

The hedgerows on the site provide suitable habitat for dormice and these hedgerows link into the surrounding woodland network. The woodlands within the Berewood development support populations of dormice and therefore dormice are considered to be present within the site. The plans may potentially involve the removal of hedgerow 2 and if this is the case a licence from Natural England will be required before this hedgerow is removed. Suitable mitigation will be required which is detailed below.

5.5.2 Mitigation

The wider scheme incorporates the creation of 9.3 hectares of woodland for dormice which will offset the loss of this small area of hedgerow for the school development. In order to mitigate the potential risk to dormice from the proposed works the following mitigation strategy will be used during the clearance:

- Phased vegetation clearance should ensure that dormice do not have to travel more than approximately 50 metres to the nearest suitable habitat during the clearance. The hedgerow is approximately 150 metres in length and only connects to suitable habitat at the northern end therefore clearance will be undertaken in 50 metre sections.
- Clearance will only be undertaken in May or the autumn (September/ October) when dormice are active and when the juveniles are old enough to be independent. The disturbance from the machinery will encourage the dormice to move away from the works area, and clearance will take place towards the retained and connected hedgerow to the north. Stump removal will then take place following the clearance.
- A thorough check for dormouse nests will be undertaken by the ecological clerk of works immediately prior to clearance.
- All workers on site will be briefed before works commence and made aware of the potential presence of dormice on site.
- Dormice boxes are already present within adjacent woodland and if any dormice are encountered during the works they will be moved to one of these boxes.

Ecological enhancements

The wider Berewood masterplan involves the creation of large areas of dormice habitat however the final design of the school should incorporate hedgerows with species favoured by dormice such as hazel, dog rose (*Rosa canina*), elder, hawthorn, blackthorn, honeysuckle, bramble and guelder rose (*Viburnum opulus*) to provide additional connectivity across the site. A replacement hedgerow connection should be provided along the eastern boundary.

5.6 Great crested newts

5.6.1 Summary of findings

The majority of the site comprises an arable field which does not provide suitable habitat for great crested newts. The hedgerows across the site provide suitable foraging and sheltering habitat. The pond within the survey area is the main breeding pond for great crested newts

within the Berewood development. Early discussions in regards to plans for the site have indicated that hedgerow 2 will be removed. A licence from Natural England will be required for this works if the hedgerow needs removing.

5.6.2 Mitigation

The time and cost implications relating to translocation exercises is considered to be disproportionate in relation to the likelihood of encountering great crested newts. Controlled habitat degradation and hand searching of potential areas suitable for great crested newts, along with adaptations / restrictions to construction working practices will be adopted. Mitigation will involve the following procedure:

- A suitably qualified ecologist will be present when the hedgerow is cleared and will carry out a finger tip search. Any great crested newts encountered will be moved to the retained area around the pond to the south.
- Works will only take place when newts are active between March and October in suitable weather conditions when temperatures are above 10°C.
- The rootballs of the hedgerows will be removed during the active season to ensure no hibernating great crested newts are encountered during the works.
- All contractors will be given a toolbox talk on the presence of newts and the southern boundary of the site will be fenced off to ensure contractors do not enter the area around the main breeding pond.
- Any trenches that are required as part of the works will be covered over for the night. If this is not possible the trenches will have sloping sides to ensure that if any newts enter the trenches at night that they can escape. If newts are present within the trenches when construction starts an ecologist will be contacted and the newt moved away from the works area.
- Materials and any arisings will be kept off the ground through the use of skips or pallets.
- A construction management plan will be put in place to ensure that no pollution enters the retained pond.

The Berewood masterplan for great crested newts incorporates extensive habitat creation which compensates for this small loss of habitat. In addition to measures outlined within the masterplan the school drainage scheme will need to ensure there are no impacts to the retained breeding pond and should incorporate newt friendly gully pots.

5.7 Reptiles

5.7.1 Summary of findings

The hedgerows and tall ruderal within the development area of the site provided suitable areas of habitat for common reptile species such as slow-worm, grass snake and common lizard. The reptile surveys recorded a low population of grass snake with a single animal recorded on one visit. Grass snake occupy large areas and therefore the site is considered unlikely to be important for this species.

