Clay Lane, Fishbourne

Ecological Appraisal

March 2022

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Executive Summary

i) **Introduction.** Aspect Ecology was commissioned by Gleeson Land in October 2020 to review baseline ecological reports, produced in 2019 by The Ecology Partnership, compile results and undertake an Ecological Appraisal in respect of proposed development of land west of Clay Lane, Fishbourne.

ii) **Proposals.** The proposals relate to an outline application to erect up to 105 residential dwellings, including affordable housing, with the provision of vehicular and pedestrian and cycle access from Clay Lane, alongside open spaces, biodiversity enhancement, sustainable urban drainage systems, landscaping, infrastructure, and earthworks, north of the West Coastway Line. A field to the south of the West Coastway Line will be managed to deliver Biodiversity Net Gain for the overall development.

iii) **Survey.** Numerous surveys were undertaken by The Ecology Partnership to establish the ecological baseline for the site. These involved a Phase 1 Habitat survey and Hedgerow Survey, along with detailed surveys for reptiles, bats, Water Vole, wintering birds, Great Crested Newts and Dormice. Aspect Ecology visited the site in November 2020 to identify if there had been any significant changes in habitats on site since the Phase 1 survey. The site was also surveyed by Aspect Ecology, including land to the south of the railway, in December 2020 to guide Biodiversity Net Gain calculations and an additional survey for Water Voles was undertaken in June 2021.

iv) **Ecological Designations.** The site itself is not subject to any statutory or non-statutory ecological designations. The nearest statutory designations are Chichester and Langstone Harbour Special Protection Area (SPA) and Ramsar, Solent Maritime Special Area of Conservation (SAC), Chichester Harbour Special Site of Scientific Interest (SSSI) which have overlapping boundaries and, in combination, are situated approximately 400m south of the development site. Information has been collected to inform a Habitat Regulations Assessment for these designations. The data presented in this assessment have concluded that there will be no adverse effects on their integrity, with the project committing to provide financial contributions to the Solent Recreation and Mitigation Strategy and habitats created to achieve Nutrient Neutrality with respect to Nitrogen. The site also sits within a proposed Strategic Wildlife Corridor and the layout of the site has been developed with this in mind. Retention and enhancement of boundary features on the development site, plus management of the field south of the railway for Biodiversity Net Gain, will strengthen this location of the Corridor and facilitate continued species movements through the landscape.

v) **Habitats.** The development site comprises four fields. The south-eastern field, abutting the railway, is grazed by Shetland ponies. The other three fields comprising the development site have been left unmanaged, resulting in a mixture of tall ruderals, grassland, bare earth, rushes and scrub (of varying mosaics/compositions across the site). These fields are surrounded by hedgerows, trees and a network of ditches. Boundary features will be retained and protected in the development, maintaining their contribution to the Strategic Wildlife Corridor. The remaining habitats within the site are not considered to form important ecological features and their loss to the proposals is of negligible significance.

vi) **Protected Species.** The site supports reptiles, low to moderate numbers of foraging/commuting bats, Water Voles and common breeding birds. Appropriate mitigation measures, such as retention and protection of all boundary features (e.g. the ditch network) will therefore be implemented to safeguard the species present.

vii) **Enhancements.** The proposals present the opportunity to secure a number of biodiversity net gains, including the management of the field south of the railway to deliver ecological benefits, the inclusion of Sustainable Urban Drainage Systems, scrub creation, and increased sheltering opportunities for bats and invertebrates. These could result in the project delivering a measurable biodiversity net gain compared to baseline conditions.

viii) **Summary.** In summary, the proposals have sought to minimise impacts on biodiversity and subject to the implementation of appropriate avoidance, mitigation and compensation measures, it is considered unlikely that the proposals will result in significant harm. In fact, proposals to deliver Biodiversity Net Gain, calculated using the Defra metric, have shown a possible increase in biodiversity units above baseline levels.

1 Introduction

1.1 Background and Proposals

1.1.1 Aspect Ecology was commissioned by Gleeson Land in October 2020 to review baseline ecological reports, produced in 2019 by The Ecology Partnership, compile results and undertake an Ecological Appraisal in respect of proposed development of land west of Clay Lane, Fishbourne, centred at grid reference SU 83885 05162 (see Plan 5555-01/ECO1), hereafter referred to as 'the site'.

1.1.2 The proposals relate to an outline application to erect up to 105 residential dwellings, including affordable housing, with the provision of vehicular and pedestrian and cycle access from Clay Lane, alongside open spaces, biodiversity enhancement, sustainable urban drainage systems, landscaping, infrastructure, and earthworks.

1.2 Site Overview

1.2.1 Land under the control of Gleeson Land is located to the west of Clay Lane and to the north and south of the West Coastway Line (an active railway line). Only land to the north of the railway is identified for development, with land to the south being used to deliver Biodiversity Net Gain and Nutrient Neutrality measures. To the east of the site is the A27 Chichester Bypass, with residential properties bordering the site to the west and the West Coastway Line (an active railway) running along the southern boundary of the site. To the north of the site is a field comprising tall ruderals and semi-improved grassland.

1.2.2 The development site itself (i.e. land north of the railway) comprises four parcels of land, bound by ditches and hedgerows supporting mature trees at varying intervals along their length. Fields do not appear to have been managed for at least the past year and comprise mosaics of varying compositions comprising tall ruderals, scrub and semi-improved grassland.

1.2.3 The land south of the railway, which will be managed to deliver biodiversity net gain for the overall development, comprises a pastoral field which was grazed by horses at the time of survey. It comprises species-poor semi-improved grassland, with tall ruderal vegetation interspersed throughout the sward.

1.3 Purpose of the Report

1.3.1 This report summarises the findings of the baseline ecology surveys undertaken to establish the existing ecological interest of the site, with the full reports provided as appendices. The report then provides an appraisal of the likely ecological effects of the proposals for the site, which were not available at the time of the 2019 surveys. The importance of the habitats and species present is evaluated. Where necessary, avoidance, mitigation and compensation measures are proposed so as to safeguard any significant existing ecological interest within the site and where appropriate, opportunities for ecological enhancement are identified with reference to national conservation priorities and local Biodiversity Action Plans (BAPs).

2 Methodology

2.1 Overview

2.1.1 The surveys undertaken by The Ecology Partnership in 2019 to guide this assessment are listed in Table 2.1. Full methods and data sources are provided in the Appendices. In addition to these, the site was revisited on 10th November and 10th December 2020 by Aspect Ecology. The purpose of these visits was to record any changes within the site which could have altered the findings of the 2019 baseline surveys (in the intervening period) and increase the accuracy of Biodiversity Net Gain calculations respectively.

Table 2.1. Surveys undertaken to guide this assessment.

Surveys	Timing	Appendix
Desktop Study	To accompany June 2019 report	5555-01/1
Phase 1 Habitat Survey and 'Protected Species Assessment' (including ground-level tree assessments for bats and a Badger survey)	5th June 2019	5555-01/1
Hedgerow Assessment	5th June 2019	5555-01/1
Great Crested Newt Environmental DNA (eDNA)	24th June 2019	5555-01/2
Reptiles	Seven survey visits across June, August and September 2019	5555-01/3
Dormouse	Equipment deployed 25th June 2019. Monthly checks Aug-November 2019, checks continued Apr-May 2020. (survey effort stipulated in the Dormouse Conservation Handbook achieved) Supplementary nut search November 2019	5555-01/4
Water Vole	25th July 2019 (walkover survey) Water Vole 'mats' (artificial latrine sites) deployed July-October 28th June 2021 (walkover survey)	5555-01/5
Bats	Manual Activity Surveys: 29th July, 14th August and 10th September 2019 Automated (static) Detector Surveys: July and August (recording for 5 nights during each survey)	5555-01/6
Winter Birds	18th November and 22nd December 2019	5555-01/7

2.2 Survey Constraints and Limitations

2.2.1 All of the species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of the year, since different species are apparent during different seasons. However, the Phase 1 habitat survey was undertaken within the optimal season, therefore allowing a robust assessment of habitats and botanical interest across the site.

2.2.2 Two of the ponds within 250m of the site boundary are on private land and could not be surveyed in detail. However, one could be seen from public rights of way and was noted to dry out, so was subsequently ruled out of requiring further survey. Given the absence of

Great Crested Newt records in the last 10 years within 250m of the site boundary, plus considering the results of the surveys undertaken, the inability to survey one off-site pond is not considered a significant constraint (as discussed in Section 5.7).

2.2.3 The habitats on site, particularly the hedgerows, were considered to have 'moderate' potential for foraging and commuting bats during the Preliminary Ecological Appraisal (Section 3.28). As such, further activity surveys were undertaken in July, August and September 2019. These were supplemented with automated detector surveys in July and August. It is noted that the survey effort expended by The Ecology Partnership is slightly lower than that recommended in guidelines published by the Bat Conservation Trust. However, given the results obtained through the surveys undertaken, plus consideration of bats as important ecological features in the Masterplan (see Section 6), it is considered that sufficient data have been collected to adequately avoid, mitigate and compensate for adverse effects as appropriate (ensuring no adverse effects on the local bat population).

2.2.4 A recognised limitation of the bat activity surveys is that bat detectors can only provide an index of activity rather than absolute numbers of bats. Therefore, the results of the bat activity surveys should only be considered indicative of the amount of use bats make of an area rather than the abundance of bats. In addition, some bat species, e.g. Brown Long-eared Bat, are difficult to detect due to their quiet echolocation calls.

2.2.5 Areas across the site had become densely vegetated in the period since the 2019 surveys. Such habitats within the site have the potential to reduce the detectability of Badger field signs. However, based on the results of the 2019 surveys, plus the absence of paths or any other evidence of Badger activity around/through areas of Bramble scrub in 2020, it is considered that conditions on site concerning Badger have not changed. This is discussed further in Section 5.4.

2.3 Ecological Evaluation Methodology

2.3.1 The evaluation of ecological features and resources is based on professional judgement whilst also drawing on the latest available industry guidance and research. The approach taken in this report is based on that described by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018)[1], which involves identifying 'important ecological features' within a defined geographical context (i.e. international, national, regional, county, district, local or site importance). For full details refer to Appendix 5555-01/8.

2.4 National Policy Approach to Biodiversity in the Planning System

2.4.1 The National Planning Policy Framework (NPPF)[2] describes the Government's national policies on 'conserving and enhancing the natural environment' (Chapter 15). NPPF is accompanied by Planning Practice Guidance on 'Biodiversity, ecosystems and green infrastructure' and ODPM Circular 06/2005[3].

2.4.2 NPPF takes forward the Government's strategic objective to halt overall biodiversity loss[4], as set out at Paragraph 174, which states that planning policies and decisions should contribute to and enhance the natural and local environment by:

[1] CIEEM (2018) '*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*', ver. 1.1, Chartered Institute of Ecology and Environmental Management, Winchester
[2] Ministry of Housing, Communities & Local Government (2021) '*National Planning Policy Framework*'
[3] ODPM (2006) '*Circular 06/2005: Planning for Biodiversity and Geological Conservation – A Guide to Good Practice*'
[4] DEFRA (2011) '*Biodiversity 2020: A strategy for England's wildlife and ecosystem services*'

'*minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*'

2.4.3 The approach to dealing with biodiversity in the context of planning applications is set out at Paragraph 180:

'When determining planning applications, local planning authorities should apply the following principles:

a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;

b) 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;

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and

d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

2.4.4 The above approach encapsulates the 'mitigation hierarchy' described in British Standard BS 42020:2019[5], which involves the following step-wise process:

- **Avoidance –** avoiding adverse effects through good design;
- **Mitigation –** where it is unavoidable, mitigation measures should be employed to minimise adverse effects;
- **Compensation –** where residual effects remain after mitigation it may be necessary to provide compensation to offset any harm; and
- **Enhancement –** planning decisions often present the opportunity to deliver benefits for biodiversity, which can also be explored alongside the above measures to resolve potential adverse effects.

2.4.5 The measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development (BS 42020:2019, section 5.5).

[5] British Standards Institution (2013) '*Biodiversity – Code of practice for planning and development*', BS 42020:2019

2.5 Local Policy

2.5.1 The site falls under the jurisdiction of Chichester District Council, the 'Adopted Chichester Local Plan: Key Policies 2014-2029' defines the vision of future development in the area and contains local policies relating to nature conservation. The main policies drawn from the report, which are relevant to the site, are indicated below:

2.5.2 ***Policy 49: Biodiversity***

"Planning permission will be granted for development where it can be demonstrated that all the following criteria have been met:

1. *The biodiversity value of the site is safeguarded;*
2. *Demonstrable harm to habitats or species which are protected or which are of importance to biodiversity is avoided or mitigated;*
3. *The proposal has incorporated features that enhance biodiversity as part of good design and sustainable development;*
4. *The proposal protects, manages and enhances the District's network of ecology, biodiversity and geological sites, including the international, national and local designated sites (statutory and non-statutory), priority habitats, wildlife corridors and stepping stones that connect them;*
5. *Any individual or cumulative adverse impacts on sites are avoided;*
6. *The benefits of development outweigh any adverse impact on the biodiversity on the site. Exceptions will only be made where no reasonable alternatives are available; and planning conditions and/or planning obligations may be imposed to mitigate or compensate for the harmful effects of the development.*

2.5.3 ***Policy 50: Development and Disturbance of Birds in Chichester and Langstone Harbours Special Protection Areas***

"*It is Natural England's advice that all net increases in residential development within the 5.6km 'Zone of Influence' are likely to have a significant effect on the Chichester and Langstone Harbours SPA either alone or in-combination with other developments and will need to be subject to the provisions of Regulation 61 of the Conservation of Habitats and Species Regulations 2010. In the absence of appropriate avoidance and/or mitigation measures that will enable the planning authority to ascertain that the development would not adversely affect the integrity of the SPA, planning permission will not be granted because the tests for derogations in Regulation 62 are unlikely to be met. Furthermore, such development would not have the benefit of the presumption in favour of sustainable development in the National Planning Policy Framework.*

Net increases in residential development, which incorporates appropriate avoidance/mitigation measures, which would avoid any likelihood of a significant effect on the SPA, will not require an 'appropriate assessment'. Appropriate avoidance/mitigation measures will comprise:

a) A contribution in accordance with the joint mitigation strategy outlined in Phase III of the Solent Disturbance and Mitigation Project; or

b) A developer provided package of measures associated with the proposed development designed to avoid any significant effect on the SPA; or

c) A combination of measures in (a) and (b) above.

Avoidance/mitigation measures will need to be phased with development and shall be maintained in perpetuity. All mitigation measures in (a), (b) and (c) above must be agreed to be appropriate by Natural England. They should also have regard to the Chichester Harbour AONB Management Plan.

The provisions of this policy do not exclude the possibility that some residential schemes either within or outside the Zone of Influence might require further assessment under the Habitats Regulations. For example, large schemes, schemes proposing bespoke avoidance/mitigation measures, or schemes proposing an alternative approach to the protection of the SPAs. Such schemes will be assessed on their own merits, and subject to advice from Natural England."

