



ECOLOGICAL APPRAISAL
PARK VIEW (PHASE 8)
BEREWOOD
WATERLOOVILLE
HAMPSHIRE
PO7 7PS

OCTOBER 2022

ON BEHALF OF GRAINGER PLC



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Authorisation

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SUMMARY

1. LC Ecological Services Ltd were commissioned by Grainger Plc to conduct an ecological appraisal of a parcel of land identified as Park View (Phase 8) of the development at Berewood, Waterlooville, PO7 7PS (Grid Ref: SU 66998 08904).
2. Berewood (Havant Borough Council planning ref: APP/10/00828/ Winchester City Council planning ref: 10/02862/OUT) is a large multi-phased development. This report presents current information for the works associated with phase 8 of the development. A site location plan for this phase of the development is provided in appendix I.
3. An ecological appraisal is essentially a multi-disciplinary walk-over survey and was conducted with the objective of identifying any ecological constraints associated with the proposals such as the site's potential to support any legally protected species or habitats of high nature conservation value.
4. The site comprises a semi-improved grassland field, with an area of ephemeral vegetation. A native hedgerow forms the south eastern boundary and separates the site from London Road. A phase 1 habitat plan is shown in appendix II.
5. The site is in very close proximity to a number of locally designated Sites of Interest for Nature Conservation. Newlands Row and Plant Row SINC lies 0.33 kilometres west of the site, whilst Newlands Farm Meadow SINC lies 0.5 kilometres to the south west. Further recommendations are provided in section 5.1.
6. The hedgerow located on the south eastern boundary is considered to be a UK Biodiversity Action Plan hedgerow due to it containing over 80% native species. In addition, a hedgerow assessment was conducted which concluded the hedgerow is not considered important under the regulations. Further recommendations however have been provided in section 5.2.
7. Badger setts were recorded within the wider Berewood development; however, no evidence of badger was recorded within the site boundary or within 30 metres of the site. The site provides potential foraging habitat and further recommendations are provided in section 5.3.
8. The site has been identified to be of local importance for bats with a total of four species and one genus being recorded. Common pipistrelle bats were the primary species recorded on site. Key foraging habitat was noted along the north and west of the site. Further recommendations are provided in section 5.4.
9. The hedgerow and semi-improved grassland on site provided potential nesting habitat for birds. The fields provide limited potential habitat for overwintering birds. Further recommendations are provided in section 5.5.
10. The semi-improved grassland provides suitable terrestrial habitat for great crested newts, and although great crested newt populations are present in the wider Berewood

development, low numbers have been recorded over 500 metres from the site. This is discussed further in section 5.6.

11. The hedgerow on site provides suitable habitat for the hazel dormouse and the site is also well connected to further suitable habitat in the immediate surrounding area. Previous surveys have identified presence of the hazel dormouse across the wider Berewood site with the nearest evidence recorded within the Newlands Row & Plant Row SINC which is located within 0.33 kilometres of the site. Further recommendations are provided in section 5.7.
12. The semi-improved grassland habitat and hedgerow on site provide suitable areas of habitat for common reptile species such as slow worm, grass snake and common lizard which have been recorded on the wider site previously. Surveys were undertaken in 2022 which identified a juvenile slow worm recorded outside of the red line boundary but within the connecting semi-improved grassland to the north-west. Further recommendations are provided in section 5.8.
13. Recommendations to enhance the ecological value of the site are outlined in section 5.9.

1.0 INTRODUCTION

LC Ecological Services Ltd were commissioned by Grainger Plc to conduct an ecological appraisal of a parcel of land identified as Park View (Phase 8) of the development at Berewood, Waterlooville, PO7 7PS (Grid Ref: SU 67040 08916).

Berewood, Waterlooville (Havant Borough Council planning ref: APP/10/00828/ Winchester City Council planning ref: 10/02862/OUT) is a large multi-phased development. This report presents current information for the parcel of land referred to Area 8. A site location plan for this phase of the development is provided in appendix I.

An ecological appraisal is essentially a multi-disciplinary walk-over survey and was conducted with the objective of identifying any ecological constraints associated with the proposals such as the site's potential to support any legally protected species or habitats of high nature conservation value.

Section 2 of the report provides some background information on legislative requirements and relevant policy. Section 3 details the methodologies adopted for the ecological surveys that were conducted and section 4 provides an account of the survey results. Section 5 provides information on the relevance of the results to the proposed development and makes recommendations for measures to mitigate and compensate for the effects on a particular habitat or species.

2.0 LEGISLATION AND POLICY

2.1 Legislation

The following legislation may be of relevance to the proposed works. Full details of statutory obligations with respect to biodiversity and the planning system can be found in DCLG Circular 06/2005.

- **The Conservation of Habitats and Species Regulations 2017:**
This transposes the EU Habitats Directive (Council Directive 92/43/EEC) into domestic law. The Regulations provide protection for a number of species including:
 - All species of bat;
 - Hazel dormouse (*Muscardinus avellanarius*); and
 - Great crested newt (*Triturus cristatus*).

This legislation makes it an offence to deliberately capture, kill or injure individuals of these species listed on Schedule 2 and damage or destroy their breeding site or place of shelter. It is also illegal to deliberately disturb these species in such a way as to be likely to significantly affect: (i) the ability of any significant group of the species to survive, breed or rear or nurture their young; or (ii) the local distribution or abundance of the species¹;

This legal protection means that where development has the potential to impact on bats, or other European protected species, the results of a protected species survey must be submitted with a planning application.

Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are also protected under this legislation. These are a network of sites designated for supporting habitats or species of high nature conservation importance in the European context. Any activity that has a detrimental effect on these European sites is made an offence under the Regulations. Where a development is likely to have a significant impact on a European site, the Regulations require a rigorous assessment of the impacts, known as an Appropriate Assessment.

¹ The *Conservation of Habitats and Species Regulations 2017* consolidates the numerous amendments that were made to the *Conservation (Natural Habitats, &c.) Regulations 1994*. Of particular relevance are amendments made in August 2007 and January 2009 which increased the threshold of illegal levels of disturbance to European Protected Species (EPS). An offence is only committed if the deliberate disturbance would result in significant impacts to the EPS population. However, it should be noted that activities that cause low levels of disturbance to these species continue to constitute an offence under Section 9 of the *Wildlife and Countryside Act (1981)*.

- **The Wildlife and Countryside Act 1981 (and amendments):** Protected fauna and flora are listed under Schedules 1, 5 & 8 of the Act. Species likely to be of relevance include:
 - All species of **bat**. It is an offence to intentionally or recklessly disturb any bat whilst it is occupying a roost or to intentionally or recklessly obstruct access to a bat roost;
 - All species of British **reptile** (in particular grass snake (*Natrix helvetica*), common lizard (*Zootoca vivipara*), adder (*Vipera berus*) and slow-worm (*Anguis fragilis*)). It is illegal to kill or injure these species; and
 - **Great crested newt**. It is illegal to obstruct access to any structure or place which great crested newts use for shelter or protection or to disturb any great crested newt while it is using such a place.

This Act also makes it an offence to intentionally kill, injure or take any wild bird or to take, damage or destroy their eggs and nests (whilst in use or being built). In addition, it is an offence to disturb any nesting bird listed on Schedule 1 or their young.

Schedule 9 of the Act lists those species for which it is an offence to cause their spread. Schedule 9 species that are most likely to be encountered are Japanese knotweed (*Fallopia japonica*) and New Zealand pigmyweed (*Crassula helmsii*).

Sites of Special Scientific Interest (SSSIs) are also protected under the Wildlife and Countryside Act 1981. These are a network of sites identified as being of national nature conservation importance and hence afforded legal protection.

- **The Countryside and Rights of Way Act 2000:** This Act strengthens nature conservation and wildlife protection. It places a duty on Government Ministers and Departments to conserve biological diversity, provides police with stronger powers relating to wildlife crimes, and improves protection and management of SSSIs.
- **The Protection of Badgers Act 1992:** This Act makes it an offence to wilfully take, injure or kill a badger (*Meles meles*); cruelly mistreat a badger; interfere with badger setts. A licence is required for work which may damage or disturb a sett.
- **Wild Mammals (Protection) Act 1996:** This Act provides protection for all wild animals from intentional acts of cruelty.
- **Hedgerow Regulations 1997:** These Regulations establish a set of criteria for assessing the importance of hedgerows. Where a hedgerow is deemed to be 'important' its removal is prohibited without consent from the local Planning Authority

2.2 Policy

The following policy is of relevance to the proposed works:

- **National Planning Policy Framework (NPPF):** This sets out the Government's vision for biodiversity in England with the broad aim that planning, construction, development and regeneration should maintain and enhance, restore or add to biodiversity and geological conservation interests. NPPF includes information on legally protected species and sites in section 15 (see section 2.1).
- **Local Sites (including Sites of Nature Conservation Interest (SNCIs), Local Nature Reserves (LNR), and Biological Notification Sites (BNSs)/County Wildlife Sites (CWSs)):** These are a network of sites designated for their nature conservation importance in a local context. Although they are not afforded legal protection they contribute towards local and national biodiversity. Where such development is permitted, the local planning authority will use conditions and/or planning obligations to minimise the damage and to provide compensatory and site management measures where appropriate.
- **Biodiversity Action Plans (BAPs):** BAPs set out policy for protecting and restoring priority species and habitats as part of the UK's response as signatories to the Convention on Biological Diversity. BAPs operate at both a national and local level with priority species and habitats identified at a national level and a series of Local BAPs that identify ecological features of importance to a particular area of the country. The requirement to consider and contribute towards BAP targets was strengthened through the Countryside and Rights of Way Act 2000. Habitat and Species Action Plans that are likely to be of relevance include:
 - Reptiles (UK BAP)
 - Brown long-eared bat (*Plecotus auritus*) (UK BAP)
 - Soprano pipistrelle (*Pipistrellus pygmaeus*) (UK BAP)
 - Hazel dormouse (UKBAP)

3.0 METHODOLOGY

3.1 Desk study

Hampshire Biological Information Centre (HBIC) provided protected species records within two kilometres of the site and details of any non-statutory designated sites. The Multi-Agency Geographical Information for the Countryside (MAGIC) website was used to provide information on any statutory designated sites within five kilometres of the proposed development.

3.2 Field study

3.2.1 Vegetation

The standard phase 1 habitat survey methodology (JNCC, 2016) was adopted whereby habitats are mapped using colour codes (appendix II). A detailed walkover survey of the site was undertaken on 30th June 2022 by experienced ecologist Aimee Cokayne, directly searching for legally protected and invasive species of flora and fauna and categorising any habitats of ecological value that were encountered. A general description of the vegetation on site was also recorded, listing species encountered and scoring their abundance using the DAFOR scale:

D	Dominant;
A	Abundant;
F	Frequent;
O	Occasional;
R	Rare;
L	Local (used as a prefix to any of the above).

