dense carpet of the invasive Schedule 9 listed least duckweed and approximately 55% of the pond surface is shaded by overhanging tree branches. In the north-eastern corner two fallen trees have opened up the canopy and there is a small stand of vegetation growing on the marginal mud. This is composed of a bed of greater reedmace *Typha latifolia*, with rare, intermixed bittersweet *Solanum dulcamara*, and a fringe of *Lycopus* and brooklime *Veronica buccabunga* behind, and is likely to be the remnants of a community that was more widespread across the basin before the maturing tree canopy shaded it.

PSYM classified the pond as 'very poor,' and due to the limited diversity of meso-habitats, essentially limited to the shallow open water and occasional marginal willow roots, the aquatic invertebrate assemblage was limited in both diversity and numbers and of 'low' conservation interest.

Table 19: Lists of aquatic invertebrate taxa

TAXA	POND 1		POND 2		POND 4	
	Nos.	Relative Abundance	Nos.	Relative Abundance	Nos.	Relative Abundance
OLIGOCHAETA	6	18.18	11	3.09	5	8.20
HIRUDINEA						
GLOSSIPHONIIDAE						
Helobdella stagnalis			54	15.17	5	8.20
CRUSTACEA						
ASELLIDAE						
Proasellus meridianus	4	12.12	15	4.21		
ZYGOPTERA						
COENAGRIONIDAE						
Erythromma najas			1	0.28		
Coenagrionidae sp. (indet.)			7	1.97		
ANISOPTERA						
AESHNIDAE						
Anax imperator			1	0.28		
Aeshna mixta			3	0.84		
EPHEMEROPTERA						
BAETIDAE						
Cloeon dipterum			22	6.18	17	27.87
HEMIPTERA						
HYDROMETRIDAE						
Hydrometra stagnorum			1	0.28		

TAXA	POND 1		POND 2		POND 4	
	Nos.	Relative Abundance	Nos.	Relative Abundance	Nos.	Relative Abundance
GERRIDAE						
Gerris lacustris			3	0.84		
Gerris sp. (nymphs)			3	0.84		
NOTONECTIDAE						
Notonecta glauca			3	0.84		
Notonecta obliqua			1	0.28		
Notonecta sp. (nymphs)			6	1.69		
NAUCORIDAE						
Ilyochoris cimicoides			2	0.56		
CORIXIDAE						
Corixa punctata			26	7.30		
Corixa sp. (nymphs)			10	2.81		
Sigara dorsalis			6	1.69	1	1.64
Hesperocorixa linnaei			1	0.28		
Hesperocorixa sahlbergi			8	2.25	1	1.64
MEGALOPTERA						
SIALIDAE						
Sialis lutaria			1	0.28		
DIPTERA						
CHIRONOMIDAE						
Chironomidae sp.	14	42.42	161	45.22	8	13.11
CERATOPOGONIDAE						
Palpomyia / Bezzia gp.			1	0.28		
CULICIDAE						
Culiseta alaskaensis gp.	3	9.09			5	8.20
TABANIDAE						
Chrysops sp.					1	1.64
PTYCHOPTERIDAE						
Ptychoptera sp.					2	3.28
CHAOBORIDAE						
Chaoborus flavicans					2	3.28
Chaoborus crystallinus	1	3.03	1	0.28	1	1.64
COLEOPTERA						
SCIRTIDAE						
Cyphon sp. (larvae)					3	4.92
PAELOBIIDAE						
Hygrobia hermanni			1	0.28		

TAXA	POND 1		POND 2		POND 4	
	Nos.	Relative Abundance	Nos.	Relative Abundance	Nos.	Relative Abundance
HELOPHORIDAE						
Helophorus minutus			2	0.56		
DYTISCIDAE						
Acilius sulcatus	3	9.09	2	0.56		
Hydroporus palustris					2	3.28
Hydroporus sp. (larvae)	2	6.06				
Laccophilus minutus			2	0.56		
Hyphydrus ovatus (larvae)			1	0.28	8	13.11
Nos. Identified Taxa	**7**		**25**		**14**	
Total Nos. of Invertebrates	**33**		**356**		**61**	

Table 20: Environmental data, plant lists, PSYM metrics and CCI values

Site details			
Site name	**Pond 1**	**Pond 2**	**Pond 4**
Grid reference	**TQ 29014 24372**	**TQ 29272 24536**	**TQ 29487 25285**
Environmental variables			
Altitude (m)	66	77	110
Shade (%)	100	40	55
Inflow (0/1)	0	0	0
Grazing (%)	0	0	0
Conductivity (µS/cm)	226	351	377
pH	6.29	6.89	6.81
Emergent plant cover (%)	0	<1	5
Pond Base Clay/Silt (1-3)	3 (100%)	3 (100%)	3 (100%)
Area (m^2)	400	1400	1500
Plant species			
Submerged	None	None	None
Floating-leaved	*Lemna minuta*	*Lemna minor*	*Lemna minuta*
Emergent / Marginal	None	*Alisma plantago-aquatica, Juncus inflexus, Juncus effusus, Juncus bufonius, Mentha aquatica, Agrostis stolonifera, Pulicaria dysenterica, Equisetum telmateia, Carex pendula, Epilobium parviflorum,*	*Typha latifolia, Veronica beccabunga, Lycopus europaeus, Solanum dulcamara, Carex remota,*

		Galium palustre, Lycopus europaeus, Callitriche obtusangula	
Bryophytes	None	None	None
Algae	None	*Spirogyra sp., Microspora sp.*	None
Plant metrics			
No. of submerged + marginal plant species (not including floating leaved)	0	12	4
Predicted (SM)	18.2	23.2	23.7
EQI (SM)	0	0.5	0.2
IBI (SM)	0	2	0
Number of uncommon plant species	0	1	0
Predicted (U)	3.2	4.1	4.2
EQI (U)	0	0.2	0
IBI (U)	0	0	0
Trophic Ranking Score (TRS)	0	8.43	9.5
Predicted (TRS)	8.81	8.79	8.8
EQI (TRS)	0	0.96	1.08
IBI (TRS)	0	3	2
Invertebrate metrics			
ASPT	2.75	4.44	3.33
Predicted (ASPT)	5.1	5.07	5.09
EQI (ASPT)	0.54	0.88	0.65
IBI (ASPT)	0	3	1
Odonata + Megaloptera (OM) families	0	3	0
Predicted (OM)	3.42	3.15	3.27
EQI (OM)	0	0.95	0
IBI (OM)	0	3	0
Coleoptera families	1	3	1
Predicted (CO)	3.77	3.72	3.73
EQI (CO)	0.26	0.81	0.27
IBI (CO)	1	3	1
Community Conservation Index (CCI)	20	13.1	1.33
Average Conservation Score (CS)	4	2.62	1.33
Community Score (CoS)	20	5	1
Conservation Interest	**Moderate (High??)**	**Fairly High**	**Low**

PSYM Analysis results			
Sum of Individual Metrics	1	14	4
Index of Biotic Integrity (%)	6%	78%	22%
PSYM quality category (IBI >75%=Good, 51-75%= Moderate, 25-50%=Poor, <25%=V Poor)	**Very Poor**	**Good**	**Very Poor**
Is this a Priority Pond? (Good quality category)	**No**	**Yes**	**No**

Photographs and sketch maps of the ponds

Figure 46: View of Pond 1

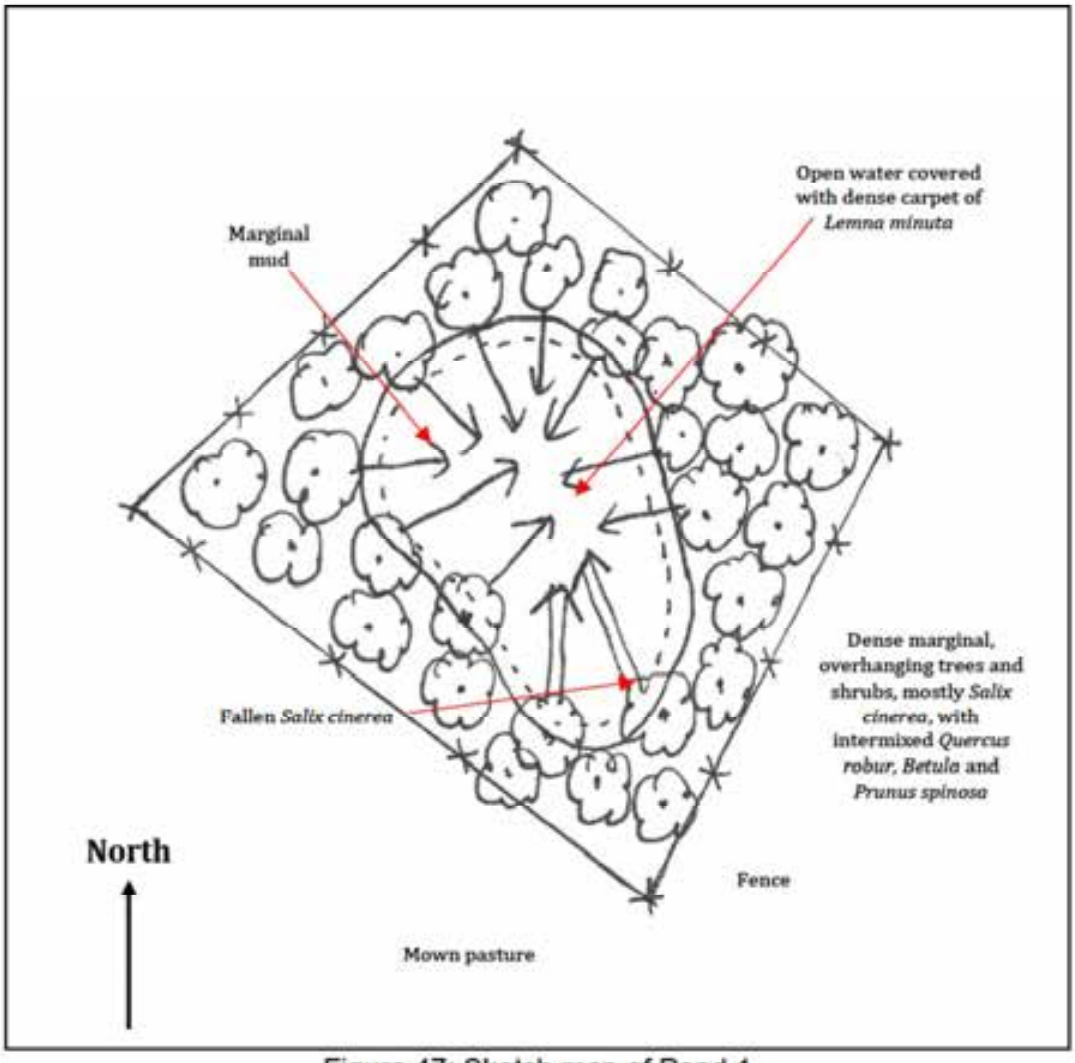
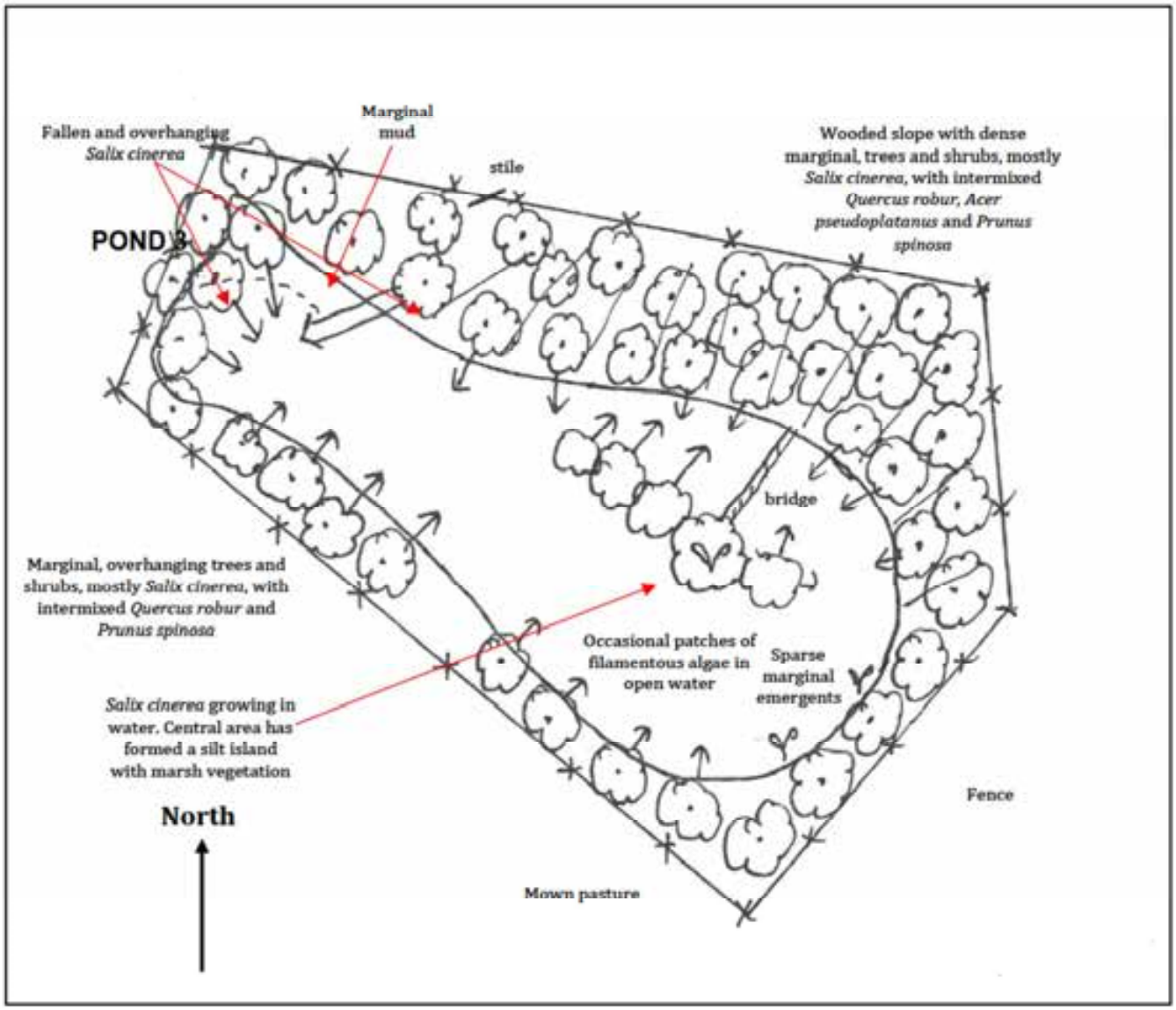


Figure 47: Sketch map of Pond 1

Figures 48 & 49: View of Pond 2

Figure 50 (below): Sketch map of Pond 2




Figures 51 & 52: View of the dried up bed of Pond 3.

Figure 53: View of Pond 4

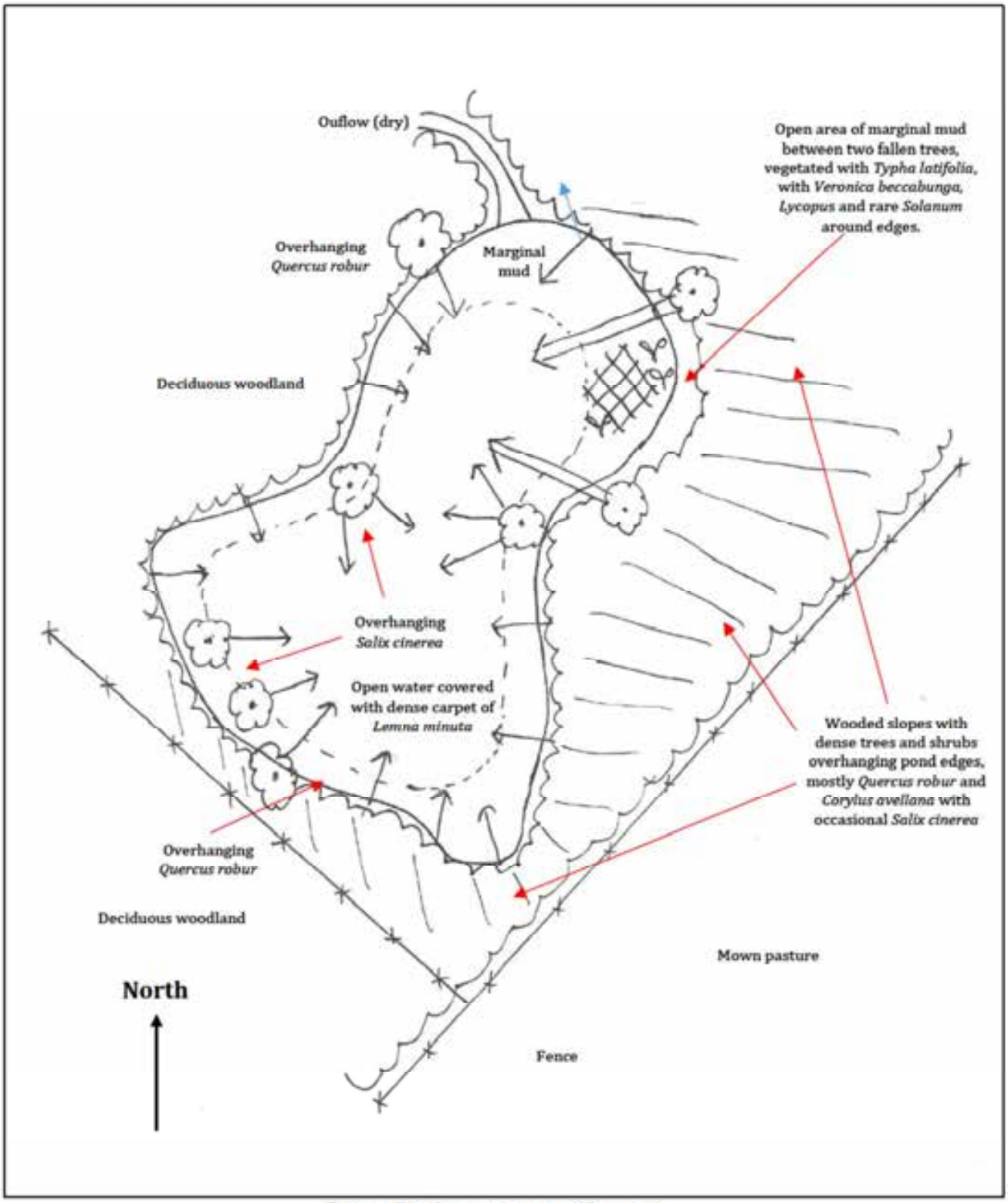


Figure 54: Sketch map of Pond 4

4.12 Otter

No evidence of otter was recorded during the field surveys located on site. However, otter are known to be within every catchment in England, including within Sussex from 2016. Otter are considered to be widespread, but at a low density within the local landscape and as such are considered likely to transit through the site during foraging/dispersal. Otter are considered as likely to utilise the watercourse throughout the year.

4.13 Water Vole

The combined results of both surveys found no evidence of water vole presence along the watercourse (River Adur) which was split in two sections for the purpose of the survey (Figure 55). The suitability of the habitat was also assessed at the time and found to be of negligible value along the River Adur as it was found to have poor habitat suitability.

Table 21: Summary of the habitat suitability for water vole at each watercourse

Watercourse ID	Habitat Suitability	Comments
North side of River Adur	Negligible value	Very dense riparian vegetation, largely trees with dense patches of nettle. Bankside profile unsuitable throughout being steep sided and heavily shaded. River supports very little in the way of vegetation and is located within a woodland and is therefore heavily shaded.
South side of River Adur	Negligible value	Very dense riparian vegetation, largely trees with dense patches of nettle. Bankside profile unsuitable throughout being steep sided and heavily shaded. River supports very little in the way of vegetation and is located within a woodland and is therefore heavily shaded.

Figure 55: View of River Adur

5.1 Proposed Development

It is proposed to develop the site, currently known as Cuckfield Park, into Beechy Bottom Parkland Reserve. Proposed plans indicate that the site will be developed to include enhanced public access and associated infrastructure, together with large areas set aside for a non-deterministic approach to habitat and species restoration as a goal, which the author has termed "constrained rewilding".

This approach is drawing on the theoretical work on equilibrium and non-equilibrium ecology and conservation to show the options for ecological management and restoration, this has led to a number of 'rewilding' outcomes, there are:

1. Continuation of the "status quo" i.e. conserving pre-modern agricultural landscapes (equilibrium ecology and conservation);
2. Soft re-wilding – a hybrid equilibrium/non-equilibrium ecology and conservation);
3. Non-deterministic approach to goal setting which the author has termed "constrained rewilding" (non-equilibrium ecology and conservation); and,
4. Re-wilding (non-equilibrium ecology and conservation) – introduction of apex predators and keystone species.

For the purpose of this development, the proposal is to try to achieve a non-deterministic approach, termed "constrained rewilding" (option 4).

5.2 Statutory & Non-statutory Designated Sites

The desk-based review identified no internationally designated (Natura 2000) sites for nature conservation within 10 km of the site boundary. One statutory designated site and two non-designated statutory sites within 1 km of the site.

The statutory designated site are associated with the High Weld Area of Outstanding Natural Beauty (AONB). The proposed development has the potential to incrementally increase the footfall (in combination with other current and proposed developments) within the statutory sites due to the incremental increase in residents in close proximity to the development in combination with the creation of a new footpath network.

However, it is noted that the High Weld Area of Outstanding Natural Beauty (AONB already experiences a high level of recreational use. It is understood that Natural

England will be consulted through the planning process regarding current recreational pressures and whether the development is perceived to include potential for an incremental 'in combination' impact to these designated sites. East Sussex operates a compensation scheme to offset any perceived impacts to the statutory designated sites. It is anticipated that a payment may be requested to compensate for the potential incremental increase in recreational impact caused by the development.

From the habitat and species restoration works proposed, no direct adverse impacts are predicted to affect the Natura 2000 sites within 10 km of the site.

There are no perceived direct impacts to the LWS located within 1 km of the site as they are separated from the site by roads and rural landscape. The Local Geological Site is also separated from the site and is unlikely to be impacted by an increase in pedestrian access in any way.

5.3 Habitats and Flora

5.3.1 Grassland Habitats

Modified Grassland g4

Grassland parcels G1, G2, G3 & G6 are to be retained as modified grassland for public use (sports pitches, sporting facilities and purpose-built dog walking). Bar the loss of small areas of this habitat for the creation of a series of footpaths, the modified grassland parcels G4 and G5 will be subject to the proposal is to try to achieve a non-deterministic approach, termed "constrained rewilding". Through the introduction of low numbers of carefully monitored rare-breed cattle and pigs, the aim is to transition this habitat to a more species-diverse tussocky sward with a woody scrub component. This is envisioned to mitigate for the loss of a small area of this low conservation value grassland by the creation of, over time, a high value habitat.

The grassland parcels G1 – G4 will be retained as modified grassland and utilised for public amenity purposes. As such, no impacts to the modified grassland within these parcels is anticipated.

The modified grassland habitat which exists within parcels G4 & G5, if the proposed management techniques are followed, is likely to develop into a more species and structurally diverse sward interspersed with scrub, over time. Grassland parcels G4 &

G5, is considered to likely slowly transitions away from the modified grassland habitat, creating a more high-value habitat measuring approximately 34.99 ha. The existing habitat type is both very widespread and has little in the way of conservation value. As such the impacts to the loss of the modified grassland located within grassland parcels G4 & G5 is considered to be at a site level only.

This transition of these grassland parcels away from modified grassland into a more species-rich sward, interspersed with woody scrub, is considered to be major positive impact in terms of biodiversity at a parish level.

The modified grassland parcels G4 & G5 are also designated as (secondary codes) *wood-pasture and parkland w(26)* and support a number of *mature parkland trees (203)* and *veteran & ancient trees (205)*. These features are of significant nature conservation value and should be retained and protected at all costs.

No direct impacts from the proposed development (foot and cycle path network with associated infrastructure) are anticipated to these secondary code receptors. However, there is a small risk of impacts to the veteran and ancient trees from anti-social behaviour, in the absence of mitigation. To mitigate for this, the addition of hedgerow buffer planting directly adjacent to the fence of the newly proposed footpaths will likely minimise the ability of pedestrian access into the site reducing the likelihood of this occurring.

Other Neutral Grassland g3c

A relatively small area of this habitat of other neutral grassland is present towards the southwest of grassland parcel G5 in an area that has been abandoned agriculturally. This habitat was also recorded within the field margins surrounding the large, modified grassland parcels G4 & G5.

No direct or indirect impacts to these areas of habitat are anticipated from the proposed development, as there are no plans to impact the area which has been agriculturally abandoned, and, the field margins which support this habitat are at most 1 m wide from the adjacent woodlands. The proposal is for the footpath and cycle path network to sit within the modified grassland component of the site, retaining the other neutral grassland verges that exist on site. As such, no direct or indirect impacts are anticipated.

This habitat, if the proposed management techniques are followed, is likely to develop within the large blocks of existing modified grassland within the grassland components G4 & G5, directly adjacent to this habitat, as the modified grassland slowly transitions towards 'other neutral grassland' habitat combined with the development of scrub.

Lolium-Cynosurus neutral grassland g3c6

A relatively small area of this habitat (approx. 0.89 ha) of this grassland type is present within the site within grassland parcel G7. This habitat will not be subject to the management techniques that are proposed for grassland parcels G4 & G5, but will be subject to annual mechanical cutting. As such, this habitat type will likely remain as g3c6 for the foreseeable future and no habitat impacts are anticipated bar the loss of a 2m wide section for the proposed footpath.

The loss relating to the footprint of the proposed cycle-path is to be off-set by the by the creation of high-value habitat within grassland parcels G4 & G5.

5.3.2 Hedgerows

Native Hedgerow h2a6

It is understood that only very small section of native hedgerow will be lost directly as a result of the proposed works (located at and at TQ 29741 25729) in order to make way for a proposed new bicycle access into the site from Stapleford Road. Impacts to the root protection areas of an adjacent (offsite – at TQ 29743 25725) beech *Fagus sylvatica* tree are possible, but are understood to be detailed in the accompanying arboricultural report. The only minor impact is relating to hedgerow fragmentation. The proposed gap to make way for the cycle path is understood to be small in scale (2 m wide for the cycle path). As such, the impact is considered to be minor at the site level only.

In the absence of mitigation, the proposed impacts are negligible in scale. The proposed creation of a substantial area of the similar habitat of woody scrub within grassland parcels G4 & G5 is likely to result in a major positive overall at a parish level.

Species-rich native hedgerow with trees h2a5

These hedgerows are located to the south of grassland parcel G1, to the south and east of grassland parcel G2 and to the south and east of grassland parcel G3. These hedgerows are all of relatively recent origin. Apart from the unmanaged shrub species,

it supports a series of semi-mature trees. Species composition is of hazel (dominant) with goat willow *Salix caprea*, sycamore, blackthorn, dog rose, field maple *Acer campestre*, hawthorn, dog rose, field elm, rowan *Sorbus aucuparia*, bramble, grey willow *Salix cinerea*, elder *Sambucus nigra*, ash (with ADB), spindle *Euonymus europaeus*, guelder rose *Viburnum opulus* and holly *Ilex aquifolium*.

Impacts will be limited to the proposed new pedestrian pathways allowing access form the north of the site towards the south. Impacts to this habitat will be confined to a new access being made at TQ 29479 25646 for this purpose.

In the absence of mitigation, the proposed impacts are negligible in scale. The proposed creation of a substantial area of the similar habitat of woody scrub within grassland parcels G4 & G5 is likely to result in a major positive overall at a parish level.

It is understood that the retained hedgerows/ hedgerows with trees will be protected during the footpath construction period and managed in accordance with any Arboricultural Protection Plan undertaken for the site. The ash component of these hedgerows should also be monitored from a health & safety perspective.

5.3.3 Ponds

Ponds r1

A series of ponds (the two carp fishing ponds and ponds 1, 2 & 4) are located within the site.

The carp ponds are to be electro-fished out and the carp relocated to another sport fishery. This will be undertaken with the aim of restoring these two ponds which have been negatively impacted through the introduction of carp, which predate heavily on native invertebrate and amphibians and currently cause considerable water pollution impacts through the outflow to the south of the ponds into the nearby watercourse.

The removal of this fish from the carp ponds is considered to result in a large-scale positive impact event that will likely completely alter the existing community dynamics and restore and reset the aquatic habitat to a far more favourable condition in the medium to long term by making the ponds available to wildlife species. No negative impacts from this proposed activity have been identified.

In terms of the construction of the new foot/cycle path network, there is a very small risk of impacts to the two ponds, adjacent outflow channel and other connected or nearby watercourse, for example through accidental discharge of fuels/oils from plant utilised for the construction phase of the proposed development.

It is understood that strict pollution prevention measures, covering pre-works enabling works and during and post competition of works, must be employed during the course of the proposed footpath construction works.

In terms of wildlife conservation and habitat restoration, the removal of carp from these two ponds will positively affect the existing community dynamics to restore and reset the habitat to a far more favourable condition in the medium to long term, as already mentioned. This is considered to be a positive impact at the parish level.

No negative impacts other than the risk associated with the use/storage of plant in close proximity to these two ponds is anticipated, but with the mitigation taken into account, no further impacts are anticipated.

Ponds 1 & 2

These two ponds were likely created for the purpose of watering stock. It is proposed that both of these ponds have their stock fencing removed and a proportion of the scrub and semi-mature trees removed. Both ponds will then be subject to restoration by digging out the ponds down to their clay liners in order to restore the pond depth in order to improve their biodiversity value.

Pond 1 supports least duckweed, a Schedule 9 invasive species. It is an illegal act to allow this species to spread in the wild and precautions must be taken to ensure that this is not the case. This plant *must* be treated and exterminated from the waterbody prior to works commencing.

Neither of these ponds support great crested newt, but smooth newt has been recorded within both Ponds 1 & 2.

Least duckweed must be eliminated from the two ponds by professional contractors to ensure that they do not re-enter the restored ponds post competition of works.

Precautions must be taken to ensure that individual amphibians are not killed through a hand search by a suitably experienced ecologist during the restoration/excavation stage. Individuals should then be transported and placed inside the reptile hibernacula being constructed on site.

There is potential for indirect impacts such as air pollution and water pollution to cause adverse impacts during the pond restoration proposed to Ponds 1 & 4.

A Construction and Environmental Management Plan (CEMP) will be required to avoid any impacts of the proposed works.

In the absence of mitigation, possible pollution impacts have the potential to cause parish wide impacts to the ponds and the wider river catchment.

Overall, the restoration of these two ponds will have a significant positive impact on their conservation value, creating deeper and more open ponds with a restored botanical interest and value to wildlife, including a variety of botanical, amphibian and invertebrate species. With mitigation in place, the restoration of these ponds have the potential to create a large scale positive for a range of wildlife species at a parish level.

Pond 3 & 4

Pond 3 is comprised of a former historic quarry that partially fills with water during the winter period. As such it is not considered a waterbody and does not support an aquatic flora. As such it is not considered further in this report.

Pond 4 is located within the woodland located to the north of the site. This pond is to remain non-interventionalist and will not be restored as with ponds 1 & 2.

Neither of these ponds are to be impacted by the proposed restoration works, and as such no impacts are anticipated. This includes the ephemeral seasonal waterbody located in close proximity to the coarse fishing ponds.

5.3.4 Watercourse

Other Rivers and Streams r2b.

No direct works are proposed to the watercourse that runs along the River Adur, which runs close to the southern site boundary.

There is a small risk of impacts to the watercourse through accidental discharge of fuels/oils from plant utilised for the construction of the footpath network/pond restoration. It is understood that strict pollution prevention measures, covering pre-works enabling works and during and post competition of works, must be employed during the course of the proposed works.

The proposed footpath that runs along the southern site boundary will head over the existing piped section of the River Adur withing an area of grassland and no further bridge or other access infrastructure is required. As such, no other direct or indirect impacts from the construction of the footpath network are anticipated.

There are large positive impacts from the electrofishing and pond restoration of the carp ponds, located a short distance to the north of the site. Currently these ponds drain into the River Adur through the connected outflow channel causing widespread siltation and nitrate impacts. As such, the removal of the carp from these ponds and the creation of valuable ponds utilised for nature conservation will have a positive impact on the water quality of the River Adur.

A Construction and Environmental Management Plan (CEMP) will be required to avoid any impacts of the proposed works.

In the absence of mitigation, possible pollution impacts have the potential to cause parish wide impacts to the wider river catchment.

With mitigation in place the proposed works will have a large-scale positive impact to the River Adur through the removal of the main source of pollution from the carp ponds within this river section.

5.3.5 Woodland

Lowland Mixed Deciduous Woodland w1f

Part of this habitat is also designated as Semi-Natural Ancient Woodland, located to the west of the site. While sections of the semi-natural ancient woodland support the traditional understorey of coppice with maiden canopy trees, a large proportion of the designated area supports large stands of the invasive plant species *Rhododendron ponticum*, a Schedule 9 listed species. This species dominated the understorey in

certain areas, while the maiden trees have been felled and removed. This invasive species must be slowly removed over a 10-20 year period trough repeat cutting the treating of stems and the area allowed to regenerate with native tree / shrub species through natural succession.

A proportion of this habitat will be subject to the introduction of small numbers of stock with cattle and pigs being allowed to access the non-fenced area. This will create an amount of bioturbation through the actions of rooting pigs and cattle poaching in some areas. Due to the limited stock numbers anticipated, the impact of this overall.

Due to the limited stock numbers anticipated, the impact of the introduction of stock is considered to be a positive overall, with cattle in particular being thought to provide biodiversity benefits in woodlands when grazed at low density since they eat dense vegetation of a low digestibility and break up vegetation mats with their hooves. This then opens up the ground layer vegetation and is thought to be beneficial for tree regeneration as well as leading to a greater variety of vegetation types and associated invertebrate and bird assemblages.

The potential impact area is considered to be in relation to the construction of the proposed cycle path (and associated stock fencing) which runs through this habitat, albeit, on an already existing overgrown trackway of some antiquity. This lowland mixed deciduous woodland may be impacted by the construction of the proposed footpath through limited fragmentation effects on the woodland component of the site through the installation of the proposed stock fencing.

Impacts will be restricted to the direct impacts relating to the proposed cycle path. It is understood that the design of this footpath will be in line with the Sustrans guidance (design guide).

Due to the soft and unstable nature, and the proximity of nearby trees to the existing 'path' in this location, the use of geogrids and geotextiles may enable a shallower foundation to be considered. Advice should be sought from an appropriately qualified person when specifying such systems. Due to the proximity of the proposed path in relation to retained (SNAW) woodland habitat, the use of a bituminous surface is to be avoided due to hydrocarbon runoff. Designers are encouraged to explore the most suitable path surfaces to suit the route as the introduction could be considered to 'urbanise' natural environments. To alleviate these concerns, designers can specify

alternative surface course materials such as an unsealed surface, such as compacted/crushed or graded rock/stone.

Overall, the wider measures are anticipated to have a positive impact on biodiversity through the eradication of the invasive plant species *Rhododendron ponticum* and the impact on the non-deterministic approach to habitat and species restoration termed "constrained rewilding". In this approach the stock fencing is essential to keep people safe from stock and to constrain the stock within the site.

In the absence of mitigation, the impact of the proposed cycle path within the woodlands is considered by be negative at a parish level. With the proposed design taken into account, utilising the correct substrate, the impact of the proposed cycle path is likely to be a minor negative at the site level.

Other Broadleaved Woodland w1g

The areas of this habitat located to the east and north of the site will be in close proximity to a new footpath will run around the edge of this habitat. It is proposed that root protection areas (RPA's) of the boundary trees/shrubs are taken into account when positioning this pathway as set out in the arboricultural reports.

A large section of this habitat will be subject to the introduction of small numbers of stock, with cattle and pigs being allowed to access the non-fenced areas. This will create an amount of bioturbation through the actions of rooting pigs and cattle poaching in some areas. Due to the limited stock numbers anticipated, the impact of the introduction of stock is considered to be a positive overall, with cattle in particular being thought to provide biodiversity benefits in woodlands when grazed at low density since they eat dense vegetation of a low digestibility and break up vegetation mats with their hooves. This opens up the ground layer vegetation and is thought to be beneficial for tree regeneration as well as leading to a greater variety of vegetation types and associated invertebrate and bird assemblages.

The plantation woodland, located to the west of the site is to have a new cycle path, as well as a series of rides and glades cut into it. In addition to this, the poplar trees are to be targeted for veteranisation and felling. The woodland already has a series of rides within it and it is proposed to utilise these up in order to create space for the proposed cycle path. Th eastern side of this cycle path will also be fenced to prevent stock from accessing the far western side of the site.

The veteranisation of the poplar tree component of the woodland is proposed. This will create a large number of features suitable for nesting birds, roosting bats and, over time saproxylic invertebrate species, such as stag beetle species. This will create a large gain for biodiversity within an even-aged woodland which currently lacks any features that have the potential to support these species.

A proportion of this woodland habitat, located to the north of the grassland parcel G4 is currently used for the raising of pheasants for game shooting. This species is known to heavily predate reptile numbers. The removal of this activity/large numbers of this game bird from the site is considered to be a positive in terms of biodiversity.

The remainder of this this habitat located to the west of the site are is to remain unimpacted by the proposed development and as such no impacts are anticipated in these areas.

The potential impact area is considered to be in relation to the construction of the proposed cycle path (and associated stock fencing) which runs through this habitat, albeit, along existing rides. This woodland may be impacted by the construction of the proposed footpath through limited fragmentation effects on the woodland component of the site through the installation of the proposed stock fencing.

Impacts will be restricted to the direct impacts relating to the proposed cycle path. It is understood that the design of this footpath will be in line with the Sustrans guidance (design guide).

Due to the proximity of nearby trees to the existing 'path' in this location, the use of geogrids and geotextiles may enable a shallower foundation should be considered. Advice should be sought from an appropriately qualified person when specifying such systems. The use of a bituminous surface is to be avoided due to hydrocarbon runoff.

Designers are encouraged to explore the most suitable path surfaces to suit the route as the introduction could be considered to 'urbanise' natural environments. To alleviate these concerns, designers can specify alternative surface course materials such as an unsealed surface, such as compacted / crushed or graded rock / stone.

Overall, the wider measures undertaken within the site are anticipated to have a positive impact on biodiversity through the non-deterministic approach to habitat and species restoration termed "constrained rewilding". In this approach the stock fencing is essential to keep people safe from stock and to constrain the stock within the site.

In the absence of mitigation, the impact of the proposed cycle path within the woodland is considered by be negative at a site level. With the proposed design taken into account, utilising the correct substrate, the impact of the proposed cycle path is likely to be a minor negative at the site level.

5.3.6 Other Habitats

Dense Bracken g1c

No areas of dense bracken are to be impacted by the proposed restoration works, and as such no impacts are anticipated.

The impact of the non-deterministic approach to habitat and species restoration termed "constrained rewilding". This will likely allow the spread of this habitat into the existing modified grassland overtime, creating a more structed habitat for a variety of wildlife species.

Dense Scrub h3

No areas of scrub are to be impacted by the proposed restoration works, and as such no impacts are anticipated.

The impact of the non-deterministic approach to habitat and species restoration termed "constrained rewilding", will likely allow the spread of this habitat into the existing modified grassland overtime, creating a more structed habitat for a variety of wildlife species. It is expected that after 10 years there will be a large increase in this habitat due to the actions of reduced overall grazing combined with the actions of the pigs breaking up the sward of the modified grassland sward within parcels G4 & G5. The development of this habitat is key to restoring populations of bird in particular and will support a wide range of amphibian, reptile, bat and invertebrate species over time.

Developed Land, Sealed Surface u1b

No areas of ephemeral perennial are to be impacted by the proposed restoration works, and as such no impacts are anticipated.

Artificial Unvegetated Unsealed Surface u1c

No areas of ephemeral perennial are to be impacted by the proposed restoration works, and as such no impacts are anticipated.

5.3.7 Non-Native Botanical Species

Rhododendron ponticum and least duckweed, listed as a non-native invasive botanical species on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), were both recorded on site along with the non-native invasive winter heliotrope.

It will be required that these species are not caused to spread by the proposed works and is appropriately removed or eradicated from the site by a professional prior to or at the commencement of any development works.

The eradication of these species in the absence of appropriate mitigation will likely result in the spread of these species to other areas of habitat both on and adjacent to the site. This is considered to constitute a negative impact at a parish level.

With appropriate mitigation in place, the removal and eradication of these species is considered to have a positive impact at site level.

5.4 Fauna

5.4.1 Amphibians

Great crested newt was confirmed as present on site from the 2023 eDNA surveys. They were recorded within a single seasonal ephemeral waterbody located on site. This seasonal waterbody is to remain unimpacted by the proposed works. Common and widespread amphibian species are also present, including common frog, common toad and smooth newt.

Great crested newt and other amphibians are likely located within the suitable terrestrial habitat located on site.

Great crested newt is afforded protection under the UK Wildlife and Countryside Act 1981 (as amended) in Schedule 5, and the EC Habitats and Species Directive (92/43/EC), enacted in the UK by the Conservation of Habitats and Species Regulations 2010.

This level of protection makes it illegal to:

- Deliberately capture, kill or injure great crested newt/s; and,
- Damage or destroy a breeding site or resting place (including aquatic and terrestrial habitat whilst great crested newts are or are not present at the time).

Mitigation measures will be required in order to avoid the disturbance or killing and injury to this species, this is likely to comprise the retention and future management of terrestrial habitat within the site and within adjacent suitable habitat.

The construction of the footpath and cycle path network have the potential to impact these species during their terrestrial phases. Appropriate mitigation, in the form of habitat manipulation of the grassland habitats to be impacted, should be undertaken in order to encourage the movement of these species away from the proposed working areas.

