



Rook Farm, Hayling Island

Ecological Impact Assessment

Prepared by
CSA Environmental

on behalf of
Gladman Developments

Report No: CSA/4956/05

October 2021

This report may contain sensitive ecological information. It is the responsibility of the Local Authority to determine if this should be made publicly available.

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EXECUTIVE SUMMARY

Residential development is proposed at Rook Farm, Hayling Island, for which outline planning permission is sought. CSA Environmental was instructed by Gladman Developments to undertake an Ecological Impact Assessment (EclA) of the proposed development. To inform this assessment, a desktop study followed by a suite of targeted species and habitat surveys were undertaken.

The Site currently comprises two arable fields with areas of semi-improved grassland with parcels of dense scrub, an on-site pond and small stretches of native species hedgerows. The scheme seeks to retain the pond and the hedgerows, with new tree and hedgerow planting and creation of large grassland areas within the proposed green infrastructure. A moderate population of slow-worm have been identified within the Site, as well as common and widespread bat species which utilise the Site for foraging and for dispersal. Mitigation has been proposed to address potential impacts on these protected species and ensure compliance with applicable legislation.

In the absence of any mitigation measures, the proposed development would have the potential to result in significant negative effects on the European site designations of the East Solent system, including but not limited to the Chichester and Langstone and Portsmouth Harbours SPAs and Ramsar sites, and the Solent Maritime SAC. Potential impact pathways include the loss of functionally linked supporting habitats for wintering birds, increased recreational pressure at coastal sites and eutrophication of the water environment. Mitigation will include the establishment of a permanent off-site brent goose refuge and financial contributions toward the Solent Recreation Mitigation Strategy. The proposed development has also been found to be nitrogen negative (i.e. a betterment on neutrality).

Opportunities for ecological enhancement may be secured by planning condition. New habitat creation is proposed to include boundary planting, grasslands, incorporation of swift bricks, hedgehog gap provision and wetland SUDs features.

Based on successful implementation of the proposed avoidance, mitigation and enhancement, the development is anticipated to result in no significant residual negative effects on important ecological features. Furthermore, it has been demonstrated that the scheme can secure a net gain in biodiversity through on-site habitat creation and the implementation of off-site measures. The scheme is considered to accord with all relevant nature conservation legislation, as well as with the provisions of Policy E14, E15, E16, EX1, E17 and E18 of the Havant Borough Council emerging Local Plan 2036.

1.0 INTRODUCTION

- 1.1 This report has been prepared by CSA Environmental on behalf of Gladman Developments. It sets out the findings of an Ecological Impact Assessment (EclA) of proposed development at Rook Farm, Hayling Island (hereafter 'the Site'). Residential development is proposed at the Site, for which outline planning permission is sought.
- 1.2 The scope of this assessment has been determined with consideration of best-practice guidance provided by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) and the Biodiversity: Code of practice for planning and development published by the British Standards Institute (BS 42020:2013).
- 1.3 The Site occupies an area of c. 11.77ha and is located around central grid reference SZ 7192 9978, in South Hayling. It comprises two arable fields with margins of semi-improved grassland, a large area of semi-improved grassland and scrub parcels to the east, and a central pond and farm building (see Habitats Plan in Appendix A). The Site is bounded by residential properties to the south and east, open greenspace adjoining Hayling Island Holiday Park to the west, and an agricultural field connected to the grounds of the Church of St Marys to the north.
- 1.4 An initial desk study and extended Phase 1 Habitat survey were undertaken for the Site in August 2021 as part of a Preliminary Ecological Appraisal, the findings of which are presented herein. In addition, the following further survey work was undertaken between April and September 2021 (with update winter bird surveys programmed for the winter of 2021/22):
 - Breeding bird surveys (April-June 2021)
 - Bat surveys (May-September 2021)
 - Reptile surveys (April-August 2021)
 - Great crested newt eDNA survey (May 2021)
 - Habitat conditions assessment (August 2021)
 - Winter bird surveys (November 2021 – ongoing)
- 1.5 This EclA aims to:
 - Establish baseline ecological conditions at the Site.
 - Determine the importance of ecological features which could be affected by the proposed scheme.
 - Identify any likely significant impacts or effects of the proposed development on important ecological features, in the absence of mitigation, including cumulative impacts.
 - Set out any measures necessary to effectively avoid or mitigate likely significant effects, and identify residual impacts.

- Identify any compensation measures required to offset residual impacts.
- Set out potential ecological enhancement measures that may be secured by the proposed scheme, and quantify the overall net change in biodiversity using the Biodiversity Metric 3.0.
- Confirm how proposed mitigation, compensation and enhancement measures could be secured.
- Provide sufficient information to determine whether the project accords with relevant nature conservation policies and legislation, and where appropriate, to allow conditions or obligations to be imposed by the relevant authority.

1.6 An EclA can be used for the appraisal of projects of any scale. This is a best practice evaluation process, recommended by CIEEM (2018). It is intended that the evaluation of findings presented here-in will aid Havant Borough Council (HBC) in their review of the planning application.

2.0 LEGISLATION, PLANNING POLICY & STANDING ADVICE

Legislation

- 2.1 Legislation relating to wildlife and biodiversity of particular relevance to this EclA includes:
- The Conservation of Habitats and Species Regulations 2017 (as amended)
 - The Wildlife and Countryside Act 1981 (as amended)
 - The Natural Environment and Rural Communities (NERC) Act 2006
 - The Protection of Badgers Act 1992
- 2.2 This above legislation has been addressed, as appropriate, in the production of this report. Further information on the above legislation is provided in Appendix B.

National Planning Policy

- 2.3 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2021) sets out the government planning policies for England and how they should be applied. Chapter 15: Conserving and Enhancing the Natural Environment, is of particular relevance to this report as it relates to ecology and biodiversity. Further details are provided in Appendix B.
- 2.4 Accompanying the NPPF, central government guidance on the implementation of planning policies is set out within online Planning Policy Guidance (PPG). The Natural Environment PPG addresses biodiversity conservation, from individual site and species protection through to the supporting of ecosystem services. Further guidance in respect of statutory obligations for biodiversity conservation within the planning system is provided by Government Circular 06/2005.

Local Planning Policy

- 2.5 A number of local planning policies relate to ecology, biodiversity and/or nature conservation. These are summarised in Table 1 of Appendix B. These policies have been addressed, as appropriate, in the production of this report.

Standing Advice

- 2.6 Natural England Standing Advice regarding protected species aims to support local authorities and forms a material consideration in determining applications in the same way as any individual response received from Natural England following consultation. Standing advice has therefore been given due consideration, alongside other detailed

guidance documents, in the scoping of ecological surveys and production of this report.

3.0 METHODS

Desk Study

- 3.1 The Multi-Agency Geographic Information for the Countryside (MAGIC) online database was reviewed in August 2021 to identify the following ecological features (based on the Site's likely 'zone of influence' in respect of such features):
- Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites within 10km of the Site (including possible/proposed sites)
 - Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Local Nature Reserves (LNR) within 3km of the Site
 - Other relevant data e.g. Ancient Woodland Inventory within 1km of the Site
- 3.2 Hampshire Biological Information Centre (HBIC) was contacted for details of any non-statutory nature conservation designations and records of protected/notable habitats and species. This information was requested for an area encompassing the Site and adjacent land within c. 2km of its central grid reference. This search area was selected to include the likely zone of influence of effects upon non-statutory designations and protected or notable habitats and species.
- 3.3 Further online resources were reviewed for information which may aid the identification of important ecological features. The Woodland Trust's online Ancient Tree Inventory was reviewed for known ancient or veteran trees within the Site and adjacent land. Interactive online mapping provided by the charity 'Buglife' was used to determine whether the Site falls within an Important Invertebrate Area.
- 3.4 In accordance with Natural England's Great Crested Newt Mitigation Guidelines (2001), a desktop search was undertaken to identify ponds within 500m of the Site which may have potential to support breeding great crested newts *Triturus cristatus*, using Ordnance Survey (OS) mapping, the MAGIC database and aerial photography.
- 3.5 Where possible under the terms of the data provider, relevant desk study data are presented in Appendix C.

Field Surveys

Extended Phase 1 Habitat Survey

- 3.6 An extended Phase 1 Habitat survey was carried out by Baker Consultants on 14th April 2016 (Diana Clark). Full details on the methods used are provided within the Ecological Appraisal Report (Baker Consultants, 2017).

- 3.7 An updated extended Phase 1 Habitat survey was carried out in dry, overcast weather conditions on 27th August 2021 by Sophie Vines QCIEEM, encompassing the Site and immediately adjacent habitats that could be viewed.
- 3.8 Phase 1 Habitat survey is a method of classification and mapping wildlife habitats in Great Britain. It was originally intended to provide "...*relatively rapidly, a record of the semi-natural vegetation and wildlife habitat over large areas of countryside.*" The Phase 1 Habitat Survey method has been widely 'extended' beyond its original purpose to allow the capture of information at an intermediate level between Phase 1 and Phase 2 Habitat surveys. Here, the standard survey method has been 'extended' in this report to include the following:
- More detailed floral species lists for each identified habitat
 - Descriptions of habitat structure, the evidence of management and a broad assessment of habitat condition
 - Mapping of additional habitat types (e.g. hardstanding)
 - Identification of Habitats of Principal Importance in respect of Section 41 (S41) of the NERC Act 2006
 - Identification of Habitats Directive Annex I habitat types
 - Evidence of, or potential for, European Protected Species (EPS) (including bats, great crested newt, dormouse and otter)
 - Evidence of, or potential for, other protected species (including birds, reptiles, water vole, badger and certain invertebrates)
 - Evidence of, or potential for, other notable species (including S41 Species of Principal Importance as well as notable, rare, protected or controlled plants and invertebrates)
- 3.9 Habitat Condition Assessments were undertaken by Sophie Vines QCIEEM on 27th August 2021 to inform a Biodiversity Net Gain assessment (Appendix F), which targeted on-site grassland, hedgerows, scrub and ponds.
- 3.10 Results of the extended Phase 1 Habitat survey are presented on the Habitats Plan in Appendix A. Appendix D provides a list of floral species recorded in each habitat.

Further Survey Work

- 3.11 As described within the Ecological Appraisal and Ecological Survey Report (Baker Consultants, 2016), a range of detailed surveys for protected and/or notable species were undertaken at the Site between 2016 and 2018 comprising the following; full methods for which are provided within the Baker Consultants reports and are summarised herein:
- Bat Activity Surveys
 - Reptile Surveys
 - Great crested newt Surveys

- Breeding Bird Surveys
- 3.12 Additional wintering bird surveys were undertaken at the Site by Ecology Solutions Ltd over the Winter of 2017/2018. Full details of these surveys are provided within the Ecology Solutions Wintering Bird Survey Report (2018).
- 3.13 The following detailed field survey work was carried out by CSA Environmental between January-September 2021, with full methods and results provided in the relevant Appendices:
- Bat Activity Surveys (Appendix G)
 - Breeding Bird Surveys (Appendix H)
 - Reptile Surveys (Appendix I)
 - Great-crested newt eDNA (Appendix J)

Limitations

- 3.14 There were no specific limitations to the desk study. The Phase 1 Habitat Survey was carried out at suitable time of year; however, it was undertaken towards the end of the optimum flowering period for many species of flora. Therefore, the flora species list for the Site should be considered to be representative but not exhaustive. Limitations to the other surveys carried out are addressed in the relevant appendix/appendices.

Evaluation and Assessment

- 3.15 Ecological features are identified, evaluated and assessed in accordance with the CIEEM Guidelines for Ecological Impact Assessment (2018), with detailed methods provided in Appendix E.
- 3.16 It is an established principle (CIEEM, 2018) that EcIA is an iterative process. Specialist advice on the avoidance and mitigation of the potential negative effects of the proposed development has been input from an early design stage.

4.0 BASELINE ECOLOGICAL CONDITIONS

Nature Conservation Designations

Statutory

- 4.1 There are no statutory designations covering any part of the Site.
- 4.2 Eight international statutory designations were identified within 10km of the Site. These were the Chichester and Langstone Harbours Ramsar & SPA (c. 750m east of the Site), Solent Maritime SAC (c. 860m south-east of the Site), Solent and Dorset Coast SPA (c. 880m south of the Site), Solent and Isle of Wight Lagoons SAC (c. 5.38km north-west of the Site), Portsmouth Harbour Ramsar & SPA (c. 8km north-west of the Site), and South Wight Maritime SAC (c. 8.89km south-west of the Site). Given the legislative frameworks underpinning international designations, these are considered to be important at the international level.
- 4.3 Potential impact pathways identified in relation to these international designations include increased visitor pressure/disturbance, loss of functionally linked land, changes in air quality and increases in nitrogen deposition which could result in habitat degradation. These impact pathways and the potential for likely significant effects on qualifying features of these designations are discussed further in Section 5 of this report, with full details provided within the Habitats Regulations Assessment (CSA/4956/06), which should be read in conjunction with this report.
- 4.4 Three national statutory designations were identified within 3km of the Site. These were the Sinah Common SSSI (c. 710m south of the Site), Chichester Harbour SSSI (c. 750m east of the Site), and Langstone Harbour SSSI (c. 800m west of the Site). As SSSIs are administered and designated under national legislation, these sites are considered to be important at the National level.
- 4.5 The Chichester Harbour and Langstone Harbour SSSIs both form part of the Chichester and Langstone Harbour SPA and Ramsar designations, and share special interests/qualifying features. Therefore, the impact pathways identified in relation to the international designations are of relevance and are discussed in Section 5 of this report.
- 4.6 Sinah Common SSSI is a stretch of varying coastal habitats which comprises the western side of south Hayling Beach, Hayling Golf Course and Sinah Common. It is primarily designated for botanical interest and includes a primary support area for the Solent Waders and Brent Geese Strategy (SWBGS). The designation contains public footpaths and road access to the beach and car parks along the south Hayling Island coast. The potential effects on this SSSI are discussed in Section 5.

- 4.7 Five local statutory designations were identified within 3km of the Site. These were the Hayling Billy LNR (c. 800m west of the Site), Gutner Point LNR (c. 1.8km north-east of the Site), The Kench, Hayling Island LNR (c. 2.29km west of the Site), West Hayling LNR (c. 2.76km north-west of the Site) and Sandy Point LNR (c. 2.97km south-east of the Site). These sites are considered important at the Local level.
- 4.8 The Hayling Billy LNR, Kench, Hayling Island LNR, West Hayling LNR and Gutner Point LNR all overlap with international designations associated with the Chichester and Langstone Harbours, and support common interest features. Further assessment of the potential effects of development on such features is therefore not repeated in Section 5. On consideration of the interest features of Sandy Point LNR and its spatial relationship to the Site, significant impact pathways are not anticipated and this site is scoped out of further assessment.
- 4.9 The above statutory designations are described in Table 1 below.

Non-Statutory

- 4.10 Eight non-statutory designations were identified within 2km of the Site. These were the Beachlands East SINC (c. 810m south of the Site), Mill Rythe Lane Saltmarsh SINC (c. 1.07km north-east of the Site), Hayling Island Beach SINC (c. 1.08km south-east of the Site), Mill Rythe Holiday Village SINC (c. 1.38km north-east of the Site), Sinah Warren Village Marsh SINC (c. 1.44km west of the Site), Mengham Salterns SINC (c. 1.51km south-east of the Site), Selsmore Boating Lake SINC (c. 1.74km south-east of the Site) and Hayling Billy Line SINC (c. 1.77km north-west of the Site). These non-statutory designations are described in Table 1 below.
- 4.11 The Beachlands East SINC forms part of the main beach to the south of Hayling Island and forms an extension to the aforementioned Sinah Common SSSI. The SINC spatially overlaps with the Solent Maritime SAC and shares common interest features, therefore further assessment in Section 5 of this report will be led by the SAC designation. The remaining SINC's are either not publicly accessible or are sufficiently separated from the Site such that no potential impact pathways are envisaged. They have, therefore, been scoped out of further assessment.

Table 1. Statutory and non-statutory designations within search radii

Site Name & Designation	Distance & Direction from Survey Area	Special Interests or Qualifying Features
International Designations within 10km		
Chichester and Langstone Harbours Rasmars	c. 750m east	Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive mud and sand flats exposed at low tide. The site is of particular significance for over-wintering wildfowl and waders and also a wide

		range of coastal and transitional habitats supporting important plant and animal communities.
Chichester and Langstone Harbours SPA	c. 750m east	This site supports breeding little tern <i>Sterna albifrons</i> and sandwich tern <i>Sterna sandvicensi</i> ; on passage little egret <i>Egretta garzetta</i> ; overwintering bar-tailed godwit <i>Limosa lapponica</i> and little egret. The site also supports the migratory species of ringed plover <i>Charadrius hiaticula</i> , black-tailed godwit <i>Limosa limosa islandica</i> , dark-bellied brent goose <i>Branta bernicla bernicla</i> , dunlin <i>Calidris alpina alpina</i> , grey plover <i>Pluvialis squatarola</i> , redshank <i>Tringa tetanus</i> and ringed plover <i>Charadrius hiaticula</i> . The area also regularly supports an assemblage of at least 20,000 waterfowl.
Solent Maritime SAC	c. 860m south-east	The Solent Maritime contains several Annex I habitats for which it is both primarily and secondarily designated. These habitats include, estuaries, spartina swards, Atlantic salt meadows, sandbanks which are slightly covered by sea water all the time, mudflats and sandflats not covered by seawater at low tide, coastal lagoons, annual vegetation of drift lines, perennial vegetation of stony banks, <i>Salicornia</i> and other annuals colonising mud and sand, and shifting dunes along the shoreline with <i>Ammophila arenaria</i> .
Solent and Dorset Coast SPA	c. 880m south	The site regularly supports internationally important breeding populations of sandwich tern, common tern <i>Sterna hirundo</i> and little tern.
Solent and Isle of Wight Lagoons SAC	c. 5.38km north-west	The site is designated due to the presence of a series of Annex I coastal lagoons.
Portsmouth Harbour SPA	c. 8km west	The site supports internationally important populations of overwintering migratory brent geese, red-breasted merganser <i>Mergus serrator</i> and black-tailed godwit.
Portsmouth Harbour Ramsar	c. 8km north-west	Portsmouth Harbour is a large industrialised estuary and includes one of the four largest expanses of mudflats and tidal creeks on the south coast of Britain. The mudflats support large beds of narrow-leaved and dwarf eelgrass, extensive green alga and sea lettuce. The harbour has only a narrow connection to the sea via the Solent, and receives comparatively little freshwater, thus giving it an unusual hydrology. The site supports internationally important numbers of

		wintering dark-bellied brent geese and nationally important numbers of grey plover, dunlin and black-tailed godwit.
Solent Wight Maritime SAC	c. 8.89km south-west	The Solent Wight Maritime contains three Annex I habitats, including reefs, vegetated sea cliffs of the Atlantic and Baltic Coasts, and submerged or partially submerged sea caves.
National Designations within 3km		
Sinah Common SSSI	c. 710m south	The site contains a variety of notable coastal habitats which support outstanding plant assemblages, including endangered chiding pink <i>Petrorhagia nauteuillii</i> , and numerous nationally scarce species.
Chichester Harbour SSSI	c. 750m east	The site is a large estuarine basin with extensive mud and sandflats exposed at low tide. It is of particular significance for wintering waders and waterfowl, as well as breeding birds within the harbour and in the surrounding pasture and woodland. The wide range of habitats present support important plant communities.
Langstone Harbour SSSI	c. 800m west	A tidal basin which contains extensive mud and sandflats at low tide. The site supports high densities of intertidal invertebrates, as well as significant populations of migrant and overwintering wildfowl and waders.
Local Designations within 3km		
Hayling Billy LNR	c. 800m west	Part of the route of the old Hayling Billy train, the site provides exceptional views of the most unspoilt sections of Langstone Harbour and contains a variety of rare plants.
Gutner Point LNR	c. 1.8km north-east	The site contains grassland, saltmarsh and inter-tidal mudland which extends into Chichester Harbour.
The Kench, Hayling Island LNR	c. 2.29km west	A small area of inter-tidal mud and saltmarsh within Langstone Harbour which supports feeding waders and wildfowls at low tide, and provides roosting opportunities when the water is high.
West Hayling LNR	c. 2.76km north-west	Supports permanent and migratory populations of seabirds within the intertidal mudflats, which contains an impressive assemblage of marine invertebrates.
Sand Point LNR	c. 2.97km south-east	A sensitive area of rare maritime heathland, sand dune and seasonally-grazed grassland. The site contains rare plant species and supports breeding whitethroat <i>Sylvia communis</i> , linnet <i>Linaria cannabina</i> and Dartford warbler <i>Sylvia undata</i> .

Non-statutory Designations within 2km		
Beachlands East SINC	c. 810m south	Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands. Supports notable species including sand couch grass <i>Elytrigia juncea</i> , burr medic <i>Medicago polymorpha</i> , bulbous bluegrass <i>Poa bulbosa</i> , suffocated clover <i>Trifolium suffocatum</i> and burr chervil <i>Anthriscus caucalis</i> .
Mill Rythe Lane Saltmarsh SINC	c. 1.07km north-east	Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands.
Hayling Island Beach SINC	c. 1.08km south-east	Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands. Supports notable flora, including sand fescue <i>Vulpia fasciculata</i> , sea holly <i>Eryngium maritimum</i> , sea spurge <i>Euphorbia paralias</i> , smooth cat's-ear <i>Hypochaeris glabra</i> , sand cat's-tail <i>Phleum arenarium</i> , sea knotgrass <i>Polygonum maritimum</i> , stiff saltmarsh-grass <i>Puccinellia rupestris</i> , sand couch grass, suffocated clover, mat-grass fescue <i>Vulpia unilateralis</i> , mossy stonecrop <i>Crassula tillaea</i> and houndstongue <i>Cynoglossum officinale</i> .
Mill Rythe Holiday Village SINC	c. 1.38km north-east	Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands. Supports notable spiny restharrow <i>Ononis spinosa</i> .
Sinah Warren Village Marsh SINC	c. 1.44km west	Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands. Supports notable species, including sea wormwood <i>Seriphidium maritimum</i> and golden samphire <i>Inula crithmoides</i> .
Mengham Salterns SINC	c. 1.51km south-east	Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands. Supports notable species, including spiny restharrow and sago pondweed <i>Potamogeton pectinatus</i> .