Limitations

During the walkover survey every effort is made to ensure invasive species are identified including Japanese knotweed, recommendations for further invasive species surveys will be made when considered necessary.

3.2.2 Hedgerow Regulations assessment

A Hedgerow Regulations assessment was conducted by Aimee Cokayne on 30th June 2022 in order to determine whether the hedgerow on site qualify as 'Important'. The hedgerow on site were assessed in relation to the various qualifying features, stated within the Hedgerow Regulations 1997, used to classify 'Important' hedgerows. Essentially, 'Important' hedgerows are identified according to the number of woody species and additional features they comprise. A summary of qualifying hedgerows and additional features is presented in table 1 below.

Table 1: Hedgerows qualifying as ‘Important’ under the Hedgerow Regulations 1997 and a summary of additional features.

Summary of ‘Important’ hedgerows
<u>Hedgerows that have existed for 30 years or more and meet the following criteria:</u> <u>Hedgerow must include:</u> (a) at least 7 woody species; (b) at least 6 woody species, and has associated with it at least 3 additional features. (c) at least 6 woody species, including one of the following— black-poplar tree (<i>Populus nigra</i> ssp <i>betulifolia</i>); large-leaved lime (<i>Tilia platyphyllos</i>); small-leaved lime (<i>Tilia cordata</i>); wild service-tree (<i>Sorbus torminalis</i>); or (d) at least 5 woody species, and has associated with it at least 4 additional features. <u>Or hedgerow must:</u> be adjacent to a bridleway or footpath, a road used as a public path, or a byway open to all traffic, and include at least 4 woody species, and at least 2 additional features.
Additional features
• a bank or wall which supports the hedgerow along at least one half of its length. • gaps which in aggregate do not exceed 10% of the length of the hedgerow. • where the length of the hedgerow does not exceed 50 metres, at least one standard tree. • where the length of the hedgerow exceeds 50 metres but does not exceed 100 metres, at least 2 standard trees. • where the length of the hedgerow exceeds 100 metres, such number of standard trees (within any part of its length) as would when averaged over its total length amount to at least one for each 50 metres. • at least 3 woodland (ground flora) species within one metre, in any direction, of the outermost edges of the hedgerow. • a ditch along at least one half of the length of the hedgerow. • hedgerow connections scoring 4 points or more (a connection with another hedgerow scores one point and a connection with a pond or a woodland in which the majority of trees are broad-leaved trees scores 2 points; and a hedgerow is connected with something not only if it meets it but also if it has a point within 10 metres of it and would meet it if the line of the hedgerow continued). • a parallel hedge within 15 metres of the hedgerow. • The hedgerow is adjacent to a bridleway or public footpath, or a byway open to all traffic.

For each individual hedgerow assessment, the length of the hedgerow was measured and the number of woody species and any additional features recorded. For woody species counts the following guidelines were applied (as stated within the Hedgerow Regulations 1997):

(a) where the length of the hedgerow does not exceed 30 metres, count the number of woody species present in the hedgerow.

(b) where the length of the hedgerow exceeds 30 metres, but does not exceed 100 metres, count the number of woody species present in the central stretch of 30 metres.

(c) where the length of the hedgerow exceeds 100 metres, but does not exceed 200 metres, count the number of woody species present in the central stretch of 30 metres within each half of the hedgerow and divide the aggregate by two.

(d) where the length of the hedgerow exceeds 200 metres, count the number of woody species present in the central stretch of 30 metres within each third of the hedgerow and divide the aggregate by three.

3.2.3 Protected species assessment

Habitats and features were assessed for their potential to support protected and notable species (see section 2). In many cases determining the presence, distribution and population size of protected species will require additional, specialist surveys.

Badger

A direct search was undertaken for signs of badger. Signs of badger may include setts, dung pits, latrines, paths or hairs on fences and vegetation. Any setts encountered were classified according to the number of entrances and the extent of their use.

Bats

Foraging/commuting habitat

The site was assessed for its suitability to support foraging/commuting bats. Bats will forage on sites that support linear landscape features (e.g. hedgerows, tree lines and rivers) with good habitat connectivity and within proximity to suitable roosting sites. Sites that support a range of semi-natural habitats with varied vegetation structure are considered to provide more suitable foraging habitat for bats as they support an abundance and diversity of insect prey.

Activity transects

A suite of bat activity surveys was undertaken on site in accordance with the guidelines established by the BCT (Collins, 2016).

Bats are generally most active between the months of March and September with the optimal months for undertaking transects being June to August. Activity transects were undertaken during June, July, August and September 2022. The dusk transect surveys began at or just before sunset and continued for approximately two hours afterwards in order to record any bats commuting from roost sites to foraging grounds as well as general foraging activity. The dawn transect survey commenced two hours before sunrise and continued until sunrise.

Bat transect surveys involve walking a pre-defined route which incorporates key areas of habitat that are likely to be important for foraging and/or commuting bats. Such areas include scrub and grassland and linear features such as hedgerows and woodland/scrub edge. In regard to the parcel known as Park View (Phase 8), a pre-determined transect route was walked by a pair of surveyors during each survey visit. The route was walked up to twice during any one survey at a steady speed and several listening station stops were also incorporated along the route. The surveyors paused at each listening stop for a duration of five minutes. The site transect route is illustrated on the plan included as appendix III.

Static Monitoring

Static monitoring devices were deployed on site for a period of at least five nights in June, July, August and September 2022 following the guidelines by the BCT (Collins, 2016). The recording devices consisted of SM2, SM4 and Anabat expresses. The recording devices were set up at the same strategically selected location on the site on each occasion. All analysis of the static recording devices was conducted using Kaleidoscope software.

For all months, the static was deployed at the following location:

- Static monitor 1 (SU 67786 08900): Positioned within hedgerow.
- Static monitor 2 (SU 67638 08753): Positioned within hedgerow.

Table 2 below identifies the number of nights bats were recorded per month.

Table 2: Static Monitoring nights

	June	July	August	September
Static 1	7	6	3	5
Static 2	7	6	5	5

Assessment of foraging and commuting habitat importance

A methodology for the ecological impact assessment of bats has been developed by Wray et al (2010). This uses a number of factors such as the species and number of bats involved, presence of roosts nearby and characteristics for foraging and commuting habitat to produce a score indicating level of importance. This scoring system has been applied to the foraging area and commuting routes for the site to assess their level of importance. The value of the habitat can be assessed for each of the bat species recorded during the survey, but the highest score (normally obtained for the rarest species) is used when defining the value of the habitat. The scores relate to the following levels of importance:

- 0–10 = not valuable
- 11–20 = locally important

- 21-30 = important at county level
- 31-40 = important at regional level
- 41-50 = nationally important

Limitation and constraints

The site was assessed as holding low to moderate suitability to support commuting and foraging bats and as such monthly surveys were undertaken with a view to surveying once a month in accordance with the BCT's guidelines (Collins, 2016). Due to the project being commissioned in the summer, the survey effort commenced in June. The reduced survey effort is not considered to have had a significant impact on the results of the survey as only low numbers of bat species were recorded during both the static monitoring and the transect surveys.

In August, there was an abnormality in that the recordings were not made for the full five nights in location 1, however data gathered from the combination of transect surveys and static monitoring across the survey season and from previous surveys undertaken across the wider Berewood development were considered satisfactory to determine local bat activity levels.

Great crested newts

Suitable breeding ponds are essential to support populations of great crested newt although they actually only spend a relatively short period of the year in the ponds during the spring for breeding. The remainder of the year is spent in suitable 'foraging' terrestrial habitat such as tall grassland and woodland. During the winter the great crested newt hibernates, often amongst the roots of trees and scrub or in other places such as rubble piles, amongst the foundations of buildings or under fallen trees and logs.

Great crested newts are known to forage up to at least five hundred metres from their breeding pond and suitable habitats that fall within two hundred and fifty metres must be considered even in situations where the breeding pond itself will not be affected. The site and surrounding area were assessed during the phase 1 habitat survey for the presence of ponds that may provide suitable breeding habitat for great crested newts. Suitable terrestrial habitat was also assessed.

Hazel dormouse

The habitat on the site was assessed for the potential to support the hazel dormouse, which are found in habitats such as woodlands, scrub and hedgerows with good connectivity and suitable food plants. A visual inspection for their distinctive nests was undertaken. Where fruiting hazel (*Corylus avellana*) is present, nuts are checked for dormice distinctive opening holes. Satellite images were used to assess the connectivity of any suitable habitat present on the site to other areas of woodland and hedgerow networks.

Reptiles

Common reptile species such as slow-worm and grass snake are widespread in habitats that provide both cover, in the form of scrub or tall vegetation, and basking areas such as hard standing or short grassland communities. Piles of debris or rubble also provide excellent refuge and hibernation sites for reptiles. They do also have an affinity for hiding under debris exposed or partially exposed to the sun. This trait is exploited by adopting a methodology based upon placing artificial refuges around the survey site thus encouraging any reptiles present to use them.

Targeted reptile surveys were undertaken between June and September 2022, excluding the months of July and August. This involved distributing artificial refugia within the site on the 23rd June 2022, in this case 50 mats of 0.25metres² pieces of roofing felt were used. These were left to settle for one week, after which seven survey visits were undertaken. The 'reptile mats' were checked between 0800 and 1000 hours or between 1600 and 1900 hours and/or during suitable weather conditions, when it was cloudy and/or with sunny breaks with temperatures between ten and eighteen degrees centigrade, when the refuges provide greater heat than the open ground. Visits were completed by experienced surveyors Colin Sutch and Jay Van der Westhuizen.

4.0 RESULTS

4.1 Desk study

Designated sites

Table 3 below lists sites designated for nature conservation located within five kilometres of land at Park View (Phase 8) of the development site.

Table 3: Statutory designated sites within a five-kilometre radius and non-statutory sites within a two kilometre radius of the land at Park View (Phase 8), Berewood, Waterloooville.