Removal of a small proportion (of the modified grassland) habitat for the creation of the footpath and cycle path infrastructure must be conducted during the active season from mid-September – end October under a Method Statement and supervision of a suitably trained Ecologist. Any animals found should be carefully moved to nearby places of safety such as the proposed hibernacula to be constructed on site.

In the absence of mitigation, the removal of this habitat is considered to have a minor negative impact on amphibian species on a parish level.

With the proposed mitigation in place, the removal of relatively small areas of modified grassland to make way for the proposed foot/cycle path network is considered to be a neutral impact when taken in conjunction with the wider habitat restoration works proposed.

5.4.2 Badgers

[redacted]

[redacted]

5.4.3 Bats

Roosting bats - trees

A number of trees located within the site support features with moderate or high bat roosting potential. None of these trees are to be impacted in any way by the proposed works and no artificial lighting is proposed as part of the development. As such no impacts are therefore considered likely.

The installation of a six, tree mounted maternity and hibernation boxes/towers and the veteranisation of the poplar component of the lowland mixed deciduous woodland located to the west of the site will greatly enhance the roosting potential for a wide range of bat species and create hibernation potential within the site which is likely lacking due to the even aged and relatively young structure of the majority of the woodland on site.

The proposed habitat creation/box installation is considered to be a positive for roosting bats at a parish level, by providing a resource that is largely lacking from the site.

Roosting bats – building

The building and eight mature trees on site is considered likely to support roosting bats. No impacts to this building or trees are proposed. As such no impacts to roosting bats are anticipated.

Commuting & foraging

In terms of commuting, the proposed development and restoration works will result in no identifiable impacts. No artificial lighting is proposed and therefore no impacts are anticipated.

The creation of a larger area of suitable foraging habitat in the form of the creation of large areas of high value habitat in the form of species-rich grassland with associated scrub, a series of new woodland rides and glades and restored ponds providing a wide range of new habitat for prey animals, will enhance the site for foraging bat species over time through the supplying of a large volume of invertebrate species and numbers within the area. The restoration of the ponds (1 & 2 and the carp ponds) will also restore a large area of habitat that will then have the potential to support, through improved water quality, larger amounts of invertebrate species that bats feed on. These

proposed restoration works will enhance the site for bat species in general (see Appendix 5). The proposed works are considered to be a positive for foraging & commuting bats at a parish level.

5.4.4 Birds

Breeding Birds

The hedgerows, woodlands (including woodland edge habitats), scrub and grassland were identified as being of value to breeding birds. The impacts on nesting birds will be confined to the loss of two small sections of hedgerow to make way for site access and a small number of individual trees to make way for the proposed cycle route through the woodland to the west of the site within the lowland mixed deciduous woodland. This is considered to represent a minor negative in the absence of mitigation.

The installation of a number of tree mounted bird boxes and the veteranisation of the poplar component of the lowland mixed deciduous woodland located to the west of the site will greatly enhance the nesting potential for a wide range of bird species and create a greatly increased nesting potential within the site which is likely lacking due to the even aged and relatively young structure of the majority of the woodland on site.

The creation of a larger area of suitable foraging habitat in the form of the creation of large areas of high value habitat in the form of species-rich grassland with associated scrub, a series of new woodland rides and glades and restored ponds providing a wide range of new nesting and foraging habitat for bird species and will enhance the site for foraging bird species over time through the supplying of a large volume of invertebrate species and numbers within the area. The restoration of the ponds (1 & 2 and the carp ponds) will also restore a large area of habitat that will then have the potential to support, through improved water quality, larger amounts of invertebrate species that bird species feed on. These proposed restoration works will enhance the site for birds species in general.

In particular, certain rare, declining and scarce species should be monitored as indicators of habitat restoration success, such as nightingale *Luscinia megarhynchos*, cuckoo *Cuculus canorus*, skylark *Alauda arvensis*, barn owl *Tyto abla* and turtle dove *Streptopelia turtur*.

With these measures taken into account, these measures will result in a major positive impact for nesting birds (both open ground and woodland/shrub nesting species) at a parish level.

5.4.5 Dormouse

Dormouse was recorded on site during the survey, and are well recorded within the locality. The habitats with the potential to support dormice within the site as a whole are the semi-natural woodland habitats together with the scrub and hedgerow habitats.

The impacts on nesting dormouse will be confined to the loss of two small sections of hedgerow to make way for site access for the proposed cycle route through the lowland mixed deciduous woodland located to the west of the site. The loss of the two hedgerow sections is considered to be minor and under 10 m loss in total. This is not considered enough to trigger any specific mitigation in terms of licencing or specific precautionary approach in terms of dormouse. The proposed cycle path located to the west of the site within the plantation woodland is understood to only involve the removal of a *very* small number of immature/semi-mature mixed plantation trees in total due to the presence of the existing ride that runs through the area.

The hedgerows, woodlands and scrub were identified as being of value to dormouse.

The proposed development is considered to represent an initial negligible/minor negative in the absence of mitigation at a site level.

The veteranisation of the poplar component of the lowland mixed deciduous woodland located to the west of the site will greatly enhance the nesting potential for dormouse and create a greatly increased nesting potential within the site which is likely lacking due to the even aged and relatively young structure of the majority of the woodland on site.

The creation of a larger area of suitable foraging habitat in the form of the creation of large areas of high value habitat in the form of species-rich grassland with associated scrub will provide a wide range of new nesting and foraging habitat for dormouse and will enhance the site for dormouse over time through the supplying of a large volume of direct suitable habitat and, fruit, nuts and invertebrate species within the site. These proposed restoration works will enhance the site for dormouse in general.

Overall, there is considered to be a major positive for dormouse at a parish level from the proposed works.

5.4.6 Invertebrates

Terrestrial Invertebrates

Given the retention of the vast majority of the suitable habitats combined with the limited overall impacts (confined to the path network creation and viewing platform), on suitable habitats for invertebrate species returned within the desk study, no specific mitigation or compensation is considered necessary. The restoration og the habitats within the site is likely to enhance the value of the site for invertebrates, and could provide habitat for the County Notable species such as Jersey tiger *Euplagia quadripunctaria* and dingy skipper *Erynnis tages* in future.

Aquatic Invertebrates

A total of 33 species were recorded during the survey of three of the ponds on site. Ponds 1 and 4, are heavily shaded and in the advanced stages of succession, with shallow water and limited meso-habitat diversity which in turn has limited the floral and faunal communities. Pond 1, in particular, is completely shaded and of little interest. Pond 2 is more open but is still lacking in floral diversity, although the invertebrate community, whilst somewhat restricted was still of sufficient diversity to be classified as being of 'good' ecological status by PSYM.

Shaded ponds, especially in ancient woodlands can support communities limited in diversity but which can potentially include uncommon species that are specialists of this type of habitat, such as the diving beetle *Hydroporus incognitus* (Kirby, 1992).

Unfortunately, this is not the case at Beechy Bottom Parkland Reserve, where the shading of the ponds has occurred recently as the result of fencing and the growth of relatively young trees and shrubs. Shading by the bankside trees has also resulted in the rapid accumulation of leaf litter and woody debris in the basins.

As part of the planned restoration, the removal of vegetation from, as a minimum, their southern sides should be undertaken. Dredging can be an expensive and drastic procedure but in the case of ponds 1 and 4 is likely to be required for any meaningful restoration.

Grading the pond margins to provide shallow sloping or shelved profiles will encourage the development of communities of marginal and wetland vegetation. Most aquatic invertebrate species tend to live amongst dense stands of submerged plants or marginal vegetation, often in water as little as 10cm deep, with floating mats of grasses such as *Agrostis* and especially floating sweet-grass *Glyvceria fluitans* being of particular value, especially for beetles.

The removal of fencing to provide livestock access will greatly improve marginal diversity for plants, encouraging the growth of smaller early-successional species that are later out-competed by taller, faster-growing species; improved floral diversity has a concomitant positive outcome for invertebrates. Light poaching can produce small pools that many *hydrophilid* beetle species utilise or areas of bare mud used by certain dragonfly species for egg-laying. However, note that excessive poaching can cause turbidity of the water, the collapse of banks and the opposite effect, curtailing the growth of marginal plants, thus stock density, which is designed to be very low, is of importance. Monitoring of impacts as stock numbers fluctuate is recommended.

In the absence of mitigation, the impact of the proposed works on inveterate species is considered to be negligible overall.

The restoration of these two ponds, in combination with the electrofishing and stock removal from the carp ponds, will support a wide range of freshwater invertebrate species. The impact of the proposed works, although large in scale to the two ponds in the short-term, will likely result in no species losses in the medium to long-term as invertebrate species are well known to reproduce rapidly and with the species recorded will likely all be retained within the locality, they are considered as likely to re-colonise the newly restored and enhanced ponds post-completion of works.

The proposed works are considered to constitute a major positive impact for inveterate species at a parish level.

5.4.7 Reptiles

The construction of the footpath and cycle path network have the potential to impact these species during their terrestrial phases.

All reptiles are protected under the W&CA 1981 (as amended) and there is a risk of injury and mortality to slow worm, grass snake and adder during the grassland removal

of the existing habitat within the proposed area to be occupied by the Serpentine Lake, if unmitigated.

The modified habitats to be impacted must be subject to habitat manipulation in order to encourage the movement of these species away from the proposed working areas. Removal of the grassland habitat for the creation of the footpath and cycle path infrastructure must be conducted during the active season from mid-September – end October under a Method Statement and supervision of a suitably trained Ecologist.

The creation of large areas of species-diverse grassland supporting a wide range of invertebrate prey, interspersed with woody scrub creating a series of micro-habitats which can be used for basking and foraging, commuting and hibernation enhance the site for reptile species over the medium to long term.

The site also supported a moderate population barred grass snake. This species is particularly fond of wetland habitats but can also be found in dry grasslands. Grass snake hunt amphibians, fish, small mammals and birds.

The proposed works will restore the pond habitat present on site, therefore, creating opportunities for foraging reptiles. Both dispersal and hibernation will be maintained and enhanced through the creation of a series of reptile hibernacula. Long-term positive impacts to the local population are considered likely.

The construction of the footpath and cycle path network have the potential to impact reptile species. Appropriate mitigation, in the form of habitat manipulation of the grassland habitats to be impacted, should be undertaken in order to encourage the movement of reptile species away from the proposed working areas.

Removal of a small proportion (of the modified grassland) habitat for the creation of the footpath and cycle path infrastructure must be conducted during the reptile active season from mid-September – end October under a Method Statement and supervision of a suitably trained Ecologist. Any animals found should be carefully moved to nearby places of safety such as the proposed hibernacula to be constructed on site.

In the absence of mitigation, the removal of this habitat is considered to have a negative impact on reptile species on a site level.

With the proposed mitigation in place, the removal of relatively small areas of modified grassland to make way for the proposed foot/cycle path network is considered to be a neutral impact when taken in conjunction with the wider habitat restoration works proposed.

5.4.8 Otter

Otter utilise the site throughout the year, but are not confirmed as not breeding within the site. As such, no specific mitigation or compensation is required.

No records for otter were returned within 1 km of the site by the data search. However, otter are considered to be within the locality and have been recorded just over 2km away within the same river catchment. The existing carp ponds on site are also considered likely to be a draw for this species.

Otter is protected by as a European protected species (EPS). EPS are protected under the Conservation of Habitats and Species Regulations 2017. It is an offence to deliberately kill, injure, disturb or capture them, damage or destroy their breeding sites and resting places - even if otters are not present.

It is also an offence under the Wildlife and Countryside Act 1981 (as amended) to intentionally or recklessly disturb otters while they occupy a structure or place used for shelter or protection, or obstruct access to a place of shelter or protection.

It is considered likely that the River Adur section on site is utilised by otter when foraging or dispersing.

There is a very small risk of impacts to the River Adur via the adjacent outflow channel from the carp pond, for example through accidental discharge of fuels/oils from plant utilised for the construction of the footpath network/ pond restoration. It is understood that strict pollution prevention measures, covering pre-works enabling works and during and post competition of works, must be employed during the course of the proposed construction works.

In the absence of mitigation, the impacts have the potential to be negative at a parish level.

With suitable mitigation in pace, the impacts to this species are considered to be positive at a site level through the restriction of the existing water pollution impacts from the adjacent carp ponds.

5.4.9 Water Vole

No records for water vole were returned within 1 km of the site by the data search.

The results of the water vole survey did not find any evidence of water voles within the proposed development site nor in association with the watercourse (River Adur) within the site.

The field survey identified the habitat to be of negligible value for water vole along the river corridor. Within the site, there was poor habitat suitability for water vole with negative indicators such as unsuitable surrounding habitat and run-off and eutrophication from the carp ponds.

As such, the species is considered to be absent from the site.

Through the removal of the carp from their existing fishing ponds. The suitability of the section of the River Adur within the site to water vole, could be improved from 'poor' to 'good' habitat suitability for water vole and may be of use to this species if they return to the area.

5.4.10 Hedgehog

Habitat of value to hedgehog is being retained and the creation of a large area of species-diverse grassland interspersed with scrub will provide greatly enhanced foraging opportunities. Therefore, creating opportunities for foraging commuting and hibernating, hedgehog habitat will be maintained and enhanced in the medium term. Long-term adverse impacts to the local population are considered to be positive overall.

6.1 Recommendations for Avoidance/Mitigation of Ecological Impacts

6.1.1 Ecology Mitigation, Compensation & Enhancement Strategy

Development of the site will require that an Construction Ecological Management Plan is implemented for development, including for:

- Amphibians (including great crested newt);
- Bat species;
- [redacted]
- Nesting birds; and,
- Reptiles – including habitat manipulation.

6.1.2 Protection of River Adur

There is potential for indirect impacts such as air pollution and water pollution to cause adverse impacts during the pond restoration proposed to Ponds 1 & 4 as well as the electrofishing operation and restoration of the existing Carp Ponds, particularly given the connection of the watercourse located to the south of the site via the existing outflow channel. Two of these ponds (Ponds 1 & 4) also support the aquatic invasive plant least duckweed. Efforts should be made to eliminate this species from the two ponds to ensure that they do not re-enter the restored ponds.

A buffer of at least two metres between the outflow channel of the carp ponds, the ponds themselves and the area of plant storage or fuels is to take place. The buffer is to be demarcated by fencing or other means to ensure protection of the watercourse.

This measure will also protect the retained habitat for species including foraging birds, otter, fish, invertebrates, amphibians and reptiles.

6.1.3 Vegetation Management

Any areas where construction is to take place (including the proposed path network, storage of materials or welfare facilities) it to be maintained with a short sward prior to construction taking place. This is to encourage any reptiles/amphibians present to move away from the working areas.

6.1.4 Nesting Birds

Ideally, the pathway construction and small sections of hedgerow removal to make way for the path/cycle path network are to take place outside the nesting bird season (considered to be March-August inclusive, although depending on species, geographical area and weather conditions nesting can take place outside of these times) to avoid unnecessary delays caused by nesting birds. If this is not possible, a nesting bird check is to be carried out and if an active nest is found then works within a 10 m buffer should cease until the nest is no longer active (i.e. the last chick has fledged).

6.1.5 Site Excavations

As a precautionary measure during the construction works, any excavations which are to remain open overnight, are to be fenced or covered to prevent potential entrapment and or injury of species such as [redacted] or hedgehog.

6.1.6 Removal of Non-native Invasive Plant Species

Rhododendron ponticum and least duckweed, listed as a non-native invasive botanical species on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), were both recorded on site along with the non-native invasive winter heliotrope.

Care must be taken that operations during the construction period, such as digging, do not cause the inadvertent spread of these species.

6.2 Compliance Monitoring

The development should include a pre-commencement site meeting and subsequent compliance monitoring visits, undertaken and recorded by a suitably qualified and pre-appointed ecologist. Such visits would be required to confirm adherence to recommendations/constraints and implementation of ecological mitigation and enhancement recommendations.

6.3 Ecology Compensation & Enhancement Measures

The National Planning Policy Framework (NPPF) outlines the Government's commitment to minimise impacts on biodiversity and provide net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

The required enhancements will include:

- The conversion, through careful management, of the two modified grassland blocks (G4 & G5) into species-diverse grassland interspersed with woody scrub and dense bracken patches will create a habitat of enhanced value to a wide range of mammal, plant, invertebrate, amphibian and bird species;
- The restoration of the Ponds 1, 4 and the carp ponds, will restore the pond habitat present on site, therefore, creating opportunities for to a wide range of mammal, invertebrate, amphibian, plant and bird species;
- The planting of 60 standard trees (adequately stock protected) throughout the parkland in order, over time, to re-create the woodland pasture habitat that formerly existed on site;
- The veteranisation of the poplar trees over time within the Oter Woodland Broadleaved (w1g) located to the west of the site by targeting low-value / undesirable trees in order to create instant habitat of high value to roosting bats and nesting dormouse/bird species through the creation of standing deadwood with a series of specially designed features carving into them specifically designed for different species (different bat species prefer different roosting positions, and bird species such as treecreeper prefer bark flakes, nest boxes for general bird species and woodpecker holes). Features low down on tree trunks can also be created specifically to support dormouse and other small mammal species. Branches removed from the tree canopies in order to create a more stable trunk will be deposited on the woodland floor to create deadwood accumulations of significant interest to saproxylic invertebrate species and fungi;
- New hedgerows along the inside of the proposed footpath and cycle network will provide enhanced connectivity with surrounding habitats, additional nesting opportunities for breeding birds, additional commuting and foraging habitat for bats and dormouse, as well as additional foraging opportunities for [redacted] and hedgehog. This hedgerow will also provide a range of opportunities for invertebrate species. This hedgerow should be planted with at least five native woody species. For example: hawthorn, dog rose, hazel, oak and field maple. The hedgerow should be allowed to develop into a dense but short and tightly manged structure approximately 1 m tall and 1.5 m wide to allow the visual viewing of the wider landscape for members of the public;
- Newly restored Ponds 1 & 2 as well as the carp ponds will create a wide range of high-quality habitat for nesting and foraging birds including aquatic plants,

waterfowl, foraging bats, invertebrates, aquatic plants, fish, reptiles, [redacted] hedgehog and riparian mammals;

- Roosting opportunities should be provided for bats, comprising six maternity and hibernation capable tree mounted bat boxes in suitable locations throughout the site;
- New nesting opportunities for birds should be provided, for example the installation of 20 tree mounted bird boxes within suitable locations along the eastern edge of the Semi-Natural Ancient Woodland; and,
- The construction of a series of reptile hibernacula within the site will enhance the site for reptile species and provide hibernation, breeding and shelter opportunities to the slow-worm and barred grass snake recorded on site.

The above-required compensation and enhancement measures should be illustrated on landscape plan(s), proposed plans and/or elevation drawings, where appropriate (see Appendix 5).

6.4 Monitoring

The development of the site and proposed restoration works should include a pre-commencement site meeting and subsequent compliance monitoring visits, undertaken and recorded by a suitably qualified and pre-appointed ecologist as set out in a Construction Ecological Management Plan (CEMP), Landscape Ecological Plan (LEMP) and/or the Habitat & Ecological Restoration Management Plan (Tadorna Consulting, 2023). Such visits would be required to confirm adherence to recommendations/constraints and implementation of ecological mitigation and enhancement recommendations.

6.5 Conclusion

In summary, the majority of the site is considered to be of moderate ecological interest. However, some adverse impacts are predicted on reptiles, [redacted] invertebrates, and amphibians through the construction of the foot and cycle path network.

Avoidance measures have been incorporated into the design and careful timing of works recommended to reduce these impacts and further mitigation and compensation measures will be implemented in order to eliminate any residual impacts.

Provided the avoidance, timing of works, mitigation and compensation measures are carried out, the proposal is considered unlikely to have significant adverse effects on the majority of ecological receptors.

Implementation of the ecology mitigation, compensation and enhancement measures, and the Habitat & Ecological Restoration Management Plan (Tadoma Consulting, 2023) is considered to represent a major gain for biodiversity overall.

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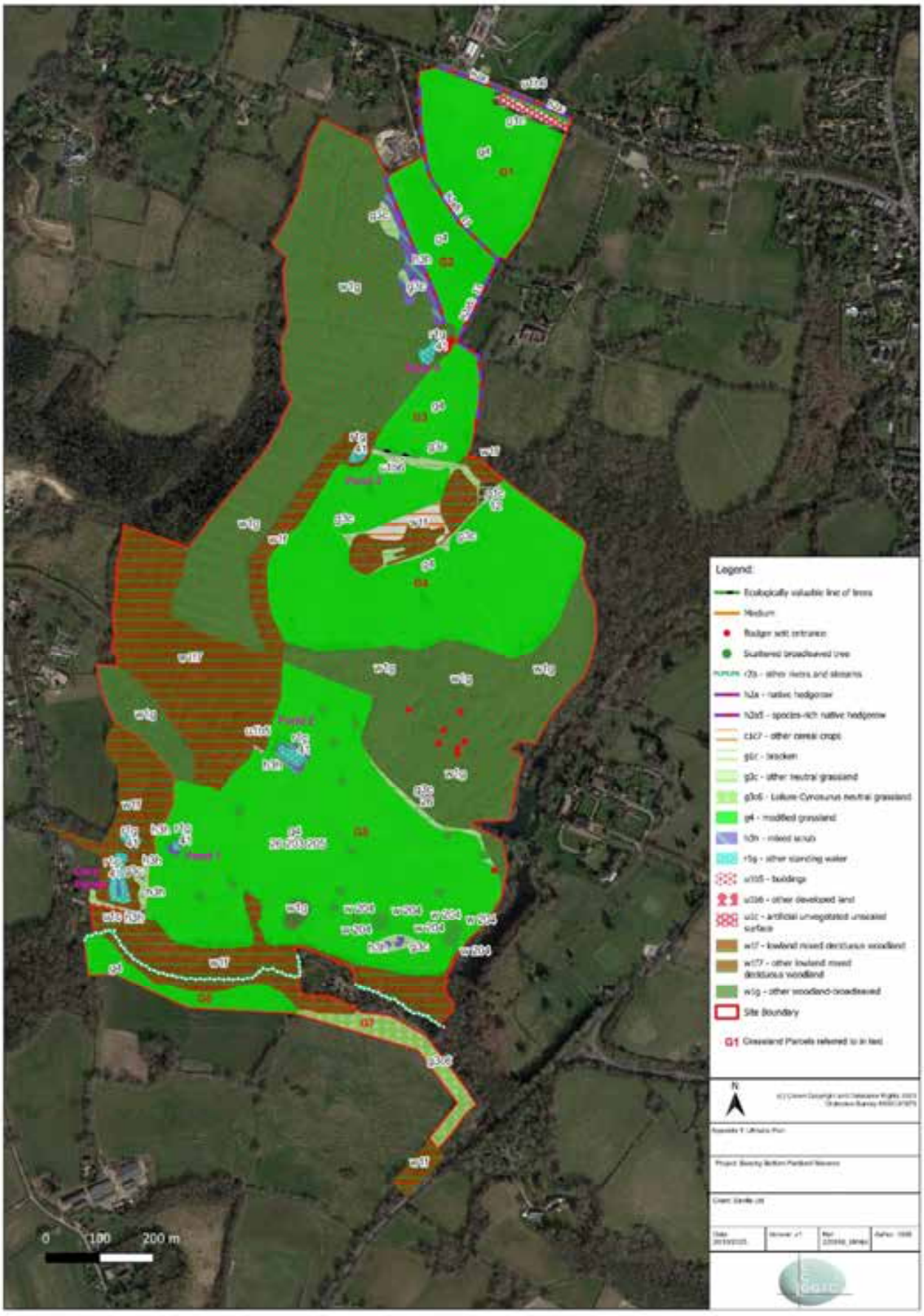
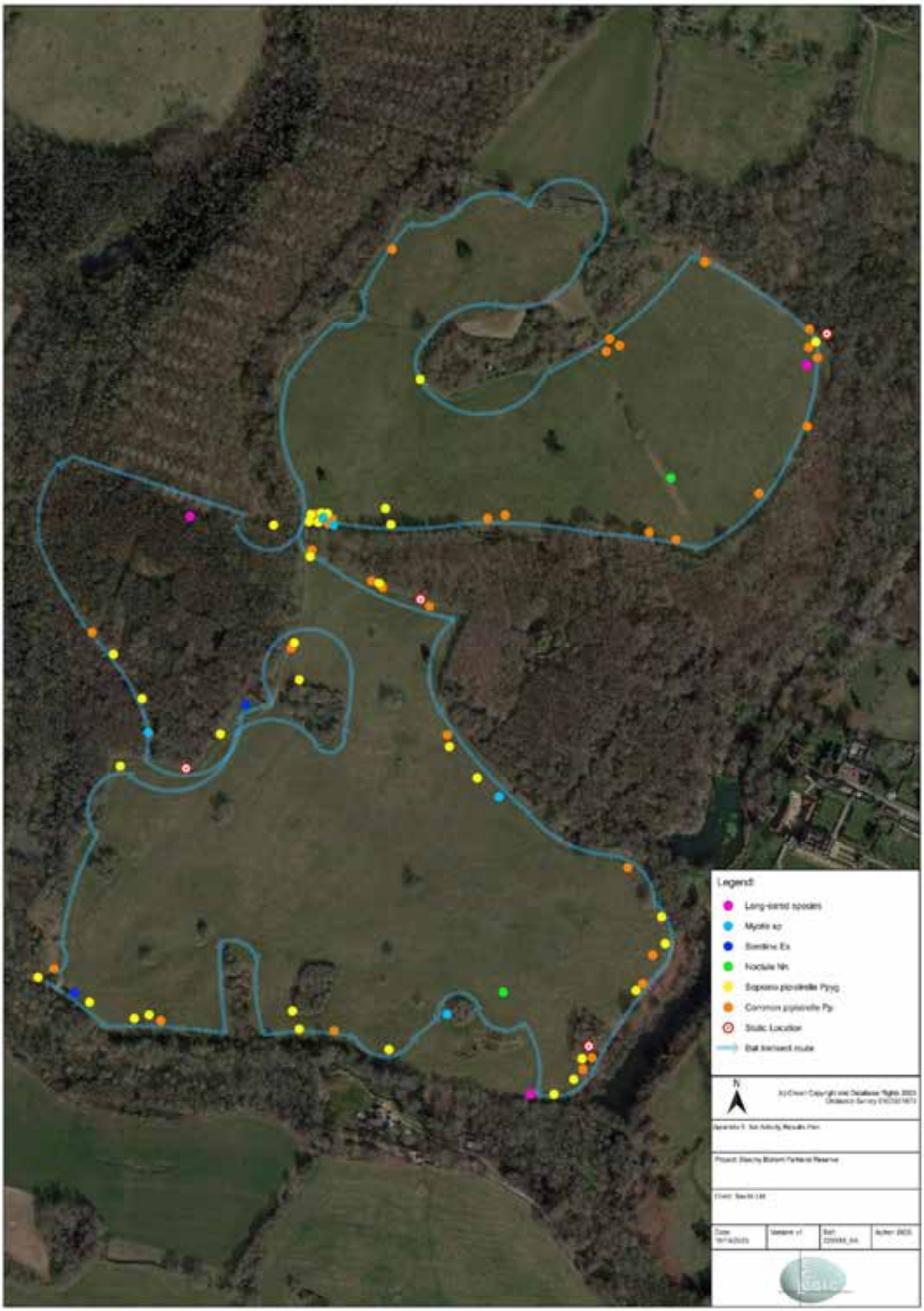
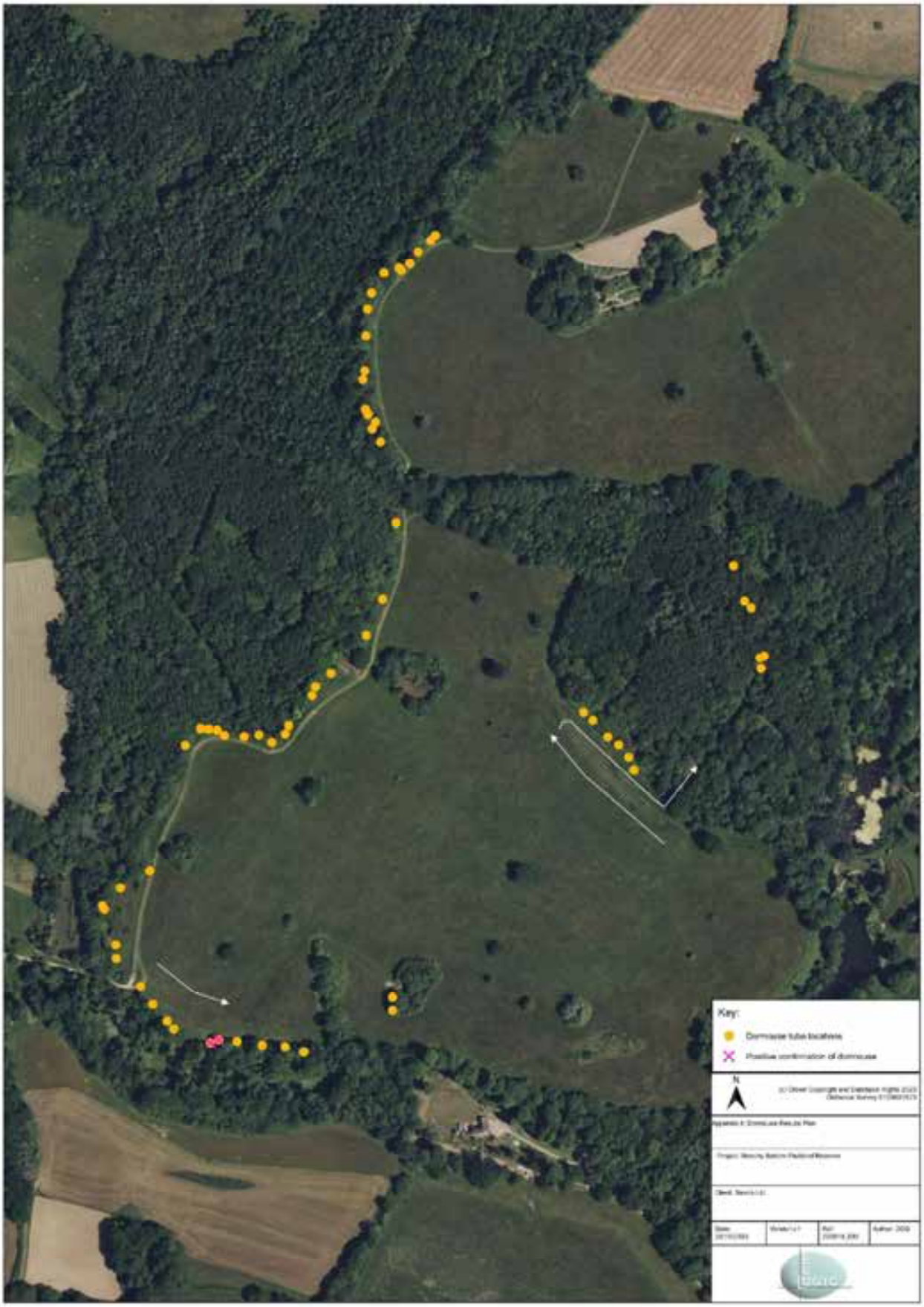
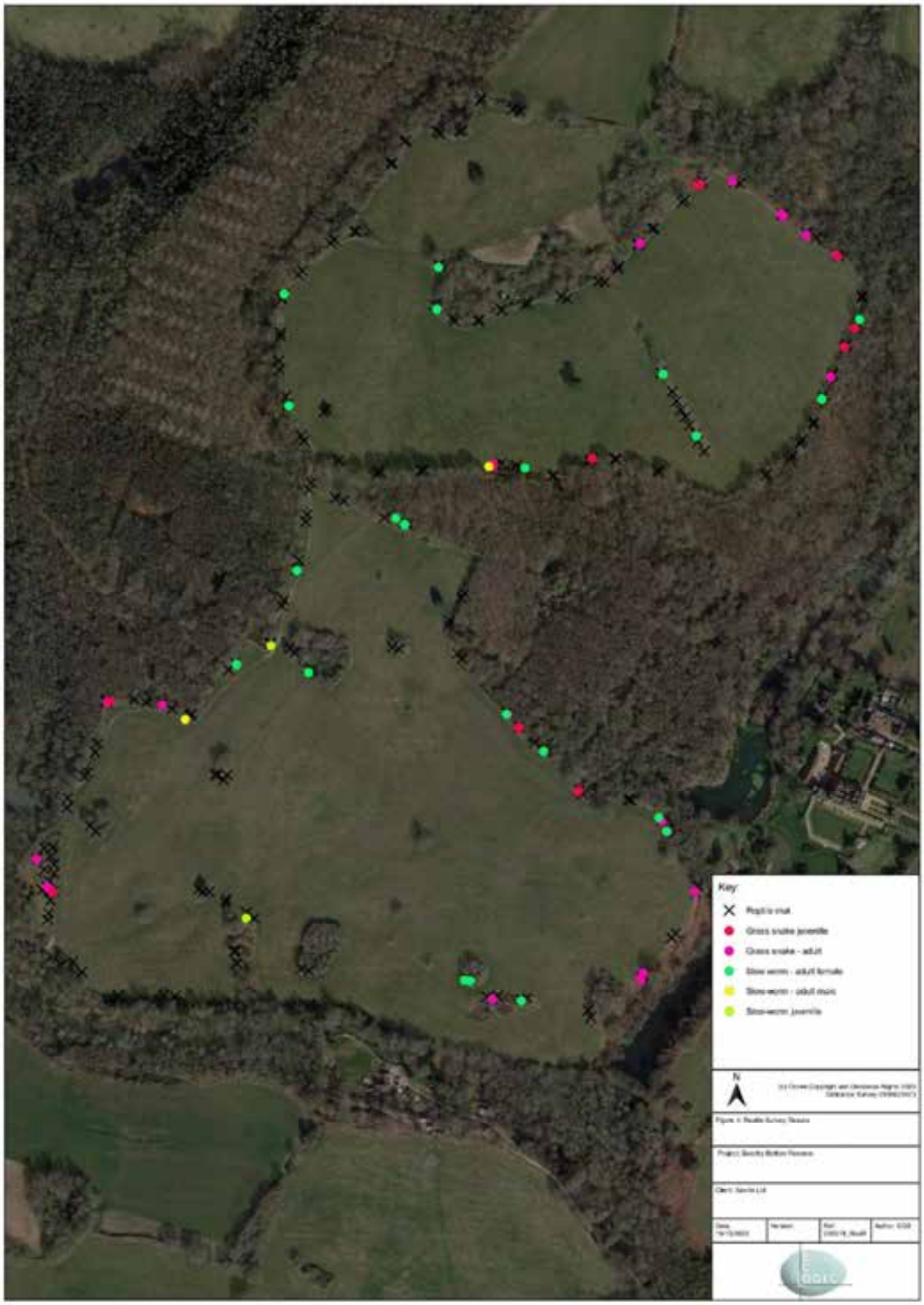
APPENDICES

UKHAB PLAN

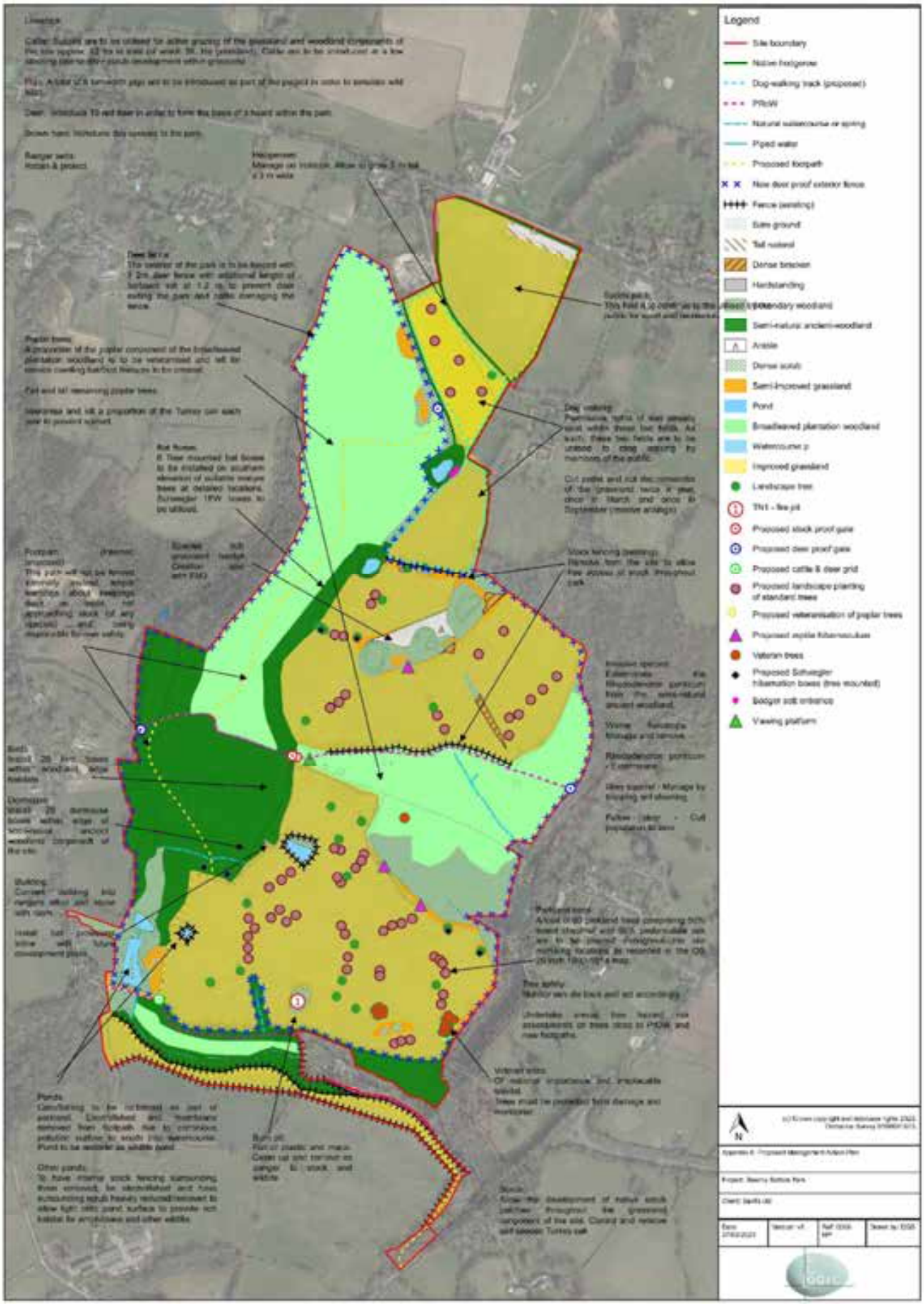

Legend:
Ecologically valuable line of trees
Medium
Badger sett: entrance
Scattered broadleaved tree
r2b - other rivers and streams
h2a - native hedgerow
h2d5 - species-rich native hedgerow
c3c7 - other cereal crops
g3c - bracken
g3c - other neutral grassland
g3c6 - Lolium-Cynosurus neutral grassland
g4 - modified grassland
h3h - mixed scrub
r1g - other standing water
u105 - buildings
u106 - other developed land
u3c - artificial unvegetated unsealed surface
w17 - lowland mixed deciduous woodland
w17 - other lowland mixed deciduous woodland
w1g - other woodland-broadleaved
Site Boundary
G1 Grassland Parcels referred to in text
N
0
100
200 m


Legend:
Long-eared species
Myotis sp
Serotine Es
Noctule Nn
Soprano pipistrelle Ppyg
Common pipistrelle Pp
Static Location
Bat transect route


Key:
Dormouse tube locations
Positive confirmation of dormouse
N


Key
Reptile mat
Grass snake juvenile
Grass snake - adult
Slow worm - adult female
Slow worm - adult male
Slow worm juvenile
N

ENHANCEMETS PLAN



Vincent Pro Bat Box

Material: Wood

Width: 180 mm
Height: 720 mm
Depth: 235 mm
Weight: 4.1 kg

Position: In a south facing location, minimum of 3 m above ground level.

Schwegler 2F Double Front Panel

Material: Woodcrete

Diameter: 160 mm
Height: 330 mm
Weight: 4.1 kg

Position: In a south facing location, minimum of 3 m above ground level.

Schwegler 2FN

Material: Woodcrete

Diameter: 160 mm
Height: 360 mm
Weight: 4.3 kg

Position: In a south facing location, minimum of 3 m above ground level.

Chavenage Bat Box

Material: Wood

Width: 380 mm
Height: 180 mm
Depth: 100 mm
Weight: 1.2 kg

Position: In a south facing location, minimum of 3 m above ground level.

Vivara Pro Barcelona Woodstone Open Nest Box

Suitable for wren, robin, pied wagtail and blackbird
Material: Woodstone

Height: 240 mm
Width: 190 mm
Depth: 175 mm

Position: Externally, at a minimum height of 3 m

Vivara Pro Seville 32mm Woodstone Nest Box

Suitable for: House sparrow, blue & great tit, nuthatch
Material: Woodstone

Height: 310 mm
Width: 200 mm
Depth: 200 mm
Weight: 6.9 kg

Position: Externally, at a minimum height of 3 m

Eco Sparrow Tower

Suitable for: House sparrow and individual blue & great tits
Material: Recycled LDPE plastic & FSC certified OSB

Height: 650 mm
Width: 170 mm
Depth: 170 mm
Weight: 2.8 kg

Position: Externally, at a minimum height of 2 m

Hibernaculum

Size: >2 m long x 0.5 m deep

Materials: Logs, branches, tree roots, inert hardcore, building rubble, rocks and bricks

Location:
- Create in marginal habitats adjacent to both low, open vegetation and dense vegetation
- Underground elements should be avoided on wet ground at risk of flooding

Creation:
- Line the base with sand &/ gravel to improve drainage
- Loosely back fill the void, placing the bricks, rocks, hardcore and rubble close to the bottom to prevent the structure collapsing
- Ensure timber and rubble protrudes from the edges of the structure to provide natural crevice entrances, which lead deeper into the structure
- Cover the pile with soil to 0.5 m in height and place on the turf removed to dig the void or sow with wildflower seed.