Selsmore Boating Lake SINC	c. 1.74km south-east	Semi-natural coastal and estuarine habitats, including saltmarsh, intertidal mudflats, sand dunes, shingle, brackish ponds, grazing marsh and maritime grasslands.
Hayling Billy Line SINC	c. 1.77km north-west	Supports notable divided sedge <i>Carex divisa</i> .

Habitats and Flora

Ancient Woodland

- 4.12 There is no ancient woodland covering any part of the Site or immediately adjacent land. Two trees within the adjacent St Mary's Churchyard to the north of the Site are listed on the ancient tree inventory. Both are yew trees *Taxus baccata*; one is listed as 'ancient' and the other as 'notable'. These trees are considered to be important at the County level.
- 4.13 While buffer zones of at least 15m around ancient and notable trees to avoid structural and root damage during construction are required, the trees are at least 30 metres from the Site boundary, ensuring that buffer zones will not be encroached upon. The trees have, therefore, been scoped out of further discussion.

Notable Flora Records

- 4.14 A total of 931 records of 158 notable plant species were identified within the search area. Those of potential relevance to the Site include early meadow-grass *Poa infirma*, field woundwort *Stachys arvensis*, corn buttercup *Ranunculus arvensis*, bird's-foot clover *Trifolium ornithopioides*, short-styled field rose *Rosa stylosa* and nettle-leaved goosefoot *Chenopodium murale*. The Site contains suitable habitat for these species; however, none were recorded within the Site during the Phase 1 habitat survey.

Habitats

- 4.15 The following habitats were recorded on-site and classified in line with current Phase 1 Habitat species guidance (JNCC, 1990), as illustrated in Appendix A. Detailed species lists for each habitat are provided in Appendix D.
- 4.16 No invasive non-native plant species were identified during the extended Phase 1 Habitat survey or subsequent visits to the Site.
- 4.17 Baseline Habitat Biodiversity Value has been determined through assessment using the Natural England Biodiversity Metric 3.0, the current method for which uses UKHabs classifications and an accompanying habitat condition assessment to determine its calculations. The assessment uses specified criteria for each habitat which provide indications of condition ('poor', 'moderate' or 'good'). Each habitat is

automatically assigned a 'distinctiveness' score ('low', 'medium', 'high' and 'very high') based on its perceived ecological value and rarity. The results of the Biodiversity Metric are provided in Appendix F.

Arable

- 4.18 Arable fields are the dominant habitat present on-site. At the time of the Phase 1 survey, the fields were planted with a mature broad bean crop with arable weeds encroaching from field margins, including fat hen *Chenopodium album*, field horsetail *Equisetum arvense*, knotgrass *Polygonum aviculare* and trefoil *Lotus* sp.

Semi-Improved Grassland

- 4.19 A large area of semi-improved grassland lies to the east of the Site. This former private allotment garden is now dominated by false oat-grass *Arrhenatherum elatius*, cock's-foot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus* and thistle *Cirsium* sp. Parcels of scattered, bramble *Rubus fruticosus* dominated scrub are present within the grassland.
- 4.20 Where narrow, uncultivated field margins are present around Field F1 and, to a lesser extent, F2, they are primarily semi-improved grassland with ruderal species present throughout. Coarse grass species including false oat, Yorkshire fog, annual meadow-grass *Poa annua*, and perennial ryegrass *Lolium perenne* dominate the eastern boundary of Field F1 and the central margin which divides Fields F1 and F2, with common herb species including ribwort plantain *Plantago lanceolata*, bristly oxtongue *Helminthotheca echioides*, scented mayweed *Matricaria chamomilla* and common nettle *Urtica dioica* frequently present. The western margin of Field F1 and the northern margin of Field F2 steadily become dominated by bracken *Pteridium aquilinum* and common nettle with occasional dock *Rumex* sp. and hogweed *Heracleum sphondylium* also present.
- 4.21 A small area of grassland is present between the current eastern access point and Field F2 and contains a species assemblage consistent with the aforementioned parcels of semi-improved grassland.
- 4.22 For the purposes of the Biodiversity Metric (Appendix F) the field margins to the east of Field F1 and the small parcel of semi-improved grassland to the east of the Site are both classified as 'Other Neutral Grassland' with 'medium distinctiveness'. Both were assessed to have a 'moderate' condition following the habitat condition assessment. The field margin which centrally divide Field F1 and F2 and the large area of semi-improved grassland to the east of the Site are classified as 'modified grassland' with 'low distinctiveness'. They were both assessed to be in 'moderate' condition following the habitat condition assessment.
- 4.23 Although adopted as a Habitat of Principal Importance in England in respect of the NERC Act 2006, arable field margins are common and

widespread in the local landscape, and where present on-site they are narrow and dominated by common species. The remaining parcels of semi-improved grassland are dominated by common species and are a common habitat in the local landscape. They are concluded to be important at less than Local level, and are scoped out of further assessment.

Dense scrub

- 4.24 Areas of dense scrub are present throughout the Site, with substantial parcels within the large area of semi-improved grassland to the east of the Site and surrounding the on-site pond. These parcels are dominated by bramble with occasional blackthorn *Prunus spinosa* and willow *Salix* sp. shrubs emerging centrally. The scrub parcels present within the large area of semi-improved grassland is assessed to be of 'poor' condition according to the habitats condition assessment criteria.
- 4.25 A large parcel of dense scrub surrounds the northern half of the on-site pond. This area of scrub is dominated by blackthorn, with standard hawthorn trees and bramble also present. According to the habitat condition assessment, this parcel of scrub is considered to be of 'moderate' condition.
- 4.26 This habitat is common and widespread throughout the local landscape and contains ubiquitous species. It is therefore concluded to be important at less than Local level and has been scoped out of further assessment.

Hedgerows

- 4.27 Hedgerow H1 which bounds the Site to the south is a fragmented, non-native hedgerow which divides the Site from residential gardens. It contains discreet sections of cherry laurel *Prunus laurocerasus*, leylandii *Cupressus x leylandii* and non-native privet *Ligustrum* sp., with occasional bramble, hedge bindweed *Calystegia sepium* and honeysuckle *Lonicera periclymenum* present. Hedgerow H3 is a short section of non-native species hedgerow along the north-eastern edge of the Site. It contains buddleia, cotoneaster *Cotoneaster* sp., cherry laurel and hawthorn *Crataegus monogyna*. These hedgerows are of negligible importance in a Local context and have been scoped out of further assessment.
- 4.28 Hedgerow H2 partially encircles the large area of semi-improved grassland at its northern edge and is dominated by blackthorn. At the time of the Phase 1 survey, it had not been recently cut but signs of management were present and it was not outgrown. There are no gaps along its course and the vegetation has a dense composition. This hedgerow was assessed to be of 'good' condition in accordance with the habitat condition assessment criteria for hedgerows without trees.

- 4.29 Hedgerow H4 is a native species hedgerow which runs along the northern boundary, dividing the Site from the St Mary's Churchyard to the north. It predominantly contains hawthorn, with standard Scot's pine *Pinus sylvestris* and beech *Fagus sylvatica* trees occasionally present along its length. The hedgerow contains frequent gaps and has patches of sparse vegetation. In accordance with the habitat condition assessment criteria for hedgerows with trees, Hedgerow H4 was assessed to be of 'moderate' condition.
- 4.30 Tree line TL1 runs along the southern border between the western-most edge of the off-site residential gardens to the Site's western boundary. It is dominated by blackthorn and English elm *Ulmus procera*. In line with the habitat condition assessment criteria, this tree line was deemed to be of 'moderate' condition.
- 4.31 Hedgerows are a Habitat of Principal Importance in England in respect of the NERC Act 2006 and a LBAP priority habitat in Hampshire. While Hedgerows H2 and H4 are short stretches, when reviewed in a local landscape context where hedgerows and natural linear features appear to be infrequent, they provide a connectivity and refuge for wildlife in an otherwise open and built-up locality. The two native species hedgerows are, therefore, considered to be important at a Local level.

Pond

- 4.32 The single pond present within the Site is located at the north-eastern corner of Field F1, centrally along the southern edge of Field F2 and to the west of the large parcel of semi-improved grassland, giving it a relatively central location within the Site. It is approximately 150m² and is surrounded on all aspects by dense scrub and ruderal vegetation. Bulrush *Typha latifolia* dominated large areas of the pond at the time of the Phase 1 survey, however, due to the dense vegetation surrounding the pond, it was unclear what other aquatic vegetation may be present.
- 4.33 This pond is classified as a 'non-priority pond' under the Biodiversity Metric 3.0, and was assessed to be of 'moderate' condition following the habitat condition assessment.
- 4.34 This pond provides foraging, breeding and sheltering opportunities for a variety of species and is one of very few ponds present in the local landscape. It is, therefore, considered to be important at the Local level and has been scoped in to further discussion.

Ditches

- 4.35 There is one on-site ditch which runs centrally east to west through the Site, dividing Field F2 from F1 and the large parcel of semi-improved grassland. Two further off-site ditches demarcate the Site's boundaries along the western edge of Field F1 and the northern edge of Field F2. All three ditches are seasonally-wet and were bounded by dense

vegetation at the time of the Phase 1 habitat survey. Following the habitat condition assessment, all three ditches were assessed to be of 'poor' condition.

- 4.36 While they represent drainage and connective features, these ditches are considered to be important at less than Local level as they frequently dry out and become smothered by common grasses and ruderal vegetation in the summer months, making them unlikely to support a rich or diverse fauna. They have, therefore, been scoped out of further discussion.

Fauna

Bats

- 4.37 A total of 221 records relating to bats were returned by HBIC. These comprised common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus*, unconfirmed long-eared bats *Plecotus* sp., Nathusius's pipistrelle *Pipistrellus nathusii*, noctule *Nyctalus noctule*, Natterer's bat *Myotis nattereri*, whiskered/Brandt's bat *Myotis mystacinus/brandtii*, Daubenton's bat *Myotis daubentonii*, Bechstein's bat *Myotis bechsteinii*, unconfirmed *Myotis* sp. and serotine *Eptesicus serotinus*. All records are widely and evenly distributed around the Site, with notably more records located around residential areas, likely reflecting survey effort rather than true distribution.
- 4.38 Notable records include a small cluster c. 40m north of the Site from within the grounds of St Mary's Churchyard immediately adjacent to the northern boundary of the Site. This cluster contains roost records for brown long-eared, serotine and unconfirmed pipistrelle bats, as well as common pipistrelle passes. Further roost records are present across the search area, including a common pipistrelle roost c. 420m south-west of the Site with a peak count of 330 individuals.
- 4.39 The habitat on-site is generally open with parcels of dense scrub, hedgerows and boundary treelines providing corridors of connectivity. The on-site pond, as well as the aforementioned habitats, support foraging opportunities for bats due to associated higher invertebrate densities.
- 4.40 The single on-site building comprises a metal frame, roof and sides, with negligible roosting opportunities.
- 4.41 Walked transect and static monitoring surveys were undertaken in May, July and September 2021. The results of the activity surveys concluded that the Site was regularly utilised by foraging common pipistrelle and soprano pipistrelle, with these species accounting for 92% of passes during the transect surveys and over 95% during the static monitoring. Less common species, such as brown long-eared, potential Nathusius'

pipistrelle and *Myotis* sp., were occasionally present. The species infrequently recorded are likely to be utilising the connective features within the Site, such as boundary vegetation, for occasional foraging and general dispersal. Activity hotspots within the Site occur along the western and southern boundary vegetation of Field F1, around the on-site pond and in the north-east corner of Field F2. These areas all present greater foraging opportunities as they are likely to support higher invertebrate densities than the remainder of the Site which is generally open and unsuitable for bats. Full methods and results are provided in Appendix G.

- 4.42 The species which regularly utilise the Site are common and widespread, and those which are less common are infrequently present. The populations of bats present are collectively considered to be important at the Local level.

Badger

- 4.43 No records of badger *Meles meles* were returned within the search area. While there are small pockets of grassland and stretches of hedgerow which may provide suitable badger habitat, no signs of badger were detected during the Phase 1 habitat survey. They have, therefore, been scoped out as a potential constraint. As referenced in the 'Assumptions' section below, it will be necessary for update surveys to be carried out on a precautionary basis prior to construction to ensure legal compliance.

Dormice

- 4.44 No records of dormouse *Muscardinus avellanarius* were provided within 2km of the Site. There is limited habitat and connectivity within the Site and within the surrounding landscape to support dormice, therefore they are concluded to be likely absent from the Site and are scoped out from further discussion.

Riparian Mammals

- 4.45 No records of water vole *Arvicola amphibius* or otter *Lutra lutra* were provided by HBIC from within the search area. Habitats on-site are not suitable for these species, which require well-connected riparian habitats. They have, therefore, been scoped out of further assessment within this report.

Other Priority Mammals

Hedgehog

- 4.46 Nine records of hedgehog *Erinaceus europaeus* were returned from within the search area, dating between 1998 and 2019. The closest of these is c. 200m south-east of the Site and was recorded from within a residential area. The Site offers good opportunities for hedgehog, which

are likely to be present on-site, despite no specific field signs or sightings of the species being made during 2021 surveys.

- 4.47 Hedgehogs are listed as a species of principal importance in respect of Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Whilst this species is in decline nationally, hedgehogs are still considered to be widespread within southern England. Given the availability of large areas of suitable habitat for this species within the local area, the Site is considered unlikely to represent a key resource at the Local level. As such, this species is not specifically considered further within this assessment, however measures to ensure site permeability for this species are included below in 'Enhancements'.

Birds

- 4.48 A total of 1991 records of 137 species of bird were returned from within the search area. A large majority of these records had a location reference of a 1km grid-square, indicating that the species have been present in the local vicinity of South Hayling, however, no specific location has been provided. A cluster of records with a 1km-square is located c. 20m north of the Site. This cluster contains 37 species, including black redstart *Phoenicurus ochruros*, ringed plover *Charadrius hiaticula*, cuckoo *Cuculus canorus*, curlew *Numenius arquata*, skylark *Alauda arvensis*, whimbrel *Numenius phaeopus*, osprey *Pandion haliaetus* and barn owl *Tyto alba*.
- 4.49 There is habitat on-site suitable for supporting foraging, roosting and nesting birds. The hedgerows and treelines, grassland and scrub provide opportunities for generalist species, while the arable cultivation may be used by farmland specialists subject to crop rotations.

Breeding birds

- 4.50 Breeding bird surveys were undertaken between April and June 2021 to understand the Site's current usage by breeding birds. A total of 17 species were recorded as breeding within the Site, including 11 birds listed as S41 Species of Principal Importance and those listed on the Birds of Conservation Concern Red and Amber Lists. Full details of the breeding bird surveys are provided in Appendix H.
- 4.51 The surveys reflect a breeding bird assemblage that is important at less than Local level, with all species recorded as breeding being nationally and locally common and widespread. The habitat on-site does not, therefore, constitute an important breeding habitat resource for local bird populations.
- 4.52 Notwithstanding the above, all wild birds and their nests and eggs receive legal protection under the Wildlife and Countryside Act 1981. This assessment assumes industry-standard good construction

management to avoid direct impacts on birds and their nests (see 'Assumptions').

Wintering birds

- 4.53 Populations of dark-bellied brent goose *Branta bernicla* have previously been recorded within the Site, with a peak count of 1100 individuals feeding during the winter of 2017 and, as a result, the entirety of the Site is adopted as a 'Core Area' under the Solent Waders and Brent Goose Strategy (SWBGS), which is reflected on Hampshire Ecological Network mapping.
- 4.54 Conversely, winter bird surveys carried out at the Site by Ecology Solutions Ltd in 2017/18 concluded that, at the time of the surveys, the overall habitat was unsuitable for brent geese as the arable fields had been recently ploughed, leaving expansive bare ground, and no brent geese were recorded during the surveys. This exemplifies that the presence of brent geese is dependent upon the management of any site, particularly the status of the arable fields over the course of the winter season, with stubble or short improved grassland habitat being preferred. These surveys are now outdated and updated winter bird surveys are scheduled to take place over the winter of 2021/22.
- 4.55 Dark-bellied brent geese represent a qualifying feature of the Chichester and Langstone Harbours SPA c. 750m east of the Site at its closest point. Further assessment of the potential development effects on this species is therefore presented in Section 5, and the accompanying Information to inform Habitats Regulations Assessment (CSA4956/06), in connection with this and other nearby European site designations.

Reptiles

- 4.56 A total of seven records of three reptile species were returned from within the search area, dating from 1999-2015. These included slow-worm *Anguis fragilis*, grass snake *Natrix natrix* (syn. *N. helvetica*) and adder *Vipera berus*. The closest records are of slow-worm c. 470m south-east of the Site from a residential garden. Suitable reptile habitat on-site is limited to the narrow arable field margins and hedgerow bases, as well as the areas of semi-improved grassland and scrub.
- 4.57 Previous reptile surveys undertaken by Baker Consultants in 2016 identified a low population of slow worm, with a total of two individuals found under refugia placed along the eastern side of the Site.
- 4.58 Updated reptile surveys were undertaken at the Site by CSA Environmental between May and August 2021. Following the surveys, a moderate population of slow-worm were found to be present, with a peak count of 69 adults found during the final survey. While slow-worm were present in all areas where refugia were placed, the northern

boundary which adjoins the St Mary's Churchyard was a particular hotspot; with a peak count of 64 slow-worm (all age classes) found along this boundary during the seventh survey. No other species of reptile were identified during the surveys, suggesting likely absence within the Site. Full details of the reptile surveys are provided in Appendix I.

- 4.59 Slow-worm are a S41 species of principal importance and are afforded protection against killing and injury under the Wildlife and Countryside Act 1981. The population of slow-worm present at the Site is considered to be important at the Local level and is discussed further in Section 5.

Great Crested Newt

- 4.60 No records for great crested newt were returned by HBIC from within the search area. The on-site pond is potentially suitable for amphibians, including breeding great crested newt, however there are no further ponds within 500m of the Site not separated by a significant barrier. Suitable terrestrial habitat in the form of semi-improved grassland and scrub are present in parcels around the Site, including dense scrub encircling the on-site pond. Two common newts were identified during a reptile survey beneath reptile refugia within the large area of semi-improved grassland adjacent to the pond, which indicates that the Site's habitats are suitable for supporting newt species.
- 4.61 Previous presence/likely absence great crested newt surveys undertaken at the on-site pond by Baker Consultants in 2016 returned negative results from bottle traps, torching and egg searches, with only smooth newts *Lissotriton vulgaris* found to be present.
- 4.62 Environmental DNA (eDNA) analysis of the on-site pond was carried out in May 2021 by CSA Environmental to determine presence/likely absence of great crested newts. A negative result was returned (Appendix J), indicating that the species is likely absent from the pond and surrounding terrestrial habitats. As a result of this negative result, the lack of surrounding suitable breeding ponds within dispersal range and lack of records for the species, great crested newt have scoped out of further discussion.

Invertebrates

- 4.63 A total of 995 records of 249 invertebrate species were returned from within the search area. Those of potential relevance to the Site include grey dagger moth *Acronicta psi*, knot grass moth *Acronicta rumicis*, ruddy flat-body moth *Agonopterix subpropinqua*, cinnabar moth *Tyria jacobaea*, little grass-veneer moth *Platytes cerussella* and swallowtail butterfly *Papilio machaon*. The Site contains suitable habitat for these species in the form of grassland and hedgerows.

- 4.64 The Site falls within the South Downs Important Invertebrate Area (IIA), however, no information is currently provided in regards to the species, assemblages and specific hotspots within the IIA.
- 4.65 The habitats on-site are common and widespread and are, therefore, likely to support a typical invertebrate assemblage, and are not considered to represent a key resource in the local landscape.

Future Baseline

- 4.66 The Site is presently under active arable management, including infrequent cutting of field margins and hedgerows. Notwithstanding the potential rotation of crop-type, these management interventions maintain the on-site conditions in a relatively stable state. There is no known intention to cease this management, other than to accommodate the proposed development should planning permission be granted. As such, the future baseline status of important ecological features is not anticipated to vary significantly from that at present.

Summary of Ecological Features

- 4.67 Table 2 below summarises all important ecological features identified within the respective zones of influence, together with the geographic context of their importance:

Table 2. Summary of important ecological features and their geographic context

Ecological Feature	Geographic Context of Importance and/or Protection Status
Chichester and Langstone Harbours SPA and Ramsar	International
Solent Maritime SAC	International
Solent and Isle of Wight Lagoons SAC	International
Portsmouth Harbour SPA and Ramsar	International
South Wight Maritime SAC	International
Solent and Southampton Water SPA and Ramsar site	International
Sinah Common SSSI	National
Hedgerows	Local
Pond	Local
Bats	Local
Slow worm	Local

5.0 ASSESSMENT OF EFFECTS

The Proposed Development

- 5.1 Outline planning permission is sought for residential development at the Site. The following impact assessment is based on the Development Framework Plan prepared by FPCR on behalf of Gladman Developments (7478-P-01 Rev A).
- 5.2 The construction phase of the proposed development will comprise the following:
- Cessation of arable cultivation
 - Removal of sections of scrub along the eastern access point from St Mary's Road and adjacent to the central pond for vehicular access
 - Construction up to 300 residential dwellings
 - Removal of grassland to the east of the Site
 - Construction of associated gardens, parking, access infrastructure, a play area and teenage provision area
 - The establishment of Public Open Space (POS) totalling c. 3.74ha, including grass pitches and playing fields, amenity greenspaces, parks, gardens and natural greenspace primarily to the north of the developed area
 - Establishment of Sustainable Urban Drainage Systems (SUDS) including two large attenuation basins set within the greenspace to the west and in the south-east corner of the development
- 5.3 The operational phase of the proposed development will comprise the following:
- Occupation of new residential dwellings
 - Increase in human activity, including use of vehicles and presence of domestic pets
 - Increased artificial lighting and anthropogenic noise

Assumptions

- 5.4 The following assumptions have been made during the assessment of potential effects of the proposed development on important ecological features. Although 'assumed' and therefore taken as part of the pre-mitigation scenario, these measures are referenced in the proceeding sections where integral to the mitigation strategy.
- 5.5 In accordance with BS42020:2013, it is assumed that a Construction Environmental Management Plan (CEMP) will be secured by planning condition and prepared at the detailed design stage for each phase of development. In addition to the construction phase impact avoidance and mitigation measures identified in the following sections, the CEMP will detail standard environmental control measures, including though not limited to the following:

- Implementation of strict protection measures for the root protection areas of retained hedgerows and trees, in accordance with BS5837:2012
 - Standard best practice construction phase pollution prevention and control measures, including measures for dust suppression
 - Sensitive working methods and timing to avoid direct impacts to nesting birds (generally vegetation removal outside nesting season of March through August)
 - Updated ecological surveys, where necessary, to identify shifts in the baseline ecological condition in order that revised impact avoidance and mitigation measures can be adopted as required (e.g. creation of new badger setts)
- 5.6 In accordance with BS42020:2013, it is assumed that a Landscape and Ecology Management Plan (LEMP) will be secured by planning condition and prepared at the detailed design stage for each phase (where relevant) of development. The LEMP will set out measures for the establishment and long-term management of newly created and retained habitats to maximise benefits for biodiversity.