5.7.2 Mitigation

The mitigation strategy will include a trim and push mitigation methodology due to the low numbers of reptiles recorded and the level of habitat that is to be lost. A full translocation exercise is therefore not considered necessary. Details of the mitigation measures are provided below.

- The tall ruderal was not tussocky and therefore considered unsuitable for hibernating reptiles. These areas can be cut in the winter period to make them unsuitable for reptiles to dissuade reptiles from entering the area in the spring.
- Hedgerow clearance can only take place in the spring/summer in line with the great crested newt and dormice mitigation strategies. These strategies will also ensure no reptiles are harmed during the clearance.
- All arisings from the cutting and clearance will be immediately removed from the works area to prevent any reptiles sheltering within it.
- The habitat within the works area will then be maintained at a short sward height to discourage reptiles from entering the works area.
- Any spoil piles, log piles or tree root systems that need to be removed should be dismantled or excavated carefully during weather greater than 10°C during the time when reptiles are active, March to October, to avoid disturbing any hibernating reptiles.
- Materials and any arisings, such as rubble from demolition, will be kept off the ground through the use of skips or pallets.

5.8 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 (*Erinaceus europaeus*).
- Flowering grassland seed mixes from a supplier of seeds of local provenance can be used to seed areas of amenity grassland within the layout of the development (such as Emorsgate EL1). Such grassland provides better nectar sources for invertebrates and hence is of greater value for foraging birds, reptiles and amphibians.
- The inclusion of hedgehog houses within the school design will provide habitat for this UKBAP species. The school should allow the free movement of hedgehogs through the area by maintaining gaps under any perimeter fencing.
- The inclusion of a wildlife pond within the grounds of the school can provide an educational resource and also additional habitat for great crested newts. The pond should be kept clear of fish and can be incorporated into a wildlife area in the school grounds.