2.5.4 ***Policy DM52: Green Infrastructure***

Development will be expected to contribute towards the provision of additional green infrastructure and protect and enhance existing green infrastructure. Planning permission will be granted where it can be demonstrated that all the following criteria have been met:

1. *The proposals maintain and where appropriate contribute to the network of green infrastructure i.e. public and private playing fields, recreational open spaces, parklands, allotments and water environments;*

2. *The proposals contribute to improving the health and well-being of the local and wider community;*

3. *Where appropriate, the proposals incorporate either improvements to existing green infrastructure or the restoration, enhancement or creation of additional provision/areas;*

4. *Where appropriate, the proposals incorporate either improvements to existing ecology and biodiversity or the restoration, enhancement or creation of additional habitat and habitat networks;*

5. *Where appropriate, the proposals incorporate either improvements to existing trees, woodland, landscape features and hedges or the restoration, enhancement or creation of additional provision/areas;*

6. *Where appropriate, the proposals create new green infrastructure either through on site provision or financial contributions. Where on-site provision is not possible financial contributions will be required and be negotiated on a site by site basis; and*

7. *The proposals do not lead to the dissection of the linear network of cycleways, public rights of way, bridleways and ecological corridors such as ancient woodlands, hedgerows, ditches and water environments.*

Such provision will be required in accordance with adopted policies and strategies relating to green infrastructure and biodiversity network provision. Development that will harm the green infrastructure network will only be granted if it can incorporate measures that avoid the harm arising or sufficiently mitigate its effects.

Where compensatory provision is to be made for the loss of existing green infrastructure the provision of new and/or enhancement of green infrastructure will be required in addition to any compensatory provision. Where appropriate, the Council will seek to secure via planning obligation provision for the future management and/or maintenance of green infrastructure. The Council will expect that a legal agreement is entered in to where it is necessary to secure green infrastructure provision, or to ensure the long term sustainable management of green infrastructure. Unless stated elsewhere the Council will normally not be responsible for the long term maintenance and management of green infrastructure.

3 Ecological Designations

3.1 Statutory Designations

Description

3.1.1 The statutory designations of ecological importance that occur within the local area are detailed in Appendix 5555-01/1, along with discussions around impacts and relevant mitigation strategies. The nearest statutory designations are Chichester and Langstone Harbour Special Protection Area (SPA) and Ramsar, Solent Maritime Special Area of Conservation (SAC) and Chichester Harbour Special Site of Scientific Interest (SSSI), which have overlapping boundaries and, in combination, are situated approximately 400m south of the site. As such, this combined designation sits within the 5.6km 'zone of influence' as specified in the planning policy (Policy 50).

3.1.2 Qualify features and reasons for designation are provided below in Table 3.1:

Table 3.1. Closest Statutory Designations to the Site.

Designation	Description and Qualify features
Chichester and Langstone Harbour Special Protection Area (SPA) and Ramsar	Internationally important wetlands supporting numbers of wintering wildfowl (more than 10,000) and regularly supporting more than 20,000 wintering waders. Other features of ornithological interest, including species on conservation concern, important numbers of migratory species and three species of Terns which breed at the site Part of the Solent Maritime European Marine Site (EMS)
Solent Maritime Special Area of Conservation (SAC)	Designated for the following Annex 1 habitats: Estuaries, Spartina swards, Atlantic salt meadows. Additional Annex 1 habitats present as a qualifying feature, but not a primary reason for designation: Sandbanks which are slightly covered by sea water at all time, Mudflats and Sandflats not covered by seawater at low tide, Coastal Lagoons, Annual vegetation of drift lines, Perennial vegetation of stony banks, *Salicornia* and other annuals colonizing mud and sand and "white dunes". The SAC also supports Otter *Lutra lutra,* Common Seal *Phoca vitulina* and Desmoulin's Whorl Snail *Vertigo moulinsiana*
Chichester Harbour Special Site of Scientific Interest (SSSI)	Estuarine habitat with mudflats, sandflats and saltmarsh. Important for wintering and breeding bird species **Note**: The site is located within the Impact Risk Zone and appears to trigger consultation between the Local Planning Authority and Natural England on the grounds that is comprises '*residential development of 100 units of more*'

3.1.3 An additional 11 statutory designations are located within 10km of the site (though none are within 4km). These are described in Table 3.2 below:

Table 3.2. Statutory Designations within 10km the Site.

Designation	Distance and direction
Kingley Vale (SAC, National Nature Reserve and SSSI)	~4.7km to the north west of site
Pagham Harbour (SPA, Ramsar and SSSI)	~5.8km to the south east **Policy 51** of the Local Plan considers that '*net increases in residential development within the 3.5km 'Zone of Influence' are likely to have a significant effect on the Pagham Harbour SPA either alone or in-combination*' Therefore, the site is located outside the perceived Zone of Influence for this designation
Solent Maritime (SAC) (continuation of the SAC in Table 3.1)	~6.7km to the west
East Dean Park Wood (SSSI)	~8.4km to the north east
Eatham Pit Boxgrove (SSSI)	~8.6km to the north east
Halnaker Chalk Pit (SSSI)	~8.7km to the north east
Singleton and Cocking Tunnels (SAC, SSSI)	~9.1km to the north east (the site is significantly outside the Core Sustenance Zones for both bat species using this designation)
Bognor Reef (SSSI)	~9.2km to the south east
Solent and Dorset Coast (SPA)	~9.2km to the south east
Bracklesham Bat (SSSI)	~9.3km to the south west
West Dean Woods (SSSI)	~9.6km to the north

Evaluation - General

3.1.4 The site itself is not subject to any statutory ecological designations. With the exception of Chichester and Langstone Harbour SPA (and its overlapping designations), statutory ecological designations in the surrounding area are well separated from the site by existing development and, given the nature and scale of the proposals, these designations are unlikely to be affected. With reference to Pagham Harbour (SPA, Ramsar and SSSI), Policy 51 in the Local Plan considers the 'Zone of Influence' for this designation to be 3.5km. Whilst acknowledging that some developments/activities outside this perceived 'Zone of Influence' could result in impacts on the integrity of the designation, this is not considered to apply to this site (given its size, location, surrounding land-uses, incorporated Green Infrastructure, ecological enhancements and measures proposed to avoid impacts on Chichester and Langstone Harbour SPA).

Evaluation - Chichester and Langstone Harbour SPA (and overlapping designations)

3.1.5 The site is located ~400m from the Chichester and Langstone Harbour SPA (and overlapping, associated designations). As such, the Local Planning Authority, acting as the 'competent authority' will assess the scheme's potential to adversely affect the site under regulation 63 of The Conservation of Habitats and Species Regulations. Information is provided to guide this assessment in Appendices 5555-01/1 (paragraphs 4.1-4.16) and 5555-01/10, plus summarised below:

- The site is separated from the designations by the West Coastway Line, the A259, Fishbourne Roman Palace Museum, a school and residential development. As such,

it will result in no direct land-take from the designation(s). Similarly, given the intervening land-uses, there are unlikely to be any adverse effects experienced in the designations associated with noise/light/movement on site;

- The site does not contain any habitats which are noted on the citations for the designations (e.g. estuarine, mudflats, sandflats, saltmarsh) and does not contribute to the 'structural' integrity of the designations;

- The site does not provide suitable breeding habitat for the Tern species listed on the citations and wintering bird surveys have not identified use of the site by any species listed on the citations (see Appendix 5555-01/7). As such, the site is not considered to be 'functionally' connected to the designations. Furthermore, the site is not noted on the *Solent Waders and Brent Goose Strategy* as being of importance to this particular species (which is a key feature of the designation)

- In line with the *Solent Recreation and Mitigation Strategy,* and discussed in Policy 50 in the Local Plan, potential impacts arising due to increased recreational use of the designations (as a result of an increased local population due to development of the site) will be mitigated and compensated for through financial contributions to the Strategy. The amount provided will be based on the final number of residential units on the site, agreed between the developer and the Local Planning Authority and secured through a planning condition;

- Due to its position relative to the designations, development of the site will need to demonstrate Nutrient Neutrality (i.e. no increases in Nitrogen entering the designations as a result of the development). To this end, Natural England's guidance (June 2020) was used to calculate the resultant increase in Nitrogen output from the site following development (i.e. relevant to current, baseline, conditions). This assessment (see sperate report from RMA Environmental) concluded an increase of 180.06 kg/year. Current Nutrient Neutrality Assessment guidance suggests a nitrate removal rate in a constructed wetland of 93 g/m²/year. Therefore, to mitigate for a nitrate surplus, wetlands will be created on land south of the railway, covering an area of 1940 m². This is sufficient to remove the 180.06 kg/year. This will deliver the required 'neutrality' and ensure excessive nutrients are not entering the designations due to the project.

Evaluation - Chichester Harbour SSSI

3.1.6 Natural England has developed Impact Risk Zones (IRZs) as an initial tool to help assess the risk of developments adversely affecting SSSIs, taking into account the type and scale of developments. The site sits within an IRZ in relation to Chichester Harbour SSSI and may exceed the threshold (100 units) triggering consultation between the Local Planning Authority and Natural England regarding potential impacts.

3.1.7 As the SSSI is incorporated into the wider Chichester and Langstone Harbour SPA, if the measures above for the SPA are adopted in full, resulting in no adverse effects on the integrity of the SPA, it should also be concluded that there will be no adverse effects on the SSSI. Especially considering the distance and intervening land-uses between the site and the designation.

3.2 Non-statutory Designations

Description

3.2.1 The non-statutory designations of nature conservation interest that occur within the local area are discussed in Appendix 5555-01/1. The nearest non-statutory designation is the River Lavant Marsh Local Wildlife Site (LWS) located approximately 300m to the south of the site (separated from it by the A259). The designation comprises grazing marsh in the former estuary of the River Lavant, important for both its botanical and ornithological features. The next nearest non-statutory designation is Fishbourne Meadows (LWS) located approximately 1.2km to the south of the site. The designation comprises several meadows lying adjacent to Chichester Harbour SSSI and are important from a botanical perspective.

Evaluation

3.2.2 The site itself is not subject to any non-statutory nature conservation designations. Both non-statutory designations in the surrounding area are separated from the site by existing development and given the nature and scale of the proposals, these designations are unlikely to be affected.

3.3 West of Chichester to Fishbourne Strategic Wildlife Corridor

3.3.1 The site is located within a proposed Strategic Wildlife Corridor, as identified within Chichester District Council's (CDC) 'Local Plan Review Background Paper (2018)' and Chichester District Council's Local Plan Review 2016-2035 (Preferred Approach 2018), and shown on Plans 5555-01/ECO2 and ECO3.

3.3.2 Policies relevant to proposed strategic wildlife corridors include S30 in the Local Plan Review and section 4 of Policy 49 in the adopted Local Plan (see Section 2.5.2 in this report).

Policy S30: Strategic Wildlife Corridors

Development proposals within, or in close proximity to, strategic wildlife corridors will be granted where it can be demonstrated that:

1. *There are no sequentially preferable sites available outside the wildlife corridor;*
2. *The development will not have an adverse impact on the integrity and function of the wildlife corridor; and*
3. *Development located in close proximity to strategic wildlife corridors protects and enhances its features and habitats.*

Minor development within the strategic wildlife corridor will be acceptable where it does not undermine the connectivity and ecological value of the corridor.

3.3.3 The identification of these proposed strategic wildlife corridors and the rationale for their locations in the district are set out in CDC's 'Strategic Wildlife Corridors Local Plan Review Background Paper' (December 2018). This sets out that background mapping of ecological networks was carried across the District during 2012-14 in partnership with Forest Research UK, which utilised data from Sussex Biodiversity Records Centre. The work adopted a species-based approach to define ecological networks and six focal species/species groups were identified to represent key habitats and landscape features, namely Water Vole, Barn Owl, woodland bats, Dormouse, Lapwing and Chalk Hill Blue Butterfly.

3.3.4 The ecological networks, in addition to high concentrations of species records and the location of priority habitats and designated sites, enabled CDC to identify four proposed strategic wildlife corridors to the west of Chichester to provide ecological connectivity between Chichester Harbour SPA and the South Downs National Park (see Plan 5555-01/ECO2), along with a further corridor to the south and east of Chichester to provide connectivity between Pagham Harbour SPA and the National Park.

3.3.5 The site is located within the eastern-most proposed wildlife corridor to the west of Chichester, namely 'West of Chichester to Fishbourne' Strategic Wildlife Corridor (herein referred to as SWC4), as shown on Plan 5555-01/ECO3.

3.3.6 The site itself is located within the southern part of SWC4 to the east of Fishbourne and to the south and west of the A27. Within this part of the wildlife corridor, ecological features are predominately focused on the ditch/watercourse and hedgerow network (functioning primarily for bats, birds and riparian mammals along with associated other species), which are generally located at field boundaries, along with small areas of Barn Owl habitat, as shown on Plan 5555-01/ECO3.

3.3.7 The A27, which runs east-west through all the proposed strategic wildlife corridors, has the potential to interrupt ecological connectivity for wildlife through the landscape. This is addressed in CDC's Strategic Wildlife Corridors Local Plan Review Background Paper, which sets out that connectivity across the A27 is maintained predominately by existing culverts and underpasses. Within SWC4, a review of OS mapping identifies that possible connections under the A27, relative to the development, are limited to two underpasses formed by Clay Lane and Fishbourne Road (although the latter is well-lit with lighting along the length of the underpass), along with the railway line, located to the east of the wildlife corridor with limited connectivity under the A27 to the rest of the corridor.

Evaluation

3.3.8 The functional elements of the proposed wildlife corridor in the location of the site centre on the ditch/watercourse and hedgerow network (functioning primarily for bats, birds and riparian mammals along with associated other species), which are generally located at the field margins. These will all be largely retained, protected (with suitable buffer zones) and enhanced through the proposals, with only minimal breaches required to facilitate access around site. As such, structural connectivity facilitating north-south movements through the corridor at the site location will be maintained.

3.3.9 Functional connectivity for north-south movements though the development will need to be maintained through implementation of a sensitive lighting strategy (e.g. not directly illuminating boundary features). However, this should be possible given the orientation/location of the properties on the Masterplan, with only gardens and access tracks abutting boundary features (not the properties themselves).

3.3.10 East-west movements across the site will be maintained along the northern and southern boundaries of the site (with retention of east and west boundary features facilitating species movements to these areas). Furthermore, planting in the southeast corner of the site will enhance movement opportunities along the southern boundary and associated railway. These onsite features, as well as the existing railway along the southern site boundary, will enable continued east-west movements across the site. They will also enable species to access the railway corridor and the underpass at Clay Lane (which is not lit). These areas provide opportunities for safe crossing of the A27, connecting with North-South orientated habitats, within SWC4, to the east of the A27.

3.3.11 The parcel of land within SWC4, south of the railway, will not be developed, but will be enhanced for wildlife (see Plan 5555-01/ECO5). This land will be managed to deliver biodiversity net gain (and Nutrient Neutrality) through the creation of habitats such as scrub and wetland (on what currently comprises species-poor semi-improved grassland). These habitats will not only increase the biodiversity 'value'/units of the land, they will also enhance the area in terms of the aspirations of the Strategic Wildlife Corridor. They will create better opportunities for north-south movement through the field (abutting the A27), tying in to both the connectivity measures north of the railway (retained and enhanced boundary features on the development site) and the east-west corridor created by the railway itself. They will also create foraging and sheltering opportunities for several of the focal species used to determine the locations of the corridors. As such, proposals to enhance this land for wildlife will be a positive contribution to the proposed Strategic Wildlife Corridor at this location.

3.3.12 It is evident from a review of the Strategic Wildlife Corridors as a whole that residential development can contribute positively to the function of the corridors, particularly where key habitats are retained and green infrastructure is included. As such, it is considered that, based on the Masterplan for the site, the development can be accommodated whilst fully maintaining the functional elements of the proposed corridor. Furthermore, the development will bring forward considerable benefits to biodiversity through the securement of long-term favourable ecological management of retained habitats plus other faunal enhancements (see Section 6).