Potential Impacts and Ecological Effects

International Statutory Designated Sites

European sites

- 5.7 An assessment of potential effects of the proposed development, both alone and in combination with other plans and projects, is presented separately as Information to Inform Habitats Regulations Assessment (CSA/4956/06). The assessment is not repeated here, however the identified potential impact pathways in the absence of mitigation are summarised.
- 5.8 The qualifying habitats and species of the Chichester and Langstone Harbours SPA and Ramsar site (which are shared with the special interests of the overlapping SSSI designations) are known to be vulnerable to recreation pressure. The proposed development will contribute to an increase in the local population, and therefore has the potential to act in combination with the projected increase in housing within Havant and adjacent districts to increase recreation pressure at these European sites.
- 5.9 The Site's importance for feeding waterfowl associated with the SPA and Ramsar designations of Chichester and Langstone Harbours, Portsmouth Harbour and the Solent and Southampton Water is recognised through its adoption as a Core Area under the Solent Wader and Brent Goose Strategy. Even beyond the spatial extent of a designation, any damage, deterioration or loss of supporting habitat has the potential to undermine conservation objectives.

- 5.10 Furthermore, foul water discharges from the Site will be treated at the Budds Farm WWTW, which itself returns treated effluent to the water environment of the East Solent system and its associated European site designations. The qualifying features of these designations are known to be sensitive to and already suffering from eutrophication. Nutrient (principally nitrogen) loading within treated foul effluent resulting directly from the proposed development is unlikely to have a significant effect on the qualifying habitats and species in isolation, however may act in combination with wider projected housing growth to undermine conservation objectives.
- 5.11 Conversely, assessment presented in full within the Information to Inform Habitats Regulations Assessment (CSA/4956/06) determined that no significant negative effect on the designated sites would likely result from traffic-derived air quality impacts or hydrological changes brought about by increased water abstraction. Increased traffic flows resulting from the scale and location of the proposed development and wider projected housing growth are capable of giving rise to localised air quality impacts. Areas of each of the Chichester and Langstone Harbours SPA and Ramsar site, Solent Maritime SAC and Portsmouth Harbour SPA and Ramsar site exist within 200m of a major road (A-road or motorway), and could therefore experience localised increases in atmospheric and deposited pollutants. However, the effects of increased traffic resulting from the proposed development in isolation are unlikely to be appreciable, given the intervening distances and diffusion of traffic. Furthermore, findings of air quality dispersion modelling (see Chapter 6 of the Environmental Statement) found that potentially significant increases in pollutant nitrogen resulting from the proposed development, in combination with other committed development, would be limited to a single modelled location within Emsworth Harbour, adjacent to Langstone Road. At this location, however, the habitat is intertidal and regularly inundated with tidal water, with the result that air pollutants are unlikely to be capable of adversely affecting the habitats present.
- 5.12 Residential growth drives increases in water consumption and waste water production, which are associated with negative environmental effects. Increased abstraction could, in principle, impact fresh water inputs to European sites, with corresponding effects on salinity gradients, water circulation, vegetation communities and the waterfowl they support. However, in their 2017 Draft Water Resources Management Plan, Portsmouth Water confirm that there is currently a surplus of supply for the period to 2044, therefore impacts on site features arising from increases in water abstraction are unlikely.

Sinah Common SSSI

- 5.13 The Sinah Common SSSI comprises a large stretch of the west side of Hayling Beach and neighbouring leisure grounds, including Hayling Golf

Club and Hayling Ferry Sailing Club. One potential impact pathway has been identified in the form of recreational pressure.

- 5.14 The SSSI is made up of two units. Unit 2 supports the Hayling Golf Club in the west of the SSSI, and the East Winner Sandbank to its south. Unit 1 to the east includes Hayling Island Beach, a popular tourist location which likely is likely to face the greatest recreational pressure.
- 5.15 Both Units were most recently assessed by Natural England (2010) as being in unfavourable but recovering condition. In respect of Unit 2 it is remarked that the, *"shingle bank in the southern part of the unit is remarkably species-rich despite the high visitor pressure."* Concern is raised over heavy trampling in Unit 1, however this is limited to a discrete area where visitor pressure is channelled by fencing. Overall, there is no indication that visitor pressure is having a limiting effect on the special interests of the designation, and a minor increase in the local population brought about by the proposed development is therefore unlikely to result in a significant negative effect via this pathway.

Hedgerows

- 5.16 The native species hedgerows and line of trees on-site provide connectivity for wildlife both within the Site and the wider landscape. The DFP provides for the retention of these features alongside development, with their incorporation within strategic green infrastructure. With good construction management practises (see 'Assumptions'), no adverse effects upon the existing hedgerows are anticipated to result from the proposed development.

Pond

- 5.17 The on-site pond has been retained alongside proposed development as part of the conceptual layout shown in the DFP. No significant negative effect on the local pond habitat resource will result from the proposed development; rather an opportunity is created to increase the biodiversity value of the feature through introduction of appropriate management.

Bats

- 5.18 The Site supports a moderate assemblage of common and widespread species which utilise the area for foraging and general dispersal. The majority of bat activity is concentrated to features of connectivity, such as boundary vegetation, and to areas of increased foraging opportunities, including the on-site pond, which are all to be retained within strategic green infrastructure as shown on the DFP. The creation of new areas of habitat suitable for bats is proposed, including tree lines extending through the centre of the Site, connecting the off-site woodland west of the Site to the central retained pond and the area of proposed greenspace to the north of the Site, where more favourable bat habitat will be created. The two proposed attenuation basins, if

appropriately landscaped and managed, will provide an increase in aquatic invertebrate habitat, which will, in turn, deliver greater foraging opportunities to bats within the Site.

- 5.19 Negative effects on bats could in principle be encountered as a result of the increase in artificial lighting within the residential area, which is situated near the Site's main hotspots in the southern and western boundaries of Field F1. However, on balance of the fact that baseline activity at the Site is heavily dominated by species which adapt readily to the suburban environment (exemplified here by the concentrations of their activity at the residential interfaces in the south of the Site), the cessation of arable cultivation and new habitat creation shown in the DFP, no significant negative effects on local bat populations are anticipated to result from the proposed development.

Reptiles

- 5.20 All native British reptile species are listed within Schedule 5 of the Wildlife and Countryside Act 1981 and are afforded protection against killing and injury. In addition, all native British reptile species are Section 41 Species of Principle Importance for the Conservation of Biodiversity in England.
- 5.21 The majority of the Site is unsuitable for reptiles, supporting homogenous arable cultivation. The narrow field margins and area of grassland and scrub in the east however provides foraging, basking and refuge opportunities for these species, which surveys have confirmed to support a concentrated population of slow worms.
- 5.22 Much of these habitats will be lost to accommodate the proposed development. However, the DFP allocates 4.24ha of the 11.77ha Site for green infrastructure which, subject to suitable habitat creation and management and in combination with the new residential gardens, has the potential to result in a significant increase in suitable slow worm habitat at the Site level. New habitat creation within public open space and its future management will be determined at the detailed design stage.
- 5.23 Notwithstanding this, site preparation works will directly impact upon slow worm habitats and could, in the absence of mitigation, result in the killing and injury of individual slow worms. While such an impact would be unlikely to undermine local population viability, and is not therefore taken to represent a significant negative effect, it would constitute an offence under the Wildlife and Countryside Act 1981.

Mitigation by Design

- 5.24 It is an established principle (CIEEM, 2018) that, wherever possible, potential negative effects should be avoided through 'Mitigation by Design', as this gives greater certainty over deliverability, demonstrates

a well-designed scheme and ensures the correct application of the 'Mitigation Hierarchy' (as advocated by BS42020:2013, Defra 2019 and CIEEM, CIRIA & IEMA 2016).

- 5.25 The proposed development will retain both native species hedgerows as well as planting an additional c. 393m of new hedgerows within the Site (as shown on the conceptual DFP) to enhance connectivity within the Site and to the surrounding landscape. Strategic green infrastructure will be created, which will incorporate varying habitats including grassland and scrub, as well as new planted trees. These features will provide habitats for a variety of species, as well as providing areas of connectivity for wildlife through the Site to the surrounding landscape.
- 5.26 As has been described, while much of the existing on-site suitable reptile habitat will be removed to accommodate construction, the DFP represents an overall increase in suitable reptile habitat. New structural landscape planting in the north-west of the Site will address the present lack of connective features, which are likely the cause of the reduced baseline bat activity in this part of the Site, while existing features of value such as the hedgerows and pond will be retained.
- 5.27 Details of the establishment and long term management of newly created and retained habitats, to maximise benefits for biodiversity, will be set out in a LEMP at the detailed design stage.

Additional Mitigation

International Designations

- 5.28 It has been ascertained within the accompanying HRA (CSA/4956/06) that, in the absence of mitigation, the proposed development has the potential to either result in or contribute toward significant negative effects on European site designations (as well as two overlapping SSSIs) of the East Solent system.
- 5.29 In summary, however, subject to payment of the applicable financial contribution to the Solent Recreation Mitigation Strategy prior to occupation of the proposed development, which will be used to fund strategic measures, it can be concluded that the proposed development will have no significant residual negative effect on the Chichester and Langstone Harbours SPA or Ramsar site as a result of impacts associated with recreation pressure.
- 5.30 Furthermore, subject to the proposed creation of a permanent bird refuge in accordance with Policy E17 of the emerging Local Plan, and its management funded by the applicant for the specific purpose of supporting wintering brent geese, it can be concluded that the proposed development will have no significant residual negative effect on the Chichester and Langstone Harbours SPA and Ramsar Site, Portsmouth Harbour SPA and Ramsar site and Solent or Southampton

Water SPA and Ramsar site as a result of impacts associated with loss of supporting habitat. Establishment of the bird refuge site and its management in perpetuity, which will involve land take from present arable cultivation, will additionally ensure that the proposal as a whole is 'nitrogen-negative' (i.e. a betterment on neutrality), and will therefore have no negative effect on the European sites of the East Solent system as a result of eutrophication linked to foul drainage impacts to water quality.

- 5.31 Full details are provided in the accompanying Information to Inform Habitats Regulations Assessment.

Reptiles

- 5.32 A large portion of existing suitable slow worm habitat within the Site will be lost to the proposed development; primarily the large area of semi-improved grassland to the east. It is illegal to recklessly kill or injure a reptile under the Wildlife and Countryside Act 1981, therefore a Reptile Mitigation Strategy will be required.
- 5.33 The Reptile Mitigation Strategy will be prepared at the detailed design stage, however, broadly, it is envisaged that this will entail a capture, exclusion and translocation exercise to an on-site receptor area. The receptor area will need to be created in advance, and enhanced to suitable condition such that its carrying capacity will not be exceeded by the donor population. It is envisaged that the receptor area will be located within informal open space in the north-west of the Site, which shares connectivity with suitable off-site habitats. Exclusion fencing will be maintained in-situ for the duration of construction activities for each phase of development.
- 5.34 The Reptile Mitigation Strategy will need to operate in tandem with the LEMP, to ensure that high quality habitat is maintained on-site such that reptiles are not displaced, and the carrying capacity of adjacent land exceeded.

Residual Effects

- 5.35 Table 3 below summarises the assessment of potential impacts on each important ecological feature, proposed mitigation and the assessed residual effects.

Table 3. Summary of effects

Important Ecological Feature	Potential Impacts and Effects	Avoidance & Mitigation Measures	Mechanism by which Measures are Secured	Residual Effects
Chichester and Langstone Harbours	Increased recreational pressure	Developer funding of SRMS	S106	No significant effect

Important Ecological Feature	Potential Impacts and Effects	Avoidance & Mitigation Measures	Mechanism by which Measures are Secured	Residual Effects
SPA and Ramsar site	Loss of supporting habitat Air quality (vehicle emissions) Eutrophication	Hayling Island Brent Goose and Wader Refuge No significant effect N/A	Planning condition No significant effect N/A	
Portsmouth Harbour SPA and Ramsar site	Loss of supporting habitat Air quality (vehicle emissions) Eutrophication	Hayling Island Brent Goose and Wader Refuge No significant effect N/A	Planning condition No significant effect N/A	No significant effect
Solent Maritime SAC	Air quality (vehicle emissions) Eutrophication	No significant effect N/A	No significant effect N/A	No significant effect
Solent and Dorset Coast SPA	Eutrophication	N/A	N/A	No significant effect
Solent and Southampton Water SPA and Ramsar site	Loss of supporting habitat Air quality (vehicle emissions) Eutrophication	Hayling Island Brent Goose and Wader Refuge No significant effect N/A	Planning condition No significant effect N/A	No significant effect
Solent and Isle of Wight Lagoons SAC	Eutrophication	N/A	N/A	No significant effect
Sinah Common SSSI	No significant effect	N/A	N/A	No significant effect
Hedgerows	Damage during construction	Arboricultural Method Statement	Planning condition	No significant effect
Pond	No significant effect	N/A	N/A	No significant effect
Bats	No significant effect	N/A	N/A	No significant effect

Important Ecological Feature	Potential Impacts and Effects	Avoidance & Mitigation Measures	Mechanism by which Measures are Secured	Residual Effects
Reptiles	Loss of habitat for slow-worm population Injury or killing of individual reptiles	Green infrastructure to secure net gain in suitable reptile habitat On-site translocation and exclusion during construction	Reptile Mitigation Strategy and LEMP secured through planning condition	No significant effect

- 5.36 Subject to the implementation of the above mitigation, no significant residual effects on any important ecological features are anticipated to result from the construction or operation of the proposed development.

Cumulative Effects

- 5.37 Table 4 below identifies the plans/projects that have been scoped in for assessment of potential additive or synergistic effects on the ecological features identified in Table 3 above.

Table 4. Summary of potential cumulative effects

Reference, distance from Site and materials reviewed	Potential impact/effect of plan or project in isolation	Potential for significant cumulative effect?
APP/20/01093 c. 800m west Phase 1 Habitat Survey. WYG, November 2020	<i>Winter birds</i> – Site is designated as a Core Area within the SWBGS, the southern part of which will be lost as a result of development	Yes, though will not be realised as negative effects of both developments will be fully mitigated
Winter Bird Mitigation Strategy. WYG, February 2021	<i>Reptiles</i> – the site supports a low population of slow-worm which would be impacted upon in the absence of mitigation	No
Reptile Survey Report. WYG, November 2021 Bat Survey Report. WYG, November 2020	<i>Bats</i> – site considered important at the local level for foraging and dispersing bats. Disruption via lighting may have negative effects upon local populations	Yes, though will not be realised as negative effects of both developments will be fully mitigated
APP/17/00529 c. 1.21km south-west Ecological Appraisal. Hampshire County Council, January 2015	<i>Solent European Sites</i> – likely increases in recreational pressure and eutrophication	Yes, though will not be realised as negative effects of both developments will be fully mitigated
APP/20/00015 c. 180m west	<i>Solent European Sites</i> – likely increases in recreational pressure and eutrophication	Yes, though will not be realised as negative effects of

Reference, distance from Site and materials reviewed	Potential impact/effect of plan or project in isolation	Potential for significant cumulative effect?
Extended Phase 1 Ecological Assessment and Phase 2 Bat Survey Report. ECOSA, 2015 Ecological Impact Assessment, ECOSA, 2019		both developments will be fully mitigated
APP/19/00324 c. 340m south-west No technical ecology information available	<i>Solent European Sites</i> – likely increases in recreational pressure and eutrophication	Yes, though will not be realised as negative effects of both developments will be fully mitigated
KP3 – Beachlands Havant Borough Council merging Local Plan 2036 (submission version) key policy	<i>Designated Sites (Solent Maritime SAC, Sinah Common SSSI, Beachlands East SINIC)</i> – Regeneration of the funfair, leisure and retail uses could exacerbate recreation pressures resulting from increased population linked to development	Yes, though will not be realised as negative effects of both developments will be fully mitigated by the SRMS
H28 – Fathoms Reach Havant Borough Council emerging Local Plan 2036 (submission version) housing allocation policy	<i>Solent European Sites</i> – likely increases in recreational pressure and eutrophication	Yes, though will not be realised as negative effects of both developments will be fully mitigated
	<i>Reptiles</i> – the allocation is contiguous with the Site and is likely to support the same slow worm population	Yes, though the subject Site is likely to result in a net gain in suitable habitat and no significant cumulative negative effect is anticipated
	<i>Bats</i> – the allocation is contiguous with the Site and is likely to support foraging and dispersal (and potentially roosting) of the same bat populations	Yes, though appropriate mitigation may be readily secured for both sites therefore no significant cumulative negative effect is anticipated

5.38 The primary potential impact pathways to the designated European sites of the East Solent system (including but not limited to the Chichester and Langstone Harbours SPA and Ramsar site, and Solent Maritime SAC) only have the potential for significance when considered in

combination with other plans or projects, i.e. these are cumulative impact pathways. These include increased recreational pressure and eutrophication of the water environment. These pathways are assessed in detail in the accompanying Information to Inform Habitats Regulations Assessment (CSA/4956/06). The legal protections of the Conservation of Habitats and Species Regulations 2017 (as amended) will ensure that no development or regeneration project (as in the case of KP3) will be permitted unless it has first been ascertained that it will have no adverse effect on the integrity of any European site, including in combination with other plans or projects.

- 5.39 Otherwise, nearby housing developments have the potential to impact upon the same species populations of bats and slow worms as are present at the subject Site. However, with the implementation of site specific mitigation measures there is no likelihood of significant residual cumulative negative effects.

Compensation

- 5.40 No significant residual negative effects on important ecological features are anticipated to result from the proposed development, following the inclusion of impact avoidance and mitigation measures described above. As such, no compensatory measures are proposed.

Enhancement

- 5.41 The DFP illustrates landscape planting enhancements which will make positive contributions to on-site biodiversity. New habitat creation will provide opportunities for species confirmed to be present on-site at baseline, such as nesting birds, bats and reptiles.

- 5.42 In addition to the above enhancements which are embedded into development proposals, a range of additional ecological enhancement measures will be delivered as part of the proposed development, as identified below. Further details will be set out in a LEMP at the detailed design stage, however as an indicative guide:

- Inclusion of plant species of known wildlife value within the landscaping scheme, including night-scented varieties to benefit bats.
- Provision of new bat roosting opportunities: Bat boxes will be erected on retained mature trees. These will be a purpose-built, durable and long-lasting variety such as available from Schwegler or Habibat.
- Provision of new bird nesting opportunities: Swift bricks will be built into new dwellings at a ratio of one box for every new dwelling, to benefit a variety of bird species, particularly swifts.
- Creation of log piles: Timber generated from tree/vegetation clearance works at the Site will be used to make at least four log piles for wildlife benefit. These will be sited within boundary vegetation

where they will be least disturbed. New material can be added as required following any future management works.

- Provision of hedgehog gaps: Hedgehogs have been scoped out of detailed assessment and no specific mitigation is proposed, however it is important that opportunities for hedgehogs to move through the landscape are preserved. Although not strictly an 'enhancement' measure, provision of hedgehog-friendly gravel boards or equivalent, providing a minimum 5 x 5 inch gap, will be used to maintain permeability for hedgehogs across the development and associated gardens. The number and location of hedgehog gaps will be determined at the detailed design stage and set out within the LEMP.

- 5.43 A quantitative calculation using Natural England's Biodiversity Metric (3.0) of the projected change in habitat and hedgerow units at the Site, presented at Appendix F, confirms that the proposed development will achieve a biodiversity net gain. Given the conceptual/outline nature of the proposals, the calculation relies on various assumptions, which are made explicit within the 'Assessor Comments' set out in the Metric.

Monitoring

- 5.44 There will be ongoing monitoring of newly established and enhanced habitats as part of POS. This commitment will be made, and further detail provided, within the LEMP to be prepared at the detailed design stage.
- 5.45 In line with Policy E17 of the HBC emerging Local Plan, monitoring will be required of the brent goose bird refuge provided to mitigate the loss of the Site as a Core Area within the SWBGS. Further detail will be set out in the Winter Bird Mitigation Strategy.

6.0 CONCLUSIONS

- 6.1 In the absence of any mitigation measures, the proposed development would have the potential to result in significant negative effects on the European site designations of the East Solent system, including but not limited to the Chichester and Langstone and Portsmouth Harbours SPAs and Ramsar sites, and the Solent Maritime SAC. Potential impact pathways include the loss of functionally linked supporting habitats for wintering birds, increased recreational pressure at coastal sites and eutrophication of the water environment.
- 6.2 The Site is, however, dominated by arable cultivation and other common and widespread habitats of limited ecological value. Up to date surveys have indicated that great crested newts are likely absent and the breeding bird assemblage is modest, while the populations of bats and slow worms using the Site are restricted in their spatial distribution owing to the limited availability of suitable habitats.
- 6.3 Mitigation for the potential effects on European sites are addressed in the accompanying Information to Inform Habitats Regulations Assessment, and will include the establishment of a permanent off-site brent goose refuge and financial contributions toward the Solent Recreation Mitigation Strategy.
- 6.4 The proposed development is not anticipated to result in any significant negative effects on local species populations, however construction phase measures will be required to avoid the killing and injury of reptiles. The Development Framework Plan demonstrates the potential to deliver net benefits for wildlife in the form of additional habitats, with the opportunity to provide additional biodiversity enhancement measures alongside the new housing.
- 6.5 The measures set out herein can be secured through appropriate conditions attached to any planning consent, and the development may therefore be delivered without harm to nature conservation interests. Specifically, it is anticipated that planning conditions would be used to secure:
- Construction Environmental Management Plan (CEMP): In addition to wider environmental controls and best practice construction management, the CEMP will set out construction-phase impact avoidance measures with respect to nesting birds and reptiles.
 - Landscape and Ecology Management Plan (LEMP): The LEMP will detail the establishment and long-term management of retained and newly created habitats to maximise benefits for wildlife. It will include a graphical Ecological Enhancement Plan, setting out the number, type and position of enhancement features.