6.0 REFERENCES

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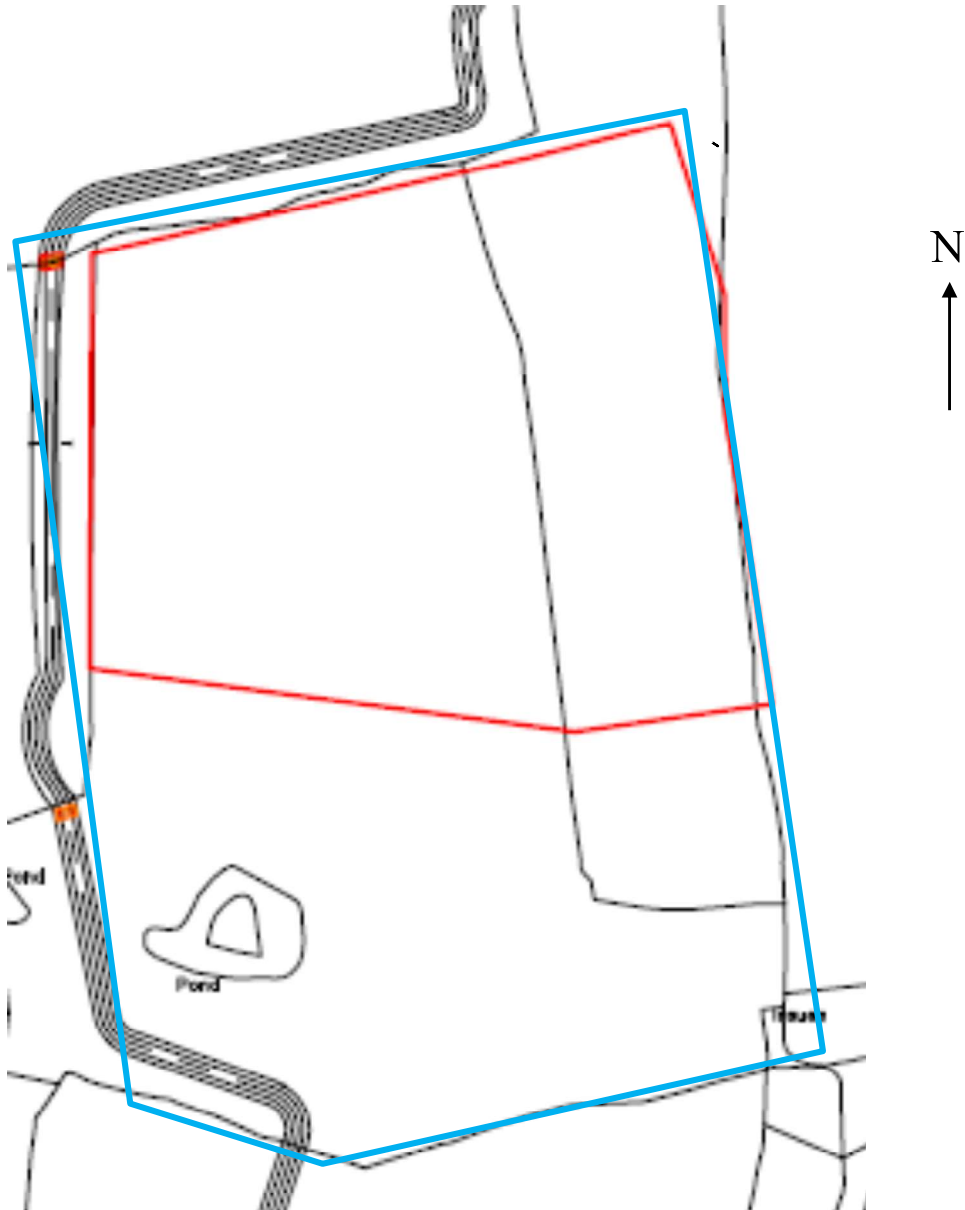
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