3.4 Priority Habitats, Ancient Woodland and Notable Trees

Description

3.4.1 The site does not lie within or adjacent to any priority habitats, although these are present within 2km of the site (largely associated with the designated areas, plus areas of Deciduous Woodland). MAGIC does show a small area of the Priority Habitat 'Deciduous Woodland' abutting the western boundary of the site (separated by a ditch). However, this area actually supports residential dwellings with a tree-lined boundary. The nearest area Ancient & Semi-Natural Woodland is approximately 450m east of the site, beyond the A27.

3.4.2 There are no records of ancient, veteran or notable trees on the site or within 500m.

3.5 Summary

3.5.1 In summary, the site itself is not subject to any statutory or non-statutory ecological designations and, subject to the implementation of appropriate mitigation measures (as described above), it is unlikely that any such designations in the surrounding area will be significantly affected by the proposals.

4 Habitats and Ecological Features

4.1 Overview

4.1.1 The habitats and ecological features present within the site are described below and evaluated in terms of whether they constitute an important ecological feature and their level of importance, taking into account the status of habitat types and the presence of rare plant communities or individual plant species of elevated interest. The likely effects of the proposals on the habitats and ecological features are then assessed. The value of habitats for the fauna they may support is considered separately in Chapter 5 below.

4.1.2 The development site comprises four fields, with an additional field also under ownership and identified as land to be managed for ecological benefits (not development – see Section 4.7). The south-eastern field, abutting the railway, is grazed by Shetland ponies. The other three fields comprising the site have been left unmanaged, resulting in a mixture of tall ruderals, grassland, bare earth, rushes and scrub (of varying mosaics/compositions across the site). These fields are surrounded by hedgerows, trees of varying maturity (none classed as Ancient or Veteran, see separate Tree Report) and they support a network of ditches. The field south of the railway, to be manged for ecological benefits, comprises horse-grazed, species-poor, semi-improved grassland (see Section 4.7).

4.1.3 The following habitats/ecological features were identified on site during the 2019 Phase 1 Habitat Survey:

- Heavily grazed semi-improved neutral grassland with bare earth;
- Horse grazed semi-improved grassland;
- Tall ruderals and bare ground;
- Tall ruderals/grassland mosaic;
- Tall ruderal/scrub mosaic;
- Semi-improved grassland with tall ruderals and scrub;
- Marshy grassland;
- Tall ruderals/bare earth/scrub mosaic;
- Tall ruderals;
- Semi-improved grassland;
- Scrub;
- Marginal vegetation;
- Hedgerows;
- Trees; and
- Ditches.

4.1.4 During the walkover in November 2020 it was noted that the areas of scrub detailed in the 2019 had become more extensive and that some areas of the site had been mown/flailed. However, conditions on site, allowing for 12 months of no management, had largely remained the same.

4.1.5 Habitats are summarised below, but are detailed in Appendix 5555-01/1, which also contains appropriate figures.

4.1.6 Overall, the habitats on site are widespread and common throughout the local area and the UK as a whole. Development will result in the loss of scrub, ruderals, bare ground and semi-improved grassland. However, these habitats are not considered to comprise important ecological features in their own right (see Appendix 5555-01/1) and their loss is not considered significant. As such, with the exception of where they have potential to support important animal species, and are discussed in the relevant sections in Chapter 5 relative to those species, they are not considered further in this assessment.

4.1.7 Habitats on site which have been identified as important ecological features, due to their combined value as, and contribution to, ecological corridors through the site (see Section 3.3) comprise:

- Hedgerows;
- Trees; and
- Ditches

4.2 Priority Habitats

4.2.1 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places duties on public bodies to have regard to the conservation of biodiversity in the exercise of their normal functions. In particular, Section 41 of the NERC Act requires the Secretary of State to publish a list of habitats which are of principal importance for conservation in England. This list is largely derived from the 'Priority Habitats' listed under the former UK Biodiversity Action Plan (BAP), which continue to be regarded as priority habitats under the subsequent country-level biodiversity strategies.

4.2.2 Of the habitats within the site, Hedgerows are considered to qualify as Priority Habitats and therefore constitute important ecological features. This is discussed further in Section 4.3 below.

4.3 Hedgerows

Description

4.3.1 The hedgerows around the site are fairly uniform with some gaps and scattered mature trees present. Four hedgerows on site were assessed on their 'importance' under the Hedgerow Regulations 1997, as detailed in Table 4.1 below.

Table 4.1. Hedgerow descriptions.

No.	Woody species	Avg. per 30m	Ground flora & climbers	Associated features	Likely to qualify[#]
H1	Oak, F. Maple, Hawthorn, Ash, Elder, Willow	5	Bramble, Ivy, Broad-leaved Dock	Associated ditch, 2 standard trees in hedgerow between 50m and 100m in length, connected to 1 other hedgerow	**N**
H2	Oak, Cherry sp., Hawthorn, Wild Privet, F. Maple, Dogwood, Ash, Hazel, Rowan	9	Common Nettle, Bramble, Broad-leaved Dock	<10% gaps, connected to 1 other hedgerow, 1 tree per 50m	**Y**
H3	Oak, Hawthorn, Elder, Ash, F. Maple, Dog Rose	5	Bramble, Ivy	Associated ditch, 2 standard trees in hedgerow between 50m and 100m in length	**N**

No.	Woody species	Avg. per 30m	Ground flora & climbers	Associated features	Likely to qualify#
H4	Oak, Hawthorn, Blackthorn, Wild Privet, Hazel, Elder	6	Common Nettle, Bramble, Broad-leaved Dock	<10% gaps, connected to 2 other hedgerows	**N**
H5	Oak, F. Maple, Elder, Hawthorn, Willow, Dog Rose	5	Bramble, Ivy Pendulous Sedge	Associated ditch, 1 standard tree every 50m for a hedgerow >100m in length, connected to 1 other hedgerow.	**N**
H6	Willow, Hazel, Wild Privet, Oak	3	Bramble, Ivy	Associated ditch, 2 standard trees in hedgerow between 50m and 100m in length, connected to 1 other hedgerow.	**N**
H7	F. Maple, Beech, Oak, Cherry Laurel, Garden Privet, Dog Rose	3	Bramble, Ivy, Bamboo, Nettle, Creeping Thistle	<10% gaps, 1 standard tree every 50m for a hedgerow >100m in length, connected to 1 other hedgerow.	**N**

Woody species (as listed under Schedule 3 of the Hedgerows Regulations 1997) and woodland ground flora species (as listed under Schedule 2 of the Hedgerows Regulations 1997) underlined

likely to qualify – as 'important' under the wildlife and landscape criteria of the Hedgerows Regulations 1997

Evaluation

4.3.2 From a preliminary appraisal, **H2** is considered likely to qualify as ecologically 'important' under the Hedgerows Regulations 1997, based on the number of woody species and associated features. **H1** and **H3**-**H7** are unlikely to qualify as important under the Regulations.

4.3.3 Hedgerows H1-H6 are likely to qualify as a Priority Habitat based on the standard definition[6], which includes all hedgerows (>20m long and <5m wide) consisting predominantly (≥80%) of at least one native woody species. It has been estimated that approximately 84% of countryside hedgerows in GB qualify as a Priority Habitat under this definition.[6] Hedgerow H7 is dominated by non-native species and does not qualify as a Priority Habitat.

4.3.4 On this basis, hedgerows H1-H6 constitute important ecological features. As standalone ecological features they are important at the Local level. However, given their identification and inclusion within Strategic Wildlife Corridor SWC4, they are considered to be of importance at the District level when viewed in combination with the trees and ditches associated with them.

4.3.5 The proposals incorporate the retention of all the hedgerows within the site, with the only losses occurring to small sections of **H4** and **H1** for construction of an access road and a pedestrian walkway respectively. Retained hedgerows will be protected during the construction phase of the proposals as per the recommendations included at Chapter 6 below. Furthermore, the proposals incorporate new planting which will link with and strengthen the existing / retained hedgerows (a number of which were noted to be somewhat gappy in nature) which will aim to enhance the value of these features for biodiversity.

[6] Based on: Biodiversity Reporting and Information Group (2011) '*UK Biodiversity Action Plan (BAP) Priority Habitat Descriptions'*, ed. Ant Maddock

4.4 Trees

Description

4.4.1 A number of trees were recorded within the site, largely associated with the hedgerows (as set out at Table 4.1 above). Standard trees within the hedgerows were noted to range from semi-mature to mature in age, with no trees noted to be approaching veteran age class (see separate tree report).

4.4.2 A small number of additional early- to semi-mature trees located outside the hedgerows were also recorded comprising Oak, Ash and Hawthorn.

Evaluation

4.4.3 A number of the trees within hedgerows are mature in nature. Accordingly, they are of ecological interest in their own right, albeit at present do not constitute important ecological features by themselves. However, they do contribute to ecological corridors through the site. In addition, where they provide opportunities for important animal species, this is discussed in Chapter 5.

4.4.4 Other trees located outside the hedgerows are relatively small in size being young to semi-mature in nature such that they are currently of limited ecological interest and are also not considered to form important ecological features.

4.4.5 It is understood that the trees within the site boundaries (hedgerows) will be fully retained under the proposals and as such, subject to recommended safeguards set out at Chapter 6 below, protected throughout development and future use of the site. This will allow them to continue in their roles as 'stepping stones' in Strategic Wildlife Corridor SWC4. In addition, new planting, especially in the south-eastern corner of the site, will combine with the existing trees to provide new opportunities for wildlife.

4.5 Ditch Network

Description

4.5.1 A network of ditches runs through the site, creating a north-south corridor. On the banks of the ditches were collections of marginal vegetation. Species present included: Pendulous Sedge *Carex pendula*, Rosebay Willowherb *Chamaenerion angustifolium*, Fool's Watercress *Apium nodiflorum*, False Brome *Brachypodium sylvaticum*, Figwort sp., Crack Wwillow *Salix fragilis*, Bulrush *Typha latifolia*.

4.5.2 The ditches can be described in six discrete sections, with the majority being dry or holding little water in 2019. Table 4.2 describes the condition of the ditches in November 2020.

Table 4.2. Ditch descriptions.

Pond no.	Location and orientation	Bank Description	Water-level/Flow
D1	Southern end of site, western boundary of Field 2. North-South alignment	Steep Eastern bank (80°) and covered with Ivy. Western bank shallower and covered in Bramble. Some in-channel vegetation	Standing water (no obvious flow) ~1m wide and 0.1m deep
D2	Continuation of D1, but on an East-West alignment through Field 3	Both banks ~75° and heavily vegetated	Standing water (no obvious flow) ~1m wide and 0.1m deep
D3	Forms the southern portion of western boundary of Field 4, on a North-South alignment	Eastern bank ~45° and mown, western bank heavily vegetated and ~80°.	Southern portion of D3 holds water and has a southwards flow. Water ~1m wide and 0.1m deep
D4	Continuation of D3, after dogleg, forming the northern portion of the western boundary. North-South alignment	Banks and channel heavily vegetated. Eastern bank ~75°, western bank heavily vegetated and ~80°.	Very slight flow, Water ~0.8m wide and 0.05m deep
D5	Northern edge of Field 5, on an East-West alignment	Banks nearly vertical, not heavily vegetated	Dry at the eastern end (where it meets D4 and D6). Pooled/standing water in central and western sections, getting shallower towards western end. Where present, water ~0.5m wide and 0.05m deep
D6	Northern edge of Field 4, on an East-West alignment	Shallow and supporting grass for a lot of its length	Dry

Evaluation

4.5.3 Ditches on site have varying flows and hold water of varying depths. However, they are all linked and provide a linear corridor through the site. Although not qualifying as important ecological features in their own right, given their poor species diversity and stability has a habitat, they do contribute to the ecological corridor SWC4 (in combination with the trees and hedgerows around site boundaries).

4.5.4 All ditches will be retained in the final development, although some small sections may require culverting to facilitate access. Furthermore, a buffer of at least 5m has been established between the edge of the water and any development. Given this buffer, plus recommended safeguards set out at Chapter 6 to protect water quality, there will be no direct impact on the ditches. A sensitive lighting scheme will also be developed to ensure the ditches maintain their 'value' as a corridor through the site for nocturnal/light-sensitive species. Implementation of these measures, plus the layout presented on the Masterplan, will protect the ditches, protect their ability to act as a corridor through the site and avoid any significant adverse effects.

4.5.5 The value of the ditch network as a habitat for important species (such as Water Vole) is discussed below in Chapter 5.

4.6 Habitat Evaluation Summary

4.6.1 On the basis of the above, the following habitats within and adjacent to the site are considered to form important ecological features:

Table 4.3. Evaluation summary of habitats forming important ecological features.

Habitat	Level of Importance
Hedgerows	Local
Combined Hedgerows, Trees and Ditch Network	District

4.6.2 Other habitats present within the site include scrub, ruderals, bare ground and semi-improved grassland. However, these habitats do not form important ecological features.

4.7 Enhancement Site Baseline

Description

4.7.1 The field to the south of the railway line (see Plan 5555-01/ECO4), will be managed to deliver biodiversity net gain. It was grazed by horses at the time of the December 2020 survey and had a variable sward height of 5-20cm. Small areas of bare ground are present around gateways where the horses have poached the ground. The grassland is dominated by Perennial Rye-grass *Lolium perenne*, with Creeping Bent *Agrostis stolonifera*, False Oat-grass *Arrhenatherum elatius*, Yorkshire-fog *Holcus lanatus*, and Cock's-foot *Dactylis glomeratus* present to a lesser extent. Herb coverage was approximately 20% and included species such as White Clover *Trifolium repens*, Daisy *Bellis perennis*, Sorrel *Rumex acetosa*, Creeping Cinquefoil *Potentilla reptans*, Yarrow *Achillea millefolium*, Common Mouse-ear *Cerastium fontanum*, Scentless Mayweed *Tripleurospermum inodorum*, Dandelion *Taraxacum officinalis* agg. and Groundsel *Senecio vulgaris*. Tall ruderal vegetation is interspersed throughout the sward, particularly in the southern area of the field, with species such as Dock *Rumex* sp., Creeping Thistle *Cirsium arvense*, Nettle *Urtica dioica* and Bristly Oxtongue *Picris echioides*.

Evaluation

4.7.2 Overall, the grassland supports a low diversity of common and widespread species and based on the type and abundance of species present it can be classified as species-poor semi-improved grassland[7]. This is likely to be a common habitat in the local area which contains a high proportion of pastoral fields. The grassland contains insufficient wildflower indicator species such that it does not qualify as a Priority Habitat. Furthermore, the presence of frequent and locally dominating encroaching tall ruderal species within the sward limits the value of this grassland somewhat. As such, the grassland does not constitute an important ecological feature and its loss to the proposals is therefore of minor ecological significance.

7 Natural England (2010) 'Higher Level Stewardship – Farm Environment Plan (FEP) Manual', 3rd Edition

5 Faunal Use of the Site

5.1 Overview

5.1.1 During the survey work, general observations were made of any faunal use of the site with specific attention paid to the potential presence of protected or notable species. Specific survey work was undertaken in respect of bats, Badgers *Meles meles*, Dormouse *Muscardins avellanarius*, Water Vole *Arvicola amphibius*, Great Crested Newt *Triturus cristatus*, reptiles and wintering birds, with the results described below. The need for other surveys was scoped out during the Preliminary Ecological Appraisal (see Appendix 5555-01/1).

5.2 Priority Species

5.2.1 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places duties on public bodies to have regard to the conservation of biodiversity in the exercise of their normal functions. In particular, Section 41 of the NERC Act requires the Secretary of State to publish a list of species which are of principal importance for conservation in England. This list is largely derived from the 'Priority Species' listed under the former UK Biodiversity Action Plan (BAP), which continue to be regarded as priority species under the subsequent country-level biodiversity strategies.