Site name	Conservation status	Distance and direction from site	Size (Ha)	Habitat description
Solent Maritime	SAC ²	3.7 km south east	165,300	The Solent encompasses a major estuarine system on the south coast of England. Designated for its estuary, salt meadow, coastal lagoons, mudflats. Qualifying species includes Desmoulin's whorl snail (<i>Vertigo moulinsiana</i>)
Chichester and Langstone Harbours	SPA ³	3.6 km south east	5,810	The SPA qualifies under Article 4.1 for breeding little tern (<i>Sterna albifrons</i>) and sandwich tern (<i>Sterna sandvicensis</i>), little egret (<i>Egretta garzetta</i>) and overwintering bar-tailed godwit (<i>Limosa lapponica</i>). This site also qualifies under Article 4.2 for passage ringed plover (<i>Charadrius hiaticula</i>), overwintering black-tailed godwit (<i>Limosa limosa islandica</i>), dark-bellied brent goose (<i>Branta bernicla bernicla</i>), dunlin (<i>Calidris alpina alpina</i>), grey plover (<i>Pluvialis squatarola</i>), redshank (<i>Tringa totanus</i>), and assemblage of international importance.
	Ramsar ⁴	3.6 km south east	5,810	Chichester Harbour comprises extensive mud and sandflats that are exposed at low tide. The site is designated as a wetland of

² SAC: Special Area of Conservation

³ SPA: Special Protection Area

⁴ Ramsar: Internationally important wetland site

Site name	Conservation status	Distance and direction from site	Size (Ha)	Habitat description
				international importance and is of particular significance for wintering wildfowl and waders as well as breeding birds both within the Harbour and in the surrounding permanent pasture fields and woodlands.
Solent & Isle of Wight lagoons	SAC	4.7 km south	11,241	Solent and Isle of Wight Lagoons is designated for the presence of Coastal Lagoons (an Annex 1 habitat type) The lagoons show a range of salinities and substrates, ranging from soft mud to muddy sand with a high proportion of shingle, which support a diverse fauna including large populations of three notable species: the nationally rare foxtail stonewort (<i>Lamprothamnium papulosum</i>), the nationally scarce lagoon sand shrimp (<i>Gammarus insensibilis</i>), and the nationally scarce starlet sea anemone (<i>Nematostella vectensis</i>).
Portsmouth Harbour	Ramsar	4.8 km south west	1,249	Portsmouth Harbour is a large industrialised estuary and includes one of the four largest expanses of mudflats and tidal creeks on the south coast of Britain. The mudflats support large beds of narrow-leaved and dwarf eelgrass (<i>Zostera sp.</i>), extensive green alga and sea lettuce (<i>Ulva sp.</i>). The site supports internationally important numbers of wintering dark-bellied brent geese and nationally important numbers of grey plover, dunlin (<i>Calidris alpina</i>) and black-tailed godwit.
	SSSI ⁵	4.8 km south west	1,264	Portsmouth Harbour SSSI is designated for its tidal lagoons, mudflats, supporting rare plants, invertebrates and waders. There is also an area of chalk grassland on Horsea island supporting a number of scarce plant species.

⁵ SSSI: Site of Special Scientific Interest

Site name	Conservation status	Distance and direction from site	Size (Ha)	Habitat description
	SPA	4.8 km south west	1,249	Portsmouth Harbour SPA qualifies under Article 4.2 dark-bellied brent goose
Lye Heath Marsh	SSSI	2.5 km west	4.4	Lye Heath Marsh supports the following habitats including a mixture of basic flushes, unimproved grassland, alder woodland and dense hedgerows, which combine to form a now rare association of individually restricted habitats.
Portsmouth	SSSI	2.8 km south west	69.15	Portsmouth is notified for its geological importance.
Hook Heath Meadows	SSSI	2.9 km south-west	5.9	Hook Heath Meadows comprise an intimate mixture of woodland and agriculturally unimproved acid pasture lying within a shallow river valley over London Clays. Many of the habitats present are now rare in lowland Britain through agricultural intensification. Their close juxtaposition here is of particular value as an invertebrate habitat.
Langstone Harbour	SSSI	3.6 km south east	2,069	A tidal basin with extensive mudflats, marshland and reedbeds supporting internationally important numbers of overwintering waders.
Hazelton Common	LNR ⁶	3.5 km north-east	17.45	A large area of heathland, mixed scrub and wooded dells with ponds and wetland area, supporting many species of reptile, dragonfly and other invertebrates. Bracken has spread in some areas, a few patches of heather survive, mostly mixed with extensive areas of gorse where there is a good breeding population of stonechats (<i>Saxicola torquata</i>).
Farlington Marshes	LNR	3.6 km south-east	119.68	Farlington Marshes comprise grazed wildflower rich-marshes. The site is internationally important for bird populations and is a popular location for observing butterflies.

⁶ LNR: Local Nature Reserve

Site name	Conservation status	Distance and direction from site	Size (Ha)	Habitat description
Yeoll's Copse	LNR	4 km north east	5.48	A precious fragment of Ancient Woodland with a small wetland area on the north side and now surrounded on three sides by housing development. Unusual plants include common cow wheat (<i>Melampyrum pratense</i>) and butcher's broom (<i>Ruscus aculeatus</i>).
Dell Piece West	LNR	4.1 km north east	4.06	Well-wooded borders, unimproved grassland, damp marshy ground and a large shallow pond provides habitat for a rich variety of wildlife that includes various butterflies, dragonflies and reptiles.
Newlands Row and Plant Row	SINC ⁷	0.33 km west	5.35	Ancient semi-natural woodlands. A site that supports dormouse (<i>Muscardinus avellanarius</i>) populations.
Newlands Farm Meadow	SINC	0.50 km west	3.75	Semi improved grassland which retain a significant element of unimproved grassland.
Stakes Coppice Remnant 1	SINC	0.51 km east	0.47	Woodland where there is a significant element of ancient semi-natural woodland surviving. Site of nature conservation interest which occur in areas otherwise deficient in such interest, and/or are known to be of particularly high value to local communities e.g. community wildlife sites.
Marrelsmoor Row	SINC	0.64 km south west	0.7	Ancient semi-natural woodlands.
Marrelsmoor Coppice	SINC	0.64 km south west	3.05	Ancient semi-natural woodlands. A site that supports dormouse populations.
Alsfordmoor Coppice	SINC	0.77 km south west	5.66	Woodland where there is a significant element of ancient semi-natural woodland surviving. They comprise important community types of restricted distribution in the County, such as yew (<i>Taxus baccata</i>) woods and alder (<i>Alnus glutinosa</i>) swamp woods. A site that supports dormouse

⁷ SINC: Site of Importance for Nature Conservation

Site name	Conservation status	Distance and direction from site	Size (Ha)	Habitat description
				populations.
Newlease Copse, Havant	SINC	0.89 km south east	1.74	Ancient semi-natural woodlands.
Frank's Coppice	SINC	0.90 km east	1.78	Surviving semi-natural ancient woodland.
Purbrook Heath	SINC	0.95 km south west	3.4	Agriculturally unimproved grasslands. A site that supports dormouse populations.
Stakes Coppice Remnant 2	SINC	1.08 km east	0.67	Surviving semi-natural ancient woodland.
Stakes Coppice Remnant 4	SINC	1.10 km east	0.63	Surviving semi-natural ancient woodland.
Sheepwash/Tattle/Dunsland Coppices	SINC	1.1 km west	20.06	Ancient semi-natural woodlands. A site that supports dormouse populations.
London Road Fen	SINC	1.19 km south	1.89	Habitats which comprise important community types of restricted distribution in the County, such as yew woods and alder swamp woods. Fens, flushes, seepages, springs, inundation grasslands etc. that support a flora and fauna characteristic of unimproved and waterlogged (seasonal or permanent) conditions.
Pound Coppice Remnant	SINC	1.2 km north west	1.23	Woodland where there is a significant element of ancient semi-natural woodland surviving. A site that supports dormouse populations.
Stakes Coppice Remnant 5	SINC	1.21 km east	0.53	Surviving semi-natural ancient woodland.
Othurst/ Inhurst/ Beech Woods	SINC	1.26 km north east	10.75	Ancient semi-natural woodland which supports <i>Crepis biennis</i>
Sandy Dell	SINC	1.28 km south east	1.29	Designated green space. Ancient semi-natural woodlands
Drivetts Complex	SINC	1.3 km west	63.70	Ancient semi-natural woodlands.
Stakes Coppice Remnant 6	SINC	1.32 km east	0.28	Surviving semi-natural ancient woodland.
Aldermoor Meadow Part	SINC	1.39 km south	1.93	Fens, flushes, seepages, springs, inundation grasslands etc. that support a flora and fauna characteristic of unimproved and waterlogged (seasonal or permanent) conditions.

Site name	Conservation status	Distance and direction from site	Size (Ha)	Habitat description
Stakes Coppice Remnant 7	SINC	1.46 km east	0.63	Ancient semi-natural woodlands
Sandy and Aldermoor Coppices	SINC	1.47 km south west	6.18	Ancient semi-natural woodlands.
Meadow Adjacent to Johnston's Copse	SINC	1.48km south east	9.09	Ancient semi-natural woodlands. Semi-improved grassland which retain a significant element of unimproved grassland. Fens, flushes, seepages, springs, inundation grasslands etc. that support a flora and fauna characteristic of unimproved and waterlogged (seasonal or permanent) conditions. Supports the hazel dormouse.
Johnston's Coppice	SINC	1.51 km south east	8.07	Small urban woodland. Ancient semi-natural woodlands which supports the hazel dormouse.
Park Wood, Havant	SINC	1.51 km north east	2.60	Ancient semi-natural woodlands.
The Queen's Inclosure	SINC	1.54 km north east	40.27	Ancient semi-natural woodlands.
Hurst Wood, Havant	SINC	1.57 km north east	2.03	Ancient semi-natural woodlands
Gundymoor Wood (West)	SINC	1.59 km south east	1.37	Ancient semi-natural woodlands. They comprise important community types of restricted distribution in the County, such as yew woods and alder swamp woods.
Broomground Coppice/Potwell Coppice	SINC	1.6 km south west	19.95	Ancient semi-natural woodlands. Woodland where there is a significant element of ancient semi-natural woodland surviving. They comprise important community types of restricted distribution in the County, such as yew woods and alder swamp woods. Supports the hazel dormouse.
Neville's Park West Wood	SINC	1.66 km east	4.51	Surviving semi-natural ancient woodland.
Widley Walk Meadow	SINC	1.75 km south west	1.56	Agriculturally unimproved grasslands.
Gundymoor Wood (Main)	SINC	1.75 km south east	3.24	Ancient semi-natural woodlands

Site name	Conservation status	Distance and direction from site	Size (Ha)	Habitat description
Neville's Park East Wood	SINC	1.75 km east	8.87	Ancient semi-natural woodlands
Hulbert Road Meadow	SINC	1.78 km south east	2.83	Fens, flushes, seepages, springs, inundation grasslands etc. that support a flora and fauna characteristic of unimproved and waterlogged (seasonal or permanent) conditions.
Purbrook Park Wood	SINC	1.83 km south	1.51	Ancient semi-natural woodlands
Beech Wood East	SINC	1.84 km east	2.85	Ancient semi-natural woodland. Surviving semi-natural ancient woodland.
Neville's Park Areas 2 & 3	SINC	1.89 km east	14.16	Agriculturally unimproved grasslands.
Portsmouth Golf course west	SINC	1.9 km south	2.02	Semi-improved grassland which retain a significant element of unimproved grassland.
Littlepark Wood (West)	SINC	1.93 km south east	4.11	Ancient semi-natural woodlands. They comprise important community types of restricted distribution in the County, such as yew woods and alder swamp woods. Supports the hazel dormouse.
Cherry Tree Row	SINC	1.94 km east	1.93	Ancient semi-natural woodland.
Neville's Park Areas 4-10	SINC	1.94 km south east	13.35	Ancient semi-natural woodlands. They comprise important community types of restricted distribution in the County, such as yew woods and alder swamp woods. Agriculturally unimproved grasslands. Supports <i>Bromus commutatus</i> .
Piper's Hill Wood	SINC	1.96 km north west	1.96	Ancient semi-natural woodlands.

