reptiles have been recorded on the development site, reptile mitigation will need to be implemented at the site to prevent breaching the Wildlife and Countryside Act 1981. A low population of slow worms, grass snakes and common lizards have been recorded at the site. The majority of suitable reptile habitat will be retained but mitigation and enhancement is also proposed (Figure 2).

Given the size of the site, and the retention of large areas of green space, a displacement will be completed to encourage the migration of reptiles to areas of retained habitat within the site boundary away from the development footprint.

Reptile hibernacula will be installed within the receptor habitat to provide additional refuge for reptiles and to act as a focal point of release for any reptiles which are translocated.

4.2.1 Pre-construction Management: Reptile Displacement

Within the areas with minimal coverage of suitable habitat (e.g. the margins of arable field compartments and woodland edges) where low populations of reptiles were recorded it is recommended that displacement works are undertaken between March and October. An Ecological Clerks of Works will supervise the strimming of the vegetation to 150mm, following which a finger-tip search will be undertaken to check for reptiles. If reptiles are found, they will be translocated to the areas of suitable habitat within the site proposed to comprise the Country Park. Following this, the clearance of this area will be finalised by a destructive search.

This approach will be agreed with the Local Planning Authority ecologist. The details of this method are described in Section 4.2.2 below.

4.2.2 Pre-construction Management: Destructive Search

Following the successful completion of the displacement of reptiles from the areas of proposed construction, these areas will be destructively cleared. This will involve two parts, hand search and a mechanical search, completed to the following specifications:

- A suitably qualified ecologist will supervise all aspects of the destructive search;
- Hand searches will be conducted, including the removal of debris on the ground in order to remove potential refuges including rubble, wood and vegetation piles;
- Using a medium sized excavator (approximately 8-10 tonnes) with a toothed bucket carry out a gradual scrape of the top one to two inches (25-50mm) of topsoil;
- Both the areas from where soil is removed, and the subsequent spoil heaps should be checked for reptiles and amphibians;
- Carry out deeper scrapes where necessary, such as beneath rot systems, buried material, cracks or holes in the ground; and
- The excavated spoil will be stored as directed by the ECOW, in consultation with the developers, in an area identified as unsuitable as reptile habitat.

4.2.3 Post-construction Management

The area will be managed sensitively for reptiles in the long term through cutting the grass to a height of no less than 6 inches during the late summer / early autumn (late September).

4.2.4 Post-construction Monitoring

Monitoring of the populations throughout the site may be required in later years to inform future habitat maintenance of the Country Park. Monitoring is normally completed during the 1st, 3rd and 5th year post translocation.

4.3 BAT ACTIVITY

This EMMP provides best practice prescriptions, below, on the routine maintenance of the proposed development site and to enhance areas of the site for bats, which will also contribute to increasing the site's overall value to biodiversity.

4.3.1 Pre-construction Mitigation: Hedgerow Retention and Replacement

The majority of hedgerows will be retained and protected within the development. However, Hedgerow A which leads south from the western extent of the existing public footpath will be bisected to accommodate the proposed access road. Access roads will also bisect the hedgerow F which runs along the northern boundary of the site, adjacent to Monk's Lane.

Infill planting of gaps within the existing hedgerows is proposed, which will enhance the remaining hedgerows and hence loss of bat commuting / foraging habitat will not be significant. Further mitigation and compensation for bats is included within the Masterplan in the form of native tree planting along the roads and throughout the residential development to re-create bat foraging and commuting habitat. Infill planting of gaps in other retained hedgerows throughout the site will be undertaken using native hedgerow species (see species list, Appendix B). Additional information in relation to hedgerow management is presented in Section 3.4.

4.3.2 Pre-construction Mitigation: Ecological Input to Landscape Plan

A diverse collection of native tree and shrub planting will be incorporated into the landscaping design (refer to Appendix B for species to be planted). The planting of native species will enhance the site for foraging / commuting bats.

The south eastern area of the site will be managed as tall grassland which will support a variety of invertebrate species, which will in turn benefit foraging bats.

4.3.3 Construction Phase Mitigation: Best Practice

Ecological buffers will be retained between development areas and woodland areas that will be retained or created:

- 15 m buffers will be retained between all areas of woodland and the development; and
- 3 m buffers will be retained from all retained hedgerows and tree lines.

Construction activity in the vicinity of hedgerows and woodland will stop half an hour before sunset to avoid delaying the emergence of locally roosting bats or adversely impacting commuting and foraging bats. Additional information on the protection of trees and hedgerows is presented in Section 3.4.

4.3.4 Post-construction Mitigation: Reducing the Risk of Traffic Collisions

The central valley and the proposed country park will be enhanced for bats and will provide connectivity between the woodland along the southern boundary of the habitats to the woodland blocks within the centre and northern extent of the site. An access road will cross the central valley; however, this will be a bridge to ensure the connectivity of the marshy grassland remains intact. At other locations where roads bisect bat foraging / commuting habitat trees will be planted / allowed to grow tall on each side of the road at the point where the road bisects the hedgerows. The trees will provide 'hop-overs' for bats, guiding them over the road and reducing the risk of traffic collisions. This will retain connectivity throughout the site and to woodland areas beyond the southern boundary of the site.

Figure 1 planting to encourage bats to fly over roads or, on a smaller scale, hedgerow gaps. Photo © Peter Twisk www.standardsforhighways.co.uk

4.3.5 Post-construction Mitigation: Lighting

The lighting across the development footprint has been sensitively designed with consideration for bats, so that valuable bat foraging and commuting areas are retained and existing/new roost sites are not impacted by ambient light. Permanent lighting on site will be minimised in proximity to the following habitats:

- woodlands (including edges and woodland buffers);
- hedgerows;
- mature trees;
- boundary vegetation; and
- new roost sites (e.g. bat boxes installed as part of the scheme).

A new road bridge is proposed crossing the central valley. The section of road going through the valley will be lit by bollard lighting, with lighting columns located at either end of the road passing through the wildlife corridor and facing away from this habitat. No lighting is proposed for the northern side of the road crossing to the south of Crook's Copse (Appendix F20).

4.3.6 Post-construction: Enhancement

Paragraph 170 of the *National Planning Policy Framework (Ministry of Housing Communities and Local Government, 2018) states 'Planning policies and decisions should contribute to and enhance the natural and local environment by…. minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures'.* Enhancements are included within the masterplan, particularly within the Country Park area of the site.

Within the Country Park, much of the grassland area will be managed as tall grassland, which will enhance the habitat for invertebrates and the bats which feed on invertebrates.

The existing pond (P1, TN12) within Waterleaze Copse is currently silty, with very little aquatic vegetation present; as such it is proposed that enhancement measures will be made which will benefit a range of species, including bats. The pond will be re-profiled to create shallow margins, which will encourage a range of aquatic plant species, which will in turn support a greater diversity of aquatic invertebrates and bats which feed on insects over the pond. In addition, scrub clearance surrounding the pond will be conducted, to allow more light into the pond and enhance the pond for invertebrates and bats.

These enhancement measures will be in addition to in-fill planting of hedgerows and the creation of areas of tall grassland at the south eastern extent of the site, which will also enhance the site for foraging and commuting bats as part of the commitment of the development in the augmentation of biodiversity.

4.3.7 Post-construction: Monitoring

No monitoring is currently proposed in relation to foraging and commuting bats.

4.4 BAT ROOSTS

During the bat roost assessment, and the hibernation survey completed in 2018 (Appendix F7), one tree T46 within G47 was identified as a 'known or confirmed roost'. However, during the bat emergence / return surveys completed during 2014 no bats were seen emerging or returning to this tree.

Nocturnal emergence/return surveys completed in 2017 observed trees T128, T127, T130, T123, T121 and G120 to have at least one bat emerge or return and are therefore considered to be active bat roosts (see Figure 4 for locations). These trees are not required to be removed for the A339 access road but may be impacted indirectly. To mitigate for these impacts, it is recommended that work in proximity to these trees (and all hedgerows) will cease 30 minutes before dusk, and the tree (together with all retained trees and hedgerows) will be protected during the works phase.

It is possible that T127 and T130 will require some arboricultural works, based on the Arboricultural Assessment (Barrell Tree Care, 2018), however, these works do not form part of the current proposal. In the event that pollarding is required in the future, further surveys will be recommended to inform potential licence requirements.

4.4.1 Pre-construction Surveys for Bats

Pre-works (either pre-construction, or pre-arboricultural works where arboricultural works are recommended, separate to the proposals) emergence/return surveys or climbed inspection will be required of those trees and the building with potential to support roosting bats (moderate or high suitability – G47, G120, T67, T109, T114, T116, T121, T122, T123, T127, T128, T129, T130, T133, T153, T154, T158, T159, T160, T173 and potentially the stable building (TN3)). The trees are shown as red (high suitability) and orange (moderate suitability) in Figure 4.

The masterplan has sought to retain all trees within the Country Park. However, felling or pollarding has been recommended for some trees with high and moderate suitability (T109, T127, T130, T153, T154, T172, T173) within the arboricultural report for management purposes. In the event that felling, or works are required, further surveys would be required to guide these works, and inform any requirement for a licence application. **T127 and T130 were observed to contain active bat roosts and will therefore require further surveys and possible license applications if deemed to still be active should future felling or pollarding works be proposed.**

4.4.2 Pre-construction Mitigation for Roosting Bats: Trees

As a precaution, tree 'soft-felling' methods will be used for limbs comprising suitable features within all trees classified as having a combination of low, moderate or high roost suitability under Bat Conservation Trust, 2016 guidelines, as shown on Figure 4.