- Reptile Mitigation Strategy: A mitigation strategy will be prepared at the detailed design stage, which is anticipated to be centred around a capture, exclusion and translocation exercise to an on-site receptor area(s).
- 6.6 Based on the successful implementation of avoidance, mitigation and enhancement measures set out herein, the scheme is considered to accord with all relevant nature conservation legislation, as well as with the provisions of Policy E14, E15, E16, EX1, E17 and E18 of the HBC emerging Local Plan 2036.

7.0 REFERENCES

Baker, J., 2016. *Biodiversity Net Gain: Good practice principles for development*. CIEEM, CIRIA & IEMA.

Bird Aware Solent, 2017. *Solent Recreation Mitigation Strategy*.

British Standards Institution, 2013. *BS 42020:2013 Biodiversity – Code of practice for planning and development*. London: BSI.

Buglife, no date. *Important Invertebrate Areas*. [online] Available at: <<https://www.buglife.org.uk/resources/important-invertebrate-areas/>> [Accessed October 2021].

Chartered Institute of Ecology and Environmental Management, 2016. *Guidelines for Assessing and Using Biodiversity Data*. Winchester: CIEEM.

Chartered Institute of Ecology and Environmental Management, 2017. *Guidelines for Ecological Report Writing*. Winchester: CIEEM.

Chartered Institute of Ecology and Environmental Management, 2018. *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Version 1.1. Winchester: CIEEM.

Collins, J., ed., 2016. *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd ed. London: The Bat Conservation Trust.

Defra, 2011. *Biodiversity 2020: A strategy for England's wildlife and ecosystem services*. London: Defra.

Defra, 2019. *Natural Environment Planning Policy Guidance: Biodiversity, geodiversity and ecosystems*. [online, last updated July 2019] Available at: <<https://www.gov.uk/guidance/natural-environment#biodiversity-geodiversity-and-ecosystems>> [Accessed October 2021].

Eaton, M., Aebischer, N., Brown, A., Heam, R., Lock, L., Musgrove, A., Noble, D., Stroud, D. and Gregory, R., 2015. Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. *British Birds*, 108, pp.708-746.

English Nature, 2001. *Great Crested Newt Mitigation Guidelines*. Peterborough: EN.

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

Fuller, R.J. 1980. A method for assessing the ornithological interest of sites for conservation. *Biological Conservation*. 17. 229-239. 10.1016/0006-3207(80)90058-0.

Havant Borough Council, 2020. *Havant Borough Local Plan 2036: Habitats Regulations Assessment*. Havant.

Havant Borough Council, 2021. *Havant Borough Council Submission Local Plan 2036*. Havant.

HGBI, 1998. *Evaluating local mitigation/translocation programmes: Maintaining Best Practice and lawful standards*. HGBI advisory notes for Amphibian and Reptile Groups (ARG's). Halesworth: Herpetofauna Groups of Britain and Ireland.

Joint Nature Conservation Committee, 1990. *Handbook for Phase 1 habitat survey – a technique for environmental audit*. Revised reprint 2010. Peterborough: JNCC.

JNCC and Defra (on behalf of the Four Countries' Biodiversity Group), 2012. *UK Post-2010 Biodiversity Framework*. [pdf] Peterborough: JNCC. Available at: < <http://jncc.defra.gov.uk/page-6189> > [Accessed 2021].

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

Multi-Agency Geographic Information for the Countryside (MAGIC), 2013. *Interactive Map*. [online] Available at: <<http://www.magic.gov.uk/MagicMap.aspx>> [Accessed September 2021].

Natural England, 2011. *Reptile Mitigation Guidelines*. Natural England Technical Information Note TIN102. York: Natural England.

Natural England and Department for Environment, Food & Rural Affairs, 2014. *Protected species and development: advice for local planning authorities*. [online, last updated January 2021] Available at: <<https://www.gov.uk/protected-species-and-sites-how-to-review-planning-proposals>> [Accessed October 2021].

Oldham, R. S., Keeble, J., Swan, M. J. S. & Jeffcote, M., 2000. Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). *Herpetological Journal*, 10(4), pp.143-155.

Rodewald, P. & Shumar, M. 2013. *Bird Atlas 2007-11: The Breeding and Wintering Birds of Britain and Ireland*. The Auk: Ornithological Advances. 131. 252-254. 10.1642/AUK-14-22.1.

Wray, S., Wells, D., Long, E. and Mitchell-Jones, T., 2010. *Valuing Bats in Ecological Impact Assessment*. In Practice, 70, pp.23-25.

The Woodland Trust, no date. *Ancient Tree Inventory*. [online] Available at: <<https://ati.woodlandtrust.org.uk/>> [Accessed October 2021].

Appendix A

Habitats Plan & Photographs



9/B.2 Southgate Chambers, 37-39
Southgate Street, Winchester,
SO23 9EH

Project Rook Farm, Hayling Island

Date Sept 2021

Drawing No. CSA/4956/103



Photograph 1. View of Field F1 looking west.



Photograph 2. On-site building and access track.



Photograph 3. Uncultivated field margins along eastern border of Field F1.



Photograph 4. Uncultivated field margins along the western boundary of Field 1.



Photograph 5. Large area of grassland



Photograph 6. On-site pond

Appendix B

Legislation and Planning Policy

- 1.1. The **Conservation of Habitats and Species Regulations 2017** (as amended) make prescriptions for the designation and protection of Sites of Community Importance ('European sites', i.e. Special Areas of Conservation and Special Protection Areas) and European Protected Species (EPS). The latter include all native bats, great crested newts, dormice, otters and certain reptiles, listed under Annex II of the Regulations. Following the UK's departure from the European Union, the provisions of the Regulations have been retained through enactment of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, which came into force on 31 December 2020.
- 1.2. The **Wildlife and Countryside Act 1981** (as amended, principally by the Countryside and Rights of Way Act 2000) forms the basis for protection of statutory designated sites of national importance (e.g. Sites of Special Scientific Interest; SSSIs) and native species that are rare and vulnerable in a national context. Additionally, badgers are protected under the **Protection of Badgers Act 1992**.
- 1.3. Section 40(1) of the **Natural Environment and Rural Communities (NERC) Act 2006** states that each public authority, "must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity." This legislation makes it clear that planning authorities should consider impacts to biodiversity when determining planning applications, with particular regard to the Section 41 (S41) lists of 56 habitats and 943 species of principal importance. The UK Biodiversity Action Plan (BAP) has been superseded by the Biodiversity 2020 Strategy, however Local BAPs continue to influence biodiversity management and conservation effort, including through the spatial planning system, at the local scale.
- 1.4. The **National Planning Policy Framework (2021)** (NPPF) sets out the government planning policies for England and how they should be applied. With regards to ecology and biodiversity, Chapter 15: Conserving and Enhancing the Natural Environment, paragraph 174, states that the planning system and planning policies should minimise impacts on and provide net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.
- 1.5. Paragraph 180 sets out the principles that local planning authorities should apply when determining planning applications:
 - If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts).
 - 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.
- Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

- 1.6. Accompanying the NPPF, central government guidance on the implementation of planning policies is set out within online Planning Policy Guidance (PPG). That relating to the protection and enhancement of the Natural Environment was most recently updated in August 2021. The Natural Environment PPG addresses principles across a broad spectrum of topics targeting biodiversity conservation, from individual site and species protection through to the supporting of ecosystem services, and the use of local ecological networks to support the national Nature Recovery Network. In particular the PPG promotes the delivery of measurable Biodiversity Net Gain through the creation and enhancement of habitats alongside development.
- 1.7. The Government Circular 06/2005, which is referred to within the NPPF, defines statutory nature conservation sites and protected species as a material consideration in the planning process.
- 1.8. Local planning policies of relevance to ecology, biodiversity and/or nature conservation have been set out in Table 1 below.

Table 1. Summary of regional and local planning policy relating to ecology

Policy	Summary
Havant Borough Council Submitted Local Plan 2036	
Policy E14: The Local Ecological Network	All development in Havant Borough is expected to protect, conserve and enhance the Borough's Local Ecological Network. Planning permission will only be granted where: a. The development results in biodiversity net gain; b. The development avoids the fragmentation of the Local Ecological Network including across administrative boundaries; c. The applicant has identified and assessed the level of ecological value of the site through adequate and proportionate information and any matters arising have been addressed through an avoidance or mitigation plan; and d. Any necessary mitigation plan includes provision for ongoing management and maintenance.

Policy	Summary
	In addition to the above, priority habitats in the Borough are afforded protection by specific nature conservation designations. Development proposals which could affect a designated site will need to consider the impact and respond appropriately. International Nature Conservation Designations Development which has the potential to have an impact on an international nature conservation designation will be subject to a Habitats Regulations Assessment and, if necessary, an Appropriate Assessment, to determine the potential for likely significant effects. Development that is likely to have an adverse effect, either alone or in combination with another project/plan, on the integrity of an international site will not be permitted unless it can be demonstrated that: e. Necessary avoidance or mitigation is secured such that in combination with other development there will be no adverse effects on the integrity of the designated sites; or f. There are no alternative sites for the proposal, there are reasons of overriding public benefit/interest and compensatory provision is secured. National Nature Conservation Designations In addition to criteria a) to d), planning permission will only be granted on or adjacent to a national nature conservation designation where: g. Development is unlikely to have an adverse effect either individually or in combination with other developments. An exception to j) will only be made where: h. The benefit of development clearly outweighs the likely impact on the feature(s) of the designation; and i. Mitigation and/or compensation measures are secured to offset any likely impacts. Local Nature Conservation Designations In addition to criteria a) to d), planning permission will only be permitted on or adjacent to a local nature conservation designation where: j. The value of the designation is retained and, where possible, enhanced in line with its original criteria for designation through avoidance and/or mitigation measures; or k. The benefit of the development can be shown to clearly outweigh the substantive nature conservation value of the site, and where the impact cannot be avoided nor mitigated, compensation is provided. Joint working The Council will continue to work collaboratively with partner authorities and bodies to develop a strategic approach towards air quality, green infrastructure and ecological networks. Under duty-to-cooperate, the Council is committed to further investigating the adverse effect of nitrogen identified at the Solent Maritime SAC within Langstone Harbour and if necessary, the preparation of a Nitrogen Action Plan for air quality in partnership with Portsmouth City Council and other appropriate partners.

Policy	Summary
E15: Protected Species	Development proposals which are likely to affect protected species, and/or their supporting habitats, must undertake appropriate surveys to establish their presence/likely absence. In using the findings of such surveys, proposals should, in the first instance, avoid an impact on a protected species. If this is not possible proposals should mitigate and compensate. Planning permission will only be granted where: a. A Mitigation Plan, or if this is not possible a Compensation Plan, is provided to the satisfaction of the Council; and b. A Monitoring and Review Plan is put in place. Bechstein's Bat In instances where Bechstein's bat is likely to be found on site and/or nearby, survey methods appropriate to Bechstein's bat must be used and undertaken by a suitably qualified ecologist. If the presence of Bechstein's bat is established on site and/or nearby, planning permission will only be granted where: c. Impacts on Bechstein's bat breeding habitat (i.e. net loss of/significant disturbance to woodland or trees containing roosts) are avoided; d. Proposals include appropriate buffers to woodlands, trees, hedgerows and other flight corridors, considering the location of roosts and foraging/commuting habitats; and e. Review and monitoring plans are put in place. Where the above measures cannot be met planning permission will be refused, unless the applicant can show, subject to meeting the tests of the Habitats Regulations, that there would not be an adverse effect on the population of the relevant protected species.
Policy E16: Recreation impact on the Solent European Sites	Planning permission will be granted for new dwellings and/or overnight accommodation that mitigates the likely significant effect on the Solent European Sites. This mitigation can be provided through either: a. A financial contribution consistent with the Solent Recreation Mitigation Strategy (SRMS); or b. A developer provided package of measures associated with the proposed development supported by evidence that it will avoid or mitigate any likely significant effect; or c. A combination of measures in (a) and (b) above. Where these measures cannot be provided development proposals will be refused, unless the applicant can show, subject to meeting the tests of the Habitats Regulations, that there would not be a likely significant effect on the Solent European Sites either alone or in combination with other plans or projects.
Policy EX1: Water Quality impact on Solent European Sites	New dwellings and/or development resulting in a net gain in overnight accommodation which would cause a likely significant effect on the designated sites will need to provide a nutrient budget. Planning permission will only then be granted if a mitigation package is provided which will remove the likely significant effect. This mitigation can be provided through either: a. A financial contribution towards the Council's strategic

Policy	Summary
	mitigation package; or b. A developer provided package of measures associated with the proposed development supported by evidence that it will avoid or mitigate any likely significant effect on the Solent European Sites; or c. A combination of measures in (a) and (b) above. Where these measures cannot be provided development proposals will be refused, unless the applicant can show, subject to meeting the tests of the Habitats Regulations, that there would not be a likely significant effect on the Solent European Sites either alone or in combination with other plans or projects.
Policy E17: Solent Wader and Brent Goose feeding and roosting Sites	Development proposals on, or adjacent to, sites which are used by Solent waders and/or Brent Geese will be assessed in line with the appropriate regulations. These proposals will, therefore, require a project level Habitats Regulations Assessment and, if necessary, an Appropriate Assessment. The Council will consider the Solent Waders and Brent Goose (SWBG) Strategy and the latest survey data when making such an assessment. Allocations Rook Farm (H27) Development proposals at Rook Farm (H27), which is located on a Core Area, will only be permitted where suitable replacement habitat is provided in perpetuity as part of the Hayling Island Brent Goose Refuge (E26), or alternative provision agreed in consultation with the local planning authority which: a. Contributes to a biodiversity net gain to the SWBG network; b. Is of an equal or, where possible, greater size and quality to the Core Area being lost or damaged; and c. Is secured through a costed Habitat Management and Monitoring Plan. Delivery and Management of Replacement Habitat Where suitable replacement habitat is required to offset the loss or damage to a SWBG site, the replacement land will need to be provided prior to commencement of development. The land for replacement habitat should be within the locality of the site and managed in a suitable condition for SWBG prior to the loss or damage to the SWBG area being proposed for development. The land should be secured and managed through an agreed costed Habitat Management and Monitoring Plan in perpetuity.
Policy E18: Trees, hedgerows and woodland	Development affecting trees, hedgerows and woodlands will only be permitted where it: a. Reflects, conserves or enhances the existing landscape and integrates the development into its surroundings, adding visual interest and amenity; b. Adequately protects existing trees and hedgerows including their root systems prior to, during and after the construction process; and c. Will not result in the loss or deterioration of ancient woodland and ancient or veteran trees.

Policy	Summary
	The Council will refuse planning permission for proposals that threaten the retention of important trees, hedgerows, and woodland, unless the need for, and benefits of development in that location clearly outweigh the impact of the proposal. Provision of new trees are expected as part of development proposals for new homes and commercial floorspace. Planning permission will be granted where it: d. Facilitates adaptation to climate change by providing shade, shelter and cooling through new tree planting; and e. Includes proposals for the successful implementation, maintenance and management of landscape and tree planting schemes.
Havant Borough Local Plan (Allocations) July 2014	
Policy DM23: Sites for Brent Geese and Waders	Planning permission will be granted for developments that avoid important sites for Brent Geese and/or waders outside of the statutory designated areas, identified on the Policies Map. Where this cannot be avoided, development proposals on or adjacent to an important Brent Goose and/or wader site outside of the statutory designated areas will need to demonstrate levels of impact, alone and in combination with other proposals subject to the tests of the Habitats Regulations. Where a negative impact upon a site cannot be avoided or satisfactorily mitigated, and the tests of the Habitats Regulations are met as necessary, replacement feeding/roosting habitat, on a no net loss basis, will be sought. Where a negative impact upon an important site cannot be avoided or mitigated and replacement feeding/roosting habitat is not or cannot be provided on a no net loss basis, the proposal will be refused. Planning permission will be granted for development on or adjacent to uncertain sites for Brent Geese and/or waders outside of the statutory designated areas, where appropriate surveys are undertaken and it is determined that the site has no importance.
Policy DM24: Recreational Disturbance to Special Protected Areas (SPAs) from Residential Development	Planning permission will be granted for residential developments that avoid or mitigate a likely significant effect on the SPAs, caused by recreational disturbance through the in-combination effect of net additional dwellings. This mitigation can be provided through: a) A financial contribution. b) A developer provided package of measures associated with the proposed development designed to avoid or mitigate any significant effect on the SPAs subject to meeting the tests of the Habitats Regulations. c) A combination of measures in (a) and (b) above. Where these measures cannot be provided development proposals will be refused, unless the applicant can show, subject to meeting the tests of the Habitats Regulations, that there would not be an adverse effect on the integrity of the SPAs.

Policy	Summary
	The provisions of this policy do not exclude the possibility that some residential schemes, due to their size/and or location, may require individual assessment under the Habitats Regulations on advice from Natural England and additional site specific avoidance or mitigation measures.
Havant Borough Local Plan (Core Strategy) March 2011	
Policy DM8: Conservation, Protection and Enhancement of Existing Natural Features	Development will only be permitted where it protects and enhances local habitats and landscape distinctiveness and which addresses all of the relevant criteria as set out below: 1. Protects natural features of nature conservation and/or amenity importance on the site, for example trees, woodlands, hedgerows, soils, streams, stream corridors, springs, ditches or ponds from damage, destruction and a deterioration in quality. 2. Sympathetically incorporates existing features into the overall design of the scheme including measures taken to ensure their continued survival. 3. Provides new landscape works that integrate successfully with the local environment and existing natural features, using local materials and plant species and making provision for future maintenance of new landscape works associated with new developments. 4. Ensures sequences of greenspaces are maintained and protects the attractiveness and visual amenity of all green open spaces that contribute to the identity of the borough.

Appendix C

Desk Study Information



Hampshire Biodiversity
Information Centre

HBIC Ref: 10107

Statutory designated
sites within 2km of Rook
Farm, Hayling Island
(SZ71929977):