5.2.2 The full list of Priority Species records, received from the Local Records Centre (LRC), is provided in Section 3.6 of Appendix 5555-01/1. During the survey work undertaken, the Priority Species Slow Worm *Anquis fragilis*, Common Lizard *Zootoca vivpara*, Soprano Pipistrelle *Pipistrellus pygmaeus,* Brown Long-eared Bat *Plecotus auritus*, Noctule *Nyctalus noctula*, Water Vole and Song Thrush *Turdus philomelos* were recorded within the site, with Starling *Sturnis vulgaris* and Herring Gull *Larus argenteus* recorded flying over the site. This is discussed further below.

5.3 Bats

5.3.1 **Legislation.** All British bats are classed as European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended) and are also listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). As such, both bats and their roosts (breeding sites and resting places) receive full protection under the legislation (see Appendix 1234/2 for detailed provisions). If proposed development work is likely to result in an offence a licence may need to be obtained from Natural England which would be subject to appropriate measures to safeguard bats. Given all bats are protected species, they are considered to represent important ecological features. A number of bat species are also considered S41 Priority Species.

5.3.2 **Background Records.** The Preliminary Ecological Appraisal and Bat Survey Report provided by The Ecology Partnership do not contain the raw/primary background records received from the LRC. However, the summary table in section 3.6 of Appendix 5555-01/1 does not indicate that any specific records of bats from within or adjacent to the site were returned from the desktop study. Information received from the LRC returned records of Soprano Pipistrelle , Brown Long-eared Bat , Noctule and Serotine *Eptesicus serotinus* within 2km of the site. The closest records are for Serotine, Noctule, Common Pipistrelle and Soprano Pipistrelle 700m south of the site in 2016. The nature of these records (e.g. roost or general activity) is not known.

5.3.3 **Survey Results**

5.3.4 The Ecology Partnership's Preliminary Ecological Appraisal (Appendix 5555-01/1) and Bat Survey Report (Appendix 5555-01/6) detail the surveys undertaken at the site and discuss the findings. These are summarised below and discussed in relation to the Masterplan for the site.

Visual Inspection Surveys

Bat Boxes

5.3.5 There are no buildings on site to assess for roosting bats. However, bat boxes have been erected on mature trees along the western boundary in association with neighbouring developments (13/02278/OUT and 15/02331/FUL). It is not known if these currently support roosting bats.

Trees

5.3.6 The Phase 1 habitat map in Appendix 5555-01/1 identifies mature and semi-mature trees around the boundaries of the site with the potential to support roosting bats. These trees support features comprising cracked limbs, Woodpecker holes and rot holes and are described as having 'Medium' or 'High' potential to support roosting bats (although categories are not displayed on the map). Some of the smaller boundary trees on site were also noted as having features with the potential to support low numbers of bats.

5.3.7 Trees of interest were observed for emergence activity during the bat activity surveys (Section 2.1, Appendix 5555-01/6), although no specific 'targeted' emergence surveys were conducted. No evidence of bats roosting in trees was recorded during the activity surveys.

Activity surveys (foraging /commuting)

5.3.8 The habitats on site, particularly the hedgerows, were considered to have 'moderate' potential for foraging and commuting bats during the Preliminary Ecological Appraisal (Section 3.28). As such, further activity surveys were undertaken in July, August and September 2019. These were supplemented with automated detector surveys in July and August.

5.3.9 It is noted that this survey effort is slightly lower than that recommended in guidelines published by the Bat Conservation Trust. However, given the results obtained through the surveys undertaken, plus consideration of bats as important ecological features in the Masterplan (see Section 6), it is considered that sufficient data have been collected to adequately avoid, mitigate and compensate for adverse effects as appropriate (ensuring no adverse effects on the local bat population).

5.3.10 **Manual walked transect surveys.** The detailed activity survey results are included at Appendix 5555-01/6, with a summary provided in this report. The transect routes are illustrated on Figure 5.1 below (Figure 3 of the original report). Figure 5.2 below shows the field number used to put the results of the surveys into context (Figure 4 of the original report – please note that Field 1 is not involved in the development).

Figure 5.1. Transect and Static Detector Locations

Figure 5.2. Field Numbers associated with Bat Activity Surveys (note that Field 1 is not included in the development proposals)

5.3.11 Manual Transect surveys recorded the following species:

- Common pipistrelle (*Pipistrellus pipistrellus*)
- Soprano pipistrelle

- Noctule
- Serotine
- Myotis species *Myotis spp.*
- Leisler's Bat *Nyctalus leisleri*

5.3.12 Throughout each monthly transect, low to moderate bat activity levels were recorded. The activity was primarily due to Common and Soprano Pipistrelles, with some additional high numbers of Serotine passes on transect 2 only. Common Pipistrelle, Soprano Pipistrelle and Serotine were observed foraging on site, it was considered that the other species detected on site were likely commuting through the site given the lower numbers of the calls detected. The majority of the activity recorded was along the site boundaries with individual bats commuting or foraging along these features.

5.3.13 There were notable levels of activity concentrated in the north west corner of field 4 on transect 1, with activity on transect 2 spread across the transect route. Bats were regularly observed commuting along the eastern edges of fields 1, 2 and 4 and the southern edges of fields 1, 3 and 4.

5.3.14 **Automated Detector surveys**. The detailed automated detector survey results are included at Appendix 5555-01/6, with a summary provided in this report. The locations of static detectors are illustrated on Figure 5.1 (Figure 3 of the original report).

5.3.15 The remote recording surveys were dominated by Common Pipistrelle calls and Serotine calls, with moderate numbers of Soprano Pipistrelle passes. In general, moderate levels of bat activity were recorded. The following species were recorded by the automated detectors:

- Common pipistrelle
- Soprano pipistrelle
- Noctule Serotine Myotis species
- Brown Long-eared Bat
- Barbastelle (*Barbastella barbastellus*)
- Leisler's Bat

5.3.16 Anabat 1 (north-eastern corner of Field 4) recorded the highest levels of bat activity and Anabat 3 (north-eastern corner of Field 3) recorded the highest level of bat species diversity. Anabat 2 (southern edge of Field 1 – not involved in the development) recorded a high number of serotine bat passes, possibly due to the presence of livestock within the field and the insects that they attract. Anabat 3 recorded the lowest levels of bat activity and this is possibly due to there being fewer mature trees along this route, compared to the other Anabat locations.

5.3.17 Noctule and Leisler's Bat were recorded by the Anabat units but in low numbers (15 and 3 calls respectively in total across the survey). It is considered that the site is only used as a commuting route for low numbers of these species.

5.3.18 small number of Brown Long-eared Bat calls (7 calls in total) were recorded by Anabat 3. Given the low number of calls it is considered that this species was commuting through the

site or using the site infrequently and as such the site is not considered to be an important site for Brown Long-eared Bats.

5.3.19 A small number of Barbastelle passes (3 in total) were recorded during the survey period. Barbastelle are considered a rare species and recently classed as 'Vulnerable' in England by the Mammal Society, using the IUCN's Red List criteria. However, the species was recorded only three times during the remote recording survey. Certainly, the site does not support significant levels of foraging or commuting activity for the species and given the absence of the species from the walked transect, it is considered most likely the activity comprises individual bats commuting across the site.

5.3.20 Barbastelle bats have a large home range, with studies indicating commuting bats travelling as far as 20km, often rapidly and directly over open habitats to reach foraging grounds (Zeale et al., 2012). Barbastelle bats are predominantly a tree roosting species, having a preference for trees within mature woodland. As there are no extensive stands of woodland present on-site, it is considered more likely that the species is roosting in an off-site location. It should also be noted that the site lies approximately 9.3km from the Singleton and Cocking Tunnels Special Area of Conservation (SAC) for which the species is a qualifying feature, but that the site lies significantly outside the core sustenance zone, which is identified as being 6.5km around the SAC. However, the site is within the 12km 'wider conservation area' and so impacts on Barbastelle movements have been considered further.

5.3.1 **Summary.** Activity surveys at the site in 2019 recorded low to moderate levels of bat activity along linear features across the site. At least eight different species have been confirmed on site, but only three (Common Pipistrelle, Soprano Pipistrelle and Serotine) recorded as actively foraging, the remainder were commuting through. Common and Soprano Pipistrelle calls dominate the recordings**.**

5.3.2 Three Barbastelle passes were recorded by the static detectors on site. This is a low number of recordings and it is inferred that this species was commuting through the site. The site sits outside the core sustenance zone for the nearest SAC listing this species as a 'qualifying species', but within the 'wider conservation area'.

5.3.3 **Evaluation and Assessment of Likely Effects**

Roosting

Bat Boxes

5.3.4 The trees along the western edge of the site will be retained and protected during development. As such, there will be no direct impacts on the boxes present or any bats they may support. Therefore, subject to the implementation of the recommendations outlined at Chapter 6 below in relation to lighting and tree protection, it is considered that bats using these boxes (if indeed they do) will be fully safeguarded under the proposals.

5.3.5 Should plans change, and trees supporting bat boxes need to be removed (*i.e.* to facilitate development or for Health and Safety reasons), boxes will need to be checked by a licensed ecologist. The most appropriate course of action will depend on the findings of this survey. However, if the boxes were originally erected as part of licensable works (as opposed to general enhancement measures), an amendment to the existing licence will likely be required before relocating the bat box(es) to a suitable, agreed location.

5.3.6 Measures are presented in Chapter 6 to increase roosting opportunities for bats across the development, in boundary features and where properties or ancillary buildings (e.g. garages) abut areas that may be used by bats. As such, it is considered that the development will enhance the site for roosting bats.

Trees

5.3.7 It is understood that all trees within the site, including those described in Section 5.3.6 with potential bat roost features, are to be retained under the proposals, such that in the event that bats are present within the trees they will remain unaffected. As such, subject to the implementation of the recommendations outlined at Chapter 6 below in relation to lighting and tree protection, it is considered that bats will be fully safeguarded under the proposals.

Foraging / Commuting

5.3.8 As noted above, the site boundaries (comprising hedgerows, ditches and trees) offer foraging/commuting habitat for bats and indeed foraging and commuting bats were recorded during the activity surveys, including frequent passes from two common species (Common and Soprano Pipistrelle) and three passes from a rarer species (Barbastelle). This combination of habitat types occurs relatively frequently in the immediate area surrounding the site; hence the identification of Strategic Wildlife Corridor 4. Furthermore, the survey results support the assumptions about this area as a commuting corridor for species such as bats. Taking this into the account, together with the levels of activity and species recorded during the survey work, the site is considered to be of District level value to bats.

5.3.9 As mentioned in sections 3.3 (SWC4), 4.3 (hedgerows), 4.4 (trees) and 4.5 (ditches), the majority of the boundary features will be retained under the proposals, with only a small breach made in hedgerow H4 to facilitate vehicle access onto site. Not only will the boundary features be retained, they will be protected, plus a buffer of ~5m maintained around ditches. This will ensure no direct adverse effects on these features or their ability to continue acting as commuting and/or foraging routes for bat species.

5.3.10 There will be loss of scrub habitat on site, which is being used by foraging bats (mainly common species). However, foraging opportunities still exist along the site boundaries, where foraging activity was recorded during the 2019 surveys, and access to other (off-site) resources maintained. The incorporation of SUDs along the southern portion of the site (abutting the railway corridor which will continue to facilitate east-west movements across the area) will provide new foraging opportunities for the local bat population. Furthermore, measures in Chapter 6 to manage the field south of the railway to deliver ecological benefits will also provide bats with suitable foraging habitat over time (within SWC4 i.e. the creation of scrub and wetland).

5.3.11 Subject to the implementation of the recommendations outlined in Chapter 6 regarding lighting, there should be no disruption (direct or indirect) to bat movements across the site using the boundary features. Options for North-South movements will be maintained and opportunities for East-West movements will be maintained along the northern edge of the site and enhanced by supplementary planting along the southern edge of the site (see Chapter 6). Regarding the latter route, East-West movements will be enhanced along the southern boundary of the site where it abuts the railway. This will facilitate bat movements onto/along the railway corridor and under the A27. Similarly, retention of the southern boundary, and supplementary planting in the south-eastern corner of the site, will enable bats to access the Clay Lane where it passes beneath the A27 (as discussed in Section 3.3.10). This will enable bats to not just move East-West across the site, but also safely cross beneath the A27.

5.3.12 Accordingly, subject to the implementation of the recommendations outlined at Chapter 6 below, along with other ecological enhancements, it is considered that the conservation status of local bat populations will be fully safeguarded under the scheme.

5.4 Badger

5.4.1 **Legislation.** Badger receive legislative protection under the Protection of Badgers Act 1992 (see Appendix 1234/2 for detailed provisions), and as such should be assessed as an important ecological feature. The legislation aims to protect the species from persecution, rather than being a response to an unfavourable conservation status, as the species is in fact common over most of Britain. It is the duty of planning authorities to consider the conservation and welfare impacts of development upon Badger and issue permissions accordingly.

5.4.2 **Survey Results and Evaluation.** Surveys in 2019 did not record any signs of Badger activity on site. In addition, no evidence of Badger activity was recorded during the visit in 2020. The Bramble scrub had become dense enough in places to hide evidence of Badger activity, although no obvious paths in or out of the Brambles were noted. As such, the species is considered absent from the site and will not be affected by the proposals.

5.4.3 Precautionary mitigation measures have been included in Chapter 6 in case Badgers move onto the site in the intervening period between the surveys and development starting on site.

5.5 Dormouse

5.5.1 **Legislation:** Dormouse is fully protected under the Wildlife and Countryside Act 1981 (as amended) and is a European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended). Such legislation affords protection to individuals of the species and their breeding sites and places of rest (see Appendix 1234/2 for detailed provisions). Dormouse is also a S41 Priority Species. On this basis, Dormouse is considered to form an important ecological feature.

5.5.2 **Background Records:** No specific records of Dormouse were returned from the desktop study from within or immediately adjacent to the study area. Data returned from the LRC includes two records of Dormouse ~0.5km south of the site and dated from 2018.

5.5.3 **Survey Results:** Dormouse surveys are detailed in Appendix 5555-01/4. Boundary habitats on site, mainly along the western edge of Fields 2 and 4, were considered suitable for the species. As such, given records of the species in the surrounding area, surveys were undertaken using nest tubes and nut searches throughout 2019, with the nest tube survey extended into 2020. In terms of survey effort, the effort required in the Dormouse Conservation Handbook was achieved.

5.5.4 No Dormice, or evidence of Dormice, such as nests or feeding remains, were recorded during the survey. As such, given the survey effort expended, the species is considered likely absent from the site and will not affected by proposals.

5.5.5 **Evaluation:** Surveys have demonstrated the likely absence of the species on site. As such, the local population will not be adversely affected by proposals. Management and enhancement measures of boundary features and Field 1, although not designed specifically for Dormice, will benefit Dormice, should they access site in the future.

5.6 Water Vole

5.6.1 **Legislation.** Water Vole is fully protected under the Wildlife and Countryside Act 1981 (as amended). Water Vole is also a S41 Priority Species. As such, this species is considered to represent an important ecological feature. The legislation affords protection to individuals of the species and their breeding sites and places of shelter (see Appendix 1234/2 for detailed provisions). There is no provision under the Act for licensing what would otherwise be offences for the purpose of development. Such activities must be covered by the defence in the Act that permits otherwise illegal actions if they are the incidental result of a lawful operation and could not reasonably be avoided.

5.6.2 If, despite all reasonable efforts, properly authorised development will adversely affect Water Vole and there are no alternative habitats nearby, Natural England may issue a licence to trap and translocate Water Vole for the purpose of conservation. To issue such a licence, Natural England would need to be assured there is no reasonable alternative to the development and that there are no other practical solutions that would allow Water Vole to be retained at the same location. NE would also require assurance that the actions would make a positive contribution to Water Vole conservation.