Soft felling is a generic term used to describe more cautious felling approaches where cross cutting in proximity to cavities or hollows is avoided, and any sections containing cavities are lowered carefully using rope and cushioning techniques to reduce the impact of felling limbs which may have bats within cavities. The felled sections will be left on the ground (preferably for up to 48 hours, but for at least 24 hours) with the openings clear, allowing any remaining bats to escape. Split limbs that are under tension may need to be wedged open to prevent their closure when pressure is released, to avoid trapping bats.

4.4.3 Post-construction Mitigation: Artificial Roost Provision

Additional measures to enhance the site for bats include the provision of artificial bat boxes in suitable habitat across the site.

Twenty bat boxes will be installed on mature trees within the site boundary. Trees within the existing woodland have been identified as the most suitable locations for bat boxes, as they are well connected to further areas of off-site habitat suitable for foraging and commuting bats. Bat boxes to be installed at the site will comprise a mixture of the following Schwegler bat boxes: Bat Box 2F, Bat Box 1FF and Bat Box 1FD (or similar), which are suitable for brown long-eared, noctule, common pipistrelle and soprano pipistrelle bats. Further details of specifications of bat boxes and bat tubes are provided in Appendix C. Refer to Figure 3 for a plan showing the proposed location of bat boxes within the site.

Tree bat boxes will be installed at a height of 3 – 6 m and will not be obstructed by branches or foliage that would restrict access to them by bats. Two or three bat boxes will be installed on each tree, facing differing directions around the tree trunk, so that if one box gets too hot or cold the bats can move to another. Boxes will be attached to the tree using an aluminium nail or tied in position using wire / leather.

4.4.4 Post-construction Monitoring

Bat boxes are to be installed as an enhancement. Therefore, monitoring of bat boxes is not currently proposed at the site.

4.5 BADGER

4.5.1 Pre-construction Monitoring

A pre-commencement badger survey will be undertaken one month prior to development commencing on site to check that no new badger setts have been created which may be impacted by the works area.

In the event that badger setts are present and the proposed development will impact these species, a Natural England development licence will be required, however this is not detailed in this report as this is not envisaged at this stage.

The masterplan retains all areas of woodland within the site boundary. Therefore, the main badger sett is unlikely to be directly impacted by the proposed development. Based on the current survey, no setts on site will require exclusion and closure as they will not be directly impacted by the proposed development works. Public access will be created through some of the woodlands, however, to avoid disturbance to badgers, these footpaths will be designed to avoid badger setts and surfaced to encourage people to keep to them. These will be detailed at the Reserved Matters stage, informed by an updated survey.

4.5.2 Construction Phase Mitigation: General Procedures During Works

As part of the toolbox talk prior to works commencing, best practice methods will be implemented on the site to avoid impacts to commuting and foraging badgers, these will include:

- Consideration being given to the placement of topsoil storage, or piles of materials that may create mounds suitable for sett creation. Any such piles will be placed well away from identified badger activity and are checked on a daily basis by construction staff to identify if badgers have attempted to construct a sett. If a sett is discovered, then all works in the immediate areas (30m buffer) will cease until a suitably qualified ecologist has been contacted for advice. If the mounds are to be in place for a significant period of time, the safest approach may to be temporarily fence the mounds to ensure that badgers cannot access the fresh soil.

- All night working will be kept to a minimum whenever possible to avoid disturbance to badgers and works within 30m of a sett should cease at least two hours before sunset. If flood lighting is to be used, we advise pointing it away from known areas of badger activity.

- An earth ramp will be left in any excavations left open overnight, or a wooden ramp installed to allow any animals that fall in to escape.

- Pipes (with a diameter greater than 200mm) that are left overnight on site will be capped to avoid animals becoming trapped. Pipes that are not capped should be checked prior to movement to ensure badgers have not entered them.

4.5.3 Post Construction Mitigation & Enhancement: Badger Foraging Areas

Some badger foraging signs were seen within the area of marshy grassland. Very little of this foraging area will be lost due to the development as the road across this part of the site will be elevated so badgers will still be able to forage and commute beneath it. The majority of the eastern part of the site will also be retained and much of the foraging and commuting evidence was recorded within this area. Lighting across the bridge will be minimal where possible, and directed onto the road itself, with minimal spillage to the surrounding area thus will avoid disturbance to nocturnal badger activity.

Other areas where badger signs were noted, such as along the southern boundary near the river and in the fields within the eastern part of the site are not going to be impacted by the proposed development therefore large areas of the site will continue to be available for badgers to forage on.

Lighting for the residential areas has been designed to reduce impacts on woodland, hedgerows and badger foraging areas wherever possible.

4.5.4 Post-construction Monitoring

At present it is not considered that a badger development licence will be required as none of the existing setts lie within 30 metres of the proposed works and therefore no monitoring is required. However, if following the pre-commencement surveys a sett closure is required, monitoring of badgers at the site is likely to be required as part of the licence, during and post construction.

4.6 HAZEL DORMICE

4.6.1 Pre-construction Mitigation

The masterplan has been designed to avoid, reduce and mitigate impacts on dormice and their habitats where possible. All woodlands will be retained within the masterplan with a 15-metre buffer surrounding them, and hedgerows will be largely retained with a 3m buffer. The retained hedgerows will be protected during the construction phase by erecting Heras fencing. This aims to avoid damage to hedgerows and retained trees which may be used by dormice.

However, where the main access road is proposed from Warren Road at the western extent of the site to Monk's Lane at the northern extent of the site, sections of dormouse habitat comprising hedgerows (Hedgerows A and H) and scrub will be lost, other breaches and hedgerow removal are also proposed.

To maintain the favourable conservation status of dormice within the site by providing compensatory habitat, new hedgerows will be planted where they are not currently present. Where existing hedgerows are present and gappy these will be infilled with native planting to improve connectivity for dormice.

The new hedgerows will be planted with a diverse mix of native species including hawthorn, hazel, holly, blackthorn, elder, guelder rose and honeysuckle all of which will provide a food source and nesting habitat for dormice.

Where the hedgerows are required to be bisected for roads and footpaths, taller trees will be planted either side of the breaches to create a vegetated arch to maintain connectivity for dormice.

Prior to any vegetation clearance, twenty standard design dormouse boxes will be erected within retained habitat. These boxes will provide long term shelter and breeding sites for dormice and will therefore enhance the habitat for dormice.

Prior to any clearance or construction works commencing, a toolbox talk will be given to all contractors by the named ecologist to explain the potential for discovering dormice during works and the procedure to take in the event a dormouse is found.

4.6.2 Construction Phase Mitigation

It is anticipated that approximately 1km of hedgerow and scrub habitat will be removed in total. In order to maintain connectivity between Barn Copse, where dormice were recorded in 2014 and the remainder of the site, it will be necessary to create a continuous vegetation arch over the proposed road, between Barn Copse and Dirty Ground Copse. Alternatively, if the level of the valley crossing bridge is high enough, with enough light getting through to sustain a hedgerow a vegetative corridor beneath the bridge may be possible.

Infill planting of gappy hedgerows around the boundary of the site will be undertaken to provide alternative commuting routes for dormice where connectivity is reduced to accommodate the access road.

It is proposed that all vegetation clearance works of suitable dormouse habitat will be undertaken following a precautionary approach under an EPSL licence. A two-stage clearance process will be implemented to avoid the main dormouse hibernation and breeding seasons, in addition to the peak nesting bird season.

Winter Vegetation Clearance

As dormice have been found on site, following a precautionary approach the above-ground vegetation will be cut to a minimum of 300mm between November and February. The suitably qualified ecologist will undertake hand searches of all the vegetation to be removed prior to cutting. Dormice hibernate at ground level; therefore, the ground level vegetation (i.e. all vegetation below 300mm) will remain in situ and undisturbed.

If any torpid dormice are found during the vegetation clearance all works must stop immediately. The suitably qualified ecologist and the ECoW present on site must be contacted immediately and made aware of the discovery. Any dormice discovered on-site must not be handled by non-licenced personal.

Summer Vegetation Removal

Stump and root removal will also be undertaken between May and October, after the hibernation season is over, when any dormice (if present) will be using arboreal habitats.

The suitably qualified will undertake a hand search of all the vegetation to be removed prior to cutting and excavation of the roots/stumps. If any dormice are found all works must stop immediately. As described above the suitably qualified and ECoW present on site must be contacted immediately and made aware of the presence of dormice. NE will then be contacted to begin the process of obtaining an EPSL to allow works to continue. Dormice must not be handled by non-licenced personal.

Where public access is to be allowed into woodlands along designated public rights of way, there is potential for disturbance to dormice during the construction and operational phases. These pathways will follow existing pathways, and as such, any vegetation clearance required is likely to be minimal. However, should any vegetation require removal from woodland areas, this will be completed under an ecological clerk of works, and according to the mitigation measures within the licence, as outlined below. These pathways will be clearly demarcated and notice boards will be erected to inform locals of the importance of this area to nature conservation to ensure that public pressure does not impact on dormouse habitats.

4.6.3 Summary of Post-construction Enhancements Hazel Dormouse

Retained and created hedgerows, scrub and woodland habitat within the site will be managed in the long term to enhance fruit / seed production and minimise disturbance to hazel dormice. Pruning of hedgerows and control of scrub encroachment will be carried out over winter when dormice are hibernating at ground level.

The hedgerows will be cut once every two years to encourage the production of food such as berries.

The management of the woodland present on site will involve periodic removal and coppicing of the trees in Barns Copse where sycamore will be removed over a five-year period in order to reduce the competitiveness of this non-native tree. Felling will not be undertaken uniformly or immediately and small group fellings throughout the woodland at intervals will maintain the species richness if undertaken every five to eight years (Bright et al., 2006).