Legend

- Central Search Point
- 2km Search Area
- SSSI
- SAC
- SPA
- LNR
- RAMSAR

Your licence to re-use expires on 31/08/2022

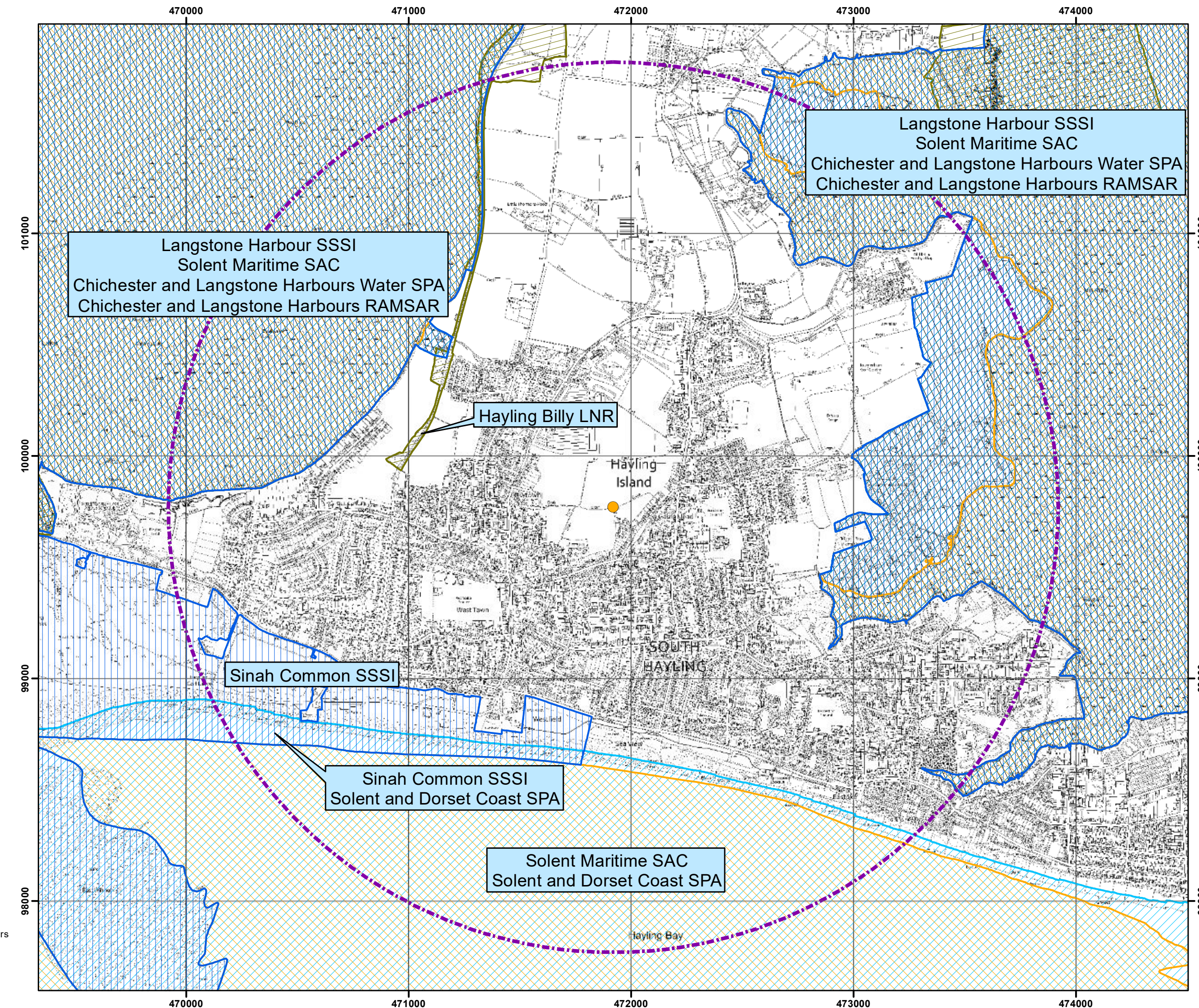
Created: 31/08/2021

Scale at A3: 1:16,000

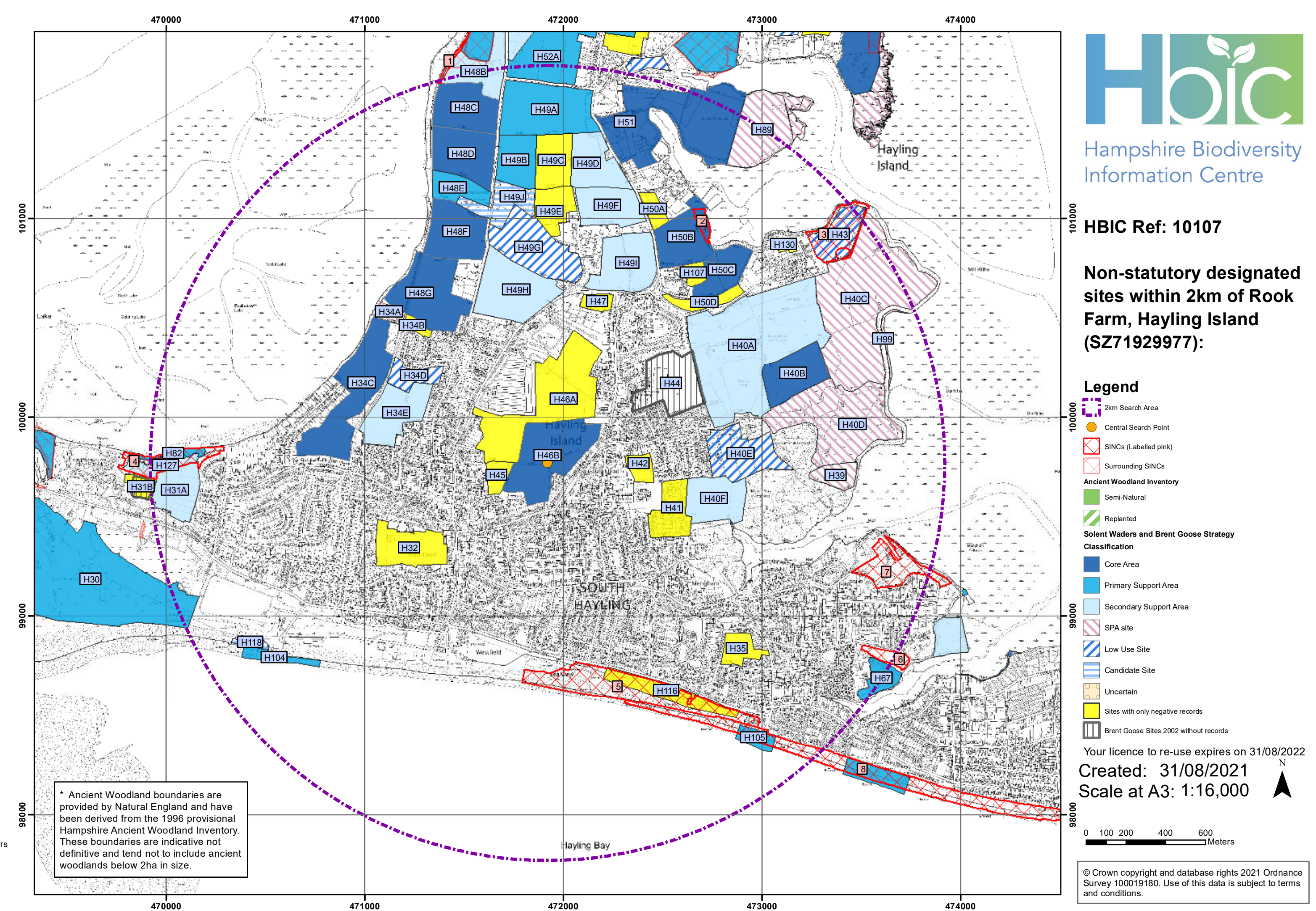


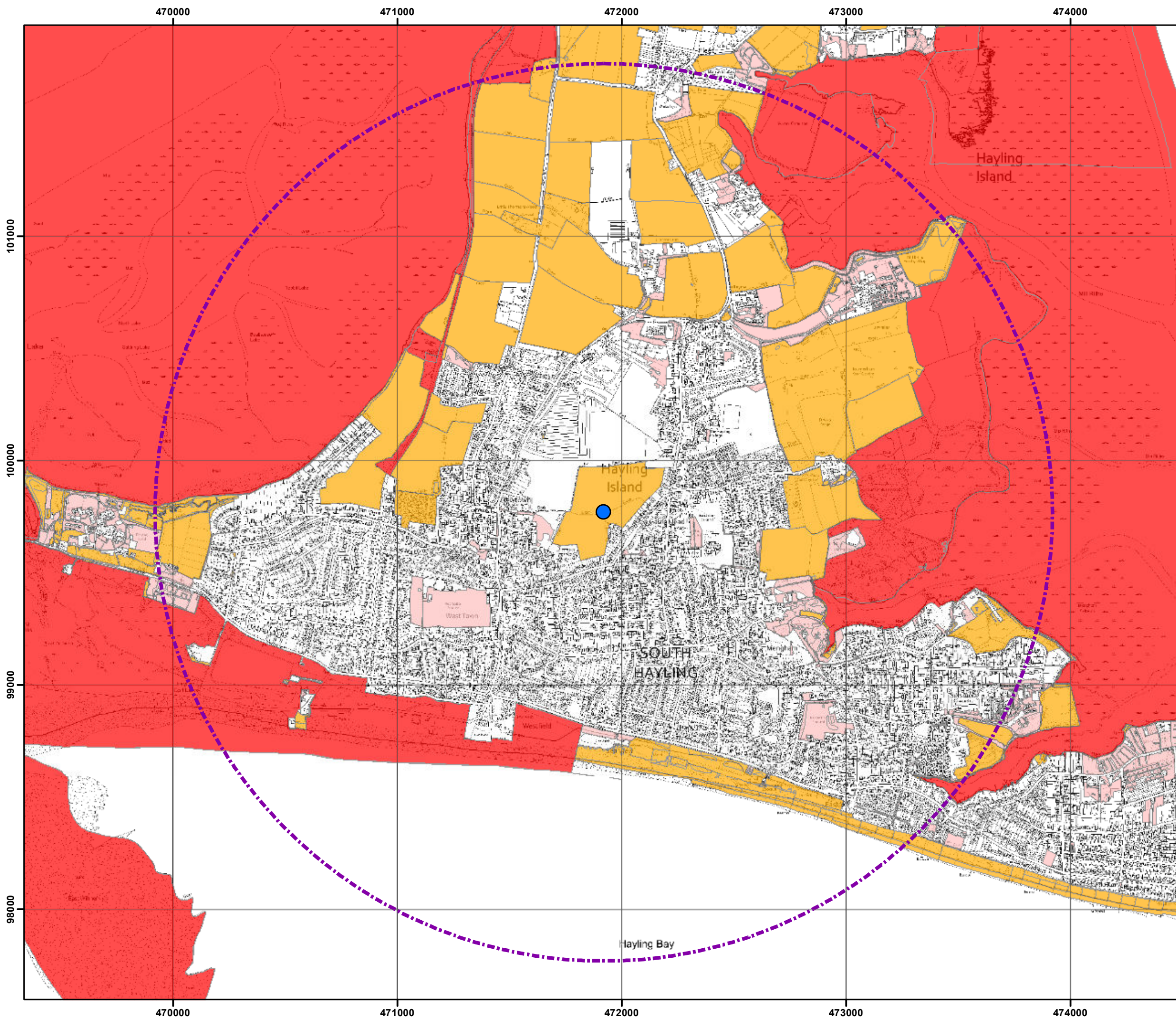
0 100 200 400 600
Meters

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and conditions.



Please note: The boundaries for statutory sites have been provided as digital data from Natural England (NE); this digital data is indicative not definitive. Paper maps produced by NE at the time the sites were designated show the official site boundaries.





Hampshire Biodiversity
Information Centre

HBIC Ref: 10107

**Ecological Network
Mapping within 2km of
Rook Farm, Hayling Island
(SZ71929977):**

Legend

-  2km Search Area
-  Central Search Point
-  Core Statutory
-  Core Non-statutory
-  Network Opportunities

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Created: 31/08/2021

Scale at A3: 1:16,000



0 100 200 400 600
Meters

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Hampshire Biodiversity
Information Centre

HBIC Ref: 10107

Priority habitats within 2km of Rook Farm, Hayling Island (SZ71929977):

Some Habitats may overlap.
Please see 'UK Priority Habitats
Legend' for full Legend, there
is a link to this within
your covering letter

(see explanatory note for details of
the origin and accuracy of this data)

Legend

- 2km Search Area
- Central Search Point

Your licence to re-use expires on 31/08/2022

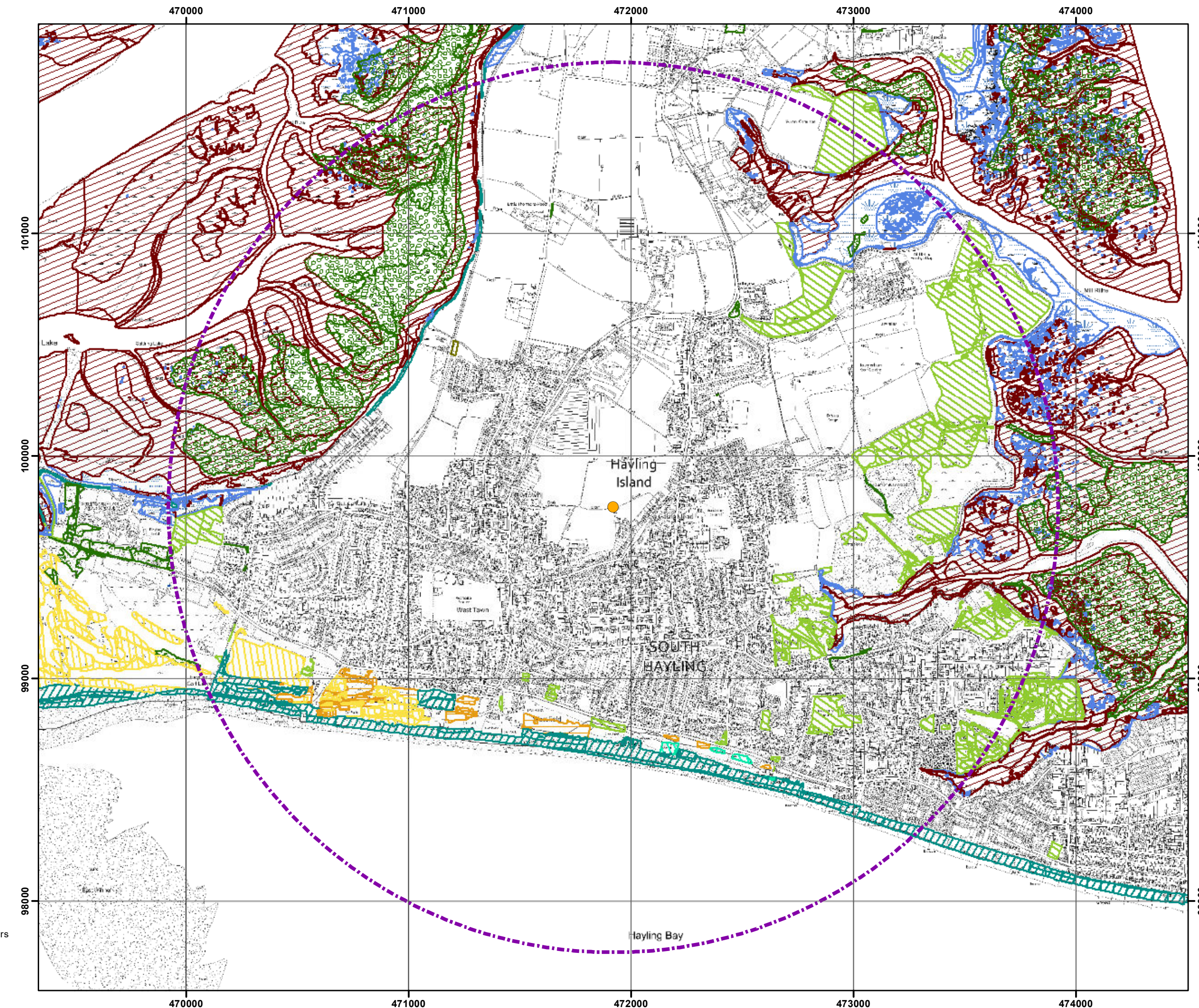
Created: 31/08/2021

Scale at A3: 1:16,000



0 100 200 400 600
Meters

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and conditions.





Hampshire Biodiversity
Information Centre

HBIC Ref: 10107

**Broad habitats within 2km
of Rook Farm, Hayling
Island (SZ71929977):**

Some Habitats may overlap.
Please see 'UK Broad Habitats
Legend' for full Legend, there
is a link to this within
your covering letter

(see explanatory note for details of
the origin and accuracy of this data)

Legend

-  2km Search Area
-  Central Search Point

Your licence to re-use expires on 31/08/2022

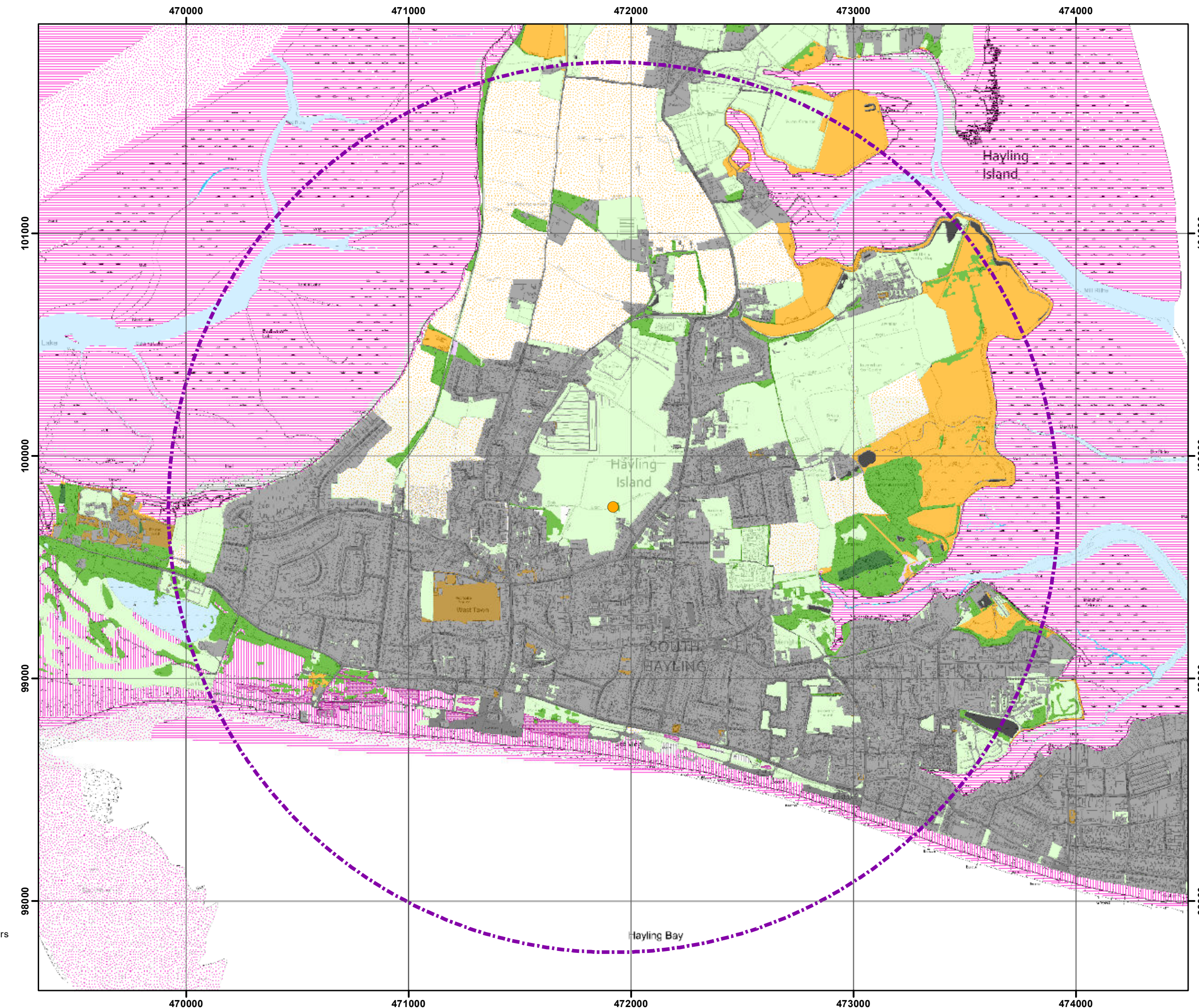
Created: 31/08/2021

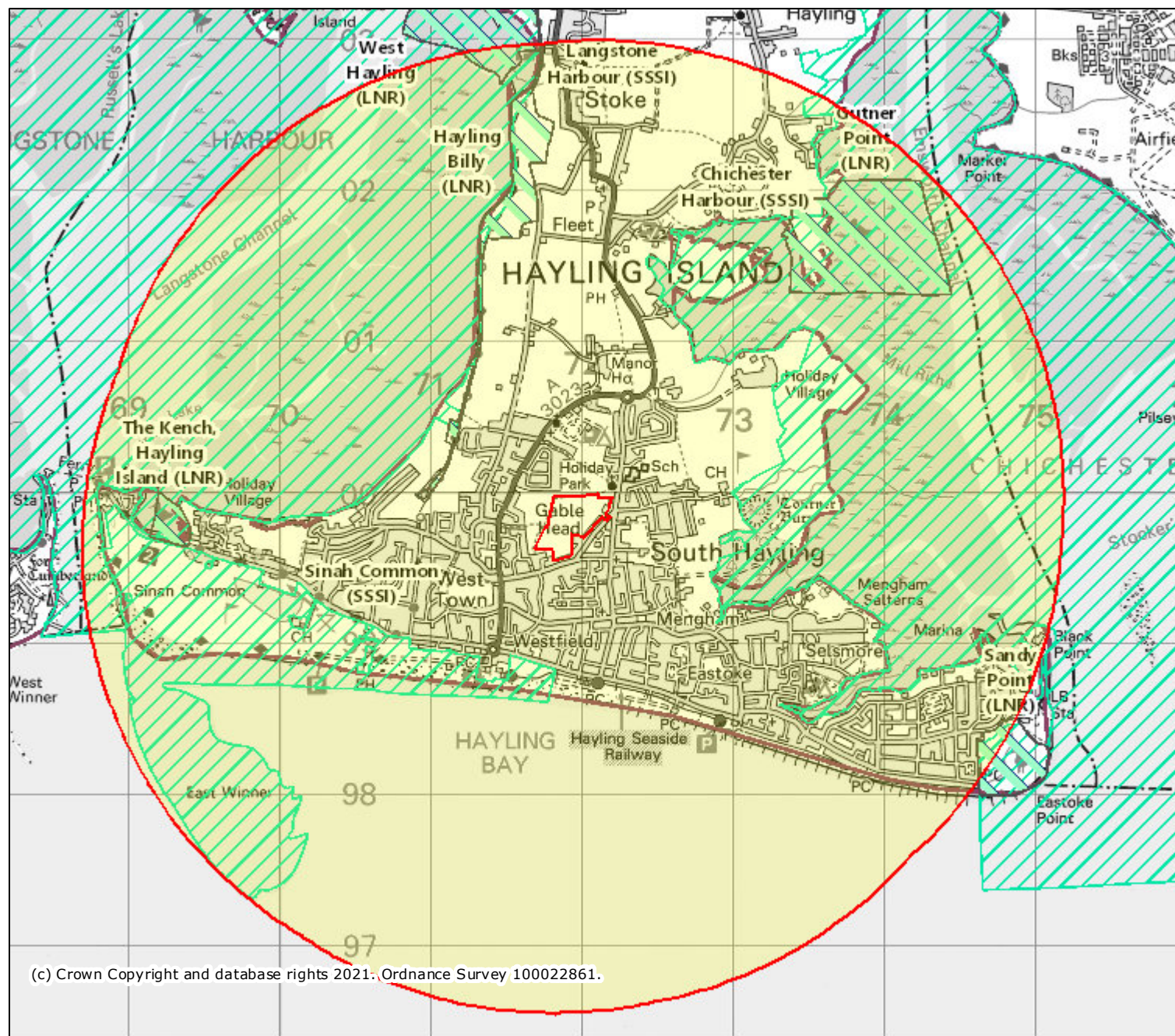
Scale at A3: 1:16,000



0 100 200 400 600
Meters

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Legend

-  Local Nature Reserves (England)
-  National Nature Reserves (England)
-  Sites of Special Scientific Interest (England)

