



Harts Farm Way, Havant

Ecology Report

Produced for Clowes Developments (UK) Ltd

By Applied Ecology Ltd

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Contents

1	Introduction	1
	Background	1
	Purpose of this Report	1
	Legislation and Planning Policy	1
2	Pre-existing Information	5
	Sources of Information	5
	Designated Wildlife Sites	5
	Protected and Notable Species	8
3	Habitats and Plants	14
	Methodology	14
	Survey Findings	14
4	Breeding Birds	20
	Methodology	20
	Survey Findings	21
5	Bats	27
	Methodology	27
	Survey Findings	28
6	Hazel Dormouse	34
	Methodology	34
	Survey Findings	34
7	Reptiles	36
	Methodology	36
	Survey Findings	36
8	Other Fauna	39
	Methodology	39
	Survey Findings	39
9	Development Effects	41
	Habitat Regulations Assessment Screening - Impacts on Designated Sites and Brent Geese	41
	Habitats Impacts and Mitigation	42
	Reptile Impacts and Mitigation	42
	Breeding Bird Impacts and Mitigation	43
	Bat Impacts and Mitigation	43
	Appendix A	44



Parameter Plan	44
Appendix B	46
Indicative Masterplan Options	46
Appendix C	50
Brent Geese Assessment	50
Appendix D	57
Plant species lists	57
Appendix E	62
Landscape masterplan	62
Appendix F	64
Rendered lighting plans	64

Tables

Table 3.1: Summary of habitat types recorded on the Site.	14
Table 4.1: Breeding evidence for bird species.	20
Table 4.2: Bird species recorded and estimated number of territories present.	21
Table 5.1: Relative abundance of bat calls recorded by the long-term automated bat detector in July, August, and September.	29
Table 5.2: First call times of common bat species.	30
Table 6.1: Dormouse nest tube index of probability.	34
Table 7.1: Reptile refugia survey results.	37

Figures

Figure 1.1: Site location.	4
Figure 2.1: Statutory wildlife sites and ancient woodland.	11
Figure 2.2: Non-statutory wildlife sites – SINC and RVEIs.	12
Figure 2.3: Non-statutory wildlife sites - SWBGS sites.	13
Figure 3.1: Phase 1 habitat map.	17
Figure 3.2: Selection of habitat survey photographs.	18
Figure 4.1: Breeding birds survey transect route.	25
Figure 4.2: Breeding birds survey findings.	26
Figure 5.1: Bat activity survey transect route and long-term detector location.	32
Figure 5.2: Bat activity survey findings.	33



Figure 6.1: Hazel dormouse survey.	35
Figure 7.1: Reptile refugia locations.	38
Figure 8.1: Waterbodies within 500 m.	40



1 Introduction

Background

- 1.1 In May 2020, Applied Ecology Ltd (AEL) was commissioned by Clowes Developments (UK) Ltd to carry out a Preliminary Ecological Appraisal (PEA) in relation to proposed development on an area of land at Harts Farm Way, Havant, referred to hereafter as "the Site" (see **Figure 1.1**). After the PEA, a range of additional follow-up ecology surveys were recommended and have been undertaken by AEL in 2020/21.
- 1.2 The development being proposed (the "Development") is for new employment units to provide up to 29,000 sq m (gross internal area) for flexible use across use classes E (light industrial), B2 and B8 with ancillary offices, car parking, service yards, drainage works, landscaping and associated works to prepare the site for development. All matters are reserved except the primary means of access to the Site.
- 1.3 The development Parameter Plan is provided in **Appendix A**, and three indicative masterplan options are provided in **Appendix B**.

Purpose of this Report

- 1.4 This report details the results of the PEA and the follow-up protected species surveys. It also highlights the potential development impact on ecology and where necessary outlines recommendations for appropriate impact avoidance and mitigation measures in line with best practice guidelines.

Legislation and Planning Policy

Legislation

- 1.5 The Wildlife and Countryside Act 1981 (as amended) provides the main legal framework for nature conservation and species protection in the UK. The Site of Special Scientific Interest (SSSI) is the main statutory nature conservation designation in the UK. Such sites are notable for their plants, or animals, or habitats, their geology or landforms, or a combination of these. Natural England is the key statutory agency in England for advising Government, and for acting as the Government's agent in the delivery of statutory nature conservation designations.
- 1.6 Designation of a SSSI is a legal process, by which sites are notified under the Wildlife and Countryside Act 1981. The 1981 Act makes provision for the protection of sites from the effects of changes in land management, and owners and occupiers receive formal notification specifying why the land is of special scientific interest, and listing any operations likely to damage the special interest.
- 1.7 The Countryside and Rights of Way Act 2000, and The Natural Environment and Rural Communities (NERC) Act 2006, provide supplementary protected species legislation. Specific protection for badgers *Meles meles* is provided by the Protection of Badgers Act 1992.



Habitats and Species of Principal Importance in England

- 1.8 The Natural Environment and Rural Communities (NERC) Act came into force on 1 October 2006. Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list has been drawn up in consultation with Natural England, as required by the Act.
- 1.9 The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

Habitats of Principal Importance

- 1.10 Fifty-six habitats of principal importance are included on the S41 list. These are all the habitats in England that were identified as requiring action in the UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework. They include terrestrial habitats such as upland hay meadows to lowland mixed deciduous woodland, and freshwater and marine habitats such as ponds and sub-tidal sands and gravels.

Species of Principal Importance

- 1.11 There are 943 species of principal importance included on the S41 list. These are the species found in England which were identified as requiring action under the UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework. In addition, the hen harrier *Circus cyaneus* has also been included on the list because without continued conservation action it is unlikely that the hen harrier population will increase from its current very low levels in England.
- 1.12 In accordance with Section 41(4) the Secretary of State will, in consultation with Natural England, keep this list under review and will publish a revised list if necessary.

National Planning Policy Framework

- 1.13 The National Planning Policy Framework (NPPF) was published in March 2012 (and replaced previous planning policy guidance (PPS 9) on biodiversity. The NPPF was updated in July 2018, and in February 2019, and states the following in relation to biodiversity and planning:
- 1.14 *“When determining planning applications, local planning authorities should apply the following principles:*
- if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
 - development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely*



impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

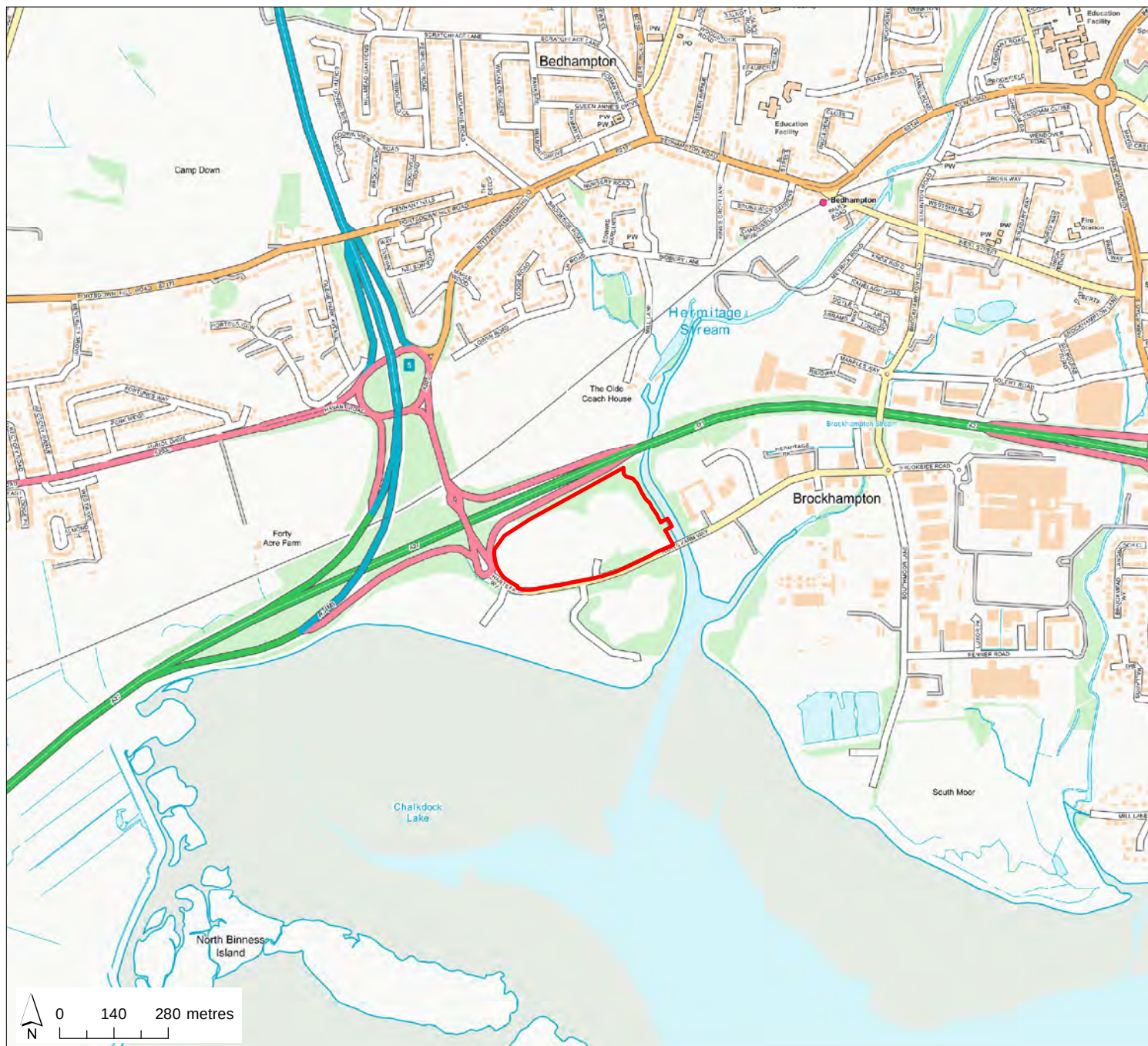
- *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
- *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.*

1.15 *The following should be given the same protection as habitats sites:*

- *potential Special Protection Areas and possible Special Areas of Conservation;*
- *listed or proposed Ramsar sites; and*
- *sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.*

1.16 *The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site."*





Harts Farm Way, Havant

Site location

 Site boundary

Figure 1.1

Map Scale @ A4: 1:15,000

Surveyed by: n/a	
Survey date: n/a	
Drawn by: RD	
Checked by: DP	
Status: Final	

2 Pre-existing Information

Sources of Information

- 2.1 The Hampshire Biodiversity Information Centre (HBIC) was commissioned by AEL in September 2020 to complete a search of its database for existing biological records. This included a search for records of statutory and non-statutory wildlife sites, ancient woodland, and protected and notable species both on the Site and within 2 km of its central point.
- 2.2 Additional information on the presence of dark-bellied brent geese *Branta bernicla bernicla* (hereafter “brent geese”) at the Site has been sourced from various data and documents produced by the Solent Wader and Brent Goose Strategy (SWBGS).

Designated Wildlife Sites

Statutory wildlife sites

- 2.3 The locations of statutory wildlife sites and ancient woodland is shown by **Figure 2.1**.
- 2.4 The closest statutory designated sites of international significance are the **Solent Maritime Special Area of Conservation (SAC)**, **Chichester and Langstone Harbours Special Protection Area (SPA)**, and **Chichester and Langstone Harbours Ramsar**, which are located 170 m to the south of the Site. The SPA is comprised of two component nationally important Sites of Special Scientific Interest, namely **Langstone Harbour SSSI** and **Chichester Harbour SSSI**.
- 2.5 Various parts of these sites are also incorporated within the Local Nature Reserves (LNR) **Farlington Marshes LNR** (935 m to the west), **West Hayling LNR** (1.9 km to the south-east), and **Hayling Billy LNR** (2.2 km to the south-east).

Solent Maritime SAC

- 2.6 The Solent comprises a major estuarine system with four coastal plain estuaries (Yar, Medina, King’s Quay Shore, and Hamble) and four bar-built estuaries (Newtown Harbour, Beaulieu, Langstone Harbour, and Chichester Harbour). The Solent is unique in Britain and Europe for its hydrographic regime, as well as the complexity of its marine and tidal habitats.
- 2.7 The SAC is designated under article 4(4) of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I (with those that are a primary reason for its selection shown in bold):
 - Annual vegetation of drift lines;
 - **Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);**
 - Coastal lagoons;
 - ***Spartina* swards (*Spartinion maritimae*);**
 - Estuaries;



- Mudflats and sandflats not covered by seawater at low tide. (Intertidal mudflats and sandflats);
- Perennial vegetation of stony banks;
- *Salicornia* and other annuals colonising mud and sand;
- Sandbanks which are slightly covered by sea water all the time;
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes).

2.8 The site is also designated under article 4(4) of the Directive (92/43/EEC) as it hosts the following species listed in Annexe II:

- Desmoulin's whorl snail *Vertigo moulinsiana*.

Chichester and Langstone Harbours SPA

- 2.9 The site is assigned international importance because it regularly supports more than 10,000 wintering wildfowl and also regularly supports more than 20,000 wintering waders.
- 2.10 The site qualifies under article 4.2 of the Directive (79/409) as it supports internationally important numbers of the following species: grey plover *Pluvialis squatarola* (3.9% of the west European population), shag *Phalacrocorax aristotelis* (3.1%), dunlin *Calidris alpina* (2.6% and over 20,000 birds), redshank *Tringa totanus* (1.4%), brent goose (12%), shelduck *Tadorna tadorna* (4%), and teal *Anas crecca* (1%).
- 2.11 The site also supports nationally important wintering numbers of the following migratory bird species: ringed plover *Charadrius hiaticula*, curlew *Numenius arquata*, bar-tailed godwit *Limosa lapponica*, turnstone *Arenaria interpres*, wigeon *Anas penelope*, pintail *Anas acuta*, shoveler *Anas clypeata*, and red-breasted merganser *Mergus serrator*.
- 2.12 The site also qualifies under article 4.1 of the Directive (79/409) because it supports breeding populations of the following bird species: common tern *Sterna hirundo*, sandwich tern *Sterna sandvicensis*, and little tern *Sternula albifrons*.

Sites of Special Scientific Interest

- 2.13 Chichester and Langstone Harbours SPA is made up of two component SSSIs, as follows:

Chichester Harbour SSSI

- 2.14 A large estuarine basin with extensive mudflats and sandflats, of particular significance for wintering wildfowl and waders and also breeding birds both within the Harbour and in the surrounding permanent pasture and woodlands. Numbers of bar-tailed godwit are of European importance, and wintering populations of shelduck, teal, and dark-bellied brent goose are of international significance.

Langstone Harbour SSSI

- 2.15 A tidal basin with extensive mudflats and a single narrow exit to the sea, including one of the largest areas of mixed saltmarsh on the south coast. The harbour is ranked amongst the 20 most important intertidal areas in Britain as a summer and autumn assembly ground for waders during their moult and as a wintering ground. Dunlin numbers often exceed 30,000 birds, or 6% of the British winter population, and significant numbers of grey plover, black-tailed godwit *Limosa limosa*, redshank, and ringed plover are also present.



Local Nature Reserves

Farlington Marshes LNR

- 2.16 An area of flower-rich grazing marsh on the northern shore of Langstone Harbour which supports large numbers of migratory birds.

West Hayling LNR

- 2.17 An area of intertidal mudflats and lagoons comprising the historic oysterbeds found on the north-west shore of Hayling Island.

Hayling Billy LNR

- 2.18 A former railway line along the west side of Hayling Island and adjacent areas.

Ancient woodland

- 2.19 The Site itself does not support any ancient woodland. The closest area of ancient woodland was Littlepark Wood (East), 1.3 km to the north, an area of ancient semi-natural and replanted woodland that is designated a Site of Importance for Nature Conservation (SINC).

Non-statutory wildlife sites

Sites of Importance for Nature Conservation

- 2.20 The locations of Sites of Interest for Nature Conservation (SINC) and Roadside Verges of Ecological Importance (RVEI) are shown by **Figure 2.2**.
- 2.21 A total of 17 non-statutory SINC and a single RVEI are present in the search area, with details of those located within 1 km of the Site provided below.
- **Farlington Marshes Grassland (north-east) SINC** - 415 m to the west – unimproved grasslands; semi-natural coastal and estuarine habitats.
 - **Fields off Havant Road SINC** - 605 m to the north-west – supports one or more notable species (dwarf spurge *Euphorbia exigua*).
 - **Southmoor SINC** – Big Field (south edge), 840 m to the south-east – semi-natural coastal and estuarine habitats.
 - **Southmoor Reserve SINC** - 940 m to the south-east – unimproved grasslands; semi-natural coastal and estuarine habitats; fens, flushes, seepages, springs, inundation grasslands, etc. characteristic of unimproved and waterlogged conditions; supports one or more notable species (divided sedge *Carex divisa*).
 - **Farlington Marshes SINC** - 1 km to the west – semi-improved grassland which retain a significant element of unimproved grassland; supports one of more notable species (annual beard-grass *Polypogon monspeliensis*, parsley water-dropwort *Oenanthe lachenalia*, divided sedge *Carex divisa*, golden samphire *Inula crithmoides*, Ray's knotgrass *Polygonum oxyspermum* subsp. *raili*, spiny restharrow *Ononis spinosa*, stiff saltmarsh-grass *Puccinellia rupestris*, blackish water-crowfoot *Ranunculus baudotii*, beaked ditch-grass *Ruppia maritima*, and sea barley *Hordeum marinum*); supports an outstanding assemblage of species.



- **Camp Down Grassland Remnants SINC** - 1 km to the north-west – impoverished grasslands with sufficient elements of unimproved grassland to enable recovery.

Solent Wader and Brent Goose Strategy (SWBGS) sites

- 2.22 The locations of Solent Wader and Brent Goose Strategy (SWBGS) sites are shown by **Figure 2.3**. In summary, large areas of mainly undeveloped land within the local area are designated as SWBGS sites which represent a network of coastal grasslands identified as having varying degrees of importance to the maintenance of the wader and brent goose populations of the SPA.
- 2.23 Two SWBGS sites were identified within the Site by the HBIC data and were referred to as H08 (western side of Site) and H07D (eastern side of Site). It should be noted however that the eastern site (H07D) has been subsequently removed and is no longer a SWBGS site.
- 2.24 A standalone assessment of past and current use of the Site by brent geese was undertaken by AEL and is provided in **Appendix C**. The conclusion of this assessment was that the recorded use the western part of the Site by brent geese in 2007/8 appears to have been only short-term and transient. Since this time, the suitability of the Site for brent geese has declined significantly due to its progressive enclosure by existing and new boundary hedges and trees, the absence of grassland management which has led to the development of tall and rank swards unsuitable for geese grazing, and through increased use of the Site for walking and dog-walking.
- 2.25 Wintering bird survey of the Site is currently being completed by AEL with two of the five planned visits undertaken to date on 22 January and 2 February during high tide conditions. No brent geese or other wildfowl or waders have been present within the Site during the two surveys, with the three remaining visits to be undertaken before mid-March.
- 2.26 Although significant impacts on brent geese, and therefore the integrity of the SPA, are not predicted in relation to the proposed Development, subsequent discussions with Natural England have confirmed that compensation for the loss of SWBGS site H08 will be expected following planning approval. The expectation is that the level of compensation required will be based on the loss of 4.47 ha of SWBGS land.