Management works involving vegetation removal/ thinning operations will be carried out outside the bird breeding season (which is March to September); the best time to undertake these works is November to March as this allows the dormice to fully exploit the nut crop.

4.6.4 Post-construction Monitoring

Dormouse boxes will be monitored by a licensed dormouse surveyor twice a year (May and October) for up to five years after completion of the scheme (or creation of new habitats).

The monitoring visit will include an assessment of the need for any additional habitat enhancement and management work and a check of all compensatory planting establishment (including vegetated arches) and requirement for replacement. A summary email will be sent to Bloor Homes following each annual survey to provide the results of the surveys and to identify any potential requirement for changes to management as required.

4.7 BREEDING BIRDS

4.7.1 Pre-construction Mitigation

As the woodland areas are due to be retained, the nesting opportunities for woodland species will be retained. However, where areas of development are positioned adjacent to the woodland, it is expected that the suitability of the woodland edge habitats for nesting will be reduced somewhat. This impact will be reduced by leaving a buffer of at least 15m between the woodland edge and residential properties, which will also retain foraging habitat for barn owls and nightjars (see below).

Species known to nest in hedgerows and scrub were generally recorded in relatively low numbers within the site, including house sparrow, linnet, yellowhammer and whitethroat. This is likely to be due to the sparse and disjointed nature of hedgerows within the site. As the proposed development is due to include the removal of some areas of hedgerow, these species will find even fewer nesting opportunities within the site. In order to enhance the remaining areas of the site for hedgerow-nesting species and maintain the current population levels of these species, the remaining hedgerows will be reinforced by the addition of native hedgerow species.

Although nightjars have been recorded on the site previously by the estate workers, they were not recorded during any survey work carried out for this species by WYG. There is not currently considered to be suitable breeding habitat within the site (although this could at least temporarily be created where large glades are created in any of the larger woodlands). It is considered possible that nightjars are using the site on a casual basis for foraging only, especially in replenishing fat reserves when they first arrive on spring migration (there is a known breeding site within a few kilometres at Greenham Common). The sheltered wet valley in the centre of the site and adjacent woodland edges are considered to provide good quality nightjar foraging habitat and these habitats are to be retained.

No footpaths will extend through Crook's Copse and this wood will remain as a no-access area allowing sensitive woodland breeding birds, such as woodcock to breed. Woodcocks have not been proven to breed on the site although they were recorded during bat surveys in the northern half of the

site and the habitat is considered suitable for them, especially as good quality foraging habitat along the wet central valley is on close proximity.

4.7.2 Construction Phase Mitigation

Wherever possible, any necessary removal of other trees, hedgerows, scrub or buildings within the site will be carried out outside the bird nesting season, which runs from March to October inclusive. In order to avoid impacts to dormice, vegetation clearance conducted outside of the above time period will be cut to a height no lower than 300mm from ground level. The process of vegetation clearance on-site is detailed in Section 4.6.2 above. If this is not possible and vegetation removal is required within the nesting season, it will be inspected for the presence of nests by a suitably experienced ecologist beforehand. Should active nests be found, they will be left in-situ with at least a 5 m buffer of intact vegetation until all the young have fledged and cease to return to the nest. The buffer will be species dependant.

The proposed development will retain all of the woodland habitats within the site intact, along with a 15-metre buffer. Landscaping and planting within residential gardens of proposed dwellings will provide additional nesting opportunities for a range of passerine bird species. New buildings will provide additional nesting locations for species, such as swifts. Therefore, it is considered that nesting opportunities for the majority of passerine bird species recorded will not be reduced by the proposed development in the medium to long term. It is anticipated that there will be a like for like replacement in nesting opportunities for these species.

Habitat enhancements, which will benefit a range of breeding bird species, will be completed at the site. A number of the hedgerows within the site are currently gappy in nature. To provide further opportunities for nesting birds, hedgerow infill planting will be carried out within these hedgerows. This will comprise a variety of native species such as hawthorn, blackthorn, field maple, hazel, oak, beech, holly and willow. Reinforced hedgerows will provide nesting and feeding opportunities for birds, as well as a resource for invertebrates, mammals and other wildlife. Additional information on hedgerows is presented in Section 3.4.

4.7.3 Post-construction Mitigation

The proposed development includes a wildlife area through the central valley of the site connecting to an area of Country Park towards the eastern part of the site. The inclusion of these features will provide a continuous corridor for wildlife, including birds, linking woodland to the south of the site to habitats within the centre and north of the site. Additional information on the creation and management of these habitats is presented in Section 3.

The pond located within Waterleaze Copse will be retained and enhanced. It is currently heavily shaded, and the water is stagnant and filled with leaf litter. In addition, the SUDs features including ponds and swales will be created which will provide habitat for wetland bird species.

Inevitably, the proposed development is likely to bring a certain number of domestic cats to the area which may potentially predate wild birds nesting close to the residential areas. Although there is a risk that this predation pressure will negatively affect the breeding success of birds in the immediate area around the houses, the extent of proposed landscaping is expected to provide further nesting opportunities. Therefore, on balance, the risk of predation from domestic cats is not expected to significantly affect the populations of birds within the site as a whole.

Conversely, the addition of residential dwellings will also increase the amount of bird feeding activity in the area, as residents are likely to erect bird feeders within gardens, providing a new source of food principally for passerine birds.

4.7.4 Post-construction Enhancements

Additional enhancements for nesting birds will include the following (refer to Appendix C for specifications). Illustrative locations are provided within Figure 3.

- Installation of two skylark plots (16-24 m^2) which will be left unsown in winter cereals to boost the nesting opportunities and food available for skylarks.

- Installation of 25 starling nest boxes and 10 house sparrow nesting boxes / terraces incorporated onto proposed buildings.
- Installation of eight nesting boxes with a variety of hole sizes from 25mm to 35mm – these will be suitable for a range of bird species.
- Installation of eight open fronted bird boxes, which will be used for species such as robins, spotted flycatchers and pied wagtails.
- Installation of eight wedge shaped nest boxes, which will be used for species such as treecreeper.
- Installation of two tawny owl nest boxes, two barn owl boxes and two little owl boxes (Refer to Appendix C).

4.7.5 Post-construction Monitoring

Bird boxes will be installed as an enhancement for nesting birds. Monitoring of bird boxes is not required at the site.

4.8 BARN OWL

4.8.1 Pre-construction Mitigation

Six trees (T158, T159, T160, T127, T173 and T34) on site are confirmed as potential nesting sites for barn owls (Figure 4). A 30m buffer zone of no construction will be incorporated around each tree where there will be no construction or development to avoid impacts to nesting barn owls between the breeding season March to September (Figure 2).

Three trees (T158, T159 and T160) were identified with particular features (e.g. cavities) making them suitable for nesting barn owls, although there was no evidence of nesting at the time of the surveys. However, these trees may become occupied by nesting barn owls in future years; therefore, as such a pre-commencement survey will be undertaken prior to development works commencing, to re-assess the use of the site by nesting barn owls. Whilst three trees were identified as particularly suitable, the survey should cover the whole site as other trees may become suitable in the meantime.

4.8.2 Construction Phase Mitigation

The masterplan retains all of the trees identified as currently having potential or confirmed for nesting barn owls. All trees with the exception of T34 are located within the Country Park. T34 is located within an area safeguarded for the expansion of Park House School. In the event that this tree will be lost to future proposals for Park House School, update surveys, and appropriate avoidance, mitigation and enhancement measures will be required. Whilst barn owls often nest in occupied buildings or close to human occupation, it is considered likely that the proposed new buildings to be constructed in close proximity to tree T34 will reduce its suitability for nesting barn owls.

Trees T127 and T173 (with potential to support barn owl) have been retained within the masterplan. However, felling or pollarding has been recommended within the arboricultural report for management purposes. In the event that felling, or works are required, further surveys and recommendations would be inform these works.

As nesting barn owls are protected from disturbance, no construction works should be carried out within approximately 100m of a barn owl nest site during the nesting period (March to September inclusive). If nests are identified, a buffer zone will be set up inside which no construction work may be undertaken until the young have fledged and cease to return to the nest. The size of the buffer will depend on the nature of the disturbance and should be advised by a suitably qualified ecologist, but it is likely to be 100-150m. To avoid this constraint, it is recommended that construction works are not commenced during the bird nesting season. If disturbing works are already underway when the

nesting season starts, and birds choose to nest nearby, then it may be assumed that the disturbance is not detrimental to them but works should not encroach upon the nest site.

4.8.3 Post-construction Mitigation and Enhancement

Barn owl nest boxes will be installed on the edge of each of the woodlands to offer an enhancement for this species and to provide additional roosting opportunities.

The proposed development is likely to increase the number of people using the site for recreational purposes. This would be expected to increase the likelihood of disturbance to barn owls, for instance by dog-walkers or children playing. To minimise this risk footpaths across the site will be clearly marked, and a 30m buffer will be maintained between T158, T159 and T160 and any footpaths.

Areas of the Country Park will be managed to maximise barn owl foraging habitat which will encourage tall grassland to maximise foraging which will be tussocky with a thatch beneath. The grassland will be cut once a year in late September to 6 inches only.

4.8.4 Post-construction Monitoring

No monitoring of barn owls is proposed.

4.9 AQUATIC INVERTEBRATES

4.9.1 Pre-construction Mitigation Measures: Aquatic Invertebrates

Best practice measures will be included in the site management proposals to minimise the risk to local biodiversity:

- Construction will be avoided within 8m of streams to minimise the potential for pollutants entering the stream, other than in the area of road bridges (Appendix F13).
- Spill kits will be made available and used immediately should a pollution incident occur.
- All relevant Pollution Prevention Guidelines (PPGs) will be adhered to.
- During the construction of the crossing over the stream, siltation to the stream to be kept to an absolute minimum.
- Best management practices such as temporary sediment traps, silt fences and diversion trenches are all means to reduce runoff pollution and sedimentation that may be used where appropriate.