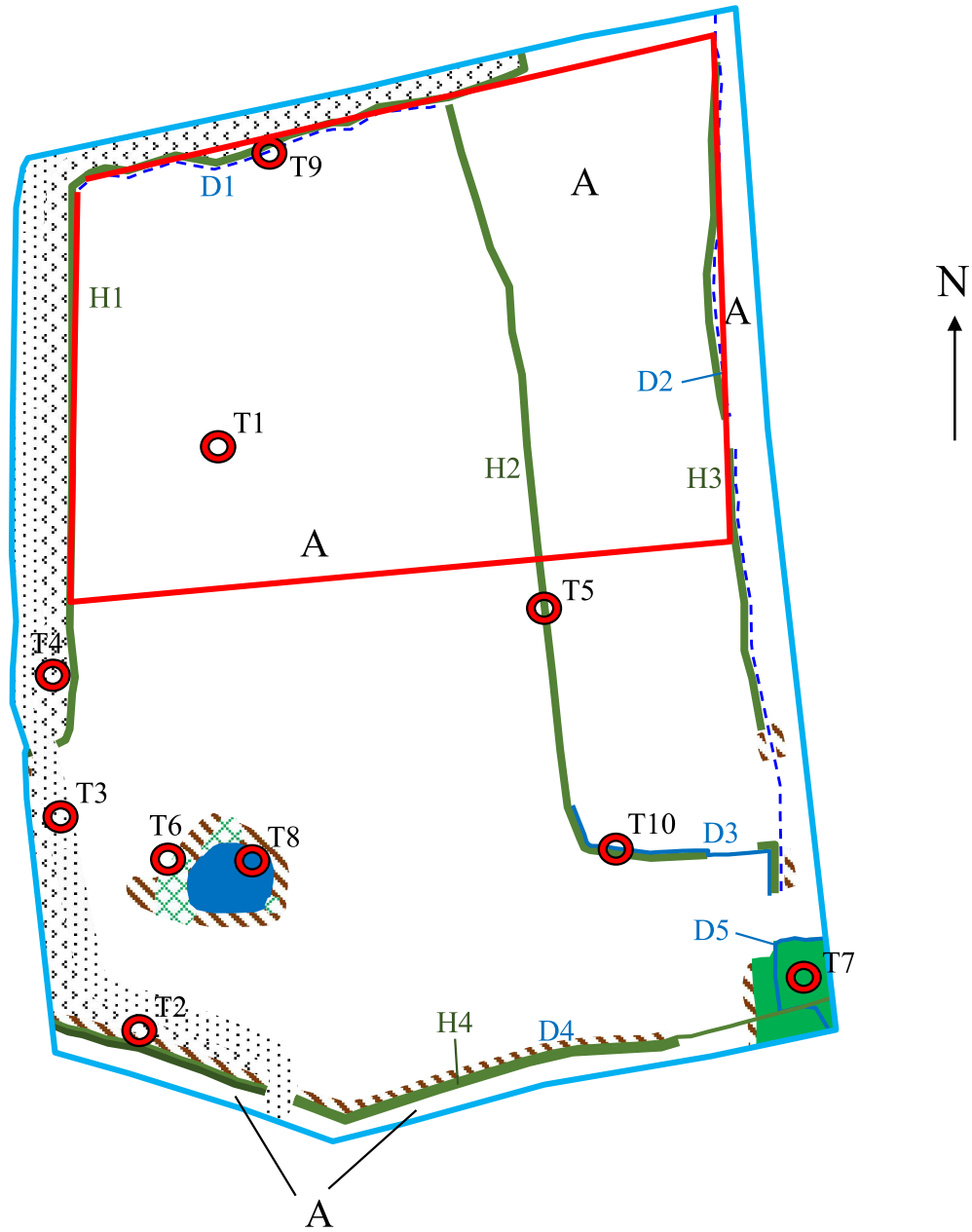
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APPENDIX I: Site plan