Projection = OSGB36

xmin = 465600

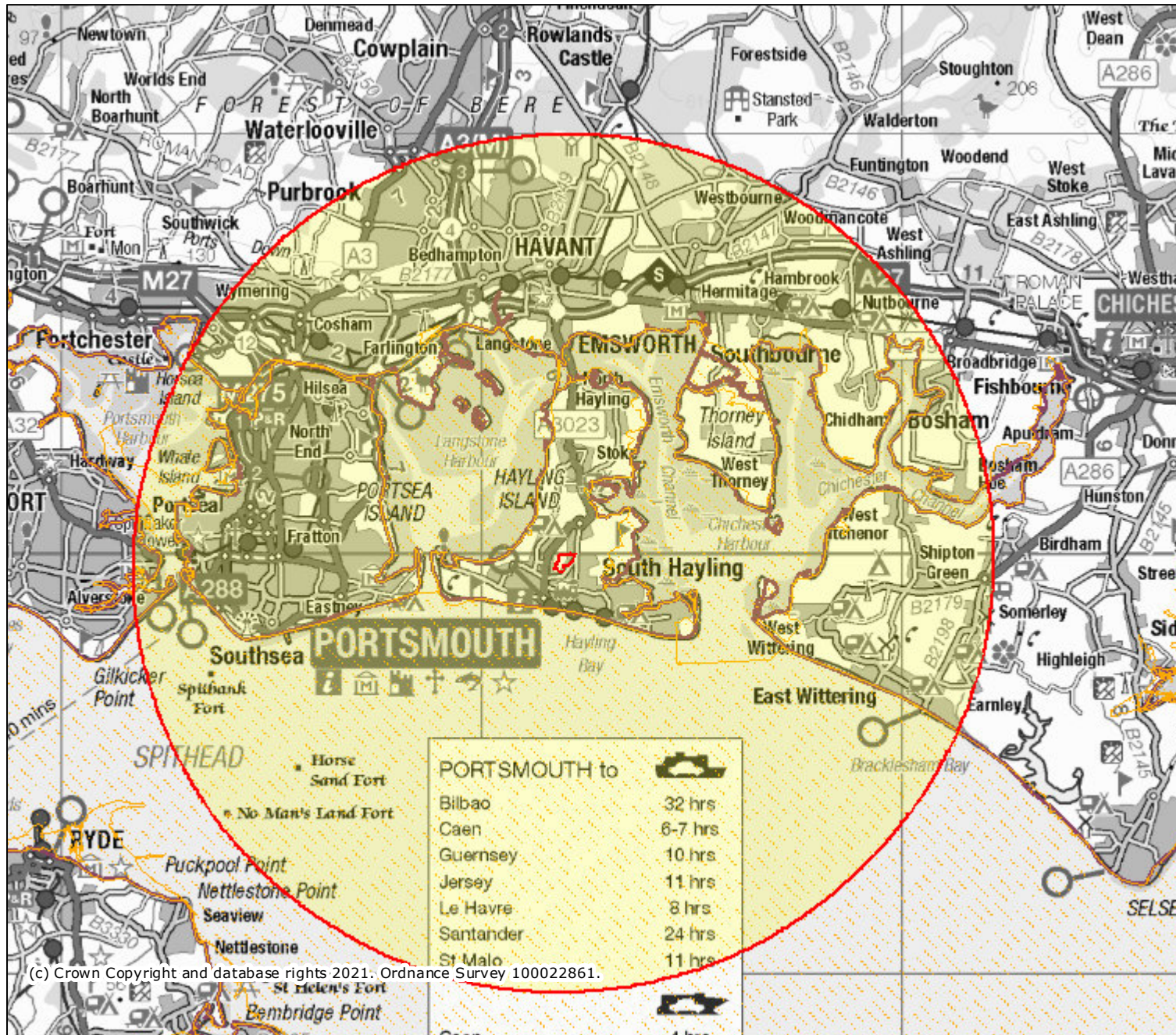
ymin = 96720

xmax = 478600

ymax = 102900

Map produced by MAGIC on 10 September, 2021.
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MAGiC 956 Rook Farm, Hayling Is. - Marine Des. 10km

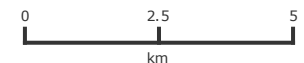


Legend

Special Protection Areas (Marine Components GB)

-  Classified
-  Potential

Projection = OSGB36
 xmin = 449200
 ymin = 89690
 xmax = 496200
 ymax = 111800



Map produced by MAGiC on 22 October, 2021.
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Legend

- Ramsar Sites (England)
- Proposed Ramsar Sites (England)
- Special Areas of Conservation (England)
- Possible Special Areas of Conservation (England)
- Special Protection Areas (England)
- Potential Special Protection Areas (England)

Projection = OSGB36

xmin = 450300

ymin = 89710

xmax = 493900

ymax = 110300

Map produced by MAGIC on 10 September, 2021.

Copyright resides with the data suppliers and the map must not be reproduced without their permission. Some information in MAGIC is a snapshot of the information that is being maintained or continually updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.

Appendix D

Habitats and Flora Species List

Site name	Rook Farm, Hayling Island										
Survey date and surveyor	27/08/2021 SV										
Scientific name	Common name	Habitat Type									
		F1 margins	F2 margins	H1	H2	H3	H4	TL1	Small SI Grassland Area	Large SI grassland area	
Fern											
<i>Pteridium aquilinum</i>	Bracken	x	x								
Herb species											
<i>Achillea millefolium</i>	Yarrow									x	
<i>Anagallis arvensis</i>	Scarlet pimpernel	x									
<i>Arcium</i> sp.	Burdock	x									
<i>Brassica</i> sp.	Wild cabbage	x									
<i>Chenopodium album</i>	Fat-hen	x	x								
<i>Cirsium vulgare</i>	Spear thistle	x	x							x	x
<i>Convolvulus arvensis</i>	Field bindweed	x	x	x				x	x	x	x
<i>Cotoneaster</i> spp.	Cotoneaster					x					
<i>Epilobium</i> sp.	Willowherb	x								x	x
<i>Equisetum arvense</i>	Field horsetail	x	x								x
<i>Euphorbia</i> sp.	Spurge	x									
<i>Galium aparine</i>	Cleavers	x									
<i>Galium</i> sp.	Bedstraw	x	x								x
<i>Geranium</i> sp.	Crane's-bill	x	x							x	
<i>Helminthotheca echinodes</i>	Bristly oxlongue	x	x								x
<i>Hieracium sphondylium</i>	Hogweed	x	x							x	
<i>Hypericum</i> sp.	St John's-wort	x									x
<i>Hypochaeris radicata</i>	Cat's-ear	x									
<i>Jacobaea vulgaris</i>	Common ragwort	x	x							x	x
<i>Lapsana</i>	Nipplewort	x									
<i>Leucanthemum vulgare</i>	Oxeye daisy									x	
<i>Lotus</i> sp.	Trefoil	x									
<i>Malva sylvestris</i>	Common mallow	x	x								
<i>Matricaria chamomilla</i>	Scented mayweed	x	x								
<i>Medicago lupulina</i>	Black medick	x	x								
<i>Persicaria maculosa</i>	Redshank	x	x								
<i>Plantago lanceolata</i>	Ribwort plantain	x	x								x
<i>Plantago major</i>	Greater plantain	x	x								
<i>Polygonum</i> sp.	Knotgrass	x	x								
<i>Pulicaria dysenterica</i>	Common fleabane	x									
<i>Ranunculus repens</i>	Creeping buttercup									x	x
<i>Rumex</i> sp.	Dock	x	x							x	x
<i>Sonchus oleraceus</i>	Smooth sow-thistle	x	x								
<i>Taraxacum officinale</i> agg.	Dandelion	x	x								x
<i>Trifolium pratense</i>	Red clover	x									
<i>Trifolium</i> sp.	Clover									x	x
<i>Tripleurospermum inodorum</i>	Scentless mayweed		x								
<i>Urtica dioica</i>	Common nettle	x	x			x				x	x
<i>Veronica persica</i>	Common field-speedwell	x									
<i>Vicia</i> sp.	Vetch	x								x	
Sedges and rushes											
<i>Carex pendula</i>	Pendulous sedge	x									x
Grasses											
<i>Agrostis</i> spp.	Bent grass									x	x
<i>Arrhenatherum elatius</i>	False oat-grass	x	x							x	x
<i>Avena sativa</i>	Oat (cultivated)	x									
<i>Cynosurus cristatus</i>	Crested Dog's-tail										x
<i>Dactylis glomerata</i>	Cock's-foot	x	x							x	x
<i>Elytrigia repens</i>	Common couch	x									
<i>Holcus lanatus</i>	Yorkshire fog	x	x							x	x
<i>Lolium perenne</i>	Perennial rye grass	x									x
<i>Poa annua</i>	Annual meadow-grass	x	x								
Woody species											
Coniferous											
<i>Cupressus × leylandii</i>	Leylandii			x							
<i>Pinus</i> sp.	Non-native pine			x							
<i>Pinus sylvestris</i>	Scot's pine		x					x			
<i>Thuja plicata</i>	Western red cedar			x							
Broadleaved											
<i>Acer pseudop</i>											

Appendix E

Evaluation & Assessment Methods

- 1.1. Ecological features are evaluated and assessed in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) 2018 Guidelines for Ecological Impact Assessment (EclA). For clarity, the evaluation and assessment process adopted within this EclA is set out below.

Establishing Potentially Important Ecological Features

- 1.2. Ecological features are assessed where they are considered to be important, and where they may be impacted by a proposed development. A feature may be considered important for a variety of reasons, such as quality, extent, rarity and/or statutory protection. Table 1 below sets out a non-exhaustive list of ecological features that are typically considered, along with key examples:

Table 1. Potentially important ecological features (adapted from CIEEM 2018)

Potentially Important Ecological Features	Typical examples
Statutory designated sites under international conventions or European Legislation	Wetlands of International Importance (Ramsar sites), Special Areas of Conservation (SAC), Special Protection Areas (SPA)
Statutory designated sites under national legislation	Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR, Local Nature Reserves (LNR)
Non-statutory, locally designated wildlife sites	Local Wildlife Sites (LWS), County Wildlife Sites (CWSs), Sites of Importance for Nature Conservation (SINCs)
National biodiversity lists	Habitats or Species of Principal Importance for the Conservation of Biodiversity (Section 41, NERC Act 2006), Ancient Woodland Inventory
Local biodiversity lists	Local Biodiversity Action Plan (BAP) priority species or habitats
Red Listed / Rare Species	Species of conservation concern, Red Data Book (RDB) species, Birds of Conservation Concern, nationally rare and nationally scarce species
Legally Protected Species	E.g. species listed under Sch.5 of the W&C Act 1981, or Sch.2 of the Hag. Regs. 2017
Legally Controlled Species	E.g. species listed under Sch.9 of the W&C Act 1981

- 1.3. It should also be noted that the social, community, economic or multi-functional importance attributed to ecological features are not assessed as they fall outwith the scope of this assessment.

Establishing Likely Zone of Influence

- 1.4. The 'zone of influence' for a project is the area over which ecological features may be subject to significant effects as a result of the project and associated activities. The project's zone of influence varies across different ecological features, which have different vulnerabilities and

sensitivities. For the purposes of this assessment, the following zones were considered:

- International statutory nature conservation designations up to 10km from the Site
- National and local statutory nature conservation designations up to 3km from the Site
- Non-statutory locally designated wildlife sites up to 1km from the Site

1.5. These arbitrary distances are considered sufficient for identifying the nature conservation designations which could be subject to significant effects. However, it is acknowledged that in certain circumstances effects beyond these distances are possible and should be considered as far as is reasonably practicable to do so.

1.6. For other ecological features, such as habitats and species, the appropriate zone of influence is described and justified as appropriate within the report, depending on their respective sensitivity to an environmental change.

1.7. The results of professionally accredited or published scientific studies have been used and referenced, where available, to establish the spatial and temporal limits of the biophysical changes likely to be caused by specific activities, and to justify decisions about the zone of influence.

Geographic Context and Significance Criteria

1.8. The importance of ecological features, as well as the significance of any likely impacts and their effects, are considered here within a defined geographic context:

- International
- National
- Regional
- County
- Local

1.9. The size, conservation status and the quality of features are all relevant in determining their importance and assigning this to the geographic scale. Where the importance of a feature is considered to fall below the Local scale, they are scoped out of detailed assessment.

1.10. Impacts and their effects are taken to be significant where they support or undermine biodiversity conservation objectives, with the scale of significance defined according to the above geographic context. Where an impact or effect is unlikely to be perceptible at a Local scale, this is taken to be not significant.

Characterising Ecological Impacts and their Effects

1.11. Where likely significant ecological impacts and effects are identified in connection with the proposed project, these are considered and described with reference to the following characteristics (where this is helpful in accurately portraying the ecological effect and determining the scale of significance):

- Positive or negative (i.e. does the anticipated change accord with nature conservation policies and objectives?)
- Extent (i.e. the spatial area over which the impact or effect may occur)
- Magnitude (i.e. the quantified size, amount, intensity or volume)
- Duration (i.e. the timeframe over which the impact or effect may occur, in both human and ecological terms)
- Frequency and timing (i.e. the number of times an activity occurs, where this is likely to influence the effect)
- Reversibility (i.e. is spontaneous recovery possible or may the effect be counteracted by mitigation?)

- 1.12. Ecological features are evaluated and assessed in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) 2018 Guidelines for Ecological Impact Assessment (EclA). For clarity, the evaluation and assessment process adopted within this EclA is set out below.

Establishing Potentially Important Ecological Features

- 1.13. Ecological features are assessed where they are considered to be important, and where they may be impacted by a proposed development. A feature may be considered important for a variety of reasons, such as quality, extent, rarity and/or statutory protection. Table 1 below sets out a non-exhaustive list of ecological features that are typically considered, along with key examples:

Table 1. Potentially important ecological features (adapted from CIEEM 2018)

Potentially Important Ecological Features	Typical examples
Statutory designated sites under international conventions or European Legislation	Wetlands of International Importance (Ramsar sites), Special Areas of Conservation (SAC), Special Protection Areas (SPA)
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Non-statutory, locally designated wildlife sites	Local Wildlife Sites (LWS), County Wildlife Sites (CWSs), Sites of Importance for Nature Conservation (SINCs)
National biodiversity lists	Habitats or Species of Principal Importance for the Conservation of Biodiversity (Section 41, NERC Act 2006), Ancient Woodland Inventory
Local biodiversity lists	Local Biodiversity Action Plan (BAP) priority species or habitats
Red Listed / Rare Species	Species of conservation concern, Red Data Book (RDB) species, Birds of Conservation Concern, nationally rare and nationally scarce species
Legally Protected Species	E.g. species listed under Sch.5 of the W&C Act 1981, or Sch.2 of the Hag. Regs. 2017
Legally Controlled Species	E.g. species listed under Sch.9 of the W&C Act 1981

- 1.14. It should also be noted that the social, community, economic or multi-functional importance attributed to ecological features are not assessed as they fall outwith the scope of this assessment.

Establishing Likely Zone of Influence

- 1.15. The 'zone of influence' for a project is the area over which ecological features may be subject to significant effects as a result of the project and associated activities. The project's zone of influence varies across different ecological features, which have different vulnerabilities and

sensitivities. For the purposes of this assessment, the following zones were considered:

- International statutory nature conservation designations up to 10km from the Site
- National and local statutory nature conservation designations up to 3km from the Site
- Non-statutory locally designated wildlife sites up to 1km from the Site

1.16. These arbitrary distances are considered sufficient for identifying the nature conservation designations which could be subject to significant effects. However, it is acknowledged that in certain circumstances effects beyond these distances are possible and should be considered as far as is reasonably practicable to do so.

1.17. For other ecological features, such as habitats and species, the appropriate zone of influence is described and justified as appropriate within the report, depending on their respective sensitivity to an environmental change.

1.18. The results of professionally accredited or published scientific studies have been used and referenced, where available, to establish the spatial and temporal limits of the biophysical changes likely to be caused by specific activities, and to justify decisions about the zone of influence.

Geographic Context and Significance Criteria

1.19. The importance of ecological features, as well as the significance of any likely impacts and their effects, are considered here within a defined geographic context:

- International
- National
- Regional
- County
- Local

1.20. The size, conservation status and the quality of features are all relevant in determining their importance and assigning this to the geographic scale. Where the importance of a feature is considered to fall below the Local scale, they are scoped out of detailed assessment.

1.21. Impacts and their effects are taken to be significant where they support or undermine biodiversity conservation objectives, with the scale of significance defined according to the above geographic context. Where an impact or effect is unlikely to be perceptible at a Local scale, this is taken to be not significant.

Characterising Ecological Impacts and their Effects

- 1.22. Where likely significant ecological impacts and effects are identified in connection with the proposed project, these are considered and described with reference to the following characteristics (where this is helpful in accurately portraying the ecological effect and determining the scale of significance):
- Positive or negative (i.e. does the anticipated change accord with nature conservation policies and objectives?)
 - Extent (i.e. the spatial area over which the impact or effect may occur)
 - Magnitude (i.e. the quantified size, amount, intensity or volume)
 - Duration (i.e. the timeframe over which the impact or effect may occur, in both human and ecological terms)
 - Frequency and timing (i.e. the number of times an activity occurs, where this is likely to influence the effect)
 - Reversibility (i.e. is spontaneous recovery possible or may the effect be counteracted by mitigation?)

Appendix F

Biodiversity Metric

(please find accompanying)

Appendix G

Bat Survey Report

1.0 Introduction

- 1.1 This report has been prepared on behalf of Gladman Developments to provide details of bat survey work undertaken at Rook Farm, Hayling Island (hereafter referred to as 'the Site') by CSA Environmental in 2021.

2.0 Legislation

- 2.1 All British bat species are legally protected under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 (as amended). These Regulations make it an offence to:

- Deliberately capture, injure, or kill a bat
- Deliberately disturb bats, impairing their ability to survive, breed, reproduce or rear/nurture their young, or which significantly affects the local distribution or abundance of the species
- Damage or destroy a breeding site or resting place used by bats

- 2.2 All bats and their roosts in the UK were previously fully protected under the Wildlife & Countryside Act 1981 (as amended). Amendments to the Act have removed most provisions as they relate to bats, however it remains an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection

- 2.3 It is important to note that bat roosts are protected throughout the year, regardless of whether or not bats are present at the time. Under the Regulations, the offence of damaging or destroying a breeding site or resting place is subject to 'strict liability', i.e. an offence is committed irrespective of whether the causal act was deliberate or otherwise.

- 2.4 Where development is proposed that would result in an offence under the Regulations, a European Protected Species (EPS) statutory derogation licence (often termed 'EPS Mitigation Licence') will need to be secured from Natural England to permit an act that would otherwise be unlawful. Such a licence can only be granted following receipt of planning permission with all relevant conditions discharged, and where it has been demonstrated that specific statutory derogation tests have been met.

3.0 Methods

- 3.1 The following survey methods, design, data analysis and interpretation have been undertaken with due consideration of the Bat Conservation Trust (BCT) guidelines 3rd Edition (Collins, 2016).

Activity Surveys

Transect Survey

- 3.2 Transect surveys were undertaken in May, July and September 2021. On each occasion a single transect route aimed to cover all accessible areas, features and habitats at the Site. Each transect route was repeated at least once during each survey to minimise temporal bias.
- 3.3 Each transect was walked at a moderate and consistent speed with qualitative observations of bat behaviour made by the surveyor. Each survey commenced at sunset (British Summer Time), continuing for the following two hours.
- 3.4 Bat calls were recorded using Elekon Batlogger M2 detectors. This detector automatically records ultrasonic signals with a one second delay between recordings. Recordings of bat contacts were subsequently analysed using BatExplorer software, with sonograms reviewed to confirm bat identification to genera, or where possible, species level.
- 3.5 Each of the recorded files, which contain a variable number of call 'pulses', was designated a 'bat contact'. At the point of contact, each sound file is assigned a GPS location.
- 3.6 Transect surveys are intended to gather data on the spatial distribution of bat activity across the Site, identifying areas of relative importance for bats, including key flight lines. In addition direct observation of bats allows for qualitative assessments of how bats use the Site to be made complementing quantitative data collected through remote monitoring.

Remote Monitoring

- 3.7 Three Wildlife Acoustics Songmeter (SM2+) detectors were deployed during May, July and September to provide three data-sets. The location of this Monitoring Location (ML) is shown on Figure 1 below.
- 3.8 The detectors were setup to automatically record ultrasonic signals for the period from half an hour before sunset to half an hour after sunrise each night, with each monitoring period spanning at least five consecutive nights.



Figure 1. The locations of each Monitoring Location (ML) surveyed during remote monitoring surveys in May, July and September

- 3.9 Weather conditions were obtained for each night surveyed using historic weather data from the World Weather Online website, with weather observations taken from the nearest weather station in South Hayling. The five nights showing the most optimal weather conditions (in terms of temperature, precipitation and wind speed, see Table 3) were taken forward for analysis.
- 3.10 Recordings are triggered when a bat echolocation call is detected and will contain a variable number of call 'pulses'. Each file containing call pulses by a bat/s is designated as a 'bat contact' for each species present. The maximum recording duration is 15 seconds after which time a new recording file, and thus a new bat contact, is generated if echolocation calls are still being detected. This means that periods of prolonged bat activity near a detector is represented as multiple bat contacts, rather than a single one.
- 3.11 Recorded bat calls were analysed using the specialist software AnalookW to identify the species present. Quantitative analysis of bat

activity was then undertaken by calculating the average bat contacts per hour on each night monitored, for each species.

- 3.12 Bat activity can show considerable inter-night variability and is dependent on a number of variables, including temperature, wind, and seasonality, amongst others. To account for this variability the median values for the average hourly bat contacts per night are reported, rather than a mean value which would misrepresent the average activity.

Limitations

- 3.13 It should be noted that the findings described herein for remote monitoring surveys are based on the bat activity recorded at the location immediate to each detector, and therefore only describe localised activity at the Site.
- 3.14 In addition, comparisons drawn on the number of detector activations by different species/genera can only give an indication of relative species abundance at the Site, as detectability varies between species.
- 3.15 It is acknowledged that the quantum of bat contacts recorded during a survey may not give a true reflection of the abundance of bats using the Site. For example, a single bat foraging close to a detector may trigger several hundred activations in the course of one night. However, this activity level does provide a proxy for the level of use by bats, and therefore its relative importance.
- 3.16 Due to a technical error in one detector, data were only gathered for two out of the three monitoring locations (ML1 and ML2) during the May monitoring period. During the September monitoring period, the detector at ML1 recorded three out of five nights and the detector at ML2 recorded four out of five nights. This was due to SD memory cards (4x 20BG per detector) becoming full as a result of detector activations by crickets. However, it is considered that the data collected remains representative of the bat activity within the Site.

4.0 Result

Activity Surveys

Transect Surveys

- 4.1 The weather conditions experienced during the transect surveys are provided in Table 1 below.