Appendix G4: Ansty Garden Community BNG Assessment

The Ecology Co-op
ENVIRONMENTAL CONSULTANTS
Building B, Lords Wood Barns, Petworth, West Sussex, GU28 9BS.

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Biodiversity Impact Calculation

Beechy Bottom Parkland Reserve, Haywards Heath

Author: Rozel Hopkins MSci (Hons)
Reviewed by: Owen Crawshaw BSc (Hons), MCIEEM

18th October 2023

Project No: P2831

The Ecology Co-operation Ltd
Registered Office: Greens Court, West Street, Midhurst, West Sussex, GU29 9NQ
Company number: 8905527

Document Control

Issue No	Author	Reviewer	Issue Date	Additions/alterations	Notes
Draft – Revision 0	RH	OC	18/10/23	N/A	

Report Summary

1. The Ecology Co-operation was commissioned by Fairfax Ltd to undertake a Biodiversity Impact Calculation for the proposed creation of a parkland reserve, to include significantly improved public access and instigation of a long-term management and rewilding regime at Beechy Bottom Parkland Reserve, Haywards Heath. These calculations used the Biodiversity Metric 4.0, to quantify net change in biodiversity after the restoration of the habitats on site.

2. It is estimated that the proposed scheme at this site will result in the loss of:

- **0.12ha of g1c bracken;**
- **0.21ha of u1c artificial unvegetated, unsealed surface;**
- **0.01ha of u1b developed land; sealed surface;**
- **0.09ha of g3c other neutral grassland – good condition;**
- **0.29ha of g4 modified grassland – poor condition;**
- **0.05ha of w1f lowland mixed deciduous woodland – poor condition;**
- **0.11ha of w1f lowland mixed deciduous woodland – moderate condition;**
- **0.23ha of w1g other woodland; broadleaved – poor condition;**
- **0.06ha of w1g other woodland; broadleaved – moderate condition;**
- **0.04km of h2a5 (11) species-rich native hedgerow with trees – good condition;**
- **0.01km of h2a5 (11) species-rich native hedgerow with trees – moderate condition.**

3. It is estimated that the proposed development scheme at this site will retain:

- **0.02ha of u1b developed land; sealed surface;**
- **0.09ha of h3a blackthorn scrub - good condition;**
- **0.05ha of h3h mixed scrub - moderate condition;**
- **0.03ha of h3h mixed scrub - moderate condition;**
- **1.41ha of g3c other neutral grassland - good condition;**
- **6.22ha of g4 modified grassland - poor condition;**
- **0.13ha of r1 (41) pond (non-priority habitat) - moderate condition;**
- **1.87ha of lowland mixed deciduous woodland - good condition;**
- **4.14ha of lowland mixed deciduous woodland - moderate condition;**
- **3.77ha of other woodland; broadleaved - moderate condition;**
- **0.57km of h2a6 native hedgerow - poor condition;**
- **0.7km of h2a5 (11) species-rich native hedgerow with trees - good condition;**
- **0.29km of h2a5 (11) species-rich native hedgerow with trees - moderate condition;**
- **0.17km of w1 (34) ecologically valuable line of trees - good condition;**
- **0.07km of w1 (34) ecologically valuable line of trees - moderate condition.**

4. It is estimated that the proposed development scheme at this site will enhance:

- **21.85ha of w (26) wood-pasture and parkland in moderate condition to good condition;**

- **15.51ha of w (26) wood-pasture and parkland in poor condition to good condition;**
- **2.58ha of g4 modified grassland in moderate condition to g3c other neutral grassland in moderate condition;**
- **4.18ha of g4 modified grassland in poor condition to g3c other neutral grassland in moderate condition;**
- **0.36ha of r1 (41) ponds (non-priority habitat) in poor condition to moderate condition;**
- **10.24ha of w1f lowland mixed deciduous woodland in poor condition to moderate condition;**
- **23.26ha of w1g other woodland; broadleaved in poor condition to moderate condition;**
- **3.65ha of w1g other woodland; broadleaved in moderate condition to good condition;**
- **2.58ha of w1f lowland mixed deciduous woodland in moderate condition to good condition;**
- **0.57km of h2a6 native hedgerow in poor condition to moderate condition.**

5. Post intervention, it is predicted that the following habitats will be created:

- **0.75ha of u1b developed land; sealed surface;**
- **0.43ha of u1c artificial unvegetated, unsealed surface;**
- **0.1832ha (5 individuals) of urban trees (medium size) - moderate condition.**

6. The following habitat losses are not included within the calculations, as they constitute a loss of irreplaceable habitat area:

- **0.08ha of w (26) wood-pasture and parkland in moderate condition (Grassland 2);**
- **0.05ha of w (26) wood-pasture and parkland in poor condition (Grassland 3).**

7. The Biodiversity Impact Calculation has demonstrated that the proposed scheme predicts a likely net gain of 177.39 habitat units (18.04%). The linear feature calculation for the proposed scheme indicates a likely net gain of 0.21 hedgerow units (0.89%).

8. The current scheme does not satisfy the trading rules of the Biodiversity Metric 4.0. The calculation has identified a 0.97 unit deficit for 'High Distinctiveness' linear habitat.

9. The calculations outlined within this report has been produced in light of the Habitat & Ecological Restoration Management Plan by Tardorna Consulting Limited and the most up-to-date illustrative landscape layout from Davies Landscape Architects provided to The Ecology Co-op in September 2023. Any changes to these plans will result in a need for the Biodiversity Metric to be updated accordingly.

CONTENTS PAGE

1 INTRODUCTION

1.1 Purpose of the Report

There is a movement in planning policy and legislation towards a requirement for all new developments to pursue opportunities for securing measurable 'net gains' in biodiversity following the release of an updated National Planning Policy Framework[1] by the Department of Housing, Communities and Local Government. A mandatory value of 10% net gain for all developments has now also been outlined within the Environment Act 2021[2].

This document includes a baseline 'Biodiversity Impact Calculation' (BIC) for the proposed creation of a public reserve. This will see a significant increase to public access and the instigation of a long-term management and rewilding regime at a site called Beechy Bottom, Haywards Heath. The proposals include the establishment of pedestrian and cycle tracks, with new pedestrian and cycle access points off Cuckfield Road to the south and Staplefield Road to the north, and the addition of two wooden viewing platforms. The proposals, if approved, would lead to the creation of the 'Beechy Bottom Parkland Reserve', which is dedicated to creating a resource of value for the public through 'access to nature' and also seeks to target both significant biodiversity net gain and target value for specific high value habitats and protected and notable species.

The calculation utilises the Biodiversity Metric 4.0 and assigns 'biodiversity units' to the pre-existing habitats contained within the site and those that are predicted to be lost, restored and/or created under the proposed new management of the area. This allows an objective comparison to be made between the existing biodiversity value of a given site and the predicted biodiversity value in the 30-year period, with the net change in biodiversity value subsequently quantified. Any units provided through the creation of the park will be used to offset net loss from the housing development Land East of Ansty[3].

The purpose of this document is to present the findings of the BIC based on the most up-to date existing habitat survey information, most up-to-date illustrative landscape layout from Davies Landscape Architects (revision 2131-DLA-DR-L-07) and the Habitat and Ecological Restoration Management Plan from Tadorna Consulting Ltd[4].

The results of the BIC are deemed accurate for the most recent illustrative layout, issued to The Ecology Co-op in September 2023.

This report was commissioned and produced at the request of Fairfax Ltd.

[1] HM Government (2023). National Planning Policy Framework. Department for Communities and Local Government. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

[2] HM Government (2021). Envrionment Act 2021 . Available online at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted

[3] The Ecology Co-op (2023). *Biodiversity Impact Calculation – Land East of Ansty.*

[4] Tardorna Consulting Ltd (2023). Habitat & Ecological Restoration Plan 0069_RevA.

1.2 Background

The site measures 103.21ha in area according to GIS mapping and the majority of the site comprises two large fields of historic parkland habitat which have mostly been managed as modified grassland and mixed broadleaved plantation woodland. Some areas of ancient semi-natural woodland remain to the west of the fields. In addition, three fields of short mown modified grassland lie at the north of the main parkland areas, the northernmost of which is managed as a sports field. Five ponds are located around the site; two woodland ponds artificially connected to each other, two field ponds and one further woodland pond to the north of the parkland. Copyhold stream runs along the west and southern boundaries of the site.

The site has been subject to an ecological and habitat assessments, including surveys for [redacted] and roosting bats. These are detailed in a Habitat & Ecological Restoration Management Plan by Tardorna Consulting Limited[5]. This document also outlines the proposed parkland restoration of the majority of the site for the next 25 years under a minimal-input and soft-touch grazing regime, as well as initial woodland management of the surrounding blocks. Two dog-walking fields of grassland meadows will be created at the north of the site. The northernmost field will be retained as a sports pitch. In order for the above habitats to be secured under the Environment Act's legal timeframe requirement, the habitats will need to be managed as above for an additional 5 years, to achieve the 30 year management period as minimum, though this would be during a simple 'maintenance' phase that follows all habitats present reaching their target condition.

Habitats (UKHab) within the site and along the site boundaries are shown in Figure 1, these include:

- g1c bracken
- u1c artificial unvegetated, unsealed surface
- u1b developed land; sealed surface
- h3a blackthorn scrub
- h3h mixed scrub
- w (26) wood-pasture and parkland
- g3c other neutral grassland (including g3c5 *Lolium-Cynosurus* neutral grassland)
- g4 modified grassland
- r1 (41) pond (non-priority habitat)
- w1f lowland mixed deciduous woodland
- w1g other woodland; broadleaved
- h2a6 native hedgerow
- h2a5 species-rich native hedgerow with trees
- w1 (34) ecologically valuable line of trees

The parkland character plan produced by Davies Landscape Architects, shown in Figure 2, and Appendix 2 in Tadorna Consulting Ltd's Habitat & Ecological Restoration Management Plan[5] provided the framework to map the proposed habitats for the site and led into the production of the UKHab map shown in Figure 3.

[5] Tardorna Consulting Ltd (2023). Habitat & Ecological Restoration Plan 0069_RevA.

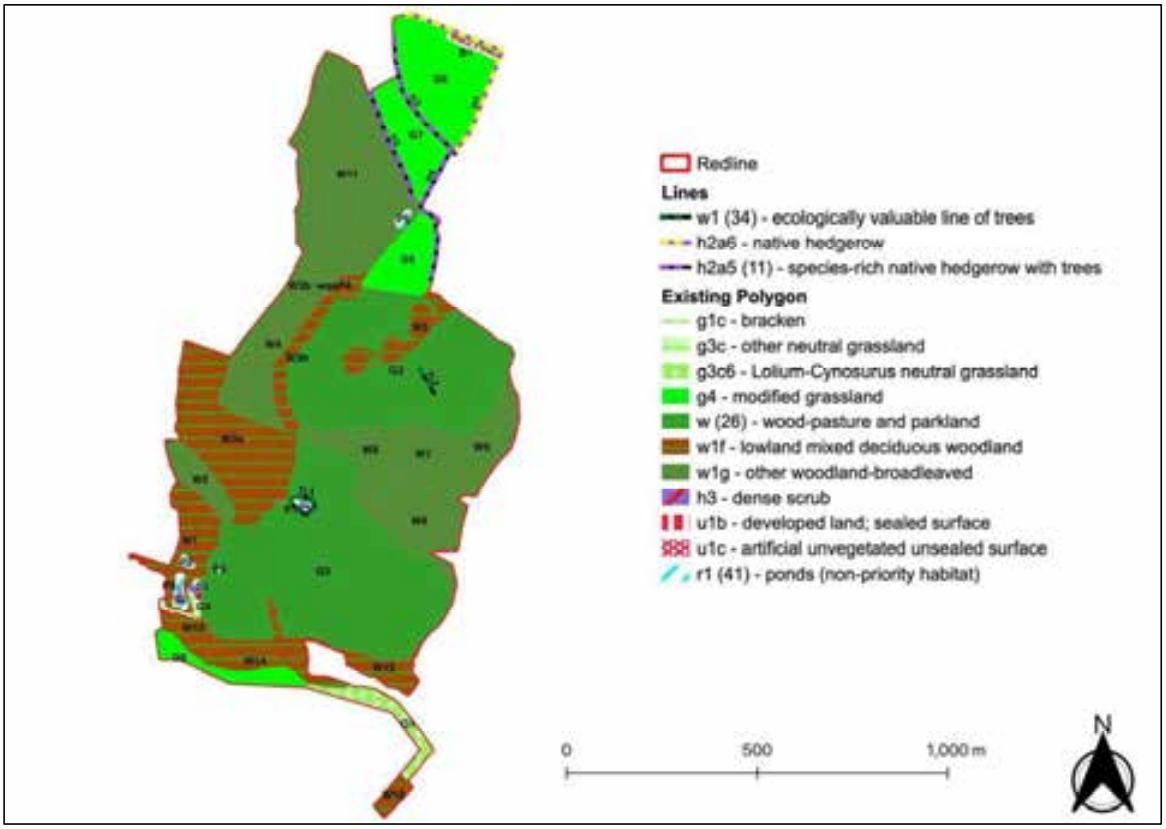


Figure 1. A UKHab map showing existing habitats within the site. The site boundary is indicated with a red line. Produced using QGIS software, version 3.28.5 – Firenze.

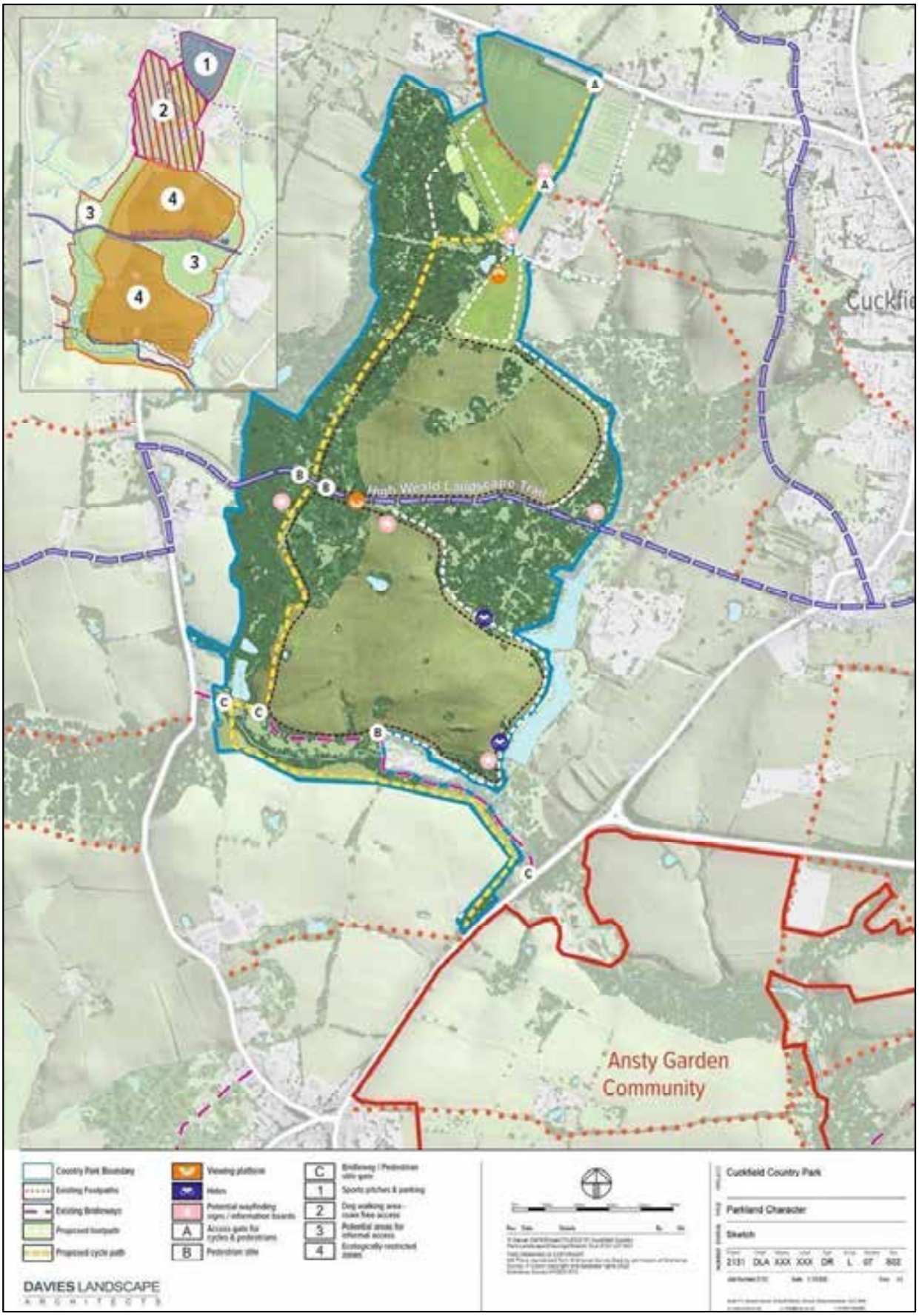


Figure 2. The proposed layout plan for Beechy Bottom Parkland Reserve, modified from Davies Landscape Architects. Issued September 2023, drawing number 2131-DLA-DR-L-07-S02.

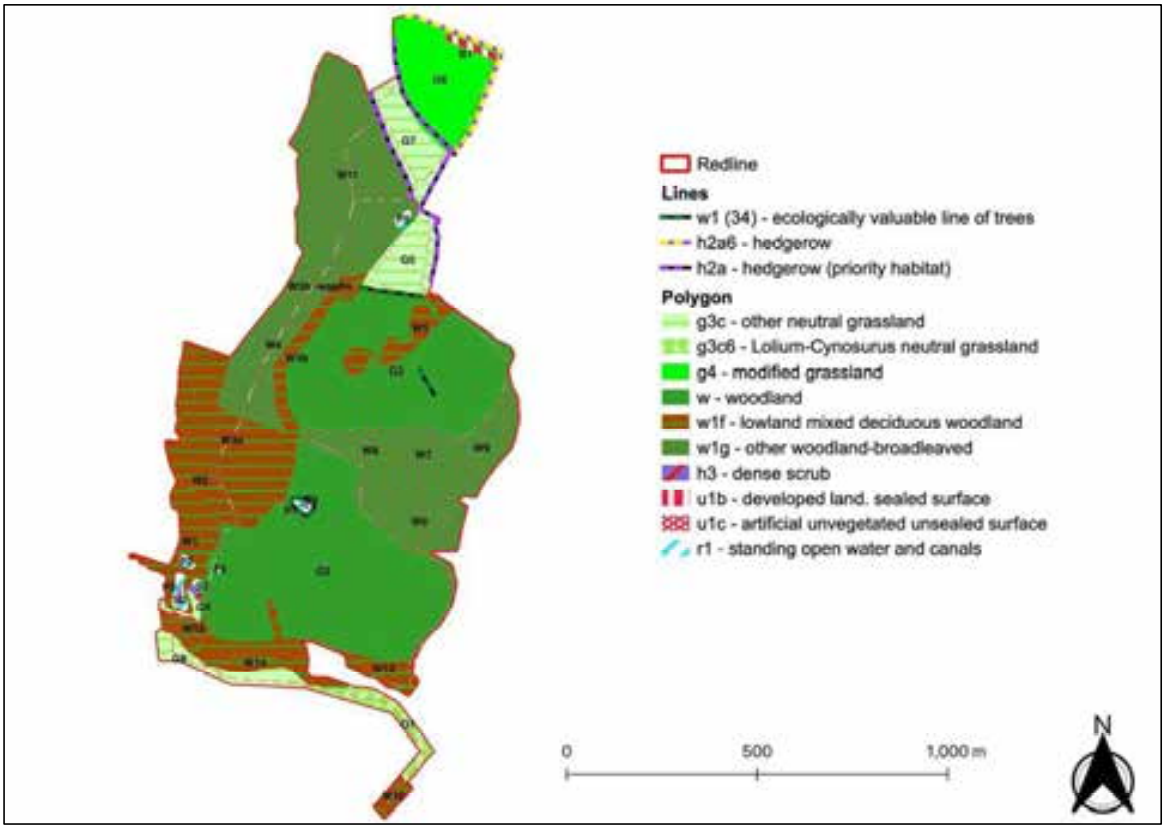


Figure 3. A UKHab map showing proposed habitats within the site. The site boundary is indicated with a red line. Produced using QGIS software, version 3.28.5 – Firenze.

1.3 Policy & Legislation

NPFF (2023)

The NPPF sets out the Government's view on how planners should balance nature conservation with development and helps ensure that Government meets its biodiversity commitments with regards to the operation of the planning system.

Paragraph 174b, states that council policies should;

- "*promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity*."

Paragraph 175d, states that when determining planning applications, authorities should:

- Refuse permission "*if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for"*
- Encourage *"opportunities to incorporate biodiversity improvements in and around developments, especially where this can secure measurable net gains for biodiversity."*

Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system[6].

In accordance with the NPPF, it is important that developments should contribute to local policies that enhance the natural environment by:

- minimising impacts on existing biodiversity and habitats and designated features
- establishing coherent ecological networks that are more resilient to current and future pressures
- providing net gains in biodiversity and habitats, wherever possible

Environment Act (2021)

The Environment Act sets a target of halting the decline in species through the inclusion of a legally binding 2030 species abundance target. Aiming to restore natural habitats and enhance biodiversity, the Act requires new developments to improve or create habitats for nature (through mechanisms such as mandatory Biodiversity Net Gain), and tackle deforestation. Going forwards, UK businesses will need to look closely at their supply chains as amongst other measures they will be prohibited from using commodities associated with wide-scale deforestation. Woodland protection measures are also strengthened through the Act.

[6] HM Government (2005) ODPM Circular 06/05 Government Circular: *Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System*. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf.

Local Policy

Policy DP38 (Biodiversity) of the current Mid-Sussex District Plan 2014-2031 from Mid Sussex District Council[7] notes that it will ensure development:

- *"Contributes and takes opportunities to improve, **enhance**, manage **and restore biodiversity** and green infrastructure so there is **a net gain in biodiversity** […];*
- *Protects existing biodiversity, so there is **no net loss of biodiversity;***
- *Unavoidable damage to biodiversity should be **offset through enhancements** and mitigation measures.*
- *Minimises habitat and species fragmentation and maximises opportunities to **enhance and restore ecological corridors** to connect natural habitats and increase coherence and resilience; and*
- *Promotes the **restoration**, management and expansion **of priority habitats** in the district."*

2 METHODOLOGY

This Biodiversity Impact Calculation uses the Biodiversity Metric 4.0 Calculation Tool published by Natural England[8]. This uses the Government Biodiversity Metric developed by DEFRA ('the Biodiversity Metric') to calculate 'habitat units' and 'hedgerow units' by multiplying the area (ha) or lengths (km), 'distinctiveness' (habitat type), 'condition' (quality), and strategic significance (location in relation to the authority's local strategy) of each habitat parcel.

The calculation provides a negative value to the biodiversity units where habitat is being directly lost. Where habitats are enhanced or created on-site, or off-site, the calculation gives a positive value but adds risk factors that account for uncertainty - difficulty in creating new habitats and time delays while they establish; habitats that are more difficult to restore or that will take a long time to reach a set target condition will score lower and therefore make a smaller positive contribution.

Where on-site gains are equal to or larger than the losses, the project is deemed to have neutral biodiversity impact or biodiversity 'net gain' respectively.

It should be noted that the Biodiversity Metric does not allow for 'trading down'; one of the key principles in measuring biodiversity net losses or gains is that habitats of high ecological importance cannot be offset by the creation of larger areas of habitats with lower value. The Biodiversity Metric 4.0 Calculation Tool includes a 'trading down correction' that deducts the number of biodiversity units that are not accounted for through the creation of equivalent high distinctiveness habitats than that lost. For example, the loss of a small area of lowland meadow priority habitat (very high distinctiveness) will not be offset by a larger area of modified grassland (low distinctiveness) and will only be offset by an equivalent area of habitat of the same distinctiveness or higher.

[7] Mid-Sussex District Coucil (2018) Mid-Sussex District Plan 2014-2031. Available online at: https://www.midsussex.gov.uk/planning-building/mid-sussex-district-plan/.

[8] Natural England (2023) The Biodiversity Metric 4.0 – Calculation Tool. Available online at: http://publications.naturalengland.org.uk/publication/6049804846366720

2.1 Data Sources

This calculation uses the most up to date survey information using botanical data and specific condition assessments gathered on 20th and 21st July, 19th and 22nd Sepember and 4th October 2023. The areas of each habitat category were measured using GIS mapping tools (QGIS). Condition assessments were made in accordance with the condition assessment sheets within The Biodiversity Metric 4.0 Technical Annex 1[9]. Applying the precautionary principle, a presumption for the higher condition was used where there was any uncertainty in the condition of existing habitats.

Aerial imagery of the site was overlaid by the proposed habitat creation plan to obtain the areas of the proposed habitats to be created under the Habitat & Ecological Restoration Management Plan and parkland character plan (see Figure 2). The Biodiversity Metric 4.0 uses a separate calculator spreadsheet for linear features. This works under the same principles but replaces areas of habitat with linear length of a feature. The hedgerow units generated for linear features are not equivalent or interchangeable with biodiversity calculations for areas of habitat.

The Biodiversity Metric 4.0 uses a separate calculator spreadsheet for linear features. This works under the same principles as above but replaces areas of habitat with linear length of a feature. The hedgerow units generated for linear features are not equivalent or interchangeable with biodiversity calculations for areas of habitat.

3 RESULTS

3.1.1 Existing Habitats Assessment

A summary of habitats and condition assessments are provided in Table 1 and Table 2. Full results of condition assessments for habitats which require it (using the Biodiversity Metric 4.0 condition assessment pro-forma) are provided in Appendix 1.

Overall, the on-site calculated baseline is 978.94 habitat units and 23.76 hedgerow units.

Table 1. Existing area habitat conditions for Beechy Bottom Parkland Reserve.

Area Habitats			**Condition Assessments**
Habitat Type in Biodiversity Metric and UK Habitat (UKHab) Classification Code	**Location Reference**	**Area (ha)**	
Grassland – bracken (g1c)	Area B1	0.12	N/A
Urban – artificial unvegetated, unsealed surface (u1c)	Unvegetated pathway	0.21	N/A
Urban – developed land; sealed surface (u1b)	All buildings and sealed tarmac	0.03	N/A
Heathland and shrub – blackthorn scrub (h3a)	Scrub S1	0.09	Good
Heathland and shrub – mixed scrub (h3h)	Scrub S2	0.05	Moderate
	Scrub S3	0.03	Good

[9] Natural England (2023) *Biodiversity Metric 4.0 – Technical Annex 1 – Condition Assessment Sheets and Methodology*. Available online at: http://publications.naturalengland.org.uk/publication/6049804846366720

Woodland and forest – wood-pasture and parkland	Field G2	21.93	Moderate
	Field G3	15.56	Poor
Grassland – other neutral grassland (g3c)	Field G1	1.24	Moderate
	Field G4	0.26	Good
Grassland – modified grassland (g4)	Field G5	2.66	Moderate
	Field G6	6.27	Poor
	Field G7	2.88	Poor
	Field G8	1.46	Poor
Lakes – ponds (non-priority habitat) (r1)	Pond 1	0.1	Moderate
	Pond 2	0.1	Poor
	Pond 3	0.24	Poor
	Pond 5	0.12	Poor
	Pond 6	0.02	Poor
Woodland and forest – lowland mixed deciduous woodland (w1f)	Woodland 1	2.6	Poor
	Woodland 3a	7.69	Poor
	Woodland 3b	1.87	Good
	Woodland 5	1.68	Moderate
	Woodland 10	0.44	Moderate
	Woodland 12	2.07	Moderate
	Woodland 13	1.16	Moderate
	Woodland 14	1.48	Moderate
Woodland and forest – other woodland; broadleaved (w1g)	Woodland 2	1.58	Moderate
	Woodland 4	5.32	Poor
	Woodland 6	3.82	Moderate
	Woodland 7	2.08	Moderate
	Woodland 8	2.75	Poor
	Woodland 9	3.06	Poor
	Woodland 11	12.36	Poor

Table 2. Existing linear habitat conditions for Beechy Bottom Parkland Reserve.

Linear Habitats			Condition Assessments
Habitat Type in Biodiversity Metric and UK Habitat (UKHab) Classification Code	**Location Reference**	**Length (km)**	
Native hedgerow (h2a6)	Hedgerow H1	0.57	Poor
Species-rich native hedgerow with trees (h2a5 (11))	Hedgerow H2	0.35	Good
	Hedgerow H3	0.3	Moderate
	Hedgerow H4	0.39	Good
	Treeline TL1	0.17	Good
	Treeline TL2	0.07	Moderate

3.1.2 Habitat Losses and Gains

3.1.2.1 Area Habitat Units

It is estimated that the proposed habitat restoration plan at this site will result in the loss of:

- 0.12ha of g1c bracken;
- 0.21ha of u1c artificial unvegetated, unsealed surface;
- 0.01ha of u1b developed land; sealed surface;
- 0.09ha of g3c other neutral grassland - good condition;
- 0.29ha of g4 modified grassland - poor condition;
- 0.05ha of w1f lowland mixed deciduous woodland - poor condition;
- 0.11ha of w1f lowland mixed deciduous woodland - moderate condition;
- 0.23ha of w1g other woodland; broadleaved - poor condition;
- 0.06ha of w1g other woodland; broadleaved - moderate condition;
- 0.04km of h2a5 (11) species-rich native hedgerow with trees - good condition;
- 0.01km of h2a5 (11) species-rich native hedgerow with trees - moderate condition.

It is estimated that the proposed habitat restoration plan at this site will retain:

- 0.02ha of u1b developed land; sealed surface;
- 0.09ha of h3a blackthorn scrub – good condition;
- 0.05ha of h3h mixed scrub – moderate condition;
- 0.03ha of h3h mixed scrub – moderate condition;
- 1.41ha of g3c other neutral grassland – good condition;
- 6.22ha of g4 modified grassland – poor condition;
- 0.13ha of r1 (41) pond (non-priority habitat) – moderate condition;
- 1.87ha of lowland mixed deciduous woodland – good condition;
- 4.14ha of lowland mixed deciduous woodland – moderate condition;
- 3.77ha of other woodland; broadleaved – moderate condition;

It is estimated that the proposed habitat restoration plan at this site will enhance:

- 21.85ha of w (26) wood-pasture and parkland in moderate condition to good condition;
- 15.51ha of w (26) wood-pasture and parkland in poor condition to good condition;
- 2.58ha of g4 modified grassland in moderate condition to g3c other neutral grassland in moderate condition;

- 4.18ha of g4 modified grassland in poor condition to g3c other neutral grassland in moderate condition;
- 0.36ha of r1 (41) ponds (non-priority habitat) in poor condition to moderate condition;
- 10.24ha of w1f lowland mixed deciduous woodland in poor condition to moderate condition;
- 23.26ha of w1g other woodland; broadleaved in poor condition to moderate condition;
- 3.65ha of w1g other woodland; broadleaved in moderate condition to good condition;
- 2.58ha of w1f lowland mixed deciduous woodland in moderate condition to good condition;

Post-intervention, it is estimated that the following habitats will be created:

- 0.75ha of u1b developed land; sealed surface;
- 0.43ha of u1c artificial unvegetated, unsealed surface;
- 0.1832ha of urban trees (five individuals of medium size) – moderate condition.

The above created habitats are estimated with the assumptions that the footpaths will be formed of 1.5m areas of unsealed materials and that the cycle paths will be formed of a more formalised 2m wide routes.

The following habitat losses are not included within the calculations, as they constitute a loss of irreplaceable habitat area:

- 0.08ha of w (26) wood-pasture and parkland in moderate condition (Grassland 2);
- 0.05ha of w (26) wood-pasture and parkland in poor condition (Grassland 3).

As irreplaceable habitats cannot be accounted for in the metric and in accordance with Natural England advice, bespoke compensation to address these specific losses will need to be agreed with the local planning authority.

3.1.2.2 Linear Habitat Units

It is estimated that the proposed habitat restoration plan at this site will result in the loss of:

- 0.04km of h2a5 (11) species-rich native hedgerow with trees – good condition;
- 0.01km of h2a5 (11) species-rich native hedgerow with trees – moderate condition.

It is estimated that the proposed habitat restoration plan at this site will retain:

- 0.57km of h2a6 native hedgerow – poor condition;
- 0.7km of h2a5 (11) species-rich native hedgerow with trees – good condition;
- 0.29km of h2a5 (11) species-rich native hedgerow with trees – moderate condition;
- 0.17km of w1 (34) ecologically valuable line of trees – good condition.
- 0.07km of w1 (34) ecologically valuable line of trees – moderate condition.

It is estimated that the proposed habitat restoration plan at this site will enhance:

- 0.57km of h2a6 native hedgerow in poor condition to moderate condition

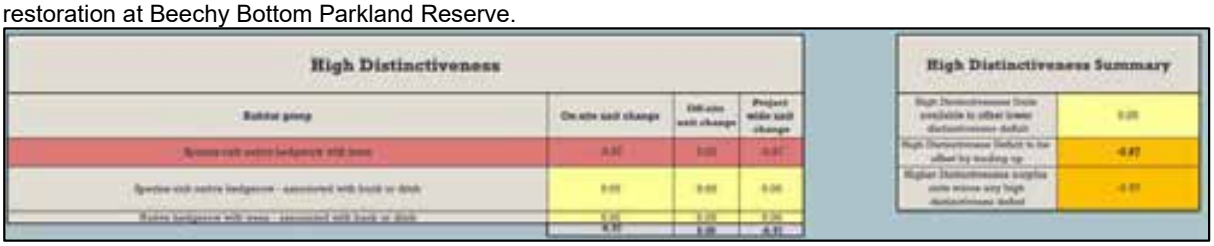
4 FINAL RESULTS

The overall results of the calculations are presented in Table 3. Please refer to the Biodiversity Metric 4.0 – Calculation Tool supplied with this document (submitted separately) for full details of the calculation.

Table 3. Headline results of the Biodiversity Impact Calculation for the proposed habitat restoration at Beechy Bottom Parkland Reserve.

FINAL RESULTS		
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	177.39
	Hedgerow units	0.21
	Watercourse units	0.00
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	18.04%
	Hedgerow units	0.89%
	Watercourse units	0.00%
Trading rules satisfied?	No - Check Trading Summaries ▲	

Table 4. Trading summary linear habitat results of the Biodiversity Impact Calculation for the proposed habitat restoration at Beechy Bottom Parkland Reserve.



High Distinctiveness			
Habitat group	On site unit change	Off-site unit change	Project wide unit change

High Distinctiveness Summary	
	-0.97
	-0.97

4.1 Conclusions

The Biodiversity Impact Calculation, using the Biodiversity Metric 4.0, has demonstrated that the proposed scheme will results in a likely net gain of **177.39 habitat units (18.04%).**

The linear feature calculation for the proposed scheme results in a likely net gain of **0.21 hedgerow units (0.89%)**.

The current scheme does not satisfy the trading rules within the Biodiversity Metric 4.0 for linear habitats. The calculation has identified a 0.97 unit deficit for 'High Distinctiveness' linear habitat.

It is likely that the proposed net gains will need to be secured by a conservation covenant or other suitable agreement, which commit future management of the site to the details provided within the Habitat & Ecological Restoration Management Plan and a suitable monitoring programme as appropriate will need to be agreed to ensure the delivery of the target habitat conditions.

Should you need any further advice on the information provided above, please do not hesitate to contact The Ecology Co-op.

APPENDIX 1 – Habitat Condition Assessment Pro-formas

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**G1**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other neutral grassland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Grassland – med, high and v. high**

Habitat description

Dominated by sweet vernal *Anthoxanthum odoratum* with the following other species recorded; perennial rye *Lolium perenne*, Yorkshire fog *Holcus lanatus*, common bent *Agrostis capillaris*, annual ryegrass *Lolium multiflorum*, cocks-foot grass *Dactylis glomerata*, red fescue *Festuca rubra*, germander speedwell *Veronica chamaedrys*, meadow buttercup *Ranunculus acris*, creeping buttercup *R. repens*, clustered dock *Rumex conglomeratus*, nodding thistle *Carduus nutans*, creeping thistle *Cirsium arvense*, common knapweed *Centaurea nigra*, dandelion *Taraxacum officinale* agg., red clover *Trifolium pratense*, cut-leaved cranesbill *Geranium dissectum*, lesser trefoil *Trifolium dubium*, hairy tare *Vicia hirsuta*, white clover *Trifolium repens*, broad-leaved dock *Rumex obtusifolius*, ragwort *Jacobaea vulgaris*, cuckoo flower *Cardamine pratensis*, autumn hawkbit *Scorzoneroides autumnalis*, common mouse-ear *Cerastium fontanum*, common fleabane *Pulicaria dysenterica*, tufted vetch *Vicia cracca*, common sorrel *Rumex acetosa* and ground ivy *Glechoma hederacea*.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F								TOTAL
Result	Y	Y	Y	Y	Y	Y								7/7

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – passed criteria A and F**	Condition (Good/Moderate/Poor):	**Good**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**G4**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other neutral grassland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Grassland – med, high and v. high**

Habitat description

Perennial rye, crested dog's-tail *Cynosurus cristatus*, Yorkshire fog, common bent, sweet vernal grass, annual rye grass and cock's-foot grasses, soft rush *Juncus effusus* and pendulous sedge *Carex pendula*. Forbs recorded included creeping buttercup, creeping thistle, common knapweed, broad-leaved dock, birds-foot trefoil, meadow buttercup, creeping cinquefoil, white clover, red clover, imperforate St John's-wort *Hypericum maculatum*, cow parsley *nthriscus sylvestris*, ground ivy, common nettle *Urtica dioica*, common hogweed *Heracleum sphondylium*, spear thistle *Cirsium vulgare* and common sorrel.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F								TOTAL
Result	**Y**	**Y**	**Y**	**N**	**Y**	**Y**								**6/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – passed criteria A and F**	Condition (Good/Moderate/Poor):	**Good**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**G5**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Modified grassland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Grassland - low**

Habitat description

Perennial rye-dominated grassland with rough meadow-grass *Poa trivialis*, meadow foxtail *Alopecurus pratensis*, annual ryegrass, cocks-foot and common bent also recorded. Forbs identified included common mouse-ear, marsh cudweed *Gnaphalium uliginosum*, creeping buttercup, common ragwort, greater plantain *Plantago major*, broad-leaved dock, clustered dock *Rumex conglomeratus*, creeping thistle, white clover, scentless mayweed *Tripleurospermum inodorum* and bristly oxtongue *Helminthotheca echioides*.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	**N**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**							**6/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – failed criterion A**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**G6**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Modified grassland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Grassland - low**

Habitat description

Shortly-mown grass sports pitch of solely perennial rye and annual ryegrass.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	**N**	**N**	**N**	**N**	**N**	**Y**	**Y**							**2/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – failed criterion A**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**G7**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Modified grassland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Grassland - low**

Habitat description

Former arable land reseeded within perennial ryegrass and dominated by this and creeping buttercup. Occasional Yorkshire fog detected as well as annual ryegrass and common bent. Forbs identified included Shepherd's purse *Capsella bursa-pastoris*, doves-foot cranesbill *Geranium molle*, bristly oxtongue, prickly sow-thistle *Sonchus asper*, common ragwort, nettle, daisy *Bellis perennis*, fleabane, smooth cat's-ear *Hypochaeris glabra*, common groundsel *Senecio vulgaris* and germander speedwell.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	**N**	**Y**	**N**	**Y**	**N**	**Y**	**Y**							**4/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – failed criterion A**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**G8**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Modified grassland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Grassland - low**

Habitat description

Field of perennial ryegrass and annual ryegrass with creeping buttercup, birds-foot trefoil *Lotus corniculatus* and creeping thistle.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	**N**	**Y**	**N**	**N**	**N**	**Y**	**Y**							**3/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – failed criterion A**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**19/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Dan Bennett & Rozel Hopkins**	Unique polygon reference(s)	**G2**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Wood-pasture and parkland**
Onsite or offsite?	**Offsite – using onsite data and available resources from MAGIC and OS mapping**	Condition sheet used	**Wood-pasture and parkland**

Habitat description

Area of managed grassland with average sward height of 10cm. Dominated by grasses with an average 5 species/m² of abundant sweet vernal, frequent meadow foxtail, Yorkshire fog and red fescue and rare cocksfoot and common bent. Forbs identified included germander speedwell, hairy tare, lesser stitchwort, broad-leaved dock, meadow buttercup, common vetch *Vicia sativa* and silver weed *Potentilla anserina*. There are pockets of veteran sweet chestnut *Castanea sativa* trees scattered across the grassland and various mature native trees scattered in the grassland. Small patches of mixed scrub are located on the southern boundary of the woodland.




Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H						TOTAL
Result	**Y**	**Y**	**N**	**N**	**Y**	**Y**	**N**	**Y**						**5/8**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – passed criterion A**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**19/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Dan Bennett & Rozel Hopkins**	Unique polygon reference(s)	**G3**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Wood-pasture and parkland**
Onsite or offsite?	**Offsite – using onsite data and available resources from MAGIC and OS mapping**	Condition sheet used	**Wood-pasture and parkland**

Habitat description

Area of managed grassland with average sward height of 10cm. Dominated by grasses with an average 5 species per m^2 of abundant sweet vernal, frequent meadow foxtail, Yorkshire fog and red fescue and rare cocksfoot and common bent. Forbs identified included germander speedwell, hairy tare, lesser stitchwort, broad-leaved dock, meadow buttercup, common vetch and silver weed. There are pockets of veteran sweet chestnut trees scattered across the grassland and various mature native trees scattered in the grassland. Small patches of mixed scrub are located on the southern boundary of the woodland.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H						TOTAL
Result	N	N	N	N	Y	Y	N	Y						3/8

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – failed criterion A**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**S1**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Blackthorn scrub**
Onsite or offsite?	**Onsite**	Condition sheet used	**Scrub**

Habitat description

Blackthorn *Prunus spinosa* scrub located in amongst Grassland 4 (G4). Frequent silver birch *Betula pendula*, occasional bramble *Rubus fruticosus* and holly *Ilex aquifolium* and rare hawthorn *Crataegus monogyna* also seen.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E									TOTAL
Result	Y	Y	Y	Y	Y									5/5

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Good**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**S2**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Mixed scrub**
Onsite or offsite?	**Onsite**	Condition sheet used	**Scrub**

Habitat description

Scrub located in the centre of Pond 3 (P3) comprising of silver birch, hazel *Corylus avellana*, buddleia *Buddleja davidii*, blackthorn, pendulous sedge, dog rose *Rosa canina*, bramble and horse chestnut. Inaccessible due to pond but viewed with binoculars.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E									TOTAL
Result	Y	Y	N	Y	Y									4/5

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**S3**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Mixed scrub**
Onsite or offsite?	**Onsite**	Condition sheet used	**Scrub**

Habitat description

Scrub located in the centre of Pond 1 (P1) comprising of downy birch *Betula pubescens*, goat willow *Salix caprea*, another willow *Salix* species, pendulous sedge, bramble and hawthorn. Some willows are mature trees. Inaccessible due to pond but viewed with binoculars.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E									TOTAL
Result	Y	Y	Y	Y	Y									5/5

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Good**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**20/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**P1**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Pond (non-priority habitat)**
Onsite or offsite?	**Onsite**	Condition sheet used	**Pond**

Habitat description

Pond bordered by mature tree lines with scrub in the centre.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I					TOTAL
Result	N	Y	Y	Y	Y	Y	Y	N	N					6/9

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**None**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**20/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**P2**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Pond (non-priority habitat)**
Onsite or offsite?	**Onsite**	Condition sheet used	**Pond**

Habitat description

Woodland fishing pond with scrub in the centre, artificially connected to Pond 3 and stream.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	**N**	**Y**	**Y**	**N**	**N**	**N**	**N**							**2/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**None**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**20/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**P3**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Pond (non-priority habitat)**
Onsite or offsite?	**Onsite**	Condition sheet used	**Pond**

Habitat description

Woodland fishing pond with scrub in the centre, artificially connected to Pond 2 and stream.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	N	Y	Y	N	N	N	N							2/7

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**None**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023 & 04/10/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**PS**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Pond (non-priority habitat)**
Onsite or offsite?	**Onsite**	Condition sheet used	**Pond**

Habitat description

Woodland pond

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	**N**	**Y**	**N**	**Y**	**Y**	**Y**	**Y**							**3/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**None**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**P6**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Pond (non-priority habitat)**
Onsite or offsite?	**Onsite**	Condition sheet used	**Pond**

Habitat description

Pond bordered by mature scrub of silver birch and hawthorn scrub with bramble, dog rose and beech *Fagus sylvatica* also recorded. Lots of dead and dying silver birch recorded.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I					TOTAL
Result	**N**	**Y**	**N**	**Y**	**Y**	**Y**	**Y**	**N**	**N**					**5/9**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**None**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W1**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Mixed broadleaved woodland with dense ground layer, with abundant common nettle. Tree species include ash *Fraxinus excelsior* (most appear to have ash dieback), beech, hazel, oak *Quercus robur*, elder *Sambucus nigra*, hawthorn, blackthorn, alder *Alnus glutinusa*, holly, field maple *Acer campestre* and yew *Taxus baccata*. Within the northern extent there is cherry laurel *Prunus laurocerasus* and *Rhododendron ponticum*. Ground flora includes abundant common nettle, frequent cow parsley, occasional wood meadow-grass *Poa nemoralis*, cleavers *Galium aparine* and rare false brome *Brachypodium sylvaticum*, greater stitchwort *Stellaria holostea*, wood speedwell *Veronica montana*, wood sedge *Carex sylvatica*, primrose *Primula vulgaris*, remote sedge *Carex remota*, wood anemone *Anemone nemorosa*, bugle *Ajuga reptans*, wood avens *Geum urbanum*, broad buckler *Dryopteris dilatata*, lesser celandine *Ficaria verna*, ground ivy, male fern *Dryopteris filix-mas*, red campion *Silene dioica*, rough meadow grass, hedge woundwort *Stachys sylvatica*, lady fern *Athyrium filix-femina*, dog's mercury *Mercurialis perennis*, pendulous sedge, opposite-leaved golden-saxifrage *Chrysosplenium oppositifolium*, enchanters nightshade *Circaea lutetiana* and hairy wood rush *Luzula acuminata*.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**2**	**1**	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**2**	**25/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**W2**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Old downy birch and hornbeam *Carpinus betulus* plantation woodland. Dense canopy and therefore limited understorey. Trees are of a uniform age.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**2**	**3**	**2**	**3**	**3**	**2**	**3**	**1**	**3**	**2**	**1**	**2**	**29/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W3a**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Broadleaved mixed woodland with diverse ground layer. Hazel, field maple, silver birch, willow, hornbeam, beech, horse chestnut, sweet chestnut *Castanea sativa*, sycamore *Acer pseudoplatanus*, ash and English elm *Ulmus procera*. Becomes dominated by sycamore to the north. Bluebell *Hyacinthoides non-scripta*, wood anemone, false brome, germander speedwell, herb Robert *Geranium robertianum*, pendulous sedge, remote sedge *Carex remota*, wood sedge, bugle, dog's mercury, male fern, enchanter's nightshade, wood speedwell, wood violet *Viola odorata*, wood meadow-grass.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**2**	**25/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W3b**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Woodland with similar composition to W3a but better management, with more mature and young trees, deadwood and less disturbance overall. Areas dominated by bramble.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**3**	**2**	**3**	**3**	**3**	**3**	**2**	**3**	**2**	**2**	**1**	**3**	**3**	**33/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Good**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W4**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Plantation woodland with ash (dieback is present), sycamore, oak and sweet chestnut. Cherry *Prunus* sp. and poplar *Populus* sp. also present. Understorey comprised of wood meadow-grass, rough meadow-grass, germander speedwell and wood avens.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	1	2	3	2	3	1	2	2	1	1	1	1	1	21/39

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W5**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Field maple and ash-dominant woodland with English oak, hawthorn, sweet chestnut and holly also recorded. One veteran field maple tree identified. Ground flora comprised of dense bramble and nettle, boarded by bracken *Pteridium aquilinum* and English bluebell.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	3	2	3	3	3	3	3	2	1	2	2	1	3	27/39

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**20/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W6**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Woodland of goat willow, sycamore, English oak, wild cherry *Prunus avium*, silver birch and hawthorn. Ground flora dominated by bramble and bracken with soft rush, perennial rye and sparse mosses also recorded.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	1	3	3	3	3	1	2	2	2	1	1	2	3	27/39

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**20/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W7**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

English oak and silver birch-dominated plantation woodland, with sycamore and hawthorn also recorded. Small stream running through the centre of the parcel, where hawthorn begins to dominate. Ground flora included bracken, bramble and soft rush. Gipsywort *Lycopus europaeus*, water mint *Mentha aquatica* and pendulous sedge recorded close to the stream.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	2	2	3	3	3	2	1	3	2	2	1	2	3	29/39

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	N	Condition (Good/Moderate/Poor):	Moderate

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 – AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W8**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

English oak plantation woodland, with one veteran oak seen in the centre of the site. Sycamore also dominates in some areas, with hawthorn recorded occasionally. Wild cherry and holly recorded in the southern sections, alongside a conifer species. Ground flora included bracken, bramble, pendulous sedge, grey sedge *Carex divulsa*, germander speedwell and nettle.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**2**	**1**	**2**	**2**	**2**	**2**	**3**	**1**	**2**	**1**	**2**	**2**	**24/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**20/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W9**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Hawthorn-dominated woodland with sycamore, holly, beech, English oak, field maple, alder, common lime *Tilia x europaea* and horse chestnut also recorded. Silver birch trees dominate towards the north. Some veteran oaks identified as well as fallen deadwood. Rare amounts of rhododendron detected. Ground flora was dominated by bramble and pendulous sedge with bracken, field horsetail, ivy, enchanted nightshade, wild strawberry *Fragaria vesca*, wood spurge *Euphorbia amygdaloides* and wood melick *Melica uniflora* also recorded.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**1**	**2**	**1**	**2**	**3**	**1**	**1**	**3**	**1**	**1**	**2**	**2**	**3**	**23/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**04/10/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**W10**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Hawthorn, blackthorn, ask, English oak and sycamore species with ground flora of enchanter's nightshade, ground ivy, bracken, nettle, bramble and dog's mercury.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**2**	**2**	**2**	**3**	**2**	**2**	**3**	**1**	**3**	**2**	**2**	**2**	**28/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W11**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Plantation woodland of ash, English oak, goat willow *Salix caprea*, sweet chestnut likely planted within the last 20 years. Ground layer remanent of neutral grassland with abundant Yorkshire fog and nettle, common fleabane, pendulous sedge, cleavers and ragwort. Ash dieback evident.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	1	2	3	2	3	1	2	1	1	1	1	2	1	21/39

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W12**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Mixed broadleaf woodland dominated by silver birch with elder, English oak, blackthorn, horse chestnut, hawthorn, beech, ash, wild cherry and holly also recorded. Ground flora recorded included false brome, pendulous sedge, bush vetch, ground ivy, nettle, bracken, common hogweed, germander speedwell and wood avens.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**3**	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**3**	**26/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023 & 04/10/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W14**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Beech-dominated woodland with hawthorn, English oak, holly, ash, silver birch, horse chestnut, hazel and aspen also recorded. Ground flora comprised of pendulous sedge, spurge laurel, bracken, wood spurge and bramble. Veteran beech tree recorded. Undergoing clearance works in south-western section in October 2023.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**2**	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**31/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W15**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Mixed broadleaved woodland dominated by nettle. Tree species recorded included beech, hazel, elder, hawthorn, blackthorn, English oak, ash, alder, holly and field maple. Ground flora included, false brome, wood meadow-grass, rough meadow-grass, hairy sedge, wood sedge, broad buckler fern, lesser celandine, ground ivy, male fern, cow parsley, cleavers, red campion, enchanter's nightshade, hedge woundwort, lady fern and dogs' mercury. Ancient woodland indicators present including primrose, pendulous sedge, wood anemone, remote sedge and wood speedwell in low abundance. Undergoing clearance works in south-eastern section in October 2023.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**2**	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**1**	**1**	**1**	**3**	**28/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - LINEAR HABITATS				
Date		04/10/2023	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	Baseline
Surveyor name		Kate Lewis	Condition sheet used	Line of trees
Project / development name		Beechy Bottom	Metric 4.0 habitat type	Line of trees
Onsite or offsite?		Onsite		
Allocate pass 'Y' or fail 'N'.				
Attributes and functional groupings (A, B, C, D and E)		Habitat parcel reference		
		TL1	TL2	
A	Native	Y	Y	
B	Canopy gaps	Y	N	
C	Veteran features and/or ecological niches	Y	Y	
D	Undisturbed vegetated strip	Y	Y	
E	Healthy condition trees	Y	N	
Total		6/6	3/5	
Condition - Good (G), Moderate (M) or Poor (P)		Good	Moderate	

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - LINEAR BASED HABITATS					
Date		04/10/2023	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)		Baseline
Surveyor name		Libby Morris	Condition sheet used	Hedgerow	
Project / development name		Beechy Bottom	Onsite or offsite?	Onsite	
Allocate pass 'Y' or fail 'N'. Attributes and functional groupings (A, B, C, D and E)					
Habitat parcel reference		H1	H2	H3	H4
Metric 4.0 habitat type and description		**Native hedgerow** – dominated by bramble	**Species-rich hedgerow with trees** – English oak, bramble, hawthorn, willow species, ivy, field maple, sycamore, hazel, blackthorn, goat willow, dog rose.	**Species-rich hedgerow with trees** – dominant ash with dog rose, hawthorn, willow species, bramble, English oak, sycamore, field maple and blackthorn.	**Species-rich hedgerow with trees** – dominated by field maple with hawthorn, hazel, ash, backthorn, willow species and bramble recorded
A1	Height	N	Y	Y	Y
A2	Width	N	Y	Y	Y
B1	Gap-hedge base	Y	Y	Y	Y
B3	Gap-hedge canopy continuity	Y	Y	Y	Y
C1	Unidisturbed ground and perennial vegetation	N	Y	Y	Y
C2	Nutrient-enriched perennial vegetation	N	N	N	Y
D1	Invasive and neophyte species	Y	Y	Y	Y
D2	Current damage	Y	Y	Y	Y
E1	Tree class	N/A	Y	N	N
E2	Tree health	N/A	Y	N	Y
Total		4/8	9/10	7/10	9/10
Condition - Good (G), Moderate (M) or Poor (P)		Poor	Good	Moderate	Good

Appendix G5: Beechy Bottom Parkland Reserve BNG Assessment

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Biodiversity Impact Calculation

Beechy Bottom Parkland Reserve, Haywards Heath

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18th October 2023

Project No: P2831

The Ecology Co-operation Ltd
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Document Control

Issue No	Author	Reviewer	Issue Date	Additions/alterations	Notes
Draft – Revision 0	RH	OC	18/10/23	N/A	

Report Summary

1. The Ecology Co-operation was commissioned by Fairfax Ltd to undertake a Biodiversity Impact Calculation for the proposed creation of a parkland reserve, to include significantly improved public access and instigation of a long-term management and rewilding regime at Beechy Bottom Parkland Reserve, Haywards Heath. These calculations used the Biodiversity Metric 4.0, to quantify net change in biodiversity after the restoration of the habitats on site.

2. It is estimated that the proposed scheme at this site will result in the loss of:

- **0.12ha of g1c bracken;**
- **0.21ha of u1c artificial unvegetated, unsealed surface;**
- **0.01ha of u1b developed land; sealed surface;**
- **0.09ha of g3c other neutral grassland – good condition;**
- **0.29ha of g4 modified grassland – poor condition;**
- **0.05ha of w1f lowland mixed deciduous woodland – poor condition;**
- **0.11ha of w1f lowland mixed deciduous woodland – moderate condition;**
- **0.23ha of w1g other woodland; broadleaved – poor condition;**
- **0.06ha of w1g other woodland; broadleaved – moderate condition;**
- **0.04km of h2a5 (11) species-rich native hedgerow with trees – good condition;**
- **0.01km of h2a5 (11) species-rich native hedgerow with trees – moderate condition.**

3. It is estimated that the proposed development scheme at this site will retain:

- **0.02ha of u1b developed land; sealed surface;**
- **0.09ha of h3a blackthorn scrub - good condition;**
- **0.05ha of h3h mixed scrub - moderate condition;**
- **0.03ha of h3h mixed scrub - moderate condition;**
- **1.41ha of g3c other neutral grassland - good condition;**
- **6.22ha of g4 modified grassland - poor condition;**
- **0.13ha of r1 (41) pond (non-priority habitat) - moderate condition;**
- **1.87ha of lowland mixed deciduous woodland - good condition;**
- **4.14ha of lowland mixed deciduous woodland - moderate condition;**
- **3.77ha of other woodland; broadleaved - moderate condition;**
- **0.57km of h2a6 native hedgerow - poor condition;**
- **0.7km of h2a5 (11) species-rich native hedgerow with trees - good condition;**
- **0.29km of h2a5 (11) species-rich native hedgerow with trees - moderate condition;**
- **0.17km of w1 (34) ecologically valuable line of trees - good condition;**
- **0.07km of w1 (34) ecologically valuable line of trees - moderate condition.**

4. It is estimated that the proposed development scheme at this site will enhance:

- **21.85ha of w (26) wood-pasture and parkland in moderate condition to good condition;**

- **15.51ha of w (26) wood-pasture and parkland in poor condition to good condition;**
- **2.58ha of g4 modified grassland in moderate condition to g3c other neutral grassland in moderate condition;**
- **4.18ha of g4 modified grassland in poor condition to g3c other neutral grassland in moderate condition;**
- **0.36ha of r1 (41) ponds (non-priority habitat) in poor condition to moderate condition;**
- **10.24ha of w1f lowland mixed deciduous woodland in poor condition to moderate condition;**
- **23.26ha of w1g other woodland; broadleaved in poor condition to moderate condition;**
- **3.65ha of w1g other woodland; broadleaved in moderate condition to good condition;**
- **2.58ha of w1f lowland mixed deciduous woodland in moderate condition to good condition;**
- **0.57km of h2a6 native hedgerow in poor condition to moderate condition.**

5. Post intervention, it is predicted that the following habitats will be created:

- **0.75ha of u1b developed land; sealed surface;**
- **0.43ha of u1c artificial unvegetated, unsealed surface;**
- **0.1832ha (5 individuals) of urban trees (medium size) - moderate condition.**

6. The following habitat losses are not included within the calculations, as they constitute a loss of irreplaceable habitat area:

- **0.08ha of w (26) wood-pasture and parkland in moderate condition (Grassland 2);**
- **0.05ha of w (26) wood-pasture and parkland in poor condition (Grassland 3).**

7. The Biodiversity Impact Calculation has demonstrated that the proposed scheme predicts a likely net gain of 177.39 habitat units (18.04%). The linear feature calculation for the proposed scheme indicates a likely net gain of 0.21 hedgerow units (0.89%).

8. The current scheme does not satisfy the trading rules of the Biodiversity Metric 4.0. The calculation has identified a 0.97 unit deficit for 'High Distinctiveness' linear habitat.

9. The calculations outlined within this report has been produced in light of the Habitat & Ecological Restoration Management Plan by Tardorna Consulting Limited and the most up-to-date illustrative landscape layout from Davies Landscape Architects provided to The Ecology Co-op in September 2023. Any changes to these plans will result in a need for the Biodiversity Metric to be updated accordingly.

CONTENTS PAGE

1 INTRODUCTION

1.1 Purpose of the Report

There is a movement in planning policy and legislation towards a requirement for all new developments to pursue opportunities for securing measurable 'net gains' in biodiversity following the release of an updated National Planning Policy Framework[1] by the Department of Housing, Communities and Local Government. A mandatory value of 10% net gain for all developments has now also been outlined within the Environment Act 2021[2].

This document includes a baseline 'Biodiversity Impact Calculation' (BIC) for the proposed creation of a public reserve. This will see a significant increase to public access and the instigation of a long-term management and rewilding regime at a site called Beechy Bottom, Haywards Heath. The proposals include the establishment of pedestrian and cycle tracks, with new pedestrian and cycle access points off Cuckfield Road to the south and Staplefield Road to the north, and the addition of two wooden viewing platforms. The proposals, if approved, would lead to the creation of the 'Beechy Bottom Parkland Reserve', which is dedicated to creating a resource of value for the public through 'access to nature' and also seeks to target both significant biodiversity net gain and target value for specific high value habitats and protected and notable species.

The calculation utilises the Biodiversity Metric 4.0 and assigns 'biodiversity units' to the pre-existing habitats contained within the site and those that are predicted to be lost, restored and/or created under the proposed new management of the area. This allows an objective comparison to be made between the existing biodiversity value of a given site and the predicted biodiversity value in the 30-year period, with the net change in biodiversity value subsequently quantified. Any units provided through the creation of the park will be used to offset net loss from the housing development Land East of Ansty[3].

The purpose of this document is to present the findings of the BIC based on the most up-to date existing habitat survey information, most up-to-date illustrative landscape layout from Davies Landscape Architects (revision 2131-DLA-DR-L-07) and the Habitat and Ecological Restoration Management Plan from Tadorna Consulting Ltd[4].

The results of the BIC are deemed accurate for the most recent illustrative layout, issued to The Ecology Co-op in September 2023.

This report was commissioned and produced at the request of Fairfax Ltd.

[1] HM Government (2023). National Planning Policy Framework. Department for Communities and Local Government. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

[2] HM Government (2021). Envrionment Act 2021 . Available online at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted

[3] The Ecology Co-op (2023). *Biodiversity Impact Calculation – Land East of Ansty.*

[4] Tardorna Consulting Ltd (2023). Habitat & Ecological Restoration Plan 0069_RevA.

1.2 Background

The site measures 103.21ha in area according to GIS mapping and the majority of the site comprises two large fields of historic parkland habitat which have mostly been managed as modified grassland and mixed broadleaved plantation woodland. Some areas of ancient semi-natural woodland remain to the west of the fields. In addition, three fields of short mown modified grassland lie at the north of the main parkland areas, the northernmost of which is managed as a sports field. Five ponds are located around the site; two woodland ponds artificially connected to each other, two field ponds and one further woodland pond to the north of the parkland. Copyhold stream runs along the west and southern boundaries of the site.

The site has been subject to an ecological and habitat assessments, including surveys for [redacted] and roosting bats. These are detailed in a Habitat & Ecological Restoration Management Plan by Tardorna Consulting Limited[5]. This document also outlines the proposed parkland restoration of the majority of the site for the next 25 years under a minimal-input and soft-touch grazing regime, as well as initial woodland management of the surrounding blocks. Two dog-walking fields of grassland meadows will be created at the north of the site. The northernmost field will be retained as a sports pitch. In order for the above habitats to be secured under the Environment Act's legal timeframe requirement, the habitats will need to be managed as above for an additional 5 years, to achieve the 30 year management period as minimum, though this would be during a simple 'maintenance' phase that follows all habitats present reaching their target condition.

Habitats (UKHab) within the site and along the site boundaries are shown in Figure 1, these include:

- g1c bracken
- u1c artificial unvegetated, unsealed surface
- u1b developed land; sealed surface
- h3a blackthorn scrub
- h3h mixed scrub
- w (26) wood-pasture and parkland
- g3c other neutral grassland (including g3c5 *Lolium-Cynosurus* neutral grassland)
- g4 modified grassland
- r1 (41) pond (non-priority habitat)
- w1f lowland mixed deciduous woodland
- w1g other woodland; broadleaved
- h2a6 native hedgerow
- h2a5 species-rich native hedgerow with trees
- w1 (34) ecologically valuable line of trees

The parkland character plan produced by Davies Landscape Architects, shown in Figure 2, and Appendix 2 in Tadorna Consulting Ltd's Habitat & Ecological Restoration Management Plan[5] provided the framework to map the proposed habitats for the site and led into the production of the UKHab map shown in Figure 3.

[5] Tardorna Consulting Ltd (2023). Habitat & Ecological Restoration Plan 0069_RevA.

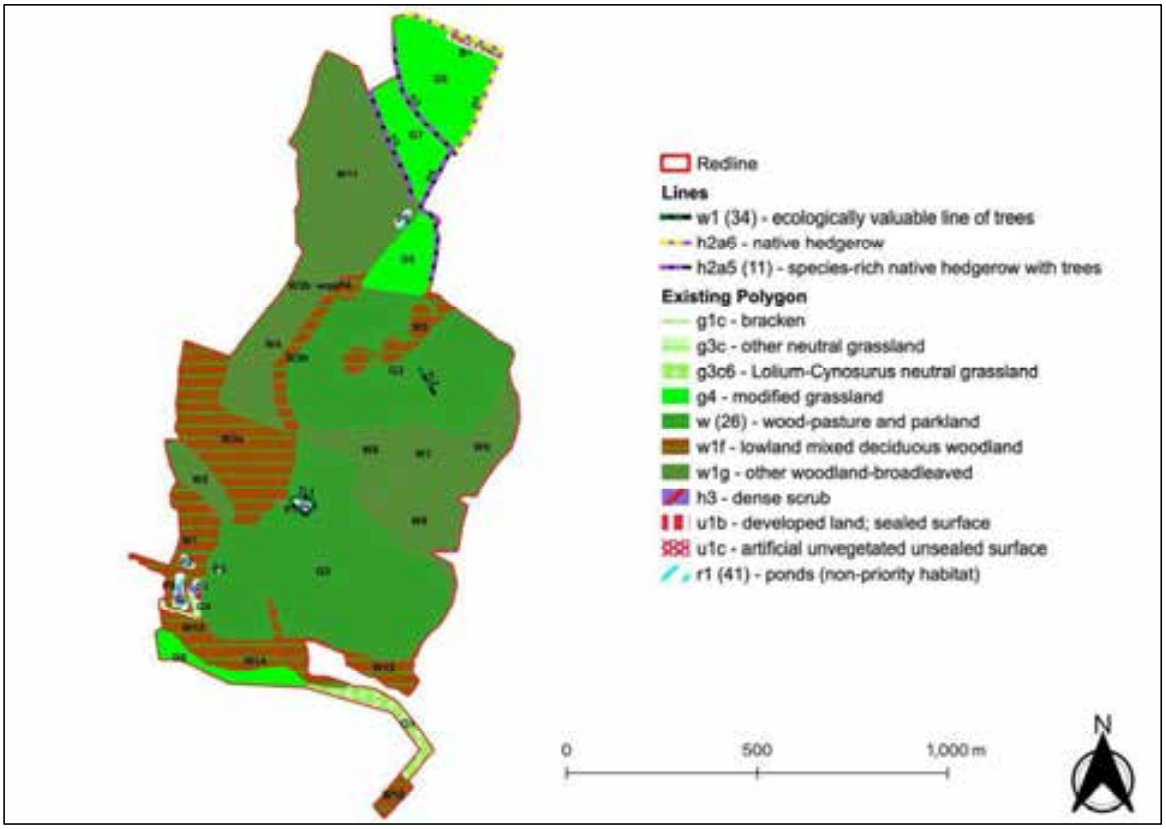


Figure 1. A UKHab map showing existing habitats within the site. The site boundary is indicated with a red line. Produced using QGIS software, version 3.28.5 – Firenze.

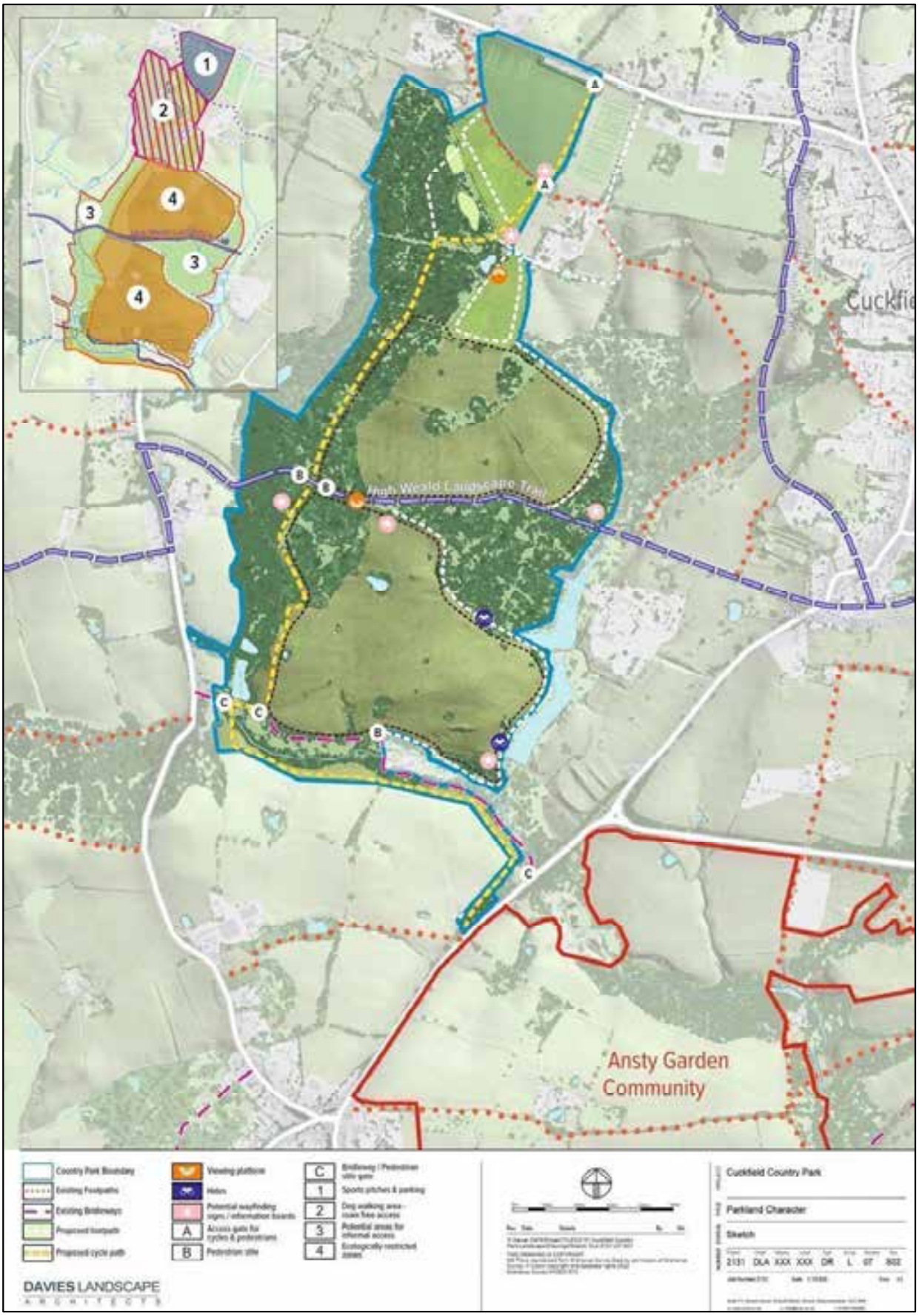


Figure 2. The proposed layout plan for Beechy Bottom Parkland Reserve, modified from Davies Landscape Architects. Issued September 2023, drawing number 2131-DLA-DR-L-07-S02.

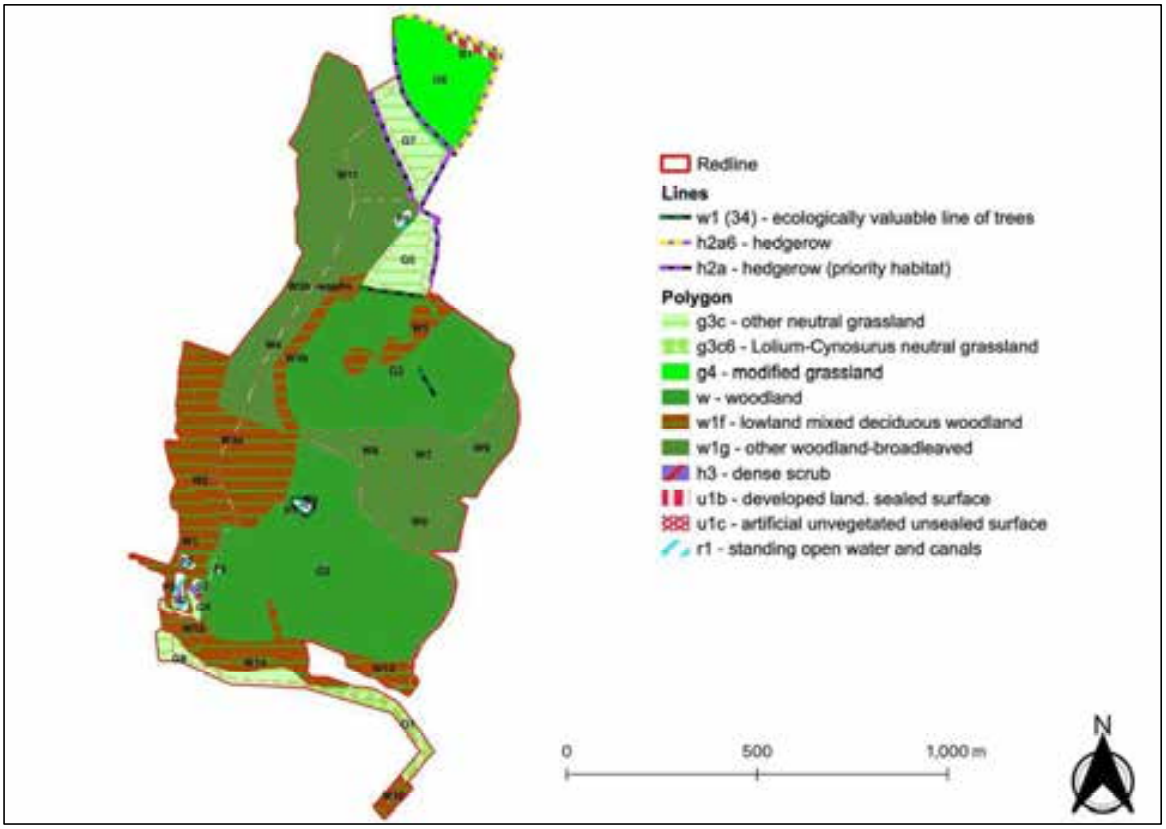


Figure 3. A UKHab map showing proposed habitats within the site. The site boundary is indicated with a red line. Produced using QGIS software, version 3.28.5 – Firenze.

1.3 Policy & Legislation

NPFF (2023)

The NPPF sets out the Government's view on how planners should balance nature conservation with development and helps ensure that Government meets its biodiversity commitments with regards to the operation of the planning system.

Paragraph 174b, states that council policies should;

- "*promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity*."

Paragraph 175d, states that when determining planning applications, authorities should:

- Refuse permission "*if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for"*
- Encourage *"opportunities to incorporate biodiversity improvements in and around developments, especially where this can secure measurable net gains for biodiversity."*

Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system[6].

In accordance with the NPPF, it is important that developments should contribute to local policies that enhance the natural environment by:

- minimising impacts on existing biodiversity and habitats and designated features
- establishing coherent ecological networks that are more resilient to current and future pressures
- providing net gains in biodiversity and habitats, wherever possible

Environment Act (2021)

The Environment Act sets a target of halting the decline in species through the inclusion of a legally binding 2030 species abundance target. Aiming to restore natural habitats and enhance biodiversity, the Act requires new developments to improve or create habitats for nature (through mechanisms such as mandatory Biodiversity Net Gain), and tackle deforestation. Going forwards, UK businesses will need to look closely at their supply chains as amongst other measures they will be prohibited from using commodities associated with wide-scale deforestation. Woodland protection measures are also strengthened through the Act.

[6] HM Government (2005) ODPM Circular 06/05 Government Circular: *Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System*. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf.

Local Policy

Policy DP38 (Biodiversity) of the current Mid-Sussex District Plan 2014-2031 from Mid Sussex District Council[7] notes that it will ensure development:

- *"Contributes and takes opportunities to improve, **enhance**, manage **and restore biodiversity** and green infrastructure so there is **a net gain in biodiversity** […];*
- *Protects existing biodiversity, so there is **no net loss of biodiversity;***
- *Unavoidable damage to biodiversity should be **offset through enhancements** and mitigation measures.*
- *Minimises habitat and species fragmentation and maximises opportunities to **enhance and restore ecological corridors** to connect natural habitats and increase coherence and resilience; and*
- *Promotes the **restoration**, management and expansion **of priority habitats** in the district."*

2 METHODOLOGY

This Biodiversity Impact Calculation uses the Biodiversity Metric 4.0 Calculation Tool published by Natural England[8]. This uses the Government Biodiversity Metric developed by DEFRA ('the Biodiversity Metric') to calculate 'habitat units' and 'hedgerow units' by multiplying the area (ha) or lengths (km), 'distinctiveness' (habitat type), 'condition' (quality), and strategic significance (location in relation to the authority's local strategy) of each habitat parcel.

The calculation provides a negative value to the biodiversity units where habitat is being directly lost. Where habitats are enhanced or created on-site, or off-site, the calculation gives a positive value but adds risk factors that account for uncertainty - difficulty in creating new habitats and time delays while they establish; habitats that are more difficult to restore or that will take a long time to reach a set target condition will score lower and therefore make a smaller positive contribution.

Where on-site gains are equal to or larger than the losses, the project is deemed to have neutral biodiversity impact or biodiversity 'net gain' respectively.

It should be noted that the Biodiversity Metric does not allow for 'trading down'; one of the key principles in measuring biodiversity net losses or gains is that habitats of high ecological importance cannot be offset by the creation of larger areas of habitats with lower value. The Biodiversity Metric 4.0 Calculation Tool includes a 'trading down correction' that deducts the number of biodiversity units that are not accounted for through the creation of equivalent high distinctiveness habitats than that lost. For example, the loss of a small area of lowland meadow priority habitat (very high distinctiveness) will not be offset by a larger area of modified grassland (low distinctiveness) and will only be offset by an equivalent area of habitat of the same distinctiveness or higher.

[7] Mid-Sussex District Coucil (2018) Mid-Sussex District Plan 2014-2031. Available online at: https://www.midsussex.gov.uk/planning-building/mid-sussex-district-plan/.

[8] Natural England (2023) The Biodiversity Metric 4.0 – Calculation Tool. Available online at: http://publications.naturalengland.org.uk/publication/6049804846366720

2.1 Data Sources

This calculation uses the most up to date survey information using botanical data and specific condition assessments gathered on 20th and 21st July, 19th and 22nd Sepember and 4th October 2023. The areas of each habitat category were measured using GIS mapping tools (QGIS). Condition assessments were made in accordance with the condition assessment sheets within The Biodiversity Metric 4.0 Technical Annex 1[9]. Applying the precautionary principle, a presumption for the higher condition was used where there was any uncertainty in the condition of existing habitats.

Aerial imagery of the site was overlaid by the proposed habitat creation plan to obtain the areas of the proposed habitats to be created under the Habitat & Ecological Restoration Management Plan and parkland character plan (see Figure 2). The Biodiversity Metric 4.0 uses a separate calculator spreadsheet for linear features. This works under the same principles but replaces areas of habitat with linear length of a feature. The hedgerow units generated for linear features are not equivalent or interchangeable with biodiversity calculations for areas of habitat.

The Biodiversity Metric 4.0 uses a separate calculator spreadsheet for linear features. This works under the same principles as above but replaces areas of habitat with linear length of a feature. The hedgerow units generated for linear features are not equivalent or interchangeable with biodiversity calculations for areas of habitat.

3 RESULTS

3.1.1 Existing Habitats Assessment

A summary of habitats and condition assessments are provided in Table 1 and Table 2. Full results of condition assessments for habitats which require it (using the Biodiversity Metric 4.0 condition assessment pro-forma) are provided in Appendix 1.

Overall, the on-site calculated baseline is 978.94 habitat units and 23.76 hedgerow units.

Table 1. Existing area habitat conditions for Beechy Bottom Parkland Reserve.

Area Habitats			**Condition Assessments**
Habitat Type in Biodiversity Metric and UK Habitat (UKHab) Classification Code	**Location Reference**	**Area (ha)**	
Grassland – bracken (g1c)	Area B1	0.12	N/A
Urban – artificial unvegetated, unsealed surface (u1c)	Unvegetated pathway	0.21	N/A
Urban – developed land; sealed surface (u1b)	All buildings and sealed tarmac	0.03	N/A
Heathland and shrub – blackthorn scrub (h3a)	Scrub S1	0.09	Good
Heathland and shrub – mixed scrub (h3h)	Scrub S2	0.05	Moderate
	Scrub S3	0.03	Good

[9] Natural England (2023) *Biodiversity Metric 4.0 – Technical Annex 1 – Condition Assessment Sheets and Methodology*. Available online at: http://publications.naturalengland.org.uk/publication/6049804846366720

Woodland and forest – wood-pasture and parkland	Field G2	21.93	Moderate
	Field G3	15.56	Poor
Grassland – other neutral grassland (g3c)	Field G1	1.24	Moderate
	Field G4	0.26	Good
Grassland – modified grassland (g4)	Field G5	2.66	Moderate
	Field G6	6.27	Poor
	Field G7	2.88	Poor
	Field G8	1.46	Poor
Lakes – ponds (non-priority habitat) (r1)	Pond 1	0.1	Moderate
	Pond 2	0.1	Poor
	Pond 3	0.24	Poor
	Pond 5	0.12	Poor
	Pond 6	0.02	Poor
Woodland and forest – lowland mixed deciduous woodland (w1f)	Woodland 1	2.6	Poor
	Woodland 3a	7.69	Poor
	Woodland 3b	1.87	Good
	Woodland 5	1.68	Moderate
	Woodland 10	0.44	Moderate
	Woodland 12	2.07	Moderate
	Woodland 13	1.16	Moderate
	Woodland 14	1.48	Moderate
Woodland and forest – other woodland; broadleaved (w1g)	Woodland 2	1.58	Moderate
	Woodland 4	5.32	Poor
	Woodland 6	3.82	Moderate
	Woodland 7	2.08	Moderate
	Woodland 8	2.75	Poor
	Woodland 9	3.06	Poor
	Woodland 11	12.36	Poor

Table 2. Existing linear habitat conditions for Beechy Bottom Parkland Reserve.

Linear Habitats			Condition Assessments
Habitat Type in Biodiversity Metric and UK Habitat (UKHab) Classification Code	**Location Reference**	**Length (km)**	
Native hedgerow (h2a6)	Hedgerow H1	0.57	Poor
Species-rich native hedgerow with trees (h2a5 (11))	Hedgerow H2	0.35	Good
	Hedgerow H3	0.3	Moderate
	Hedgerow H4	0.39	Good
	Treeline TL1	0.17	Good
	Treeline TL2	0.07	Moderate

3.1.2 Habitat Losses and Gains

3.1.2.1 Area Habitat Units

It is estimated that the proposed habitat restoration plan at this site will result in the loss of:

- 0.12ha of g1c bracken;
- 0.21ha of u1c artificial unvegetated, unsealed surface;
- 0.01ha of u1b developed land; sealed surface;
- 0.09ha of g3c other neutral grassland - good condition;
- 0.29ha of g4 modified grassland - poor condition;
- 0.05ha of w1f lowland mixed deciduous woodland - poor condition;
- 0.11ha of w1f lowland mixed deciduous woodland - moderate condition;
- 0.23ha of w1g other woodland; broadleaved - poor condition;
- 0.06ha of w1g other woodland; broadleaved - moderate condition;
- 0.04km of h2a5 (11) species-rich native hedgerow with trees - good condition;
- 0.01km of h2a5 (11) species-rich native hedgerow with trees - moderate condition.