Protected and Notable Species

- 2.27 A total of 27,351 records were received from HBIC, with the overwhelming majority of these being of birds.

Birds

- 2.28 A total of 25,339 records, relating to 141 different species. Many of these records related to typical coastal species, such as little egret *Egretta garzetta* (906 records) and Mediterranean gull *Larus melanocephalus* (916 records), and most originated from Farlington Marshes. Due to the coastal location, there were also various records of rare or vagrant species, such as tawny pipit *Anthus campestris* and collared pratincole *Glareola pratincole*, that are of little relevance to this assessment.
- 2.29 Species records of elevated conservation concern which regularly occur in the habitat types present at the Site included skylark *Alauda arvensis* (190 records), song thrush *Turdus*



philomelos (124 records), and reed bunting *Emberiza schoeniclus* (291 records). There were also 953 records of brent goose.

Dark-bellied brent goose

- 2.30 A total of 461 records of dark-bellied brent goose were received as part of an additional dataset from the Solent Wader and Brent Goose Strategy. These data included six records of brent geese using the western part of the Site during December 2007 and January 2008, with up to 69 feeding birds recorded.
- 2.31 Additional survey work to inform the SWBGS has continued over time and included surveys to update the SWBGS in 2016–17¹ and specific surveys commissioned by Havant Borough Council. All these surveys have reported no use of the Site by brent geese. The surveys included 12 survey visits to H08 and H07D over the winter of 2011–12², and 24 visits to H08 and H07D during the winter of 2013–14 – all recording no use of the Site by brent geese.

Bats

- 2.32 A total of 654 records of 11 species. Of these, 225 were of common pipistrelle *Pipistrellus pipistrellus* and 210 were of soprano pipistrelle *Pipistrellus pygmaeus*, with a further 62 records of unidentified *Pipistrellus* species. The less frequently recorded species were noctule *Nyctalus noctula* (50 records), *Myotis* spp. (38), serotine *Eptesicus serotinus* (33), Daubenton's bat *Myotis daubentonii* (eight), brown long-eared bat *Plecotus auritus* (four), whiskered bat *Myotis mystacinus* (one), Natterer's bat *Myotis nattereri* (one), and Leisler's bat *Nyctalus leisleri* (one). There were an additional 12 records of unidentified bats.

Hazel dormouse

- 2.33 There were two records of hazel dormouse *Muscardinus avellanarius*, both from an area of ancient woodland at Littlepark Wood (West) SINC, approximately 1.8 km to the north of the Site, dating from 2007 and 2009.

Other mammals

- 2.34 There was a single record of badger *Meles meles* and 46 records of water vole *Arvicola amphibius*. The remaining records were of yellow-necked mouse *Apodemus flavicollis* and hedgehog *Erinaceus europaeus*, and the marine mammals common seal *Phoca vitulina* and grey seal *Halichoerus grypus*.

Reptiles and amphibians

- 2.35 A total of 59 records, of which 57 were of slow-worm *Anguis fragilis*, almost exclusively from 2008 along the route of the A27 adjacent to the Site's northern boundary. There were also single records of grass snake *Natrix helvetica* and common lizard *Zootoca vivipara*, but neither was in proximity to the Site.

¹ Whitfield, D. (2019) *Solent Waders and Brent Goose Strategy 2019 Interim Project Report: Year One*. Hampshire and Isle of Wight Wildlife Trust, Curdridge.

² Crook, J. (2012) *Broadmarsh brent goose survey – Final Report December 2011–March 2012*. Unpublished report to Havant Borough Council



- 2.36 There were no records of amphibians, including the legally protected species great crested newt *Triturus cristatus*.

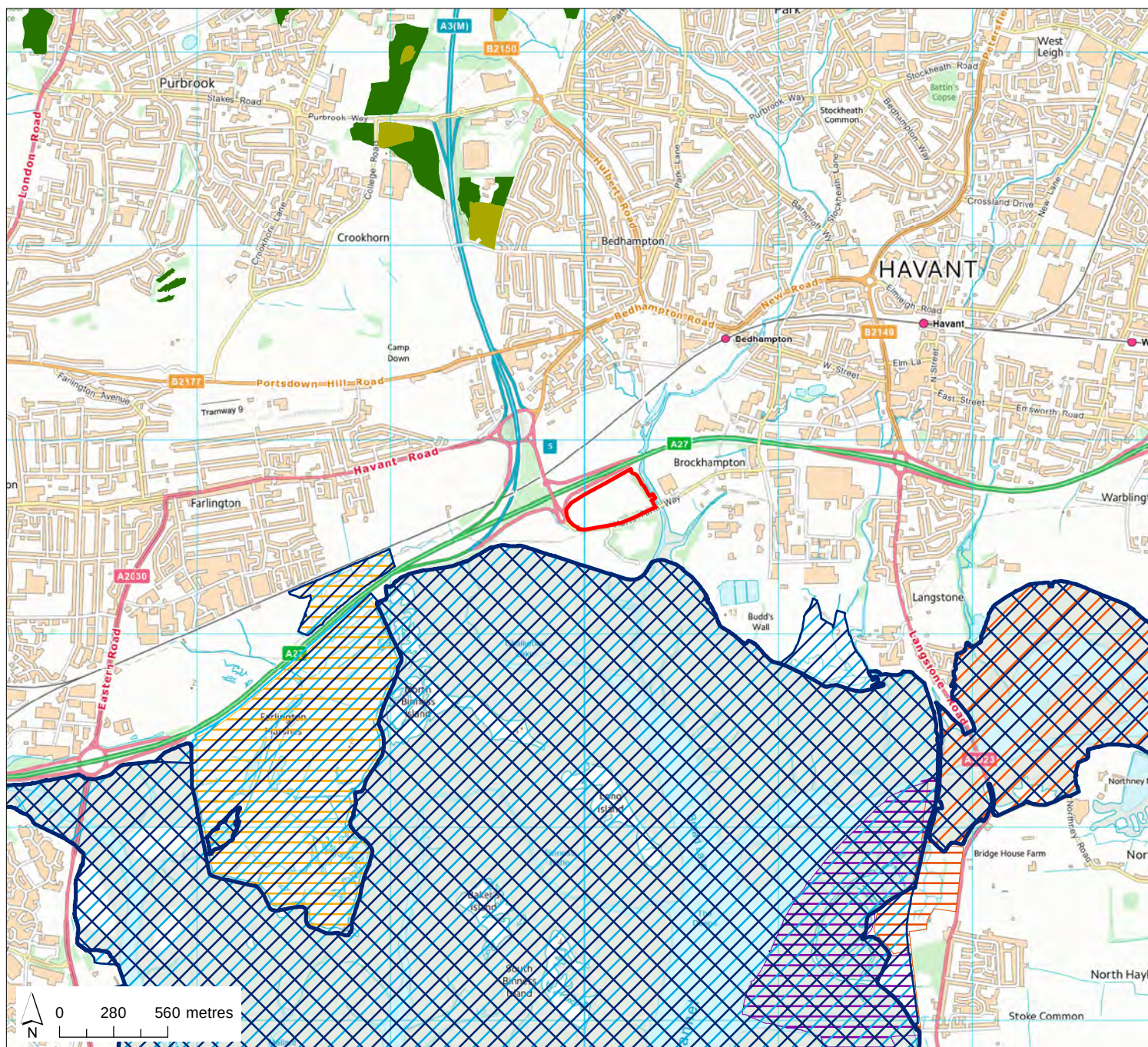
Invertebrates

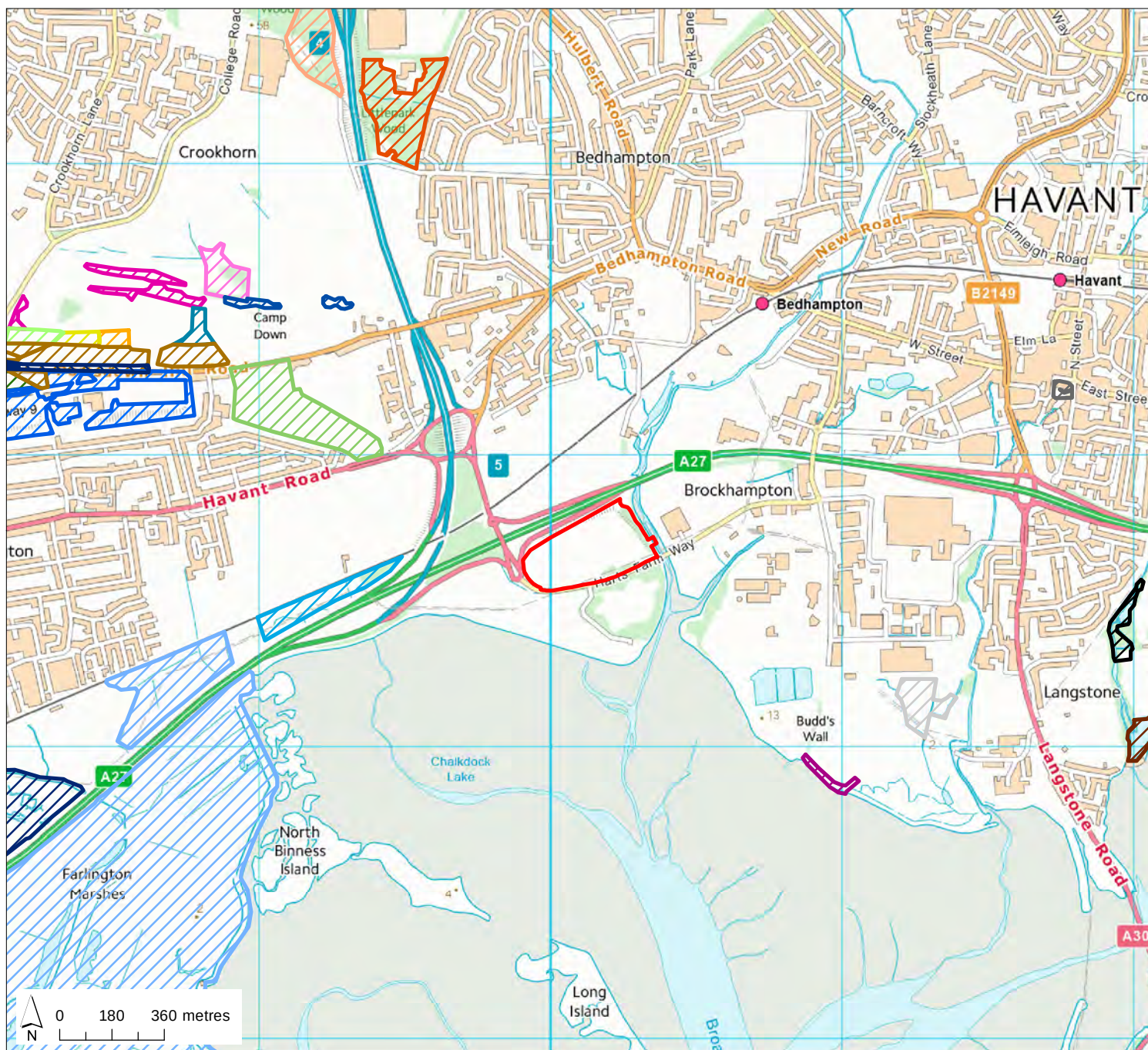
- 2.37 There was a total of 737 records, of which the majority were of butterflies and moths (641 records) and beetles (87 records), of which 82 were of stag beetle *Lucanus cervus*.

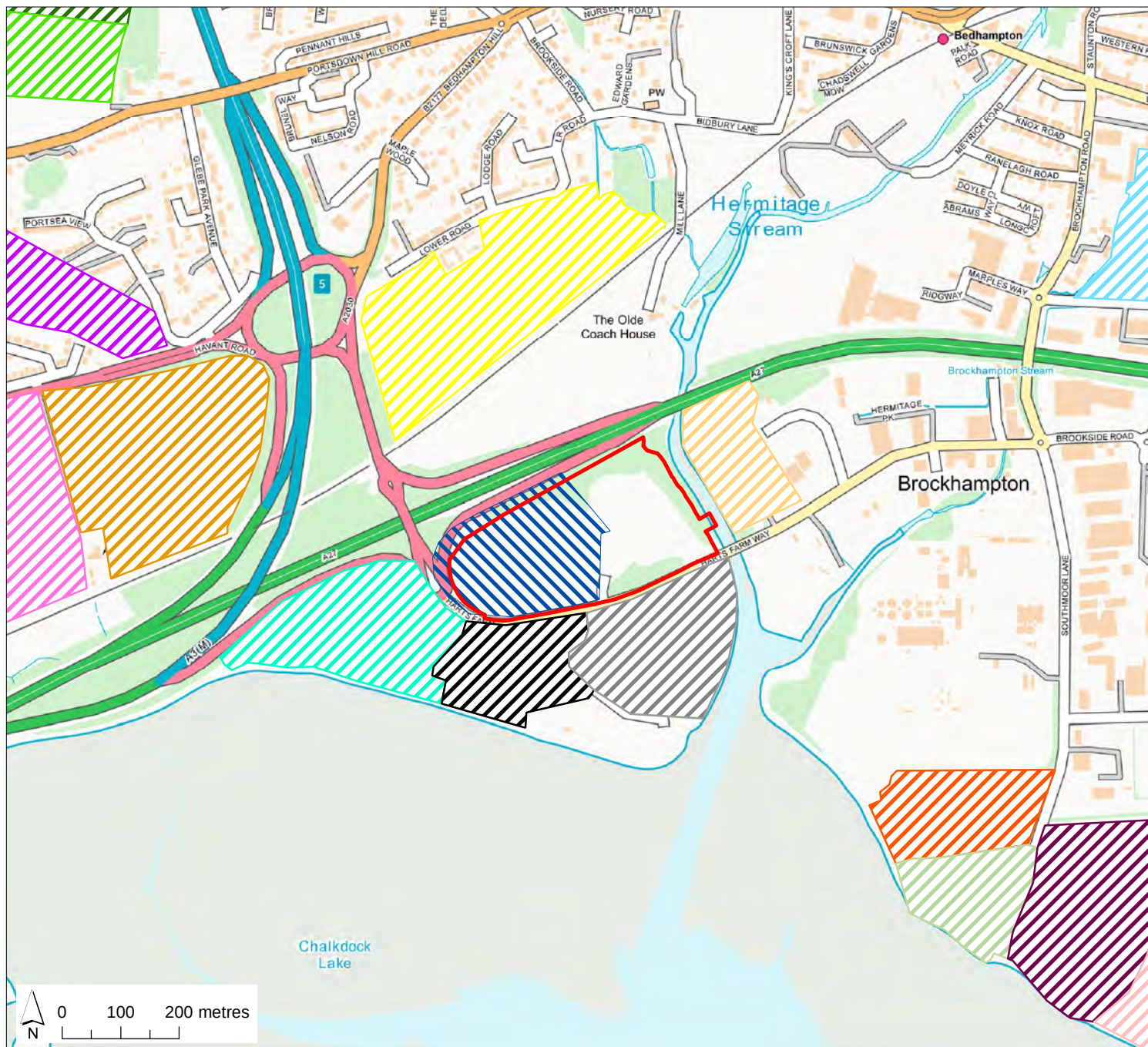
Plants

- 2.38 A total of 452 records, including a range of coastal species, with most originating from Farlington Marshes and other designated wildlife sites.









Harts Farm Way, Havant

Non-statutory wildlife sites: SWBGS sites

Site boundary

SWBGS Sites

- H08
- H02A
- H02B
- H03
- H04B
- H04C
- H05a
- H07A
- H07B
- H07C
- H09
- H11
- H28A
- H28C
- H29
- H90

Figure 2.3

Map Scale @ A4: 1:10,000

Surveyed by: n/a

Survey date: n/a

Drawn by: CB

Checked by: DP

Status: Final



3 Habitats and Plants

Methodology

- 3.1 An extended Phase 1 habitat survey was undertaken for the Site on 8 June 2020 by AEL ecologist Richard Dale MCIEEM³ in dry and bright weather conditions. The methodology adopted followed the standard JNCC approach to Phase 1 habitat survey (JNCC, 1993⁴) by which all habitats present within the Site were classified and mapped according to standard categories. Target notes were used to describe areas of both typical and unique botanical character. Habitat patches were mapped as polygon features, and if sufficient space on the map linear features (such as walls and fences) as lines where this provided added value. Point features were recorded where there were notable isolated trees or scrub. Plant species abundance was noted using the DAFOR⁵ system.
- 3.2 The habitat map was subsequently digitised using a Geographical Information System (ArcGIS).
- 3.3 The survey was completed within the accepted season for completing Phase 1 habitat survey, which runs from late March until mid-October in southern England.

Survey Findings

- 3.4 The Phase 1 habitat map is shown in **Figure 3.1**, and a selection of habitat survey photographs can be found in **Figure 3.2**. A breakdown of the habitats within the Site is shown in **Table 3.1**, and lists of the characteristic plant species are provided in **Appendix D**.

Table 3.1: Summary of habitat types recorded on the Site.

Habitat	Area (ha)	% of Site
Semi-improved neutral grassland	3.954	47.2
Broad-leaved plantation woodland	1.601	19.1
Tall ruderal	1.482	17.7
Dense scrub	1.103	13.2
Hard-standing	0.197	2.4
Bare ground	0.023	0.3
Intertidal mud	0.010	0.1

- 3.5 In contextual terms, the Site was bounded to the north by the A27 (a major dual carriageway), and the east by a tidal watercourse known as Hermitage Stream. To the south, beyond Hart Way, were areas of coastal grassland, woodland, and Chalkdock Lake, part of the Solent estuary.

³ Level 4 Botanical Society of Britain and Ireland (BSBI) Field Identification Skills Certificate.