Chichester and Langstone Harbours SPA and Ramsar lie 3.6 kilometres to the south east of the site, the Solent Maritime SAC lies 3.7 kilometres to the south east, and the nearest statutory site is Lye Heath Marsh SSSI which is situated 2.5 kilometres to the west of the site. There are no anticipated direct impacts to these designated sites from this development phase. Issues relating to the wider housing development, in relation to recreational pressures are detailed within the Ecology Chapter for the development (Biodiversity by Design 2010b).

Newlands Row and Plant Row SINC lies 0.33 kilometres to the west of the site, whilst Newlands Farm Meadow SINC lies 0.5 kilometres to the south west of the site. These local sites may be impacted by works. Further recommendations have been provided in section 5.1.

Protected species records

Records were provided by HBIC (Reference: 11025) from the last 15 years for most species, 30 years for plants and no time constraint for bat records. A full copy of the data search can be provided on request however a summary is provided below:

Amphibians and reptiles

Records of slow worm, common toad (*Bufo bufo*), grass snake, great crested newt, adder (*Vipera berus*) and common lizard were provided by HBIC.

Birds

Seventy-five species of bird records were provided by HBIC. Species records included lesser redpoll (*Acanthis cabaret*), goshawk (*Accipiter gentilis*), nightjar (*Caprimulgus europaeus*), oystercatcher (*Haematopus ostralegus*), nightingale (*Luscinia megarhynchos*), osprey (*Pandion haliaetus*) and lapwing (*Vanellus vanellus*).

Higher plants

Twenty-six species of flowering plant records were provided from the last 30 years. Species records included chamomile (*Chamaemelum nobile*), dwarf spurge (*Euphorbia exigua*), mousetail (*Myosurus minimus*), sainfoin (*Onobrychis viciifolia*), butcher's-broom, strawberry clover (*Trifolium fragiferum*) and bastard-toadflax (*Thesium humifusum*).

Invertebrates

More than 100 species of invertebrate records were provided by HBIC. Species records included stag beetle (*Lucanus cervus*), white admiral (*Limentis camilla*), willow midget (*Phyllonorycter viminiella*) and common darter (*Sympetrum striolatum*).

Mammals

Thirteen species of bat were provided by HBIC. Bat species records included noctule (*Nyctalus noctule*), brown long-eared, common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle and serotine (*Eptesicus serotinus*). Non bat mammal records provided by HBIC included hazel dormouse, badger (*Meles meles*) and hedgehog (*Erinaceus europaeus*).

These records of protected, notable and invasive species in the vicinity of the site increase the likelihood of them being present where suitable habitat is identified in the field survey.

4.2 Field survey

4.2.1 Vegetation

The accompanying phase 1 habitat map provided as appendix II depicts the habitats encountered and highlights areas of particular interest with target notes.

The site comprises a semi-improved grassland field, with an area of ephemeral vegetation. A native hedgerow forms the south eastern boundary and separates the site from London Road. Native planting, hedgerow, footpaths and tree line form adjacent habitats to the site.

Descriptions of the habitats encountered during the survey are provided below:

Semi-improved grassland (Target note 1)

The majority of the site comprises a semi-improved grassland field with a sward height measuring approximately 0.75 centimetres to 1 metre. The grassland was dominated by Yorkshire-fog (*Holcus lanatus*), with locally dominant false oat-grass (*Arrhenatherum elatius*), cock's-foot (*Dactylis glomerata*) and creeping thistle (*Cirsium arvense*). Additional species recorded are presented in table 4 below.

Six earth mounds were present in the north east of the site (target note 5), which have been colonised by similar species to those recorded within the grassland, although a higher frequent of creeping thistle, bristly oxtongue (*Picris echioides*), dock (*Rumex* sp) and common ragwort (*Senecio jacobaea*) were recorded.

Table 4: Species recorded within the semi-improved grassland habitat

Common name	Scientific name	Abundance	Status
<i>Grasses, sedges, rushes and mosses</i>			
Common bent	<i>Agrostis capillaris</i>	LO	Common in acidic, calcareous and heath grasslands
Creeping bent	<i>Agrostis stolonifera</i>	LO	Common and widespread
Meadow foxtail	<i>Alopecurus pratensis</i>	LR	Common in neutral and wet grasslands
False oat-grass	<i>Arrhenatherum elatius</i>	LD	Common and widespread
Soft brome	<i>Bromus hordeaceus</i>	R	Common in woodlands and calcareous grasslands
Pendulous sedge	<i>Carex pendula</i>	R	Common in damp grasslands
Cock's-foot	<i>Dactylis glomerata</i>	LD	Common and widespread
Red fescue	<i>Festuca rubra</i>	LA	Common and widespread
Hard rush	<i>Juncus inflexus</i>	R	Common in wet grasslands
Perennial rye-grass	<i>Lolium perenne</i>	R	Common and widespread
Yorkshire -fog	<i>Holcus lanatus</i>	D	Common and widespread
Annual meadow-grass	<i>Poa annua</i>	A	Common on disturbed ground
Rough meadow-grass	<i>Poa trivialis</i>	A	Common and widespread
<i>Herbaceous species</i>			
Lesser burdock	<i>Arctium minus</i>	O	Common and widespread
Mugwort	<i>Artemisia vulgaris</i>	LO	Very common on wasteground, scrub, hedge banks and roads
Butterfly bush	<i>Buddleja davidii</i>	R	Common and widespread and invasive
Creeping thistle	<i>Cirsium arvense</i>	LD	Common and widespread
Field horsetail	<i>Equisetum arvense</i>	LO	Common in meadows, arable and wasteground.
Common toadflax	<i>Linaria vulgaris</i>	R	Common in grasslands
Common mallow	<i>Malva sylvestris</i>	R	Common and widespread
Ribwort plantain	<i>Plantago lanceolata</i>	R	Common and widespread
Creeping cinquefoil	<i>Potentilla reptans</i>	LO	Common and widespread
Common fleabane	<i>Pulicaria dysenterica</i>	LF	Common in meadows, roadsides, ditches, clay and wet soils
Curled dock	<i>Rumex crispus</i>	LO	Very common on waste ground, roadsides, hedge banks and arable

Common name	Scientific name	Abundance	Status
Common ragwort	<i>Senecio jacobaea</i>	R	Common and widespread
Lesser trefoil	<i>Trifolium dubium</i>	R	Common on dry and bare grasslands
White clover	<i>Trifolium repens</i>	LO	Very common and widespread

Species recorded within the semi-improved grassland are common and / or widespread, nevertheless it could potentially support foraging badgers, ground nesting birds, common reptile species and great crested newt, these species are discussed further in section 4.2.3.

Ephemeral / short perennial (Target note 2)

An area of disturbed ground was recorded in the north west of the site, and is being colonised by locally dominant common fleabane (*Pulicaria dysenterica*), bristly ox-tongue, locally abundant scented mayweed (*Matricaria recutita*), dandelion (*Taraxacum agg.*), creeping thistle, occasional ox-eye daisy (*Leucanthemum vulgare*), ribwort plantain (*Plantago lanceolata*), locally occasional knotgrass (*Polygonum aviculare*), and rare occurrences of poppy (*Papaver* sp), and prickly sow-thistle (*Sonchus asper*).

Species recorded within the ephemeral/ short perennial habitat are common and / or widespread, nevertheless it could potentially support foraging badgers, ground nesting birds, common reptile species and great crested newt, these species are discussed further in section 4.2.3.

Willow saplings (Target note 4)

A small patch of goat willow (*Salix caprea*) saplings were recorded within the grassland habitat. These measured approximately 1 to 1.25 metres high.

The willow saplings provide limited botanical value but have the potential to provide habitat for reptile and great crested newts which are discussed further in section 4.2.3.

Hedgerow (Target note 7)

An established native, species-rich hedgerow is present along the eastern site boundary with a wooden fence and post and wire fence. The hedgerow has been planted as part of the Berewood development. The woody species recorded within the hedgerow measure 3 to 4 metres in height with standard oak (*Quercus robur*) trees within the hedgerow measuring approximately 7 to 8 metres in height. The hedgerow measures approximately 380 metres in length and 1.5 to 2 metres in width.

The hedgerow is unmanaged and comprises hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) interspersed with other woody shrubs including hazel (*Corylus avellana*), field maple (*Acer campestre*), goat willow, dogwood (*Cornus sanguinea*), common privet (*Ligustrum vulgare*), crab apple (*Malus sylvestris*), guelder rose (*Viburnum opulus*), rose (*Rosa* sp), cherry (*Prunus avium*), gorse (*Ulex europaeus*) and garden privet (*Ligustrum ovalifolium*). Additional species recorded in the hedgerow include bramble (*Rubus fruticosus* agg) and hedge bindweed (*Calystegia sepium*). Tree guards are still visible on the shrubs.

The hedgerow understorey (within the site) comprised a thin strip of semi-improved grassland measuring approximately 0.75 metres in height. Species recorded in this area included hogweed (*Heracleum sphondylium*), field horsetail (*Equisetum arvense*), false oat grass, Yorkshire-fog, hedge bedstraw (*Galium mollugo*) and cock's-foot.

The understorey on the south eastern side of the hedgerow (adjacent to London Road) comprises a road verge on a slope which measures approximately 2.5 to 3 metres, and is currently managed. The grassland sward height is therefore shorter measuring approximately 15 to 20 centimetres. Species recorded include dandelion (*Taraxacum* agg), yarrow (*Achillea millefolium*), hedge bedstraw, hogweed, Yorkshire-fog, false oat-grass, bent sp. (*Agrostis* sp), perennial rye-grass (*Lolium perenne*) and annual meadow-grass (*Poa annua*).