5.6.3 **Background Records.** No specific records of Water Vole within or adjacent to the site were returned from the desktop study. Twenty-one records of Water Vole were returned from the surrounding search area, with the closest and most recent records being ~0.9km to the south of the site from 2018.

5.6.4 **Survey Results.** The ditch network on site (see Table 4.2) has the potential to support Water Voles, especially those ditches in the southern portion of the site. As such, surveys were undertaken in 2019 (detailed in Appendix 5555-01/5). Surveys comprised walkover survey2 in July 2019 (summer survey) and June 2021 (spring survey), with supplementary monthly checks of Water Vole 'mats' (artificial latrine sites) from July to October 2019.

5.6.5 Water Vole droppings were recorded at the southern end of the site in 2019, where ditches are predicted to connect to off-site habitats/populations of this species. No burrows or feeding piles were located during the 2019 survey, but these may have been obscured by dense vegetation along the banks of the ditches. No evidence of Water Vole activity was recorded in the northern portion of the site. The survey in 2021 did not record any evidence of Water Vole activity. However, surveys have confirmed the historic presence of the species, with the population using the site considered to be of District importance.

5.6.6 **Evaluation**. All ditches will be retained in the proposals, although some short sections may require culverting to facilitate access to parts of the site (although the ditch containing evidence of Water Vole activity will not be). As such, further surveys are recommended in Chapter 6 to ensure that culverts are appropriately sited to avoid any Water Vole burrows (should they exist at the time of construction). If burrows are discovered, and culverts cannot be relocated, a suitable mitigation strategy under licence will be agreed with Natural England.

5.6.7 No construction is planned within 5m of the top of any ditch on site. This will minimise the amount of encroachment into Water Vole habitats. In addition, pollution prevention measures are detailed in Chapter 6 to minimise potential adverse effects on water quality in the ditch network during construction. The creation of a wetland area (for Nutrient Neutrality reasons) south of the site (to the south of the railway) may also benefit this species if still present in the local area. Overall, subject to the measures outlined in Chapter 6 being implemented, no significant adverse effects on the Water Vole population using the site are predicted.

5.7 Amphibians

5.7.1 **Legislation.** All British amphibian species receive a degree of protection under the Wildlife and Countryside Act 1981 (as amended). Great Crested Newt is protected under the Act and is also classed as a European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended). As such, both Great Crested Newt and habitats utilised by this species are afforded protection (see Appendix 1234/2 for detailed provisions). Great Crested Newt is also a S41 Priority Species, as are Common Toad *Bufo bufo*, Natterjack Toad *Epidalea calamita*, and Pool Frog *Pelophylax lessonae*. As such, these species should be assessed as important ecological features.

5.7.2 **Background Records.** No specific records of Great Crested Newt were returned by the LRC within 2 km of the site (see Appendices 5555-01/1 and 5555-01/2).

5.7.3 **Survey Results.** Two ditches on site and three waterbodies off site (<250m from the site boundary) were identified as requiring assessments for Great Crested Newts. Two off the off-site waterbodies are on private land and could not be accessed for surveys. However, one of them (Waterbody 4) could be seen from a public footpath and was noted as being dry on the 17th July. The one accessible off-site Waterbody, and the two on-site ditches, were subject to Environmental DNA (eDNA) surveys, with water samples collected on 24th June 2019. The results of the survey work undertaken for Great Crested Newts is summarised below in Table 5.1, with full results presented in Appendix 5555-01/2.

Table 5.1. HSI survey results.

Waterbody Identifier*	Location	Habitat Suitability Index	eDNA result
WB1 (at the northern end of site and the convergence of ditches 4, 5 and 6**)**	On-site	HSI not designed for linear waterbodies	*Negative*
WB2 (at the southern end of site and the convergence of ditches 1, 2 and 3**)**	On-site	HSI not designed for linear waterbodies	*Negative*
WB3	Off-site	**0.72** (*Good*)	*Negative*
WB4	Off-site	No Access (but dry in July 2019)	-
WB5	Off-site	No Access	-

*Waterbody Identifiers taken from the report in Appendix 5555-01/2. Ditch numbers relate to those in Table 4.2 of this report.

5.7.4 In summary, there are two waterbodies (collections of ditches) on site and a further three waterbodies off-site. The two ditches on site were confirmed through eDNA as not supporting Great Crested Newts. Waterbody 3, which is off-site but directly connects to the ditch network at the southern end of the site, was also confirmed through eDNA analysis to not support Great Crested Newts.

5.7.5 The two other remaining waterbodies could not be accessed as they are on private land. However, both are separated from the site by a railway and, in the case of WB5, residential properties and Salthill Road, which will likely limit newt movements. In addition, WB4 was dry in July 2019 and no longer considered as potential habitat for Great Crested Newts (section 5.1, Appendix 5555-01/2). Therefore, although they could not be directly surveyed,

even if WB4 and WB5 did support Great Crested Newts, the probability of those newts using habitats on site is unlikely.

5.7.6 **Evaluation and Assessment of Likely Effects.** Waterbodies on site do not support Great Crested Newts. In addition, given the absence of background records around the site, plus obstacles to Great Crested Newt movements onto site, it is considered that newts are also absent from terrestrial habitats site and will not be affected by proposals.

5.7.7 If newts do move into the area in the future, all waterbodies on site are being retained and a safe buffer around them maintained. As such, there will be no reduction in the aquatic opportunities for the species or common amphibian species in general. Furthermore, measures to protect and enhance boundary features, plus enhancement of the field south of the railway to deliver ecological gains, including areas of standing water, will benefit amphibians in general.

5.8 Reptiles

5.8.1 **Legislation**. All six species of British reptile are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), which protects individuals against intentional killing or injury. Sand Lizard *Lacerta agilis* and Smooth Snake *Coronella austriaca* receive additional protection under the Conservation of Habitats and Species Regulations 2017 (as amended); refer to Appendix 1234/2 for detailed provisions. All six reptile species are also S41 Priority Species. As such, all reptile species should be assessed as important ecological features.

5.8.2 **Background Records.** Information returned from the LRC contained records for Slow Worm *Anguis fragilis* approximately 1.9km to the west of the site (from 2018) and Common Lizard *Zootoca vivipara* approximately 1.7km south-west of the site (from 1995). Surveys of land around the site also confirmed the presence of both species in 2013. A brush pile and hibernaculum, created for reptiles as part of surrounding development, were also noted on site during the Preliminary Ecological Appraisal (see figures in Appendix 5555-01/1 for locations).

5.8.3 **Survey Results.** Seven survey visits were undertaken between 30th June and 18th September 2019. The results of these surveys are detailed in Appendix 5555-01/3 (specifically Table 1). Although some visits took place in August, outside of the recommended survey windows, given the overall results obtained on site this is not considered a constraint to interpretation, impact assessment or mitigation/enhancement design.

5.8.4 Species and peak counts recorded during the surveys were:

- Common Lizard: 7 adults
- Slow Worm: 39 Adult Female, 3 Adult Male, 14 Sub-adult and 7 Juvenile

5.8.5 Reptiles were recorded across the site, with key 'hotspots' of reptile activity shown in Figure 5.3 below.

Figure 5.3. Reptile 'hotspots' around the site, denoted by green circles (taken from Appendix 5555-01/3)

5.8.6 Given the number of animals recorded, using the Froglife criteria, it is considered that a 'good' population of Common Lizards and an 'exceptional' population of Slow Worms use the site. As such, the overall assemblage of reptiles is considered significant at the County scale. Given the presence of an 'exceptional' population of Slow Worms, the site could also qualify as a 'Key Reptile Site'. Given this recognition, safeguarding measures outlined in Chapter 6 will be required to ensure reptiles are protected during development of site.

5.8.7 **Evaluation and Assessment of Likely Effects.** Common Lizards and Slow Worms have been found across the site. Many of the areas supporting these species are associated with boundary features and will be retained and protected during development. In addition, creation and maintenance of buffers around watercourses will allow reptiles to continue using all boundary features (e.g. hedgerows and ditches) for commuting through the site.

5.8.8 However, reptiles will lose foraging habitat in the centre of the site and it is unlikely that sufficient foraging habitat will be retained in the final development to support the current resident population. In addition, if present at the time of site clearance, it is possible that reptiles could be killed or injured, especially when the brush pile, hibernaculum and scrub areas are removed. As such, a mitigation strategy is outlined in Chapter 6 to ensure that reptiles are safely removed from site to suitable receptors away from development. One of these areas will be the field south of the railway (being managed to deliver Biodiversity Net Gain) which will be enhanced and managed for reptiles. It is currently a horse-grazed field presenting few opportunities for foraging reptiles. As such, its conversion will provide some compensatory habitat in an area that is close to the donor site, but currently considered unsuitable for either species.

5.8.9 Given the retention of possible commuting corridors through the site, plus relocation of animals to suitable (safeguarded) off-site receptors (see Chapter 6) it is considered likely

that the conservation status of the current reptile assemblage will be maintained post-development.

5.9 Birds

5.9.1 **Legislation.** All wild birds and their nests receive protection under Section 1 of the Wildlife and Countryside Act 1981 (as amended) in respect of killing and injury, and their nests, whilst being built or in use, cannot be taken, damaged or destroyed. Species included on Schedule 1 of the Act receive greater protection and are subject to special penalties (see Appendix 1234/2 for detailed provisions).

5.9.2 **Conservation Status.** The conservation importance of British bird species is categorised based on a number of criteria including the level of threat to a species' population status[8]. Species are listed as Green, Amber or Red. Red Listed species are considered to be of the highest conservation concern being either globally threatened and or experiencing a high/rapid level of population decline (>50% over the past 25 years). A number of birds are also S41 Priority Species. Red and Amber listed species and priority species should be assessed as important ecological features.

5.9.3 **Background Records.** Information from the data search included records for several bird species in the vicinity of the site (see Table 2, Appendix 5555-01/1) . These included S41 Priority species, Red List species and Schedule 1 species such as Hobby *Falco Subbuteo* (~0.5km west of site), Hen Harrier *Circus cyaneus* (<2km from site), Barn Owl *Tyto alba* (~0.9km North-West of site) and Cetti's Warbler *Cettia cetti* (~0.9km south of site). None of the records originate from within the site itself.

5.9.4 **Breeding Birds - General.** The Preliminary Ecological Appraisal (PEA) did not identify the need for a specific breeding bird survey of the site. This is likely based on the habitats present and the fact that they are well-represented in the wider landscape (and so not a limiting factor to the continuation of the local breeding bird population). Section 3.4.1 of Appendix 5555-01/1 notes that several common bird species were recorded during the 2019 PEA, identifying hedgerows as suitable breeding habitats, and discussing only Barn Owls in relation to SWC4 and wintering birds in relation to the Chichester and Langstone Harbour SPA in detail (discussed here in Sections 5.9.15 and 5.9.13 respectively). The site was not considered to support a significant breeding bird assemblage and it is valued at the Local level.

5.9.5 **Evaluation.** A common breeding bird assemblage uses boundary features (hedgerows and trees) around the site as nesting habitat. These areas will be retained and protected throughout development, the exception being the one breach in H4 to facilitate access, with supplementary planting in the south east corner and Field 1 contributing to nesting habitat for birds. Similarly, measures outlined in Chapter 6 will increase artificial nesting opportunities across the site and ensure nesting birds are not harmed during the breach in H4 or removal of scrub habitat on site (should they be present). As such, no significant adverse effects on the local breeding bird assemblage are anticipated.

5.9.6 **Wintering Birds – General.** The wintering bird surveys undertaken on site are detailed in Appendix 5555-01/7. In summary, two survey visits were undertaken in November and December 2019 comprising transects along field boundaries and across the fields themselves.

[8] Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) *'Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man'* British Birds *108*, pp.708-746

5.9.7 No waterbirds were seen to land within or directly adjacent to the site, but a low number were identified flying overhead, including Black-headed Gull *Chroicocephalus ridibundus,* Herring Gull and Common Gull *Larus canus*. The observations can reasonably be assumed to be waterbirds using the site's air space on transit between locations.

5.9.8 Seven 'Priority Species' were recorded during the surveys. Two of these, Dunnock (Amber list) and Song Thrush (Red List) were noted using the site's peripheral hedgerows. The remaining five were recorded as 'flyovers', with Stock Dove, Starling, Herring Gulls and Black-headed Gulls (all Red List) passing over and Grey Wagtail *Motacilla cinerea* (Red List) passing overhead using the ditch network. A full species list is provided in Table 6 of Appendix 5555-01/7.

5.9.9 The number of wintering waterbirds on the site was low, the assemblage is valued at the Local level, with only Dunnock and Song Thrush being observed on site and restricting activity to the boundary features only. None of the species of conservation concern were identified on site and only low numbers of Stock Dove, Herring Gulls, Starlings, Black-headed Gulls and Grey Wagtails were also observed flying over the site. The observation of these individuals is not considered to be significant.

5.9.10 **Evaluation.** Features used by the low number of wintering species of importance will be retained and protected throughout the development (as mentioned in 5.9.5). As such, subject to implementation of the measures outlined in Chapter 6, there will be no significant adverse effects on these species.

5.9.11 **Birds Associated with Chichester and Langstone Harbour SPA** *(see Section 3.1.5 and Appendix 5555-01/9)*

5.9.12 **Breeding.** Three Tern species are noted on the citation as breeding in the SPA. The site does not support habitats which constitute suitable breeding sites for these species. As such, there will be no effects on the species comprising the breeding component of the SPA.

5.9.13 **Wintering**. Twenty-seven bird species were identified as requiring assessment for functional linkage between the site and the SPA based on the SPA citation. One species, Black-headed Gull, was observed flying over the site during the surveys, but no individuals were seen to land within, or directly adjacent to, the site. Therefore, it is not considered likely that the development will have any direct or indirect impacts on this species. Given that no birds of interest were seen within the site, it is concluded that there is no functional linkage between the site and the SPA.

5.9.14 **Evaluation.** No birds contributing to the integrity of the SPA have been recorded using the site. Therefore, it is not considered to be functionally connected to the SPA. Development of the site will not remove ancillary habitats of importance for qualifying SPA features, or disturb qualifying features using areas outside of the SPA (see Appendix 5555-01/9).

5.9.15 **Barn Owls (SWC4).** No evidence of Barn Owl activity has been recorded on site. However, specific surveys have not been undertaken. As such, given the existence of Barn Owl records within 1km of the site, plus its inclusion on the species list that SWC4 is designed to benefit, habitats were assessed for the species. If present, Barn Owls are likely to use linear features around the site for commuting and grassland habitats within the site for foraging.

5.9.16 **Evaluation.** Development will not result in the loss of any boundary features that may be used for Barn Owl movements (through the site or through SWC4 as a whole). Given their retention, protection and, subject to a suitable lighting strategy being developed for the site (see Chapter 6), no restrictions on Barn Owl movements are anticipated.

5.9.17 There will be a loss of potential foraging habitat due to development of grassland areas. However, Bramble succession on site is already starting to reduce possible foraging opportunities. In acknowledgement of this potential loss, areas in the field south of the railway, being managed to deliver biodiversity benefits, will be created to benefit foraging Barn Owls (see Chapter 6). Overall, the scheme will not significantly affect Barn Owls, if present.

5.10 Summary

5.10.1 On the basis of the above, a summary of the evaluation of fauna is provided below:

Table 5.2. Evaluation summary of fauna forming important ecological features.