⁴ JNCC (1993) *Handbook for Phase 1 Habitat Survey – A technique for Environmental Audit*. JNCC, Peterborough.

⁵ DAFOR: whereby species occurrence may be classified as being **d**ominant, **a**bundant, **f**requent, **o**ccasional or **r**are. Rare in the context of a DAFOR score should not be confused with species rarity in the more widely accepted meaning of general scarcity.



- 3.6 The Site itself is a restored landfill site consisting of two fields of rank unmanaged semi-improved neutral grassland, with marginal and isolated patches of tall ruderals, and linear stands of dense scrub and broad-leaved plantation woodland around its boundary.

Semi-improved neutral grassland

- 3.7 The Site was dominated by semi-improved neutral grassland that was relatively rank, with a tussocky structure in places and areas dominated by tall ruderal species – signs of a relative paucity of grassland management. The grassland sward was somewhat variable in terms of species composition, with some areas dominated by tall ruderal species, particularly creeping thistle *Cirsium arvense*, and damper areas with abundant creeping bent *Agrostis stolonifera*, hard rush *Juncus inflexus*, and glaucous sedge *Carex flacca*. In general, the sward comprised a wide range of species, with the main component being false oat-grass *Arrhenatherum elatius*. Other grasses included red fescue *Festuca rubra*, meadow brome *Bromus commutatus*, reed canary-grass *Phalaris arundinacea*, and Yorkshire-fog *Holcus lanatus*, with a range of forbs including common knapweed *Centaurea nigra*, corky-fruited water-dropwort *Oenanthe pimpinelloides*, pyramidal orchid *Anacamptis pyramidalis*, creeping cinquefoil *Potentilla reptans*, and grass vetchling *Lathyrus nissolia*.

Tall ruderal

- 3.8 Patches of tall ruderal dominated vegetation occurred within the grassland and around the Site's boundaries, with typical species including creeping thistle, hemlock *Conium maculatum*, nettle *Urtica dioica* and cow parsley *Anthriscus sylvestris*.

Broad-leaved plantation woodland

- 3.9 Extensive areas along the northern and eastern boundary, as well as in the south and centre of the Site comprised broad-leaved plantation woodland. This was most established in the north, along the road embankment, and east, adjacent to the Hermitage Stream.
- 3.10 The main components of the canopy were white poplar *Populus alba* and ash *Fraxinus excelsior*, with frequent field maple *Acer campestre*. The understorey and ground layer included hawthorn *Crataegus monogyna*, elder *Sambucus nigra*, common nettle, cow parsley, wood dock *Rumex sanguineus*, and ivy *Hedera helix*.

Dense and scattered scrub

- 3.11 Various areas of dense scrub were present, most extensively around the western boundary and the eastern part of the southern boundary. Additional areas were present at the edges of the woodland, and an extensive area of bramble dominated scrub was present to the south of the eastern grassland field and below a set of power lines running parallel to the southern boundary.
- 3.12 Most of the scrub comprised frequent hawthorn, blackthorn *Prunus spinosa*, dogwood *Cornus sanguinea*, dog rose *Rosa canina*, and bramble.



Scattered trees and scrub

- 3.13 Small amounts of scattered scrub were present within the grassland and tall ruderal areas, mostly comprising dog rose, hawthorn, and blackthorn. A single young pedunculate oak was present within the grassland 'bottleneck' between the two fields.

Bare ground and hard-standing

- 3.14 An area of hard-standing with some bare ground was present in the centre of the Site.

Intertidal mud

- 3.15 An extremely small area of intertidal mud was present within the Site, where the Site's eastern boundary extends towards Hermitage Stream. This small eastern extension crosses an existing public footpath and is the proposed location of a discharge drainage pipe from the Site.



Harts Farm Way, Havant

Phase 1 habitat map

-  Site boundary
-  broad-leaved plantation woodland
-  dense scrub
-  semi-improved neutral grassland
-  tall ruderal
-  bare ground
-  hard-standing
-  intertidal mud
-  individual tree (indicative location)
-  scattered scrub

Figure 3.1

Map Scale @ A4: 1:2,500

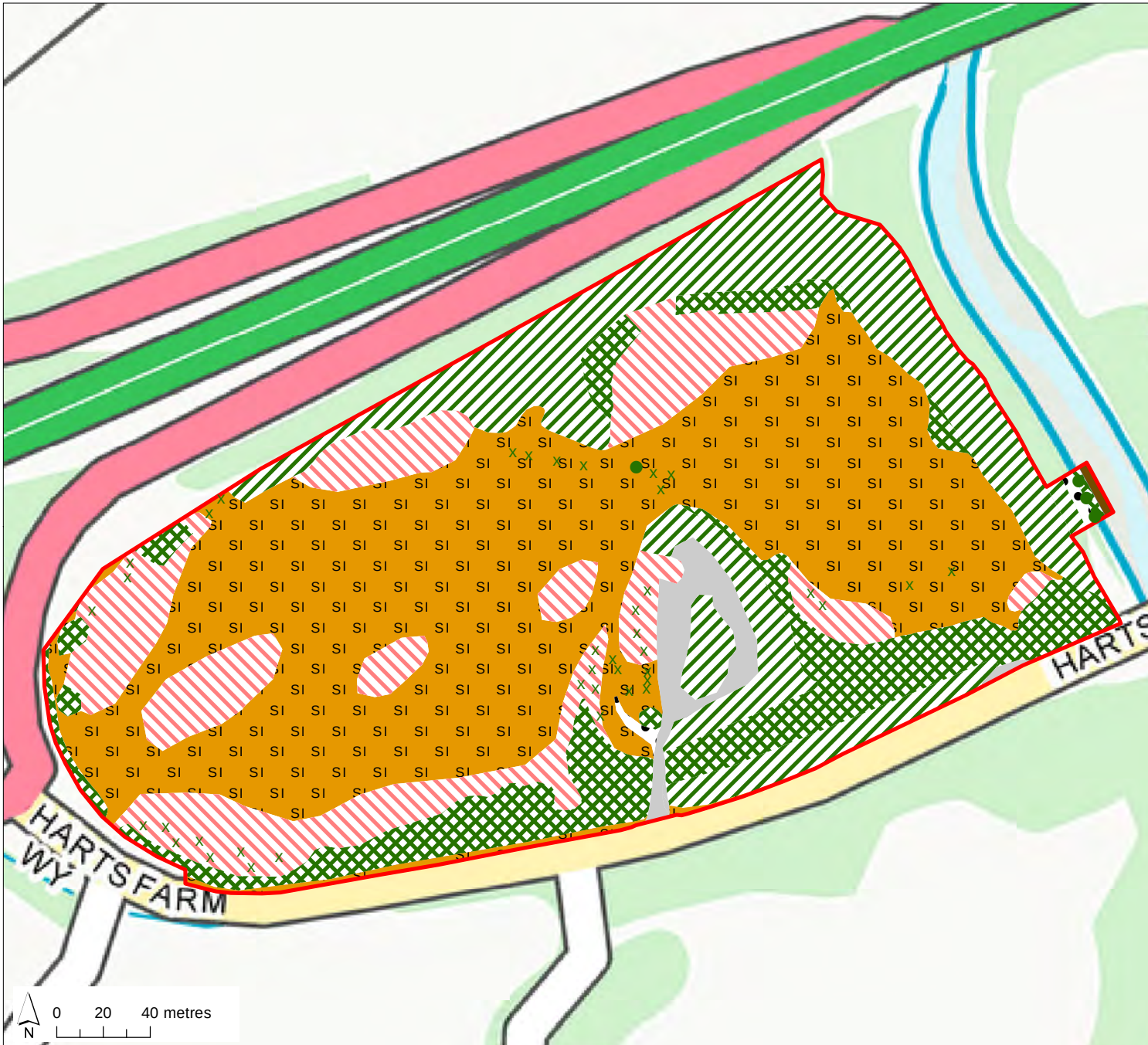
Surveyed by: RD

Survey date: 8 June 2020

Drawn by: RD

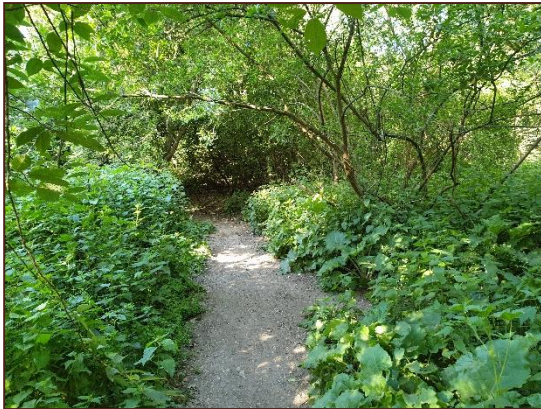
Checked by: DP

Status: Final



0 20 40 metres

Figure 3.2: Selection of habitat survey photographs.



(a) Broad-leaved plantation woodland with shaded ground-layer dominated by common nettle.



(b) Broad-leaved plantation woodland.



(c) Boundary between woodland and semi-improved grassland, with fringe of dense bramble-dominated scrub.



(d) Semi-improved grassland in centre of Site – damper area with abundant creeping bent and frequent rushes and sedges.





(e) Scrub, grassland and ruderal in north-west of Site.



(f) Semi-improved neutral grassland in west of Site.



(g) Dense scrub and hard-standing at Site entrance on southern boundary.



(h) Broad-leaved plantation woodland along eastern part of southern Site boundary, viewed from Harts Farm Way.



4 Breeding Birds

Methodology

- 4.1 A transect-based, territory mapping breeding bird survey, combining aspects of the Breeding Birds Survey (BBS) and Common Bird Census (CBC)⁶, was used as the basis of the survey, with three visits to record birds using the Site during the 2020 bird breeding season.
- 4.2 The survey was planned and undertaken by Richard Dale MCIEEM – a senior ecologist and ornithologist. A transect route was devised and walked around the Site to adequately cover all accessible parts of the Site, as shown by **Figure 4.1**.
- 4.3 During each survey, the positions, age, sex, and behaviour of individual birds were recorded on large-scale field maps, using a new map on each visit. All birds detected by sight and sound were recorded, however, species flying over the Site were not transcribed onto the field map unless it was clear the birds were feeding over the Site or were flying to or had originated on or near the Site.
- 4.4 Every effort was made, using the surveyor's judgement and the survey recording methodology, to record any individual bird once only. Where possible, repeated records and clusters of registrations were used to map approximate breeding territories to assess species breeding densities and abundance. Only adult birds were mapped and counted to assess breeding bird abundance.
- 4.5 Each transect survey started within an hour of sunrise, to coincide with the peak period of bird activity, and took less than two hours to complete. The survey visits took place on 29 May, 8 June, and 16 June 2020. Weather conditions during the surveys were generally fine with occasional light cloud and free of rain.
- 4.6 Only adult birds are reported here, as fledged young, particularly of earlier breeding species, might give a false impression of abundance.
- 4.7 Particular attention is given in this report to species of conservation importance.
- 4.8 Depending on the behaviour observed, species were allocated levels of breeding confirmation using slightly adapted BTO guidelines⁷ (**Table 4.1**).

Table 4.1: Breeding evidence for bird species.

Breeding status	Breeding evidence
Non-breeder	Suspected to be on migration. Summering non-breeder. Definitely not nesting within Site boundary (but potentially close by).
Possible breeding	Species observed in suitable nesting habitat or singing male present.
Probable breeding	Pair in suitable breeding habitat.

⁶ Gilbert, G., Gibbons, D.W. & Evans, J. (1998). *Bird Monitoring Methods: a manual of techniques for key UK species*. RSPB, Sandy, Bedfordshire.

⁷ www.bto.org/volunteer-surveys/birdatlas/methods/breeding-evidence



Breeding status	Breeding evidence
	Permanent territory presumed through registration of territorial behaviour (song etc.) on at least two different days a week or more apart at the same place or many individuals on one day. Courtship and display. Visiting probable nest site. Agitated behaviour or anxiety calls from adults, suggesting presence of nest or young nearby. Nest-building or excavating nest-hole.
Confirmed breeding	Distraction display of feigning injury. Used nest of eggshells found (occupied or laid during period of survey). Recently fledged young (nidicolous species) or downy young (nidifugous species) Adults entering or leaving nest site in circumstances indicating occupied nest, or adults seen incubating. Adult carrying faecal sac or food for young. Nest containing eggs. Nest with young seen or heard.

Survey Findings

Overview

- 4.9 The survey recorded a total of 21 bird species within the survey area. Of these one was a Red-listed species of conservation concern and a further two species were Amber-listed. A single species listed under Schedule 1 of the Wildlife and Countryside Act 1981 was also recorded.
- 4.10 A total of six species was confirmed as breeding within the survey area, and nine species were classed as probable breeders. A further six species were possible breeders.
- 4.11 The results of the survey are summarised in **Table 4.2**, including broad estimates of the number of territories present for each species.

Table 4.2: Bird species recorded and estimated number of territories present.

Species	UK Conservation Designation	Max count per visit			Max. count	Breeding status	Estimated no. of territories
		29 May	8 June	16 June			
Blackbird <i>Turdus merula</i>	Green	4	3	3	4	Confirmed	3–4
Blackcap <i>Sylvia atricapilla</i>	Green	4	3	2	4	Confirmed	2–3
Blue tit <i>Cyanistes caeruleus</i>	Green	3	4	4	4	Confirmed	3–4
Cetti's warbler <i>Cettia cetti</i> *	Green	1	1	1	1	Probable	1
Chaffinch <i>Fringilla coelebs</i>	Green	0	0	1	1	Possible	0–1
Chiffchaff <i>Phylloscopus collybita</i>	Green	1	1	2	2	Probable	1–2
Dunnock <i>Prunella modularis</i>	Amber	3	1	3	3	Probable	2–4
Goldfinch <i>Carduelis carduelis</i>	Green	2	1	1	2	Probable	1–2
Great spotted woodpecker <i>Dendrocopos major</i>	Green	1	0	1	1	Possible	1
Great tit <i>Parus major</i>	Green	1	2	1	2	Confirmed	2–3
Greenfinch <i>Chloris chloris</i>	Green	3	1	1	3	Probable	1–2
Green woodpecker <i>Picus viridis</i>	Green	0	0	1	1	Possible	0–1
Jay <i>Garrulus glandarius</i>	Green	1	0	0	1	Possible	0–1



Species	UK Conservation Designation	Max count per visit			Max. count	Breeding status	Estimated no. of territories
		29 May	8 June	16 June			
Kestrel <i>Falco tinnunculus</i>	Amber	0	1	0	1	Possible	0–1
Long-tailed tit <i>Aegithalos caudatus</i>	Green	2	0	2	2	Probable	1–2
Magpie <i>Pica pica</i>	Green	1	0	1	1	Possible	0–1
Robin <i>Erithacus rubecula</i>	Green	5	4	2	5	Confirmed	4–6
Song thrush <i>Turdus philomelos</i>	Red	7	2	3	7	Probable	4
Whitethroat <i>Sylvia communis</i>	Green	7	5	6	7	Confirmed	4–6
Woodpigeon <i>Columba palumbus</i>	Green	2	2	4	4	Probable	2–4
Wren <i>Troglodytes troglodytes</i>	Green	6	3	2	6	Probable	4–6

- 4.12 In addition to the species recorded during the breeding birds survey visits, a barn owl *Tyto alba* was observed hunting over the grassland at the Site on both the August and September bat activity surveys.
- 4.13 A small number of additional species, not listed in the table above, were noted in flight only above the Site, namely peregrine *Falco peregrinus*, starling *Sturnus vulgaris*, swallow *Hirundo rustica*, swift *Apus apus*, herring gull *Larus argentatus*, black-headed gull *Chroicocephalus ridibundus*, Mediterranean gull *Larus melanocephalus*, feral pigeon *Columba livia*, and grey wagtail *Motacilla cinerea*.

Species diversity

- 4.14 The species recorded represent a range of common species of woodland and scrub habitats. Although areas of grassland habitat were present, no grassland specialist ground-nesting species such as skylark or meadow pipit *Anthus pratensis* were recorded. The open grassland supports a population of small rodents – field voles *Microtus agrestis* were regularly found beneath reptile refugia during the reptile survey in September – and therefore is of value to kestrel *Falco tinnunculus* and other predators, including barn owl.
- 4.15 Overall, the breeding bird assemblage recorded reflects the habitats present, comprising mostly common garden, woodland and hedgerow species in relatively small numbers. The grassland areas appeared to be of limited value to most species, except for foraging kestrel and barn owl.

Species density and distribution

- 4.16 A breeding bird distribution heatmap incorporating pooled records from all three visits from each survey, together with estimated territory areas for song thrush (the only Red-listed species) is shown by **Figure 4.2**. This confirms that the main concentrations of birds recorded during the breeding bird survey were present in the boundary scrub and woodland habitats, particularly the woodland along the eastern boundary and the area of scrub and trees in the centre of the Site which divides the two open grassland areas. The sparser vegetation in the west of the Site held fewer birds, and very few were recorded from within the grassland areas.



Species of conservation concern

- 4.17 A total of three species of elevated conservation concern was recorded during the survey, in addition to further species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (such species are either rare, subject to persecution, or sensitive to disturbance and are provided additional protection during the breeding season). The only red-listed species recorded was song thrush; amber-listed species were dunnock *Prunella modularis* and kestrel; and the Schedule 1 species were Cetti's warbler *Cettia cetti* and barn owl.

Song thrush Turdus philomelos – red-listed for severe breeding population decline

- 4.18 Although subject to a long-term population decline, particularly in farmland, this remains a widespread and familiar species, and can still be common in suitable habitat. Four territories were present at the Site, associated with areas of woodland scrub, although the species also likely forages within marginal grassland areas. The location and approximate extent of these territories is shown in **Figure 4.2**.

Dunnock Prunella modularis – amber-listed for moderate breeding population decline

- 4.19 This remains a common and widespread species, and small numbers were present within the areas of scrub at the Site.

Kestrel Falco tinnunculus – amber-listed for moderate breeding population decline

- 4.20 A single bird was observed hunting over the grassland in the west of the Site on the second survey visit.

Cetti's warbler Cettia cetti – listed under Schedule 1 of the Wildlife and Countryside Act 1981

- 4.21 A single singing bird was recorded in the dense, bramble-dominated scrub near the Site entrance on the southern boundary on each survey visit. Although listed under Schedule 1 due to the species' rarity at the time the Act was passed, following a steady population increase this is now a relatively common species of wetlands and associated dense scrubby areas and is green-listed and of no particular conservation concern.