It is estimated that the proposed habitat restoration plan at this site will retain:

- 0.02ha of u1b developed land; sealed surface;
- 0.09ha of h3a blackthorn scrub – good condition;
- 0.05ha of h3h mixed scrub – moderate condition;
- 0.03ha of h3h mixed scrub – moderate condition;
- 1.41ha of g3c other neutral grassland – good condition;
- 6.22ha of g4 modified grassland – poor condition;
- 0.13ha of r1 (41) pond (non-priority habitat) – moderate condition;
- 1.87ha of lowland mixed deciduous woodland – good condition;
- 4.14ha of lowland mixed deciduous woodland – moderate condition;
- 3.77ha of other woodland; broadleaved – moderate condition;

It is estimated that the proposed habitat restoration plan at this site will enhance:

- 21.85ha of w (26) wood-pasture and parkland in moderate condition to good condition;
- 15.51ha of w (26) wood-pasture and parkland in poor condition to good condition;
- 2.58ha of g4 modified grassland in moderate condition to g3c other neutral grassland in moderate condition;

- 4.18ha of g4 modified grassland in poor condition to g3c other neutral grassland in moderate condition;
- 0.36ha of r1 (41) ponds (non-priority habitat) in poor condition to moderate condition;
- 10.24ha of w1f lowland mixed deciduous woodland in poor condition to moderate condition;
- 23.26ha of w1g other woodland; broadleaved in poor condition to moderate condition;
- 3.65ha of w1g other woodland; broadleaved in moderate condition to good condition;
- 2.58ha of w1f lowland mixed deciduous woodland in moderate condition to good condition;

Post-intervention, it is estimated that the following habitats will be created:

- 0.75ha of u1b developed land; sealed surface;
- 0.43ha of u1c artificial unvegetated, unsealed surface;
- 0.1832ha of urban trees (five individuals of medium size) – moderate condition.

The above created habitats are estimated with the assumptions that the footpaths will be formed of 1.5m areas of unsealed materials and that the cycle paths will be formed of a more formalised 2m wide routes.

The following habitat losses are not included within the calculations, as they constitute a loss of irreplaceable habitat area:

- 0.08ha of w (26) wood-pasture and parkland in moderate condition (Grassland 2);
- 0.05ha of w (26) wood-pasture and parkland in poor condition (Grassland 3).

As irreplaceable habitats cannot be accounted for in the metric and in accordance with Natural England advice, bespoke compensation to address these specific losses will need to be agreed with the local planning authority.

3.1.2.2 Linear Habitat Units

It is estimated that the proposed habitat restoration plan at this site will result in the loss of:

- 0.04km of h2a5 (11) species-rich native hedgerow with trees – good condition;
- 0.01km of h2a5 (11) species-rich native hedgerow with trees – moderate condition.

It is estimated that the proposed habitat restoration plan at this site will retain:

- 0.57km of h2a6 native hedgerow – poor condition;
- 0.7km of h2a5 (11) species-rich native hedgerow with trees – good condition;
- 0.29km of h2a5 (11) species-rich native hedgerow with trees – moderate condition;
- 0.17km of w1 (34) ecologically valuable line of trees – good condition.
- 0.07km of w1 (34) ecologically valuable line of trees – moderate condition.

It is estimated that the proposed habitat restoration plan at this site will enhance:

- 0.57km of h2a6 native hedgerow in poor condition to moderate condition

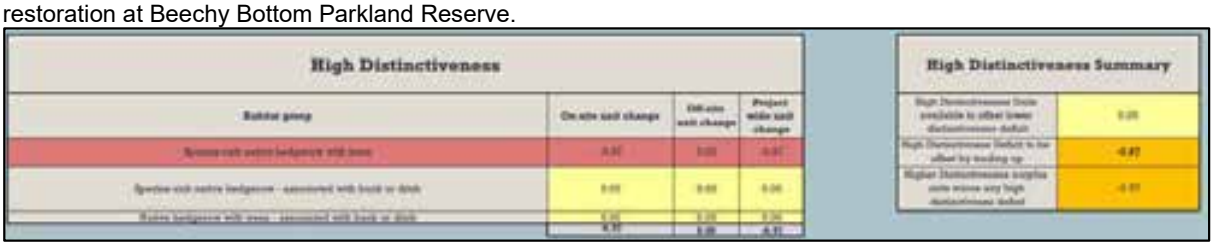
4 FINAL RESULTS

The overall results of the calculations are presented in Table 3. Please refer to the Biodiversity Metric 4.0 – Calculation Tool supplied with this document (submitted separately) for full details of the calculation.

Table 3. Headline results of the Biodiversity Impact Calculation for the proposed habitat restoration at Beechy Bottom Parkland Reserve.

FINAL RESULTS		
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	177.39
	Hedgerow units	0.21
	Watercourse units	0.00
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	18.04%
	Hedgerow units	0.89%
	Watercourse units	0.00%
Trading rules satisfied?	No - Check Trading Summaries ▲	

Table 4. Trading summary linear habitat results of the Biodiversity Impact Calculation for the proposed habitat restoration at Beechy Bottom Parkland Reserve.



High Distinctiveness			
Habitat group	On site unit change	Off-site unit change	Project wide unit change

High Distinctiveness Summary	
	-0.97
	-0.97

4.1 Conclusions

The Biodiversity Impact Calculation, using the Biodiversity Metric 4.0, has demonstrated that the proposed scheme will results in a likely net gain of **177.39 habitat units (18.04%).**

The linear feature calculation for the proposed scheme results in a likely net gain of **0.21 hedgerow units (0.89%)**.

The current scheme does not satisfy the trading rules within the Biodiversity Metric 4.0 for linear habitats. The calculation has identified a 0.97 unit deficit for 'High Distinctiveness' linear habitat.

It is likely that the proposed net gains will need to be secured by a conservation covenant or other suitable agreement, which commit future management of the site to the details provided within the Habitat & Ecological Restoration Management Plan and a suitable monitoring programme as appropriate will need to be agreed to ensure the delivery of the target habitat conditions.

Should you need any further advice on the information provided above, please do not hesitate to contact The Ecology Co-op.

APPENDIX 1 – Habitat Condition Assessment Pro-formas

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**G1**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other neutral grassland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Grassland – med, high and v. high**

Habitat description

Dominated by sweet vernal *Anthoxanthum odoratum* with the following other species recorded; perennial rye *Lolium perenne*, Yorkshire fog *Holcus lanatus*, common bent *Agrostis capillaris*, annual ryegrass *Lolium multiflorum*, cocks-foot grass *Dactylis glomerata*, red fescue *Festuca rubra*, germander speedwell *Veronica chamaedrys*, meadow buttercup *Ranunculus acris*, creeping buttercup *R. repens*, clustered dock *Rumex conglomeratus*, nodding thistle *Carduus nutans*, creeping thistle *Cirsium arvense*, common knapweed *Centaurea nigra*, dandelion *Taraxacum officinale* agg., red clover *Trifolium pratense*, cut-leaved cranesbill *Geranium dissectum*, lesser trefoil *Trifolium dubium*, hairy tare *Vicia hirsuta*, white clover *Trifolium repens*, broad-leaved dock *Rumex obtusifolius*, ragwort *Jacobaea vulgaris*, cuckoo flower *Cardamine pratensis*, autumn hawkbit *Scorzoneroides autumnalis*, common mouse-ear *Cerastium fontanum*, common fleabane *Pulicaria dysenterica*, tufted vetch *Vicia cracca*, common sorrel *Rumex acetosa* and ground ivy *Glechoma hederacea*.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F								TOTAL
Result	Y	Y	Y	Y	Y	Y								7/7

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – passed criteria A and F**	Condition (Good/Moderate/Poor):	**Good**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**G4**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other neutral grassland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Grassland – med, high and v. high**

Habitat description

Perennial rye, crested dog's-tail *Cynosurus cristatus*, Yorkshire fog, common bent, sweet vernal grass, annual rye grass and cock's-foot grasses, soft rush *Juncus effusus* and pendulous sedge *Carex pendula*. Forbs recorded included creeping buttercup, creeping thistle, common knapweed, broad-leaved dock, birds-foot trefoil, meadow buttercup, creeping cinquefoil, white clover, red clover, imperforate St John's-wort *Hypericum maculatum*, cow parsley *nthriscus sylvestris*, ground ivy, common nettle *Urtica dioica*, common hogweed *Heracleum sphondylium*, spear thistle *Cirsium vulgare* and common sorrel.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F								TOTAL
Result	**Y**	**Y**	**Y**	**N**	**Y**	**Y**								**6/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – passed criteria A and F**	Condition (Good/Moderate/Poor):	**Good**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**G5**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Modified grassland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Grassland - low**

Habitat description

Perennial rye-dominated grassland with rough meadow-grass *Poa trivialis*, meadow foxtail *Alopecurus pratensis*, annual ryegrass, cocks-foot and common bent also recorded. Forbs identified included common mouse-ear, marsh cudweed *Gnaphalium uliginosum*, creeping buttercup, common ragwort, greater plantain *Plantago major*, broad-leaved dock, clustered dock *Rumex conglomeratus*, creeping thistle, white clover, scentless mayweed *Tripleurospermum inodorum* and bristly oxtongue *Helminthotheca echioides*.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	**N**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**							**6/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – failed criterion A**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**G6**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Modified grassland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Grassland - low**

Habitat description

Shortly-mown grass sports pitch of solely perennial rye and annual ryegrass.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	**N**	**N**	**N**	**N**	**N**	**Y**	**Y**							**2/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – failed criterion A**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**G7**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Modified grassland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Grassland - low**

Habitat description

Former arable land reseeded within perennial ryegrass and dominated by this and creeping buttercup. Occasional Yorkshire fog detected as well as annual ryegrass and common bent. Forbs identified included Shepherd's purse *Capsella bursa-pastoris*, doves-foot cranesbill *Geranium molle*, bristly oxtongue, prickly sow-thistle *Sonchus asper*, common ragwort, nettle, daisy *Bellis perennis*, fleabane, smooth cat's-ear *Hypochaeris glabra*, common groundsel *Senecio vulgaris* and germander speedwell.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	**N**	**Y**	**N**	**Y**	**N**	**Y**	**Y**							**4/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – failed criterion A**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**G8**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Modified grassland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Grassland - low**

Habitat description

Field of perennial ryegrass and annual ryegrass with creeping buttercup, birds-foot trefoil *Lotus corniculatus* and creeping thistle.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	**N**	**Y**	**N**	**N**	**N**	**Y**	**Y**							**3/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – failed criterion A**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**19/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Dan Bennett & Rozel Hopkins**	Unique polygon reference(s)	**G2**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Wood-pasture and parkland**
Onsite or offsite?	**Offsite – using onsite data and available resources from MAGIC and OS mapping**	Condition sheet used	**Wood-pasture and parkland**

Habitat description

Area of managed grassland with average sward height of 10cm. Dominated by grasses with an average 5 species/m² of abundant sweet vernal, frequent meadow foxtail, Yorkshire fog and red fescue and rare cocksfoot and common bent. Forbs identified included germander speedwell, hairy tare, lesser stitchwort, broad-leaved dock, meadow buttercup, common vetch *Vicia sativa* and silver weed *Potentilla anserina*. There are pockets of veteran sweet chestnut *Castanea sativa* trees scattered across the grassland and various mature native trees scattered in the grassland. Small patches of mixed scrub are located on the southern boundary of the woodland.




Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H						TOTAL
Result	**Y**	**Y**	**N**	**N**	**Y**	**Y**	**N**	**Y**						**5/8**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – passed criterion A**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**19/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Dan Bennett & Rozel Hopkins**	Unique polygon reference(s)	**G3**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Wood-pasture and parkland**
Onsite or offsite?	**Offsite – using onsite data and available resources from MAGIC and OS mapping**	Condition sheet used	**Wood-pasture and parkland**

Habitat description

Area of managed grassland with average sward height of 10cm. Dominated by grasses with an average 5 species per m^2 of abundant sweet vernal, frequent meadow foxtail, Yorkshire fog and red fescue and rare cocksfoot and common bent. Forbs identified included germander speedwell, hairy tare, lesser stitchwort, broad-leaved dock, meadow buttercup, common vetch and silver weed. There are pockets of veteran sweet chestnut trees scattered across the grassland and various mature native trees scattered in the grassland. Small patches of mixed scrub are located on the southern boundary of the woodland.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H						TOTAL
Result	N	N	N	N	Y	Y	N	Y						3/8

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**Y – failed criterion A**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**S1**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Blackthorn scrub**
Onsite or offsite?	**Onsite**	Condition sheet used	**Scrub**

Habitat description

Blackthorn *Prunus spinosa* scrub located in amongst Grassland 4 (G4). Frequent silver birch *Betula pendula*, occasional bramble *Rubus fruticosus* and holly *Ilex aquifolium* and rare hawthorn *Crataegus monogyna* also seen.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E									TOTAL
Result	Y	Y	Y	Y	Y									5/5

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Good**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**S2**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Mixed scrub**
Onsite or offsite?	**Onsite**	Condition sheet used	**Scrub**

Habitat description

Scrub located in the centre of Pond 3 (P3) comprising of silver birch, hazel *Corylus avellana*, buddleia *Buddleja davidii*, blackthorn, pendulous sedge, dog rose *Rosa canina*, bramble and horse chestnut. Inaccessible due to pond but viewed with binoculars.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E									TOTAL
Result	Y	Y	N	Y	Y									4/5

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**S3**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Mixed scrub**
Onsite or offsite?	**Onsite**	Condition sheet used	**Scrub**

Habitat description

Scrub located in the centre of Pond 1 (P1) comprising of downy birch *Betula pubescens*, goat willow *Salix caprea*, another willow *Salix* species, pendulous sedge, bramble and hawthorn. Some willows are mature trees. Inaccessible due to pond but viewed with binoculars.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E									TOTAL
Result	Y	Y	Y	Y	Y									5/5

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Good**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**20/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**P1**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Pond (non-priority habitat)**
Onsite or offsite?	**Onsite**	Condition sheet used	**Pond**

Habitat description

Pond bordered by mature tree lines with scrub in the centre.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I					TOTAL
Result	N	Y	Y	Y	Y	Y	Y	N	N					6/9

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**None**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**20/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**P2**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Pond (non-priority habitat)**
Onsite or offsite?	**Onsite**	Condition sheet used	**Pond**

Habitat description

Woodland fishing pond with scrub in the centre, artificially connected to Pond 3 and stream.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	**N**	**Y**	**Y**	**N**	**N**	**N**	**N**							**2/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**None**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**20/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**P3**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Pond (non-priority habitat)**
Onsite or offsite?	**Onsite**	Condition sheet used	**Pond**

Habitat description

Woodland fishing pond with scrub in the centre, artificially connected to Pond 2 and stream.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	N	Y	Y	N	N	N	N							2/7

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**None**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023 & 04/10/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**PS**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Pond (non-priority habitat)**
Onsite or offsite?	**Onsite**	Condition sheet used	**Pond**

Habitat description

Woodland pond

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G							TOTAL
Result	**N**	**Y**	**N**	**Y**	**Y**	**Y**	**Y**							**3/7**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**None**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**22/09/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**P6**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Pond (non-priority habitat)**
Onsite or offsite?	**Onsite**	Condition sheet used	**Pond**

Habitat description

Pond bordered by mature scrub of silver birch and hawthorn scrub with bramble, dog rose and beech *Fagus sylvatica* also recorded. Lots of dead and dying silver birch recorded.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I					TOTAL
Result	**N**	**Y**	**N**	**Y**	**Y**	**Y**	**Y**	**N**	**N**					**5/9**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**None**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W1**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Mixed broadleaved woodland with dense ground layer, with abundant common nettle. Tree species include ash *Fraxinus excelsior* (most appear to have ash dieback), beech, hazel, oak *Quercus robur*, elder *Sambucus nigra*, hawthorn, blackthorn, alder *Alnus glutinusa*, holly, field maple *Acer campestre* and yew *Taxus baccata*. Within the northern extent there is cherry laurel *Prunus laurocerasus* and *Rhododendron ponticum*. Ground flora includes abundant common nettle, frequent cow parsley, occasional wood meadow-grass *Poa nemoralis*, cleavers *Galium aparine* and rare false brome *Brachypodium sylvaticum*, greater stitchwort *Stellaria holostea*, wood speedwell *Veronica montana*, wood sedge *Carex sylvatica*, primrose *Primula vulgaris*, remote sedge *Carex remota*, wood anemone *Anemone nemorosa*, bugle *Ajuga reptans*, wood avens *Geum urbanum*, broad buckler *Dryopteris dilatata*, lesser celandine *Ficaria verna*, ground ivy, male fern *Dryopteris filix-mas*, red campion *Silene dioica*, rough meadow grass, hedge woundwort *Stachys sylvatica*, lady fern *Athyrium filix-femina*, dog's mercury *Mercurialis perennis*, pendulous sedge, opposite-leaved golden-saxifrage *Chrysosplenium oppositifolium*, enchanters nightshade *Circaea lutetiana* and hairy wood rush *Luzula acuminata*.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**2**	**1**	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**2**	**25/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**W2**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Old downy birch and hornbeam *Carpinus betulus* plantation woodland. Dense canopy and therefore limited understorey. Trees are of a uniform age.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**2**	**3**	**2**	**3**	**3**	**2**	**3**	**1**	**3**	**2**	**1**	**2**	**29/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W3a**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Broadleaved mixed woodland with diverse ground layer. Hazel, field maple, silver birch, willow, hornbeam, beech, horse chestnut, sweet chestnut *Castanea sativa*, sycamore *Acer pseudoplatanus*, ash and English elm *Ulmus procera*. Becomes dominated by sycamore to the north. Bluebell *Hyacinthoides non-scripta*, wood anemone, false brome, germander speedwell, herb Robert *Geranium robertianum*, pendulous sedge, remote sedge *Carex remota*, wood sedge, bugle, dog's mercury, male fern, enchanter's nightshade, wood speedwell, wood violet *Viola odorata*, wood meadow-grass.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**2**	**25/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W3b**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Woodland with similar composition to W3a but better management, with more mature and young trees, deadwood and less disturbance overall. Areas dominated by bramble.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**3**	**2**	**3**	**3**	**3**	**3**	**2**	**3**	**2**	**2**	**1**	**3**	**3**	**33/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Good**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W4**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Plantation woodland with ash (dieback is present), sycamore, oak and sweet chestnut. Cherry *Prunus* sp. and poplar *Populus* sp. also present. Understorey comprised of wood meadow-grass, rough meadow-grass, germander speedwell and wood avens.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	1	2	3	2	3	1	2	2	1	1	1	1	1	21/39

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W5**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Field maple and ash-dominant woodland with English oak, hawthorn, sweet chestnut and holly also recorded. One veteran field maple tree identified. Ground flora comprised of dense bramble and nettle, boarded by bracken *Pteridium aquilinum* and English bluebell.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	3	2	3	3	3	3	3	2	1	2	2	1	3	27/39

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**20/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W6**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Woodland of goat willow, sycamore, English oak, wild cherry *Prunus avium*, silver birch and hawthorn. Ground flora dominated by bramble and bracken with soft rush, perennial rye and sparse mosses also recorded.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	1	3	3	3	3	1	2	2	2	1	1	2	3	27/39

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**20/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W7**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

English oak and silver birch-dominated plantation woodland, with sycamore and hawthorn also recorded. Small stream running through the centre of the parcel, where hawthorn begins to dominate. Ground flora included bracken, bramble and soft rush. Gipsywort *Lycopus europaeus*, water mint *Mentha aquatica* and pendulous sedge recorded close to the stream.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	2	2	3	3	3	2	1	3	2	2	1	2	3	29/39

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	N	Condition (Good/Moderate/Poor):	Moderate

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 – AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W8**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

English oak plantation woodland, with one veteran oak seen in the centre of the site. Sycamore also dominates in some areas, with hawthorn recorded occasionally. Wild cherry and holly recorded in the southern sections, alongside a conifer species. Ground flora included bracken, bramble, pendulous sedge, grey sedge *Carex divulsa*, germander speedwell and nettle.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**2**	**1**	**2**	**2**	**2**	**2**	**3**	**1**	**2**	**1**	**2**	**2**	**24/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**20/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W9**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Hawthorn-dominated woodland with sycamore, holly, beech, English oak, field maple, alder, common lime *Tilia x europaea* and horse chestnut also recorded. Silver birch trees dominate towards the north. Some veteran oaks identified as well as fallen deadwood. Rare amounts of rhododendron detected. Ground flora was dominated by bramble and pendulous sedge with bracken, field horsetail, ivy, enchanted nightshade, wild strawberry *Fragaria vesca*, wood spurge *Euphorbia amygdaloides* and wood melick *Melica uniflora* also recorded.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**1**	**2**	**1**	**2**	**3**	**1**	**1**	**3**	**1**	**1**	**2**	**2**	**3**	**23/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**04/10/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris**	Unique polygon reference(s)	**W10**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Hawthorn, blackthorn, ask, English oak and sycamore species with ground flora of enchanter's nightshade, ground ivy, bracken, nettle, bramble and dog's mercury.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**2**	**2**	**2**	**3**	**2**	**2**	**3**	**1**	**3**	**2**	**2**	**2**	**28/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W11**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Other woodland; broadleaved**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Plantation woodland of ash, English oak, goat willow *Salix caprea*, sweet chestnut likely planted within the last 20 years. Ground layer remanent of neutral grassland with abundant Yorkshire fog and nettle, common fleabane, pendulous sedge, cleavers and ragwort. Ash dieback evident.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	1	2	3	2	3	1	2	1	1	1	1	2	1	21/39

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Poor**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W12**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Mixed broadleaf woodland dominated by silver birch with elder, English oak, blackthorn, horse chestnut, hawthorn, beech, ash, wild cherry and holly also recorded. Ground flora recorded included false brome, pendulous sedge, bush vetch, ground ivy, nettle, bracken, common hogweed, germander speedwell and wood avens.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**3**	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**3**	**26/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023 & 04/10/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W14**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Beech-dominated woodland with hawthorn, English oak, holly, ash, silver birch, horse chestnut, hazel and aspen also recorded. Ground flora comprised of pendulous sedge, spurge laurel, bracken, wood spurge and bramble. Veteran beech tree recorded. Undergoing clearance works in south-western section in October 2023.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**2**	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**31/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - AREA BASED HABITATS

Date	**21/07/2023**	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	**Baseline**
Surveyor name	**Libby Morris & Dan Bennett**	Unique polygon reference(s)	**W15**
Project / development name	**Beechy Bottom Reserve**	Metric 4.0 habitat type	**Lowland mixed deciduous woodland**
Onsite or offsite?	**Onsite**	Condition sheet used	**Woodland**

Habitat description

Mixed broadleaved woodland dominated by nettle. Tree species recorded included beech, hazel, elder, hawthorn, blackthorn, English oak, ash, alder, holly and field maple. Ground flora included, false brome, wood meadow-grass, rough meadow-grass, hairy sedge, wood sedge, broad buckler fern, lesser celandine, ground ivy, male fern, cow parsley, cleavers, red campion, enchanter's nightshade, hedge woundwort, lady fern and dogs' mercury. Ancient woodland indicators present including primrose, pendulous sedge, wood anemone, remote sedge and wood speedwell in low abundance. Undergoing clearance works in south-eastern section in October 2023.

Allocate pass 'P' or fail 'F'.
For Woodland & Intertidal condition sheets, allocate scores of '1' '2' or '3' against each criteria assessed.

Criterion	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Result	**2**	**2**	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**1**	**1**	**1**	**3**	**28/39**

Are any criteria non-negotiable? (Y/N) If Yes are they passed?	**N**	Condition (Good/Moderate/Poor):	**Moderate**

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - LINEAR HABITATS				
Date		04/10/2023	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	Baseline
Surveyor name		Kate Lewis	Condition sheet used	Line of trees
Project / development name		Beechy Bottom	Metric 4.0 habitat type	Line of trees
Onsite or offsite?		Onsite		
Allocate pass 'Y' or fail 'N'.				
Attributes and functional groupings (A, B, C, D and E)		Habitat parcel reference		
		TL1	TL2	
A	Native	Y	Y	
B	Canopy gaps	Y	N	
C	Veteran features and/or ecological niches	Y	Y	
D	Undisturbed vegetated strip	Y	Y	
E	Healthy condition trees	Y	N	
Total		6/6	3/5	
Condition - Good (G), Moderate (M) or Poor (P)		Good	Moderate	

CONDITION ASSESSMENT PROFORMA FOR USE WITH BIODIVERSITY METRIC 4.0 - LINEAR BASED HABITATS					
Date		04/10/2023	Metric 4.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)		Baseline
Surveyor name		Libby Morris	Condition sheet used	Hedgerow	
Project / development name		Beechy Bottom	Onsite or offsite?	Onsite	
Allocate pass 'Y' or fail 'N'. Attributes and functional groupings (A, B, C, D and E)					
Habitat parcel reference		H1	H2	H3	H4
Metric 4.0 habitat type and description		**Native hedgerow** – dominated by bramble	**Species-rich hedgerow with trees** – English oak, bramble, hawthorn, willow species, ivy, field maple, sycamore, hazel, blackthorn, goat willow, dog rose.	**Species-rich hedgerow with trees** – dominant ash with dog rose, hawthorn, willow species, bramble, English oak, sycamore, field maple and blackthorn.	**Species-rich hedgerow with trees** – dominated by field maple with hawthorn, hazel, ash, backthorn, willow species and bramble recorded
A1	Height	N	Y	Y	Y
A2	Width	N	Y	Y	Y
B1	Gap-hedge base	Y	Y	Y	Y
B3	Gap-hedge canopy continuity	Y	Y	Y	Y
C1	Unidisturbed ground and perennial vegetation	N	Y	Y	Y
C2	Nutrient-enriched perennial vegetation	N	N	N	Y
D1	Invasive and neophyte species	Y	Y	Y	Y
D2	Current damage	Y	Y	Y	Y
E1	Tree class	N/A	Y	N	N
E2	Tree health	N/A	Y	N	Y
Total		4/8	9/10	7/10	9/10
Condition - Good (G), Moderate (M) or Poor (P)		Poor	Good	Moderate	Good

Appendix G6: Habitat & Ecological Restoration Management Plan

Beechy Bottom Country Park, Ansty, Mid-Sussex

Habitat & Ecological Restoration Management Plan

March 2023

A report on behalf of Savills Ltd

Ref: 0069_Rev A

Tadorna Consulting Ltd is the trading name of Tadorna Consulting Ltd.
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Site Details

Site Name	Beechy Bottom Country Park
Site Location	Ansty, Mid-Sussex
Central OS Grid Reference	TQ 292 246
Client	Savills Ltd

Quality Assurance

Report Title	Habitat & Ecological Restoration Management Plan
Period Covering	2023 – 2048
Report Reference	0069_Rev A
Author	Dominic Sheldon BSc PGCert ACIEEM TechArbor A
Revision No.	FINAL
Issue Date	03 March 2023
Summary of Changes	N/A
Revised By	N/A
Approved By	Aran Kimberlee BSc (hons) MArborA PTI

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The authority of this report ceases at any stated time limit within it, or if none is stated after two years from the date of the survey or when site conditions change, or pruning or other works unspecified in the report are carried out to, or affecting, the subject tree(s), or whichever is sooner.

Executive Summary

This report presents the results of a desk study, Extended Phase 1 Habitat Survey and Habitat & Ecological Restoration Management Plan at Beechy Bottom Country Park, Ansty, Mid-Sussex (central OS grid reference: TQ 292 246) to provide advice on future management and potential ecological enhancement for the estate as well as detailing management vision, objectives and potential enhancement of the site as a whole.

The site is approximately 109.53ha (see Figure 1) and is comprised of a former historic deer park (de-parked in 1618) Semi-Natural Ancient Woodland (SNAW), improved grassland, semi-improved grassland, native hedgerows, wet woodland, an arable cover crop, hardstanding, dense and scattered scrub. dense bracken, mixed broadleaved woodland, secondary woodland, areas of bare ground, a traditional building, a series of landscape trees, (including a number of veteran trees), a series of ponds and a watercourse (see Appendix 1).

The site is located approximately 550m to the west of the village of Cuckfield, Mid-Sussex.

Only the two former parkland blocks of grassland with two associated fields located to the north of the site, two ponds utilised by a local angling group for coarse fishing, as well as a small block of woodland with associated arable cover crop (currently utilised for the raising of pheasants) currently receive any management. The remainder of the site, mainly comprised of woodland habitats is currently unmanaged. It is proposed to introduce limited management to the site for the benefit of wider fauna and flora and to increase access to the site for the local community.

Study Purpose

A desk study and field survey was undertaken in combination with the Habitat & Ecological Restoration Management Plan to assess the existing site ecological receptors and to assess the perceived ecological impacts and constraints associated with the proposed management of the site, including any perceived impacts to: legally protected species or species of conservation concern; legally protected habitats or habitat of conservation concern; any statutory or non-statutory sites of conservation interest; and opportunities to provide biodiversity enhancement(s). The management plan will also outline the impacts of the proposed management of ecological receptors and habitats and provide recommendations for stock, site access, staffing, monitoring and a feasibility assessment for the project.

Site Ecology

The site was found to support suitable habitats for a range of foraging, nesting and commuting, and dispersal habitat for protected and notable species, including breeding birds, reptiles, bat species, dormouse, hedgehog, amphibians (including great crested newt *Triturus cristatus*), notable plant species, notable invertebrate species and otter. The site also supports a series of invasive plant species including substantial stands of the Schedule 9 (of the Wildlife & Countryside Act 1981 (as amended)) invasive plant species *Rhododendron ponticum* and winter heliotrope *Petasites fragrans* (an invasive non-native species) which require removal.

Conclusion

The following proposed management and enhancement measures should be undertaken to enhance the ecological features present to achieve the vision for the long-term management and habitat/species restoration of the site:

- Creation of areas for dog walking and general public access (including new pathways) located to the north of the site to allow greater (but controlled) access through the wooded areas of the site;
- Creation of glades within the broadleaved plantation woodland component of the site to improve and enhance woodland structure by allowing an increase in light to infiltrate onto the woodland floor in order to create opportunities for alternative habitats;
- Construction of external deer fencing with cattle protection;
- Partial conversion of the barn on site to create a ‘rangers hut’;

- Removal of fences and a proportion of the scrub located around the ponds located on site;
- Clear up of the existing 'burn pit' located on site;
- Restoration of the coarse fishing and other ponds located on site;
- Allowing the main grassland blocks to 'scrub up' through natural succession;
- Introduce low-level grazing pressure through the introduction of rare-breed Sussex cattle *Bos taurus*, red deer *Cervus elaphus,* brown hare *Lepus europaeus* and Tamworth pig;
- Fallow deer *Dama dama* and grey squirrel *Sciurus carolinensis* management/removal;
- Woodland restoration, including the veteranisation and removal of the poplar trees as well as a proportion of the ash and Turkey oak growing within the broadleaved plantation woodlands located on site in order to provide habitat for nesting birds, crevice dwelling bats and to provide a deadwood component of the site and reduce the spread of invasive species;
- Allow for deadwood accumulations throughout the woodland which will affect the structure and enhance woodland biodiversity;
- Removal and eradication of the Schedule 9 invasive plant species *Rhododendron ponticum* from the woodland, and the invasive non-native winter heliotrope *Petasites fragrans* from the south of the site, which will ultimately limit biodiversity;
- Protect, record, monitor and appropriately manage all ancient and veteran trees including the historic sweet chestnut located within the former parkland located on site;
- Install six hibernation suitable bat boxes and, 20 bird and 20 dormouse boxes within the semi-natural ancient woodland component of the site; and,
- Planting of 60 new standard landscape trees of English oak *Quercus robur* and sweet chestnut *Castanea sativa* (with associated stock protection).

Overall, the proposed management and enhancement measures will result in a substantial net gain in biodiversity, provided the recommendations are undertaken in accordance with this report. The proposed will result in carbon-capture through soil sequestration of atmospheric CO^2, habitat creation through succession and the introduction of sensitive management through the creation of relatively large-scale semi-natural habitats which have become scarce within the wider countryside.

This will result in the restoration of both habitats and animal populations including for rare, scarce and notable species such as bats, invertebrate, reptile, mammal (including dormouse), bird and amphibian (including great crested newt) species.

Contents

Appendices

1 INTRODUCTION

This report presents the results of an Habitat & Ecological Restoration Management Plan (MP) at Beechy Bottom Country Park, Ansty, Mid-Sussex (central OS grid reference: TQ 292 246). The surveys were commissioned by Savills Ltd.

The site was originally a deer park serving the Tudor Cuckfield Park house, located a short distance to the east of the site. This served as deer park for the hunting or deer until it was 'de-parked' in 1618.

The site is made up of a diverse series of habitats including Semi-Natural Ancient Woodland (SNAW), improved grassland, semi-improved grassland, native hedgerows, wet woodland, an arable cover crop, hardstanding, dense and scattered scrub. dense bracken, mixed broadleaved woodland, secondary woodland, areas of bare ground, a traditional building, a series of landscape trees, (including a number of veteran trees), a series of ponds and a watercourse (see Appendix 1).

The site forms part of the High Weald Area of Outstanding Natural Beauty (AONB) and supports a Local Wildlife Site (LWS) – The Hanger and a geological designation, Whitemans Green, Local Geological Site (LGS). The total area of the survey site is 109.53 hectares (ha) in size (see Figure 1 & Appendix 1).

It is proposed to introduce an alternative management regime to the site in order to enhance and restore the ecological receptors present.

1.1 Aims

The aim of this report is to:

- To provide a vision and advice on future management and potential ecological enhancement for the site as well as detailing objectives and potential enhancement of the site as a whole.
- Identify and describe the habitats and species likely to be present within the site and assess the ecological value of these features;
- Provide a professional opinion on existing management and advice on the future management of the habitats present with the aim of restoring and enhancing their value to wildlife and their associated species while introducing an alternative management schedule for a 25 year (2023- 2048) period; and,
- Provide recommendations for habitat creation to further enhance the value of the site for a wide variety of wildlife.
- The management plan will also outline the impacts of the proposed management of ecological receptors and habitats and provide recommendations for stock, site access, staffing, monitoring and a feasibility assessment for the project.


Legend
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2 METHODS

2.1 Ecological Scoping and Baseline Data Collection

Biodiversity information was requested for a study area of 1 km radius around the site survey boundary (hereafter referenced as the 'Site') designated sites and notable/ protected species (extended to 2 km for bats) from the Sussex Biodiversity Record Centre (SBRC) in October 2022.

To support this, an internet search was undertaken to identify statutory sites designated for nature conservation value within a 1 km radius of the site boundary, using the Government's mapping website MAGIC (www.magic.gov.uk). A search was also conducted on MAGIC for sites of international importance for 10 km around the site and European Protected Species licences issued by Natural England and Habitats of Principal Importance (HPI) within 1 km of the site.

Aerial photography of the wider area was also reviewed to identify possible important habitat features for wildlife.

Table 1 summarises the surveys undertaken to provide ecological baseline information for the Site. Full details are provided in the appendices.

Table 1: Summary of Baseline Data Collection Surveys

Survey Type	Date (s)	Surveyor	Summary of Methods
Desk study	17 & 18th October 2022	Dominic Sheldon BSc (Hons) PgCert ACIEEM TechArborA	Internet search using MAGIC: priority habitats within 1 km, Natura 2000 sites within 10 km.
Extended Phase 1 Habitat Survey			Walkover of habitats within the Site boundary in accordance with JNCC (2010) and CIEEM (2013). See **Appendix 1.**
Badger Survey			Based on the methodology outlined by Harris, Creswell and Jefferies (1991).
Tree Assessment for Bats			Based on the methodology published by the Bat Conservation Trust (Collins 2016)

2.2 Extended Phase 1 Habitat Survey

A site walkover was undertaken in accordance with the Joint Nature Conservation Committee's Phase 1 Habitat Survey methodology (JNCC 2010) on 17 October 2022 by Dominic Sheldon BSc (Hons) PgCert ACIEEM TechArborA when weather conditions were dry, warm and with good visibility.

All habitats within the Site were identified, described and mapped during the field survey, and an indicative botanical species list compiled. Plant names follow Stace (2019). The survey was extended to highlight the potential presence of protected and priority species in accordance with CIEEM's Guidelines for Preliminary Ecological Appraisal (2017). This involved a search to identify the presence or potential presence of notable and protected species such as breeding birds, badger *Meles meles*, dormouse *Muscardinus avellanarius*, bats, reptiles and amphibian species. Target Notes (TNs) were used to record any features or habitats of ecological interest.

Where access allowed, adjacent habitats were also considered in order to assess possible impacts of the proposal in a wider context.

A series of digital maps have been produced using QGIS (QGIS Development Team (2018) Geographic Information System Open Source Geospatial Foundation Project). The Phase 1 Habitat map is shown in **Appendix 1.**

2.3 Badger Survey

A badger survey was undertaken on the 17 October 2022 by Dominic Sheldon BSc (Hons) PgCert ACIEEM TechArborA (Badger class licence holder CL36/067).

The survey involved a thorough search of the Site for evidence of badger activity based on the methodology outlined by Harris, Creswell and Jefferies (1991). A search was made for:

- Setts, including earth mounds/ spoil, evidence of bedding and runways between setts;
- Latrines, often located close to setts, at territory boundaries or adjacent to favoured feeding areas;
- Prints and paths;
- Hairs within sett entrance or caught on nearby fencing; and,
- Other evidence including snuffle holes, feeding and playing areas and scratching posts.

Where setts were observed, their status and the level of activity were noted. Sett status can be broadly classified as:

Main sett – A sett within a badger territory that appears to be the largest (usually with at least five holes) and the most well-used, with much activity in the vicinity, is categorised as the main sett. Main setts always have active badger runs leading away from them and are normally marked by latrines. Social groups have one main sett, which is the most important sett in the territory. It is used throughout the year and is the main breeding sett.

Annexe sett – Setts are categorised as annexe setts where they are assumed to form part of the main sett area but where the sett is unlikely to be directly linked by an underground passage to the main sett either due to a barrier (e.g. separated by a watercourse or ditch) or by distance. Annexe setts are normally linked to the main sett by a well-used path and lie within 150 m of a main sett entrance.

Subsidiary sett – Setts that offer an alternative sett complex to the main sett are categorised as subsidiary setts. Subsidiary setts are normally, at least, 50 m from the main sett and are not always obviously linked by a well-used path to the main sett (unlike annexe setts). Subsidiary setts often exhibit moderate levels of activity, are larger than outlier setts but smaller than main setts. Subsidiary setts are often marked by latrines.

Outlier sett – These setts often comprise just one or two entrances. They are used infrequently and can be found at the boundaries of a badger social group's territory.

When found, activity levels at individual sett entrances were categorised using the following typology:

- **Category A**: sett entrances comprising a number of well-used sett entrances (with one or more of the following features: well-worn entrance, freshly excavated soil and bedding material);
- **Category B**: setts with partially used holes (leaves or twigs in entrance and/or mosses and other plants growing in or around the entrance); and,
- **Category C**: an apparently disused sett entrance (partially or completely blocked, with a considerable amount of excavation required for reoccupation).

Where access allowed, adjacent habitats and properties were also searched in order to assess possible impacts of the proposal in a wider context.

The survey aims were to:

- Locate all setts and badger activity within the Site;
- Provide an evaluation of the likely impact of the exclusion works on the badger social group utilising the outlier setts; and,

- Provide a working Method Statement for the temporary partial closure of the two single-entrance entrance outlier setts.

2.4 Tree Assessment for Bats

The trees on Site were assessed by Dominic Sheldon BSc (Hons) PgCert ACIEEM TechArborA on 17/10/2022 during the Extended Phase 1 Habitat Survey for their bat roost potential in accordance with best practice methodology published by the Bat Conservation Trust (Collins 2016).

Trees were inspected from ground-level with the aid of binoculars for Potential Roost Features (PRFs) such as rot holes, hazard beams, cracks or splits, woodpecker holes, knot holes, man-made holes, cankers, gaps between overlapping stems/ branches, loose bark, dense ivy, epicormic growth and bat, bird or dormouse boxes. Signs indicating possible use by bats were also recorded, such as bat droppings, odour, scratches, staining and audible sounds. Information collected about PRFs included a description, the height of the feature above ground level and the orientation of the feature in relation to the trunk.

Trees were then prescribed a category based on their potential to support roosting bats as detailed in **Table 2.** Locations are shown in **Appendix 1.**

Table 2: Bat Roost Potential (as detailed in Collins, 2016)

Suitability	Description of bat roosting potential (trees)
Negligible	Negligible habitat feature/s likely to be used by roosting bats
Low	A tree with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A tree with one or more potential roost sites that are obviously suitable for use by larger number of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Roost	Known or confirmed roost

2.5 Baseline Evaluation and Impact Assessment

Determining the importance of ecological features was undertaken in accordance with the Chartered Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM 2018). An assessment was then made of possible ecological impacts of the proposed development on each feature within the development's likely 'Zone of Influence' (ZoI). Where uncertainty exists, a precautionary approach has been adopted.

2.6 Limitations

Care has been taken to ensure that balanced advice is provided on the information available and collected during the study period (s), and within the resources available for the project. However, the possibility of important ecological features being missed due to survey timings, absence during surveys or the year of survey cannot be ruled out. In addition, the lack of evidence or records of protected species on Site does not preclude their presence.

3 RESULTS

3.1 Internationally Designated Sites

There are no internationally designated (Natura 2000) sites for nature conservation within 10 km of the Site boundary.

3.2 Nationally Designated Sites

One statutory designated site lies within 1 km of the Site boundary. A summary is provided in **Table 3**.

There is an area of woodland identified as an Ancient Woodland Inventory (AWI) within the Site boundary for its semi-natural ancient woodland interest.

3.3 Non-designated sites

Two non-designated sites for nature conversation lie within 1 km of the Site. A summary is provided in **Table 3**.

An Ancient Woodland Inventory and Ghyll Woodland were also returned from within 1 km of the Site. These are not designated sites *per se*, but are considered areas of Sussex countryside which support higher than average concentrations of existing wildlife habitats such as native woodlands, flower-rich grasslands, bogs and heathland (many of these habitats will have an international, national or local designation).