4.9.2 Post-construction Mitigation and Enhancements Measures: Aquatic Invertebrates

- Following construction, the stream banks will be returned to their original height and shape (profile) and allowed to re-vegetate naturally from the surrounding area.
- If acceptable to the LPA, the management regime may include periodic grazing of the areas adjacent to the drain and stream e.g. twice a year, by cattle or an appropriate breed of sheep so as to maintain these habitats in a similar condition to present.

Enhancement measures along the stream will include:

- The careful removal of some of the understory trees along the stream banks thus allowing light onto the stream will be beneficial as it will allow aquatic vegetation to establish and grow. Vegetation removal should be avoided in areas along the River Enborne where otters and water

voles have been recorded, a check for otters and water voles should be made prior to vegetation removal works commencing.

- Some careful removal of silt from the stream bed will help to provide areas that are deeper and thus provide refuge habitats in times of low water level for the aquatic invertebrates.

4.9.3 Post-construction Monitoring of Aquatic Invertebrates

No monitoring is recommended for invertebrates at the site.

4.10 TERRESTRIAL INVERTEBRATES

4.10.1 Pre-construction Mitigation Measures: Terrestrial Invertebrates

Table 1 provides details of notable invertebrates recorded within the site boundary, their habitat requirements and proposed mitigation/ enhancement for these species.

Table 1: Notable invertebrates recorded within the site boundary

Notable invertebrate species	Location recorded	Requirements	Mitigation / enhancement
Soldier beetle *Cantharis fusca* Red data book	South east of High Wood (SU47296439)	Rank vegetation	Retention of rank grassland within the proposed Country Park
Hoverfly *Pipiza lugubris* Nationally scarce	Along the perimeter of Barn Copse (SU46446461) and along the main track (SU46346453)	Woodland and wetland habitats and hogweed Heracleum sphondylium	Retention of hogweed plants within the buffer zones around the woodlands and within the valley wetland corridor and Country Park
Picture-winged fly *Orellia falcate* Nationally scarce	Near Dirty Ground Copse (SU46726433)	Goats-beard (Tragopogon pratensis)	Translocation of goats – beard plants to these areas, or alternatively collection of seed and replanting may allow the host plant to successfully establish in other areas
Snail-killing fly *Psacadina verbekei* Nationally scarce	South of Slockett's Copse (SU46706464)	Aquatic molluscs	Retention of wetland valley and careful consideration of hydrology to prevent wet areas drying out
A snail-killing fly *Tetanocera punctifrons* Nationally notable	Within the marshy grassland (SU46706464)	Aquatic molluscs	Retention of wetland valley and careful consideration of hydrology to prevent wet areas drying out

Notable invertebrate species	Location recorded	Requirements	Mitigation / enhancement
A mining bee *Lasioglossum pauxillum* Nationally scarce	Within an area of game cover south east of Dirty Ground Copse and south of Slockett's Copse	Variety of habitats – this species has increased in rank and frequency	Retention of wetland valley and woodland
A jewel beetle *Agrilus laticornis* Nationally scarce	Along the eastern perimeter of Gorse Covert (SU46736424)	Oak	Retention of all woodlands with 15m buffer

Many of the notable invertebrate species recorded on the proposed development site were recorded within and adjacent to the woodlands or within the marshy grassland. All of the woodlands, including a 15m buffer and the marshy grassland are being retained, as such these species are considered likely to remain on site. The snail-killing flies rely on aquatic molluscs to complete their lifecycle; as such these species also require the retention of wetland habitat.

Specimens of the Nationally Scarce picture – winged fly were recorded within the field to the south of Dirty Ground Copse and this area is scheduled for development within the current proposals. Larvae of *Orellia falcata* develop in the roots and stems of goat's–beard, which was abundant in this field, but scarce or absent from the rest of the survey area. In order to attempt to preserve *Orellia falcata* within the site, it will be necessary to ensure that the host plant is retained in undeveloped areas of the site prior to the development of this field. Translocation of goat's–beard plants to areas within the country park, which lie within close proximity of the existing location, or alternatively collection of seed from the existing location and scattering it in fields within the country park may allow the host plant to successfully establish in these areas. This will need to be undertaken prior to development occurring to increase the chances of success and will also need the ground to be disturbed prior to seed set to ensure seed penetration and successful germination.

4.10.2 Post-construction Mitigation and Enhancement Measures: Moths

All woodland within the site will be retained as part of the development proposals. Lighting will be directed away from this woodland habitat and hence impacts to moths are not anticipated.

4.10.3 Post-construction Monitoring of Invertebrates (All)

No monitoring is recommended for invertebrates at the site.

5.0 MANAGEMENT ACTIVITY

Table 2: Annual Management Summary

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 5 Onwards
Tall grassland habitat to be grazed or cut once a year in late September to a height of 15cm						

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 5 Onwards
Grazing to be considered for certain areas of the park (TBC with LPA)						
Plough arable weed areas / skylark plots overwinter						
Scrub management and seedling removal of opportunistic tree species (October)						
Hedgerow cutting (September) every other year						

6.0 MONITORING

Table 3: Monitoring Summary

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 10	Year 15
Monitoring of reptile population if required (October)							
Monitoring of dormouse population (twice a year)							
Monitoring to confirm absence of invasive species							
Monitoring of the existing bluebell populations (April to early May)							
Monitor the establishment of the orchard for 15 years							
Meadow habitat – monitored once a year in July							
Monitoring of Himalayan balsam stands							

An annual monitoring summary will be compiled and will include suggestions and justification for proposed modifications for monitoring if necessary.

At the end of the 15-year period, a reassessment of the management plan will be made.

7.0 REFERENCES

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- WYG, (2016d), A339 Link Road, Climbed inspection of trees for bats.

- WYG, (2016e), A339 Link Road, Nocturnal bat emergence / return surveys of trees.
- WYG, (2016f), Warren Road and A339 Bat activity surveys.

FIGURES

Figure 1 – Site Location & Phase 1 Habitat Plan

Figure 2 – Constraints Plan

Figure 3 – Enhancement and Mitigation Plan

Figure 4 – Tree Roost Assessment

APPENDIX A – REPORT CONDITIONS

This Report has been prepared using reasonable skill and care for the sole benefit of Bloor Homes and Sandleford Farm Partnership (“the Client”) for the proposed uses stated in the report by [Tetra Tech Environment Planning Transport Limited] (“Tetra Tech”). Tetra Tech exclude all liability for any other uses and to any other party. The report must not be relied on or reproduced in whole or in part by any other party without the copyright holder’s permission.

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The report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections'. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times. No investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather-related conditions. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions. The “shelf life” of the Report will be determined by a number of factors including; its original purpose, the Client’s instructions, passage of time, advances in technology and techniques, changes in legislation etc. and therefore may require future re-assessment.

The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Tetra Tech accept no liability for issues with performance arising from such factors.

APPENDIX B – KEY LEGISLATION

Bern Convention
The *Convention on the Conservation of European Wildlife and Natural Habitats* (the *Bern Convention*) was adopted in Bern, Switzerland in 1979, and was ratified in 1982. Its aims are to protect wild plants and animals and their habitats listed in Appendices 1 and 2 of the Convention, and regulate the exploitation of species listed in Appendix 3. The regulation imposes legal obligations on participating countries to protect over 500 plant species and more than 1000 animals. To meet its obligations imposed by the Convention, the European Community adopted the *EC Birds Directive* (1979) and the *EC Habitats Directive* (1992 – see below). Since the Lisbon Treaty, in force since 1st December 2009, European legislation has been adopted by the European Union.
Bonn Convention
The Convention on the Conservation of Migratory Species of Wild Animals or 'Bonn Convention' was adopted in Bonn, Germany in 1979 and came into force in 1985. Participating states agree to work together to preserve migratory species and their habitats by providing strict protection to species listed in Appendix I of the Convention. It also establishes agreements for the conservation and management of migratory species listed in Appendix II. In the UK, the requirements of the convention are implemented via the Wildlife & Countryside Act 1981 (as amended), Wildlife (Northern Ireland) Order 1985 (as amended), Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 and the Countryside and Rights of Way Act 2000 (CRoW).
Habitats Directive
The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, or the 'Habitats Directive', is a European Union directive adopted in 1992 in response to the Bern Convention. Its aims are to protect approximately 220 habitats and 1,000 species listed in its several Annexes. In the UK, the Habitats Directive is transposed into national law via the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales, and via the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland.
Birds Directive
The EC Directive on the Conservation of Wild Birds (791409/EEC) or 'Birds Directive' was introduced to achieve favourable conservation status of all wild bird species across their distribution range. In this context, the most important provision is the identification and classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex 1 of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance.
Conservation of Habitats and Species Regulations 2017 (as amended)
Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species (listed in Annexes I or II of the Habitats Directive respectively) to the European Commission. These sites, if ratified by Ministers, are then designated as Special Protection Areas (SPAs) within six years. Public bodies must also help preserve, maintain and re-establish habitats for wild birds. The 2018 amendments mainly related to the impact of the *People Over Wind* decision and some implications arising for neighbourhood plan development and a range of other planning tools including Local Development Orders and Permission in Principle – see here for full details: https://www.legislation.gov.uk/uksi/2018/1307/note/made The Regulations make it an offence to deliberately capture, kill, disturb or trade in the animals listed in Schedule 2, or pick, uproot, destroy, or trade in the plants listed in Schedule 5 - see below:

Schedule 2 – European Protected Species of Animals	Schedule 5 – European Protected Species of Plants
Horseshoe bats *Rhinolophidae* - all species	Shore dock *Rumex rupestris*
Common bats *Vespertilionidae* - all species	Killarney fern *Trichomanes speciosum*
Large Blue Butterfly *Maculinea arion*	Early gentian *Gentianella anglica*
Wild cat *Felis sylvestris*	Lady's-slipper *Cypripedium calceolus*
Dolphins, porpoises and whales *Cetacea* – all sp.	Creeping marsh-wort *Apium repens*
Dormouse *Muscardinus avellanarius*	Slender naiad *Najas flexilis*
Pool frog *Rana lessonae*	Fen orchid *Liparis loeselii*
Sand lizard *Lacerta agilis*	Floating-leaved water plantain *Luronium natans*
Fisher's estuarine moth *Gortyna borelii lunata*	Yellow marsh saxifrage *Saxifraga hirculus*
Great crested newt *Triturus cristatus*	
Otter *Lutra lutra*	
Lesser whirlpool ram's-horn snail *Anisus vorticulus*	
Smooth snake *Coronella austriaca*	
Sturgeon *Acipenser sturio*	
Natterjack toad *Epidalea calamita*	
Marine turtles *Caretta caretta, Chelonia mydas, Lepidochelys kempii, Eretmochelys imbricata, Dermochelys coriacea*	

Wildlife & Countryside Act 1981 (as amended)

This is the principal mechanism for the legislative protection of wildlife in the UK. This legislation is the chief means by which the 'Bern Convention' and the Birds Directive are implemented in the UK. Since it was first introduced, the Act has been amended several times.

The Act makes it an offence to (with exception to species listed in Schedule 2) intentionally:

- kill, injure, or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use; or
- take or destroy an egg of any wild bird.

Or to intentionally do the following to a wild bird listed in Schedule 1:

- disturbs any wild bird while it is building a nest or is in, on or near a nest containing eggs or young; or
- disturbs dependent young of such a bird.

In addition, the Act makes it an offence (subject to exceptions) to:

- intentionally or recklessly kill, injure or take any wild animal listed on Schedule 5;
- interfere with places used for shelter or protection, or intentionally disturbing animals occupying such places; and
- The Act also prohibits certain methods of killing, injuring, or taking wild animals.

Finally, the Act also makes it an offence (subject to exceptions) to: intentionally pick, uproot or destroy any wild plant listed in Schedule 8, or any seed or spore attached to any such wild plant; unless an authorised person, intentionally uproot any wild plant not included in Schedule 8; or sell, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

Following all amendments to the Act, Schedule 5 'Animals which are Protected' contains a total of 154 species of animal, including several mammals, reptiles, amphibians, fish and invertebrates. Schedule 8 'Plants which are Protected' of the Act, contains 185 species, including higher plants, bryophytes and fungi and lichens. A comprehensive and up-to-date list of these species can be obtained from the JNCC website.

Part 14 of the Act makes unlawful to plant or otherwise cause to grow in the wild any plant which is listed in Part II of Schedule 9.

It is recommended that plant material of these species is disposed of as bio-hazardous waste, and these plants should not be used in planting schemes.

Schedule 1 - Birds which are protected by special penalties

Avocet	*Recurvirostra avosetta*	Osprey	*Pandion haliaetus*
Bee-eater	*Merops apiaster*	Owl, Barn	*Tyto alba*
Bittern	*Botaurus stellaris*	Owl, Snowy	*Nyctea scandiaca*
Bittern, Little	*Ixobrychus minutus*	Peregrine	*Falco peregrinus*
Bluethroat	*Luscinia svecica*	Petrel, Leach's	*Oceanodroma leucorhoa*
Brambling	*Fringilla montifringilla*	Phalarope, Red-necked	*Phalaropus lobatus*
Bunting, Cirl	*Emberiza cirlus*	Plover, Kentish	*Charadrius alexandrinus*
Bunting, Lapland	*Calcarius lapponicus*	Plover, Little Ringed	*Charadrius dubius*
Bunting, Snow	*Plectrophenax nivalis*	Quail, Common	*Coturnix coturnix*
Buzzard, Honey	*Pernis apivorus*	Redstart, Black	*Phoenicurus ochruros*
Capercaillie	*Tetrao urogallus*	Redwing	*Turdus iliacus*
Chough	*Pyrrhocorax pyrrhocorax*	Rosefinch, Scarlet	*Carpodacus erythrinus*
Corncrake	*Crex crex*	Ruff	*Philomachus pugnax*
Crake, Spotted	*Porzana porzana*	Sandpiper, Green	*Tringa ochropus*
Crossbills (all species)	*Loxia*	Sandpiper, Purple	*Calidris maritima*
Curlew, Stone	*Burhinus oedicnemus*	Sandpiper, Wood	*Tringa glareola*
Divers (all species)	*Gavia*	Scaup	*Aythya marila*
Dotterel	*Charadrius morinellus*	Scoter, Common	*Melanitta nigra*
Duck, Long-tailed	*Clangula hyemalis*	Scoter, Velvet	*Melanitta fusca*
Eagle, Golden	*Aquila chrysaetos*	Serin	*Serinus serinus*
Eagle, White-tailed	*Haliaetus albicilla*	Shorelark	*Eremophila alpestris*
Falcon, Gyr	*Falco rusticolus*	Shrike, Red-backed	*Lanius collurio*
Fieldfare	*Turdus pilaris*	Spoonbill	*Platalea leucorodia*
Firecrest	*Regulus ignicapillus*	Stilt, Black-winged	*Himantopus himantopus*
Garganey	*Anas querquedula*	Stint, Temminck's	*Calidris temminckii*
Godwit, Black-tailed	*Limosa limosa*	Swan, Bewick's	*Cygnus bewickii*
Goshawk	*Accipiter gentilis*	Swan, Whooper	*Cygnus cygnus*
Grebe, Black-necked	*Podiceps nigricollis*	Tern, Black	*Chlidonias niger*
Grebe, Slavonian	*Podiceps auritus*	Tern, Little	*Sterna albifrons*
Greenshank	*Tringa nebularia*	Tern, Roseate	*Sterna dougallii*
Gull, Little	*Larus minutus*	Tit, Bearded	*Panurus biarmicus*
Gull, Mediterranean	*Larus melanocephalus*	Tit, Crested	*Parus cristatus*

Harriers (all species)	*Circus*	Tree-creeper, Short-toed	*Certhia brachydactyla*
Heron, Purple	*Ardea purpurea*	Warbler, Cetti's	*Cettia cetti*
Hobby	*Falco subbuteo*	Warbler, Dartford	*Sylvia undata*
Hoopoe	*Upupa epops*	Warbler, Marsh	*Acrocephalus palustris*
Kingfisher	*Alcedo atthis*	Warbler, Savi's	*Locustella luscinioides*
Kite, Red	*Milvus milvus*	Whimbrel	*Numenius phaeopus*
Merlin	*Falco columbarius*	Woodlark	*Lullula arborea*
Oriole, Golden	*Oriolus oriolus*	Wryneck	*Jynx torquilla*
Animal (Vertebrate) Species Listed in Schedule 5 (full legal protection at all times)			
Horseshoe Bats (all species)	*Rhinolophidae*	Newt – Great Crested	*Triturus cristatus*
Typical Bats (all species)	*Vespertilionidae*	Snake – Smooth	*Coronella austriaca*
Dolphin – Bottle-nosed	*Tursiops truncatus (tursio)*	Toad, Natterjack	*Epidalea calamita*
Dolphin – Common	*Delphinus delphis*	Turtles – All Species	*Cheloniidae & Dermochelyidae*
Dormouse – Hazel	*Muscardinus avellanarius*	Basking Shark	*Cetorhinus maximus*
Pine Marten	*Martes martes*	Burbot	*Lota lota*
Porpoise – Harbour	*Phocaena phocaena*	Goby – Giant	*Gobius cobitis*
Otter – Eurasian	*Lutra lutra*	Goby – Couch's	*Gobius couchii*
Squirrel – Red	*Sciurus vulgaris*	Seahorse – Short-snouted[1]	*Hippocampus hippocampus*
Walrus	*Odobenus rosmarus*	Seahorse – Spiny	*Hippocampus guttulatus*
Water Vole	*Arvicola amphibius*	Sturgeon	*Acipenser sturio*
Whales – All Species	*Cetacea*	Vendace	*Coregonus albula*
Wildcat	*Felis sylvestris*	Whitefish	*Coregonus lavaretus*
Lizard – Sand	*Lacerta agilis*		
Animal (Vertebrate) Species Protected under Section 9 (1) part: Killing and Injuring & Section 9 (5) Sale			
Adder	*Vipera berus*	Slow-worm	*Anguis fragilis*
Lizard – Viviparous	*Zootoca vivipara*	Snake – Grass	*Natrix helvetica (natrix)*
Animals (Vertebrate) Species Protected under Section 9 (5) Sale only			
Frog – common	*Rana temporaria*	Newt – Smooth	*Lissotriton vulgaris*
Newt – Palmate	*Lissotriton helvetica*	Toad – Common	*Bufo bufo*
Animals (Vertebrate) Species Protected under Section 9 (1) (4)(a): Killing, Injuring & Taking and Damage / Destruction of place of shelter / protection only			
Allis Shad	*Alosa alosa*	Shark – Angel	*Squatina squatina*
Twaite Shad	*Alosa fallax*		

[1] Both sea horse species are protected in England only.