APPENDIX II: Phase 1 habitat map



Phase 1 habitat key

	Arable
	Tall ruderal
	Bare ground
	Ephemeral/short perennial
 H1 – H4	Native hedgerow
	Scrub
	Native broad-leaved woodland
	Pond
 D1 & D2	Dry ditch
 D3 – D5	Wet ditch
	Survey boundary
	Development boundary
 T1	Target notes

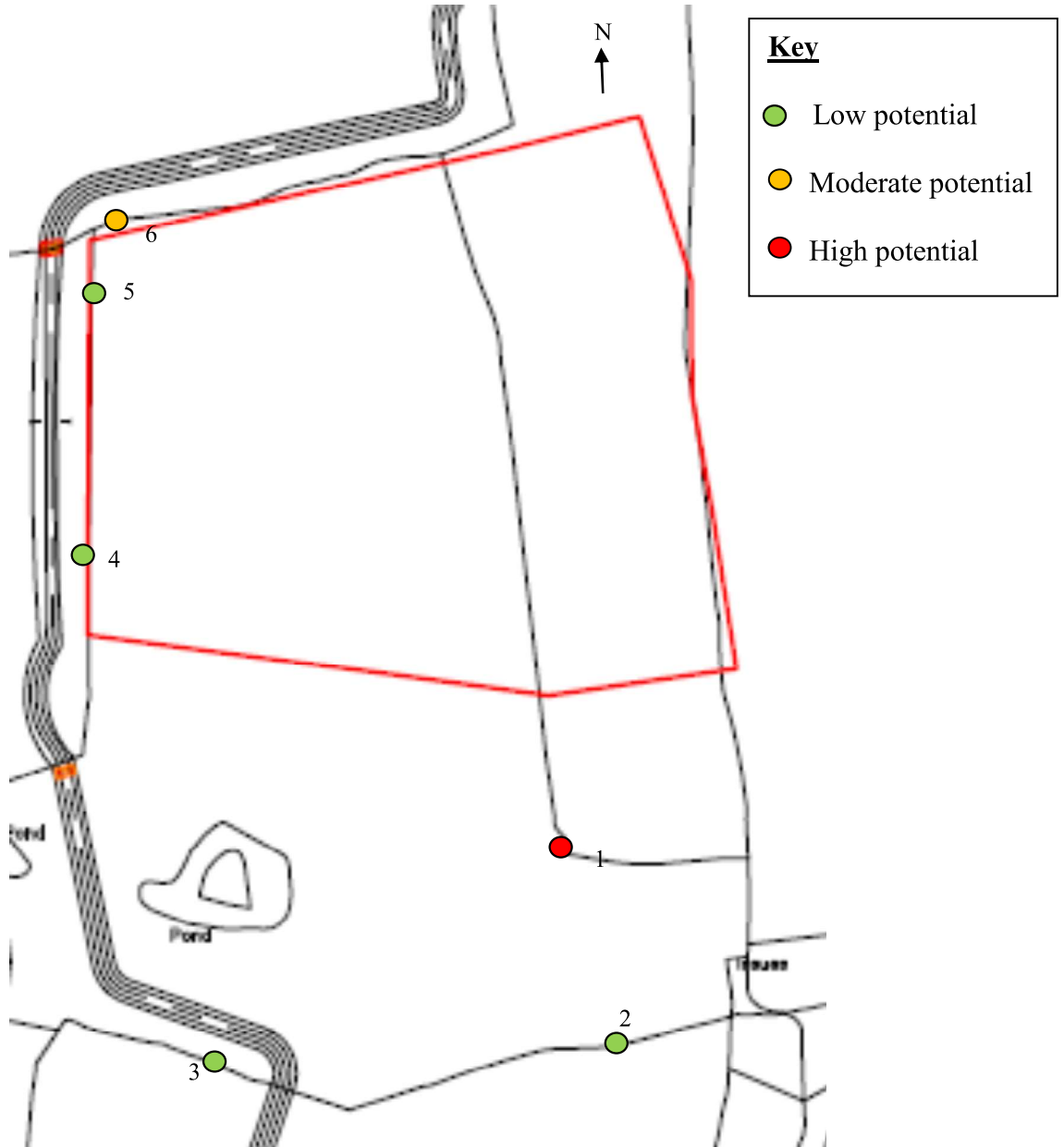
Target notes to accompany Phase 1 habitat map

Target Note	Description
1	Arable land which is currently being used for growing wheat (<i>Triticum sp.</i>).
2	Margins of tall ruderal vegetation adjacent to the southern boundary of the site and surrounding the pond. The tall ruderal vegetation on site mostly comprises common species, such as common nettle (<i>Urtica dioica</i>), soft brome (<i>Bromus hordeaceus</i>), rough-stalked meadow-grass (<i>Poa trivialis</i>), cock's-foot (<i>Dactylis glomerata</i>) and creeping thistle (<i>Cirsium vulgare</i>), and some species indicative of damp conditions, such as hemlock water-dropwort (<i>Oenanthe crocata</i>) and great willowherb (<i>Epilobium hirsutum</i>). Other species recorded include hogweed (<i>Heracleum sphondylium</i>), sterile brome (<i>Anisantha sterilis</i>), willowherb (<i>Epilobium sp.</i>), cow parsley (<i>Anthriscus sylvestris</i>), creeping buttercup (<i>Ranunculus repens</i>), wood avens (<i>Geum urbanum</i>), broad-leaved dock (<i>Rumex obtusifolius</i>), burdock (<i>Arctium sp.</i>), herb Robert (<i>Geranium robertianum</i>), marsh thistle (<i>Cirsium palustre</i>), cuckooflower (<i>Cardamine pratensis</i>) meadow foxtail (<i>Alopecurus pratensis</i>) and field horsetail (<i>Equisetum arvensis</i>).