Table 1. Bat transect survey timings and weather conditions

Survey Date	Sunset Time	Start Time	End Time	Temp. (°C)		Cloud Cover (oktas)		Wind (Beaufort Scale)		Precipitation
				Start	End	Start	End	Start	End	
26/05/21	21:02	21:02	23:02	10	10	7	7	2	2	Very light drizzle at beginning of survey, dry thereafter
21/07/21	21:05	21:05	23:05	21	18	3	1	1	1	None
15/09/21	19:18	19:18	21:18	16	15	8	7	2	1	None

- 4.2 At least five species of bat were recorded during the transect surveys, comprising common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, serotine *Eptesicus serotinus*, unconfirmed *Myotis* sp. and unconfirmed *Pipistrellus* sp. The majority of contacts occurred within Field F1, along the west and southern boundary lines, and around the on-site pond.
- 4.3 The number of bat contacts recorded for each species are summarised in Table 2 below. The locations of each bat contact and the overall distribution of activity across the Site are illustrated in Figures 2 and 3.

Table 2. Summary of bat contacts recorded during transect surveys

Month	Common pipistrelle	Myotis species	Pipistrellus species	Serotine	Soprano pipistrelle
May	42	1	0	0	38
Jul	5	0	0	1	8
Sep	27	0	9	0	10
Total	74	1	9	1	56
% of total	52.7	0.8	6.4	0.8	39.3



Figure 2. Locations of bat contacts recorded across all transect surveys

- 4.4 Figure 2 shows that the majority of common pipistrelle and soprano pipistrelle activity is concentrated within Field F1, particularly along the southern and western boundary vegetation. There is a cluster of soprano pipistrelle activity around the on-site pond, and a similarly concentrated area of common pipistrelle activity at the north-eastern corner of Field F2. The single serotine pass occurred adjacent to the access point to the east of Field F2.
- 4.5 Figure 3 below provides an indicative illustration of 'hotspots' in bat activity recorded across all transect surveys undertaken at the Site. The hotspots are concentrated on features with connectivity, such as the southern and western boundary vegetation within Field F1, and to areas where foraging opportunities are increased, including around the on-site pond. There is a distinct lack of bat activity in the more open areas of the Site where there are no connective features and invertebrate prey are likely to be present in much lower densities, including the north and east of Field F2 and the central areas between the two arable fields

(this boundary being demarcated by fencing rather than hedgerow). No behaviours were recorded during surveys indicative of a significant commuting corridor.



Figure 3. Indicative 'Utilisation Distribution' (UD) of all bat species/genera at the Site estimated from all transect data combined. The UD illustrates the relative probability of a bat in flight being present at a given point at the Site, with higher/central contours having a greater probability, and lower/peripheral contours having less probability.

Remote monitoring

- 4.6 The weather conditions experienced during the five nights where data was analysed for each monitoring period are provided in Table 3 below. There were three nights of moderate rainfall during the July monitoring period, one of which also had a moderate wind. These conditions are suboptimal for bats, therefore the data captured on these days may be fewer than is typical for bat activity at that time of year. The total number of bat contacts recorded across all monitoring locations and periods for each bat species/genera are provided in Figure 4 below.

Table 3. Overnight weather conditions during remote monitoring

Survey Month	Dates Sampled	Temp. (°C)		Cloud Cover (%)		Wind (km/h)		Precipitation
		Min	Max	Min	Max	Min	Max	
May	27/05/21	11	12	18	62	2	3	Dry
May	28/05/21	12	13	51	83	4	12	Dry
May	29/05/21	9	11	6	13	9	16	Dry
May	30/05/21	5	12	0	27	12	18	Dry
May	31/05/21	12	14	2	19	21	33	Dry
July	21/07/21	13	18	6	23	6	13	Dry
July	22/07/21	16	17	4	17	17	22	Dry
July	23/07/21	17	18	50	100	7	35	Moderate at 21:00 + 00:00. Light at 03:00. Very light at 06:00
July	24/07/21	16	17	35	100	9	19	Moderate at 21:00. Very light at 06:00
July	25/07/21	16	17	13	84	8	12	Moderate at 21:00. Light at 00:00
Sept	15/09/21	13	15	25	87	6	10	Dry
Sept	16/09/21	13	14	13	45	8	10	Dry
Sept	17/09/21	12	14	25	66	5	12	Dry
Sept	18/09/21	13	12	22	100	3	9	Dry
Sept	19/09/21	12	14	73	100	5	19	Very heavy at 00:00. Light at 03:00 + 06:00

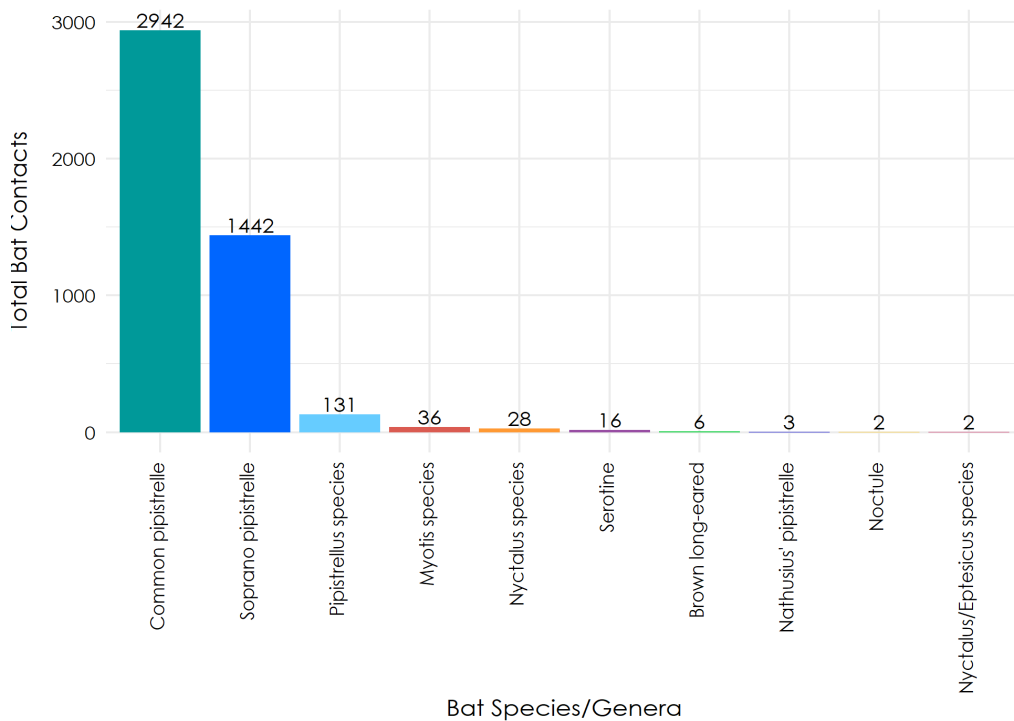


Figure 4. Total bat contacts by species/genera recorded across all remote monitoring periods and monitoring locations

- 4.7 The majority of the passes recorded were from common pipistrelle, with a lesser, but still large, proportion from soprano pipistrelle, suggesting the two species are regularly utilising the Site for foraging and general dispersal. Low activity levels of unconfirmed *Myotis* sp., unconfirmed *Nyctalus* sp. and serotine bats were recorded. These low levels indicate occasional foraging behaviour. Very low pass numbers for brown long-eared bats *Plecotus auritus*, noctule *Nyctalus noctula* and suspected Nathusius' pipistrelle *Pipistrellus nathusii* were recorded, suggesting infrequent passes through the Site during dispersal (although *Plecotus* calls may be underrepresented due to the low amplitude of their echolocation).
- 4.8 Figure 5 below shows the variance in nightly activity levels for each of these bat species recorded on-site. More detailed data describing Figure 5 are provided in Table 4. The activity data in Figure 5 is presented as boxplots for each bat species, which show the inter-night variability in bat activity across the 15 nights monitored. The median value (middle line of the boxplot) is taken as the typical level of activity for that species on-site at the point monitored. The length of each coloured boxplot is the interquartile range which shows the variance in nightly activity around the median value. The ends of each whisker line define the minimum and maximum nightly activity values recorded at the monitoring location. Outlying values are nightly activity levels that are greatly different when compared to the distribution of the remaining nightly activity levels. Outliers are illustrated as black points away from the boxplot. While important to note, these outliers do not represent the bat activity more commonly found at the Site for the species in question.

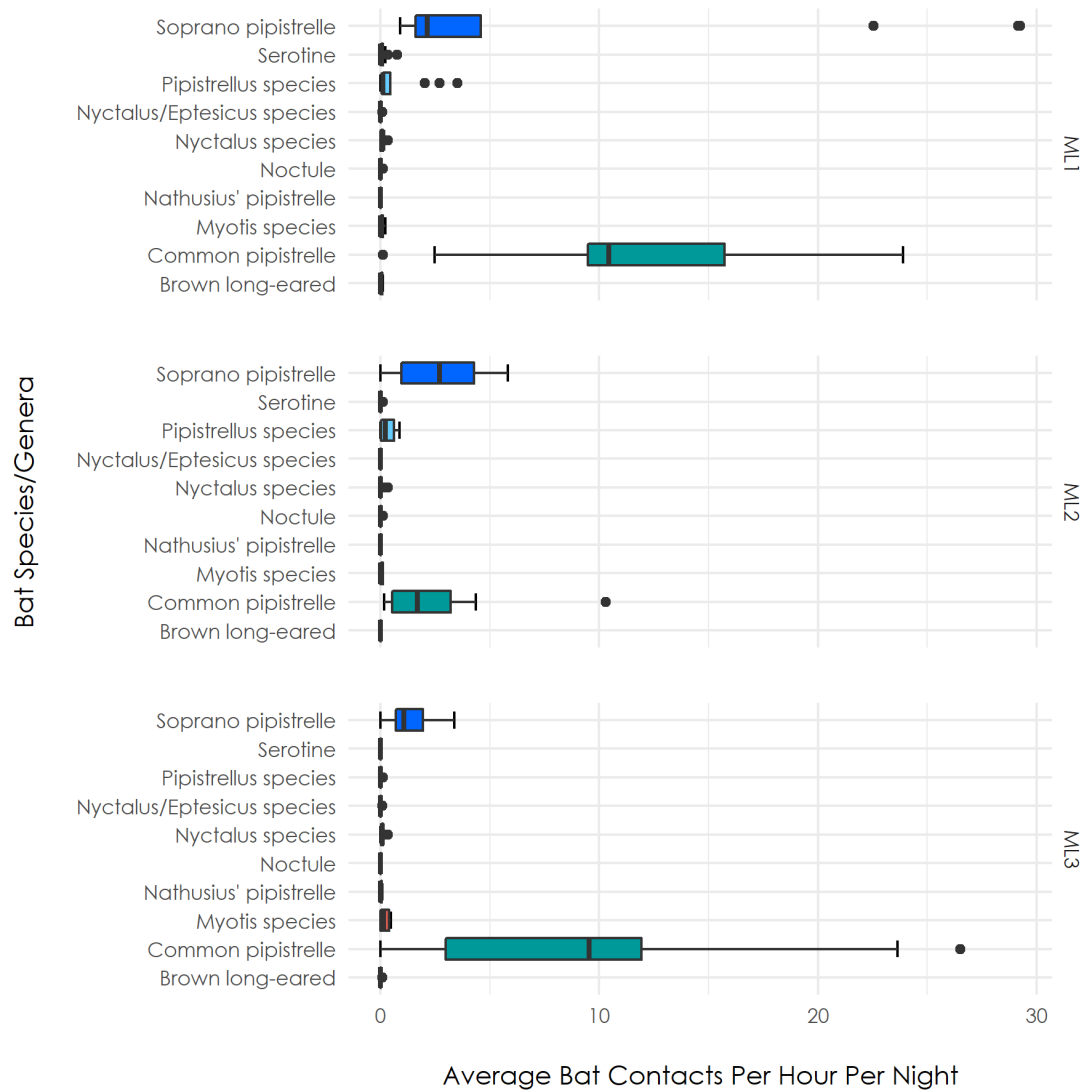


Figure 5. Average bat contacts per hour per night for each bat species/genera recorded across all remote monitoring

4.9 A greater level of common pipistrelle activity was recorded at ML1 and ML3. These locations are situated within boundary vegetation which provide areas of connectivity and foraging opportunities. Soprano pipistrelle activity was higher at ML2 and ML2 which is adjacent to the on-site pond where foraging opportunities are increased. The remaining species recorded were relatively evenly distributed across all three monitoring locations.

Table 4. Average bat contacts per hour per night recorded during remote monitoring surveys

ML	Species	Average bat contacts per hour per night				Total bat contact s	Number of nights monitore d
		Minimu m	Maximu m	Media n	IQ rang e		
ML 1	Brown long-eared	0.000	0.109	0.000	0.080	4	13

ML 1	Common pipistrelle	0.112	23.901	10.453	6.242	1435	13
ML 1	Myotis species	0.000	0.227	0.000	0.113	8	13
ML 1	Nathusius' pipistrelle	0.000	0.000	0.000	0.000	0	13
ML 1	Noctule	0.000	0.113	0.000	0.000	1	13
ML 1	Nyctalus species	0.000	0.322	0.108	0.112	10	13
ML 1	Nyctalus/Eptesicus species	0.000	0.080	0.000	0.000	1	13
ML 1	Pipistrellus species	0.000	3.515	0.112	0.369	86	13
ML 1	Serotine	0.000	0.761	0.000	0.113	15	13
ML 1	Soprano pipistrelle	0.896	29.252	2.144	2.987	947	13
ML 2	Brown long-eared	0.000	0.000	0.000	0.000	0	14
ML 2	Common pipistrelle	0.161	10.302	1.695	2.681	309	14
ML 2	Myotis species	0.000	0.113	0.000	0.111	5	14
ML 2	Nathusius' pipistrelle	0.000	0.000	0.000	0.000	0	14
ML 2	Noctule	0.000	0.113	0.000	0.000	1	14
ML 2	Nyctalus species	0.000	0.326	0.000	0.000	6	14
ML 2	Nyctalus/Eptesicus species	0.000	0.000	0.000	0.000	0	14
ML 2	Pipistrellus species	0.000	0.857	0.225	0.593	43	14
ML 2	Serotine	0.000	0.109	0.000	0.000	1	14
ML 2	Soprano pipistrelle	0.000	5.823	2.691	3.321	343	14
ML 3	Brown long-eared	0.000	0.080	0.000	0.000	2	10
ML 3	Common pipistrelle	0.000	26.524	9.552	8.971	1198	10
ML 3	Myotis species	0.000	0.477	0.148	0.380	23	10
ML 3	Nathusius' pipistrelle	0.000	0.081	0.000	0.060	3	10
ML 3	Noctule	0.000	0.000	0.000	0.000	0	10
ML 3	Nyctalus species	0.000	0.323	0.080	0.088	12	10
ML 3	Nyctalus/Eptesicus species	0.000	0.080	0.000	0.000	1	10
ML 3	Pipistrellus species	0.000	0.108	0.000	0.000	2	10
ML 3	Serotine	0.000	0.000	0.000	0.000	0	10
ML 3	Soprano pipistrelle	0.000	3.379	1.079	1.236	152	10

5.0 Summary

- 5.1 Overall, the Site regularly supports moderate numbers of foraging and dispersing common pipistrelle and soprano pipistrelle, while less common species occasionally pass through the Site as part of infrequent dispersal. Activity hotspots within the Site are present in southern field (F1), particularly along the western and southern boundary vegetation and around the on-site pond.

Appendix H

Breeding Bird Survey Report

1.0 Introduction

- 1.1 This report has been prepared on behalf of Gladman and provides details of the breeding bird surveys carried out at Rook Farm, Hayling Island.

2.0 Legislation

- 2.1 All wild birds, their nests and eggs are protected under subsection 1(1) of the Wildlife and Countryside Act 1981. It is an offence to kill or injure any wild bird, to take or destroy their eggs, or to take, damage or destroy their nests while in use or being built.
- 2.2 In addition, certain species of wild bird, listed within Schedule 1 of the Wildlife and Countryside Act, receive additional protection under subsection 1(5) of the Act. This makes it an offence to disturb any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young. It is also an offence to disturb the dependent young of such a bird.
- 2.3 Consideration is also taken of Birds of Conservation Concern ('BoCC'). These are species which are declining or appear to be in need of concentrated conservation actions (Eaton et al, 2015). Certain criteria are used to place birds on a Red-list, Amber-list or Green-list and these are outlined in Table 1 below.

Table 1. Criteria for red, amber and green listed birds

Red Listed	• Those that are globally threatened according to The World Conservation Union (IUCN) criteria • Historical decline in breeding population and not shown substantial recent recovery those that have shown a severe breeding decline over 25 years/longer term • Those that have shown a severe breeding range decline over 25 years/longer term • Species whose non-breeding population has declined over 25 years/longer term
Amber Listed	• Species of European Conservation Concern • Those whose population has declined historically but made a substantial recent recovery • Those whose breeding population has declined moderately over 25 years /longer term • Those that have shown a moderate breeding range decline over 25 years/longer term • Those whose non-breeding population has declined moderately over 25 years/longer term • Rare breeders; or non-breeding rarity species with internationally important or localised populations
Green Listed	• Species that fulfil none of the criteria above

3.0 Methods

Breeding Birds

- 3.1 Breeding bird surveys were carried out by Andy Johnson, a specialist ornithologist with detailed knowledge of the Solent. The surveys were undertaken over three visits between April and June 2021 to gain an understanding of the breeding bird assemblage at the Site. Surveys were conducted with the following aims:
- To determine the potential for breeding species of birds across the survey area
 - To review the rarity status and conservation of each species found, including levels of national protection, National and Local BAP and Birds of Conservation Concern (BoCC)
 - To review the likely breeding potential within the habitats present
 - To assess the impacts of the proposed developments with regards to the species/ likely species determined
 - To recommend appropriate mitigation and protection measures where necessary
- 3.2 The survey methodology adopted follows the standard Common Birds Census (CBC) method which utilises registration mapping based on bird breeding behaviour, which allows the number and distribution of territories to be determined for each species. The survey area included all accessible areas of the Site and immediately adjacent land visible from the Site.
- 3.3 On each survey the surveyor walked a slow route across the whole site which ensured that both species of open and boundary habitats would be detected. Alternative versions of the route were taken on each visit so that different parts of the site would be surveyed at different parts of the morning, thus avoiding temporal bias associated with bird activity. Each survey took place in the early morning, when birds are most active, during suitable weather conditions. Birds were detected by sound or sight, using a pair of 10 x 42 binoculars.
- 3.4 All birds detected at the Site were recorded using standardised codes to map their distribution and behaviour, and to differentiate between individuals for the purposes of territory mapping.
- 3.5 On each survey visit the following objectives were met:
- Identification of likely breeding species within the habitats present
 - Identification of all birds seen and heard
 - Breeding status of each bird seen and heard
 - Total numbers of birds, including juveniles recorded

- 3.6 The criteria used during the 'Bird Atlas' surveys of 2007-2011 were used to ascertain the breeding status of birds at the Site (as given in Table 2 below).

Table 2. Categories of Breeding Bird Evidence

Breeding Status Categories	Evidence Criteria
Confirmed breeding:	• Distraction display or injury feigning • Used nests or eggshells found (occupied or laid within the survey period) • Recently fledged young or downy young • Adults entering or leaving a nest site in circumstances indicating occupied • Nest or an adult sitting on nest • Adults carrying food for young or faecal sacs • Nest containing eggs • Nest with young seen or heard
Probable breeding:	• Pairs observed in suitable nesting habitat in breeding season • Permanent territory presumed through registration or territorial behaviour (song etc.) on at least two different days, a week apart, at the same place • Display and courtship • Visiting probable nest site • Agitated behaviour or anxiety calls from adults • Building nest or excavating nest hole
Possible breeding:	• Species observed in breeding season in possible nesting habitat • Singing male(s) present or breeding calls heard in breeding season

Limitations

- 3.7 Only a proportion of individuals of each species will be detected on each visit, and some particularly secretive or low-density species, can be elusive and require several visits to detect. Furthermore, the importance of a site for birds can change depending on factors such as food availability, presence of roosting/nesting features and weather conditions.

Evaluation

- 3.8 The importance of the breeding bird assemblage at the Site was assessed using the criteria suggested by Fuller (1980) (see Table 3 below).

Table 3. Assessment criteria for breeding bird assemblage at a Site

Importance	Number of Breeding Species
Local	25-49
County	50-69
Regional	70-84
National	85+

4.0 Results

Breeding Birds

- 4.1 The weather conditions during the breeding bird surveys are summarised in Table 4 below.

Table 4. Weather conditions for breeding bird surveys

Date	Start time	Temp (°C)	Cloud (Oktas)	Rain (mm)	Wind (Beaufort scale)
16/04/21	05:40	1	0/8	0	1
09/05/21	05:00	11	5/8	0	2
06/06/21	07:55	14	8/8	0	0

- 4.2 A total of 30 species were recorded on or adjacent to the survey area during the surveys. The full results of the breeding bird survey are presented at the end of this report in Table 6. The Breeding Bird Survey Plan CSA/4956/101 shows the location of each sighting and activity observed. For clarity only notable species (i.e. BoCC amber or red listed species, Section 41 and Schedule 1) are displayed on the plan.
- 4.3 Of these, 17 species were recorded to have a breeding status of either 'confirmed', 'probable' or 'possible' and are thus considered as breeding species. The remaining 13 species were either recorded flying over the Site only, or there is no suitable breeding habitat to support these species.
- 4.4 A total of 11 species of conservation interest were recorded including five species listed under Section 41 (S41) of the 2006 Natural Environment and Rural Communities (NERC) Act, as shown in Table 5 below.