Butterflies & Moths – Full Protection under Schedule 5[2] at all times			
High brown fritillary	*Argynnis adippe*	Fisher's Estuarine Moth	*Gortyna borelii*
Large Blue	*Maculinea arion*	Barberry Carpet	*Pareulype berberata*
Heath Fritillary	*Mellicta athalea*	Black-veined Moth	*Siona lineata*
Marsh Fritillary	*Eurodryas aurinia*	Sussex Emerald	*Thalera fimbrialis*
Swallowtail	*Papilio machaon britannicus*	Essex Emerald	*Thetidia smaragdaris*
Large Copper	*Lycaena dispar*	Fiery Clearwing	*Bembecia chrysidiformis*
Reddish-buff Moth	*Acosmetia caliginosa*	New-Forest Burnet	*Zygaena viciae*
Butterflies – Protected under Section 9 (5) Sale Only			
Purple Emperor	*Apatura iris*	Adonis Blue	*Lysandra bellargus*
Northern Brown Argus	*Aricia artaxerxes*	Chalkhill Blue	*Lysandra coridon*
Pearl-bordered Fritillary	*Boloria euphrosyne*	Glanville Fritillary	*Melitaea cinxia*
Chequered Skipper	*Carterocephalus palaemon*	Large Tortoiseshell	*Nymphalis polychloros*
Large Heath	*Coenonympha tullia*	Silver-studded Blue	*Plebejus argus*
Small Blue	*Cupido minimus*	Black Hairstreak	*Strymonidia pruni*
Mountain Ringlet	*Erebia epiphron*	White-letter Hairstreak	*Strymonidia w-album*
Duke of Burgundy	*Hamearis lucina*	Brown Hairstreak	*Thecla betulae*
Silver-spotted Skipper	*Hesperia comma*	Lulworth Skipper	*Thymelicus acteon*
Wood White	*Leptidea sinapis*		
Other Invertebrates – Full Protection under Schedule 5 at all times			
Rainbow Leaf-beetle	*Chrysolina cerealis*	Tadpole Shrimp	*Triops cancriformis*
Spangled Diving-beetle	*Graphopterus zonatus*	Trembling Sea-mat	*Victorella pavida*
Lesser Silver Water-beetle	*Hydrochara caraboides*	De Folin's Lagoon Snail	*Caecum armoricum*
Moccas Beetle	*Hypebaeus flavipes*	Sandbowl Snail	*Catinella arenaria*
Violet Click-beetle	*Limoniscus violaceus*	Freshwater Pearl Mussel	*Margaritifera margaritifera*
Bembridge Beetle	*Parcymus aeneus*	Glutinous Snail	*Myxas glutinosa*
New Forest Cicada	*Cicadetta montana*	Lagoon Snail	*Paludinella littorina*
Wart-Biter	*Decticus verrucivorus*	Lagoon Sea Slug	*Tenellia adspersa*
Mole-Cricket	*Gryllotalpa gryllotalpa*	Northern Hatchet-shell	*Thyasira gouldi*
Field-Cricket	*Gryllus campestris*	Tentacled Lagoon-worm	*Alkmaria romijni*
Norfolk Hawker Dragonfly	*Aeshna isosceles*	Lagoon Sand-worm	*Armandia cirrhosa*
Southern Damselfly	*Coenagrion mercuriale*	Medicinal Leech	*Hirudo medicinalis*
Fen Raft Spider	*Dolomedes fimbriatus*	Marine Hydroid	*Clavopsella navis*
Ladybird Spider	*Eresus niger (cinaberinus)*	Ivell's Sea Anemone	*Edwardsia ivelli*

[2] Viper's Bugloss Moth *Hadena irregularis* was removed from Schedule 5 in 1996 as it is believed to be extinct.

Fairy Shrimp	*Chirocephalus diaphanus*	Starlet Sea Anemone	*Nematosella vectensis*
Lagoon Sand Shrimp	*Gammarus insensibilis*	Atlantic Stream (White-clawed) Crayfish	*Austropotamobius pallipes*
Other Invertebrates Protected under Section 9 (1) Possession & 9 (2) (5) Sale only			
Stag Beetle	*Lucanus cervus*	Roman Snail[3]	*Helix pomatia*
Fan Mussel	*Atrina fragilis*	Pink Sea-fan	*Eunicella verrucosa*
Other Invertebrates Protected under Section 9 (4) (a) Damage / Destruction of Place of Shelter / Protection only			
Mire Pill Beetle	*Curimopsis nigrita*		
Vascular Plant Species - Full Protection under Schedule 8 at all times (previous Scientific name in brackets)			
Adder's-tongue Least	*Ophioglossum lusitanicum*	Lily – Snowdon	*Gagea serotina (Lloydia serotina)*
Alison- Small	*Alyssum alyssoides*	Marsh-mallow – Rough	*Malva setigera (Althaea hirsuta)*
Broomrape – Bedstraw	*Orobanche caryophyllacea*	Milk-parsley – Cambridge	*Selinum carvifolia*
Broomrape – Oxtongue	*Orobanche picridis*	Mudwort – Welsh	*Limosella aquatica*
Broomrape – Thistle	*Orobanche reticulata*[4]	Naiad – Holly-leaved	*Najas marina*
Cabbage – Lundy	*Coincya wrightii (Rhynchosinapis wrightii)*	Orache – Stalked	*Atriplex pedunculata (Halimione pedunculata)*
Calamint – Wood	*Clinopodium menthifolium (Calamintha sylvatica)*	Orchid – Early Spider	*Ophrys sphegodes*
Catchfly – Alpine	*Silene suecica (Lychnis alpina)*	Orchid – Ghost	*Epipogium aphyllum*
Centaury – Slender	*Centaurium tenuiflorum*	Orchid – Lapland Marsh	*Dactylorhiza lapponica*
Cinquefoil – Rock	*Potentilla rupestris*	Orchid – Late Spider	*Ophrys fuciflora*
Clary – Meadow	*Salvia pratensis*	Orchid – Lizard	*Himantoglossum hircinum*
Club-rush – Triangular	*Schoenoplectus triqueter (Scirpus triqueter)*	Orchid – Military	*Orchis militaris*
Colt's-foot – Purple	*Homogyne alpina*	Orchid – Monkey	*Orchis simia*
Cotoneaster – Wild	*Cotoneaster cambricus (C. integerrimus)*	Pear – Plymouth	*Pyrus cordata*
Cotton-grass – Slender	*Eriophorum gracile*	Pennycress – Perfoliate	*Microthlaspi perfoliatum (Thlaspi perfoliatum)*
Cow-wheat – Field	*Melampyrum arvense*	Pennyroyal	*Mentha pulegium*
Crocus – Sand	*Romulus columnae*	Pigmyweed	*Crassula aquatica*
Cudweed – Broad-leaved	*Filago pyramidata*	Pine - Ground	*Ajuga chamaepitys*

[3] England only

[4] The Weeds Act 1959 does not apply to thistles *Cirsium* & *Carduus* species supporting this broomrape.

Cudweed – Jersey	*Gnaphalium luteoalbum*	Pink – Cheddar	*Dianthus gratianopolitanus*
Cudweed – Red-tipped	*Filago lutescens*	Pink – Childing	*Petrorhagia nanteuilii*
Cut-grass	*Leersia oryzoides*	Ragwort – Fen	*Jacobaea paludosa (Senecio paludosa)*
Deptford Pink	*Dianthus armeria*	Ramping-fumitory – Martin's	*Fumaria reuteri (F. martinii)*
Diapensia	*Diapensia lapponica*	Rampion – Spiked	*Phyteuma spicata*
Eryngo – Field	*Eryngium campestre*	Restharrow – Small	*Ononis reclinata*
Fern – Dickie's-bladder	*Cystopteris dickieana*	Rock-cress – Alpine	*Arabis alpina*
Fleabane – Alpine	*Erigeron borealis*	Rock-cress – Bristol	*Arabis scabra*
Fleabane – Small	*Pulicaria vulgaris*	Sandwort – Norwegian	*Arenaria norvegica*[5]
Galingale – Brown	*Cyperus fuscus*	Sandwort – Teesdale	*Minuartia stricta*
Gentian – Alpine	*Gentiana nivalis*	Saxifrage – Drooping	*Saxifraga cernua*
Gentian - Dune	*Gentianella amarella subsp. occidentalis (Gentianella uliginosa)*	Saxifrage – Tufted	*Saxifraga cespitosa*
Gentian – Fringed	*Gentianopsis ciliata (Gentianella ciliata)*	Solomon's-seal – Whorled	*Polygonatum verticillatum*
Gentian - Spring	*Gentiana verna*	Sow-thistle – Alpine	*Cicerbita alpina*
Germander – Cut-leaved	*Teucrium botrys*	Spearwort – Adder's-tongue	*Ranunculus ophioglossifolius*
Germander – Water	*Teucrium scordium*	Speedwell – Fingered	*Veronica triphyllos*
Gladiolus – Wild	*Gladiolus illyricus*	Speedwell – Spiked	*Veronica spicata*[6]
Goosefoot – Stinking	*Chenopodium vulvaria*	Spike-rush – Dwarf	*Eleocharis parvula*
Grass-poly	*Lythrum hyssopifolia*	South-stack Fleawort	*Tephroseris integrifolia ssp. maritima*
Hare's-ear – Sickle-leaved	*Bupleurum falcatum*	Star-of-Bethlehem – Early	*Gagea bohemica*
Hare's-ear – Small	*Bupleurum baldense*	Starfruit	*Damasonium alisma*
Hawk's-beard – Stinking	*Crepis foetida*	Strapwort	*Corrigiola littoralis*
Hawkweed – Northroe	*Hieracium northroense*	Violet – Fen	*Viola persicifolia*
Hawkweed – Shetland	*Hieracium zetlandicum*	Viper's-grass	*Scorzonera humilis*
Hawkweed – Weak-leaved	*Hieracium attenuatifolium*	Water-plantain – Ribbon-leaved	*Alisma gramineum*
Heath – Blue	*Phyllodoce caerulea*	Wood-sedge – Starved	*Carex depauperata*
Helleborine – Red	*Cephalanthera rubra*	Woodsia – Alpine	*Woodsia alpina*
Horsetail – Branched	*Equisetum ramosissimum*	Woodsia – Oblong	*Woodsia ilvensis*