The hedgerow on site comprises 80% native species and is therefore considered a UK Bap habitat. The hedgerow is discussed further in section 4.2.2. The hedgerow has potential to support hibernating reptiles and provides foraging and commuting habitat for great crested newts, badgers, hazel dormouse, bats and nesting birds. These species are discussed further in section 4.2.3.

Off-site habitats

Mature treeline (Target note 3)

A mature treeline is located west of the site alongside a footpath. Tree species recorded included mature trees of dominant sycamore (*Acer pseudoplanatus*), occasional ash (*Fraxinus excelsior*) and rare field maple. Abundant hazel, rare goat willow, locally frequent blackthorn and occasional hawthorn comprised the shrubby, woody layer at approximately 4 to 5 metres in height.

A field margin of approximately 3 metres in width is located at the base of the treeline. This area was dominated by hogweed with occasional red campion (*Silene dioica*), locally abundant creeping thistle and occasional bramble with a height of approx. 1 metre.

Planted native saplings (Target note 6)

Pedunculate oak, hawthorn, cherry and lime (*Tilia* sp) saplings have been planted adjacent to the south east of the site as part of landscaping for the wider Berewood development site.

Native hedgerow (Target note 8)

An established native, species-rich hedgerow is present adjacent to the allotments, north of the site boundary. The hedgerow measures approximately 3 to 3.5 metres in height, 190 metres in length and 2 to 2.5 metres in width. The hedgerow is dense and evidence of management through trimming was recorded. Woody species recorded within the hedgerow include blackthorn, hawthorn, sycamore, field maple, goat willow, common privet, guelder rose and elder (*Sambucus nigra*), with hedge bindweed also noted.

A field margin of approximately 2.5 to 3 metres of semi-improved grassland is located at the base of the hedgerow. Species along the base of the hedgerow include hogweed, hedge mustard (*Sisymbrium officinale*), common ragwort, creeping thistle, creeping bent (*Agrostis stolonifera*), false oat-grass, and Yorkshire-fog.

These habitats are located outside of the red line boundary and will not be impacted by any development.

4.2.2 Hedgerow assessment

The results of the hedgerow regulations assessment are presented in table 5 below for the hedgerow recorded on site (target note 7).

Table 5: Results of the hedgerow regulations assessment

Hedge reference	Hedge length (metres)	Woody species recorded in hedgerow	Average/total number of woody species recorded in surveyed sections	Hedgerow adjacent to a bridleway or footpath, a road used as a public path, or a byway open to all traffic	Additional features	Total number of additional features	Qualifies as 'Important' under the Hedgerow Regulations 1997 (Yes/No)
TN7	380	Field maple (<i>Acer campestre</i>) Dogwood (<i>Cornus sanguinea</i>) Hazel (<i>Corylus avellana</i>) Hawthorn (<i>Crataegus monogyna</i>) Privet (<i>Ligustrum vulgare</i>) Crab apple (<i>Malus sylvestris</i>) Cherry (<i>Prunus avium</i>) Blackthorn (<i>Prunus spinosa</i>) Pedunculate oak (<i>Quercus robur</i>) Goat willow (<i>Salix caprea</i>) Guelder rose (<i>Viburnum opulus</i>)	6	No	No	0	No (Borderline)

The hedgerow does not qualify as 'Important', though it is considered to be 'borderline' as it would only require one additional woody species or additional features in order to qualify. Further recommendations are provided in section 5.2.

4.2.3 Protected species assessment

Badger

Evidence of badger have been recorded across the wider Berewood development, and four records were provided within 2 kilometres from HBIC. However, no evidence of badger including setts, latrines, mammal paths or foraging signs were recorded within the site.

Although badger have not been recorded on site, these are highly mobile species and as such further recommendations have been provided in section 5.3.

Bats

Foraging habitat

The hedgerow and semi-improved grassland on the site have been assessed as low to moderate value foraging/commuting habitat for bats. Collectively, these habitats are likely to support a diverse assemblage of invertebrate prey and they are also well connected with further suitable habitat in the surrounding area including hedgerows, and woodland. Within the wider surrounding area there are native hedgerows, woodland, arable and pasture fields, water courses, residential housing with associated gardens, and allotment gardens, all of which could provide suitable foraging and commuting habitat for bats.

Activity surveys

A series of monthly bat transect surveys commenced in June 2022 alongside static monitoring devices. A map showing the transect route is located in appendix III. A summary of the results is provided below while detailed results are provided in appendix IV.

Low numbers of common pipistrelle, soprano pipistrelle, noctule and long-eared bats were recorded during the activity surveys. The bats were recorded mainly commuting and foraging along the hedgerow and tree lines outside of the site, in the west and north.

Dusk survey on 30th June 2022

- Common pipistrelle bats were detected during the survey, primarily foraging along the hedgerow north of the site.

Dusk survey on 19th July 2022

- Low levels of bat activity were recorded during the survey. Five brief calls from common pipistrelle bats foraging and commuting were detected between 22:08 and 22:52 from all areas of the site.
- Two noctule calls were detected in the west and north east of the site at 22:20 and 22:52.
- A single soprano pipistrelle bats was recorded at point D foraging.

Dawn survey on 20th July 2022

- Very low levels of bat activity were recorded during the survey. Five brief calls from common pipistrelle bats foraging and commuting were detected primarily in the north of the site between 03:17 and 04:14.

Dusk survey on 16th August 2022

- Common pipistrelle bats were recorded throughout the duration of the survey, primarily foraging along the hedgerow between A and B and along the northern boundary. Common pipistrelle bats were also noted foraging along the tree line west of the site.
- Two noctule passes were recorded in the north of the site near D at 21:04 and 21:08.
- A soprano pipistrelle was recorded foraging along the footpath north of the site boundary at 21:09 and was recorded at 22:07 foraging between C and D near lamp posts.
- A single long-eared bat was heard at 21:41 by point B.

Dusk survey on 15th September 2022

- Low levels of bat activity were recorded during the survey, with common pipistrelle bats only being recorded primarily along the northern boundary of the site.

Static monitoring

A plan showing the location of the static detectors is in appendix III. A summary of the findings has been provided below:

- Bats were detected between 23rd June 2022 and 12th September 2022 using two static bat detectors.
- A total of three species and genus of bat were recorded during the static monitoring survey including common pipistrelle, Nathusius' pipistrelle (*Pipistrellus nathusii*), and indeterminate *Myotis* species.
- The most common species recorded was common pipistrelle which was consistently recorded during every month of the static monitoring.
- Common pipistrelle bats were the highest recorded species at both static detector location 1 and 2, followed by noctule, nathusius' pipistrelle and *Myotis* species.
- The highest number of common pipistrelle bat passes were recorded in June with 10,944 passes, followed by 5823 passes in July, 2605 passes in August and 654 passes in September.
- The highest number of *Myotis* bat passes were recorded in June with 8 passes, followed by 2 passes in July, and one pass each in August and September.

- The highest number of nathusius' pipistrelle bat passes were recorded in June with 199 passes, followed by 34 passes in July, 13 passes in August and 5 passes in September.
- The highest number of noctule bat passes were recorded in September with 2855 passes, followed by 34 passes in August, 33 passes in July and 8 passes in June.

Table 6 and 7 examines the scores for foraging and commuting habitat on site based upon the species recorded on site.

Table 6: Scores for Parcel 8 foraging habitat (bold indicates the relevant criteria)

Species	Number of bats	Roosts/potential roosts nearby	Foraging habitat characteristics
Common (2)	Individual bats (5)	None (1)	Industrial or other site without established vegetation (1)
-	-	Small number (3)	Suburban areas or intensive arable land (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Isolated woodland patches, less intensive arable and/or small towns and villages (3)
-	-	Large number of roosts, or close to a SSSI for the species (5)	Larger or connected woodland blocks, mixed agriculture, and small villages/hamlets (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Mosaic of pasture, woodlands and wetland areas (5)
5	5	4	3
Total score			17

Table 7: Score for Parcel 8 commuting habitat (bold indicates relevant criteria)

Species	Number of bats	Roosts/potential roosts nearby	Commuting habitat characteristics
Common (2)	Individual bats (5)	None (1)	Absence of (other) linear features (1)
-	-	Small number (3)	Unvegetated fences and large field sizes (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Walls, gappy or flailed hedgerows, isolated well-grown hedgerows, and moderate field sizes (3)
-	-	Large number of roosts, or close to a SSSI for the species (5)	Well-grown and well-connected hedgerows, small field sizes (4)

Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Complex network of mature well-established hedgerows, small fields and river/streams (5)
5	5	4	3
Total score			17

Using the scoring system above, the foraging and commuting routes across the site are considered to be locally important for bats. This is reflected in the survey data by the low number of bats recorded on the majority of the survey nights.

The site is locally important for bats and therefore further recommendations regarding foraging/commuting bats have been provided in section 5.4.

Birds

Breeding birds

Previous breeding bird surveys were carried out across the wider site by FPCR in 2003 and 2005. Species recorded as breeding or probable breeding included the following: lesser whitethroat (*Sylvia curruca*), blue tit (*Cyanistes caeruleus*), skylark (*Alauda arvensis*), wren (*Troglodytes aedon*), common whitethroat (*Sylvia communis*), dunnoek (*Prunella modularis*), blackcap (*Sylvia atricapilla*), robin (*Erithacus rubecula*), wood pigeon (*Columba palumbus*), pheasant (*Phasianus colchicus*) and chaffinch (*Fringilla coelebs*). Species recorded as possible breeding included starling (*Sturnus vulgaris*). Skylark and starling are UK BAP Priority bird species and BoCC red list species, whilst common whitethroat, wood pigeon and wren are BoCC amber list species. The other recorded birds are common and widespread species which are not of conservation concern.

The hedgerow and semi-improved grassland within the site provide suitable habitat for nesting birds.

Wintering birds

The semi-improved grassland may provide suitable habitat for wintering birds. However, the site is considered to be of low suitability for brent geese due to Town Park phase A which is currently operational and is well used by the locals which has increased disturbance levels on the site.

There are 17 sets of records for brent goose (*Branta bernicla*) within two kilometres of the site as provided by HBIC. The site falls within the Wader and Brent Geese Strategy (King, 2010) survey area H00B which was surveyed for the 2010 strategy for waders and brent geese without positive results. HBIC provided a map which currently identifies this site as 'sites with only negative records'.

The Environmental Statement details mitigation for wintering birds (Biodiversity by Design Ltd, 2010a). Further details have been provided in section 5.5.

Great crested newts

The works area of this site comprises almost entirely semi-improved grassland which is considered to provide suitable terrestrial newt habitat. The hedgerow on the site provides suitable hibernation and commuting habitat for great crested newts. Great crested newts are present within the wider Berewood development with the main breeding pond located 970 metres to the west of the site. Three additional ponds of low population (reference as number 1, 2 and 3 in appendix V) are located over 1 kilometre in the west. A pond located just 650 metres south west within Newlands Meadow has been created as part of the mitigation for great crested newts.