Barn owl Tyto alba – listed under Schedule 1 of the Wildlife and Countryside Act 1981

- 4.22 A single bird was observed hunting over the grassland areas at dusk during the bat activity surveys conducted on 31 July and 26 August 2020. The lack of large mature trees or suitable structures precludes the possibility of the species breeding at the Site.

Evaluation

- 4.23 Fuller⁸ devised standard procedures for evaluating breeding bird communities. Recording the number of species on a site can provide a simple measure of species diversity from which to confer a level of conservation importance to a site. For breeding birds, the standard qualifying levels provided by Fuller are as follows:

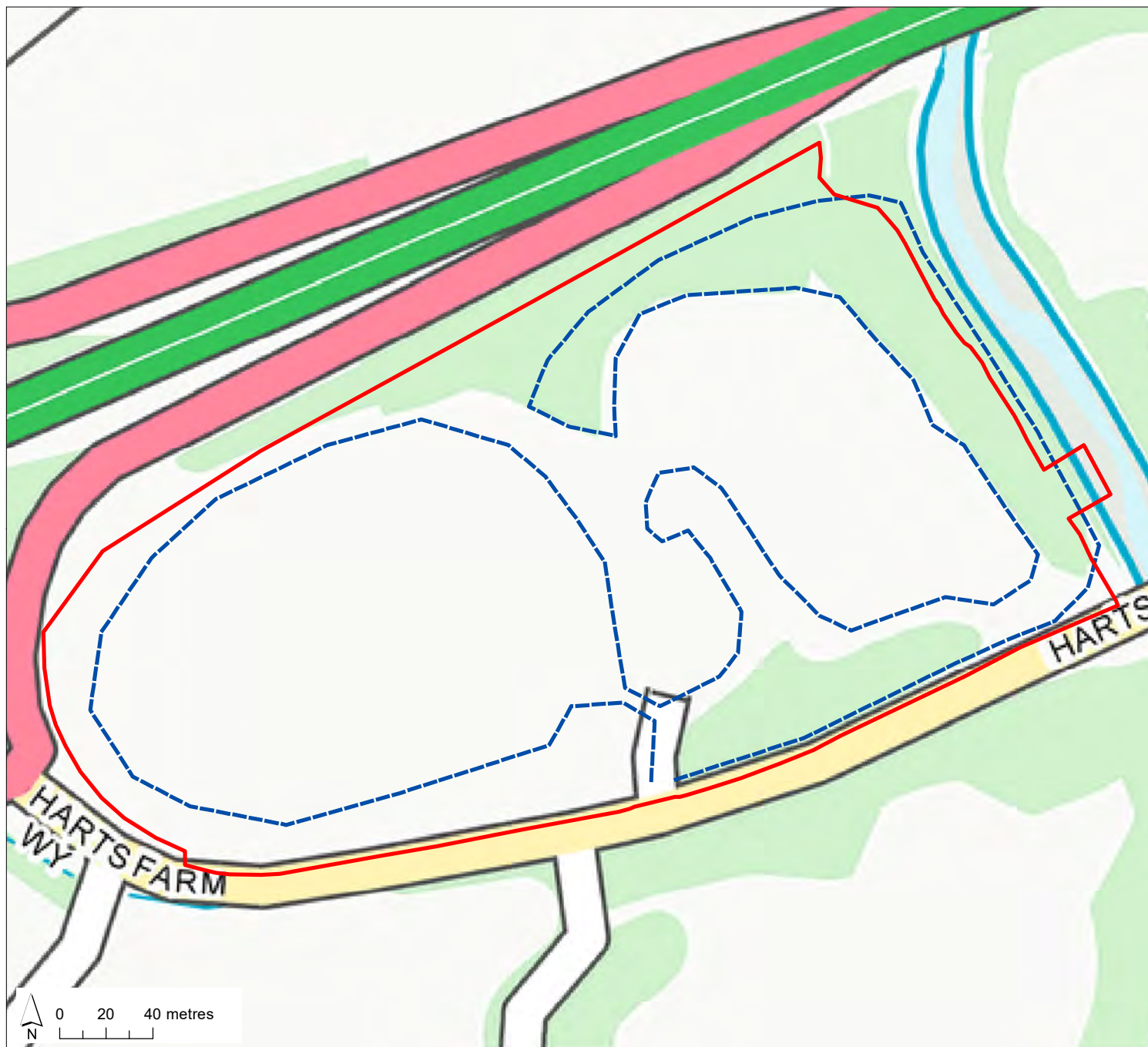
⁸ Fuller, R.J. (1980). *A Method for Assessing the Ornithological Interest of Sites for Conservation*. Biological Conservation, 17: 229–239



- National Importance, 85+ species
- Regional Importance, 70–84 species
- County Importance, 50–69 species
- Local Importance, 25–49 species
- 0–24 species

- 4.24 As well as those species for which evidence of confirmed or probable breeding was obtained, it is considered likely that some of the possible breeding species did indeed breed within the Site or had breeding territories than covered part of the Site. The overall breeding assemblage of the Site is likely to be in the range of 18–20 species, meaning the Site falls below the level of Local importance with respect to its diversity of breeding birds.
- 4.25 In terms of bird population size and species rarity the Site did not possess any particular value under Fuller’s criteria.
- 4.26 The Site supports a breeding population of mostly commonplace species typical of scrub and woodland habitats, although the woodland – dominated by ash and poplar – was of relatively low value and supported very few true woodland specialist species. The most significant element of this assemblage was the four song thrush territories centred on more mature areas of scrub and woodland, as this is a red-listed species of elevated conservation concern.





Harts Farm, Havant

Breeding birds survey transect route

- Site boundary
- transect route

Figure 4.1

Map Scale @ A4: 1:2,500

Surveyed by: RD

Survey date: May–June 2020

Drawn by: RD

Checked by: DP

Status: Final





Harts Farm, Havant

Breeding birds survey results

- Site boundary
- Relative density (all individuals, n=129)**
- High
- Low
- song thrush territories (approximate extent)

Figure 4.2

Map Scale @ A4: 1:2,600

Surveyed by: RD

Survey date: May–June 2020

Drawn by: RD

Checked by: DP

Status: Final



5 Bats

Methodology

Bat roost assessment

- 5.1 The Site does not support buildings or built structures that could be used by roosting bats, and all on-Site trees were of a similar relatively young age with narrow trunks and limbs that were not of sufficient size or maturity to support tree roosting bats.

Manual transect bat activity survey

- 5.2 Manual bat activity survey was carried out to assess bat activity across the Site, including the range of bat species present and the identification of any important bat flyways/commuting routes.
- 5.3 Three surveys were conducted, each consisting of both a manual transect survey and an automated bat activity survey. The survey dates and associated weather conditions (which were suitable for bats to be active), were as follows:
- 30 July 2020, sunset 20:52: air temperature 21 °C, light air, 0% cloud cover and no rain;
 - 26 August 2020, sunset 20:01: air temperature 20 °C, gentle south-westerly breeze, 25% cloud cover and no rain;
 - 15 September 2020, sunset 19:15: air temperature 23 °C, light air, 0% cloud cover and no rain.
- 5.4 Two transect routes around the Site were pre-planned to sample the range of habitat types and features considered to be of potential value to commuting and foraging bats. The transect routes are shown in **Figure 5.1**.
- 5.5 The surveys were conducted by two experienced bat workers from AEL (one surveyor assigned to each transect) on all visits. Both surveyors were equipped with a hand-held Anabat Scout full spectrum bat detector with an inbuilt GPS to record surveyor location throughout the survey as a GPS track, as well as recording all bat calls throughout the survey. The surveys commenced 15 minutes before sunset and lasted for 90 minutes after sunset.
- 5.6 Both surveyors spent the first 45 minutes of each survey at fixed starting points to record evidence of any bats commuting along the vegetated boundaries. From 30 minutes after sunset, both observers followed their respective transect route, walking at a constant pace around the Site.
- 5.7 All bats heard and/or seen were noted on paper maps by the observers, including whether bats were foraging or commuting, species if known and direction of flight. All bat calls recorded by the hand-held detectors were subsequently analysed using Anabat Insight software and identified to species (or the lowest possible taxonomic level) in accordance with Russ (2012)⁹.

⁹ Russ, J. (2012) *British Bat Calls – A guide to Species Identification*. Pelagic Publishing.



Automated bat activity survey

- 5.8 A long-term automated bat activity survey consisting of the deployment of a bat detector on the Site for five nights, was carried out in conjunction with each the manual transect survey. A Wildlife Acoustics SM4 full spectrum bat detector with SMM-U1 microphone was set up in vegetation on the edge of the woodland and scrub in the centre of the Site. The location of the automated detector is shown by **Figure 5.1**.
- 5.9 The long-term detector was, on each occasion, left for five consecutive nights, set to constantly record between dusk and dawn.
- 5.10 All call/sound files recorded by the long-term detector were analysed in accordance with Russ (2012). This analysis was completed primarily using Kaleidoscope, with further interrogation of calls of the difficult to separate *Myotis* species in Analook. Individual bat species call files per night were assigned relative abundance categories (<10, 10–20, 20–50, 50–100 or >100 call files) based on a review of the recorded calls. For less common species, such as *Myotis* spp. or Annex II species such as barbastelle *Barbastella barbastellus*, the exact number of recorded call files were counted.

Survey Findings

Roosting bats

- 5.11 None of the trees within the Site were of an age or size to support features of potential value to tree roosting bats, and no obvious bat roost features have been seen in any location within the Site.

Transect bat activity survey

- 5.12 Three species of bat were recorded during the walked transect surveys – common pipistrelle, soprano pipistrelle, and noctule. The first common pipistrelle was recorded at a mean time of 27 minutes after sunset (range 24–29 minutes). The first soprano pipistrelle was recorded at a mean time of 26 minutes after sunset (range 17–37 minutes). The first noctule was recorded at a mean time of 12 minutes after sunset (range 1–32 minutes).
- 5.13 The early arrival of noctules over the Site on the July and September surveys (one and four minutes after sunset, respectively) suggests that roosts of this species are present in close proximity to the Site. The two pipistrelle species typically leave their roost sites 15–30 minutes after sunset, and therefore the early arrival times of these species at the Site are indicative of nearby roosting.

Foraging bats

- 5.14 Each of the transect surveys recorded small numbers of foraging common and soprano pipistrelles, mostly in proximity to the most mature boundary scrub and woodland. Most sightings were of one or two foraging bats only, with a maximum of four common and soprano pipistrelles seen foraging around the central area of scrub and trees during the August survey.
- 5.15 The relative density and distribution of all individual bat encounters during the walked transect part of the three surveys is shown as a heatmap in **Figure 5.2**.



Commuting bats

- 5.16 Small numbers of commuting bats were noted, with individual common pipistrelles seen to fly east along the northern edge of the western field on both July and August surveys. Individual noctule and *Nyctalus* spp. bats were recorded commuting north over the Site on each survey, and with individual soprano pipistrelles commuting north in the eastern part of the Site in September (see **Figure 5.2**).

Automated bat activity survey

- 5.17 The number of calls recorded for each species across the three survey periods is shown in **Table 5.1**. As the detector for the July survey only recorded three nights of data, the number of bat calls recorded are not directly comparable, though the percentages attributed to each species are.

Table 5.1: Relative abundance of bat calls recorded by the long-term automated bat detector in July, August, and September.

Bat species	Number of call files recorded by survey period (and percentage of calls)			
	July	August	September	Total
Common pipistrelle <i>Pipistrellus pipistrellus</i>	231 (42.1%)	488 (54.5%)	729 (67.2%)	1,448 (57.3%)
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	260 (47.4%)	351 (39.3%)	340 (31.3%)	951 (37.6%)
Noctule <i>Nyctalus noctule</i>	3 (0.5%)	26 (2.9%)	5 (0.5%)	34 (1.3%)
Daubenton's <i>Myotis daubentonii</i>	14 (2.6%)	12 (1.3%)	2 (0.2%)	28 (1.1%)
<i>Nyctalus</i> spp. (Noctule or Leisler's)	22 (4.0%)	3 (0.3%)	2 (0.2%)	27 (1.1%)
<i>Pipistrellus</i> sp (Common or Soprano)	17 (3.1%)	8 (0.9%)	0	25 (1.0%)
<i>Myotis</i> sp.	1 (0.2%)	7 (0.8%)	3 (0.3%)	11 (0.4%)
Leisler's <i>Nyctalus leisleri</i>	1 (0.2%)	0	1 (0.1%)	2 (0.1%)
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	0	0	2 (0.2%)	2 (0.1%)
Brown long-eared bat <i>Plecotus auritus</i>	0	0	1 (0.1%)	1 (>0.1%)
Total (all species)	549	895	1,085	2,529

- 5.18 The detector on the July survey only recorded three nights of data. During those three nights it recorded an average of 176 call files per night, closely comparable to the 179 calls per night recorded in August. The September survey recorded increased levels of activity, with an average of 216 calls per night. This change coincided with a notable increase in the levels of common pipistrelle activity at the Site, with the numbers of other species remaining broadly comparable throughout the three survey periods.
- 5.19 A total of at least ten bat species were recorded by the automated detector survey, with the vast majority of all calls recorded relating to either common pipistrelle or soprano pipistrelle (95.8% of calls). The remaining calls were predominantly of the two *Nyctalus* species, noctule and Leisler's bat (2.5% of calls), and Daubenton's bat and unidentified *Myotis* species (1.5% of calls), with very small numbers of long-eared bat *Plecotus* spp. (assumed to be brown long-eared) and Nathusius' pipistrelle *Pipistrellus nathusii* making up the remainder. It is possible that brown long-eared bat, a relatively common species, may be under-represented in the data as the calls of this species are very quiet and often missed by bat detectors.



- 5.20 The mean times of first call for each survey period of the three most common species recorded by the survey, namely common pipistrelle, soprano pipistrelle, and noctule (including unidentified *Nyctalus* species) are shown in **Table 5.2** below. As with the transect survey findings, these data indicated the likely presence of roosts of these species in relative proximity to the Site.

Table 5.2: First call times of common bat species.

Bat species	Mean first call time (minutes after sunset) and range			
	July	August	September	Total
Common pipistrelle <i>Pipistrellus pipistrellus</i>	36.5 (36–37)	25.8 (20–29)	36.8 (35–39)	36.8 (20–39)
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	60 (51–69)	30 (24–38)	44 (29–69)	41.8 (24–69)
<i>Nyctalus</i> spp.	22 (1–43)	23.5 (14–30)	27.3 (22–40)	24.7 (1–43)

Evaluation

- 5.21 The approach to valuing the Site for roosting, commuting and foraging bats follows a scoring system set out by Wray *et al* (2010)¹⁰. This involves calculating a score based on several parameters including bat species, numbers of bats, number of roosts/potential roosts and the characteristics and value of associated habitats. To provide a geographic frame of reference the scores are calculated for each species, and where several bat species are present the highest values for roosting, foraging, and commuting are reported.
- 5.22 The categories for classifying the relative value of the Site for foraging and commuting bats can be summarised as follows:
- International importance = score > 50
 - National importance = 41–50
 - Regional importance = 31–40
 - County importance = 21–30
 - District, local and parish = 11–20
 - Not importance = 1–10

Commuting bats

- 5.23 The scrub and woodland assessed during the transect survey were used by individual common and soprano pipistrelle bats as commuting routes/flyways, and individual noctule bats were observed commuting high over the Site. Given the following parameters, the Site scores a total of 18 points and is therefore considered to be of “*District, local or parish*” importance for commuting bats.
- Species – noctule, rarer bat species (scores 5);
 - Number of bats – individual bats only (scores 5);
 - Roost / potential roosts nearby – moderate number / not known (scores 4);
 - Type and connectivity of linear features – Well-grown and well-connected hedgerows, small field size (scores 4).

¹⁰ Wray *et al* (2010) Valuing Bats in Ecological Impact Assessment. *In Practice*, December edition.



Foraging bats

5.24 A minimum of seven bat species have been recorded within the Site, but the overwhelming majority of calls were from the two most common species, common and soprano pipistrelle. Observations of foraging bats during the transect surveys only recorded these two species foraging at the Site, but small numbers of noctule and Daubenton's bat were recorded by the long-term static detector. Given the following parameters, the Site scores a total of 17 points and is therefore considered to be of "*District, local or parish*" importance for foraging bats.

- Species – noctule / Daubenton's, rarer bat species (scores 5);
- Number of bats – individual bats only (scores 5);
- Roost / potential roosts nearby – moderate number / not known (scores 4);
- Foraging habitat characteristics – isolated woodland patches, less intensive arable and/or small towns and villages (scores 3 points).





Harts Farm, Havant

Bat activity survey transect route long-term detector location

- Site boundary
- location of SM4 full spectrum bat detector
- transect start point
- transect survey routes

Figure 5.1

Map Scale @ A4: 1:2,500

Surveyed by: AEL

Survey date: July–Sept 2020

Drawn by: RD

Checked by: DP

Status: Final



Harts Farm, Havant

Transect bat survey findings

 Site boundary

Commuting bats (<30 mins after sunset)

 common pipistrelle
Pipistrellus pipistrellus

 soprano pipistrelle
Pipistrellus pygmaeus

 noctule
Nyctalus noctua

 *Nyctalus* spp.

Relative bat encounter density (n=107)

 High
Low
Relative density of all bat encounters during walked transects from all three surveys, (i.e. excluding bats recorded up to 30 minutes after sunset while surveyors were stationary).

Figure 5.2

Map Scale @ A4: 1:2,500

Surveyed by: AEL

Survey date: July–Sept 2020

Drawn by: RD

Checked by: DP

Status: Final



6 Hazel Dormouse

Methodology

- 6.1 A total of 100 dormouse nest-tubes were installed in suitable habitats around the Site in July 2020 (see **Figure 6.1**), in accordance with Natural England (NE) guidance¹¹.
- 6.2 The minimum survey effort required to confirm the presence or likely absence of dormouse from a site is set out in the *The Dormouse Conservation Handbook* (English Nature, 2006)¹². The minimum survey effort required is based on the probability of finding evidence of dormice during a survey, for instance through the presence of their nests within the nest-tubes and reflects the probability of detection during each month that dormice are normally active (see **Table 6.1**). Best practice survey guidance states that a survey needs to score over 20 points (by totalling up the index probability scores for each month covered by the survey) in order confirm the presence or likely absence of the species.
- 6.3 Where appropriate, the index of probability can be adjusted according to the number of tubes used – in this instance, 100 rather than 50 tubes were used and therefore the indices score shown for each month can be doubled.
- 6.4 The 100 nest-tubes used for the current survey were checked on 26 August and 15 September 2020. On this basis, the survey scores a total of 24 points, and is therefore valid according to best practice survey requirements.