[5] All subspecies occurring in the UK

[6] Both subspecies: *spicata* & *hybrida*

Hound's-tongue – Green	*Cynoglossum germanicum*	Wormwood – Field	*Artemisia campestris*
Knawel – Perennial	*Scleranthus perennis*[7]	Woundwort - Downy	*Stachys germanica*
Knot-grass – Sea	*Polygonum maritimum*	Woundwort – Limestone	*Stachys alpina*
Leek – Round-headed	*Allium sphaerocephalon*	Yellow-rattle – Greater	*Rhinanthus angustifolius*
Lettuce – Least	*Lactuca saligna*		
Vascular Plant Species – Partial Protection under Section 13 (2) Protection from commercial exploitation and sale			
Bluebell	*Hyacinthoides non-scripta*		
Bryophytes – Full Protection under Schedule 8 at all times			
Anamodon – Long-leaved	*Anomodon langifolius*	Flamingo Moss	*Desmatodon cernuus*
Blackwort	*Southbya nigrella*	Frostwort	*Gymnomitrion apiculatum*
Crystalwort – Lizard	*Riccia bifurca*	Glaucous Beard Moss	*Barbula glauca*
Earwort – Marsh	*Jamesoniella undulifolia*	Green Shield Moss	*Buxbaumia viridis*
Feathermoss – Polar	*Hygrohypnum polare*	Hair Silk Moss	*Plagiothecium piliferum*
Flapwort – Norfolk	*Leiocolea rutheana*	Knothole Moss	*Zygodon forsteri*
Grimmia – Blunt-leaved	*Grimmia unicolor*	Large Yellow Feather Moss	*Scorpidium turgescens*
Petalwort	*Petalophyllum ralfsii*	Millimetre Moss	*Micromitrium tenerum*
Lindenberg's Leafy-Liverwort	*Adelanthus lindenbergianus*	Multi-fruited River Moss	*Cryphaea lamyana*
Feather-moss Slender Green	*Drepanocladus vernicosus*	Nowell's Limestone Moss	*Zygodon gracilis*
Alpine Copper-Moss	*Mielichoferia meilicoferia*	Rigid Apple Moss	*Bartramia stricta*
Baltic Bog-Moss	*Sphagnum balticum*	Round-leaved feather Moss	*Rhynchostegium rotundifolium*
Blue Dew-Moss	*Saelania glaucescens*	Schleicher's Thread Moss	*Bryum schleicheri*
Blunt-leaved bristle-Moss	*Orthotrichum obtusifolium*	Triangular Pygmy Moss	*Acaulon triquetrum*
Bright-Green Cave-Moss	*Cyclodictyon laetevirens*	Turpswort	*Geocalyx graveolens*
Cordate Beard Moss	*Barbula cordata*	Vaucher's Feather Moss	*Hypnum vaucheri*
Cornish Path Moss	*Ditrichum cornubicum*	Western Rustwort	*Marsupella profunda*
Derbyshire Feather Moss	*Thamnobryum angustifolium*		
Stoneworts – Full Protection under Schedule 8 at all times			
Bearded Stonewort	*Chara canescens*	Foxtail Stonewort	*Lamprothamnium papullosum*

[7] Includes both subspecies: *perennis* & *prostratus*

Lichens – Full Protection under Schedule 8 at all times			
New Forest Beech Lichen	*Enterographa elaborata*	Forked Hair Lichen	*Bryoria furcellata*
Snow Caloplaca	*Caloplaca nivalis*	Golden Hair Lichen	*Teloschistes flavicans*
Tree Catapyrenium	*Catapyrenium psoromoides*	Orange-fruited Elm Lichen	*Caloplaca luteoalba*
Laurer's Catillaria	*Catillaria laurei*	River Jelly Lichen	*Collema dichotomum*
Convoluted Cladonia	*Cladonia convoluta*	Starry Breck Lichen	*Buellia asterella*
Upright Mountain Cladonia	*Cladonia stricta*	Caledonia Pannaria	*Pannaria ignobilis*
Goblin Lights	*Catolechia wahlenbergii*	New Forest Parmelia	*Parmelia minarum*
Elm Gyalecta	*Gyalecta ulmi*	Oil Stain Parmentaria	*Parmentaria chilensis*
Tarn Lecanora	*Lecanora archariana*	Southern Grey Physcia	*Physcia tribacioides*
Copper Lecidea	*Lecidea inops*	Ragged Pseudo-cyphellaria	*Pseudocyphellaria lacerata*
Arctic Kidney Lichen	*Nephroma arcticum*	Rusty Alpine Psora	*Psora rubiformis*
Ciliate Strap Lichen	*Heterodermia leucomelos*	Rock Nail	*Calicium corynellum*
Coralloid Rosette Lichen	*Heterodermia propagulifera*	Serpentine Selanopsora	*Selanopsora liparina*
Ear-lobed Dog Lichen	*Peltigera lepidophora*	Sulphur Tresses	*Alectoria ochroleuca*
Lichens – Partial Protection under Section 13 (2) Commercial Exploitation and Sale Only			
Tree Lungwort	*Lobaria pulmonaria*		
Fungi – Full Protection under Schedule 8 at all times			
Royal Bolete	*Boletus regius*	Oak Polypore	*Buglossosporus pulvinus*
Hedgehog Fungus	*Hericium erinaceum*	Sandy Stilt Ball	*Battaria phalloides*
Invasive plant species listed in Schedule 9			
Alexanders, Perfoliate	Smyrnium perfoliatum	Kelp, Japanese	Laminaria japonica
Algae, Red	Grateloupia luxurians	Knotweed, Giant	Reynoutria (Fallopia) sachalinensis
Archangel, Variegated Yellow	Lamiastrum galeobdolon subsp. argentatum	Knotweed, Hybrid	Reynoutria (Fallopia) japonica x sachalinensis
Azalea, Yellow	Rhododendron luteum	Knotweed, Japanese	Reynoutria (Fallopia) japonica
Balsam, Himalayan	Impatiens glandulifera	Leek, Few-flowered	Allium paradoxum
Cotoneaster, Wall	Cotoneaster horizontalis	Lettuce, water	Pistia stratiotes
Cotoneaster, Entire-leaved	Cotoneaster integrifolius	Montbretia	Crocosmia x crocosmiiflora
Cotoneaster, Himalayan	Cotoneaster simonsii	Parrot's Feather	Myriophyllum aquaticum
Cotoneaster, Hollyberry	Cotoneaster bullatus	Pennywort, Floating	Hydrocotyle ranunculoides

Cotoneaster, Small-leaved	Cotoneaster microphyllus	Potato, Duck	Sagittaria latifolia
Creeper, False Virginia	Parthenocissus inserta	Primrose, Floating Water	Ludwigia peploides
Creeper, Virginia	Parthenocissus quinquefolia	Primrose, Water	Ludwigia grandiflora
Dewplant, Purple	Disphyma crassifolium	Primrose, Water	Ludwigia uruguayensis
False-acacia	Robinia pseudoacacia	Rhododendron	Rhododendron ponticum and hybrid R. ponticum x R. maximum
Fanwort/Carolina Water-Shield	Cabomba caroliniana	Rhubarb, Giant	Gunnera tinctoria
Fern, Water	Azolla filiculoides	Rose, Japanese	Rosa rugosa
Fig, Hottentot	Carpobrotus edulis	Salvinia, Giant	Salvinia molesta
Garlic, Three-cornered	Allium triquetrum	Seafingers, Green	Codium fragile
Hogweed, Giant	Heracleum mantegazzianum	Seaweed, Californian Red	Pikea californica
Hyacinth, Water	Eichhornia crassipes	Seaweed, Hooked Asparagus	Asparagopsis armata
Kelp, Giant species	Macrocystis angustifolia, M. integrifolia, M. laevis, M. pyrifera	Seaweed, Japanese	Sargassum muticum
Seaweeds, Laver	Porphyra spp except except native species, P. amethystea, P. leucosticte, P. linearis, P. miniate, P. purpurea, P. umbilicalis	Wakame	Undaria pinnatifida
Shallon	Gaultheria shallon	Waterweed, Curly	Lagarosiphon major
Stonecrop, Australian Swamp/New Zealand Pygmyweed	*Crassula helmsii*	Waterweeds	All species of the genus *Elodea*

Protection of Badgers Act 1992

The main legislation protecting badgers in England and Wales is the Protection of Badgers Act 1992 (the 1992 Act). Under the 1992 Act it is an offence to: wilfully kill, injure, take or attempt to kill, injure or take a badger; dig for a badger; interfere with a badger sett by, damaging a sett or any part thereof, destroying a sett, obstructing access to a sett, causing a dog to enter a sett or disturbing a badger while occupying a sett.

The 1992 Act defines a badger sett as: “any structure or place which displays signs indicating current use by a badger”

Natural Environment and Rural Communities Act 2006

Section 41 (S41) of this Act requires the Secretary of State to publish a list (in consultation with Natural England) of Habitats and Species which are of Principal Importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as public bodies including local and regional authorities, in implementing their duty under Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal (e.g. planning) functions. The S41 list includes 65 Habitats of Principal Importance and 1,150 Species of Principal Importance.