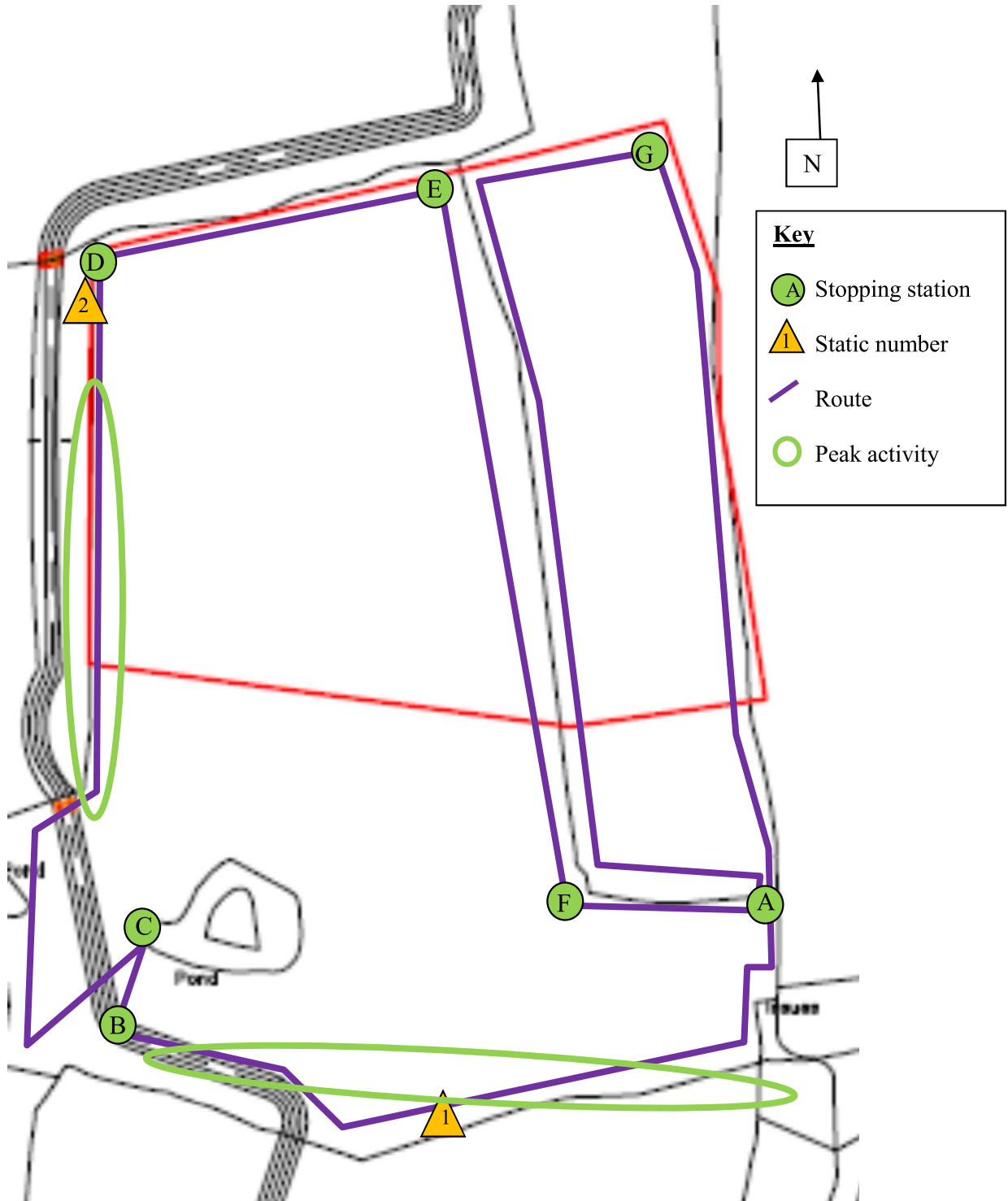
Target Note	Description
3	Areas of bare ground on site comprising a recently constructed gravel track which runs along the western and south-western boundaries of the site and exits the site to the south. The track is used by the public for walking and cycling.
4	Margins of ephemeral/short perennial vegetation which adjoin the gravel trackway on site. The ephemeral/short perennial vegetation comprises common/widespread ruderals and arable weeds which have colonised areas of bare earth adjoining the track. It varies from very sparse colonisation of the bare earth to more extensive coverage. Species recorded include annual meadow-grass (<i>Poa annua</i>), curled dock (<i>Rumex crispus</i>), dove's-foot crane's-bill (<i>Geranium molle</i>), greater plantain (<i>Plantago major</i>), creeping buttercup, scentless mayweed (<i>Tripleurospermum inodorum</i>), sticky mouse-ear (<i>Cerastium glomeratum</i>), groundsel (<i>Senecio vulgaris</i>), knotgrass (<i>Polygonum sp</i>), creeping bent (<i>Agrostis stolonifera</i>), soft brome, black-grass (<i>Alopecurus myosuroides</i>), common ragwort (<i>Senecio jacobaea</i>) and willowherb (<i>Epilobium sp</i>).
5	Species-rich native hedgerows comprising a good variety of woody species and a moderately diverse field layer which includes some ancient woodland indicator species such as dog's mercury (<i>Mercurialis perennis</i>) and bluebell (<i>Hyacinthoides non-scripta</i>). The hedgerows range from approximately 1 to 5 metres in height and include mature standard trees (including some veteran specimens of pedunculate oak (<i>Quercus robur</i>) and adjoining drainage ditches. Hedgerow H1 is considered to be defunct due to the presence of numerous large gaps and sparse shrub cover, the other hedgerows are considered to be intact.
6	Scrub around the margins of the pond on site. Scrub species recorded include blackthorn (<i>Prunus spinosa</i>), hawthorn (<i>Crataegus monogyna</i>), goat willow (<i>Salix caprea</i>) and bramble (<i>Rubus fruticosus</i> agg.).