Species / Group	Supported by or associated with the site	Level of Importance
Bats – Foraging / Commuting	Confirmed presence on site	District
Water Vole	Confirmed historic presence on site	District
Reptiles	Confirmed presence on site	County
Birds	Confirmed presence on site	Local

6 Mitigation Measures and Biodiversity Net Gains

6.1 Mitigation

6.1.1 Based on the habitats, ecological features and associated fauna identified within / adjacent to the site, it is proposed that the following mitigation measures (**MM1 – 12**) are implemented under the proposals. Further, detailed mitigation strategies or method statements can be secured via suitably-worded planning conditions, as recommended by relevant best practice guidance (BS 42020:2019).

Hedgerows and Trees

6.1.2 **MM1 – Hedgerow and Tree Protection.** Boundary trees and hedgerows are being retained to allow the features to act as commuting routes for species through the sites (in recognition of the site's location within SWC4 and in alignment with Policy DM52 on Green Infrastructure). All retained hedgerows and trees shall be protected during construction in line with standard arboriculturalist best practice (BS5837:2012) or as otherwise directed by a suitably competent arboriculturalist. This will involve the use of protective fencing or other methods appropriate to safeguard the root protection areas of retained trees / hedgerows.

Watercourses

6.1.3 **MM2 - Buffer Zone**. There will be no development work within 5m of ditches (as measured from the top of the bank).

6.1.4 **MM3 – Pollution Prevention.** In order to safeguard the ditches running along field boundaries against any potential run-off or pollution events during construction, the following safeguards will be implemented:

- Storage areas for chemicals, fuels, etc. will be sited well away from the watercourse (minimum 10m), and stored on an impervious base within an oil-tight bund with no drainage outlet. Spill kits with sand, earth or commercial products approved for the stored materials shall be kept close to storage areas for use in case of spillages;
- Where possible, and with prior agreement of the sewage undertaker, silty water should be disposed of to the foul sewer or via another suitable form of disposal, e.g. tanker off-site;
- Water washing of vehicles, particularly those carrying fresh concrete and cement, mixing plant, etc. will be carried out in a contained area as far from the watercourse as practicable (minimum 10m), to avoid contamination; and
- Refuelling of plant will take place in a designated area, on an impermeable surface, away from the watercourse (minimum 10m).

6.1.5 Post-development, the drainage system for the development will ensure that the ditches are not subject to adverse changes in surface water run-off or quality.

Bats

6.1.6 **MM5 – Surveying Trees to Determine Bat Roosting Potential.** There are currently no plans to remove any trees with the potential to support roosting bats (as indicated on the figures in Appendix 5555-01/1). However, if any trees (>5cm dbh) do require removal to facilitate development then, regardless of current assumptions regarding their bat roost potential,

and given the lack of specific tree details in the Preliminary Ecological Appraisal, they will require a survey to determine if they contain possible roost features. Depending on the outcome of this survey, climbing and or emergence/dawn surveys may be required to confirm if they support roosting bats and a suitable mitigation strategy devised.

6.1.7 **MM6 – Bat Box Checks.** It is not envisaged that any of the bat boxes currently present on site will need removing/relocating as part of these proposals. However, if they do, they will first need to be checked by a licensed ecologist. The results of this check will determine if/how the boxes are moved, whether under licence or an amendment to any existing licence that may cover them. A suitable alternative location for the box(es) will need to be determined prior to relocation.

6.1.8 **MM7 – Sensitive Lighting.** Light-spill onto retained habitats, in particular the retained hedgerows and ditches, will be minimised in accordance with good practice guidance[9] to reduce potential impacts on light-sensitive bats (and other nocturnal fauna). This may be achieved through the implementation of a sensitively designed lighting strategy, with consideration given to the following key factors:

- **Light exclusion zones –** ideally no lighting should be used in areas likely to be used by bats. Light exclusion zones or 'dark buffers' may be used to provide interconnected areas free of artificial illumination to allow bats to move around the site;
- **Appropriate luminaire specifications** – consideration should be given to the type of luminaires used, in particular luminaries should lack UV elements and metal halide and fluorescent sources should be avoided in preference for LED luminaries. A warm white spectrum (ideally <2,700K) should be adopted to reduce the blue light component;
- **Spacing and height of lighting units –** increasing spacing between lighting units will minimise the area illuminated and allow bats to fly in the dark refuges between lights. Reducing the height of lighting will also help decrease the volume of illuminated space and give bats a chance to fly over lighting units (providing the light does not spill above the vertical plane). Low level lighting options should be considered for any parking areas and pedestrian / cycle routes, e.g. bollard lighting, handrail lighting or LED footpath lighting;
- **Light intensity –** light intensity (i.e. lux levels) should be kept as low as possible to reduce the overall amount and spread of illumination;
- **Directionality –** to avoid light spill lighting should be directed only to where it is needed. Particular attention should be paid to avoid the upward spread of light so as to minimise trespass and sky glow;

<u>Badger</u>

6.1.9 **MM8 – Badger Update Survey.** Given that no evidence of Badgers has been recorded within or adjacent to the site it is considered that Badgers do not currently pose a constraint to development. Nonetheless, Badgers are dynamic animals and levels of Badger activity can rapidly change at a site, with new setts being created at any time. It is therefore recommended that an update survey is carried out prior to commencement of site works in

[9] Bat Conservation Trust and Institute of Lighting Professionals (2018) '*Guidance Note 08/18: Bats and artificial lighting in the UK*'; Stone, E.L. (2013) '*Bats and lighting: Overview of current evidence and mitigation guidance*.'; ILP (2011) '*Guidance notes for the reduction of obtrusive light*' Institution of Lighting Professionals, GN01:2011.

order to confirm the current status of Badgers at the site. Furthermore, depending on the outcome of this survey, and the density of scrub of site at the time of survey, an Ecological Clerk of Works (ECoW) may be required to supervise vegetation clearance. The ECoW will check any areas that may have been obscured by vegetation during surveys for signs of Badger activity.

Reptiles

6.1.10 **MM9 – Translocation.** As detailed in Sections 4.7 - 4.12 of Appendix 5555-01/3, a translocation will be required in order to remove reptiles from the development site. This will need to be undertaken when reptiles are active (generally accepted to be March-September, weather dependent). A specific strategy will be submitted to and agreed by the Local Planning Authority, but is likely to comprise:

- Reptile fencing being placed around the edges of the site (and across the site to compartmentalise different areas for trapping), ensuring that the area outside the development footprint is fenced off, therefore preventing any potential movement of reptiles on to the site.
- The site will be trapped for a minimum of 60 suitable days, with 5 capture-free days required at the end of this period in order to finish the translocation. This could mean trapping for 55 suitable days and then achieving 5 capture-free days (making the required minimum of 60 days). Or, once the 60 suitable days have been exceeded, the translocation will run until 5 suitable, capture-free days have been achieved.
- The Slow Worms and Common Lizards will be removed from the site to suitable, agreed receptor sites. One of these areas will be the field south of the railway, being managed for ecological benefits (see Plan 5555-01/ECO5) if habitats are sufficiently developed to receive reptiles. However, given the number of reptiles recorded during baseline surveys, if the same numbers are encountered during the translocation then it is unlikely that this field could accommodate them all without exceeding its carrying capacity. As such, at least one additional, suitable site will need to be identified (e.g. with the Local Planning Authority, local herpetological group or local Wildlife Trust). Thresholds will then need to be agreed for the sites depending on their condition at the time of translocation. Animals will be moved to the southern field in preference but if/once the agreed threshold is reached, animals will be taken to the other, local receptor sites.
- This area will be monitored during site works by an ecologist to ensure that the fence line is fit for purpose and that the area is respected as a 'wildlife exclusion area'.
- Once 5 consecutive no reptile catch days have been achieved at the end of the translocation, the vegetation within the development zone will be strimmed.
- Any areas which support dense vegetation will be removed sensitively under ecological supervision. The process would entail a visual inspection and fingertip search by an ecologist for the presence of reptiles. This is followed by a cut of the vegetation to 150mm above ground. This cut is inspected once more for the presence of reptiles. Finally, vegetation is cut to ground level.
- Final clearance works and sensitive soil removal will also be carried out under the supervision of an ecologist.

6.1.11 **MM10 – Destructive Search (Brush pile and Hibernacula).** After the translocation has been completed, any potential refuge features, especially the brush pile and hibernacula on site,

will be fingertip-searched by an ecologist prior to being carefully disassembled. Any reptiles encountered during the destructive search will be carefully rescued by the supervising ecologist and relocated to the receptor site(s).

Nesting Birds

6.1.12 **MM11** – **Timing of Works.** To avoid a potential offence under the relevant legislation, no clearance of suitable vegetation (e.g. scrub on site and the breach in hedge H4) should be undertaken during the bird-nesting season (1st March to 31st August inclusive). If this is not practicable, any potential nesting habitat to be removed should first be checked by a competent ecologist in order to determine the location of any active nests. Any active nests identified would then need to be cordoned off (minimum 5m buffer) and protected until the end of the nesting season or until the birds have fledged. These checking surveys would need to be carried out no more than three days in advance of vegetation clearance.

Water Voles

6.1.13 **MM12 – Water Vole Update Survey**. In order to provide sufficient information to guide the locations of culverts on site, an update survey of the site will be required. This will determine if Water Voles are still present on (or recolonised) the site, and identify any active burrows (in turn identifying the need for any specific mitigation or licensing related to culvert locations).

6.2 Enhancements and Biodiversity Net Gains

6.2.1 The National Planning Policy Framework (NPPF) encourages new developments to maximise the opportunities for biodiversity through incorporation of enhancement measures. Furthermore, the Environment Act mandates biodiversity net gain on development sites.

6.2.2 The proposals present the opportunity to deliver ecological enhancements at the site for the benefit of local biodiversity, thereby making a positive contribution towards the broad objectives of national conservation priorities and Chichester District Council's Local Biodiversity Action Plan 2020-2024. The recommendations and enhancements summarised below are considered appropriate given the context of the site and the scale and nature of the proposals. Through implementation of the following ecological enhancements (EE1 – EE9), the opportunity exists for the proposals to deliver a number of biodiversity net gains at the site.

6.2.3 Calculations regarding Biodiversity Net Gain, using the Defra metric, have shown a possible increase in biodiversity units above baseline levels by implementing the measures below (see also Appendix 5555-01/10).

Management of Field South of the Railway to Deliver Ecological Benefits (see also Appendix 5555-01/10).

6.2.4 **EE1 – Shrub Planting**. Extensive planting of native shrub species of local provenance will be undertaken to create a new, diverse scrub habitat in the field south of the railway. Suitable species for inclusion include Wild Privet *Ligustrum vulgare*, Dogwood *Cornus sanguinea*, Alder Buckthorn *Frangula alnus*, Hawthorn *Crataegus monogyna* and Spindle *Euonymus europaeus*. Planting a diverse range of shrub species will maximise the period during which pollen, nectar and fruits are available for invertebrates, birds and small mammals. Species of particular benefit include those such as Blackthorn *Prunus spinosa* and Hawthorn, which

bloom in spring, whilst species such as Holly *Ilex aquifolium* and Guelder Rose *Viburnum opulus* will offer flowers and fruits in the autumn into winter.

6.2.5 The scrub habitat will be subject to active management to ensure that no single species becomes dominant and to encourage the establishment of a good age range of species from seedlings and saplings to mature shrubs. Glades and clearings will be maintained within the scrub to create a varied habitat structure. This will be of particular benefit to reptiles and invertebrates such as butterflies.

6.2.6 **EE2 – Wetland Creation**. The proposals include the creation of wetland features (for Nutrient Neutrality purposes) to the south of the railway, which have been guided by ecological principles to improve opportunities for a range of wildlife, whilst also helping to attenuate surface water run-off. For example, the features will include areas of permanent water which will provide a constant habitat for aquatic species and also shallower areas of water/inundations zones to support different assemblages of species. This new wetland habitat will provide opportunities for a range of amphibian, reptile and invertebrate species, along with foraging habitat and water supply for mammals and birds.

6.2.7 **EE3 – Reptile Refuges**. In order to improve the site for translocated reptiles, plus compensate for the loss of a brush pile and artificial hibernaculum on site, three log piles and a hibernaculum will be created on the field south of the railway. The precise locations of these refuges will be determined by a competent ecologist, post-planning once the relevant final layout for the field (and the overall development) has been approved.

6.2.8 **EE4 – Invertebrate Habitat Piles**. A proportion of any deadwood arising from vegetation clearance works on the main site will be retained and used to create three wood piles on the field south of the railway. These will provide potential habitat opportunities for invertebrate species, which in turn could provide a prey source for a range of other wildlife.

6.2.9 Habitat creation should ideally commence in the appropriate growing season(s) for each feature at least six months prior to development of the main site (earlier if possible). This will allow habitats to begin establishing prior to any displacement of species or loss of potential habitats on site. The condition of the site to act as a suitable receptor site for reptiles will then be reviewed immediately prior to commencing the translocation outlined in Mitigation Measure MM9. If not considered suitable, the alternative sites identified will be used instead.

<u>Habitat Creation around the development itself (land north of the railway)</u>

6.2.10 **EE5 – New Planting**. Where practicable, new planting within the development will be comprised of native species of local provenance, including trees and shrubs appropriate to the local area. Suitable species for inclusion within the planting could include native trees such as Oak, Birch *Betula pendula* and Field Maple, whilst native shrub species of particular benefit would likely include fruit and nut bearing species which would provide additional food for wildlife, such as Blackthorn, Hawthorn, Crab Apple *Malus sylvestris*, Hazel *Corylus avellana* and Elder. Where non-native species are proposed, these will include species of value to wildlife, such as varieties listed on the RHS' 'Plants for Pollinators' database, providing a nectar source for bees and other pollinating insects.

6.2.11 **EE6 – Wildflower Grassland**. It is recommended that areas of wildflower grassland are created within the site such that, in combination with new native landscape planting, opportunities for biodiversity will be maximised under the proposals. This would make a positive contribution towards the Sussex Biodiversity Action Plan, which lists 'lowland meadows' as a priority. Consideration should be given to the laying of wildflower turfs,

comprising locally appropriate native species, to establish wildflower grassland. This would ensure rapid establishment of these habitats, and reduce the timeframe for delivering the range of ecological benefits that are proposed.

6.2.12 **EE7 – Wetland Creation**. New SUDS features are proposed within the site and, if guided by ecological principles (as described in EE2 above), these will provide opportunities for a range of amphibian, reptile and invertebrate species, along with foraging habitat and water supply for mammals and birds.

Bats

6.2.13 **EE8 - Bat Boxes**. A number of bat boxes will be installed and incorporated within the proposed development. The provision of bat boxes will provide new roosting opportunities for bats in the area, such as Soprano Pipistrelle, a national Priority Species. So as to maximise their potential use, the bat boxes will be situated on suitable retained trees along the ditch network, erected as high up as possible and sited in sheltered wind-free areas that are exposed to the sun for part of the day, facing a south-east, south or south-westerly direction. In addition, a number of integrated bat boxes / roost features will be incorporated into a proportion of the new build, on ancillary structures such as garages. The precise number (no less than 6 boxes on trees and 6 integrated into buildings) and locations of boxes / roost features will be determined by a competent ecologist, post-planning once the relevant final development design details have been approved.

Invertebrates

6.2.14 **EE9 – Bee Bricks**. Bee bricks will be incorporated within the proposed development thereby increasing nesting opportunities for declining populations of non-swarming solitary bee populations. Ideally, bee bricks should be located within suitable south-facing walls (where architectural design allows), located at least 1m off the ground. The bricks need to be unobstructed by vegetation, though within close vicinity of nectar and pollen sources.