Hedgerow Regulations 1997

The Hedgerow Regulations were made under Section 97 of the Environment Act 1995 and came into force in 1997. They introduced new arrangements for local planning authorities in England and Wales to protect important hedgerows in the countryside, by controlling their removal through a system of notification. Important hedgerows are defined by complex assessment criteria, which draw on biodiversity features, historical context and the landscape value of the hedgerow.

Birds of Conservation Concern

This is a review of the status of all birds occurring regularly in the United Kingdom. It is regularly updated and is prepared by leading bird conservation organisations, including the British Trust for Ornithology (BTO), Joint Nature Conservation Committee (JNCC) and The Royal Society for the Protection of Birds (RSPB).

The latest report was produced in 2015 (Eaton *et al*, 2015) and identified 67 red list species, 96 amber species, and 81 green species. The criteria are complex, but generally:

- **Red list** species are those that have shown a decline of the breeding population, non-breeding population or breeding range of more than 50% in the last 25 years.
- **Amber list** species are those that have shown a decline of the breeding population, non-breeding population or breeding range of between 25% and 50% in the last 25 years. Species that have a UK breeding population of less than 300 or a non-breeding population of less than 900 individuals are also included, together with those whose 50% of the population is localised in 10 sites or fewer and those whose 20% of the European population is found in the UK.
- **Green list** species are all regularly occurring species that do not qualify under any of the red or amber criteria are green listed

Global IUCN Red List

The International Union for Conservation of Nature (IUCN) Threatened Species was devised to provide a list of those species that are most at risk of becoming extinct globally. It provides taxonomic, conservation status and distribution information about threatened taxa around the globe.

The system catalogues threatened species into groups of varying levels of threat, which are: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CE), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), Not Evaluated (NE). Criteria for designation into each of the categories is complex, and consider several principles.

Local Biodiversity Action Plan (LBAP)

Local Biodiversity Action Plans (LBAP) identify habitat and species conservation priorities at a local level (typically at the County level), and are usually drawn up by a consortium of local Government organisations and conservation charities.

Some LBAP's may also include Habitat Action Plans (HAP) and/or Species Action Plans (SAP), which are used to guide and inform the local decision making process.

Wild Mammals (Protection) Act 1996

This Act offers protects a form of protection to all wild species of mammals, irrespective of other legislation, and focussed on animal welfare, rather than conservation.

Unless covered by one of the exceptions, a person is guilty of an offence if he mutilates, kicks, beats, nails or otherwise impales, stabs, burns, stones, crushes, drowns, drags or asphyxiates any wild mammal with intent to inflict unnecessary suffering.

It's application is typically restricted to preventing deliberate harm to wildlife (in general) during construction works etc.

Gardening for bats

Aim at having flowers in bloom through the year, including both annuals and herbaceous perennials.
Below are some suggestions, but this is by no means an exhaustive list. See what grows well in YOUR garden, and what seems most attractive to insects.
Flowering times are approximate, varying in different areas. Regular dead-heading extends flowering period in many flowers. A=annual, HA=hardy annual, HHA=half-hardy annual, P=perennial, W=wild flower,

Flowers for borders			
St John's Wort	*Hypericum*	P	March-
marigolds	*Calendula*	H/A	March – Oct.
aubretia	*a. delltoidea*	P	March-June
honesty	*Lunaria rediva*	HB	March
forget-me-not	*Myosotis sp.*	A/P	March - May
elephant ears	*Bergenia*	P	April
Wallflowers	*Erysimum*	B	April - June
Cranesbills	*Geranium sp*	P	May – Sept.
Yarrow	*Achillea*	P	May -
Poppies	*Papaver sp.*	A	May - July
Dames violet	*Hesperis matronalis*	P	May - August
Red Valerian	*Centranthus ruber*	P	May – Sept.
Poached egg plant	*Limnanthes*	HA	June – Aug.
Knapweed	*Centaurea nigra*	P	June- Sept.
Phacelia		HA	June – Sept.
Ox-eye daisy	*Leucanthemum vulgare*	P	June – Aug.
Evening primrose	*Oenathera biennis*	B	June-Sept.
Candytuft	*Iberis umbellata*	HA	June – Sept.
Sweet William	*Dianthus barbatus*	B	June - July
Blanket flowers	*Gaillardia*	P	June -
Verbena	*V.bonariensis*	HHA	June – Oct.
Scabious	*knautia arvensis*	P	July-Aug.
Night-scented stock	*mattiola bicornia*	HA	July-Aug
Pincushion flower	*Scabious sp.*	A/P	July – Sept.
Cherry pie	*heliotrope*	HHA	July – Oct.
Mexican aster	*Cosmos sp.*	A/P	July – Oct.
Cone flower	*Rudbeckia sp.*	A/P	August-Nov.
Mallow	*lavatera sp.*	P	August-Oct.
Michaelmas daisy	*Aster sp.*	P	August-Sept.
Ice plant 'Pink lady'	*Sedum spectabile*	P	Sept.
Herbs – both leaves and flowers are fragrant			
Fennel	*Foeniculum vulgare*		July – Sept.
Bergamot	*Monarda didyma*		June - Sept
Sweet Cicely	*Myrrhis odorata*		April - June
Hyssop	*Hyssopus officianlis*		July - Sept
Feverfew	*Tanacetum parthenium*		June – Sept.
Borage	*Borago officinalis*		May – Sept.
Rosemary	*Rosemary officinalis*		March - May
Lemon balm	*Melissa officinalis*		
Coriander	*Coprianrum sativum*		June - August
Lavenders	*Lavendula sp.*		
Marjoram	*Origanum sp*		

Trees, shrubs and climbers important to insects		
Oak	*Quercus sp.*	large gardens only
Silver birch	*Betula pendula*	
Common alder	*Alnus glutinosa*	Suitable for coppicing
Hazel	*Corylus avellana*	Suitable for coppicing
Elder	*Sambucus nigra*	Small
Pussy willow	*Salix caprea*	Suitable for coppicing
Hawthorn	*Crataegus monogyna*	Suitable for coppicing
Honeysuckle	*Lonicera sp.*	grow a variety for succession.
Dog rose	*Rosa canina*	Climber
Bramble	*Rubus fruticosus*	Climber
Ivy	*hedera helix*	Climber
Buddleia	*Buddleia davidii*	shrub
Guelder rose	*Vibernum opulus*	shrub
Gorse	*Ulex sp.*	shrub

Plants for pond edges and marshy areas			
Purple loosestrife	*Lythrum salicaria*	W	June – Aug.
Meadow sweet	*Filipendula ulmaria*	W	June – Sept.
Lady's smock	*Cardamine pratensis*	W	April - June
Water mint	*mentha aquatica*	W	July – Sept.
Angelica	*Angeliica sylvestris*	W	July – Sept
Hemp agrimony	*Eupatorium cannabinum*	W	July – Sept.
Marsh marigold	*Caltha palustris*	W	March – May
Creeping Jenny	*Lysimachia nummularia*	W	May - August
Fringed water lily	*Nymphoides peltata*	W	June – Sept.
Water forget-me-not	*Myosotis scorpioides*	W	June – Sept.

Allow part of your lawn to grow long in summer and cut in autumn, removing the clippings. Avoid using fertilizers.
Compost heaps are good producers of insects too.

Add a seat to watch your garden come to life!

APPENDIX D – WILDLIFE BOXES

Bats

Bat Box

This type of box is made of woodcrete and is expected to last approximately 25 years. It has a narrow crevice-like internal space to attract Pipistrelle and Noctule bats. Woodcrete (75% wood sawdust, concrete and clay mixture).

Width: 27cm; Height: 43cm; Weight: 8.3kg.

For Trees

Woodcrete boxes have the highest rates of occupation of all box types. The 75% wood sawdust, concrete and clay mixture allows natural respiration, stable temperature, and durability. They are long lasting (approx. 25 years) and are rot- and predator-proof. Hang from a tree branch near the trunk or fix to a trunk with the supplied 'tree-friendly' aluminium nail. Attractive to smaller British bats.

Material: Woodcrete (75% wood sawdust, concrete and clay mixture); Diameter: 16cm; Height: 33cm; Weight: 4kg.

Bird nest boxes

The following briefly summarises three of the most common nesting box types used. There are many other designs, particular to the nesting preferences of the various species. For detailed information of the various nest box designs, please refer to Extracts from BTO Guide 23, Nestboxes (1993 edition) by Chris du Feu, available at:

http://www.bto.org/sites/default/files/u15/downloads/publications/guides/nestbox.pdf

Open Fronted Boxes

This box is attractive to robins, pied wagtails, spotted flycatcher, wrens and black redstarts

and is best situated on the walls of buildings with the entrance on one side. These woodcrete boxes are designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting. They can be expected to last 25 years or more without maintenance.

Boxes with Entrance Holes

This box is attractive to smaller birds such as tits, wrens and tree sparrows. Sparrow terraces are also available.

Wedge shaped boxes

These boxes are attractive to a range of small birds but are particularly attractive to treecreepers as the box mimics crevices under loose bark that are used by this species.

Barn Owl Nest Box

This nest box is specifically designed for nesting barn owls. In the UK owl boxes now account for three-quarters of the nest sites used by Barn Owls.

Tawny Owl Box

Tawny owls uses small nest cavities that barn owls and thus the boxes tend to be smaller – tawny owl boxes are always sited on trees.

Little Owl Box

Little owls use fairly large boxes but with a small entrance hole and a dark nesting chamber. Typically, these are installed on trees or buildings.