Pre-existing herptile fencing separates this phase of the development from the ponds and great crested newt populations in the wider site.

The great crested newt masterplan for the site (LCES,2018) covers the licencing procedures for all phases of the Berewood development.

Great crested newts are present in the wider Berewood site, however are considered to be absent from this site and as such, a licence is not considered necessary. A precautionary method of working will be put in place. Further details are provided in section 5.6.

Hazel dormouse

Twenty-three records of dormice were returned by HBIC within 2 kilometres of the site. Previous hazel dormouse surveys were conducted on site and in the adjacent surrounding land by Biodiversity by Design Ltd between 2007 and 2009 (Biodiversity by Design Ltd, 2010a), which recorded their presence within the immediate surrounding area. LC Ecological Services (LCES) currently hold hazel dormouse licenses for works along the Western Link Road in the west of the site. LCES has also undertaken a monitoring scheme within the ancient woodland within Newlands Row and Plant Row SINC, and Marrelsmoor Coppice SINC. Dormice mitigation licences with an associated Berewood wide masterplan has been approved by Natural England for the clearance of small amounts of scrub, hedgerows and woodland across these areas.

The hedgerow on site provides suitable habitat for the hazel dormouse, with good structure and availability of suitable food plants. The wider site is also well connected with further suitable habitat in the immediate surrounding area, including native hedgerows, scrub and ancient woodland.

The hazel dormouse is considered present across the wider Berewood site, and likely to be present within the existing hedgerow on site. Further recommendations have been made in section 5.7.

Reptiles

The semi-improved grassland and hedgerow habitat within the survey area are considered to hold potential to support common reptile species such as slow-worm, common lizard and grass snake. These habitats are also well connected to further suitable habitat in the surrounding area including hedgerows, woodland and allotments. The desk study returned 27 records of slow-worm, seven records of grass snake, four records of adder and five records of

common lizard within two kilometres of the development site. A targeted reptile survey was therefore undertaken. The full results are provided in appendix VI, however to summarise no reptiles were recorded with the red line boundary. A single juvenile slow worm however was recorded in the north west located outside of the red line boundary. There is no boundary separating the slow worm from the site and as such the site is considered to support a low population of slow worm.

Mitigation has been provided in section 5.8 to ensure reptiles are not harmed during any development of this site.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Park View (Phase 8) at Berewood is considered to be of moderate ecological value. Development on this site may have the following impacts in the absence of mitigation:

- Disturbance to bats foraging in the local area through the use of lighting.
- The killing/injury of nesting birds during the clearance of the site.
- The killing/injury of great crested newts during the clearance of the site.
- The killing/injury of the hazel dormouse during the clearance of the site.
- The killing/injury of slow worms during the clearance of the site.

Mitigation strategies have been provided below to prevent and minimise these impacts.

5.1 Designated Sites

5.1.1 Summary of findings

Chichester and Langstone Harbours SPA and Ramsar lie 3.6 kilometres to the south east of the site, the Solent Maritime SAC lies 3.7 kilometre to the south east, and the nearest statutory site is Lye Heath Marsh SSSI which is situated 2.5 kilometres to the west of the site.

Newlands Row and Plant Row SINC lies 0.33 kilometres west and Newlands Farm Meadow SINC lies 0.55 kilometres to the south west.

5.1.2 Implications of survey findings and recommendations for further action

The Conservation of Habitats and Species Regulations 2017 (the Regulations) impart a duty on Local Planning Authorities (competent authorities) to carefully consider whether any proposals may have a significant effect on a European site, either alone or in combination with other plans or projects.

No part of the proposed development site falls within the boundaries of these European Protected Sites, and at their closest point they are located 3.6 kilometres from the boundary of the survey area. There are no anticipated direct impacts to these sites from this element of the scheme. Issues relating to the wider housing development are detailed within the Ecology Chapter for the development (Biodiversity by Design 2010b) which aims to divert pressure, especially from dog walkers, away from the European Sites by providing a high level of quality green infrastructure.

Newlands Row and Plant Row SINC and Newlands Farm Meadow SINC

Although no direct impacts are anticipated to the nearby SINC habitats, indirect impacts may arise and a Construction Method Statement (CMS) will be prepared and implemented. This will set out detailed methods of construction to avoid impacts to these woodland and meadow habitats.

The following matters will be addressed in the CMS:

- Details of how materials / chemicals will be stored and controlled on-site to avoid pollution and siltation (for example, all plant will be fitted with drip trays in order to avoid potential pollution incidents and no re-fuelling will take place on the site).
- Details on the proposed construction methodology including factors such as construction access, methods of construction, timing of work and working hours.
- Industry standard dust suppression methodology.

5.2 Hedgerows

5.2.1 Summary of findings

The hedgerow located adjacent to London Road was assessed as a UK BAP habitat for containing more than 80% native species, and was planted as part of the Berewood development. A hedgerow regulation assessment was undertaken which did not identify the hedgerow as 'important'.

5.2.2 Implications of survey findings and recommendations for further action

As the hedgerow does not qualify as important, it will therefore not be necessary to seek written approval from the Council in order to undertake any proposed clearance. Nevertheless, the hedgerow is considered to be a valuable habitat feature and therefore it is recommended that any cleared sections are reinstated elsewhere on site with native shrub and tree planting, including hazel, hawthorn, field maple, spindle (*Euonymus europaea*), crab apple and pedunculate oak as part of the landscaping on site.

5.3 Badger

5.3.1 Summary of findings

No evidence of badger was recorded on site, however badger are known to use the wider Berewood site.

5.3.2 Implications of survey findings and recommendations for further action

Since badger are highly mobile mammals the following is recommended:

- Where a period of greater than 12 months pass an update badger survey should be undertaken to determine if badger are utilising the site.
- Install fencing in areas where it is important to exclude badgers for safety reasons e.g. fuel storage areas.
- Where possible excavations should not be left open overnight. However, if excavations are left open at night, then an earth / wooden ramps must be installed to allow any animals that fall in to escape. Work areas would be checked daily to ensure no animals are trapped.
- Cap any pipes over-night on site to avoid animals becoming trapped.

5.4 Bats

5.4.1 Summary of findings

The hedgerow and semi-improved grassland provide foraging habitat for bats. A total of four species and two genus of bat were recorded during the static monitoring and activity surveys.

It is considered that *Myotis* bats are rare (Wray, 2010). Other species recorded on site are considered to be common and widespread. In the context of the bat populations in the wider area the site is considered to be locally important. However, it is not considered that the site contains an important commuting route or foraging area associated with a nearby roost of high importance.

Development of the site could have a significant negative effect on bats using the area in terms of loss of foraging habitat, reduced landscape connectivity and disturbance from light pollution. This negative effect will be most detrimental to bats commuting and foraging along hedgerow boundaries. This is reflected by the increased activity recorded in these areas by the static monitors and the activity surveys. Mitigation is therefore provided below.

5.4.2 Implications of survey findings and recommendations for further action

Foraging and commuting habitat

The overall masterplan for the wider Berewood development maintains the connectivity across and around the site so that foraging or commuting bats are able to cross the site. Connectivity to retained woodland habitat will be maintained and where possible enhanced through planting additional hedgerows. The Park View (Phase 8) development can provide additional foraging opportunities with the inclusion of wildflower grasslands and the use of native species within the landscape design.

External lighting

In accordance with *Bats and Artificial Lighting in the UK* (BCT, 2018), any new lighting to be installed as part of the development should incorporate the following measures to minimise impacts on nocturnal species such as bats:

- Lighting will be directed only to where it is needed away from any hedgerows and trees in the vicinity.
- Selection and design of the lighting systems and by using accessories such as cowls or hoods to minimise light spill and direct light only to where it is needed.
- Using light sources that emit minimal ultra-violet light, peak higher than 550nm and be of a warm/neutral colour <2,700 kelvin.
- LED luminaires should be used where possible.
- All security lighting will be on a timer and only triggered at waist height.

5.5 Birds

5.5.1 Summary of findings

Breeding birds

The hedgerow and semi-improved grassland on site provided potential nesting habitat for birds.

Wintering birds

Whilst no wintering birds have been recorded previously on the site and the habitat is not considered suitable, the Ecology Chapter has outlined brent goose compensation measures for the wider Berewood development; these are detailed below.

5.5.2 Implications of survey findings and recommendations for further action

Breeding birds

The following precautions should negate the risk of harming nesting birds during both the development:

- The clearance of any hedgerows and semi-improved grassland should where possible be undertaken outside of the bird nesting season, which is considered to extend from the 1st March to the 31st August, or if this is not possible, clearance must be done under the supervision of an ecologist to ensure that nesting birds are not harmed. Where nesting birds are encountered, clearance and/or demolition must be postponed until the nestlings have fledged.
- Ecological enhancement measures suggested in section 5.9 will provide foraging and nesting opportunities for many species of bird.

Wintering birds

A substantial area of farmland 13.5 ha of 'Brent Goose Compensation Land' has been set aside on the north-western corner of the Berewood development. This will be managed to provide suitable habitat for brent geese. The measures are outlined within the Ecology Chapter (Biodiversity by Design 2010).

5.6 Great crested newts

5.6.1 Summary of findings

The semi-improved grassland and hedgerow habitat are suitable to support great crested newts. Pre-existing herptile fencing separates this phase of the development from the ponds and great crested newt populations in the wider site.

5.6.2 Implications of survey findings and recommendations for further action

No further mitigation is required. However, it is advised that the herptile fencing is checked regularly to ascertain whether it has been damaged and allowing great crested newts to enter the site.

In the event a great crested newt is encountered during site preparation, works will cease, and Natural England will be contacted for further advice. This may include obtaining a European Protected Species licence.

5.7 Hazel dormouse

5.7.1 Summary of findings

The hazel dormouse is present within the woodlands across the wider Berewood development site. The hedgerow on Park View (Phase 8) site provides suitable habitat for the hazel dormouse, however the hedgerow is relatively recent and has been created as part of the wider Berewood development.

5.7.2 Implications of survey findings and recommendations for further action

Where the hedgerow is due to be clearance will need to be undertaken within daylight hours as the hazel dormouse is more active at night. No vegetation clearance will be undertaken between June and early September when adult hazel dormouse have dependent young. Supervised clearance will be conducted in either of the following two ways depending on the time of year works take place (active season or inactive season).