Table 3: Designated sites records within 1 km of Site boundary

Site Name	Location	Description
Statutory Designated Sites		
High Weld Area of Outstanding Natural Beauty (AONB)	Forms part of the southern Site boundary	Designated as 'Weald' and given to the area between the North and South Downs which are the outer chalk rims of the ancient Wealden anticline. The sandstones and clays of the exposed centre of the dome, the 'High Weald' give rise to a hilly, broken and remote country of ridges and valleys covered by a patchwork of fields, woods and shaws. In contrast, open areas of the AONB include Ashdown Forest and, to the east, the river valleys of the Rother, Brede and Tillingham. The AONB meets the coast at Hastings. The character of the High Weald was established by the 14th century and has survived major historical events and social and technological changes. As a result the High Weald is considered to be one of the best surviving, coherent medieval landscapes in Northern Europe.
Non-statutory Sites		
The Hanger Local Wildlife Site (LWS)	Located approximately 900 m to the west	Designated for its two types of woodland that are present within a gill woodland. Alder occurs along the streams and extends up the lower slopes in parts, with oak, hazel and ash on the upper slopes and the flat ground above. The wood supports a wide range of woodland plants, mosses and liverworts, a good bird community and a number of uncommon butterflies.
Whitemans Green, Cuckfield Local geological site	Located approximatly 155 m to the east of the Site	Designated for its historical geological interest
Ancient Woodland Inventory Site (AWI)		
Walks Wood Ancient Woodland Inventory (AWI)	Located within the Site boundary	Designated for its ancient woodland habitats
Walks Wood Ghyll Woodland	Located within the Site boundary	Designated for the highly species-rich woodland, even at the small scale, support distinctive assemblages of cryptogamic plants, and are unique to south-east England.

3.4 EPS Mitigation Licences

No EPS mitigation licences have been granted within 1 km of the Site boundary.

3.5 Great Crested Newt Class Survey Licence Returns

No Great Crested Newt Class Survey Licence Returns have been granted within 1 km of the Site boundary.

3.6 Great Crested Newt Pond Surveys 2017-2019

No ponds within 1 km of the Site boundary were shown to support great crested newt from between 2017-2019.

3.7 Priority Habitats

The Site supported a series of habitats of principal importance (HPI) or Biodiversity Action Plan (BAP) habitats. These were areas of ancient replanted woodland, ancient and semi-natural woodland and areas of the BAP habitat - wood pasture and parkland.

3.8 Geology & Soils

The underlying geology is very varied over the Site with the following geology types being recorded:

- Ardingly Sandstone Member - Sandstone. Sedimentary bedrock formed between 139.4 and 133.9 million years ago during the Cretaceous period;
- Lower Grinstead Clay - Mudstone. Sedimentary bedrock formed between 139.4 and 133.9 million years ago during the Cretaceous period;
- Upper Grinstead Clay - Mudstone. Sedimentary bedrock formed between 139.4 and 133.9 million years ago during the Cretaceous period;
- Lower Tunbridge Wells Sand - Sandstone, siltstone and mudstone. Sedimentary bedrock formed between 139.4 and 133.9 million years ago during the Cretaceous period;
- Cuckfield Stone Bed - Sandstone, calcareous. Sedimentary bedrock formed between 139.4 and 133.9 million years ago during the Cretaceous period; and,
- Wadhurst Clay Formation - Mudstone. Sedimentary bedrock formed between 139.4 and 133.9 million years ago during the Cretaceous period.

4 FIELD SURVEY

4.1 Habitat Descriptions

The survey Site included, and was comprised of, an historic parkland, mostly converted to improved grassland and broadleaved plantation woodland, areas of ancient semi-natural woodland, secondary woodland, arable, dense scrub, dense bracken, semi-improved grassland, watercourse, a series on ponds, tall ruderal and parkland trees (including veteran trees), bound by a series of hedgerows and fences (see Appendix 1). The Site is located approximately 500 m to the west of the village of Cuckfield, Sussex. The Site measured approximately 109.53 ha.

The immediate surroundings to the Site include:

- The grounds of Cuckfield House (located to the east of the Site);
- Open countryside dominated by arable and pasture fields (to the south and west); and,
- Staplefield Road and further areas of open countryside (located to the north of the Site).

4.2 Field Survey

Table 4: Survey Environmental Conditions

Date	Temperature	Beaufort	Cloud cover	Precipitation
17 & 18th October 2022	17°C	F2-3	20-100%	None
Constraints on the survey: The survey was undertaken in late Autumn, which may preclude spring and summer annual botanical species. However, botanical diversity was considered sufficient to classify and assess the habitats present.				

4.2.1 Amenity Grassland

This habitat was confined to the northern-most field parcel (Field Parcel A). This parcel was dominated by perennial rye grass *Lolium perenne*, with some Yorkshire fog *Holcus lanatus*, dove's-foot cranesbill *Geranium molle*, common ragwort *Jacobaea vulgaris*, white clover *Trifolium repens* and curled dock *Rumex crispus* (see Figure 2). The parcel is currently utilised as a local sporting venue.

Figure 2: View of the amenity grassland located within Field Parcel A (see Appendix 1).

4.2.2 Improved Grassland

This habitat formed the vast majority of the grassland habitats present on site (see Figures 3-6). Of note was one of the fields located to towards the north of the Site, which had been sown almost exclusively with sweet vernal grass *Anthoxanthum odoratum*. The remainder of the improved grassland throughout the Site was very species-poor with perennial rye grass being dominant with some Yorkshire fog and common bent *Agrostis capillaris*. Forb species recorded included rare creeping buttercup *Ranunculus repens*, thyme-leaved speedwell *Veronica serpyllifolia*, common ragwort, broad-leaved dock *Rumex obtusifolius*, black medick *Medicago lupulina*, common field speedwell *Veronica persica*, selfheal *Prunella vulgaris*, curled dock *Rumex crispus*, dove's-foot cranesbill and common hogweed *Heracleum sphondylium*.

Figure 3: View of the improved grassland located within Field Parcel B.

Figure 4: View of the improved grassland located within Field Parcel C, sown with sweet vernal grass.

Figure 5: View of the improved grassland located within Field Parcel D, located to the south of the site within the former parkland.

Figure 6: View of the improved grassland located within Field Parcel E, located to the south of the site within the former parkland.

4.2.3 Semi-improved Grassland (species-poor)

This habitat was confined to the improved grassland field parcel verges and small areas adjacent to Field Parcel D (see Figure 7). Species recorded included common bent, Yorkshire fog and cock's foot. Forb species included common sorrel *Rumex acetosa*, common field speedwell *Veronica persica*, soft rush *Juncus effusus*, meadow cranesbill *Geranium pratense*, tufted vetch *Vicia cracca*, white clover, field horsetail *Equisetum arvense*, broad-leaved dock, creeping buttercup and dandelion *Taraxacum officinale agg*.

Figure 7: View of the semi-improved grassland (interspersed with developing scrub) located adjacent to Field Parcel E.

To the far south of the Site, within Field Parcels F & G lay an area dominated by semi-improved grassland (see Figure 8). Species recorded included sweet vernal grass, Yorkshire fog, common bent, perennial rye grass, and cock's foot. Forb species recorded included white clover, creeping buttercup, meadow buttercup *Ranunculus acris*, common sorrel, creeping thistle *Cirsium arvense*, bird's-foot trefoil *Lotus corniculatus*, meadow cranesbill *Geranium pratense* and common ragwort.

Figure 8: View of the semi-improved grassland located within Field Parcels F & G

4.2.4 Arable

This habitat can confined to an area contained by Field Parcel D (see Figure 9). The arable comprised *Soghum* sp with some *Triticale* sp. The crop has been sown to provide cover and a drive location for pheasants *Phasianus colchicus* being raised within the secondary woodland located directly to the south.

Figure 8: View of the arable habitat located on Site.

4.2.5 Dense Scrub

This habitat was confined to small areas located within or on the edge (see Figure 7 above) of Field Parcel E (see Figure 10). Species recorded included blackthorn *Prunus spinosa* and hawthorn *Crataegus monogyna*.

Figure 10: View of the dense scrub located within Field Parcel E.

4.2.6 *Dense Bracken*

This habitat was confined to the Field Parcel edges and located within the centre of Field Parcel E (see Figures 11-14 Appendix 1). Species recorded included dominant bracken *Pteridium aquilinum*.

Figure 11: View of the dense bracken located to the north of Field Parcel A.

Figure 12: View of the dense bracken located to the centre of Field Parcel E.

Figure 13: View of the dense bracken located to the centre of Field Parcel E.

Figure 14: View of the dense bracken located on the northern edge of Field Parcel G.

4.2.7 *Pond*

Six ponds are located within the Site. Two of these are former quarry sites of some antiquity located within the semi-natural ancient woodland component of the Site (see Figure 15 for northernmost pond). Both of these ponds receive large leaf fall from surrounding trees and are generally heavily shaded. Floating species are restricted to duck weed *Lemna minor* and a few marginal species such as soft rush.

Figure 15: View of the northernmost pond surrounded by dense woodland.

The next two ponds are located within Field Parcel E. Both of these ponds were fenced off from the surrounding grassland and surrounded by dense woody scrub and semi-mature trees (see Figures 16 & 17 respectively).

Figure 16: View of the pond located within Field Parcel E.

Figure 17: View of the other pond located within Field Parcel E.

The final two ponds are associated with a coarse fishing club located towards the south-western part of the Site. Due to presence of presumed carp, the water quality within these ponds is very poor with significant turbidity and a lack of general floating plant species bar a single specimen of white water lily *Nymphaea alba* (see Figures 18 & 19 respectively). These ponds are fed by a natural spring located just to the north of the two ponds, while a piped outflow taking excess water flows to the south underneath the south-western access track directly into a watercourse that flows from the west to the east through the southernmost part of the Site. This causes significant water clarity issues relating to suspended sediment and presumably nitrate impacts to the watercourse (see section 4.2.8).

Figure 18: View of one of the coarse fishing ponds

Figure 19: View of the other coarse fishing pond showing high levels of sediment loading.

4.2.8 Watercourse

A watercourse ruins from the west to the east along the southern part of the site (see Figures 20 & 21). This watercourse is semi-natural in nature and has carved a meandering watercourse with relatively steep sides through the broadleaved and semi-natural woodland located within this area. Due to the topography, this area is likely prone to occasional flooding.

As mentioned previously, the water quality is very poor within the site due to the impact from the coarse fishing outflow pipe located at TQ 28897 24268.

Figure 20: View of the watercourse located along the southern Site boundary.

Figure 21: View of the same watercourse showing the high levels of sediment loading.

4.2.9 Broadleaved Plantation Woodland

This habitat was located along the majority of the western, central and part of the southern Site boundary. From studying historical aerial photographs, the western and central broadleaved plantation woodland was of more recent origin being planted in the late 1990s, while the plantation woodland located along part of the southern site boundary was probably planted in the late 1970/80s. All these areas were grassland prior to these plantings taking place. These are discussed in more detail below.

Western Plantation Woodland

This semi-mature woodland has been planted on a grid patten from pedunculate oak *Quercus robur*, sweet chestnut *Castanea sativa*, ash *Fraxinus excelsior*, silver birch *Betula pendula*, willow *Salix sp*, cherry *Prunus avium*, a single specimen of *Cotoneaster* sp. and a proportion of poplar *Populus* sp (see Figure 22). The ground flora was generally sparce, species-poor and denuded with ground ivy *Glechoma hederacea*, pendulous sedge, common nettle, male fern, light scattered bramble, occasional dog's mercury *Mercurialis perennis* and ground elder *Aegopodium podagraria* with large amounts of bare ground. A large number of earthball fungi *Scleroderma citrinum*, sulpher tuft *Hypholoma fasciculare* and patches of common haircap *Polytrichum commune* were recorded within this woodland.

The woodland also supported a number of rides, presumable to provide vehicular access (see Figure 23). These rides supported an identical species composition to the rest of the plantation woodland ground flora located within this area, with the addition of marsh thistle *Cirsium palustre*, creeping buttercup *Ranunculus repens*, lesser celandine *Ficaria verna*, thin-spiked wood sedge *Carex strigosa* and common bent *Agrostis capillaris*.

Figure 22: View of the broadleaved plantation woodland

Figure 23: View of one of the rides located within the plantation woodland

Southern Plantation Woodland

This woodland was comprised of ash with some Poplar species and a limited understorey of scattered hazel (see Figure 24 below). The ground flora was more varied with pendulous sedge, false brome *Brachypodium sylvaticum*, bramble, dense ivy, male fern *Dryopteris filix-mas* and common nettle. The vast majority of the ash had or was in the process of dying from ash die back *Hymenoscyphus fraxineus*. Some self-sown alder *Alnus glutinosa* was located along the watercourse.

Figure 24: View of the southern plantation woodland showing advanced ash die back related death of trees.

Central Plantation Woodland

This woodland was comprised of predominantly turkey oak *Quercus cerris* with silver birch, ash, pedunculate oak, poplar sp.

4.2.10 Semi-natural Ancient Woodland

This habitat was located along the western part of the Site (see Figures 25 & 26). The woodland itself was fairly diverse with pedunculate oak, ash (with advanced ADB), field maple *Acer campestre*, hazel *Corylus avellana* dominated understorey subject to some planting with beech (some of which has been previously coppiced), sycamore *Acer pseudoplatanus*, sweet chestnut, horse chestnut *Aesculus hippocastanum* and spindle *Euonymus europaeus*. The ground flora comprised occasional hard fern *Blechnum spicant*, wood sorrel *Oxalis acetosella*, pendulous sedge *Carex pendula*, thin-spiked wood sedge *Carex strigosa*, stinting iris *Iris foetidissima*, betony *Betonica officinalis*, ivy *Hedra helix*, dog rose *Rosa canina*, sanicle *Sanicula europaea*, bramble *Rubus fruticosus agg*, bush vetch *Vicia sepium*, wood sage *Teucrium scorodonia*, hemp agrimony *Eupatorium cannabinum*, tormentil *Potentilla erecta*, water mint *Mentha aquatica*, tufted hairgrass *Deschampsia cespitosa* and bracken *Pteridium aquilinum*.

Throughout the southern part of the woodland, in close proximity to the established pathways there are blocks of the invasive species *Rhododendron ponticum* (as listed on Schedule 9 of the wildlife and Countryside Act 1981). This has been subject to some form or management over the previous 10 years. The woodland was subject to relatively high browsing and grazing pressure from deer, predominantly fallow *Dama dama*, which was recorded during the site visit.

Figure 25: View of the semi-natural woodland showing the relatively open ground layer subject to deer grazing and browsing pressure.

Figure 26: View of the invasive *Rhododendron ponticum* recorded throughout the woodland.

4.2.11 Secondary Woodland

This habitat was recorded along the southern site boundary and within blocks located along the centre and east of the Site. Species recorded included oak, ash, beech, hazel, blackthorn, hawthorn, English elm *Ulmus minor* (impacted by Dutch elm disease *Ophiostoma novo-ulmi*), silver birch and holly *Ilex aquafolium*. The ground flora was dominated by areas of bramble scrub with some dog rose located along the woodland edges.

4.2.12 Parkland Trees

A series of parkland trees are located within the Site. The older mature and over-mature specimens were pedunculate oak. A number of these were located to the north and west of Field Parcel D and west of Field

Parcel E (see Figures 27-29, 31 & 32), with one being located within Field Parcel B (see Figure 30). A number of these supported features that had a high potential to support roosting bats (see section 4.3.3).

Figure 27: View of the parkland tree located to the north of Field Parcel D.

Figure 28: View of a parkland tree located to the west of Field Parcel E.

Figure 29: View of a parkland tree located within Field Parcel E.

Figure 30: View of the dense bracken located on the northern edge of Field Parcel B.

Figure 31: View of a mature parkland beech tree located within Field Parcel E.

Figure 32: View of a clump of mature parkland trees located within Field Parcel E.

Veteran Trees

The Site supported a small number of veteran trees. This included a veteran oak located within the plantation woodland located along the centre of the Site (see Figure 31 – TN1, Appendix 1). A veteran beech located along the southern edge of Field Parcel E (see Figure 33 – TN2, Appendix 1), and two clumps of veteran (and ancient) sweet chestnuts located within field Parcel E (see Figure 34-39, TN3 & TN4 - Appendix 1).

The veteran sweet chestnuts were of particular note and were considered to be outstanding examples of their type supporting all of the classic veteran features including, rot holes, tear-outs, snags, delaminated wood on branches, fallen deadwood accumulations, standing deadwood, woodpecker holes, fungal bodies, basal cavities, cracks, splits and crown borne deadwood. In some cases, these trees included vigorous epicormic growth. As such these trees can be considered to be both veteran and ancient trees. These trees had been planted in clumps of six and (further to the east) a clump of three.

Figure 33: View of the veteran pedunculate oak located within the central woodland (TN1).

Figure 34: View of the veteran beech located towards the south of the site complete with tear-out feature (TN2).

Figure 35: View of clump of veteran and ancient sweet chestnut trees located within Field Parcel E (TN3).

Figure 36: View of one of the sweet chestnut stems located at TN3 showing some epicormic growth.

Figure 37: View of a deadwood accumulation within the clump located at TN3.

Figure 38: View of one of the outstanding veteran and ancient sweet chestnut trees located at TN4.

Figure 39: View of the same tree with human for scale showing a multitude of veteran and faunal features.

4.2.13 Building

A single building was recorded on Site, located on the western side of Field Parcel E. This was a traditional timber frame and timber clad barn supporting a ceramic tile roof. The building is considered to be of mid-19th century origin (see Figures 40-43). On the southern elevation the building at some point supported a series of windows which have now being blocked up with timber cladding. Internally only the section that opens out to the south was possible to access along with a small open fronted section located to the west. The building supported two internal rooms which were both locked limiting further investigation. The building had at some point over the previous 20 years been re-roofed using breathable membrane (see Figure 41). This type of breathable membrane has the potential to trap and kill crevice dwelling bats that utilise the building. Evidence of bat use was identified (see section 4.3.3). The building also supported an owl box.

Figure 40: View of the southern elevation of the building on site showing the open sections of the building.

Figure 41: View of eastern room

Figure 42: View of the western room

Figure 43: View of the roof structure showing the use of breathable membrane and an owl box located within the barn.

4.2.14 Native Hedgerows

Native hedgerows were recorded throughout the northern part of the site (see Figures 44–47 & Appendix 1). The parkland areas of the site lacked hedgerows. The hedgerows varied from being of some antiquity to being of more recent origin (the southern, eastern and northern boundaries of Field Parcel 2) and varied in terms of management from annual flailing to no apparent management. These are dealt with in more detail below:

Native Hedgerows – of some antiquity

These hedgerows were confined to the northern and eastern boundaries of Field Parcel 1 and the northern and eastern boundaries of Field Parcel 3. Species recorded included hazel (the general dominant species) with sycamore, hawthorn, ash (with ADB), dog rose, field elm *Ulmus minor*, bramble and blackthorn. Of these, only the northern hedgerow of Field Parcel 1 was managed in any way, utilising mechanical flail on an annual basis. Of these, the western boundary of Field Parcel 1 supported trees including a series of mature oak and ash trees.

Native Hedgerows – recent origin

These hedgerows were generally unmanaged and had grown tall and bushy (approx. 6m tall x 5 m wide). From studying aerial photographs, these hedgerows date from the time that the broadleaved plantation woodland was planted (circa 1990s). Species were varied with hazel (dominant) with goat willow *Salix caprea*, sycamore, blackthorn, dog rose, field maple *Acer campestre*, hawthorn, dog rose, field elm, rowan *Sorbus aucuparia*, bramble, grey willow *Salix cinerea*, elder *Sambucus nigra*, ash (with ADB), spindle *Euonymus europaeus*, guelder rose *Viburnum opulus* and holly *Ilex aquifolium*.

Figure 44: View of the northern hedgerows of Field Parcel 1

Figure 45: View of the eastern hedgerows of Field Parcel 1

Figure 46: View of the south-western hedgerow of Field Parcel 2

Figure 47: View of the north-eastern hedgerow of Field Parcel 2

4.2.15 Ephemeral perennial

This habitat was confined to the edges of the edges of the area of gravel/hardstanding parking provision located to the north of Field Parcel 1 (see Figure 48). Species recorded included daisy *Bellis perennis*, annul meadow grass *Poa annua*, dandelion, scattered individual plants of perennial rye grass, wood avens *Geum urbanum*, dove's-foot cranesbill, white clover and patches of white English stonecrop *Sedum anglicum*.

Figure 48: View of the ephemeral perennial habitat located on site.

4.2.16 Tall Ruderal

This habitat was confined to the earthen bund that formed the southern and western confines of the parking provision of Field Parcel 1. Species recorded included cock's foot, black bindweed *Fallopia convolvulus*, sheep's fescue, creeping thistle *Cirsium arvense*, bramble, common nettle, bristly ox-tongue *Helminthotheca echioides*, spear thistle *Cirsium vulgare*, cow parsley *Anthriscus sylvestris* and common hogweed *Heracleum sphondylium*.

4.2.17 Other Habitats

The Site supported a series of stock fences, an area utilised for parking constructed using compacted gravel, areas of bare ground an a single area of concrete hardstanding that forms the top of an underground storage tank located close to the northern edge of Field Parcel D.

4.3 Fauna

The data search results have been referenced throughout this report within the relevant sections; the full dataset is available in Appendix 3.

4.3.1 Amphibians

Thirty-four records for amphibian species were returned by Sussex Biodiversity Records Centre (SBRC) within 1 km of the Site, for 5 amphibian species common toad *Bufo bufo*, common frog *Rana temporaria,* great crested newt *Triturus cristatus,* smooth newt *Lissotriton vulgaris* and palmate newt *Lissotriton helveticus*. Only one records for this species was returned from the data search, but they are known to be present locally and quite widespread within the landscape.

Terrestrial habitats on site presented foraging, sheltering and breeding opportunities for common and widespread amphibian species as well as the rare great crested newt.

Standing water is present on Site with six ponds being recorded (see 3.11.7 above & Appendix 1). Two of these ponds, located in the south-western corner of the site are currently utilised for coarse fishing are therefore deemed unsuitable for supporting amphibian species due to the presence of the predatory common carp *Cyprinus carpio*. The other four ponds, two located within Field Parcel E and the other two within the woodland compartments are considered suitable for breeding great crested newts and other common and widespread amphibian species. Common amphibians, including the S41 species common toad and newt species within their terrestrial phases are likely to be present in suitable habitats, particularly in the damper areas and at hedgerow bases, tree bases. The Site is considered to be of **Local importance** for both great crested newt and common and widespread amphibian species.

4.3.2 Badger

[redacted]

4.3.3 Bats

Foraging/ Commuting Bats

Numerous records for commuting or foraging bats were returned from the data search from SBRC from within 1 km of the site.

This included records for brown long-eared bat *Plecotus auritus*, unidentified long-eared species *Plecotus* sp., soprano pipistrelle *Pipistrellus pygmaeus*, common pipistrelle *Pipistrellus pipistrellus*, unidentified pipistrelle *Pipistrellus* species, Nathusius's pipistrelle *Pipistrellus nathusii*, Noctule *Nyctalus noctula,* Whiskered bat *Myotis mystacinus*, Brandt's bat *Myotis brandtii*, unidentified *Myotis* sp., serotine *Eptesicus serotinus* and unidentified bat *Chiroptera* species.

On consulting aerial photographs, it is most likely that bats using the local area utilise the flanking woodlands within the Site to travel from east to west and from north to south along these strong linear features supporting the commuting of bat species and allowing the access of further foraging grounds/ habitats within the surrounding landscape through the use of other commuting features such as hedgerows, hedgerow trees and woodlands. The veteran (and ancient) sweet chestnut trees within the site are likely to be of interest due to the rich habitats (and therefore likely diverse and abundant invertebrate prey) they provide.

Due to its location, habitat connectivity to large areas of semi-natural woodland and the diverse semi-natural habitats present, the Site is considered to be of **County Importance** for commuting bat species.

As the main body of the Site contains foraging habitat for bats and the Site is considered to be of importance for foraging bat species, including noctule, particularly during May - July, when cockchafer beetles *Melolontha sp.* are on the wing. However, there is an abundance of high quality foraging habitat in the local area comprising woodlands, woodland edge habitats with smaller areas of good-quality semi-improved grassland and river corridors and as such, the importance of the site for foraging bat species is not considered important above the **Local** level.

Roosting Bats

Numerous roost records were returned by SBRC including a single maternity roosts for brown long-eared *Plecotus auratus* and records for general summer roosting for brown long-eared bat *Plecotus auritus*, unidentified long-eared species *Plecotus* sp., soprano pipistrelle *Pipistrellus pygmaeus*, common pipistrelle *Pipistrellus pipistrellus*, unidentified pipistrelle *Pipistrellus* species, Noctule *Nyctalus noctula*, natterer's bat *Myotis nattereri*, unidentified *Myotis* sp., serotine *Eptesicus serotinus* and unidentified bat *Chiroptera* species within 2 km of the Site.

Trees

No bat roosts were found within trees on Site although a number of trees on site presented potential roosting features (PRFs) that had a moderate to high bat roosting potential. These are discussed in more detail in **Table 5** below:

Table 5: PRFs within Site trees (refer to Target Notes (TN), Appendix 1.

Picture	Description	Potential Roosting Feature category
	Bark flake – TN3, Appendix 1	Low
	Woodpecker hole (WPH) – TN4, Appendix 1	Low-moderate

Picture	Description	Potential Roosting Feature category
	Woodpecker hole – TN5, Appendix 1	High
	Rams horns feature – TN6, Appendix 1	Low-moderate
	Multiple features present on veteran ancient sweet chestnut trees – TN7, Appendix 1	High

Picture	Description	Potential Roosting Feature category
	Impact shatter and rot features – TN8, Appendix 1	Moderate - high
	Woodpecker hole – TN9, Appendix 1	High
	Woodpecker hole – TN10, Appendix 1	High

Building

The only building located on site supported a large number of features that have the potential to support roosting bats. Gaps under ridge and roof tiles were recorded along with access gaps into the two (locked) rooms within the building providing access into dark areas including access to the ridge beam. As stated earlier, access into the two rooms of the building were not possible so a full assessment could not be undertaken.

A single degraded bat dropping was recorded lying on the edge of the southern facing open area within the building (see Figure 49 below).

Figure 49: View of the same tree with human for scale showing a multitude of veteran and faunal features.

It is considered highly likely that the building supports unknown numbers of roosting crevice dwelling bat species including both day and night roosting. The presence of 'breathable membrane' under the ceramic tiles of this building is cause of significant concern as this has been shown to actively entrap and kill bats that come into contact with it.

Within the context of the local area and bearing in mind the presence of numerous roosts for the species recorded from SBRC, the Site is considered to be of no more than **Parish Importance** for roosting bats.

4.3.4 Birds

The Site was found to provide good nesting and foraging habitat for a range of bird species, in particular within hedgerows and semi-natural ancient woodland component of the Site and the plantation woodland canopies.

Notably, the rare NERC 41 birds red kite *Milvus milvus*, lapwing *Vanellus vanellus*, curlew *Numenius arquata*, turtle dove *Streptopelia turtur*, *cuckoo Cuculus canorus*, skylark *Alauda arvensis*, woodlark *Lullula arborea*, yellowhammer *Emberiza citronella*, linnet *Linaria cannabina*, hawfinch *Coccothraustes coccothraustes*, lesser redpoll *Acanthis cabaret*, bullfinch *Pyrrhula pyrrhula*, tree pipit *Anthus trivialis*, spotted flycatcher *Muscicapa striata*, marsh tit *Poecile palustri*s, house sparrow *Passer domesticus*, starling *Sturnus vulgaris*, song thrush *Turdus philomelo*s, barn owl *Tyto alba* and common kingfisher *Alcedo atthis* were also returned from the data search from SBRC.

An owl box was recorded within the building located on site (see Figure 43), although no evidence of use was recorded.

The Site is considered to be of **Local Importance** for breeding birds.

4.3.5 Dormouse

Thirteen records were returned by SBRC within 1 km of the Site within connecting habitat (nearest location approximately 200 m east of the Site). Owing to the number of records, the good connectivity of the habitat within the local landscape in the form of large areas of semi-natural ancient woodland, plantation woodland,

secondary woodland and native hedgerows, their presence on site is presumed. The Site is considered to be of **Local Importance** for dormouse.

4.3.6 Invertebrates

A wide range of invertebrate species were returned from the data search from SBRC from within 1 km of the Site. Species recorded included the S41 (species of principle importance) butterfly species purple emperor *Apatura iris*, small heath *Coenonympha pamphilus*, white admiral *Limenitis camilla*, large tortoiseshell *Nymphalis polychloros* and brown hairstreak *Thecla betulae*.

The dragonfly/damselfly species downy emerald *Cordulia aenea* and common darter *Sympetrum striolatum* were also returned from the data search.

Roesel's bush cricket *Roeseliana roeselii*, was also returned from the data search.

The rare beetle, the stag beetle *Lucanus cervus,* has also been recorded within 1 km of the Site.

A large number of moth species was also recorded from within 1 km of the Site boundary. This included the S41 and Bap priority moth species knot grass *Acronicta rumicis*, ear moth *Amphipoea oculea*, minor shoulder knot *Brachylomia viminalis*, false mocha *Cyclophora porata*, small square spot *Diarsia rubi*, figure of eight *Diloba caeruleocephala*, small phoenix *Ecliptopera silaceata*, small emerald *Hemistola chrysoprasaria*, ghost moth *Hepialus humuli*, shoulder striped wainscot *Leucania comma*, rosy minor *Litoligia literosa*, brindled beauty *Lycia hirtaria*, dot moth *Melanchra persicariae*, white ermine *Spilosoma lubricipeda*, buff ermine *Spilosoma lutea*, blood vein *Timandra comae*, cinnabar *Tyria jacobaeae* and oak hook tip *Watsonalla binaria*.

Other invertebrate species include records for the S41 species of true fly northern yellow splinter *Lipsothrix errans* and river-shore cranefly *Rhabdomastix japonica*.

Common and widespread invertebrates are assumed on Site owing to the variety of semi-natural habitats present and the large number of records for S41 priority species, in particular butterfly and moth species returned by SBRC. Dead wood is present within oak, sweet chestnut, beech and ash canopies of the semi-natural ancient woodland, parkland trees and secondary woodland. As such, the Site is considered to be of **Local Importance** for invertebrate species.

4.3.7 Reptiles

Thirty-two records of reptile species were returned from the data search from SBRC comprising; slow worm *Anguis fragilis*, barred grass snake *Natrix Helvetica*, adder *Vipera berus* and common lizard *Zootoca vivipara*. Habitats on site were considered suitable for slow worm and grass snake.

Due to the habitats present on Site, the Site is considered to be of **Site Importance** for these reptile species.

4.3.8 Otter

No records for otter *Lutra lutra* were returned as part of the desk study. However, it is stated within the data search material that records for otter are not included within the records publicly released. Otter are now again present in every river catchment within England and their presence within the local landscape is therefore assumed.

Suitable habitat on site comprised the stream that runs along the majority of the southern part of the Site as well as the ponds located on Site. The stream is likely to offer foraging, commuting habitat and possibly breeding habitat, although the watercourse is rather shallow.

4.3.9 Hedgehog

Sixteen records for hedgehog *Erinaceus europaeus* were returned from the data search from SBRC. The hedgerow bases, woodland edge and scrub habitats are suitable for S41 Species of Principal Importance European hedgehog *Erinaceus europaeus* and their presence on site is therefore assumed. The Site is likely to be of **Local Importance** for this species.

4.3.10 European Rabbit

Fifteen records for European rabbit *Oryctolagus cuniculus* were returned from the data search from SBRC. Although not normally considered within an ecology based report, this species has undergone a rapid nationwide decline over the previous few years due to the emergence of Rabbit Haemorrhagic Disease 2, or RHD 2, is a particularly severe disease with a mortality rate of 90%+. This disease entered the UK from the pet trade from China in 2019.

No evidence of this species was recorded on site and the grasslands are considered sub-optimal due to their length and species composition. However, it is considered likely that a low-density population is present on Site.

4.4 Flora

The results have been referenced throughout this report within the relevant sections; the full dataset is available in Appendix 3.

4.4.1 Invasive Plant Species

The data search returned 80 records for invasive species located within 1 km of the Site. This included records for species listed on Schedule 9 of the Wildlife & Countryside Act 1981. This included records for three-cornered leek *Allium triquetrum*, monbretia *Crocosmia × crocosmiiflora*, Japanese knotweed *Fallopia japonica*, winter heliotrope *Petasites fragrans*, false acacia *Robinia pseudoacacia, Rhododendron ponticum, holm oak Quercus ilex,* cherry laurel *Prunus laurocerasus*, parrot's feather *Myriophyllum aquaticum*, least duckweed *Lemna minuta*, Spanish bluebell *Fallopia japonica*, Nutall's waterweed *Elodea nuttallii*, Newzealand pygmyweed *Crassula helmsii*, Himalayan cotoneaster *Cotoneaster simonsi,* wall cotoneaster *Cotoneaster horizontalis,* red valerian *Centranthus ruber* and variegated yellow archangel *Lamiastrum galeobdolon subsp. argentatum*.

The site itself supported two invasive non-native species, including species listed on Schedule 9 of the Wildlife & Countryside Act 1981 (as amended). This included winter heliotrope (see TN11 – Appendix 1) and *Rhododendron ponticum* (see TN12 – Appendix 1).

4.4.2 Notable Plant Species

The 1 km data search returned records for a wide range of notable plant species comprised of 140 records. Species returned included bluebell *Hyacinthoides non-scripta*, Aggregate-headed Hawkweed *Hieracium aggregatum*, Dyer's greenweed *Genista tinctoria*, box *Buxus sempervirens*, quaking grass *Briza media*, wood sorrel *Oxalis acetosella*, lesser spearwort *Ranunculus flammula*, sanicle *Sanicula europaea*, Devil's-bit scabious *Succisa pratensis*, autumn lady's-tresses *Spiranthes spiralis* and the liverwort fringed heartwort *Ricciocarpos natans*.

Of these, wood sorrel and sanicle were recorded on site. Possibly due to the time of year, no other of these species were recorded on site during the survey.

4.4.3 *Lichens*

A single record for lichen species were returned from the data search from SBRC. This comprised *Verrucaria polysticta*, listed as Nationally Scarce (NS).

4.4.4 *Fungi*

Four records for lichen species were returned from the data search from SBRC. This comprised bay polypore *Polyporus badius*, tiered tooth *Hericium cirrhatum*, Devil's fingers *Clathrus archeri* and *Pholiota adiposa*, all listed as Sussex Rare.

5 CONSERVATION MANAGEMENT PLAN 2023 - 2047

5.1 Introduction

The Site is made up of large areas of improved and semi-improved grassland and a series of woodland habitats (semi-natural ancient woodland, broadleaved plantation woodland and secondary woodland). Other habitats include small areas of arable, a series of ponds, a watercourse, small areas of dense scrub, dense bracken, ephemeral perennial, tall ruderal and a series of parkland trees including veteran and ancient trees. The site measures approximately 109.3 ha in size.

This plan forms part of the Beechy Bottom Park Conservation Management Plan 2023-2048 and aims to set out the management and rationale for the management on the site to ensure that the site meets its targets for habitat and animal species restoration.

5.2 History and Past Management of the Site

The Site has not previously been managed by any land-based scheme such as Entry Level Stewardship Scheme (ELS) or Higher-Level Stewardship (HLS) schemes. The Site may have been subject to an historical English Woodland Grant Scheme or Woodland Grant Scheme, although these records are not available online due to the age of the presumed agreement, it is assumed that the broadleaved plantation woodland located to the west of the Site are as a result of this.

The broadleaved plantation woodland located to the west of the Site (and in smaller parcels located towards the centre and east of the site) are believed to have been planted on former pasture fields and parts of the historic parkland at some point in the late 1980s to mid-1990s. Since its planting the only apparent management that has taken place has been the removal of the majority of the tree guards, a very few were in evidence during the Site visit. Since then, these woodlands have essentially been left as non-intervention woodlands with little active management bar the maintenance of the rides.

The other woodlands, including the semi-natural ancient woodland, secondary woodland, broadleaved Turkey oak plantation woodlands and the parkland trees (including the veteran and ancient sweet chestnut trees) do not currently receive any management bar from the occasional cyclical cutting of the *Rhododendron ponticum* located within the semi-natural ancient woodland component of the site. The public rights of way (PROW) that run through these woodlands are also maintained to provide pedestrian access through the Site.

The grassland component of the Site is currently managed in a number of ways with Field Parcel A being managed as amenity grassland to provide local sports facilities. Field Parcel B is likely subject to bi-annual mechanical topping. Field Parcels C has been historically managed by occasional re-seeding and taking a series of sileage cuts throughout the growing season while Field Parcels D & E have been managed by a combination of re-seeding, mechanical cutting and bailing (see Figure 51) and cattle grazing. Field parcels F & G have been fenced off recently and have not received any active management as yet but are likely to be historically part of an arable rotation with field margins.

The majority of the grassland formed part of the historic parkland associated with Cuckfield Park, located to the east of the Site and was likely managed through extensive grazing of cattle on permanent pasture with a large number of parkland trees forming wood-pasture. This can be seen on Figure 50 below, which details a view of the OS 25 inch 1892-1914 map of Cuckfield Park. This figure is of particular interest as it shows the direct relationship between the site and Cuckfield House and also shows not only the veteran and ancient sweet chestnut groves located to the south of the Site but also the large number of parkland trees that have been lost from the Site as a whole.

Historically, through looking at Figure 50 below, it is possible to see that a large number of parkland trees have been lost from the areas of the Cuckfield Park to the extent that it is possible to see that the historic parkland was previously managed as wood pasture in a parkland setting. Wood pasture and parkland is land that has been managed traditionally through grazing of permanent grassland. This parkland, as discussed earlier, started as a medieval hunting forest but was de-parked in 1618 and has since then formed part of the landscaped grounds of the adjacent Cuckfield Park.

The ponds located on Site can be split into three different categories. The two woodland ponds appear to be been former quarry locations which receive no active management. The two coarse fishing ponds are managed by a local angling club for the coarse fishing purposes. The two ponds located within Field Parcel currently fenced off and are currently not managed in any way.

Figure 50: View of the OS 25 inch 1892-1914 map of Cuckfield Park showing the number of parkland trees that formerly covered the Site.

5.3 Future Vision

A minimal-input, more-natural and soft-touch grazing regime means removing internal man-made barriers to permit herbivores (stock and wild animals) to roam freely. Vegetation will develop and change without interference except where necessary and then at minimum levels needed.

The proposal is to enclose the park with a secure deer and cattle-proof fencing and then to remove the limited internal barriers to allow free access throughout the site for stock and wild animals. This is envisaged to include herds of cattle and pigs and wild animal species such as hare, red and roe deer would graze across the whole of the park. The vegetation will then be subject to a more naturalistic management process which can be built up over time allowing habitats to develop, through succession, into more semi-natural states.

This naturalistic grazing project has been inspired in part by the work undertaken at the nearby Knepp Estate and therefore by the theories of the Dutch ecologist Frans Vera. Frans Vera theorised that a true wilderness in this part of Europe would have been driven by disturbance from wild herbivores and would have looked more like wood pasture than dense, closed canopy forest. This may have been the case of the continent where large-scale seasonal migration by large numbers of herbivores was both feasible and possible, but this was unlikely to have taken place in mainland Britain since the end of the last ice age approximately 11,700 years ago due to the lack of a winter migratory refuge and low numbers of large herbivores when compared with a continental wide natural system.

To look at what can be created at Beechy Bottom, we have to look to a more recent past when a combination of fallow and 'waste' areas and areas of traditional farming practices created habitat that supported large numbers of individual animals and a wide range of wildlife species. Prior to the Second World War, the UK supported very large areas of semi-natural habitat which in turn supported large wildlife populations (albeit in the absence of predators such as sparrow hawk and pine martens), in particular of farmland bird species. This was in part due to the large-scale imports of food products from the Empire, which from the 1880s led to a 60-year farming depression and a general lack of progression of farming methods and techniques.

During the war, an area measuring approximately 4 million acres was ploughed up and put into agricultural production. To give a comparison, this is simar in scale to the combined area of the whole of Cornwall, Devon, Somerset and Dorset. Post-war, this trend continued and large areas of scrub, woodland, wetland and permanent grassland went into intensive agricultural production.

Post-war government subsidies were heavily targeted towards increasing agricultural production. This led to changes in farming practices, which included the loss of mixed farming systems (creating arable and intensive pasture monocultures), the move from spring to autumn sowing of cereal crops (which actively kills farmland bird young), and increased use of a new diverse range of pesticides, all of which have been demonstrated to have had adverse impacts on farmland birds such as skylark *Alauda arvensis* and grey partridge *Perdix perdix*.

Five farmland specialists (corn bunting *Emberiza calandra*, grey partridge, starling *Sturnus vulgaris*, turtle dove *Streptopelia turtur* and tree sparrow *Passer montanus*) have experienced severe declines in excess of 80% since 1970. The grey partridge in particular has seen severe declines of 93% between 1967 to 2018.

However, the work at the Knepp Estate has seen a large-scale restoration of bird, reptile, botanical, mammal, amphibian populations. This includes large rises in all of the above species as well as rare migrants such as nightingale rufous nightingale. With the UK summer population estimates to be just 5500-6000 birds, Knepp Estate can now boast of 40 territories (approx. 80 birds can be inferred) being defended, when in 2001, Knepp estate supported none.

It should be the aim of the proposed park to try and restore these lost animal species and restore degraded habitats. A particular focus will be on farmland bird species, but also reptile, amphibian, mammal and invertebrate populations as well as botanical diversity. By introducing more naturalistic processes such as 'soft touch' extensive management systems and allowing the development of woody scrub areas, forb rich and structured grassland as well as allowing natural regeneration within the woodlands should, over time, create species-rich and evocative wildlife rich habitats. As an aside, this will also result in carbon sequestration into the soils through the abandonment of more intensive agricultural techniques.