Table 6.1: Dormouse nest tube index of probability.

Month	Index of probability (for 50 tubes)
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

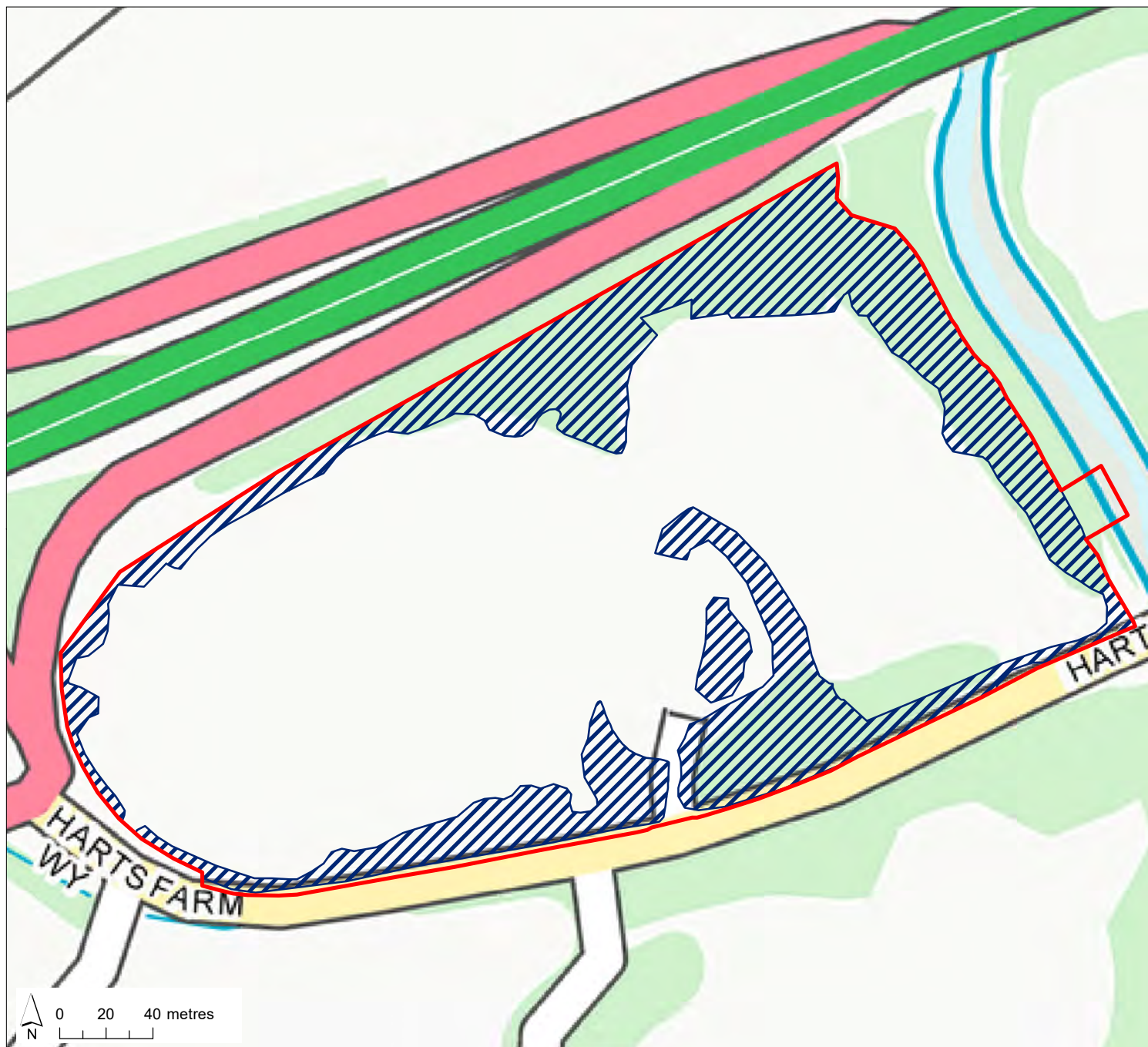
Survey Findings

- 6.5 No evidence of hazel dormouse was found on either check. Three dormouse nest-tubes were found to support wood mice *Apodemus sylvaticus* nests on 15 September.

¹¹ www.gov.uk/guidance/hazel-or-common-dormouse-surveys-and-mitigation-for-development-projects#survey-methods

¹² Bright, P, Morris, P, and Mitchell-Jones, T (2006) *The Dormouse Conservation Handbook*. English Nature, Peterborough.





Harts Farm Way, Havant

Hazel dormouse survey

- Site boundary
- woodland and scrub subject to dormouse survey - 100 dormouse tubes

Figure 6.1

Map Scale @ A4: 1:2,500

Surveyed by: RD

Survey date: July–Sept 2020

Drawn by: RD

Checked by: DP

Status: Final



7 Reptiles

Methodology

- 7.1 A seven-visit reptile presence / absence survey of all suitable on-Site habitat has been undertaken in-line with guidelines provided by the Herpetofauna Groups of Britain and Ireland¹³ (HGBI), as per the current recommendation provided on the Natural England website, as well as advice provided by Froglife (1999)¹⁴.
- 7.2 The optimal months for reptile survey are April, May, and September and during these months the recommended times to check artificial refuges are from 08:30 to 11:00 in the morning, and from 16:00 to 18:30 in the evening, to avoid the heat of the midday sun. Note that checking at other times is acceptable providing weather conditions are suitable. Survey should also ideally take place when the air temperature is between 9 °C and 18 °C. However, changes in weather type can also influence the results, with the likelihood of seeing reptiles increasing, for example, on hot days following a cooler spell; or in showery weather conditions following a prolonged dry spell.
- 7.3 In terms of the current survey, 40 artificial reptile refugia (bitumastic roofing felt mats) each measuring 1 x 0.5 m were placed out in eight groups of five in areas of suitable reptile habitat across the Site on 26 August 2020 as shown by **Figure 7.1**. There was just under 4 ha of semi-improved grassland habitat at the Site, so the refugia were at a density of approximately ten per hectare, in line with best practice guidance.
- 7.4 Refugia are typically left in situ for two weeks to allow any reptiles present sufficient time to locate them prior to the first survey visit. However, the survey start date was brought forward as several slow-worms were located beneath refugia on 2 September 2020. The first survey visit took place on 4 September, with the remaining six survey visits undertaken on 8, 11, 15, 17, 21, and 25 September 2020.
- 7.5 During each visit, all refugia were checked for reptiles basking on or sheltering underneath them and the number, age category, species and location of any reptiles found was recorded.

Survey Findings

- 7.6 The results of the reptile survey are provided in **Table 7.1**. In summary, three of the groups of refugia recorded no slow-worms (groups 3, 7, and 8), but overall, the findings suggest that the species is present throughout most of the grassland at the Site at moderate density.

¹³ Herpetofauna Groups of Britain and Ireland (1998). *Evaluating local mitigation/translocation programmes: Maintaining best practice and lawful standards*. HGBI advisory notes for Amphibian and Reptile Groups (ARGs). HGBI, c/o Froglife, Halesworth. Unpubl.

¹⁴ Froglife (1999) *Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.

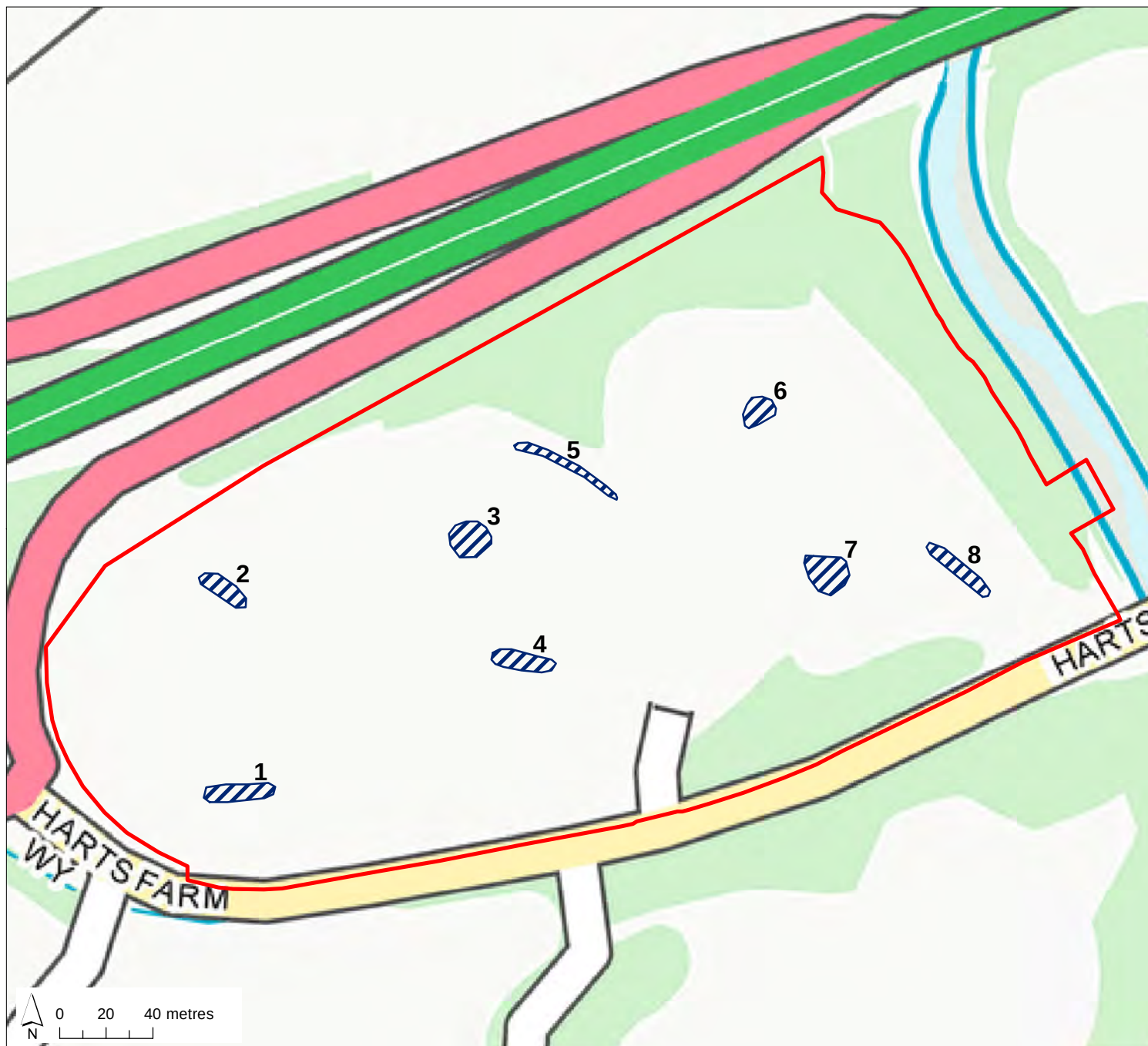


Table 7.1: Reptile refugia survey results.

Date	Time	Weather conditions	Findings	Total (adults)
4 Sept	10:00	17 °C, 100% cloud, no wind or rain.	Slow worm: one adult male, three adult females. Three in group 4, one in group 5.	4 (4) slow-worm.
8 Sept	09:20	17 °C, 95% cloud, no wind or rain.	Slow-worm: one adult male, three adult females, four sub-adults. Two in group 1, one in group 4, five in group 6.	8 (4) slow-worm.
11 Sept	09:00	16 °C, 95% cloud, no wind or rain.	One adult male, five adult females. One in group 1, two in group 4, three in group 6.	6 (6) slow-worm.
15 Sept	18:30	18 °C, 30% cloud, wind Beaufort 2, no rain.	Two adult females. One in group 5, one in group 6.	2 (2) slow-worm.
17 Sept	09:00	16 °C, 0% cloud, wind Beaufort 4, no rain.	Two adult females, one sub-adult. One in group 1, one in group 4, one in group 6.	3 (1) slow-worm.
21 Sept	10:00	17 °C, 0% cloud, wind Beaufort 2, no rain.	One adult male, one adult female, one sub-adult. One in group 1, one in group 4, one in group 6.	3 (2) slow-worm.
25 Sept	12:30	14 °C, 40% cloud, wind Beaufort 4, no rain.	One adult female. One in group 2.	1 (1) slow-worm.

7.7 According to the definitions provided by Froglife (1999), the Site was found to support a 'good' population of slow-worm (maximum daily count six adults).





Harts Farm, Havant

Reptile refugia locations

- Site boundary
- groups of five refugia

Figure 7.1

Map Scale @ A4: 1:2,500

Surveyed by: AEL

Survey date: September 2020

Drawn by: RD

Checked by: DP

Status: Final



8 Other Fauna

Methodology

- 8.1 The standard Phase 1 habitat survey was "extended" to include a search for evidence of or potential for the presence of protected species or species of nature conservation interest within and close to the Site. This was not a detailed survey for such species, but included noting the presence of habitats suitable to support specific protected species, and where seen, any evidence of presence such as droppings, mammal tracks and footprints, shelters (or nests/roosts), hair caught on fence-wire, foraging signs, and so on.

Great crested newt

- 8.2 In advance of the survey the 1:25,000 scale Ordnance Survey map was checked, and online aerial photos inspected to identify any ponds within 250 m of the Site that could potentially support breeding populations of the legally protected amphibian great crested newt *Triturus cristatus* (GCN).

Water vole and otter

- 8.3 The small part of the Site which extends towards the Hermitage Stream, was checked for evidence of water vole and otter by Dr Chris Bate ACIEEM on 2 February 2021.

Survey Findings

Great crested newt

- 8.4 A single waterbody was identified within 500 m of the Site boundary. However, this was hydrologically connected to the adjacent Hermitage Stream, a watercourse certain to contain fish populations. The possible presence of breeding GCN in this waterbody has therefore been discounted and given the absence of GCN records from the wider area, the species is considered to be absent from the terrestrial habitats within the Site.

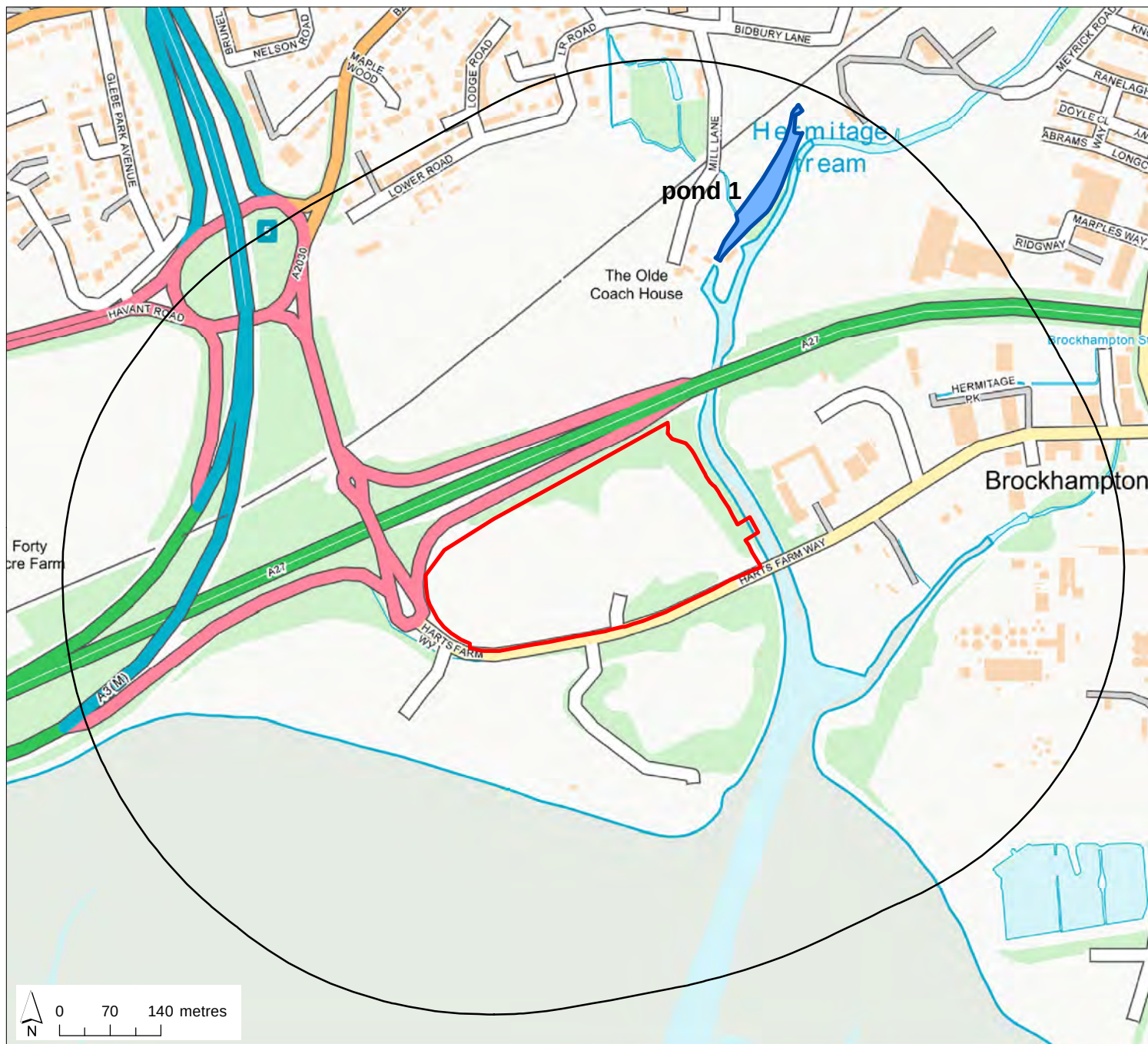
Badger

- 8.5 No field evidence of badger was seen during the Phase 1 habitat survey or subsequent visits to the Site. While finger-tip searches of all dense scrub areas were not possible to complete, there were no obvious well-used mammal paths/runs leading from this habitat and, on balance, we believe the Site is unlikely to support a hidden high status badger sett in dense vegetation.

Water vole and otter

- 8.6 There was no evidence of water vole, such as feeding signs or burrows, and no signs of otter presence such as spraints or any suitable features for an otter holt, on the very small section of the bank of Hermitage Stream within the Site boundary. Impacts on these species are not a constraint on the Development.