Active season (May or September/October)

- Clearance will be carried out in May or September/October when the hazel dormouse are active and all young are independent. Clearance at this time of year can be carried out in a single stage clearance with all vegetation and stumps removed at the same time.
- Prior to clearance the area of vegetation will be inspected by a licenced ecologist to record any hazel dormouse nests in the area.
- If no hazel dormouse are recorded then clearance will then take place with the use of hand trimmers in one direction towards the retained habitat.
- The noise of the machinery and contractors will cause any hazel dormouse in the area to move out of the working area.
- Any stumps in the area can then be removed.
- A completion statement will be produced following the works detailing the findings and actions taken during the clearance.

Inactive season (November to April)

- Clearance carried out between November and March will be carried out in a two stage clearance.
- Prior to clearance the area of vegetation will be inspected by a licenced ecologist to record any hazel dormouse nests in the area.
- Clearance of above ground vegetation will be carried out with hand tools with vegetation cleared to no lower than 10cm from the ground. The stumps will remain in place over the winter to avoid the risk of encountering any hibernating hazel dormouse.
- No sections larger than 50 metre ² will be cleared in this manner to ensure that any hazel dormouse emerging from hibernation are not isolated from suitable habitat.
- The stumps can then be removed in May once hazel dormouse are active. The stump will be inspected by a licenced ecologist prior to removal.
- A completion statement will be produced following the works detailing the findings and actions taken during the clearance.

Any hedgerow to be lost will be replaced within the landscaping design on site ensuring there is connectivity with adjacent habitat.

If the hazel dormouse is encountered during works, they will cease immediately, and Natural England will be contacted for further advice and this may result in a European Protected Species licence application being obtained.

5.8 Reptiles

5.8.1 Summary of findings

The semi-improved grassland and hedgerow on site provide suitable areas of habitat for common reptile species such as slow worm, which have been recorded on the wider site

previously. Surveys of this parcel of land recorded a juvenile slow worm located in the north east outside of the red line boundary, however this is directly connected to the site and as such the site is considered to support a low population of slow worms.

5.8.2 Implications of survey findings and recommendations for further action

To ensure reptiles are not harmed or killed during site clearance a mitigation strategy is required.

Stim and push

This would involve ‘pushing’ reptiles into an area of retained habitat on site with the use of hand-held tools. This can be undertaken during the active season when temperatures are above 10 degrees Celsius. An ecologist would undertake a search followed by a strimmer being used in a directional manner to encourage reptiles to move into retained suitable habitat. The vegetation is cut in a two-stage approach to give the reptiles opportunities to move into adjacent habitat.

Habitat enhancement

Park View (Phase 8) of the development can be enhanced for reptiles with the inclusion of wildflower grassland areas which can be oversown with an EM10 wildflower mix and maintained to provide a scrub:grassland mosaic favoured by slow worms. The construction of hibernacula within these areas can further enhance the habitat for slow worms.

Ecological enhancement measures that could potentially benefit reptiles on site are provided in section 5.9.

5.9 Ecological enhancement

A few suggestions for ecological enhancements across the development site are outlined below.

- Provision of log and brushwood piles alongside any retained hedgerows and within any new habitat creation areas will provide refugia and hibernacula for reptiles and other fauna such as hedgehog and deadwood invertebrates.
- Flowering grassland seed mixes from a supplier of seeds of local provenance can be used to seed new lawns and areas of amenity grassland within the layout of the development (such as Emorsgate EL1 or similar). Such grassland provides better nectar sources for invertebrates and hence is of greater value for foraging birds, reptiles and amphibians.
- The inclusion of wildlife ponds within the design of any proposals would enhance the area for local amphibians and invertebrate populations. The pond should be kept free of fish and planted with native British plant species such as water-plantain (*Alisma plantago-aquatica*), reed sweet-grass (*Glyceria maxima*) and yellow flag.

- The provision of bat and bird boxes on buildings and on suitable mature hedgerow standards to provide additional nesting and roosting opportunities for local bat and bird populations.
- Swift bricks will be installed under the eaves or at the top of a vertical wall away from windows to provide nesting opportunities for this species
- Where any close boarded fencing is to be used within the development, hedgehog friendly gravel boards with holes of 13cm x 13cm to enable hedgehog movements around the site

6.0 REFERENCES

Bat Conservation Trust & Institute of Lighting Professionals (2018). *Bats and Artificial Lighting in the UK*. <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>

Biodiversity by Design Ltd (2010a) *Newlands Environmental Statement, Chapter 9: Biodiversity*.

Biodiversity by Design (2010b) Evidence to inform a Habitats Regulations Assessment Screening for the Proposed Newlands Development, Waterloooville.

Collins, J., Charleston, P., Davidson-Watts, I., Markham, S. and Kerslake, L. (2016). *Bat Surveys for Professional Ecologists Good Practice Guidelines*. Bat Conservation Trust, London.

Department for Communities and Local Government (2005). *Circular 06/2005: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System*.

Froglife (1999). *Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.

Hampshire & Isle of Wight Wildlife Trust (November 2010) *Solent Waders and Brent Goose Strategy Steering Group*

Hampshire Biodiversity Information Centre (2022). *Data search reference – HBIC Ref 11025*.

Hassel M, Riddington R and Helden A (2001) *Foraging behaviour of brent geese, Brant b. bernicla, on grasslands: effects of sward length and nitrogen content*, Oecologia, 127:97-104

Joint Nature Conservation Committee (2016). *Handbook for Phase I Habitat Survey*. JNCC.

Ministry of Housing, Communities and Local Government (2021). *National Planning Policy Framework*.

Mitchell-Jones A.J. & McLeish A.P. (2004). *The Bat Workers' Manual (3rd Edition)* Joint Nature Conservation Committee.

Multi-Agency Geographical Information for the Countryside (MAGIC) Website at www.magic.gov.uk.

Wray S; Wells D, Long E and Mitchell-Jones T (2010). *Valuing Bats in Ecological Impact Assessment*. In Practice December 2010, 23-25;

APPENDIX I: Site location plan



APPENDIX II: Phase 1 habitat map



Target notes to accompany Phase 1 habitat map

Target Note	Description
1	Semi-improved grassland forming the majority of the site, with a sward height of 0.75 to 1 metre. The grassland is dominated by Yorkshire-fog (<i>Holcus lanatus</i>) with locally dominant false oat-grass (<i>Arrhenatherum elatius</i>), cock's-foot (<i>Dactylis glomerata</i>), and creeping thistle (<i>Cirsium arvense</i>).
2	An area of disturbed ground has been colonised by ephemeral/ short perennial vegetation. Species present include locally dominant common fleabane (<i>Pulicaria dysenterica</i>), bristly oxtongue (<i>Picris echioides</i>), and locally abundant creeping thistle and dandelion (<i>Taraxacum</i> agg).
3	Mature tree line located outside of the site boundary. Tree species include sycamore (<i>Acer pseudoplatanus</i>), ash (<i>Fraxinus excelsior</i>) and field maple (<i>Acer campestre</i>). Woody species present include hazel (<i>Corylus avellana</i>), goat willow (<i>Salix caprea</i>), blackthorn (<i>Prunus spinosa</i>), and hawthorn (<i>Crataegus monogyna</i>).
4	Area of goat willow saplings located within grassland.
5	Six earth mounds which have been colonised by semi-improved grassland. Creeping thistle, common ragwort (<i>Senecio jacobaea</i>), bristly oxtongue and dock (<i>Rumex</i> sp) were recorded in higher densities.
6	An area of landscape planting located outside of the red line boundary. Species recorded include pedunculate oak (<i>Quercus robur</i>), hawthorn, cherry (<i>Prunus avium</i>) and lime (<i>Tilia</i> sp) saplings.
7	Native species-rich hedgerow with standard oak trees present. Comprises hawthorn and blackthorn interspersed with hazel, field maple, goat willow, dogwood (<i>Cornus sanguinea</i>), crab apple (<i>Malus sylvestris</i>), gorse (<i>Ulex europaeus</i>), guelder rose (<i>Viburnum opulus</i>) and privet (<i>Ligustrum vulgare</i> and <i>L. ovalifolium</i>).
8	Native species-rich hedgerow located outside of the red line boundary, comprising blackthorn, hawthorn, sycamore, field maple, goat willow, privet, guelder rose and elder (<i>Sambucus nigra</i>).

APPENDIX III: Transect map and location of static devices



APPENDIX IV: Bat transect results

BAT DETECTOR ACTIVITY SURVEY					
SURVEY LOCATION:	Berewood Park View (Phase 8)	SURVEYORS:	Aimee Cokayne, Jay van der Westhuizen	DATE:	30/06/2022
TEMP AT START:	13.0	SUNSET:	21:21	START TIME:	21:21
TEMP AT END:	12.0	CLOUD COVER (oktas):	4/8	END TIME:	23:21
WIND (bft):	1-2/12	RAINFALL:	0	WEATHER:	Cool breeze, rained early evening
Data Analysed Y/N:	Y	Additional information:	IPAD and EMT		
TIME	STOPPING POINT/TARGET NOTE	SPECIES	NUMBER OF BATS	ACTIVITY (behaviour/ commuting/ direction/ foraging/ feeding/ feeding buzzes/ roost/ etc.	
21:21-21:24	A	-	-	No activity	
21:34-21:37	B	-	-	No activity	
21:42-21:45	C	-	-	No activity	
21:49-21:52	C-D	Common pipistrelle	1	Foraging along treeline	
21:55-21:58	D	-	-	No activity	
22:03-22:06	E	-	-	No activity	
22:07	E-F	Common pipistrelle	1	Brief call, heard not seen	
22:09-22:12	F	-	-	No activity	
22:16	F-A	Common pipistrelle	1	Heard not seen foraging	
22:19	F-A	Common pipistrelle	1	Foraging up and down hedgerow	
22:23-22:28	A				
22:23	A	Common pipistrelle	1	Heard not seen foraging	
22:25	A	Common pipistrelle	1	Heard not seen foraging	
22:26	A-B	Common pipistrelle	1	Heard not seen foraging	
22:29/30	A-B	Common pipistrelle	1	Heard not seen foraging	
22:31-22:36	B				
22:32-22:34	B	Common pipistrelle	1	Heard not seen foraging	
22:35/36	B	Common	1	Heard not seen foraging	

		pipistrelle		
22:41-22:46	C			
22:43	C	Common pipistrelle	1	Brief call, heard not seen
22:44	C	Common pipistrelle	1	Heard not seen foraging
22:45	C	Common pipistrelle	1	Heard not seen foraging
22:46	C	Common pipistrelle	1	Heard not seen foraging
22:47-22:49	C-D	Common pipistrelle	1	Brief calls, heard not seen
22:50-22:55	D			
22:57-22:58	D-E	Common pipistrelle	1	Heard not seen foraging
22:58-23:04	E			
22:58-22:59	E	Common pipistrelle	1	Heard not seen foraging
23:00	E	Common pipistrelle	1	Foraging up and down hedgerow
23:01	E	Common pipistrelle	1	Heard not seen foraging
23:02/03	E	Common pipistrelle	1	Foraging up and down hedgerow
23:04	E	Common pipistrelle	1	Heard not seen foraging
23:05	E-F	Common pipistrelle	1	Heard not seen foraging
23:06-23:11	F	-	-	No activity
23:16-23:21	A	-	-	No activity