7	A small section of native broad-leaved woodland located at the south-eastern corner of the site. This woodland is floristically diverse with good structure in the canopy and understorey and a species-rich field layer with numerous ancient woodland indicator species, including dog's mercury, wood anemone (<i>Anemone nemorosa</i>), bluebell and moschatel (<i>Adoxa moschatellina</i>). Other species recorded include sycamore (<i>Acer pseudoplatanus</i>), ash (<i>Fraxinus excelsior</i>), pedunculate oak, goat willow, field maple (<i>Acer campestre</i>), downy birch (<i>Betula pubescens</i>), hazel (<i>Corylus avellana</i>), hawthorn, holly (<i>Ilex aquifolium</i>), remote sedge (<i>Carex remota</i>), wood sedge (<i>Carex sylvatica</i>), male-fern (<i>Dryopteris filix-mas</i>), wood melick (<i>Melica uniflora</i>), lords and ladies (<i>Arum maculatum</i>), enchanter's nightshade (<i>Circaea lutetiana</i>), lesser celandine (<i>Ficaria verna</i>), cleavers (<i>Galium aparine</i>), herb Robert (<i>Geranium robertianum</i>), wood avens (<i>Geum urbanum</i>), ivy (<i>Hedera helix</i>), bramble, wood dock (<i>Rumex sanguineus</i>) and early dog-violet (<i>Viola reichenbachiana</i>).
8	A pond which is approximately 740 metres ² in size and supports a moderately diverse assemblage of macrophytic vegetation including reed canary-grass (<i>Phalaris arundinacea</i>), soft rush (<i>Juncus effusus</i>), water mint (<i>Mentha aquatica</i>), bulrush (<i>Typha latifolia</i>), water plantain (<i>Plantago alisma-aquatica</i>), duckweed (<i>Lemna sp</i>), lesser spearwort (<i>Ranunculus flammula</i>) and marsh bedstraw (<i>Galium palustre</i>). Bulrush is the most dominant macrophyte and has colonised a large proportion of the pond. The pond is generally in good condition with areas of open water persisting amongst the bulrush and other macrophytic vegetation and good/clear water quality.
9	Dry ditches which are mostly < 0.5 metres in depth and approximately 0.5 metres in width, they are vegetated with the adjoining hedgerow field layer vegetation. It is considered that the dry ditches likely function as drains during periods of wet weather before rapidly drying again.