Once this management has been set up, Beechy Bottom Country Park will then be left to 'go wild', with minimal management, but with close welfare and ecological monitoring to evaluate habitat and animal population change while providing a refuges for bats and birds that are currently lacking within the habitats on Site at present.

The overall vision is of a park where natural processes predominate, and long-term financial stability is achieved outside a conventional agricultural framework. So far as is possible, management of the park will deliver environmental and landscape enhancement through these management techniques.

Figure 51: Proposed vision of the grassland component of the site showing grazing herbivores living within a species-rich grassland setting with areas of successional scrub providing rich bird and mammal foraging and nesting opportunities.

5.4 Biodiversity Restoration Detail - Habitats

Field parcels A will continue to form part of the sports pitch provision locally in order to continue to provide a local sporting facility for the local community.

Field Parcels B and C, due to the high level of permissive public use for dog-walking and other public recreational walking will be retained as this going forward in order to provide this facility locally. Cut paths within Grassland Compartments B & C and cut the remainder of the grassland twice a year, once in March and once in September (remove arisings).

Field Parcels D – G, along with the majority of the woodland component of the Site, veteran trees and Site ponds are envisioned to be subject to part of a project to restore semi-natural habitats with the aim of restoring animal and plat populations that have been lost from the local area and wider countryside.

5.4.1 Arable

The arable component of the site is small, measuring approximately 0.34 ha. As this already ploughed land, this habitat should be sown with a species-rich native meadow mixture. This will allow this area to act as a source of wind and animal dispersed seed for the surrounding species-poor grassland habitats, as well as providing an immediate habitat provision for a wide range of invertebrate, bird, amphibian, mammal and reptile species.

It is recommended that Emorsgate Seeds EM3 – Special General Purpose Meadow Mixture (containing 32 forb and grass species) is sown to create a species-rich sward which will allow the spread of species diversity throughout the retained grassland sward on Site.

Preparation

To establish this habitat, the existing habitat should be removed through the use of glyphosate or repeat cultivation. Chemical use is recommended here due to the difficulty in using machinery within these relatively confined areas to help create a well prepared and good quality seed bed before sowing.

To prepare a seed bed, first remove weeds using repeated cultivation or a herbicide. Then plough or dig to bury the surface vegetation, harrow or rake to produce a medium tilth, and roll, or tread, to produce a firm surface. Sowing seed is best sown in the autumn or spring but can be sown at other times of the year if there is sufficient warmth and moisture. The seed must be surface sown and can be applied by machine or broadcast by hand. To get an even distribution and avoid running out divide the seed into two or more parts and sow in overlapping sections. Do not incorporate or cover the seed, but firm in with a roll, or by treading, to give good soil/seed contact.

First year management

Most sown meadow wildflower and grass species are perennial; they will be slow to germinate and grow and will not usually flower in their first growing season. There will often be a flush of annual weeds from the soil in the first growing season which may grow up and obscure the meadow seedlings beneath. This annual weed growth is easily controlled by topping or mowing.

Mow newly sown meadows regularly throughout the first year of establishment, to a height of 40-60mm, removing cuttings if dense. This will control annual weeds and help maintain balance between faster growing grasses and slower developing wildflowers.

Avoid cutting in the spring and early summer as the mixture contains yellow rattle *Rhinanthus minor* which parasitizes the grass species allowing for the development of more forb species within the sward. These sown annuals should be allowed to flower, then in mid-summer cut back and the cut vegetation removed.

Carefully dig out or spot treat any residual perennial weeds such as docks.

In the second and subsequent years EM3 sowings can be managed in a number of ways. The best results are usually obtained by traditional meadow management based around a main summer hay cut in combination with autumn and possibly spring mowing.

Figure 52: View of a typical EM3-sown meadow.

5.4.2 Grassland

This habitat within the Site, with the correct management and over time has the potential to support a wide range of bird, mammal, invertebrate, reptile and amphibian populations as well as re-creating habitats that have been lost and allowing other habitats to become more varied, structured and species-rich.

The Site has the potential to allow the improved grassland to transition to a more species rich and structured sward that has the ability to support a wide range of invertebrate and mammal species which will in turn support wide food web increasing number of reptile and amphibian species including common lizard, grass snake, slow worm, smooth, palmate and great crested newt. This will in turn lead to the development of areas of dense woody scrub will be allowed to develop around the edges of the grassland parcels which will intern support a wide range of bird species, including farmland bird species which have been lost from the landscape.

Over time, it is hoped that the grassland will develop into a much more diverse and species-rich natural grassland interspersed with scrub and woodland edge habitats.

5.4.3 Ponds

The ponds currently located within grassland component of the Site are to be opened up through the felling of a small number of trees and removal of the scrub that currently surrounds the ponds. This will allow light onto the ponds and enable the ponds to be utilised as a natural source of water for stock and wild animals.

The two ponds currently utilised as coarse fishing ponds are to be subject to electrofishing to humanely remove the fish currently present. These can be transported offsite and used to stock offsite ponds. The ponds will then be allowed to settle out to improve the water quality, thereby preventing the pollution of the River Adur, located to the south of the Site. It is expected that these ponds will then be utilised by wildlife including amphibian, invertebrate reptile and botanical species.

The two ponds located within the semi-natural woodland on site will be loft as non-intervention ponds in terms of active human management. Stock will however be allowed to access these ponds and it is expected that some management impacts will be encountered over the period of this management plan. These will be monitored by park staff.

5.4.4 Woodlands

The semi-natural ancient woodland component of the Site is currently subject to relatively high fallow deer pressure. As such, there is little in the way of natural regeneration. The plantation woodlands generally lacked an understorey due to the planting of tree species with no understorey species, as opposed to woodland shrub species. A clear browse line is present within the woodlands. The development of some limited scrub and thick forb vegetation within the plantation woodlands is limited to the rides where light is allowed to impact the woodland floor.

Within the semi-mature plantation woodland, it is proposed to create a number of glades and to veteranise (see section 5.4.11 below) all of the poplar and a proportion of the Turkey Oak and ash component of the plantation woodlands. This combined with a sharp reduction of the local fallow population and allowing the low numbers of stock (red deer, cattle and pigs) full access to the woodland habitats generally. It is hoped that a more naturalistic woodland structure with open glades and areas of natural underwood regeneration will develop.

This measure will benefit a wide range of mammal, bird, invertebrate and amphibian species.

5.4.5 Parkland Trees

The site supports a range of parkland trees. The majority of these originate from the post-war era and can be classed as semi-mature to mature trees. These are of some value to wildlife at present, offering limited foraging and nesting resources, but are not of the age that has allowed the development of features that have the potential to support roosting bats, bird nesting features associated with deadwood or saproxylic invertebrate species, such as stag beetle species. Over time, as these trees age and suffer the impacts associated with aging, they will offer more in the way of habitats suitable for a wide range of wildlife.

It is proposed that a wide program of re-planting is undertaken with at least 60 trees being planted in order to re-create the wood-pasture landscape that previously existed on Site. These trees should be planted mimicking the locations as shown on the OS 25 inch 1892-1914 map (see Figure 50). These have been set out in order to provide sight and wildlife commuting lines through the landscape. Beech *Fagus sylvatica* should not be planted as this species is vulnerable to the impacts of drought, and therefore, climate change. It is recommended that pedunculate oak *Quercus robur* and sweet chestnut *Castanea sativa* should make up the tree species utilised. Both these trees are more drought resistant and have the ability (in the case of pedunculate oak) to support a wide range of invertebrate species and mimic the species composition of the surviving mature and veteran parkland trees.

5.4.6 Veteran Trees

A small number of veteran (and ancient) trees exist within the Site. These historic and, in the case of the sweet chestnut component, are nationally important trees. A number of these trees have fallen and some are standing deadwood. These trees contain a large number of features that have the potential to support roosting bats, nesting birds and likely to support a wide range of saproxylic invertebrates.

These trees are significant natural reservoirs in their own right and need to be preserved as far as possible as they provide habitats found nowhere else on the estate. These trees must be retained, monitored, studied and protected going forward. The fallen deadwood accumulations should be left in-situ in order to preserve the saproxylic invertebrates that likely already exist here.

5.4.7 *Native Hedgerows*

A small number of native hedgerows exist towards the north of the Site. Hedgerows are an important habitat in the countryside as they mimic woodland edge habitat and as such are important for nesting birds, dormice, and amphibian species during their terrestrial phase.

A number of the existing hedgerows on site are unmanaged and are now developing into lines of trees, while the hedgerows of more recent origin have not been cut for a number of years. It is recommended that all of the hedgerows are allowed to grow tall and bushy, with the hedgerows of more recent origin allowed to develop to be 3 m tall x 3 m wide.

5.4.8 *Watercourse*

Watercourses are of significant wildlife interest in terms of providing foraging, nesting and commuting habitat for a wide range of species. The River Adur, running through part of the southern extent of the Site is currently suffering heavily from the polluted outflow from the existing coarse fishing ponds. The water is both turbid and likely high in nutrients as a by-product of keeping large numbers of fish within confined waterbodies. These fish likely receive supplementary feeding which will further impact the nutrient levels and therefore the outflow into the river. This, of course, impacts a wide range of wildlife both on site and further downstream.

In order to support wildlife generally, the water quality of the river needs to be significantly improved. It is proposed to close the coarse fishing ponds and electro-fish the water-bodies. This can be a non-lethal, with the fish humanely removed and relocated to a less impacting location off-site.

5.4.9 *Dense Scrub*

The dense scrub habitat present on site is confined to very small areas of the Site within Grassland Compartment E and surrounding the ponds located within this compartment. This habitat is considered to be of considerable value to wildlife, in particular nesting bird and invertebrate species, including rare and scarce species such as brown hairstreak *Thecla betulae*, which depends of the presence of blackthorn *Prunus spinosa* as its foodplant. Blackthorn and hawthorn scrub also provide a ‘nursery’ for tree species, in particular immature oak species, providing protection from browsing and grazing animals such as cattle, ponies and deer.

It is envisaged that pockets of scrub be allowed to develop across the grassland component of the site and woodland edges prior to the introduction of stock animals (red deer, cattle etc) on site. This will provide a very substantial boost for bird species in particular.

The development of this habitat within the grassland and woodland edge habitats has the potential to provide a huge boost to wildlife species, including rare and scarce species such as nightingale and brown hairstreak.

5.4.10 *Dense Bracken*

This habitat is present within very restricted areas of Grassland Compartment D alongside woodland compartments and along natural geological folds in the landscape. In some cases, this clonal plant can be very aggressive and therefore damaging to the environment. However, bracken can be beneficial to wildlife, particularly in a mix with other habitats by providing nesting locations and cover for a range of bird species.

Bracken edge habitat is also beneficial for reptile species, especially when emerging from hibernation during spring by providing shelter, foraging and dispersal routes. Small mammal species also benefit from bracken by providing foraging and shelter opportunities. Eleven invertebrate species are found only on bracken, and many others use it as part of their diet, for example several species of fritillary butterflies use bracken areas with their caterpillars feeding on violets and then pupating under dead plant material. Often woodland plants such as bluebell, primrose and wood anemone grow under bracken providing valuable pollen and nectar for

insects in the spring. To provide the greatest benefits for wildlife, bracken should be managed as part of the grassland, heathland or woodland habitat in which it grows. At Beechy Bottom Country Park, it is envisaged that this habitat will spread within the grassland component of the site and form a matrix with scrub, grassland and woodland thereby providing a variety of habitats suitable for a wide range of wildlife species.

5.4.11 Building

The only building on Site, a 19th century barn located on the edge of Grassland Compartment E is to be partially converted for the use by the proposed ranger. It is envisaged that the building will be utilised as an office and as a store and will also act as a hub for visitors with a sheltered area for people to eat. As mentioned earlier, the building also supports a disused owl box and has signs of roosting bats. As such the appropriate ecology works will be to be completed prior to conversion. The existing Tyvek membrane must be removed as it can entrap bats.

5.4.12 Veteranisation

This is the process of targeting low-value / undesirable trees that require removal or, in the case of ash, are dying of disease anyway in order to create instant habitat of high value to a wide variety of mammal, bird, fungi and saproxylic invertebrate species through the creation of standing deadwood with a series of specially designed features carving into them specifically designed for a range of bat species (different bat species prefer different roosting positions) and bird species such as bark flakes for species such as treecreeper, nest boxes for general bird species and woodpecker holes. Features low down on tree trunks can also be created specifically to support dormouse and other small mammal species. Branches removed from the tree canopies in order to create a more stable trunk will be deposited on the woodland floor to create deadwood accumulations of significant interest (along with the retained standing deadwood to saproxylic invertebrate species and fungi.

5.4.13 Ash Dieback Disease

Ash dieback disease *Hymenoscyphus fraxineus* is a serious fungal pathogen that attacks ash trees and was first confirmed in Britain in 2012. The disease is native to eastern Asia and causes significant leaf loss, stem and branch lesions, crown dieback, and is usually fatal, particularly with younger specimens or coppiced trees.

It is reported that older mature trees can sometimes live with the disease but often become weakened or stressed and are therefore more susceptible to secondary fungal infections from honey fungus *Armillaria mellea*. Once a tree is infected there is no cure or treatment and the crown can die very quickly and, in some cases, modifying the structural condition of the wood in one season.

Ash trees with advanced ash dieback can be particularly brittle and dangerous to work on. As mentioned above, some trees can be significantly affected by the disease in a single season, this could result in the tree being a high risk and a danger to the public in some circumstances. Therefore, dead standing trees in high or moderate target areas, close to footpaths, need to be quickly assessed in order to determine the appropriate management, i.e. felling, pollarding or monolithing. In many cases individual ash trees have shown resilience to ash dieback, it is important that these trees are identified, retained and monitored. For this reason, pre-emptive felling of diseased ash trees should be discouraged, unless the tree poses a significant risk to people or property.

The ash trees observed at Beechy Bottom County Park are in reasonable condition with moderate signs of ash dieback disease at present. The worst affected ash are located within the plantation woodland located to the west of the Site. The remainder of the ash trees growing on the estate are along hedgerow boundaries and in woodlands which are categorized as very low risk to people or property. Management of these trees will be dependent on the overall impacts of the disease over the coming years.

5.4.14 Climate Change

Climate change is predicted to change global temperatures and weather patterns are to become more extreme. The Met Office (2008 data) predict hotter, drier summers with average temperatures of 31˚C and warmer, wetter winters for the Southwest of England. This has large implications on woodlands and other associated flora and fauna.

Wildlife and lower plant life communities also make up a large part of the woodland ecosystem and therefore it is likely that woodland habitats will also be affected by climatic change. For this reason, it is of utmost importance where possible to help create habitats throughout woodland ecosystems, in order to support and, is possible, enhance biodiversity.

5.5 Biodiversity Restoration Detail – Species

5.5.1 Mammals

Hard provisions, such as the provision of the bat maternity, dormouse and tree veteranisation will allow an immediate benefit to mammal wildlife populations through providing shelter, roosting and nesting opportunities that are currently lacking from within the Site. This is due to the lack of woodland understorey and the presence of a general even-age structure within the plantation woodlands (of recent origin and Turkey oak dominated areas) that lack a more natural age range and as such, the features associated with older trees that can be utilised for both nesting/roosting that develop with age.

In terms of bat boxes, it is recommended that Schwegler 1FS large colony boxes are utilised. The Schwegler 1FS Large Colony Box provides bats with a very large internal space. This allows high numbers of bats to congregate together and makes it very popular for accommodating large colonies in summer. It is particularly attractive to noctule *Nyctalus noctula*, Nathusius' pipistrelle *Pipistrellus nathusii* and brown long-eared bat *Plecotus auritus* as well as nurseries, with roosts containing between 70-100 bats have been recorded. The large internal space and variety of hanging places makes it ideal for bats to use as a nursing area. The 1FS is suitable for both summer and winter roosting/hibernation. This will instantly provide a resource that is currently lacking from the site for the reasons already stated. A total of six boxes should be installed across the site, focussed on the southern edge of the semi-natural ancient woodland and on some of the mature and veteran chestnut trees located within the site.

5.5.2 Birds

Hard provisions, such as the provision of the tree veteranisation/bird boxes will allow an immediate benefit to bird wildlife populations through providing shelter, roosting and nesting opportunities that are currently lacking from within the site. This is due to the lack of woodland understorey and the presence of a general even-age structure within the plantation woodlands (of recent origin and Turkey oak dominated areas) that lack a more natural age range and as such, the features associated with older trees that can be utilised for both nesting/roosting that develop with age.

The proposed new management of the grassland component of the site, allowing the spread and development of scrub habitat following by the introduction of cattle, brown hare and red deer will enhance the site for a wide variety of common and widespread bird species. In particular, certain rare, declining and scarce species should be targeted as indicators of habitat restoration success. These are:

- Nightingale - The development of patches of scrub on former arable land at Knepp Castle has led to a surge in numbers of very rare and scarce species such the nightingale *Luscinia megarhynchos*. This once common species has all but disappeared from the landscape of England, declining a staggering 92% between 1970 – 2018 (British Trust of Ornithology BTO

figures). In 1999, a national nightingale survey at Knepp by the BTO recorded only seven nightingale territories at Knepp. But in 2012 (post-rewilding) a survey conducted by a student at Imperial College London identified 34 territories, 79% of which were thought to be paired birds that were potentially breeding. Since 2012 that figure has increased even further to 40 territories as of 2021.

The Imperial College study showed that the habitat nightingales were focussing their nesting within overgrown hedges between 8-14 metres deep, made up of mixed shrub species with a preponderance of blackthorn. The interior of these thorny shrubs provide the adults and their fledgling chicks with a safe place to forage for insects in the leaf-litter. Nightingale territories are usually found in habitats associated with woodland and woodland edge habitats.

- *Barn owl* - The barn owl *Tyto alba* is widely distributed across Britain. But at an estimated c.4,000 breeding pairs (Barn Owl Project 1997), can be considered at a low density. This population is partially migratory during the winter period and is somewhat limited (being at the edge of its northern range) during the winter months. The barn owl was once a familiar owl of lowland English farmland – both pastoral and arable – with peak densities occurring in East Anglia, Lincolnshire and Yorkshire. Historically, numbers have recovered since an all-time low of 1,400 breeding pairs in 1988-91 from a high of the first national barn owl survey of 12,000 breeding pairs in 1932.

  Favoured habitats contain areas of rough grassland and woodland edge, within which populations of field vole *Microtus agrestis* (the favoured prey) are sufficiently abundant. The availability of small mammal prey shapes breeding behaviour; breeding may be delayed or not take place at all in those years when small mammal populations are at a low. Populations have recovered somewhat from an earlier period of decline and have benefited from the erection of nest boxes and appropriate habitat management. Barn Owl is listed on Schedule One of the Wildlife & Countryside Act and so receives additional legal protection, making it illegal to disturb its nesting sites. All five species of British owl, including barn owl are now regularly recorded at Knepp.

  The creation of large-scale tussocky grassland and woodland edge habitat interspersed with pockets of successional scrub will create ideal habitat to support a large population of small mammals, including field vole. It is unknown if barn owl currently nest or frequent the site, but the existing habitats – improved and heavily managed grassland – are considered to be unsuitable for supporting a breeding population of this species. This can be supported by the installation of two barn owl boxes located on suitable trees within the parkland/woodland edge habitats.

- *Turtle dove* - The turtle dove Streptopelia turtur, a summer migratory visitor to the UK, is the fastest-declining bird in the UK. The species, as recently of the early 1970s was both common and widespread across southern Britain. The range extended into southwest England and eastern Wales, northwest into Lancashire and northwards up the eastern coast of England to Scotland. The population was estimated at 125,000 breeding pairs in 1970. The population has fallen a staggering 98% as of 2021 and is continuing to steadily halve in number every four years. This has sadly been mirrored across their European range with an 80% decline since 1980. As such, it is now classified as globally Vulnerable, and now has a European Action Plan identifying steps to address the key issues such as habitat loss, insufficient food availability, and excessive over hunting (in the Mediterranean region). The current national estimate is of 1,00 breeding pairs, with many counties being able to support single breeding pairs only. Sussex is one of the national strongholds of this species, with 80 breeding territories being recorded in 2019, 25% of these were recorded at Knepp.

  Favoured habitats include tall, thick hedgerows, a high level of ‘weed’ seed from seasonal native herbaceous plants and areas of scrub and successional woodland edge habitat to provide nesting habitat.

The creation of large-scale tussocky and herb rich grassland and woodland edge habitat (over 4 m tall) interspersed with pockets of successional scrub will create ideal habitat to support a small, possibly single breeding pair of this species within the Site.

- *Cuckoo* - Cuckoos are also migratory summer visitors and are well-known brood parasites. Instead of building their own nest, the females lay their eggs in other birds' nests, especially meadow pipits, dunnocks and reed warblers. The Breeding Bird Survey organised by the British Trust for Ornithology has documented a 70% decline since 1995, whilst the Scottish population has increased by 30%. The reasons for this are not entirely clear, but currently cuckoos are faring much better in areas of heathland, especially in the uplands, than in the farmed lowlands.

  The decline of cuckoo is not fully understood, but is probably related to the decline in semi-natural habitats in the lowlands due to agricultural intensification. This had led to a loss of the invertebrate prey such as the 'wooly bear' caterpillars (garden tiger *Arctia caja* larvae), which are a key item for adult cuckoos.

  Cuckoo has now being recorded at Knepp (an estate that was formerly 3,500 ha of arable), with four cuckoos being ringed in 2018, so habitat restoration can help this species recover. The restoration and diversification of the grassland habitats will help support this species by providing the foodplants that this species require. The larvae of garden tiger are generalists, meaning they eat a large variety of plants without much specialisation. However, most larvae of this species obtain their characteristic toxic compounds from their diet, which can vary from foxglove, members of the daisy family and species of plantain.

5.5.3 Reptiles

The creation of a series of hibernacula from excess cut wood (from the veteranisation process) should be utilised to create hibernacula in suitable locations. These could be in close proximity to the ponds on site both on the woodland edge and within the grassland component of the site. These features offer a combination of shelter, foraging and hibernation opportunities to a range of reptile (and amphibian species).

The development of the grassland component of the Site into tussocky grassland with short basking areas grazed by a variety of herbivores will also provide a large area of suitable habitat for these species, in particular common lizard, slow-worm and grass snake. The introduction stock that are not subject to ivermectin worm control will also provide dung that will in turn support a wide range of invertebrate species that will provide a large abundance of prey items for the reptile species, such as slow-worm and common lizard.

5.5.4 Amphibians

The creation of the reptile hibernacula (as set out in section 5.5.3 above) also be of considerable benefit for amphibian species such as common frog, common toad, palmate, smooth and great crested newt by providing shelter, foraging and hibernation opportunities. The creation of fallen deadwood habitats will also provide similar hibernation, shelter and foraging opportunities.

The development of the grassland component of the site into tussocky grassland with areas of successional scrub and woodland edge habitats will provide suitable foraging (during their terrestrial phases) and commuting / connective habitat for these species. The introduction stock (that are not subject to ivermectin worm control) will also provide dung that will in turn support a wide range of invertebrate species that will provide a large abundance of prey items for the amphibian species mentioned above.

The opening up of the ponds located within the grassland and the restoration and electro-fishing of the existing coarse fishing ponds will also provide a number of new suitable breeding locations for these species.

5.5.5 Invertebrates

The veteranisation process will create instant habitat of high value to a wide variety of saproxylic invertebrate species through the creation of standing and fallen deadwood accumulations which will be of significant interest to these saproxylic invertebrate species.

The creation of a species-rich native grassland within the area formerly occupied by the arable will also provide a new species-diversity to the grassland component on site providing foraging opportunities and foodplants for a wide range of invertebrate species, in particular butterfly, beetle and moth species. The creation of rough tussocky grassland that is allowed, through carefully controlled grazing patterns to develop into a more species-rich sward over time will provide a large area of suitable habitat for invertebrate species, thereby providing a food source for a wide range of animal species.

The development of scrub patches throughout the grassland component of the site and along the woodland edges will provide areas of blackthorn scrub which will in turn provide habitat for the rare brown hairstreak butterfly.

5.5.6 *Invasive Species*

The Site supports a number of non-native invasive species, both animal and plant. To summarise:

- The semi-natural ancient woodlands support quite large stands of common rhododendron. This species is listed on Schedule 9 of the Wildlife & Countryside Act 1981 making it illegal to allow this plant to spread in the wild and onto neighbouring properties. This plant reproduces readily from seed and has since spread rapidly across the UK, being most invasive in western and upland areas. It's dense, evergreen foliage and rapid growth crowd out almost all other species and phenols from its leaves suppress the germination of any other plants;
- A large patch of the invasive non-native winter heliotrope, located to the south of the site. This species aggressively spreads in woodland, woodland edge and grassland habitats. It is spread by rhizomes and root fragments;
- A population of grey squirrel *Sciurus carolinensis* within all of the woodlands located on Site. The invasive greys, are responsible for the disappearance of the native red throughout much of England and Wales, due to the squirrel pox virus they transmit and the fact that they compete for food and habitat with their smaller relatives;
- Fallow deer *Dama dama*, now naturalised in the country, inhabit the Site. This species love a moderately high densities in the woodland on Site and as such have a negative impact on the woodland ground flora and understorey; and,
- Turkey oak *Quercus cerris* has been planted as a single species plantation woodland within the Site. This species, especially in an area with reduced grazing pressure can spread rapidly and has many invasive properties being able to aggressively spread and outcompete native species including English oak.

The following management recommendations are proposed:

Rhododendron

It is essential that this species is aggressively controlled, and over-time eradicated within the Site boundary. Control of *R. ponticum* invasion in the woodland is often taken as the first operation in the restoration of native habitats. The choice of control/eradication method can influence the recovery of the Site, and this should be considered when planning any operations. Control options that include the complete or partial removal of *R. ponticum* shoots before herbicide control will allow faster re-invasion of plants, especially if coupled with ground disturbance. The speed of recovery is also dependent on a local source of viable propagules.

A stem injection control method has been successfully trialled in Western Scotland and Wales. The removal of the largest plants has always posed the greatest challenge and expense to managers, their continued presence in the environment the greatest threat to the species' long-term eradication, as mature bushes can produce up to a million seeds a season, continually re-invading surrounding habitats.

The following methods are recommended:

- Injecting herbicide directly into the stems of large rhododendron results in their death within six months. Not only is the dead material then easier to remove, but the application of the herbicide is more precise than in traditional methods, uses less product producing overall cost savings.
- Cut during the winter (September to March), focussing on older, seedbearing bushes first, and follow up with stump treatment immediately. Seed dispersal tends to be very low, generally within a few metres of the individual bush, and research shows that destroying the oldest/core plant is more effective than starting at the edge of the infested area and dealing with younger plants and seedlings;
- Pull up any seedlings if they come out easily and dig out any plants manually where feasible (don't leave any roots behind);
- Treat young bushes, any regrowth from stumps and any remaining seedlings with a foliar spray mixed with an adjuvant (this breaks down the waxy layer on the surface of the leaf) between May to October. Research seems to show that these sprays are most effective on younger bushes that are less than 1.3 m tall;
- Treat mature bushes with a stem injection treatment, if available. If not, then apply a foliar spray as for other younger bushes; and,
- Burn the cuttings but make sure you limit the number of fire sites since any bare ground created will result in more sites being available for the seeds to take hold.

Winter Heliotrope

Winter heliotrope is a non-native invasive species that was introduced to the UK from abroad. Winter heliotrope was brought over from the Americas and North Africa (mostly) to be planted in gardens during the 1800s as it provides good ground coverage and had a pleasant aroma.

Managing the plant is best achieved via herbicide treatment and/or regular mechanical cutting of plants, which will over time weaken and destroy the plant by not allowing photosynthesis. This should be carried out once a month throughout the UK growing season until the plant no longer returns. Treatment can take a number of years to achieve full eradication.

Grey Squirrel

The grey squirrel was introduced to the UK from North America in 1876. The UK population has grown rapidly since then to the detriment to our native red squirrel through direct competition and the spread of squirrel pox. The native red squirrel has been lost over much of their range, including in Sussex and the whole of southern England.

Grey squirrels also cause extensive damage to our woodlands by stripping bark from trees' main trunks (both from the base and up into the canopy) and branches. They can over time strip a complete ring of bark around the tree, killing the tree. The costs of damage are estimated at between £6 and £10million per annum in Great Britain.

There are encouraging methods being trialled at present in order to deal with this species, this includes a project studying fertility control and the possible future spread/re-introduction of the pine marten. But these possibilities of control are likely many years away yet.

It is recommended that the grey squirrel is heavily managed across the Site. There is a need for a variety of control methods to be available and these should be supported by good practice guidance. Any new control methods should meet legal and welfare criteria as well as being cost effective. There are currently two methods available to achieve this, trapping and shooting.

Trapping

For trapping guidance use: Grey squirrel traps. The use of live-capture traps is recommended to avoid any by-catch fatalities. It is envisaged that the ranger will undertake the proposed grey squirrel trapping.

Shooting

It is envisaged that the ranger will undertake the proposed grey squirrel shooting. In order to legally, safely and humanely control grey squirrel through shooting, the shooter must:

- Have permission from the owner of the sporting rights;
- Access to a suitable gun/licence and compliance with the law concerning its ownership and use; in gardens an airgun may be the only suitable option;
- Plan carefully safe shooting angles with a backstop within the area you have permission to shoot;
- Check you have sufficient third party insurance (recommend £10 million);
- Consider the squirrels' welfare; you must be a competent shooter so they are killed humanely
- Consider a good use for the culled squirrels. Does a local project want them for research? They are perfectly edible by humans or pets such as ferrets; and,
- Record what you see and shoot and be ready to provide that information to local projects.

Fallow Deer

Evidence of the negative effects caused by the fallow population within the woodlands include:

- Putting browsing pressure (the consumption of tree shoots, shrubs and woody/bark vegetation) on existing trees and ground flora;
- Inhibiting the natural regeneration of the native woodlands making them vulnerable to disease, long term survival and climate change; and,
- Hampering the use of natural succession to establish new areas of scrub and juvenile woodland.

Once the Site is fenced, the fallow and muntjac *Muntiacus reevesi* deer if present) should be eradicated in order to allow native deer species to predominate within the Site, with introduced red deer and any roe deer that may be present being encouraged and managed as required.

Turkey Oak

The Turkey oak has been widely cultivated in the UK since the 18th century. However, it wasn't until 1905 that it was first recorded in the wild. Since then, it has aggressively colonised areas of the British countryside and displaced native plants. The species has an overall low value to UK wildlife, offering little in the way of habitat for UK invertebrate species.

It has now become naturalised and is spreading into wildlife-rich habitats such as calcareous grassland and heathland, threatening native species. It is also the host of the knopper gall wasp, an insect which damages the acorns of the native oak so affecting its ability to reproduce.

In order to manage this species within the Site:

- Selectively remove/thin a proportion (2% per year) of the mature Turkey oak trees each year by ring barking, ensuring that these trees are not within falling distance of the footpaths on Site;
- Veteranisation of an additional 2% of the Turkey oak within the site each year, leaving standing and fallen deadwood piles, ensuring that these trees are not within falling distance of the footpaths on Site; and,
- Manage and remove the juvenile Turkey oak spreading within the grassland component of the Site.

5.5.7 Injurious Weeds, Land Management and Nuisance Issues.

The park will be bound by The Weeds Act 1959. This legislation requires occupiers of land where specified weeds are growing to take action to prevent them spreading. The five injurious weeds are spear thistle *Cirsium vulgare*, creeping thistle *Cirsium arvense*, curled dock *Rumex crispus*, broadleaved dock *Rumex obtusifolius* and ragwort *Jacobaea vulgaris*.

Given the size of the park it will be the case that there will be no requirement to control weeds where there is no perceived risk of spread to other farmland or land beyond the boundary fence. However, there is likely to be a need to continue current practice of controlling primarily through mowing the vegetation near to the boundary so as to prevent the spread of seeds and the consequent spread of weeds to other land. As such the park will need to monitor the spread of invasives such as rhododendron. The ranger will need to consider whether localised management and control is required.

5.6 Stock Overview

The choice of herbivore has been made after careful research. The animals will recreate, so far as possible, the type of grazing pressure likely to have existed historically that will lead to the development of restored species-rich and diverse habitats.

The proposals involve:

- Fencing the outer perimeter of the country park with deer and stock fencing followed by the removal of most internal fencing and barriers;
- The provision of safe crossing points over the footpaths that cross the estate;
- Provision of vantage points to allow visitors to view the Site without entering the park itself; and,
- Minimally-managed herds of cattle, red deer and pigs with the introduction of brown hare to complement the introduced species composition.

The exact breed mix for the future is not known. However, the following recommendations are suggested:

- Fallow deer are recommended to be removed due to their non-native (but naturalised) status, impact on woodlands, high numbers and to simplify ease of future population management.
- Tamworth pigs are the closest we have to the Old English forest pig but are far mor easier to manage than the hybrid ‘Iron-age pig’ and are not subject to the Dangerous Wild Animals Act as are wild boar *Sus scrofa*.
- The final cattle breeds are still under consideration, but it must be a UK native rare breed that is suitable and adapted to lowland England. Sussex cattle, an ancient breed first described just after the Norman invasion and therefore a Saxon breed is however recommended, as this breed is under threat in the UK and of local origin. Horned blood lines should be selected and animals that conformed to the older breed type with powerful forequarters (see Figure 54 & 55 below) rather than the later bred animals that have been bred to produce more beef.

Figure 54: Horned Sussex cow– once described as “the sweetest beef in England”.

Figure 55: Horned Sussex Cattle, showing the powerful forequarters, horns and white tail.

Obviously, there is no record of the stocking density of historic wildernesses in lowland Europe or England. Nor do we know what types, breeds and numbers of animals may have grazed such areas. In many ways, however, the actual animal is less interesting than the effect of their selective grazing on the vegetative cover and the resultant habitat change / creation.

The park ranger will be in charge of monitoring the effects of the proposed grazing as the project progresses. If the ranger decides that there is an imbalance or excess of animals, numbers must be adjusted. Working on a range of grazing pressure from 0.3 – 0.7 Livestock Units per ha (LSU/ha)(5), the populations of different animals and species could range quite widely. Exact numbers are not known, nor will they be assessable for many years.

Table 6 below, however, gives a current "best guess" at likely numbers, based on grazing density towards the lower end.

Table 6: Possible Stocking Ratio Animal Numbers

Stock	Animal numbers
Cattle (probably Sussex)	10 cows, 2 heifers, 1 bull
Red deer	3 stags, 10 hinds
Pigs	1 boar, 2 sows
Brown hare	10 Jills, 5 Jacks

5.7 Cattle

Cattle *Bos taurus* are ideal for removing long, coarse grass growth. The tongue is used to pull tufts of vegetation into the mouth, which at low/medium intensity leaves a tussocky appearance.

Cattle are less selective grazers than either equines or sheep, and are likely to graze a vegetation stand or community to a fairly average height, producing a more homogeneous end result. They do not selectively eat flower heads of herbs, unlike sheep. This can be beneficial for the creation of a botanically diverse grassland over time. but may support less variety of invertebrates than a more structured end result.

As ruminants, cattle may spend up to 16 hours a day resting to allow ingested food to be digested by the rumen micro-fauna. They can be quite selective about their resting places and favoured spots can soon show signs of dung accumulation or damage to the turf, but this is generally less noticeable than with sheep or equines. On very large areas, this impact is likely to be significant.

Hoof marks can be very valuable on sites where bare ground is desirable. Heavier animals can cause damage to vegetation and soils around supplementary feeding sites, especially in wet weather or on soft ground. Cattle have a considerable impact on the vegetation with respect to the trampling of bracken and low scrub, breaking up mats of dead litter and creating pathways through tall, dense vegetation.

5.7.1 Foraging Preferences

Cattle have a generalised feeding behaviour and broad mouths, making it impossible for them to ingest individual components of the sward by choice. Selection is therefore made on the basis of patches of sward rather than of individual plants. This generalised feeding behaviour is a valuable asset, within extensive systems, for maintaining species diversity of herb-rich swards.

Cattle usually take sedges, along with other herbage, particularly as the grazing season progresses. Rushes are generally avoided. Control of rush within an area through cattle grazing involves high stocking densities for short periods of time; careful consideration of possible impacts on other aspects of sites importance, such as breeding birds and invertebrates, should also be taken into account if this occurs.

5.7.2 *Impact on Trees and Shrubs*

Cattle can have a significant impact on shrubs and small trees, as they tend to remove leaves and twigs by a tearing action rather than a nipping with their teeth; this can be highly damaging and cause the affected tree/shrub to die. A broad range of woody species is consumed, with ash, sycamore and oak being amongst the most preferred, whilst birch, hazel and hawthorn are less favoured. Horned cattle may cause significant physical damage to scrub, by rubbing against trees and bushes and pushing through them.

5.7.3 *Social Behaviour and its Effect on Foraging*

In general, cattle are social grazers and on large sites will almost always be found in close proximity to each other when feeding. Favoured parts of the site will thus begin to show signs of grazing very quickly, whilst areas where the pasture is less palatable will take longer to show any impact. However, some breeds of cattle, for example highlands, appear to form territories with cyclical use of large areas and may travel miles in one day, with individuals quite widely dispersed.

5.7.4 *Impact of Age on Foraging Ability*

Cattle have resilient teeth and seldom lose them with age. Additionally, grazing ability tends to improve with age and animals cope better with a poorer quality diet once the rumen is fully developed at around 18 months. This improved foraging ability must be balanced against their ability to get about, particularly on arduous terrain.

5.7.5 *Dunging Behaviour*

As an adaptation to reducing parasites burdens, cattle avoid grazing within 10-20 cm from the edge of each pat of dung; thus, even in tightly grazed situations the sward develops a mosaic pattern of short turf strewn with randomly scattered tufts of tussock where pats have been deposited.

5.7.6 *Pigs*

Tamworth pigs tend to be hardier and more suitable for foraging on a wide range of food for themselves and are less prone to sun burn than some other breeds. They area also able to tolerate outwintering provided they are well fed and can find shelter from the wind within the woodlands. They willingly graze, browse and consume berries and fungi, and have been known to take invertebrates which helps to create and maintain a mosaic of bare ground, herb rich pasture and shrub layer. The impact of pigs must be assessed and reduced as required if the impacted become too great.

Depending on the outcome of these assessments, appropriate stocking density and timing will vary as we only require a low number of pigs over a larger area. At low densities, pigs will dig some areas and forsake others, leading to habitat variability. If plenty of varied food is available there may be no need for supplementary winter feeding.

The beneficial effects of pigs in conservation grazing and land management are many and include acting as a natural predator for invasive species, reducing ground layer density, increasing dead wood percentage, breaking up soil, generating nesting materials and clearing or thinning vegetation.

5.7.7 *Deer*

Red deer are not only an evocative species in lowland Britain but they are a post-glacial native and considered a suitable grazing animal for open habitat conservation. Only two species of deer are considered UK native, the red deer and the roe deer *Capreolus capreolus*. They have largely been lost from lowland Britain with sizeable populations only existing on Exmoor and the southwest peninsular, Norfolk, the Lake District and Scotland. Although it should be noted that none of the mainland deer in Scotland are 100% pure genetically,

as they are all hybrids with the non-native sika deer *Cervus nippon*. Due to their current distribution, is commonly assumed that the red deer is a beast of the open moor, but in fact they are creatures of dense forest, riverine and bog habitats. They have been pushed into these open upland areas by human activities. This is reflected in the fact that a red deer stag inn Scotland weighs up to 350 lbs, while in England they can weigh up to 600 lbs due to the higher quality forage available and better shelter availability.

Like fallow deer, red deer graze as well as browse but, because of their size, they can impact dense vegetation better than smaller species. Red deer graze in the growing season and browse and de-bark in the winter months when the grass gets tougher and lose its nutrients. They can also de-bark poisonous elder by neutralising the cyanide in their stomachs – something cattle are unable to achieve.

Research at Knepp has shown that red deer are a generalist herbivore and the only species to favour plantations as habitat, something that Beechy Bottom Park has plenty of. They also show a preference for grassland where bramble, one of their favourite food plants, is prevalent.

The stags rut from late-September to mid-October. Their territorial displays often involve the pawing up the ground and turfing up the sward with their antlers. This adds another disturbance factor to the land, creating opportunities for other species as well as an autumn spectacle for visitors walking through the park.

5.7.8 Brown Hare

Brown hares were introduced in Iron Age times from either Scandinavia or northern Europe. They are widespread in the lowlands throughout England, Wales and Scotland. Brown hares are replaced by the native mountain hare *Lepus timidus* in upland areas of Scotland and central England.

Brown hares *Lepus europaeus* live in very exposed habitats, and they rely on acute senses and running at speeds of up to 70 kph (45mph) to evade predators. Hares do not use burrows, but make a small depression in the ground among long grass, known as a form. They spend most of the day on or near the form, moving out to feed in the open at night. Though generally solitary, hares sometimes band into loose groups when feeding.

Breeding takes place between February and September and a female can rear three or four litters a year, each of two to four young. The young, known as leverets, are born fully furred with their eyes open and are left by the female in forms a few metres from their birth location. Once a day for the first four weeks of their lives, the leverets gather at sunset to be fed by the female, but otherwise they receive no parental care. This avoids attracting predators to the young at a stage when they are most vulnerable. Foxes are important predators of young hares and where foxes are common there are likely to be few hares.

Brown hares have little legal protection as they are game animals managed by farmers and landowners. Numbers declined substantially since the beginning of this century, though they are still common animals in many parts of the country. Today's modern farms, including the parkland at Beechy Bottom, are intensive in nature and has little habitat for the hares to hide in. As such, they are currently considered absent form the Site.

This is aggravated by the rise in fox numbers from 1950 to now, when the fox numbers have risen several hundred percent overall due to the presence of more farmed animals and small shooting concerns within the landscape.