Harts Farm Way, Havant

Waterbodies within 500 m

- Site boundary
- 500 m from Site boundary
- waterbodies within 500 m

Figure 8.1

Map Scale @ A4: 1:8,000

Surveyed by: n/a

Survey date: n/a

Drawn by: RD

Checked by: DP

Status: Final



9 Development Effects

Habitat Regulations Assessment Screening - Impacts on Designated Sites and Brent Geese

- 9.1 The Site is not covered by any statutory or non-statutory wildlife site designation and does not support ancient woodland.

Overview of potential impacts

- 9.2 The Site is 170 m to the north of the internationally important statutory designated sites Solent Maritime SAC, and Chichester and Langstone Harbours SPA and Ramsar, as well as nationally important Langstone Harbour SSSI, along with Chichester Harbour SSSI, a component part of the SPA.
- 9.3 Given the distance between the Site and these internationally designated sites significant direct impacts on the SPA, Ramsar and/or the SAC are not predicted. Significant indirect impacts, for instance the displacement of winter birds within the SPA due to construction-related noise and visual disturbance, are not anticipated given the distance from the SPA, and existing screens including earth banks, mature woody vegetation, and roadside hedgerows.
- 9.4 In addition, a proposed commercial Development of this type would not be expected to significantly increase the number of people using the footpath along the sea wall adjoining the SPA, particularly in the context that there is already a large car-park, boat storage yard and slipway on the edge of the shoreline, which means the area already appears to be subject to significant public use and disturbance.
- 9.5 The potential impact of the Development on the integrity of these designated sites is restricted to the loss of grassland habitat which represents a theoretical foraging resource for wintering brent geese (a qualifying species of the SPA).

Potential impacts on brent geese

- 9.6 The western part of the Site is identified as a Solent Wader and Brent Goose Strategy (SWBGS) site (H08) in recognition of its potential suitability for brent geese and reflecting past records for this species. The SWBGS sites network was set up to protect and mitigate the impact of development on the network of coastal grasslands outside of the SPA that waders and brent geese depend upon.
- 9.7 Although this species was recorded using the western part of the Site by a SWBGS survey in the winter of 2007–8, subsequent extensive surveys have not recorded their use of the Site since. No brent geese have been recorded from the Site during two wintering bird survey visits undertaken by AEL in January and February 2021. This finding is not surprising given the suitability of the Site for brent geese has declined significantly due to its progressive enclosure by existing and new boundary hedges and trees, the absence of grassland management and increased recreational use.



- 9.8 Although significant impacts on brent geese, and therefore the integrity of the SPA, are not predicted in relation to the proposed Development, subsequent discussions with Natural England have confirmed that compensation for the loss of SWBGS H08 will be expected following planning approval. The expectation is that the level of compensation required will be based on the loss of 4.47 ha of SWBGS land.

Habitats Impacts and Mitigation

- 9.9 The extent of Development-related habitat loss and compensation in the form of new soft landscaping is shown by the Landscape Masterplan provided in **Appendix E**.
- 9.10 Except for areas of planted woodland along the northern, eastern, and southern boundaries, all habitats within the Site will be removed during Site clearance and construction.
- 9.11 Compensation for habitat loss will include the following:
- Proposed woodland planting – 7,615 m².
 - Proposed wildflower grassland – 6,830 m².
 - Proposed amenity grassland – 1,725 m².
 - Proposed amenity tree and shrub planting – 1,660 m².
 - Proposed slow-worm translocation area – 4,855 m².

Reptile Impacts and Mitigation

- 9.12 All areas of open grassland within the Site will be impacted during construction which could result in the killing and/or injury of slow worm during Site clearance and have long-term effects due to a reduction in the extent and quality of reptile habitat.
- 9.13 The following reptile mitigation strategy is being proposed:
- Slow worms within the Site will be caught and moved to a temporary receptor area in advance of construction. See Landscape Masterplan in **Appendix E** for proposed receptor area location.
 - The temporary receptor area is located beneath existing power lines and currently consists of bramble scrub and bracken that is unsuitable for reptiles. The proposed receptor area will be cleared of scrub before the end of February 2021 to avoid the bird nesting season. The cleared ground will be subject to grass reseeding, weed control, and hibernacula creation to create a suitable reptile habitat. The designated receptor will be enclosed within reptile fencing prior to beginning the reptile capture and this fencing will remain in place while Site clearance and construction is ongoing.
 - The post-Development soft landscaping will create a substantial buffer of wildflower grassland around the Site's boundary for the long-term benefit of slow worms. Linear earth screening bunds have also been designed to incorporate scalloped edges and a variety of slopes and aspects to directly benefit reptiles.
 - Following Development construction and landscaping the reptile fence around the temporary slow-worm receptor area will be removed to allow reptiles to colonise and expand into newly created habitats around the Site's boundary.



- The grassland will be managed by annual cutting to provide suitable reptile habitat in the long-term.

Breeding Bird Impacts and Mitigation

- 9.14 The loss of scrub and woodland is likely to result in a reduction of breeding bird species and number across the Site, with the possible loss of more sensitive scrub nesting species. The removal of open grassland means the Site is unlikely to be of value to foraging barn owl in the future. However, the Site represents only a small proportion of the local foraging resource for this species and loss of the Site for foraging is unlikely to be significant in overall terms.
- 9.15 In order to avoid killing and/or injuring breeding birds, the clearance of any potential bird nesting habitat (e.g. trees and scrub) must take place outside of the bird breeding season (i.e. over the period September–February), or, if during the breeding season, immediately after a check by an experienced ornithologist that verifies nesting bird absence from the Site.
- 9.16 Compensation for the loss of breeding bird habitat will be provided in the form of new woodland planting and wildflower grassland creation, and the installation of tree mounted bird boxes in retained woodland.

Bat Impacts and Mitigation

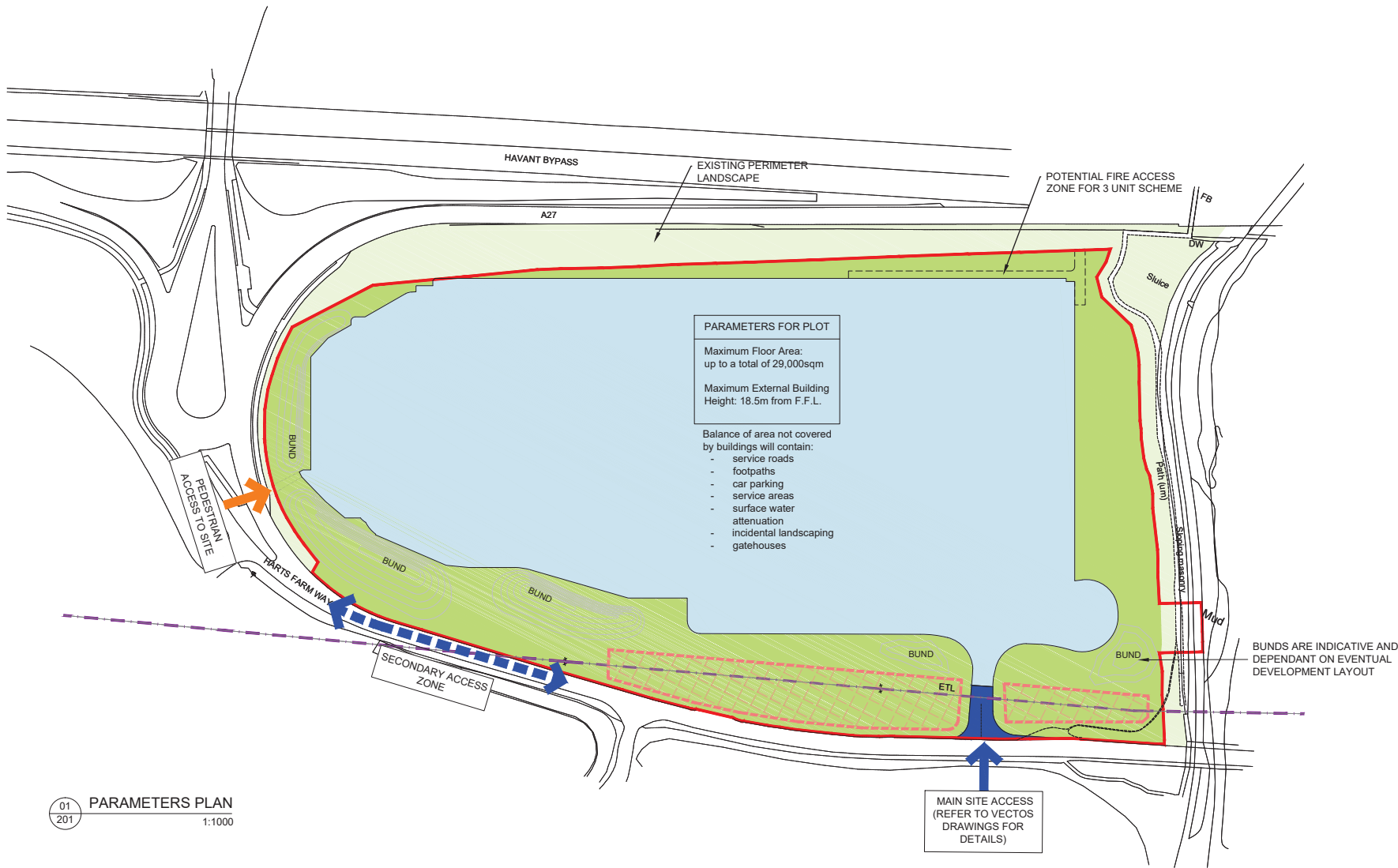
- 9.17 The Site supports an assemblage of bats dominated by the two most common species (common and soprano pipistrelle) that mainly use boundary scrub and woodland for foraging and commuting in small numbers.
- 9.18 To minimise the impact of the Development on bat activity, a sympathetic lighting strategy has been designed to avoid directly lighting the boundary habitats (see **Appendix F** for rendered images). Opportunities for the provision of integrated bat boxes into new buildings should be considered.



Appendix A

Parameter Plan





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KEY:

- DEVELOPMENT ZONE
- LANDSCAPE BUFFER (INCL. PEDESTRIAN & SECONDARY ACCESS)
- PROTECTED AREA FOR SLOW WORMS
- MAIN SITE ACCESS
- SECONDARY SITE ACCESS ZONE
- PEDESTRIAN ACCESS
- OVERHEAD CABLES

SITE AREA (APPROX.)	Ha	acres
Development Zone	5.533	13.671
Landscape Buffer (incl. footpaths)	2.824	6.977
TOTAL	8.357	20.648

REV	09/02/2020	First Issue	AH	AC
DATE	NOTE	DRAW	CHK	

MICHAEL SPARKS
ASSOCIATES

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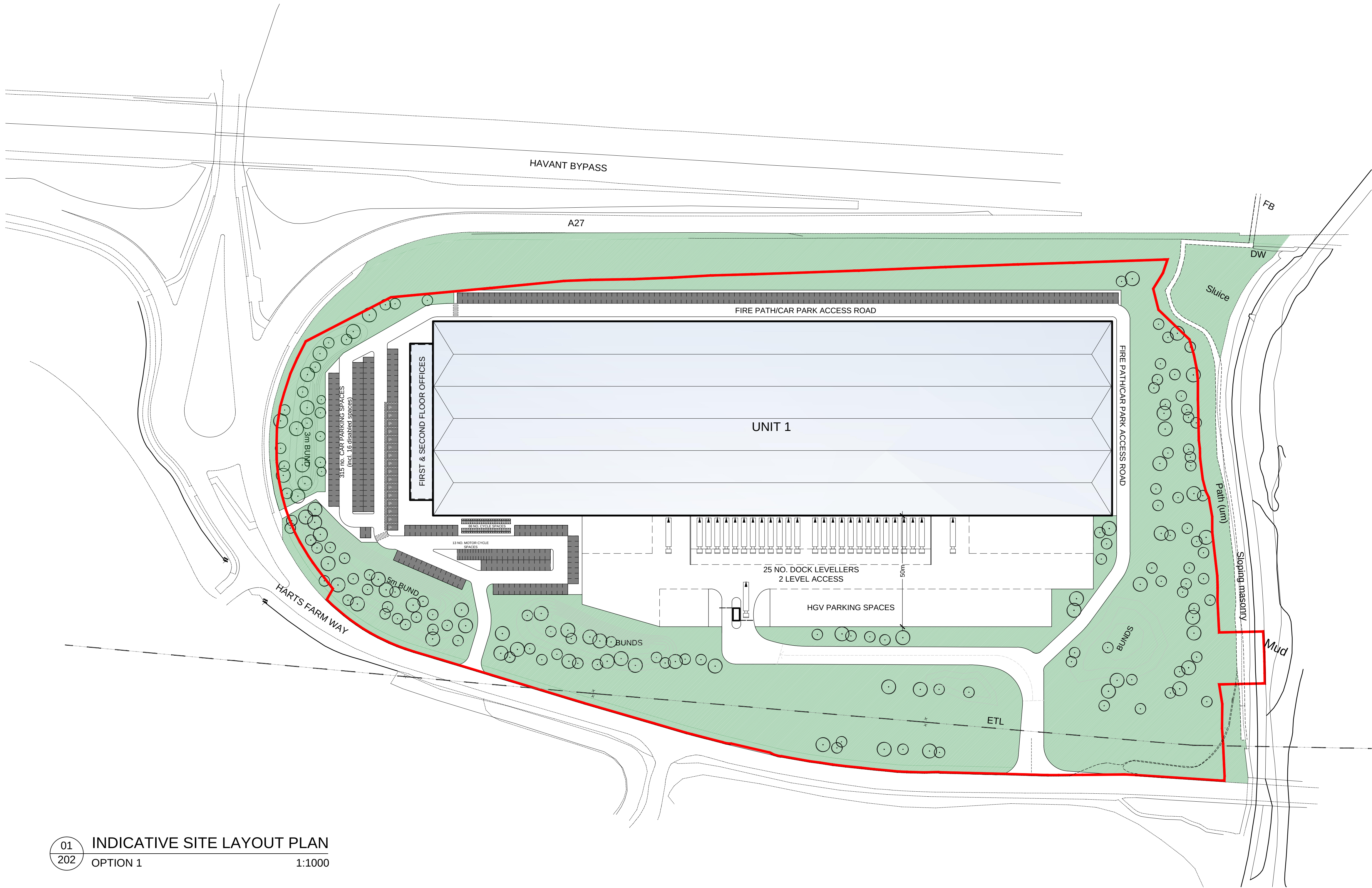
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Appendix B

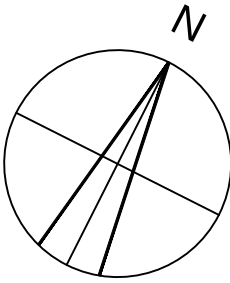
Indicative Masterplan Options





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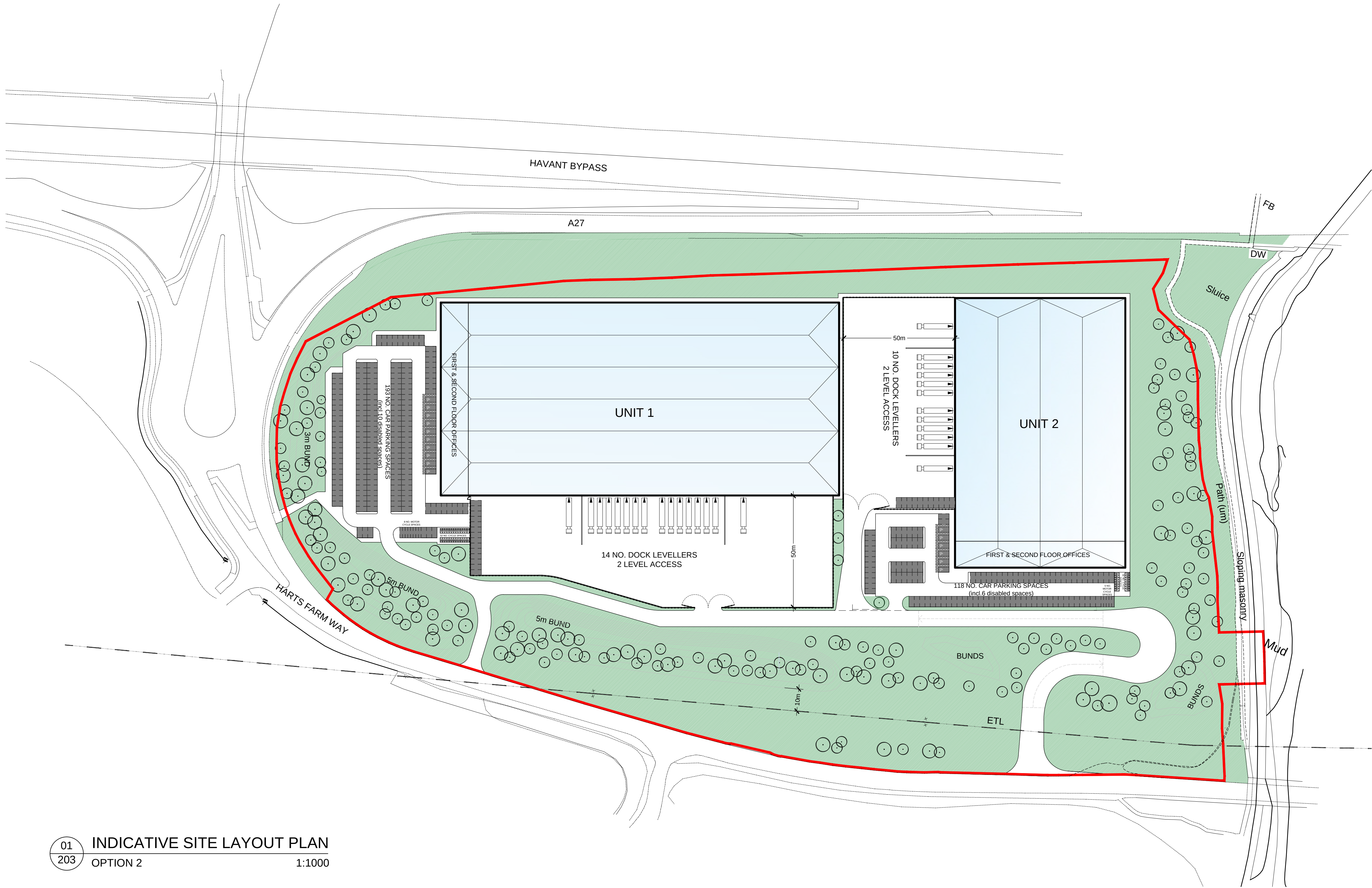