7 Conclusions

7.1.1 Aspect Ecology has carried out an Ecological Appraisal of the proposed development, based on the results of detailed surveys undertaken by The Ecology Partnership.

7.1.2 The available information confirms that no statutory or non-statutory nature conservation designations are present within or adjacent to the site, and none of the designations within the surrounding area are likely to be adversely affected by the proposals.

7.1.3 Data have been collected to inform a Habitats Regulations Assessment in respect of Chichester and Langstone Harbour Special Protection Area (SPA) and Ramsar and Solent Maritime Special Area of Conservation (SAC), which have overlapping boundaries and, in combination, are situated approximately 400m south of the development site. The data presented in this assessment have concluded that there will be no adverse effects on their integrity.

7.1.4 The site also sits within a proposed Strategic Wildlife Corridor and the layout of the site has been developed with this in mind. Retention and enhancement of boundary features on the development site, plus management of the field south of the railway for Biodiversity Net Gain, will strengthen this location of the Corridor and facilitate continued species movements through the landscape.

7.1.5 The Phase 1 habitat survey has established that the site is dominated by habitats not considered to be of ecological importance, whilst the proposals have sought to retain those features identified to be of value (e.g. boundary features). Where it has not been practicable to avoid loss of habitats, new habitat creation has been proposed to offset losses, in conjunction with the landscape proposals.

7.1.6 The habitats within the site support several protected species, including species protected under both national and European legislation. Accordingly, a number of mitigation measures have been proposed to minimise the risk of harm to protected species, with compensatory measures proposed, where appropriate, in order to maintain the conservation status of local populations.

7.1.7 In conclusion, the proposals have sought to minimise impacts and subject to the implementation of appropriate avoidance, mitigation and compensation measures, it is considered unlikely that the proposals will result in significant harm to biodiversity. On the contrary, the opportunity exists to provide a number of biodiversity net gains as part of the proposals. In fact, proposals to delivery Biodiversity Net Gain, calculated using the Defra metric, have shown a possible increase in biodiversity units above baseline levels.

Plan 5555-01/ECO1:

Site Location

Key:

Site Location

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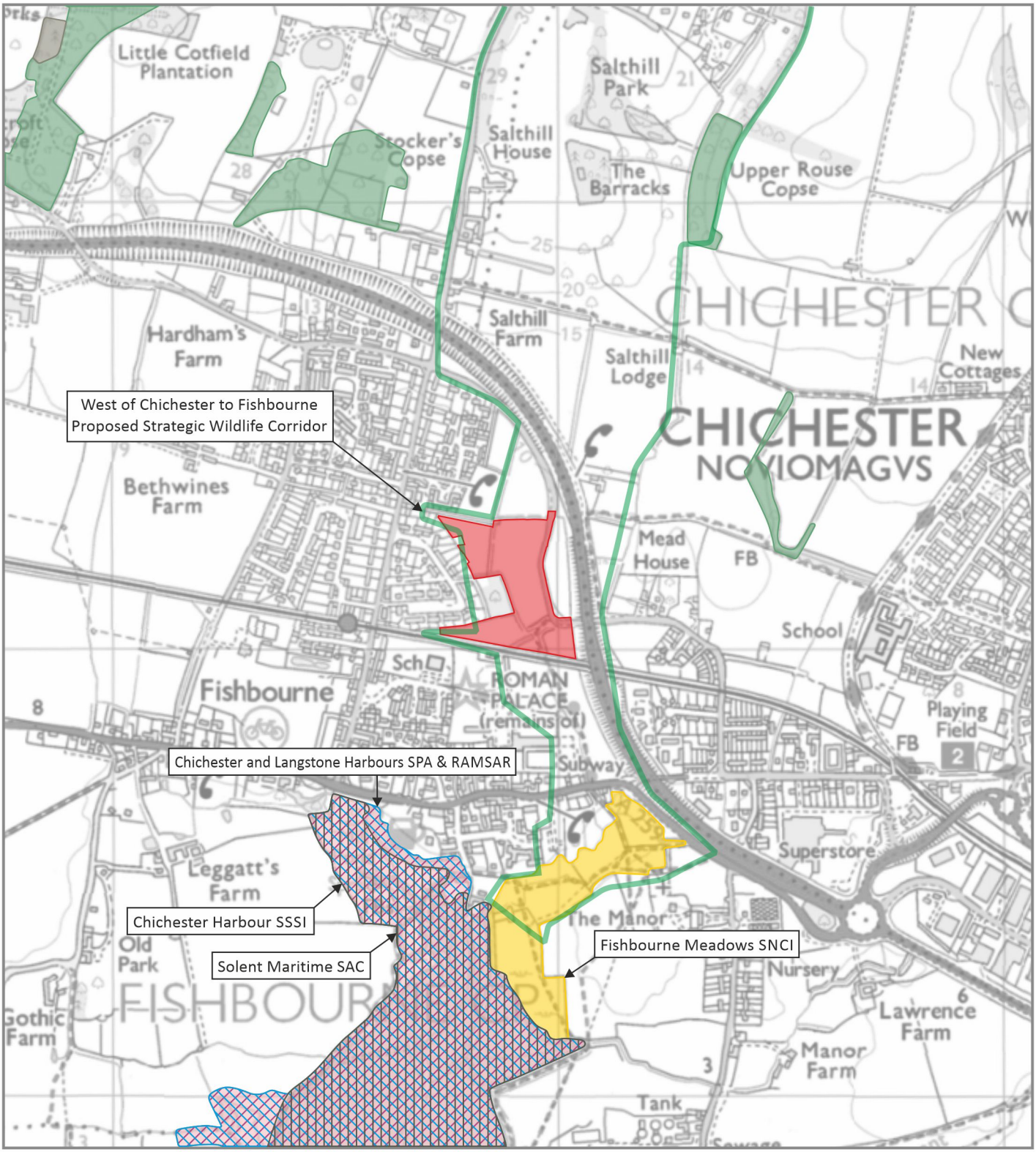
Clay Lane, Fishbourne	PROJECT
Site Location	TITLE
5555/ECO1	DRAWING NO.
-	REV.
February 2022	DATE

Plan 5555-01/ECO2:

Ecological Designations



Key:

- Site Location
- RAMSAR
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)
- Site of Nature Conservation Interest (SNCI)
- Ancient & Semi-natural Woodland (ASW)
- Ancient Replanted Woodland (ARW)
- Proposed Strategic Wildlife Corridor

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Clay Lane, Fishbourne	PROJECT
Ecological Designations	TITLE
5555/ECO2	DRAWING NO.
-	REV.
February 2022	DATE

Plan 5555-01/ECO3:

Habitats and Ecological Features

Key:

- Site Boundary
- Grassland - Other Neutral Grassland
- Grassland - Modified Grassland
- Sparsely Vegetated Land - Ruderal/Ephemeral
- Heathland and Shrub - Mixed Scrub
- Heathland and Shrub - Bramble Scrub
- Lakes - Ditches
- Hardstanding
- Urban - Developed Land; Sealed Surface
- Native Species-rich Hedgerow with Trees
- Native Species-rich Hedgerow with Trees - Associated with Bank or Ditch
- Hedge Ornamental Non-native
- Scattered Scrub
- Tree

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Clay Lane, Fishbourne	PROJECT
Habitats and Ecological Features	TITLE
5555/ECO3	DRAWING NO.
B/AM	REV
March 2022	DATE

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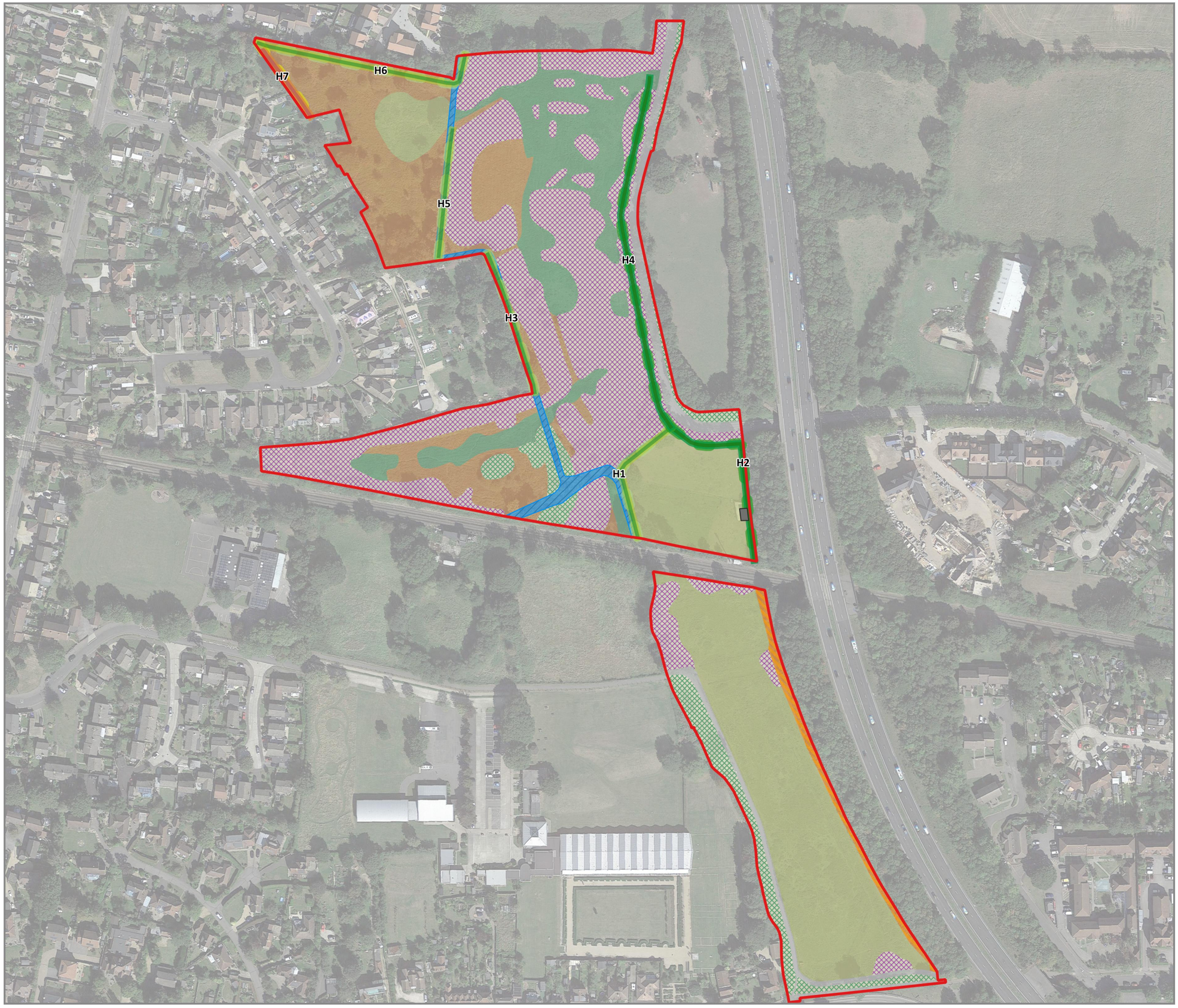
Plan 5555-01/ECO4:

Pre-development Metric Habitat Plan



Key:

- Site Boundary
- Grassland - Other Neutral Grassland
- Grassland - Modified Grassland
- Sparsely Vegetated Land - Ruderal/Ephemeral
- Heathland and Shrub - Mixed Scrub
- Heathland and Shrub - Bramble Scrub
- Woodland
- Lakes - Ditches
- Hardstanding
- Urban - Developed Land; Sealed Surface
- Native Species-rich Hedgerow with Trees
- Native Species-rich Hedgerow with Trees - Associated with Bank or Ditch
- Hedge Ornamental Non-native

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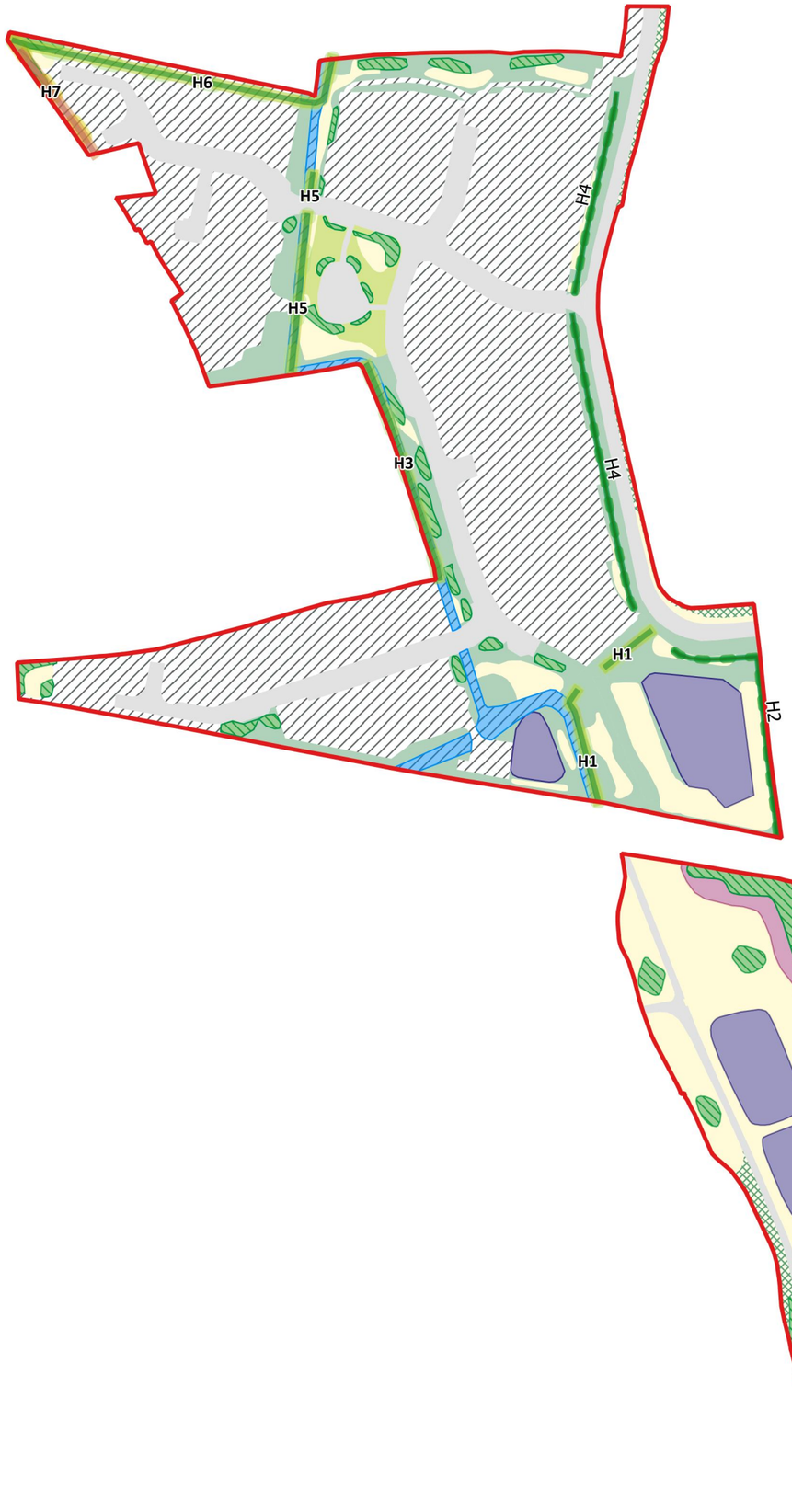
Clay Lane, Fishbourne	PROJECT
Pre-development Metric Habitat Plan	TITLE
5555/BIA1	DRAWING NO.
G	REV
March 2022	DATE

Plan 5555-01/ECO5:

Post-development Metric Habitat Plan



Key:

- Site Boundary
- Grassland - Other Neutral Grassland
- Native Shrub
- Urban - Amenity Grassland
- Wildflower Mix
- Urban - Wetland for Nutrient Neutrality Purposes
- Urban - Suburban/Mosaic of Developed/ Natural Surface
- Urban - Developed Land; Sealed Surface
- Lakes - Ditches
- Scrubland
- Heatland and Shrub - Bramble Scrub (retained)
- Heatland and Scrub - Mixed Scrub (retained)
- Woodland (retained)
- Native Species-rich Hedgerow with Trees (retained)
- Native Species-rich Hedgerow withTrees - Associated with Bank or Ditch (retained)
- Hedge Ornamental Non-native (retained)

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Clay Lane, Fishbourne	PROJECT
Post-development Metric Habitat Plan	TITLE
5555/BIA2	DRAWING NO.
G	REV
March 2022	DATE

Appendix 5555-01/1:

Preliminary Ecological Appraisal

the ecology partnership

Site Assessment and PEA

Land off Clay Lane, Fishbourne, Chichester

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Contents

LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living animals and plants are capable of migration/establishing and whilst such species may not have been located during the survey duration, their presence may be found on a site at a later date.