The introduction of this evocative species to the park is hoped to help retore this species to the locality.

5.7.9 Animal Welfare and Management.

There are obligations on landowners who have control over animals, and further legislation may be brought through Parliament in the future. The animals within the park need to be observed sufficiently frequently to avoid suffering, to meet obligations under the Welfare of Farmed Animals (England) Regulations 2000, as advised in the Welfare Codes for cattle, pigs and deer. This may be daily during calving and when there are young calves. In the event of illness or injury (causing pain or discomfort), assistance should be administered. This, of course, goes somewhat against the concept of animals being kept free from human interference. Whilst suffering is natural it is not acceptable under the Welfare Regulations, and good management practices will need to be followed. There should be no animal welfare reasons to prevent the proposals being carried out.

5.7.10 Ear Tagging and Passports.

Farmed animals must be recorded as follows:

- All cattle must have a cattle passport, and all cattle must be ear tagged within 30 days of birth. There is no way around this issue. Accordingly, calves will need to be caught and tagged;
- All pigs must be earmarked by a single tag or tattooed, again necessitating capture and handling, before slaughter;
- Deer do not require to be tagged;

It may be possible to record some by observation without capture. These obligations will significantly affect the way the livestock are managed, because they impose management obligations and necessitate handling of livestock more frequently than might otherwise have been needed. It will mean that there will have to be location(s) into which the animals can be herded for handling, as such a mobile corral/s will be required.

5.8 Site Access

The Site supports a section of the High Weald Landscape Trail, a Public Right of Way (PROW) that runs east-west through the centre of the site. In addition, another PROW and Public Bridleway (PB) runs east-west within the site close to the southern site boundary. A third PROW runs broadly south-east to the north-west along the north field boundary of Grassland Compartment B (see Appendix 1).

By law, footpaths and bridleway must be kept open, and their maintenance is an obligation of the SPS. The proposed park operator will have liabilities to ensure public safety and may be held liable if an animal causes injury that could have been expected. Liability does not extend to injuries wholly the fault of the person injured.

Advice from various sources is to ensure that stiles are safe and that paths are clearly marked. It will be necessary to clear vegetation along the routes of the rights of way so that they remain passable at all times. This will have a management-time implication, but will not prejudice the integrity of the proposals.

It may be required for the cows to only be allowed within one compartment for covering by the bulls for a one month period per breeding season, before removing the bull offsite in order to restrict the amount of time a bull is present on Site. This management mostly overcomes any potential conflicts with footpath usage. A lot will depend on the temperament of the bull.

The park operator will therefore need to:

- Supply equipment for the ranger to manage the rights of way and thereby comply with legal obligations;
- Put up signs showing that a bull is in residence during the month period the bull is envisaged to be on Site;
- Monitor livestock births. As necessary, offspring may need to be castrated;

- Monitor animal behaviour, and if necessary, contain/remove certain animals at times of the year. This may require a temporary fenced area within one of the grassland compartments on site, which obviously goes against the overall objective but may become an essential management requirement.

5.9 Potential Issues

Any proposal usually ends in some form of compromise, and the proposal set out in this document is no different. The following "showstoppers" are considered to be:

- Animal welfare, management and identification obligations necessitate some livestock husbandry and prevent some wild animals from being kept;
- The risk to users of highways and bridleways means domesticated variants of wild animals must be utilised.

5.10 Feasibility Assessment

It is considered that the proposed project is feasible. The concept is to:

- Create an area of animal grazing where there would be no interference from man, except in emergency;
- The wildlife and the vegetation would be allowed to develop through natural succession;
- There should generally be completely free access across the proposed park both of the grassland compartments and the woodland compartments;
- A degree of human management is unavoidable;
- There is a need for considerable expenditure in terms of fencing the boundary. Stock handling facilities capable of holding rarely-handled animals will be needed. A visitor centre could be very expensive and yet produce little income;
- There will be ongoing management obligations in terms of public rights of way, animal welfare, control of weeds (to prevent spread out of the estate);
- It is proposed that once habitats have developed, the park should apply for management funding under the Higher Level Scheme and any successor such as Environmental Land Management Scheme (ELMS);
- It will take years for the populations of wild and stock animals to reach a stable size in balance with the developing habitats;
- Taxation. For the land to continue to benefit from agricultural property relief, it must continue to qualify as land occupied for the purposes of agriculture. The keeping of livestock for meat or other products would qualify. Commercial activity with a view to the realisation of profits is needed to retain the opportunity to offset periodic losses for income tax purposes;
- Overall, there are no insurmountable legal, physical, liability or practical limitations;
- Wild animals. The Estate is crossed by footpaths/bridleways. The introduction of non-contained animals such as wild boar, which currently feature on the Dangerous Wild Animals Act list, is not feasible. It is advised that that the use of domestic derivatives will not diminish the value of the project;
- Project lifespan. As will be outlined in this report, ecological theories driving this project suggest that a natural 400-500 year cycle would have evolved in the wild. Clearly no landowner can commit to such a timescale. A 25-year timeframe is envisaged, initially, for the project. The proposals as set out in this report are, therefore, a variation from the original concept. They are to some extent a compromise.

5.11 Staffing

The proposed ranger/s should have the following responsibilities and skills:

- Monitoring and maintenance of boundary fencing;

- Monitoring, handling, husbandry and animal welfare checks of animals;
- Some management of land in a few key areas (e.g. noxious weed control near to the periphery) therefore will need a pesticide ticket;
- Management/maintenance of public rights of way – will require brush cutter and chainsaw (up to large felling) tickets;
- The ranger should have a full Fire-arms Certificate (FAC) including humane dispatch to control problem fox population if threatening ground nesting birds and a HAD ticket to cover the euthanisation of injured stock / wild animals;
- Undertake some limited observational monitoring of wild bird species;
- Have some botanical skills; and,
- Public and visiting student management.

Staffing levels for the first three items are estimated at one person with casual assistance. The Health and Safety of staff will be paramount. No staff should be asked or expected to handle animals where there is a significant risk of injury. A full risk assessment is recommended, to be carried out at an appropriate stage as the project progresses.

5.12 Monitoring

Given the number of variables that can affect the outcomes of this grazing management plan, site monitoring is essential to ensure the aims of the plan are being achieved. If the aims are not being achieved, then changes to the management regime will be required. On a site like this, monitoring should focus on vegetation structure and flowering forb species cover and diversity as well as invertebrate, reptile, amphibian, bat and bird monitoring.

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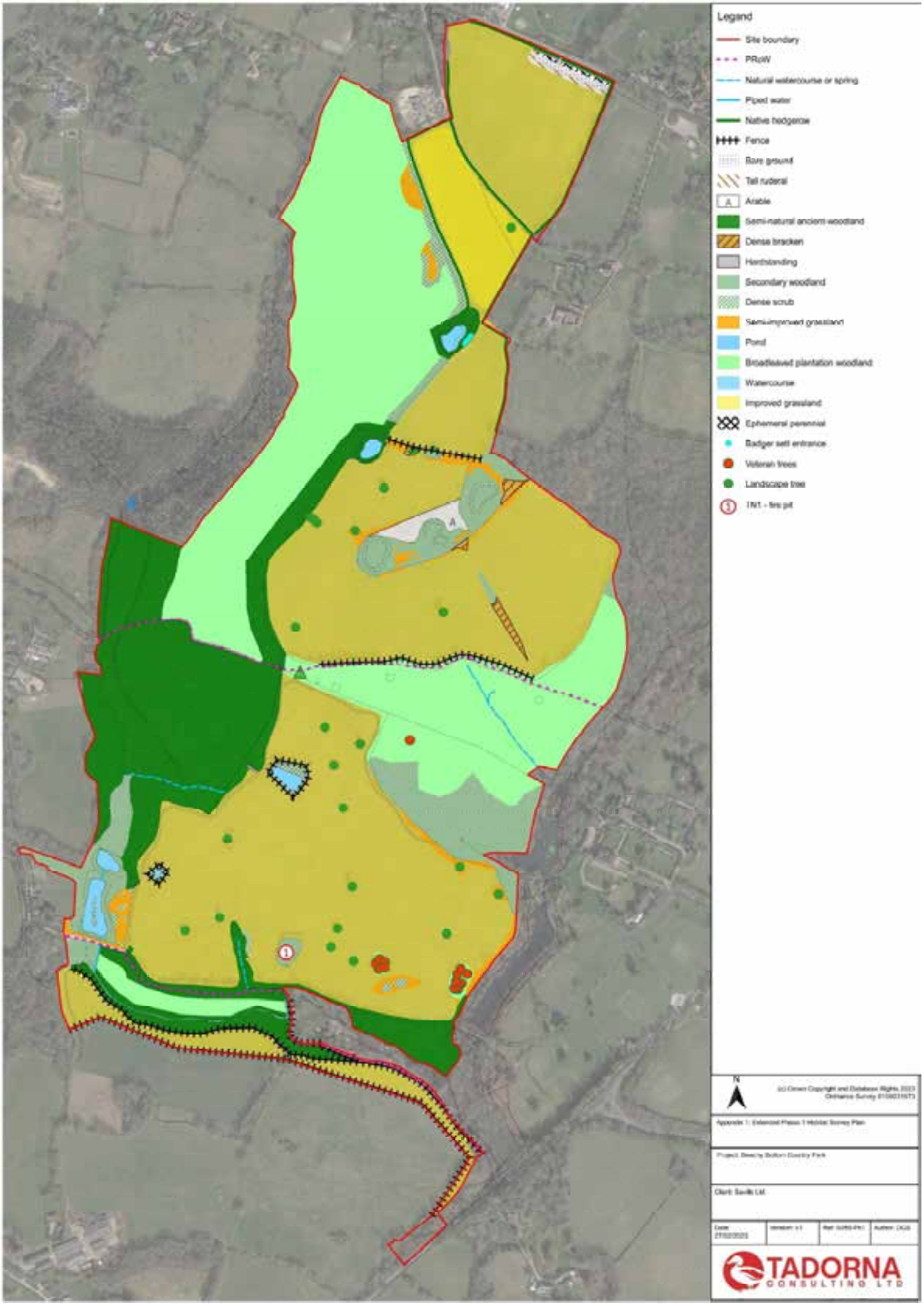
Legend
Site boundary
PRoW
Natural watercourse or spring
Piped water
Native hedgerow
Fence
Bare ground
Tall ruderal
Arable
Semi-natural ancient woodland
Dense bracken
Hardstanding
Secondary woodland
Dense scrub
Semi-improved grassland
Pond
Broadleaved plantation woodland
Watercourse
Improved grassland
Ephemeral perennial
Badger sett entrance
Veteran trees
Landscape tree
IN1 - fire pit
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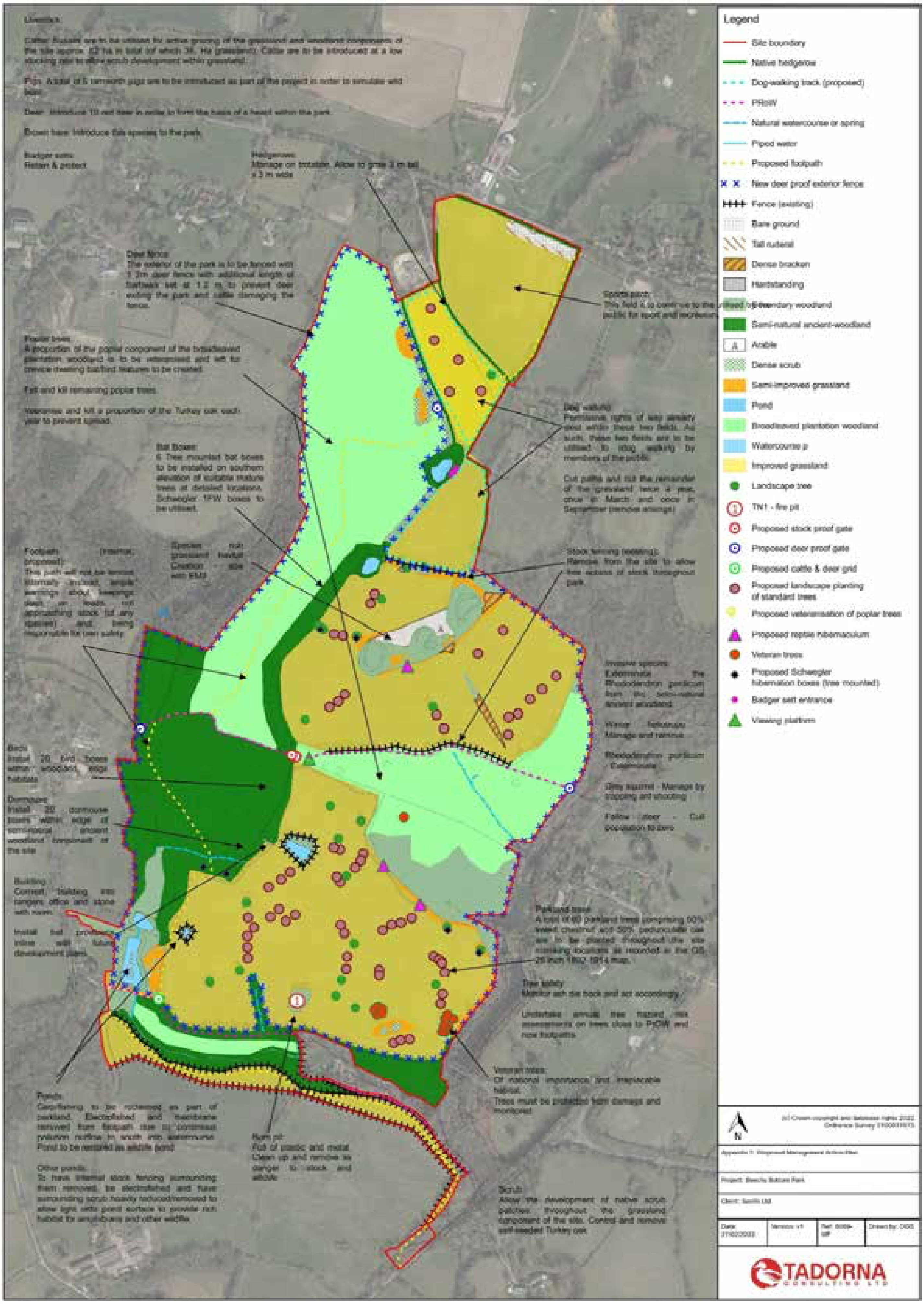
TADORNA
CONSULTING LTD


Legend
Site boundary
Native hedgerow
Dog-walking track (proposed)
PRoW
Natural watercourse or spring
Piped water
Proposed footpath
New deer proof exterior fence
Fence (existing)
Bare ground
Tall ruderal
Dense bracken
Hardstanding
Secondary woodland
Semi-natural ancient-woodland
Arable
Dense scrub
Semi-improved grassland
Pond
Broadleaved plantation woodland
Improved grassland
Landscape tree
TN1 - fire pit
Proposed stock proof gate
Proposed deer proof gate
Proposed cattle & deer grid
Proposed landscape planting of standard trees
Proposed veteranisation of poplar trees
Proposed reptile hibernaculum
Veteran trees
Proposed Schwegler hibernation boxes (tree mounted)
Badger sett entrance
Viewing platform
TADORNA

Appendix 3 – Desk Study

6.1 Fauna & Flora

6.1.1 Fauna

Table 7 below summarises the desk study records for notable animal species returned by SxBRC.

Table 7: Notable animal records provided by SxBRC

Amphibians	**Conservation Status**	**Record Details**
Common frog *Rana temporaria*	WCA Sch5 s9.5a	14 records
Common toad *Bufo bufo*	WCA Sch5 s9.5a, NERC S41, UK BAP Priority	5 records
Great crested newt *Triturus cristatus*	Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41, UK BAP Priority	1 record
Palmate newt *Lissotriton helveticus*	WCA Sch5 s9.5a	2 records
Smooth newt *Lissotriton vulgaris*	WCA Sch5 s9.5a	11 records
Fish	**Conservation Status**	**Record Details**
Brook lamprey *Lampetra planeri*		
Invertebrates	**Conservation Status**	**Record Details**
Brown hairstreak *Thecla betulae*	WCA Sch5 s9.5a, NERC S41, UK BAP Priority, RedList GB post2001 VU, Sussex Rare	10 records
Common darter *Sympetrum striolatum*	RedList GB post2001 DD	3 records
Dingy skipper *Erynnis tages*	NERC S41, UK BAP Priority, RedList GB post2001 VU	1 record
Dolichovespula media	Notable A, Sussex Rare	2 records
Downy emerald *Cordulia aenea*	Sussex Rare	2 records
Ear moth *Amphipoea oculea*	NERC S41, UK BAP Priority	1 record
Four-banded flower bee *Anthophora quadrimaculata*	Notable B, Sussex Rare	2 records
Gorytes laticinctus	RedList GB Pre94 R	1 record
Green dock beetle *Gastrophysa viridula*	Sussex Rare	1 record
Knot grass *Acronicta rumicis*	NERC S41, UK BAP Priority	1 record
Large tortoiseshell *Nymphalis polychloros*	WCA Sch5 s9.5a, RedList GB post2001 RE, Sussex Rare	1 record
Minor shoulder-knot *Brachylomia viminalis*	NERC S41, UK BAP Priority	1 record
Orange-vented mason bee *Osmia leaiana*	Sussex Rare	1 record
Poecilium alni	Notable B, Sussex Rare	1 record
Purple emperor *Apatura iris*	WCA Sch5 s9.5a, RedList GB post2001 NT, Sussex Rare	3 records
Red-girdled mining bee *Andrena labiata*	Notable A, Sussex Rare	2 records
Roesel's Bush-cricket *Roeseliana roeselii*	Sussex Rare	3 records
Small heath *Coenonympha pamphilus*	NERC S41, UK BAP Priority, RedList GB post2001 NT	6 records
Stag beetle *Lucanus cervus*	WCA Sch5 s9.5a, NERC S41, UK BAP Priority, Nat Scarce, Sussex Rare	1 record
Tillus elongatus	Nat Scarce, Sussex Rare	1 record

White admiral *Limenitis camilla*	NERC S41, UK BAP Priority, RedList GB post2001 VU	23 records
False mocha *Cyclophora porata*	NERC S41, UK BAP Priority	1 record
Figure of eight *Diloba caeruleocephala*	NERC S41, UK BAP Priority	2 records
Ghost moth *Hepialus humuli*	NERC S41, UK BAP Priority	3 records
Marbled coronet *Hadena confusa*	Sussex Rare	1 record
Small emerald *Hemistola chrysoprasaria*	NERC S41, UK BAP Priority	2 records
Small phoenix *Ecliptopera silaceata*	NERC S41, UK BAP Priority	4 records
Small square-spot *Diarsia rubi*	NERC S41, UK BAP Priority	134 records
Banded general *Stratiomys potamida*	Sussex Rare	1 record
Blood-vein *Timandra comae*	NERC S41, UK BAP Priority	16 records
Brindled beauty *Lycia hirtaria*	NERC S41, UK BAP Priority	3 records
Buff ermine *Spilosoma lutea*	NERC S41, UK BAP Priority	106 records
Cijnnabar *Tyria jacobaeae*	NERC S41, UK BAP Priority	13 records
Common wainscot *Mythimna pallens*	Sussex Rare	61 records
Ctenophora flaveolata	RedList GB Pre94 VU, Sussex Rare	2 records
Dot moth *Melanchra persicariae*	NERC S41, UK BAP Priority	18 records
Golden-haired Robberfly Choerades marginatus	Nat Scarce, Sussex Rare	1 record
Grypocoris (Lophyromiris) stysi	Sussex Rare	3 records
Gymnosoma rotundatum	RedList GB Pre94 R, Sussex Rare	10 records
L-album wainscot *Mythimna l-album*	Sussex Rare	5 records
Limnophila pictipennis	Notable, Sussex Rare	1 record
Lunar thorn *Selenia lunularia*	Sussex Rare	13 records
Molophilus propinquus	Notable, Sussex Rare	1 record
Northern yellow splinter *Lipsothrix errans*	UK BAP Priority, Notable, Sussex Rare	1 record
Oak hook-tip *Watsonalla binaria*	NERC S41, UK BAP Priority	7 records
Pilaria fuscipennis	Notable, Sussex Rare	1 record
River-shore cranefly *Rhabdomastix japonica*	UK BAP Priority, RedList GB Pre94 R, Sussex Rare	1 record
Rosy minor *Litoligia literosa*	NERC S41, UK BAP Priority	22 records
Satin lutestring *Spilosoma urticae*	Sussex Rare	1 record
Scleroprocta pentagonalis	RedList GB Pre94 R, Sussex Rare	1 record
Shoulder striped wainscot *Leucania comma*	NERC S41, UK BAP Priority	7 records
Tricyphona unicolor	Notable, Sussex Rare	1 record
Water ermine *Spilosoma urticae*	Sussex Rare	5 records
White ermine *Spilosoma lubricipeda*	NERC S41, UK BAP Priority	98 records
Mammals	**Conservation Status**	**Record Details**
European rabbit *Oryctolagus cuniculus*	RedList Global post2001 NT	15 records
Brown long-eared bat *Plecotus auritus*	Hab Dir A4, Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41, UK BAP Priority	28 records
Common pipistrelle *Pipistrellus pipistrellus*	Hab Dir A4, Hab Reg Sch2, NERC S41, WCA Sch5 s9.4b/s9.4c/s9.5a, UK BAP Priority	30 records

Hazel dormouse *Muscardinus avellanarius*	Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41, UK BAP Priority, RedList GB post2001 VU	13 records
Nathusius's pipistrelle *Pipistrellus nathusii*	Hab Dir A4, Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, RedList GB post2001 NT	2 records
Natterer's Bat *Myotis nattereri*	Hab Dir A4, Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a	1 records
Noctule Bat *Nyctalus noctula*	Hab Dir A4, Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41, UK BAP Priority	5 records
Serotine *Eptesicus serotinus*	Hab Dir A4, Hab Reg Sch2, WCA Sch5, s9.4b/s9.4c/s9.5a, RedList GB post2001 VU	5 records
Soprano pipistrelle *Pipistrellus pygmaeus*	Hab Dir A4, Hab Reg Sch2, NERC S41, WCA Sch5 s9.4b/s9.4c/s9.5a, UK BAP Priority	10 records
Unidentified bat species *Chiroptera*	Hab Dir A2 NP, Hab Dir A4, Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41, UK BAP Priority, RedList GB post2001 CR, RedList GB post2001 EN, RedList GB post2001 VU, RedList GB post2001 NT, RedList GB post2001 DD	11 records
Unidentified long-eared bat sp. *Plecotus* sp.	Hab Dir A4, Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41, UK BAP Priority, RedList GB post2001 EN	7 records
Unidentified *Myotis* sp.	Hab Dir A2 NP, Hab Dir A4, Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41, UK BAP Priority, RedList GB post2001 CR, RedList GB post2001 DD	5 records
Unidentified pipistrelle sp. *Pipistrellus* sp.	Hab Dir A4, Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41, UK BAP Priority, RedList GB post2001 NT	3 records
West European hedgehog *Erinaceus europaeus*	NERC S41, UK BAP Priority, RedList GB post2001 VU	16 records
Whiskered Bat *Myotis mystacinus*	Hab Dir A4, Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, RedList GB post2001 DD	1 record
Whiskered/Brandt's bat *Myotis mystacinus/brandtii*	Hab Dir A4, Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a	2 records
Reptiles	**Conservation Status**	**Record Details**
Adder *Vipera berus*	WCA Sch5 s9.1/s9.1 kill/s9.5a, NERC S41, UK BAP Priority	4 records

Common lizard *Zootoca vivipara*	WCA Sch5 s9.1/s9.1 kill/s9.5a, NERC S41, UK BAP Priority	1 record
Grass snake *Natrix helvetica*	WCA Sch5 s9.1/s9.1 kill/s9.5a, NERC S41, UK BAP Priority	25 records
Slow-worm *Anguis fragilis*	WCA Sch5 s9.1/s9.1 kill/s9.5a, NERC S41, UK BAP Priority	2 records
Birds	**Conservation Status**	**Record Details**
Barn owl *Tyto alba*	Notable Bird	28 records
Bittern *Botaurus stellaris*	WCA Sch1 Pt1, NERC S41, UK BAP Priority, Bird Amber, Notable Bird	2 records
Black-headed gull *Chroicocephalus ridibundus*	Bird Amber, Notable Bird	2 records
Bullfinch *Pyrrhula pyrrhula*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	46 records
Common gull *Larus canus*	Bird Amber, Notable Bird	4 records
Corn bunting *Emberiza calandra*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	2 records
Crossbill *Loxia curvirostra*	Notable Bird	1 record
Cuckoo *Cuculus canorus*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	24 records
Curlew *Numenius arquata*	NERC S41, UK BAP Priority, RedList Global post2001 NT, Bird Red, Notable Bird	1 record
Dunnock *Prunella modularis*	NERC S41, UK BAP Priority, Bird Amber, Notable Bird	96 records
Firecrest *Regulus ignicapilla*	WCA Sch1 Pt1, Notable Bird	1 record
Green woodpecker *Picus viridis*	Notable Bird	125 records
Grey wagtail *Motacilla cinerea*	Bird Amber, Notable Bird	18 records
Hawfinch *Coccothraustes coccothraustes*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	4 records
Herring gull *Larus argentatus*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	4 records
Hobby *Falco subbuteo*	WCA Sch1 Pt1, Notable Bird	24 records
House martin *Delichon urbicum*	Bird Red, Notable Bird	38 records
House sparrow *Passer domesticus*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	97 records
Kestrel *Falco tinnunculus*	Bird Amber, Notable Bird	52 records
Kingfisher *Alcedo atthis*	WCA Sch1 Pt1, Notable Bird	21 records
Lapwing *Vanellus vanellus*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	11 records
Lesser black-backed gull *Larus fuscus*	Bird Amber, Notable Bird	1 record
Lesser redpoll *Acanthis cabaret*	NERC S41, UK BAP Priority, Notable Bird	3 records
Linnet *Linaria cannabina*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	15 records
Little grebe *Tachybaptus ruficollis*	Notable Bird	1 record
Long-eared owl *Asio otus*	Notable Bird	1 record
Mallard *Anas platyrhynchos*	Bird Amber, Notable Bird	71 records
Marsh tit *Poecile palustris*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	39 records
Meadow pipit *Anthus pratensis*	Bird Amber, Notable Bird	1 record
Merlin *Falco columbarius*	WCA Sch1 Pt1, Bird Red	3 record

Mistle thrush *Turdus viscivorus*	Bird Red, Notable Bird	47 records
Mute swan *Cygnus olor*	Notable Bird	3 records
Nightingale *Luscinia megarhynchos*	Bird Red, Notable Bird	5 records
Red kite *Milvus milvus*	WCA Sch1 Pt1, RedList Global post2001 NT, Notable Bird	17 records
Redstart *Phoenicurus phoenicurus*	Bird Amber, Notable Bird	3 records
Red-throated diver *Gavia stellata*	WCA Sch1 Pt1	1 record
Reed bunting *Emberiza schoeniclus*	NERC S41, UK BAP Priority, Bird Amber, Notable Bird	5 records
Skylark *Alauda arvensis*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	69 records
Snipe *Gallinago gallinago*	Bird Amber, Notable Bird	1 record
Song thrush *Turdus philomelos*	NERC S41, UK BAP Priority, Bird Amber, Notable Bird	123 records
Spotted flycatcher *Muscicapa striata*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	9 records
Starling *Sturnus vulgaris*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	75 records
Stock dove *Columba oenas*	Bird Amber, Notable Bird	60 records
Swallow *Hirundo rustica*	Notable Bird	53 records
Swift *Apus apus*	Bird Red, Notable Bird	31 records
Tawny owl *Strix aluco*	Bird Amber, Notable Bird	9 records
Tree pipit *Anthus trivialis*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	1 record
Tree sparrow *Passer montanus*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	1 record
Turtle dove *Streptopelia turtur*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	10 records
Wheatear *Oenanthe oenanthe*	Bird Amber, Notable Bird	2 records
White fronted goose *Anser albifrons*	UK BAP Priority, Bird Red	1 record
Willow warbler *Phylloscopus trochilus*	Bird Amber, Notable Bird	16 records
Wood warbler *Phylloscopus sibilatrix*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	1 record
Woodcock *Scolopax rusticola*	Bird Amber, Notable Bird	10 records
Woodlark *Lullula arborea*	WCA Sch1 Pt1, NERC S41, UK BAP Priority, Notable Bird	52 records
Yellowhammer *Emberiza citrinella*	NERC S41, UK BAP Priority, Bird Red, Notable Bird	50 records

Sussex Rare = Sussex Rare Species Inventory; **Red list** = IUCN Red list; , **Vul** = (Vulnerable) designated when best available evidence indicates that it is considered to be facing a high risk of extinction in the wild; **UK Bap Priority -** The UK List of Priority Species contains 1150 species that have been listed as priorities for conservation action under the UK Biodiversity Action Plan (UK BAP), **NN –** nationally notable Species which are estimated to occur within the range of 16 to 100 10km squares, NNb - axa which do not fall within Red Data Book categories but which are none-the-less uncommon in Great Britain and thought to occur in between 31 and 100 10km squares of the National Grid, **NNa** - Taxa which do not fall within Red Data Book categories but which are none-the-less uncommon in Great Britain and thought to occur in 30 or fewer 10km squares of the National Grid**, NS –** Nationally scarce Occurring in 16-100 hectads in Great Britain, **NR –** Nationally rare, Occurring in 15 or fewer hectads in Great Britain; **Vul** – venerable; **S41 –** Section 41 Lists species "of principal importance for the purpose of conserving biodiversity"; **ScH5** – of the Wildlife & Countryside Act 1981;

6.1.2 *Flora*

Table 8 below summarises the desk study records for notable plants returned by SxBRC.

Table 8: Notable plant records provided by SxBRC

Higher Plant Species	Conservation Status	Record Details
Aggregate-headed hawkweed *Hieracium aggregatum*	Nat Rare	3 records
Autumn hawkweed *Hieracium sabaudum*	RedList ENG post 2001 EN, RedList ENG post 2001 NT	2 records
Autumn Lady's-tresses *Spiranthes spiralis*	RedList GB post 2001 NT, RedList ENG post 2001 NT	2 records
Bird's-nest Orchid *Neottia nidus-avis*	RedList GB post 2001 NT, RedList ENG post 2001 VU	1 record
Bitter-vetch *Lathyrus linifolius*	RedList ENG post 2001 NT	5 records
Bladder-sedge *Carex vesicaria*	RedList ENG post 2001 VU	1 record
Bluebell *Hyacinthoides non-scripta*	WCA Sch8	16 records
Box *Buxus sempervirens*	RedList GB post 2001 DD, RedList ENG post 2001 DD, Nat Rare, Sussex Rare	3 records
Broad-leaved Meadow-grass *Poa chaixii*	Sussex Rare	1 record
Broad-leaved spurge *Euphorbia platyphyllos*	Sussex Rare	1 record
Corn mint *Mentha arvensis*	RedList ENG post 2001 NT	10 records
Corn spurrey *Spergula arvensis*	RedList GB post 2001 VU, RedList ENG post 2001 VU	1 record
Des Etangs' St John's-wort *Hypericum perforatum x maculatum = H. x desetangsii*	Sussex Rare	1 record
Devil's-bit scabious *Succisa pratensis*	RedList ENG post2001 NT	6 records
Dyer's greenweed *Genista tinctoria*	RedList ENG post 2001 VU	8 records
Flea sedge *Carex pulicaris*	RedList ENG post 2001 NT, Sussex Rare	1 record
Goldenrod *Solidago virgaurea*	RedList ENG post 2001 NT	7 records
Hay-scented buckler-fern *Dryopteris aemula*	Sussex Rare	1 record
Heath milkwort *Polygala serpyllifolia*	RedList ENG post 2001 NT	1 record
Heather *Calluna vulgaris*	RedList ENG post 2001 NT	1 record
Lesser spearwort *Ranunculus flammula*	RedList ENG post 2001 VU	7 records
Quaking-grass *Briza media*	RedList ENG post 2001 NT	1 record
Ragged-robin *Silene flos-cuculi*	RedList ENG post 2001 NT	7 records
Rye brome *Bromus secalinus*	RedList GB post 2001 NT, RedList ENG post 2001 NT, Nat Scarce, Sussex Rare	1 record
Sanicle *Sanicula europaea*	RedList ENG post 2001 NT	5 records
Star sedge *Carex echinata*	RedList ENG post 2001 NT	1 record
Stinking chamomile *Anthemis cotula*	RedList GB post 2001 VU, RedList ENG post 2001 VU	1 record
Tormentil *Potentilla erecta*	RedList ENG post 2001 NT	10 records
Welsh poppy *Meconopsis cambrica*	Nat Scarce, Sussex Rare	2 records
Wild strawberry *Fragaria vesca*	RedList ENG post 2001 NT	11 records
Wood-sorrel *Oxalis acetosella*	RedList ENG post 2001 NT	13 records
Common valerian *Valeriana officinalis*	RedList ENG post2001 NT	1 record
Heath speedwell *Veronica officinalis*	RedList ENG post2001 NT	7 records

Lichen Species	Conservation Status	Record Details
Verrucaria polysticta	Nat Scarce	1 record
Lower Plant Species	**Conservation Status**	**Record Details**
Fringed heathwort *Ricciocarpos natans*	Sussex Rare	1 record
Fungi Species	**Conservation Status**	**Record Details**
Bay Polypore *Polyporus badius*	Sussex Rare	1 record
Devil's Fingers *Clathrus archeri*	Sussex Rare	1 record
Pholiota adiposa	Sussex Rare	1 record
Tiered Tooth *Hericium cirrhatum*	Sussex Rare	1 record
Invasive non-native Species	**Conservation Status**	**Record Details**
Cherry Laurel *Prunus laurocerasus*	Sussex INNS	12 records
Evergreen Oak *Quercus ilex*	Sussex INNS	2 records
False-acacia *Robinia pseudoacacia*	WCA Sch 9, INNS	1 record
Himalayan Balsam *Impatiens glandulifera*	WCA Sch 9, INNS	4 records
Himalayan Cotoneaster *Cotoneaster simonsii*	WCA Sch 9, INNS	1 record
Japanese Knotweed *Fallopia japonica*	WCA Sch 9, INNS	9 records
Lamiastrum galeobdolon subsp. argentatum	WCA Sch 9, INNS	8 records
Least Duckweed *Lemna minuta*	Sussex INNS	3 records
Montbretia *Crocosmia pottsii x aurea = C. x crocosmiiflora*	WCA Sch 9, INNS	8 records
New Zealand Pigmyweed *Crassula helmsii*	WCA Sch 9, INNS	1 record
Nuttall's Waterweed *Elodea nuttallii*	WCA Sch 9, INNS	1 record
Parrot's-feather *Myriophyllum aquaticum*	WCA Sch 9, INNS	1 record
Red Valerian *Centranthus ruber*	Sussex INNS	4 reocrd1 record s
Rhododendron ponticum	WCA Sch 9, INNS	13 records
Spanish bluebell *Hyacinthoides non-scripta x hispanica = H. x massartiana*	Sussex INNS	3 records
Three-cornered Garlic *Allium triquetrum*	WCA Sch 9, INNS	1 record
Wall Cotoneaster *Cotoneaster horizontalis*	WCA Sch 9, INNS	2 records
Winter Heliotrope *Petasites fragrans*	Sussex INNS	7 records

WCA Sch9 – species listed in Schedule 9 of the Wildlife & Countryside Act 1981 (WCA) and 26 other species not in this Schedule but which pose a particular risk in Sussex; **Sussex Rare** = Sussex Rare Species Inventory; **Red list** = IUCN Red list; , **Vul** = (Vulnerable) designated when best available evidence indicates that it is considered to be facing a high risk of extinction in the wild; **Sussex INNs** - Sussex invasive non-native species

Appendix 4 - Management schedule – Ecology and Habitats

Habitat: compartment	Management Action	2023-2024	2025-2026	2027-2028	2029-2030	2031-2032	2033-2034	2035-2035	2037-2038	2039-2040	2041-2042	2043-2044	2045-2046	2047-2048
Plantation woodlands	Install external deer and stock fencing surrounding the entire site													
	Grey squirrel *Sciurus carolinensis* should also be managed through shooting and trapping to ensure the successful establishment of tree succession													
	Ring bark and veteranise all of the poplar trees and a proportion ash trees within the site each year (taking into account individual trees with bat roosting features). Leave cut wood in deadwood piles to create fallen deadwood habitat for invertebrate species.													
	Cut a series of rides and footpaths/cycling throughout the woodland to allow for woodland access and to let light to the woodland floor enhancing the woodland for a wide range of wildlife.													
	When old mature trees fall, the brash should be removed but the timber should be allowed to remain recreating deadwood to encourage the return of saproxylic invert species as well as recreate the lost habitat.													
	To allow standing deadwood within the canopy supporting a wide range of animal species.													
Secondary woodland	Cut a series of rides and footpaths/cycling throughout the woodland to allow for woodland access and to let light to the woodland floor enhancing the woodland for a wide range of wildlife.													
	Ring bark and veteranise a proportion of the Turkey oak and ash trees within the site each year (taking into account individual trees with bat roosting features). Leave cut wood in deadwood piles to create fallen deadwood habitat for invertebrate species.													
Semi-natural Ancient Woodland	Open up the existing old path network to allow for woodland access and to let light to the woodland floor enhancing the woodland for a wide range of wildlife.													
Grasslands	Grassland Compartment A: Allow this parcel to continue to be utilised as local sports facilities													
	Grassland Compartment B: Turn this parcel over to dog walkers. Cut paths and cut the remainder of the grassland twice a year, once in March and once in September (remove arisings)													
	Grassland Compartment C: Turn this parcel over to dog walkers. Cut paths and cut the remainder of the grassland twice a year, once in March and once in September (remove arisings)													
	Grassland Compartment D: Introduce mixed low-density cattle, deer and pig grazing within these compartments. Ensure that no ivermectin wormers are used within the livestock population.													
	Grassland Compartment E: Introduce mixed low-density cattle, deer and pig grazing within these compartments. Ensure that no ivermectin wormers are used within the livestock population.													
	Grassland Compartment F: Introduce mixed low-density cattle, deer and pig grazing within these compartments. Ensure that no ivermectin wormers are used within the livestock population.													
Arable	Re-sow the existing arable habitat with Emorsgate EM3 – Special General Purpose Meadow Mixture in order to create a seed source for the remainder of the improved/modified grasslands located on site.	either	or											
	Manage as grassland by low-density grazing (going forward)													
Ponds	Remove stock fencing from ponds located within grassland compartments as well as a proportion of the dense scrub currently surrounding the ponds to allow light and flight-paths for bird species and the development of floating and emergent plant species.													
	The two ponds currently utilised as coarse fishing ponds are to be subject to electrofishing to humanely remove the fish currently present. These can be transported offsite and used to stock offsite ponds	Either	Or											
Watercourse	The two ponds currently utilised as coarse fishing ponds are to be subject to electrofishing to humanely remove the fish currently present. These can be transported offsite and used to stock offsite ponds	Either	Or											
Veteran trees	These trees must be retained, monitored, studied and protected going forward. The fallen deadwood accumulations should be left in-situ in order to preserve the saproxylic invertebrates that likely already exist here.													
Parkland trees	Commence a wide program of re-planting is undertaken with at least 60 trees being planted in order to re-create the wood-pasture landscape that previously existed on site. Include appropriate tree protection (stock proof)													

Habitat/ compartment	Management Action	2023-2024	2025-2026	2027-2028	2029-2030	2031-2032	2033-2034	2035-2036	2037-2038	2039-2040	2041-2042	2043-2044	2045-2046	2047-2048
Dense bracken	Allow this habitat will spread within the grassland component of the site and form a matrix with scrub, grassland and woodland. If this habitat becomes too dominant after year 10, roll a proportion (10%) per year to manage overall cover. If required, burn bracken leaf litter using the 'mini burn' code.													
Native hedgerows	It is recommended that all of the hedgerows are allowed to grow tall and bushy, with the hedgerows of more recent origin allowed to develop to be 3 m tall x 3 m wide. Manage on rotation to allow existing pedestrian access to continue within Grassland Compartments A - C.													
Dense scrub	It is envisaged that pockets of scrub be allowed to develop across the grassland component of the site and woodland edges prior to the introduction of stock animals (red deer, cattle etc) on site.													
Burn pit	Remove rubbish from burn pit to make safe for stock and wild animals.													
Species														
Amphibians	Construction of reptile hibernacula.													
Bats	Install x 6 Schwegler 1FW boxes within semi-natural ancient woodland edge													
Badger	Retain sett within woodland													
Birds	Install 20 bird boxes within the woodlands/woodland edge													
Dormouse	Install / create 20 dormouse boxes within the woodlands/woodland edge habitats													
Reptiles	Methods outlined within section 5 have significant benefits for reptile species.													
Invertebrates	Methods outlined within section 5 have significant benefits for invertebrate species.													
Ash dieback	Monitor Ash Dieback Disease and act accordingly.													
Invasive plant species	Exterminate the *Rhododendron ponticum* from the semi-natural ancient woodland located on site by cutting and treating the stumped with herbicide. Continue until this species has been removed entirely.				Until target achieved									
	Winter heliotrope - Managing the plant is best achieved via herbicide treatment and/or regular mechanical cutting of plants, which will over time weaken and destroy the plant by not allowing photosynthesis.													
	Grey squirrel – Use a combination of trapping and shooting to reduce the impact of this species and maintain a low population level												On going	
	Cull fallow deer population (post deer fence installation) intensive culling of the deer population to remove this species from the proposes park. Focus on females during the fallow deer open season (1st November – 31st March each year) to actively reduce the population.													
Risk and condition assessments	Periodic annual risk and condition assessments of trees which have the potential to cause harm to persons or property need to be carried out by an Arboricultural Consultant on an annual basis. Particular regard for the safety for path users should be considered.													