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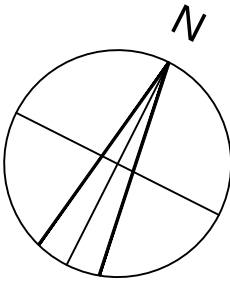
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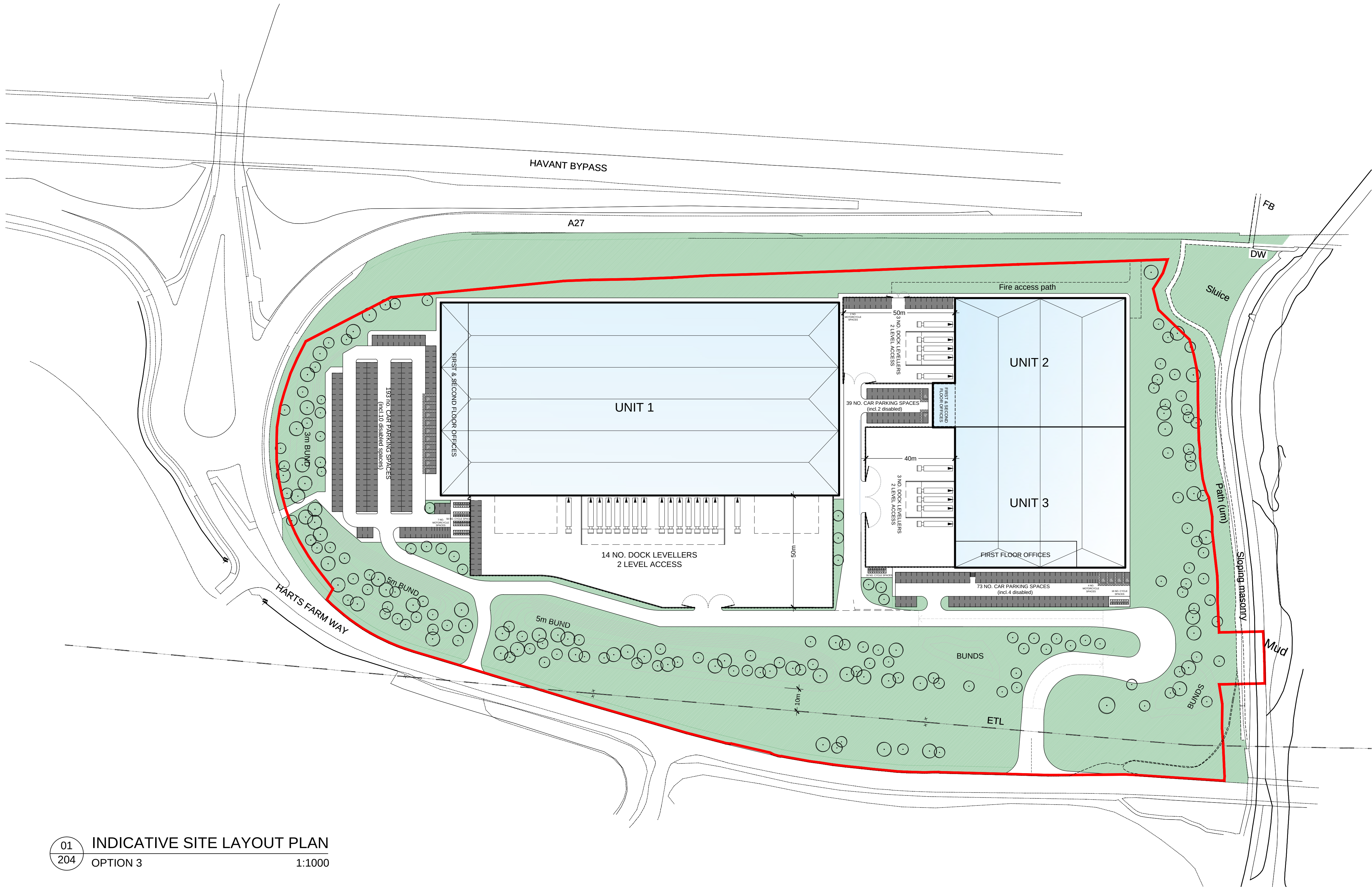
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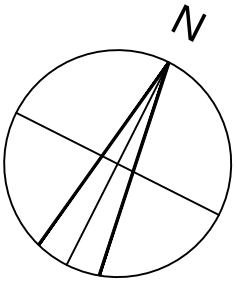
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203 INDICATIVE SITE LAYOUT PLAN
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204 OPTION 3 1:1000

Appendix C

Brent Geese Assessment





Use of land (H07D & H08) at Harts Farm Way, Havant by wintering Brent Goose

Summary

In September 2020, Applied Ecology Ltd (AEL) was commissioned by CWC Developments (UK) Ltd to complete an ecological assessment of a restored former land-fill site located off Harts Farm Way, Havant ("the Site"). This included an assessment of the potential value of the Site as high tide foraging habitat for wintering dark-bellied brent geese *Branta bernicla bernicla* (hereafter "brent goose"). The assessment forms part of a wider ecological assessment of the Site to support a planning application for industrial (warehouse) development within the Site. The Site is allocated for development for employment uses within the adopted Development Plan for Havant Borough, and the principle of this development is supported by the Local Planning Authority.

Historically the Site was used for land-fill and, since its restoration, has been identified as part of the Solent Waders and Brent Goose Strategy (SWBGS)¹ as land that has been used by brent goose in the winter months. The Site divided into two SWBGS areas referred to as H07D (eastern side of the Site) and H08 (western) – see **Figure 1**. The SWBGS relates to the internationally important wintering brent goose and wader populations associated with the three Special Protection Areas (SPAs) associated with the Solent coastline² which are also collectively designated as Wetlands of International Importance under the Ramsar Convention (commonly known as Ramsar sites). The Solent is reported to support approximately 30% of the UK's 98,000 wintering brent goose population i.e. circa 29,400 geese.

The eastern part of the Site (H07D) has never been known to support wintering brent geese and is classified by the SWBGS as a land area with only negative records (no records of brent goose use). The larger western land area (H08) is reported to have supported brent geese during the winter of 2007-08, and H08 is classified by the SWBGS as a low use site (a site that has records of birds, but in low numbers). The maximum number of brent geese recorded on the Site in 2007-08 was 69 birds which represents circa 0.2% of the estimated total of the Solent wintering geese population.

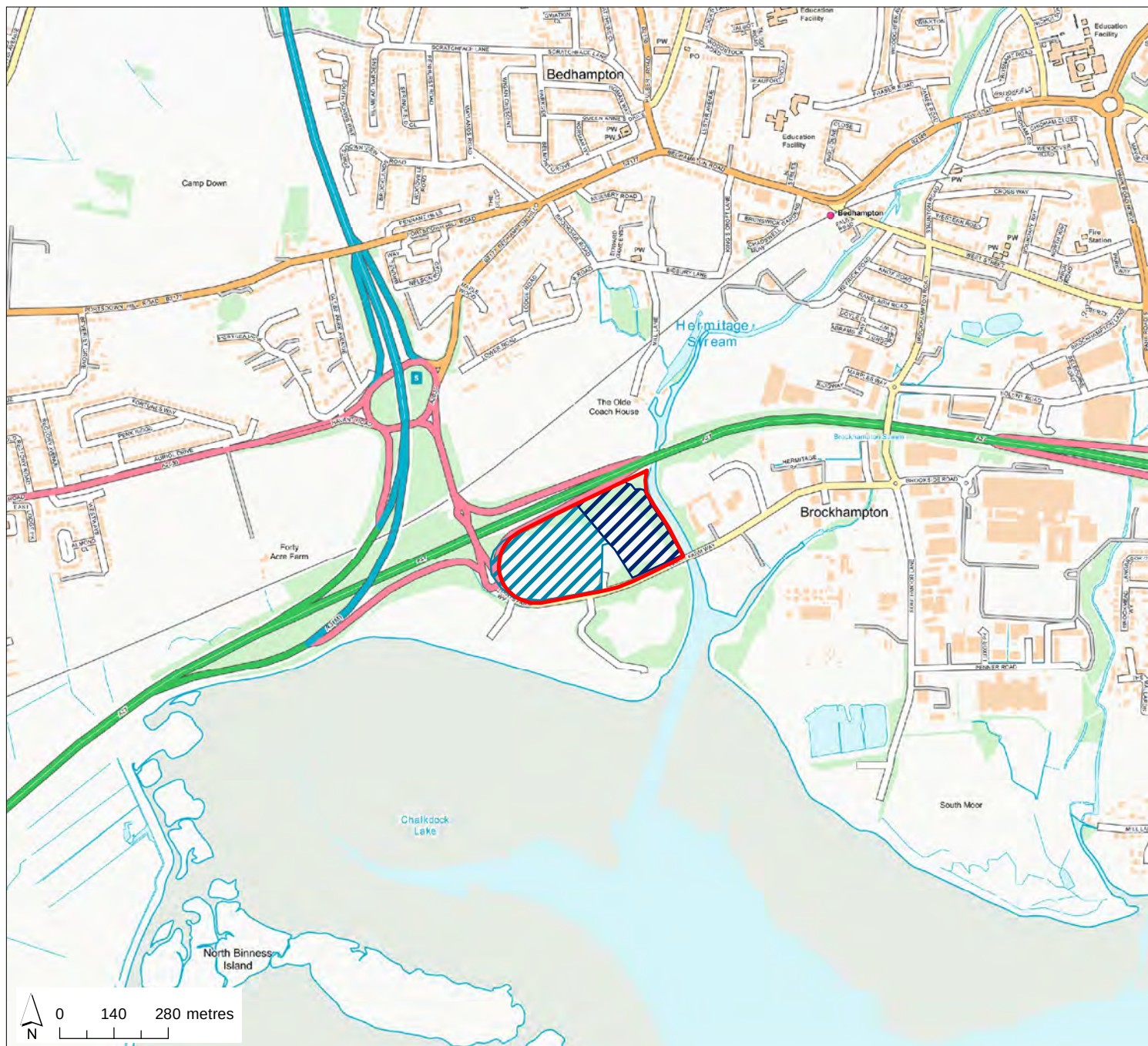
We contend that H07D has never been used by wintering brent geese and use of the adjoining H08 land area by wintering geese has only ever been short-term and transient during the winter of 2007-08 when specific landscape conditions within H08 (which no-longer persist) were favourable for use by low numbers of brent geese. Since 2011 the Site has persisted in a physical state that is unattractive to brent geese with planted boundary hedges and trees that have grown up and limit sightlines for geese within the Site, and open grassland that is tall and rank and unsuitable for geese grazing. Since 2011 a network of informal footpaths that connect to offsite public rights of way have also formed within the Site, and both H08 and H07D are used regularly by walkers and dog walkers that significantly limits the value of the Site for geese and other wading birds. The eastern part of the Site (H07D) appears to have had a longer history of informal footpath use with a network of paths evidence in the area since at least 1999.

Since the winter of 2007-08 repeat winter survey visits for geese and waders have been completed within the Site but none of these surveys have ever reported a positive record for brent geese - indicating brent

¹ King, D. (2002) *Solent Waders and Brent Goose Strategy 2010*. Hampshire and Isle of Wight Wildlife Trust.

² Solent & Southampton Water SPA, Portsmouth Harbour SPA and Chichester & Langstone Harbours SPA.





Harts Farm Way, Havant

Site location

- Site boundary
- H07D
- H08

Figure 1

Map Scale @ A4: 1:15,000

Surveyed by: n/a

Survey date: n/a

Drawn by: RD

Checked by: DP

Status: Final



goose absence since it was first noted on the Site in 2007-08. In summary, the Site appears to have been unsuitable for brent geese since at least 2011, and its current inclusion within the SWBGS is considered to be misleading and erroneous. The proposed redevelopment of the Site for industrial use would not result in a significant indirect adverse impact on brent geese or the ecological integrity of the Solent SPA because the land area has never been particularly important for the species, and it does not appear to have been used by brent geese for over 11 years since the last and only record for brent goose was recorded within the Site.

Brent goose ecology

The brent goose is a winter visitor to the Solent and is of high international nature conservation importance. Following several decades of low population levels numbers increased to a peak in the early 1990s, after which a general downward trend has been observed. The most recent population estimates give a total of 98,000 wintering in the UK (Frost *et al* 2019)³.

It is estimated that the Solent supports about 10–13% of the world population of dark-bellied brent geese and about 30% of the UK population (Stillman *et al* 2009)⁴. During the winter of 2007–2008, the maximum number of brent geese recorded within the Site (H08) was 69 birds on one survey occasion which represents circa 0.2% of the Solent wintering population. Since this time no positive brent geese records have been reported within the Site.

Brent geese arrive in the UK from mid-September with numbers reaching a peak in January, and most departing by late-February. Brent geese traditionally winter on coastal mud flats and saltmarsh; however, since the 1950s, brent geese have diversified their feeding habits to include farmland with cereals and pasture and amenity grassland. Brent geese feed in daylight and use terrestrial feeding sites most frequently at high tide.

The suitability of a site for brent geese depends on a number of factors, including proximity to the coast, the size of the available grazing area, the type of grassland management, visibility, and disturbance.

Most sites used by brent geese are within 5 km of the coast and are large, open fields with clear sight lines (McKay *et al* 1996⁵; Hampshire Brent Goose Strategy Group, 2020). Brent geese prefer large field sizes and avoid smaller fields, with a study in North Norfolk finding a mean size of 5 ha (Summers and Critchley 1990)⁶ being the minimum size required.

On coastal grassland, short grass is preferred (McKay *et al* 1996), and fields with the fewest thistles are also preferentially selected by foraging geese. The addition of fertilisers significantly improves the attractiveness of sites to brent geese.

Brent geese are also sensitive to disturbance, such as that from walkers with or without dogs, and avoid sites where such disturbance is too great (Riddington *et al* 1996⁷; Hampshire Brent Goose Strategy Group, 2020).

Summary of brent goose habitat preferences on coastal grassland:

³ Frost, T., Austin, G., Hearn, R., McAvoy, S., Robinson, A., Stroud, D., Woodward, I., and Wotton, S. (2019) *Population estimates of wintering waterbirds in Great Britain*. British Birds 112: 130–115.

⁴ Stillman, R.A., Cox, J., Liley, D., Ravenscroft, N., Sharp, J., and Wells, M. (2009) *Solent disturbance and mitigation project: Phase 1 report*. Solent Forum.

⁵ McKay, H.V., Langton, S.D., Milson, T.P., and Feare, C.J. (1996) *Prediction of field use by brent geese: an aid to management*. Crop Protection 15(3): 259–268.

⁶ Summers, R.W. and Critchley, C.N.R. (1990) *Use of grassland and field selection by brent geese Branta bernicla*. Journal of Applied Ecology, 27(3): 034–046.

⁷ Riddington, R., Hassall, M., Lane, S.J., Turner, P.A., and Walters, R. (1996) *The impact of disturbance on the behaviour and energy budgets of Brent Geese Branta bernicla*. 43: 269–279.



- Large sites / fields with good sight lines – fields heavily enclosed by trees or buildings being avoided;
- Short grass <12 cm, but typically <5 cm if not heavily fertilised, longer swards and those with many thistles avoided;
- Free from disturbance.

In summary the Site comprises two relatively small rank grassland fields – H08 (2.9 ha) and H07D (1.5 ha) which are suboptimal for brent geese in terms of their overall small size, grassland structure and the regular presence of disturbance by use of the Site by walkers and dog walkers using informal footpaths that are connected to off-site public rights of way.

Historical brent goose records at the Site

The Hampshire Biodiversity Information Centre (HBIC) was commissioned by AEL to complete a search of its database for records of brent goose within 2 km of the centre of the Site. These records, incorporating records of brent goose presence and absence, mainly relate to surveys commissioned to inform the SWBGS. Brent goose survey reports have also been kindly supplied by Havant Borough Council.

Brent goose surveys of the Solent area were conducted to inform the SWBGS over the winters 2006–07, 2007–08, and 2008–09. Following the identification of potentially suitable sites, surveys were conducted with visits taking place every two weeks over the survey period. This survey work recorded no use of the eastern part of the Site (H07D) by brent geese, but recorded six separate records of brent geese using the western half of the Site (H08) between 15 December 2007 and 20 January 2008, with up to 69 feeding birds (mean = 46.3) recorded. As described previously the maximum number of 69 birds equates to circa 0.2% of the total estimated Solent wintering brent goose population of 29,400 birds.

Additional survey work to inform the SWBGS has continued over time and included surveys to update the SWBGS in 2016–17⁸ and specific surveys commissioned by Havant Borough Council. All of these surveys have reported only zero use of the Site by brent geese. The surveys included 12 survey visits to H08 and H07D over the winter of 2011–12⁹, and 24 visits to H08 and H07D during the winter of 2013–14¹⁰ – all recording no use of the Site by brent geese.

Based on the available survey data, it can be concluded that brent geese have only ever been present in small numbers on Site in H08 during the winter of 2007–08, and have not used the Site in a significant way, if at all, since that time.

Historical habitat changes at the Site 1999–2020

The 2013–14 brent goose winter survey report describes the grass sward at H08 as relatively long (> 20 cm) following an autumn cut, and also notes the presence of well-used paths across the centre of the grassland.

Using aerially imagery available on Google Earth, the land use within the Site on nine dates between 1999 and 2020 (where images are available) has been summarised using ArcGIS to document the changes in the habitats present over time, as well as informal footpath development within the Site – see **Figure 2**.

While only broad conclusions can be drawn from this assessment, particularly with regard to grassland management, it does provide useful insight into changes in the Site's potential suitability for brent geese over time and are summarised on **Figure 2** as follows:

⁸ Whitfield, D. (2019) *Solent Waders and Brent Goose Strategy 2019 Interim Project Report: Year One*. Hampshire and Isle of Wight Wildlife Trust, Curdridge.