Table 5. Bird species of conservation importance recorded breeding at the Site during the breeding bird surveys

Species	BoCC Red List	BoCC Amber List	Section 41	Sch 1	Estimated no. of breeding pairs
Black-headed gull <i>Chroicocephalus ridibundus</i>		•			Non-breeding
Dunnock <i>Prunella modularis</i>		•			3
Herring gull <i>Larus argentatus</i>	•		•		Non-breeding
House sparrow <i>Passer domesticus</i>	•		•		2
Kestrel <i>Falco tinnunculus</i>		•			Non-breeding
Linnet <i>Linaria cannabina</i>	•		•		Non-breeding
Mediterranean gull <i>Larus melanocephalus</i>		•		•	Non-breeding

Skylark <i>Alauda arvensis</i>	•		•		2
Song thrush <i>Turdus philomelos</i>	•		•		Non-breeding
Starling <i>Sturnus vulgaris</i>	•		•		Non-breeding
Stock dove <i>Columba oenas</i>		•			Non-breeding

Abbreviations:

BOCC Red List: Red List of Birds of Conservation Concern 4

Section 41: Listed as a priority species under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006

Sch1: Schedule 1 (Part 1) of the Wildlife and Countryside Act 1981

- 4.5 The Site and the adjacent land appear to support 17 species of breeding bird, of which three are of conservation concern. These are skylark, house sparrow and dunnock. The remaining species breeding within or in close proximity to the Site are common and widespread.
- 4.6 The hedgerow and treelines which bound the Site and its fields appear to be breeding hotspots, with the majority of activity recorded in these areas, including all three dunnock pairs. The houses which border the Site to the east appear to support breeding house sparrow, which may utilise the Site as a foraging ground. The two breeding skylark pairs are noted to have territories within the northern field which encompass both on-site and off-site habitats to the north-west corner of the field.

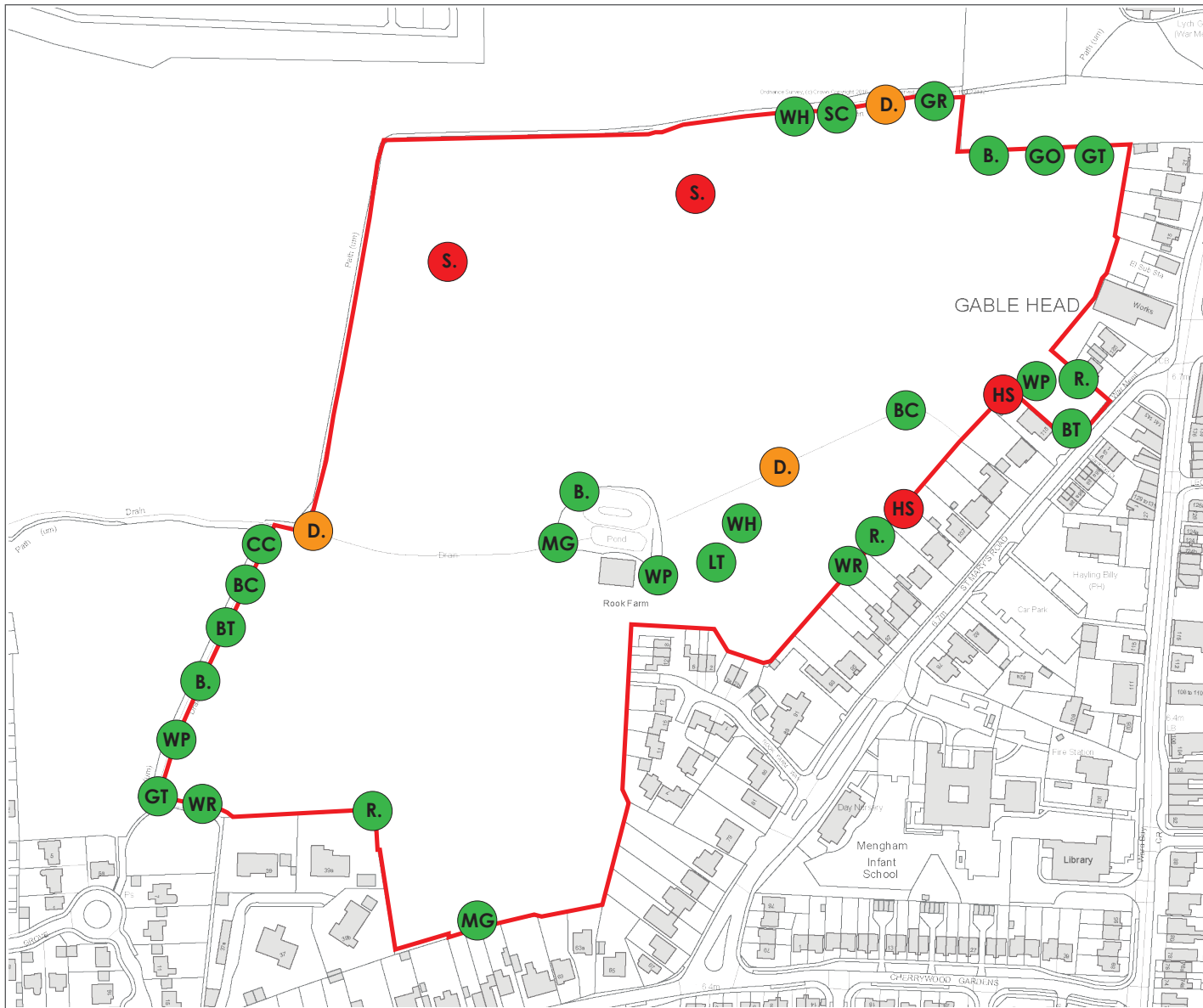
5.0 Summary

- 5.1 In summary, a total of 17 species of bird appear to be breeding within or immediately adjacent to the Site which, in accordance with Fuller (1980), is taken to fall below the threshold of ecological importance. A total of 11 species of conservation significance were recorded, including breeding pairs of declining skylark, dunnock and house sparrow, however all species recorded as breeding are nationally and locally common and widespread.
- 5.2 The Site was previously subject to a breeding bird survey in 2016, when 30 species were also recorded, 22 of which were present during both surveys. Aside from incidental records of non-breeding birds, four species breeding in 2021 were not recorded in the 2016 survey: long-tailed tit, blackcap, whitethroat and stonechat. Conversely, moorhen was recorded on the pond in 2016, whilst swift and jackdaw were recorded as "possible" breeders, although there are no possible nest sites for either of these species within the current red line boundary.

Table 6. Full breeding bird survey results

Species	BOCC	S41	Sch1	Est. no. pairs	Notes
Blackbird (B.) <i>Turdus merula</i>				3	
Blackcap (BC) <i>Sylvia atricapilla</i>				2	
Black-headed gull (BH) <i>Chroicocephalus ridibundus</i>	Amber			0	Singles flying over
Blue tit (BT) <i>Cyanistes caeruleus</i>				2	
Carrion crow (C.) <i>Corvus corone</i>				0	Up to 12 foraging in the fields
Chaffinch (CH) <i>Fringilla coelebs</i>				0	One present in June
Chiffchaff (CC) <i>Phylloscopus collybita</i>				1	
Coal tit (CT) <i>Periparus ater</i>				0	One in churchyard in April
Collared dove (CD) <i>Streptopelia decaocto</i>				0	Noted on adjacent house
Dunnock (D.) <i>Prunella modularis</i>	Amber			3	
Goldfinch (GO) <i>Carduelis carduelis</i>				1	
Great spotter woodpecker (GS) <i>Dendrocopos major</i>				0	One drumming off-site to the west in April
Great tit (GT) <i>Parus major</i>				2	
Greenfinch (GR) <i>Chloris chloris</i>				1	
Herring gull (HG) <i>Larus argentatus</i>	Red	•		0	Singles in or over the fields
House sparrow (HS) <i>Passer domesticus</i>	Red	•		2	Associated with adjacent housing
Kestrel (K.) <i>Falco tinnunculus</i>	Amber			0	One hunting over grassland in April
Linnet (LI) <i>Linaria cannabina</i>	Red	•		0	One flew over in June
Long-tailed tit (LT) <i>Aegithalos caudatus</i>				1	
Magpie (MG) <i>Pica pica</i>				2	
Mediterranean gull (MU) <i>Larus melanocephalus</i>	Amber		•	0	Three flew over in April
Robin (R.) <i>Erithacus rubecula</i>				3	
Skylark (S.) <i>Alauda arvensis</i>	Red	•		2	Both territories cover on- and off-site habitat

Song thrush (ST) <i>Turdus philomelos</i>	Red	•		0	One territory off-site to the west
Starling (SG) <i>Sturnus vulgaris</i>	Red	•		0	
Stock Dove (SD) <i>Columba oenas</i>	Amber			0	One present in June
Stonechat (SC) <i>Saxicola rubetra</i>				1	On the northern boundary
Whitethroat (WH) <i>Sylvia communis</i>				2	
Woodpigeon (WP) <i>Columba palumbus</i>				3	
Wren (WR) <i>Troglodytes troglodytes</i>				2	



- Site boundary
- Breeding BOCC Green List Species*
- Breeding BOCC Amber List Species*
- Breeding BOCC Red List Species*
- Species reference code (for key see Table 6. in Breeding Bird Report ref. CSA/4956/02)

*Species locations do not necessarily show nest sites, but show the location of each species within its presumed territory



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Project Rook Farm, Hayling Island
Drawing Title Breeding Bird Survey Results
Client Gladman Developments

Date	July 2021	Drawing No.	CSA/4956/101
Scale	Refer to scale	Rev	-
Drawn	SV	Checked	MR

Appendix I

Reptile Survey Report

1.0 Introduction

- 1.1 Reptile surveys were undertaken by CSA Environmental at Rook Farm, Hayling Island, on behalf of Gladman Developments. These updated previous surveys carried out by Baker Consultants in 2016.
- 1.2 The results of the 2016 surveys identified a low population of slow worm present within the Site, with a total of two individuals found under refugia along the eastern boundary. The updated surveys carried out in 2021 were undertaken to ascertain the species present, establish the approximate population size which the Site may support and to identify any focal areas for reptiles within the Site.

2.0 Legislation

- 2.1 All native British reptile species are listed within Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are afforded protection against killing and injury under parts of sub-section 9(1) of the Act. In addition, all native British reptile species are recognised as species of principal importance for the conservation of biodiversity in England, in respect of Section 41 of the Natural Environment and Rural Communities Act 2006.

3.0 Methods

- 3.1 A total of 70 artificial refugia, comprising squares of roofing felt measuring 0.5 x 0.5m, were installed in suitable habitat present at the Site on 23rd April 2021 by Sophie Vines QCIEEM (see Reptile Survey Plan CSA/4956/100).
- 3.2 Following an initial 2-week 'bedding-in' period for refugia, surveys were carried out on seven occasions during favourable weather conditions (e.g. intermittent or hazy sunshine, not too windy, sunny spells following wet or cloudy weather) between 5th May and 18th August 2021. Each survey visit comprised a slow walk of the Site to visually and physically check refugia for the presence of reptiles. On each occasion a visual search was also carried out within areas of suitable habitat whilst walking between refugia locations.
- 3.3 The primary aim of the reptile survey was to establish the presence or likely absence of widespread reptile species within the survey area, rather than to estimate abundance or population size. To this end, seven survey checks, an effort generally considered 'reasonable effort' in establishing the presence or likely absence of reptiles at a Site, were carried out.
- 3.4 Given the inherent problems in detecting reptiles, greater survey effort and/or identification or marking of individuals would be required to establish the actual or relative abundance of reptile populations. However, as reptiles are confirmed to be present and mitigation action

is required, an approximation of population size is useful in guiding reptile mitigation strategies and has therefore been reported below.

- 3.5 There are several published methods for broadly 'categorising' reptile population sizes in the UK, with the most commonly employed by ecological consultants being HGBI (1998), Froglife (1999) and/or Natural England (2011 [now rescinded]). These three approaches vary in their application, assumptions and limitations, and therefore outputs have been reported for all three methods for comparison below.

Limitations

- 3.6 The three metrics referenced below, HGBI (1998), Froglife (1999) and/or Natural England (2011; now rescinded), rely on varying proxies to calculate/estimate reptile populations. The HGBI categories are based on adult population densities, as opposed to peak counts. Moreover, the categorisation by HGBI is intended to inform capture effort for translocation exercises and, therefore, is not directly applicable to providing a population size class estimate, though it is widely applied within the industry for this purpose.
- 3.7 The Froglife method is based on peak adult counts where surveys have used refugia densities of 10 per hectare. Surveys carried out by CSA used densities of c. 30.3 per ha of suitable reptile habitat to maximise site coverage and opportunities to confirm the presence or likely absence of reptiles. Therefore, to enable comparison with the Froglife categories, peak counts have been divided by a factor of 22 [peak count ÷ (refugia per ha ÷ 10)] so that they are proportionate to the Froglife survey effort of 10 refugia per ha.
- 3.8 Finally, the Natural England methods provide population class size estimates based upon a refugia density of 100 per ha and, in addition, goes on to consider habitat suitability. As with the Froglife method, survey results have been scaled to be proportionate to a survey effort of 100 refugia per ha. The consideration of peak counts and habitat suitability may be the most ecologically sound, or holistic, of the three indices. However, in light of the guidance having been rescinded, this metric cannot be exclusively relied upon.
- 3.9 Surveys carried out in August were limited by dense vegetation growth which covered a number of refugia and prevented checks. Therefore, results for these surveys should be considered representative but not fully comprehensive.

4.0 Results

- 4.1 There is a moderate population of slow worm present within the Site, with the species found during every survey. While slow worm were present in all areas where refugia were placed, Area B which adjoins the St Mary's Churchyard at the northern boundary was a particular hotspot, with a

peak count of 64 individual slow worms (adults and juveniles) found along this boundary during the seventh survey. The ground flora along this boundary comprises common herbs and grasses, including common nettle *Urtica dioica*, spear thistle *Cirsium vulgare*, Yorkshire fog *Holcus lanatus* and cock's foot *Dactylis glomerata*. It is c. 1m wide, not regularly cut and runs parallel to a hawthorn-dominated native species hedgerow which divides the Site from the adjacent cemetery.

- 4.2 During later surveys, numbers of slow worms recorded in the area of unmanaged semi-improved grassland (Area D) in the east of the Site increased with the vegetation cover (see Reptile Survey Plan CSA/4956/100). Full survey results and weather conditions are provided in Table 2 below.
- 4.3 It should be noted that although the Site is c. 11.77ha, suitable reptile habitat, comprising grassland, scrub and field margins, account for only c. 2.31ha within the Site. Any reptiles present will, therefore, be confined to the peripheral grassland, ruderal and scrub vegetation. Within this area 70 artificial refugia were used to provide a survey refugia density of c. 30.3 refugia per ha.

Table 1. Reptile population size category estimates

Method	Species
	Slow worm
Peak count between May-September (2021)	69
HGBI (1998)	Low
Froglife (1999)	High
Natural England (2011)*	High

*Rescinded

- 4.4 It is acknowledged that the above metrics have their limitations. However, in consideration of this information, balanced against an ecological understanding of the Site and survey findings, it is estimated that the Site supports a 'moderate' population of slow worm, with specific areas supporting high densities.

5.0 Summary

- 5.1 Overall, the Site at Rook Farm supports a moderate population of slow worm. While slow worm were present in all surveyed areas of the Site, particular hotspots supported higher localised populations, including the northern boundary adjacent to the St Mary's Church cemetery and, to a lesser extent, the area of semi-improved grassland to the east. Other native reptile species are concluded to be likely absent from the Site.

Table 2. Full reptile survey data

Set-up surveyor	Sophie Vines						Beaufort Scale: 0. Calm. Vertical smoke. 1. Light air. Smoke drifts. 2. Light breeze. Leaves rustle. 3. Gentle breeze. Small twigs constantly move. 4. Moderate breeze. Small branches begin to move. 5. Fresh breeze. Small trees in leaf begin to sway. Precipitation: select from (type) No Rain / Light / Moderate / Heavy & (duration) Intermittent / Continuous					
Set-up date	23/04/2021		Total number of refugia	70								
Date	Time	Surveyor	Weather				Area reference	Slow worm <i>Anguis fragilis</i>				
			Temp °C	Cloud cover (Oktas; n/8)	Wind (Beaufort scale)	Rain (type & duration)		Adult male (>230mm)	Adult female (>230mm)	Unidentified adult	Sub-adult	Newborn
Survey 1												
05/05/2021	13:30	SV	10	8	4	Moderate intermittent	A	-	-	-	-	-
							B	2	-	-	1	1
							C	-	-	-	-	-
							D	-	-	-	-	-
							E	-	-	-	-	-
							F	-	-	-	-	-
							G	-	-	-	-	-
							H	-	-	-	-	-
Survey 2												
19/05/2021	10:17	SV	11	3	3	Dry	A	-	-	-	-	-
							B	3	3	-	-	1
							C	1	-	-	-	-
							D	-	3	-	3	1
							E	-	-	-	-	1
							F	-	-	-	1	-

							G	-	-	-	1	-
							H	-	-	-	-	-
Survey 3												
01/06/2021	09:15	SV	18	1	3	Dry	A	-	-	-	-	-
							B	5	3	-	7	5
							C	1	1	-	-	2
							D	-	1	-	-	2
							E	-	-	-	-	-
							F	-	-	-	-	-
							G	1	-	-	-	3
							H	-	-	-	-	-
Survey 4												
15/06/2021	09:30	SV	20	3	3	Dry	A	2	-	-	-	-
							B	-	6	-	4	1
							C	-	1	-	1	1
							D	1	-	-	2	-
							E	-	-	-	-	1
							F	1	-	-	-	-
							G	-	1	-	1	5
							H	-	-	-	-	1
Survey 5												
28/06/2021	10:30	SV	18	8	2	Rain earlier in AM – dry during survey	A	1	-	-	-	-
							B	2	11	-	9	15
							C	2	3	-	-	6
							D	1	9	-	2	5

							E	1	1	-	-	2
							F	-	2	-	-	3
							G	-	1	-	-	-
							H	-	-	-	-	-
Survey 6												
							A	-	1	-	-	-
							B	4	5	26	4	2
							C	-	1	-	1	-
							D	1	8	4	6	2
							E	1	3	-	-	-
							F	-	1	-	-	-
							G	-	2	-	-	1
10/08/2021	10:00	SV	18	1	2	Dry	H	-	-	3	-	-
Survey 7												
							A	1	-	-	-	-
							B	16	24	-	18	4
							C	-	1	-	-	-
							D	2	9	3	5	6
							E	2	3	-	2	1
							F	3	3	-	2	-
							G	-	-	-	-	2
18/08/2021	11:30	SV	18	8	3	Very light drizzle prior to survey	H	-	2	-	-	-
										Total Adult		Total Juvenile
										200		143



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Project	Rook Farm, Hayling Island	Date	Sept 21	Drawing No.	CSA/4956/100
Drawing Title	Reptile Survey Plan	Scale	Not to scale	Rev	-
Client	Gladman Developments	Drawn	SV	Checked	MR

Appendix J

Great Crested Newt eDNA Result

Client: Aaron White,
CSA Environmental



ADAS
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172 Chester Road
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Email: Helen.Rees@adas.co.uk

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Sample ID: ADAS-0279 Condition on Receipt: Good Volume: Passed
Client Identifier: p1, 4956 Description: pond water samples in preservative
Date of Receipt: 28/05/2021 Material Tested: eDNA from pond water samples

Determinant	Result	Method	Date of Analysis
Inhibition Control [†]	2 of 2	Real Time PCR	02/06/2021
Degradation Control [§]	Within Limits	Real Time PCR	02/06/2021
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	02/06/2021
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10 ⁻⁴ ng/μL) [#]	4 of 4	Real Time PCR	As above for GCN

Report Prepared by: Dr Helen Rees Report Issued by: Dr Ben Maddison

Signed:

A handwritten signature in black ink, appearing to read "H. Rees", written over a light blue horizontal line.

Signed:

A handwritten signature in black ink, appearing to read "B. Maddison", written over a light blue horizontal line.

Position:

Director: Biotechnology

Position:

MD: Biotechnology

Date of preparation:

03/06/2021

Date of issue:

03/06/2021

eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.

** If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

[†] Recorded as the number of positive replicate reactions at expected C_t value. If the expected C_t value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.

[§] No degradation is expected within time frame of kit preparation, sample collection and analysis.

[#] Additional positive controls (10⁻¹, 10⁻², 10⁻³ ng/μL) are also routinely run, results not shown here.

Appendix 1: Interpretation of results

Sample Condition

Upon sample receipt we score your samples according to quality: good, low sediment, medium sediment, high sediment, white precipitate, and presence of algae.

There are three reasons as to why sediment should be avoided:

1. It is possible for DNA to persist within the sediment for longer than it would if it was floating in the water which could lead to a false positive result i.e. in this case GCN not recently present but present a long time ago
2. In some cases sediment can cause inhibition of the PCR analysis used to detect GCN eDNA within samples which could lead to an indeterminate result.
3. In some cases sediment can interfere with the DNA extraction procedure resulting in poor recovery of the eDNA which in turn can lead to an indeterminate result.

Algae can make the DNA extraction more difficult to perform so if it can be avoided then this is helpful.

Sometimes samples contain a white precipitate which we have found makes the recovery of eDNA very difficult. This precipitate can be present in such high amounts that it interferes with the eDNA extraction process meaning that we cannot recover the degradation control (nor most likely the eDNA itself) at sufficient levels for the control to be within the acceptable limits for the assay, therefore we have to classify these type of samples as indeterminate.

What do my results mean?

A positive result means that great crested newts are present in the water or have been present in the water in the recent past (eDNA degrades over around 7-21 days).

A negative result means that DNA from the great crested newt has not been detected in your sample.

On occasion an inconclusive result will be issued. This occurs where the DNA from the great crested newt has not been detected but the controls have indicated that either: the sample has been degraded and/or the eDNA was not fully extracted (poor recovery); or the PCR inhibited in some way. This may be due to the water chemistry or may be due to the presence of high levels of sediment in samples which can interfere with the DNA extraction process. A re-test could be performed but a fresh sample would need to be obtained. We have successfully performed re-tests on samples which have had high sediment content on the first collection and low sediment content (through improved sample collection) on the re-test. If water chemistry was the cause of the indeterminate then a re-test would most likely also return an inconclusive result.

The results will be recorded as indeterminate if the GCN result is negative and the degradation result is recorded as:

1. evidence of decay - meaning that the degradation control was outside of accepted limits
2. evidence of degradation or residual inhibition - meaning that the degradation control was outside of accepted limits but that this could have been due to inhibitors not being removed sufficiently by the dilution of inhibited samples (according to the technical advice note)



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