BAT DETECTOR ACTIVITY SURVEY					
SURVEY LOCATION:	Berewood Park View (Phase 8)	SURVEYORS:	Colin Sutch, Jay van der Westhuizen	DATE:	19/07/2022
TEMP AT START:	22.0°	SUNSET:	21:13	START TIME:	21:13
TEMP AT END:	20.0°	CLOUD COVER (oktas):	3/8	END TIME:	23:13
WIND (bft):	2/12 to start	RAINFALL:	0	WEATHER:	Mild/Dry, got very windy half way through survey
Data Analysed Y/N:	Y	Additional information:	I PAD and EMT		

TIME	STOPPING POINT/TARGET NOTE	SPECIES	NUMBER OF BATS	ACTIVITY (behaviour/ commuting/ direction/ foraging/ feeding/ feeding buzzes/ roost/ etc.
21:13-21:18	A	-	-	No activity
21:20-21:25	B	-	-	No activity
21:26-21:31	C	-	-	No activity
21:35-21:40	D	-	-	No activity
21:42-21:46	E	-	-	No activity
21:47-21:52	F	-	-	No activity
21:56-22:01	A	-	-	No activity
22:08	A-B	Common pipistrelle	1	Heard not seen commuting
22:10-22:15	B	-	-	No activity
22:18-22:23	C			
22:20	C	Noctule	1	Heard not seen commuting
22:26	C-D	Common pipistrelle	1	Heard not seen, foraging
22:29	C-D	Common pipistrelle	1	Heard not seen, foraging
22:30-22:35	D			
22:30-22:35	D	Common and Soprano pipistrelle	2	Heard not seen continuous foraging in the South West corner
22:38-22:43	E	-	-	No activity
22:45-22:50	F	-	-	No activity
22:52	F-A	Noctule	1	Brief call, heard not seen
22:52	F-A	Common pipistrelle	1	Very brief call, heard not seen
22:56-23:01	A	-	-	No activity
23:09-23:12	B	-	-	No activity
23:13	A	-	-	No activity

BAT DETECTOR ACTIVITY SURVEY

SURVEY LOCATION:	Berewood Park View (Phase 8)	SURVEYORS:	Colin Sutch, Jay van der Westhuizen	DATE:	20/07/2022
TEMP AT START:	18.0°	SUNRISE:	05:17	START TIME:	03:17
TEMP AT END:	17.0°	CLOUD COVER (oktas):	3/8	END TIME:	05:17
WIND (bft):	1/12	RAINFALL:	0	WEATHER:	
Data Analysed Y/N:	Y	Additional information:	I PAD and EMT		

TIME	STOPPING POINT/TARGET NOTE	SPECIES	NUMBER OF BATS	ACTIVITY (behaviour/ commuting/ direction/ foraging/ feeding/ feeding buzzes/ roost/ etc.
03:17-03:22	A			
03:17-03:20	A	Common pipistrelle	1	Heard not seen foraging
03:25-03:30	E			
03:30	E	Common pipistrelle	1	Continuous foraging, heard not seen
03:32-03:37	F	-	-	No activity
03:39-03:44	D			
03:41	D	Common pipistrelle	1	Heard not seen Commuting
03:51-03:56	C	-	-	No activity
03:59-04:04	B			
04:04	B	Common pipistrelle	1	Brief calls, heard not seen
04:13-04:18	A			
04:14	A	Common pipistrelle	1	Heard not seen Commuting
04:22-04:27	F	-	-	No activity
04:29-04:34	E	-	-	No activity
04:36-04:41	D	-	-	No activity
04:47-04:52	C	-	-	No activity
04:56-05:01	B	-	-	No activity
05:08-05:13	A	-	-	No activity

BAT DETECTOR ACTIVITY SURVEY

SURVEY LOCATION:	Berewood Park View (Phase 8)	SURVEYORS:	Aimee Cokayne, Jay van der Westhuizen	DATE:	16/08/2022
TEMP AT START:	19.0°	SUNSET:	20:23	START TIME:	20:23
TEMP AT END:	18.0°	CLOUD COVER (oktas):	2/8	END TIME:	22:23
WIND (bft):	0-1/12	RAINFALL:	0	WEATHER:	Rain during day, warm and humid
Data Analysed Y/N:	Y	Additional information:	I PAD and EMT		
TIME	STOPPING POINT/TARGET NOTE	SPECIES	NUMBER OF BATS	ACTIVITY (behaviour/ commuting/ direction/ foraging/ feeding/ feeding buzzes/ roost/ etc.	
20:23-20:28	A	-	-	No activity	

20:38-20:43	B	-	-	No activity
20:48-20:53	C			
20:59-21:02	C-D	Common pipistrelle	1	Continuous foraging along treeline
21:02-21:07	D			
21:03	D	Common pipistrelle	1	Faint call, heard not seen
21:04	D	Common pipistrelle	1	Heard not seen foraging
21:04	D	Noctule	1	Heard not seen commuting
21:06/07	D	Common pipistrelle	1	Heard not seen foraging
21:08	D-E	Noctule	1	Brief call, heard not seen
21:09-21:10	D-E	Common and Soprano pipistrelle	2	Foraging along the pathway from East to West
21:12-21:17	E	-	-	No activity
21:18-21:23	F			
21:18	F	Common pipistrelle	1	Heard not seen foraging
21:19-21:22	F	Common pipistrelle	1	Continuous foraging
21:25	F-A	Common pipistrelle	1	Brief call, heard not seen
21:26	F-A	Common pipistrelle	1	Heard not seen commuting
21:27-21:28	F-A TN5	Common pipistrelle	2	Heard not seen foraging
21:29-21:34	A			
21:29-21:34	A	Common pipistrelle	2	Heard not seen foraging
21:36-21:40	A-B TN6	Common pipistrelle	2	Foraging up and down the hedgerow
21:41-21:45	B			
21:41	B	Common pipistrelle	1	Heard not seen foraging (social calls)
21:41	B	Long eared sp	1	Brief call, heard not seen
21:42	B	Common pipistrelle	1	Heard not seen foraging
21:48-21:50	B-C	Common pipistrelle	2	Continuous foraging up and down the pathway under the lamp post lights (social calls)
21:50-21:55	C			
21:50-21:55	C	Common pipistrelle	2	Continuous foraging up and down the pathway under the lamp post lights (social calls)
21:57-22:05	C-D	Common pipistrelle	1	Continuous foraging up and down the pathway under the lamp post lights
22:05/06	C-D	Common and Soprano	2	Continuous foraging up and down the pathway under the lamp post

		pipistrelle		lights (social calls)
22:07-22:12	D			
22:07-22:12	D	Common pipistrelle	2	Continuous foraging up and down the pathway under the lamp post lights
22:13	E-F	Common pipistrelle	1	Continuous foraging up and down the pathway under the lamp post lights
22:17-22:23	F	Common pipistrelle	1	Heard not seen foraging (not recorded)

BAT DETECTOR ACTIVITY SURVEY

SURVEY LOCATION:	Berewood Park View (Phase 8)	SURVEYORS:	Sarah Barker and Ben Willers	DATE:	15/09/2022
TEMP AT START:	16.0°	SUNSET:	19:19	START TIME:	19:19
TEMP AT END:	14.0°	CLOUD COVER (oktas):	5/8	END TIME:	21:19
WIND (bft):	2/12	RAINFALL:		WEATHER:	Dry/Mild
Data Analysed Y/N:	Y	Additional information:	EMT and I-PAD		
TIME	STOPPING POINT/TARGET NOTE	SPECIES	NUMBER OF BATS	ACTIVITY (behaviour/ commuting/ direction/ foraging/ feeding/ feeding buzzes/ roost/ etc.	
19:19-19:24	A	-	-	No activity	
19:30-19:35	B	-	-	No activity	
19:39-19:44	C	-	-	No activity	
19:52-19:57	F	-	-	No activity	
20:00-20:05	D				
20:00	D	Common pipistrelle	1	Heard not seen Commuting	
20:02	D	Common pipistrelle	1	Heard not seen Commuting	
20:06	D-E	Common pipistrelle	1	Heard not seen foraging	
20:08	D-E	Common pipistrelle	1	Heard not seen foraging	
20:08-20:13	E				
20:09-20:12	E	Common pipistrelle	1	Heard not seen continuous foraging	
20:16-20:21	A	-	-	No activity	
20:27-20:32	B	-	-	No activity	
20:35-20:40	C	-	-	No activity	
20:43-20:52	D				

20:45	D	Common pipistrelle	1	Heard not seen Commuting
20:46	D	Common pipistrelle	1	Heard not seen Commuting
20:50	D	Common pipistrelle	1	Heard not seen foraging
20:51	D	Common pipistrelle	1	Common pipistrelle
20:54	D-E	Common pipistrelle	1	Heard not seen feeding and social call
20:55/56	D-E	Common pipistrelle	1	Heard not seen foraging
20:56-21:01	E			
20:57	E	Common pipistrelle	1	Heard not seen continuous foraging
20:59	E	Common pipistrelle	1	Heard not seen continuous foraging
21:03-21:08	F	-	-	No activity
21:09	F-A	Common pipistrelle	1	Heard not seen Commuting
21:11-21:16	A	-	-	No activity

APPENDIX V: Great crested newt populations



APPENDIX VI: Reptiles results

Visit	Date	Time	Weather	Temp (°C)	Common lizard	Slow worm	Adder	Grass snake	Other	Area recorded
1	30.06.2022	09:30	7/8 cc, 2/12 wind	12-13	0	0	0	0	0	0
2	01.09.2022	10:00	3/8 cc, 2/12 wind	19	0	0	0	0	0	0
3	05.09.2022	11:10	4/8 cc, 1/12 wind, dry	19	0	0	0	0	0	0
4	08.09.2022	10:50	6/8 cc, 2/12 wind	17-18	0	0	0	0	0	0
5	12.09.2022	09:20	3/8 cc, 1/12 wind	18	0	1 juvenile	0	0	0	North western corner at Lift.sector.fuzzy
6	14.09.2022	11:30	7/8 cc, 2/12 wind	16	0	0	0	0	0	0
7	16.09.2022	09:30	5/8 cc, 2/12 wind	13	0	0	0	0	0	0