⁹ Crook, J. (2012) *Broadmarsh brent goose survey – Final Report December 2011- March 2012*. Unpublished report to Havant Borough Council



- 1999 – prior to this date the Site was in use as a land-fill. By 1999 it appears the Site was in the final stages of being restored. Both grassland areas (in H07D and H08) were established and appear to be a relatively short uniform sward with the western area (H08) still partly bare ground. The surrounding vegetation is well-established, appearing to include semi-mature trees and scrub. An informal footpath is present in the eastern part of the Site, suggesting recreational use in H07D.
- 2004 – the grassland areas are undisturbed and appear to be tussocky and unmanaged. The boundary trees and scrub have continued to develop fully screening the grassland areas.
- 2005 – the boundary trees and scrub in the west of the Site have been recently removed, opening up the Site in terms of goose sight lines.
- 2007 – road construction work appears to be ongoing to the west of the Site. Areas of topsoil have been removed from the west (H08). The eastern part remains (H07D) unchanged with well-worn footpaths across and around the edge of the grassland.
- 2011 – the Site appears to have been restored following completion of road work construction, the grassland appears to have been mown at some point, appearing more uniform than previously, and it is possible to discern a recently planted hedgerow around the perimeter of the western part of the Site. The route of a footpath through the grassland leading across the Site from a new access point in the west can be discerned, as well as the existing paths in the east of the Site.
- 2015 – the grassland appears rank and unmanaged, several well-established paths are present, following the routes still present in 2020, and the new boundary scrub in the west is maturing.
- 2016 – as in 2015, with further maturing of boundary vegetation.
- 2019 – rough grassland across the Site, well-used footpaths and dense boundary vegetation.

Based on the above summary it seems likely that the habitat conditions within the Site were only ever suitable for foraging brent geese for a relatively short period of time following the removal of boundary vegetation sometime between 2004 and 2005, most likely for a few years following restoration of the western part of the Site after completion of the adjacent road building in 2007.

By 2015 the boundary vegetation around H08 had re-established and the grassland appeared to have reverted to a rank, longer sward with a greater number of well-worn footpaths. The eastern section has remained unsuitable for brent geese throughout the period, being well enclosed by trees and scrub and subject to regular recreational disturbance.

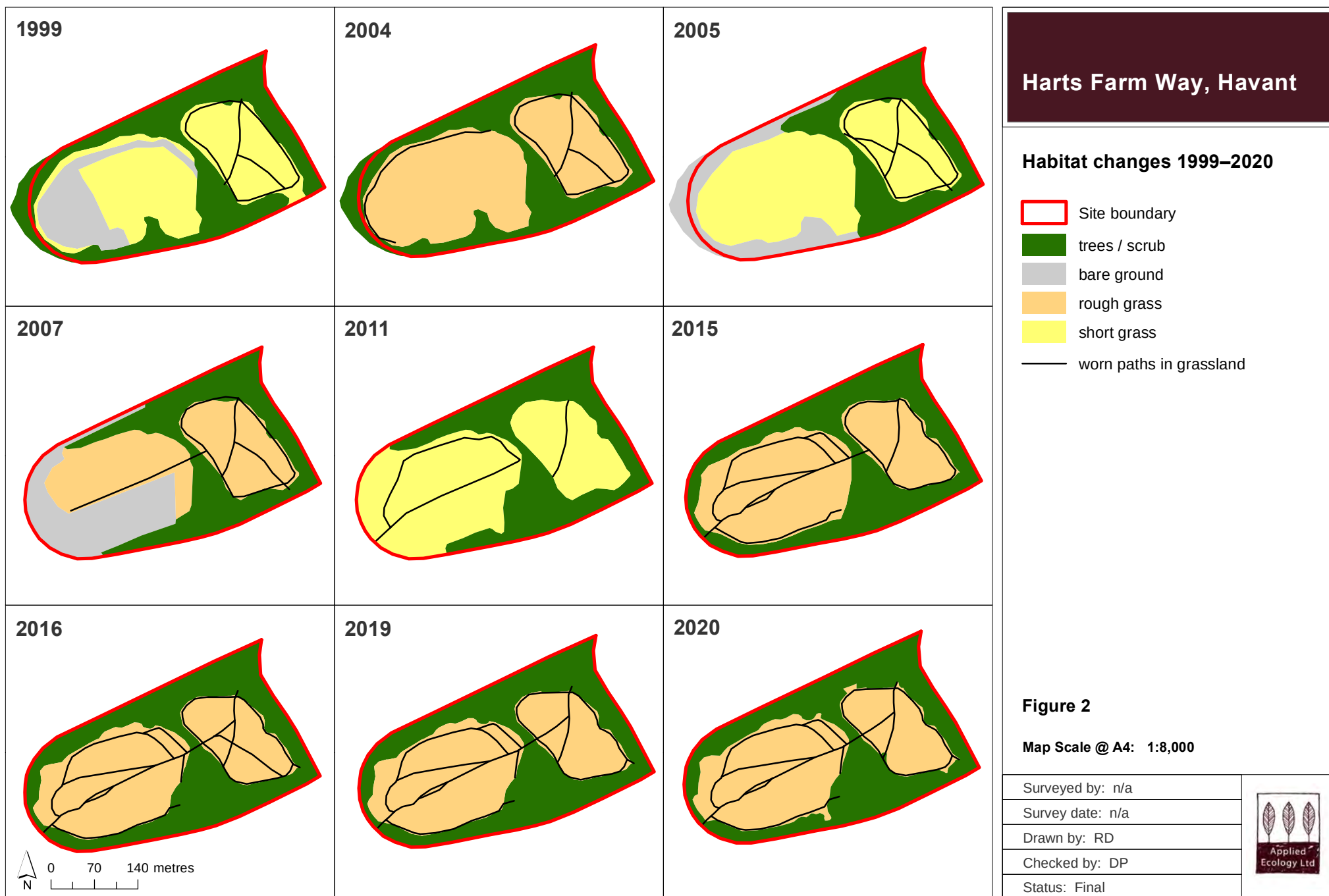
Current habitats at the Site

A Phase 1 habitat mapping survey of the Site was conducted by AEL in May 2020 and verifies that it comprises two areas of rough (unmanaged) semi-improved neutral grassland with a large component of tall ruderal species – principally creeping thistle *Cirsium arvense*. The grassland is surrounded by areas of plantation woodland and scrub and has several well-used informal footpath routes that connect to existing off-Site public rights of way used by walkers and dog walkers.

In its current state the Site is unsuitable foraging habitat for brent geese as the grassland areas are too small and enclosed by mature scrub and trees that limit goose sight lines and are also too rank with an unsuitable sward that in places is dominated by tall ruderal species. The Site is also subject to regular disturbance by walkers and dog walkers.

Photographs of the Site taken in 2020 are provided below.





Appendix D

Plant species lists



DAFOR: D = dominant, A = abundant, F = frequent, O = occasional, R = rare, (LD =locally dominant).

Semi-improved neutral grassland.

Species	DAFOR
False oat-grass <i>Arrhenatherum elatius</i>	A
Red fescue <i>Festuca rubra</i>	A
Meadow brome <i>Bromus commutatus</i>	A
Yorkshire-fog <i>Holcus lanatus</i>	F
Cock's-foot <i>Dactylis glomerata</i>	F
Reed canary-grass <i>Phalaris arundinacea</i>	F
Common knapweed <i>Centaurea nigra</i>	F
<i>Allium</i> spp.	F
Creeping thistle <i>Cirsium arvense</i>	F
Creeping cinquefoil <i>Potentilla reptans</i>	F
Corky-fruited water-dropwort <i>Oenanthe pimpinelloides</i>	F
Common couch <i>Elytrigia repens</i>	O
Meadow foxtail <i>Alopecurus pratensis</i>	O
Tall fescue <i>Festuca arundinacea</i>	O
Meadow barley <i>Hordeum secalinum</i>	O
Barren brome <i>Anisantha sterilis</i>	O
Rough meadow-grass <i>Poa trivialis</i>	O
Creeping bent <i>Agrostis stolonifera</i>	O
Soft brome <i>Bromus hordeaceus</i>	O
Common nettle <i>Urtica dioica</i>	O
Cow parsley <i>Anthriscus sylvestris</i>	O
Hemlock <i>Conium maculatum</i>	O
Field bindweed <i>Convolvulus arvensis</i>	O
Ground-ivy <i>Glechoma hederacea</i>	O
Common mallow <i>Malva sylvestris</i>	O
Perforate St John's-wort <i>Hypericum perforatum</i>	O
Hogweed <i>Heracleum sphondylium</i>	O
Yarrow <i>Achillea millefolium</i>	O
Common vetch <i>Vicia sativa</i>	O
Tufted vetch <i>Vicia cracca</i>	O
Meadow vetchling <i>Lathyrus pratensis</i>	O
Grass vetchling <i>Lathyrus nissolia</i>	O
Smooth tare <i>Vicia tetrasperma</i>	O
Glaucous sedge <i>Carex flacca</i>	O
Red bartsia <i>Odontites vernus</i>	O
Sticky mouse-ear <i>Cerastium glomeratum</i>	O
Spear thistle <i>Cirsium vulgare</i>	O
Bird's-foot trefoil <i>Lotus corniculatus</i>	O



Species	DAFOR
Creeping buttercup <i>Ranunculus repens</i>	O
Ribwort plantain <i>Plantago lanceolata</i>	O
<i>Typha</i> sp.	O
Cut-leaved crane's-bill <i>Geranium dissectum</i>	O
Dove's-foot crane's-bill <i>Geranium molle</i>	O
Mugwort <i>Artemisia vulgaris</i>	O
Hard rush <i>Juncus inflexus</i>	O
Curled dock <i>Rumex crispus</i>	O
Common fleabane <i>Pulicaria dysenterica</i>	O
Hoary ragwort <i>Senecio erucifolius</i>	O
Common ragwort <i>Senecio jacobaea</i>	O
Hoary willowherb <i>Epilobium parviflorum</i>	O
Pyramidal orchid <i>Anacamptis pyramidalis</i>	O
White clover <i>Trifolium repens</i>	O
Bristly oxtongue <i>Picris echioides</i>	O
Wild teasel <i>Dipsacus fullonum</i>	O
Red clover <i>Trifolium pratense</i>	O
Soft rush <i>Juncus effusus</i>	O
Salsify <i>Tragopogon porrifolius</i>	O
Goat's-beard <i>Tragopogon pratensis</i>	O
Bramble <i>Rubus fruticosus</i>	O
Oxeye daisy <i>Leucanthemum vulgare</i>	O
Meadow buttercup <i>Ranunculus acris</i>	O
Wild carrot <i>Daucus carota carota</i>	O
Dog rose <i>Rosa canina</i>	O
Lesser stitchwort <i>Stellaria graminea</i>	O
Bladder campion <i>Silene vulgaris</i>	O
Willowherb <i>Epilobium</i> spp.	O
Pineapple-weed <i>Matricaria discoidea</i>	R
Dandelion <i>Taraxacum officinale</i> agg.	R
Common poppy <i>Papaver rhoeas</i>	R
Pendulous sedge <i>Carex pendula</i>	R
Borage <i>Borago officinalis</i>	R
Scentless mayweed <i>Tripleurospermum inodorum</i>	R
Bee orchid <i>Ophrys insectifera</i>	R
Knapweed broomrape <i>Orobanchae eliator</i>	R
Yellow iris <i>Iris pseudacorus</i>	R
Hedge bedstraw <i>Galium mollugo</i>	R
Hoary cress <i>Lepidium draba</i>	R
Broad-leaved dock <i>Rumex obtusifolius</i>	R



Tall ruderal

Species	DAFOR
Common nettle <i>Urtica dioica</i>	A
Hemlock <i>Conium maculatum</i>	A
Creeping thistle <i>Cirsium arvense</i>	A
Cow parsley <i>Anthriscus sylvestris</i>	A
Curled dock <i>Rumex crispus</i>	O
Common vetch <i>Vicia sativa</i>	O
False oat-grass <i>Arrhenatherum elatius</i>	O
Tufted vetch <i>Vicia cracca</i>	O
Bramble <i>Rubus fruticosus</i>	O
Common mallow <i>Malva sylvestris</i>	O
Cut-leaved crane's-bill <i>Geranium dissectum</i>	O
Hoary cress <i>Lepidium draba</i>	O
Pendulous sedge <i>Carex pendula</i>	R

Dense scrub (woodland edges, field margins).

Species	DAFOR
Hawthorn <i>Crataegus monogyna</i>	F
Blackthorn <i>Prunus spinosa</i>	F
Dogwood <i>Cornus sanguinea</i>	F
Dog rose <i>Rosa canina</i>	F
Bramble <i>Rubus fruticosus</i>	F
Gorse <i>Ulex europaeus</i>	O
Elder <i>Sambucus nigra</i>	O
Field maple <i>Acer campestre</i>	O
Ash <i>Fraxinus excelsior</i>	O
White poplar <i>Populus alba</i>	O
Hemlock <i>Conium maculatum</i>	O
Cow parsley <i>Anthriscus sylvestris</i>	O

Dense scrub (bramble scrub).

Species	DAFOR
Bramble <i>Rubus fruticosus</i>	D
Common nettle <i>Urtica dioica</i>	F
Barren brome <i>Anisantha sterilis</i>	O
Soft brome <i>Bromus hordeaceus</i>	O
Common ragwort <i>Senecio jacobaea</i>	O
Ribwort plantain <i>Plantago lanceolata</i>	O
Cut-leaved crane's-bill <i>Geranium dissectum</i>	O



Broad-leaved plantation woodland (canopy).

Species	DAFOR
White poplar <i>Populus alba</i>	A
Ash <i>Fraxinus excelsior</i>	A
Field maple <i>Acer campestre</i>	F
Norway maple <i>Acer platanoides</i>	O
Pedunculate oak <i>Quercus robur</i>	O
Sycamore <i>Acer pseudoplatanus</i>	O
Willow <i>Salix</i> spp.	O
Copper beech <i>Fagus sylvatica</i> f. <i>purpurea</i>	R
Turkey oak <i>Quercus cerris</i>	R
Horse chestnut <i>Aesculus hippocastanum</i>	R

Broad-leaved plantation woodland (understorey / ground layer).

Species	DAFOR
Common nettle <i>Urtica dioica</i>	A
Cow parsley <i>Anthriscus sylvestris</i>	A
Ivy <i>Hedera helix</i>	F
Dogwood <i>Cornus sanguinea</i>	F
Field maple <i>Acer campestre</i>	F
Hawthorn <i>Crataegus monogyna</i>	F
Elder <i>Sambucus nigra</i>	F
Wild privet <i>Ligustrum vulgare</i>	F
Smooth meadow-grass <i>Poa pratensis</i>	F
Wood dock <i>Rumex sanguineus</i>	F
Lesser burdock <i>Arctium minus</i>	O
Bramble <i>Rubus fruticosus</i>	O
Red campion <i>Silene dioica</i>	O
Spear thistle <i>Cirsium vulgare</i>	O
Garlic mustard <i>Alliaria petiolata</i>	O



Appendix E

Landscape masterplan





Key

	Site Boundary		Proposed Slow Worm Translocation Area - 685m²
	Existing Overhead Powerlines (and 10m easement)		Proposed Amenity Mown Grassland - 1725m²
	Existing vegetation to be retained		Proposed Amenity Tree and Shrub Planting - 1660m²
	Existing Vegetation to be removed		Proposed Drainage Pipe and Outfall
	Proposed Woodland Planting - 7115m²		Proposed Hibernaculum location
	Proposed Wildflower Grassland - 6630m²		

Indicative Planting Schedule

Woodland Buffer Planting - Outline Specification and Approximate Growth Rates									
Species	Common Name	Percentage	Size (m)	Height (m) Year 1	Height (m) Year 2	Height (m) Year 3	Height (m) Year 4	Height (m) Year 5	Height (m) Year 6
Acer campestre	Field maple	5	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Acer campestre	Field maple	10	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Alnus glutinosa	Alder	5	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Alnus glutinosa	Alder	10	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Acer pseudoplatanus	Sycamore	5	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Acer pseudoplatanus	Sycamore	10	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Crataegus monogyna	Hawthorn	10	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Corylus avellana	Hazel	10	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Eurostanus europaeus	Spondylus	2	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Prunus spinosa	Blackthorn	3	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Quercus cerris	Turkey Oak	5	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Quercus robur	Common Oak	10	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Rosa canina	Dog Rose	2	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Salix caprea	Willow	10	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Viburnum opulus	Guelder Rose	3	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0

Amenity Groundcover Planting									
Species	Common Name	Percentage	Size (m)	Height (m) Year 1	Height (m) Year 2	Height (m) Year 3	Height (m) Year 4	Height (m) Year 5	Height (m) Year 6
Bergenia Silberlicht	Bergenia	2	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Cornus alba	White Dogwood	2	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Geranium Blue Mound	Geranium	3	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Cornus Kelp	Cornus	3	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Cornus sanguinea	Cornus	3	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Cornus Midwinter Fire	Cornus	3	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Potentilla fruticosa	Potentilla	3	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Rosa Keri	Rosa	3	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Rhus typhina	Rhus	3	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Symphoricarpos x chautauqui	Symphoricarpos	3	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0
Viburnum tinus 'Eva Price'	Viburnum	3	17 (100-200)	2.5	5	7.5	10.0	12.0	12.0

Emorsgate EM10 Tussock Grassland Mix

No.	Latin name	Common name
1.1	Arrhenatherum elatius	Arrhenatherum
1.2	Centaurea nigra	Common Knapsack
1.3	Centaurea jacobaea	Greater Knapsack
1.4	Stachys crassifolia	Wild Cardus
1.5	Stachys recta	Wild Cardus
1.6	Stachys recta	Wild Cardus
1.7	Stachys recta	Wild Cardus
1.8	Stachys recta	Wild Cardus
1.9	Stachys recta	Wild Cardus
1.10	Stachys recta	Wild Cardus
1.11	Stachys recta	Wild Cardus
1.12	Stachys recta	Wild Cardus
1.13	Stachys recta	Wild Cardus
1.14	Stachys recta	Wild Cardus
1.15	Stachys recta	Wild Cardus
1.16	Stachys recta	Wild Cardus
1.17	Stachys recta	Wild Cardus
1.18	Stachys recta	Wild Cardus
1.19	Stachys recta	Wild Cardus
1.20	Stachys recta	Wild Cardus

No.	Latin name	Common name
2.1	Abies balsamea	Abies
2.2	Abies balsamea	Abies
2.3	Abies balsamea	Abies
2.4	Abies balsamea	Abies
2.5	Abies balsamea	Abies
2.6	Abies balsamea	Abies
2.7	Abies balsamea	Abies
2.8	Abies balsamea	Abies
2.9	Abies balsamea	Abies
2.10	Abies balsamea	Abies
2.11	Abies balsamea	Abies
2.12	Abies balsamea	Abies
2.13	Abies balsamea	Abies
2.14	Abies balsamea	Abies
2.15	Abies balsamea	Abies
2.16	Abies balsamea	Abies
2.17	Abies balsamea	Abies
2.18	Abies balsamea	Abies
2.19	Abies balsamea	Abies
2.20	Abies balsamea	Abies



Appendix F

Rendered lighting plans