Target Note	Description
10	Wet ditches on site, one ditch adjoins hedgerow H3 (D3), one ditch adjoins hedgerow H4 (D4) and the other ditch forms a small interconnected network within the native broad-leaved woodland area (D5). The wet ditches which adjoin the hedgerows are approximately 0.5 metres in depth and 0.75 metres in width, they are vegetated with the adjoining hedgerow field layer vegetation. The water within ditches D3 and D4 mostly appeared to be stagnant and poor/turbid in quality. The wet ditch channels within the woodland area are mostly < 0.5 metres in depth and approximately 0.5 to 1 metre in width, the water level within the ditch channels was very shallow to dry in places, the ditches are vegetated with woodland ground flora as described in the relevant section above. Ditch D5 also connects with ditch D4 to the west of the woodland area.

APPENDIX III: Trees with bat potential



APPENDIX IV: Transect map and peak activity areas



APPENDIX V: Results of bat transect survey

April 2018

BAT DETECTOR ACTIVITY SURVEY					
SURVEY LOCATION:	Berewood	SURVEYORS:	Alex Hannam and Kayleigh Smith	DATE:	25/04/2018
TEMP AT START:	10°C	SUNSET:	20:15	START TIME:	20:15
TEMP AT END:	9°C	CLOUD COVER (oktas):	2/8	END TIME:	22:15
WIND (bft):	2/12	RAINFALL:		WEATHER:	Showers at start
(PLEASE ADD TRAGET NOTES TO MAP AND APPEND TO RECORDING FORM)					
TIME	STOPPING POINT/TARGET NOTE	SPECIES	NUMBER OF BATS	ACTIVITY (behaviour/ commuting/ direction/ foraging/ feeding/ feeding buzzes/ roost/ etc.	
20:50	A-B	Common pipistrelle	1	Heard but not seen.	
20:51	A-B	Common pipistrelle	1	Heard but not seen.	
21:00	A-B	Myotis sp.	1	Heard but not seen.	
21:20	C	Soprano pipistrelle	1	Heard but not seen.	

May 2018

BAT DETECTOR ACTIVITY SURVEY					
SURVEY LOCATION:	Berewood Orange Route	SURVEYORS:	Stuart Woodley and Colin Sutch	DATE:	21.05.2018
TEMP AT START:	17°C	SUNSET:	20:55	START TIME:	20:55
TEMP AT END:	15°C	CLOUD COVER (oktas):	5/8	END TIME:	22:55
WIND (bft):	1/12	RAINFALL:	Nil	WEATHER:	Cool & dry
(PLEASE ADD TRAGET NOTES TO MAP AND APPEND TO RECORDING FORM)					
TIME	STOPPING POINT/TARGET NOTE	SPECIES	NUMBER OF BATS	ACTIVITY (behaviour/ commuting/ direction/ foraging/ feeding/ feeding buzzes/ roost/ etc.)	
21:19	B	Noctule	1	Heard but not seen.	
21:21	B	Soprano pipistrelle	1	Heard but not seen.	
21:30	C	Soprano pipistrelle	1	Commuting west to east across the field.	
21:37	C-D	Common pipistrelle	1	Heard but not seen.	
21:40	D	Serotine	1	Heard but not seen.	
21:40-21:48	D	Common pipistrelle	1	Foraging around tree on the west side of the field.	
21:48	D	Nathusius' pipistrelle	1	Heard but not seen.	
21:53-21:58	E	Common pipistrelle	1	Foraging around the trees on the northern edge.	
21:59-22:01	E	Common pipistrelle	1	Heard but not seen.	
22:08	F	Common pipistrelle	1	Heard but not seen.	
22:10	F	Soprano pipistrelle	1	Heard but not seen.	
22:11-22:12	F	Common pipistrelle	1	Heard but not seen.	
22:17	F-G	Myotis sp.	1	Heard but not seen.	
22:24	G	Brown long-eared	1	Heard but not seen.	
22:33	G-F	Soprano pipistrelle	1	Heard but not seen.	
22:35	G	Common pipistrelle	1	Heard but not seen.	
22:40	G		1	Heard but not seen.	