This report provides a snapshot of the species that were present at the time of the survey only and does not consider seasonal variation. Furthermore, where access is limited or the site supports habitats which are densely vegetated only dominant species maybe recorded.

The recommendations contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background

1.1 The Ecology Partnership was commissioned by Gleeson Strategic Land to undertake a site assessment and preliminary ecological appraisal (PEA) of land off Clay Lane, Fishbourne, Chichester, PO19 3RP.

1.2 This report presents the results of The Ecology Partnership's survey in and around the site, which aims specifically to assess the site's potential to support protected species and protected habitats that may be affected by the proposed development. Potential mitigation measures and recommendations for the site are included within this report.

1.3 Section 2 of this report sets out the methodologies of the Ecology Partnership's surveys. In section 3, the results of the surveys are presented. Discussions and implications for development are found in section 4, including general site enhancements. Conclusions drawn from the report are presented in section 5.

Site Context and Status

1.4 The site is situated off Clay Lane to the west and east of the road (SU 83962 05144 – centre point), west of the A27 Chichester Bypass. There is new development to the west and Fishbourne Roman Palace to the south. The Chichester and Langstone Harbour Special Protection Area (SPA), Ramsar and SSSI is located 400m south. There are additional designated sites within 2km.

Figure 1: Approximate location of the site, indicated by red line boundary

Planning Policies

1.5 National and local planning policies may have an effect on the proposed development. The following paragraphs identify relevant planning policies and discuss these in the context of the site.

1.6 Under the Natural Environment and Rural Communities (NERC) Act (2006), *"Every 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"*. In order to comply with

this 'Biodiversity Duty', planning decisions must ensure that they adequately consider the potential ecological impacts of a proposed development.

1.7 In compliance with Section 41 of the NERC Act, the Secretary of State has published a list of species and habitats considered to be of principle importance for conserving biodiversity. These were known as BAP habitats and species. The UK BAP lists of priority species and habitats remain an important and valuable reference, certainly at county levels. However, the UK Post 2010 Biodiversity Framework (published 2012) has succeeded BAP. It was produced by JNCC and Defra, on behalf of the Four Countries' Biodiversity Group (4CBG), through which the environment departments of all four governments in the UK work together to achieve the 'Aichi Biodiversity Targets' and the aims of the EU biodiversity strategy.

1.8 National policy guidance is provided by National Planning Policy Framework (NPPF), which sets out the Government's planning policies for England and how they should be applied. The latest revision of the NPPF was released on 19th February 2019 and states:

Policy 15 - Conserving and enhancing the natural environment

170. Planning policies and decisions should contribute to and enhance the natural and local environment by:

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;

c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

171. Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.'

Habitats and biodiversity

174. 'To protect and enhance biodiversity and geodiversity, plans should:

a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and

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

175. When determining planning applications, local planning authorities should apply the following principles:

a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;

b) 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;

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and

development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.'

1.9 The site falls under the jurisdiction of Chichester District Council, the 'Adopted Chichester Local Plan: Key Policies 2014-2029' defines the vision of future development in the area and contains local policies relating to nature conservation. The main policies drawn from the report, which are relevant to the site, are indicated below:

Policy 49: Biodiversity

"Planning permission will be granted for development where it can be demonstrated that all the following criteria have been met:

1. *The biodiversity value of the site is safeguarded;*
2. *Demonstrable harm to habitats or species which are protected or which are of importance to biodiversity is avoided or mitigated;*
3. *The proposal has incorporated features that enhance biodiversity as part of good design and sustainable development;*
4. *The proposal protects, manages and enhances the District's network of ecology, biodiversity and geological sites, including the international, national and local designated sites (statutory and non-statutory), priority habitats, wildlife corridors and stepping stones that connect them;*

5. *Any individual or cumulative adverse impacts on sites are avoided;*
6. *The benefits of development outweigh any adverse impact on the biodiversity on the site. Exceptions will only be made where no reasonable alternatives are available; and planning conditions and/or planning obligations may be imposed to mitigate or compensate for the harmful effects of the development."*

Policy 50: Development and Disturbance of Birds in Chichester and Langstone Harbours Special Protection Areas

"It is Natural England's advice that all net increases in residential development within the 5.6km 'Zone of Influence' are likely to have a significant effect on the Chichester and Langstone Harbours SPA either alone or in-combination with other developments and will need to be subject to the provisions of Regulation 61 of the Conservation of Habitats and Species Regulations 2010. In the absence of appropriate avoidance and/or mitigation measures that will enable the planning authority to ascertain that the development would not adversely affect the integrity of the SPA, planning permission will not be granted because the tests for derogations in Regulation 62 are unlikely to be met. Furthermore, such development would not have the benefit of the presumption in favour of sustainable development in the National Planning Policy Framework.

Net increases in residential development, which incorporates appropriate avoidance/mitigation measures, which would avoid any likelihood of a significant effect on the SPA, will not require an 'appropriate assessment'. Appropriate avoidance/mitigation measures will comprise:

a) A contribution in accordance with the joint mitigation strategy outlined in Phase III of the Solent Disturbance and Mitigation Project; or

b) A developer provided package of measures associated with the proposed development designed to avoid any significant effect on the SPA; or

c) A combination of measures in (a) and (b) above.

Avoidance/mitigation measures will need to be phased with development and shall be maintained in perpetuity. All mitigation measures in (a), (b) and (c) above must be agreed to be appropriate by

Natural England. They should also have regard to the Chichester Harbour AONB Management Plan.

The provisions of this policy do not exclude the possibility that some residential schemes either within or outside the Zone of Influence might require further assessment under the Habitats Regulations. For example, large schemes, schemes proposing bespoke avoidance/mitigation measures, or schemes proposing an alternative approach to the protection of the SPAs. Such schemes will be assessed on their own merits, and subject to advice from Natural England."

Policy DM52: Green Infrastructure

Development will be expected to contribute towards the provision of additional green infrastructure and protect and enhance existing green infrastructure. Planning permission will be granted where it can be demonstrated that all the following criteria have been met:

1. The proposals maintain and where appropriate contribute to the network of green infrastructure i.e. public and private playing fields, recreational open spaces, parklands, allotments and water environments;

2. The proposals contribute to improving the health and well-being of the local and wider community;

3. Where appropriate, the proposals incorporate either improvements to existing green infrastructure or the restoration, enhancement or creation of additional provision/areas;

4. Where appropriate, the proposals incorporate either improvements to existing ecology and biodiversity or the restoration, enhancement or creation of additional habitat and habitat networks;

5. Where appropriate, the proposals incorporate either improvements to existing trees, woodland, landscape features and hedges or the restoration, enhancement or creation of additional provision/areas;

6. Where appropriate, the proposals create new green infrastructure either through on site provision or financial contributions. Where on-site provision is not possible financial contributions will be required and be negotiated on a site by site basis; and

7. The proposals do not lead to the dissection of the linear network of cycleways, public rights of way, bridleways and ecological corridors such as ancient woodlands, hedgerows, ditches and water environments.

Such provision will be required in accordance with adopted policies and strategies relating to green infrastructure and biodiversity network provision. Development that will harm the green infrastructure network will only be granted if it can incorporate measures that avoid the harm arising or sufficiently mitigate its effects.

Where compensatory provision is to be made for the loss of existing green infrastructure the provision of new and/or enhancement of green infrastructure will be required in addition to any compensatory provision. Where appropriate, the Council will seek to secure via planning obligation provision for the future management and/or maintenance of green infrastructure.
The Council will expect that a legal agreement is entered in to where it is necessary to secure green infrastructure provision, or to ensure the long term sustainable management of green infrastructure. Unless stated elsewhere the Council will normally not be responsible for the long term maintenance and management of green infrastructure.

1.10 The site was surveyed by The Ecology Partnership to assess its ecological value and to ensure compliance with national and local plan policies. This report has been produced with reference to current guidelines for preliminary ecological appraisal (CIEEM 2017) and in accordance with BS 42020:2013 Biodiversity – Code of Practice for Planning and Development.

2.0 Methodology

Desktop Study

2.1 A desktop study search was completed using an internet-based mapping service (www.magic.gov.uk) for statutory designated sites and an internet-based aerial mapping service (maps.google.co.uk) was used to understand the habitats present in and around

the survey area and habitat linkages and features (ponds, woodlands etc.) within the wider landscape.

2.2 A data search was requested from Sussex Biodiversity Records Centre. A search of 2km around the redline boundary, for protected species, statutory and non-statutory designated sites, was requested and the results of which have been processed in Table 2.

Preliminary Ecological Appraisal

2.3 An extended preliminary ecological appraisal was undertaken on 05th June 2019 by ecologists Chris Jennings BSc (Hons) MSc MCIEEM and Joel Cronin BSc (Hons) MSc QCIEEM. The surveyors identified the habitats present following the standard 'Phase 1 habitat survey' auditing method developed by the Joint Nature Conservancy Council (JNCC). The site was surveyed on foot and the existing habitats and land uses were recorded on an appropriately scaled map (JNCC 2010). In addition, the dominant plant species in each habitat were recorded, as was any evidence of protected species.

Hedgerow Assessment

2.4 The hedgerows on site were assessed under the criteria of the Hedgerow Regulations 1997 (as amended 2002). Under the criteria, to be determined as 'important', a hedgerow must be at least 30 years old and meet at least one of the additional criteria as summarised below:

- Marks a pre-1850 parish or township boundary
- Incorporates an archaeological feature
- Is part of, or associated with, an archaeological site
- Marks the boundary of, or is associated with pre-1600 estate or manor
- Forms an integral part of a pre-Parliamentary enclosure field system
- Contains certain categories of species of birds, animals or plants listed in the Wildlife and Countryside Act or Joint Nature Conservation Committee (JNCC) publications

2.5 To be determined as 'species-rich', the hedgerow much include:

a) at least seven woody species, on average, in a 30m length;
b) at least six woody species, on average, in a 30m length and has at least 3 associated features;
c) at least six woody species, on average, in a 30m length, including a black poplar tree, or large-leaved lime, or small-leaved lime, or wild service-tree; or
d) at least five woody species, on average, in a 30m length and has at least 4 associated features.

2.6 The number of woody species is reduced by one in northern counties. The list of 56 woody species comprises mainly shrubs and trees. It generally excludes climbers (such as clematis, honeysuckle and bramble) but includes wild roses.

2.7 The hedgerow may also be considered as 'important' if the hedgerow runs alongside a bridleway, footpath, road used as a public path, or a byway open to all traffic and includes at least four woody species, on average, in a 30 metre length and has at least two of the associated features listed at (i) to (vii) below:

i) a bank or wall supporting the hedgerow;
ii) less than 10% gaps;
iii) on average, at least one tree per 50 metres;
iv) at least 3 species from a list of 57 woodland plants;
v) a ditch along at least one half of the hedgerow;
vi) a number of connections with other hedgerows, ponds or woodland; and
vii) a parallel hedge within 15 metres.

Tree Assessment for Bats

2.8 The trees on site were assessed for their potential to support roosting bats. Bats can use trees to rest, give birth, raise young and/or hibernate. The trees were assessed visually for evidence of bats as well as for features that increase the likelihood of roosting bats, such as the following:

- Woodpecker holes, natural cracks and rot holes in trunks and branches;

- Frost cracks;
- Trunk and branch splits;
- Hollow sections of trunk and branches;
- Loose bark;
- Cavities beneath old root buttresses and coppice stools;
- Dense epicormic growth;
- Dense ivy cover.

2.9 Veteran trees typically exhibit many of these features and should usually be regarded as sites with clear potential, but any tree possessing one or more such feature, may host bats. Any tree species can be suitable but oak and beech often seem to be the preferred options. However, bats rarely restrict themselves to one tree. They change their roost sites frequently, sometimes every two to three days, looking for small differences in temperature and humidity.

2.10 Roosts of bats in trees may be identified from the following field signs:

- Black stains beneath cracks, splits and other features where bat droppings have fallen;
- Dark marks at entrance points where bats have rubbed against the wood and left natural body oils;
- Feeding remains beneath roosts, such as insect wings;
- Chattering of bats;
- Bat droppings under access points;
- Scratch marks around a feature (cavity or split) caused by bat claws;
- Urine stains below the entrance or end of split;
- Large roosts or regularly used sites may produce an odour;
- Flies around the entrance, attracted by the smell of guano.

2.11 Trees scheduled for arboricultural work should also be assessed, and may be categorised to relate the value of their features to recommended actions (Table 1). This approach allows trees to be graded according to their potential to support bat roosts. Trees may be assessed as having the potential to support bats (from an individual to a larger roost) even if no bats have been found.

Table 1: Protocol for visual inspection of trees to assess their value to bats (Bat Conservation Trust 2016)

Suitability	Roosting habitat description
Negligible	Negligible habitat features on-site likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
High	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

2.12 Foraging habitat is considered to include unlit, intact treelines and hedgerows of multiple-species that connect well to off-site habitats and areas of woodland or rough grassland that may provide further suitable foraging habitat for invertebrate species.

Badger Survey

2.13 A badger survey was undertaken at the site to assess if badgers were using the area and to locate any setts on the site or within 30m of the site that might constrain development. The evaluation of badger activity was based on methodology developed for the National Survey of Badgers (Creswell *et al*. 1990) and includes searching for badger field signs such as setts, badger pathways, tracks (pawprints), dung piles with latrines, badger hairs and feeding signs such as snuffle holes.

2.14 During the survey, all habitats potentially suitable for badgers were systematically examined for evidence of badger activity including:

- Setts: several sett types may be present within a social group territory, ranging from a single hole to numerous interconnecting tunnels. Setts can be categorised into: main, annexe, subsidiary and outlier (Wilson *et al*. 1997).

- Latrine sites: badgers characteristically deposit dung in pits, which may be located along the boundaries and within the social group territory. These sites serve as a means of inter- and intra-group communication.
- Paths and runs: well used routes between setts and/or foraging areas. Often used by generations of badgers.
- Snuffle holes: areas of disturbed vegetation often formed by badgers foraging for ground dwelling invertebrates such as earthworms and larvae and the underground storage organs of plants.
- Hair: often found among spoil and bedding outside entrances to setts or snagged on fences (such as barbwire) along well-used runs.
- Footprints: often distinguishable from other large mammal species. Regularly found along paths and runs or in spoil outside sett entrances.

Habitat Suitability for Reptiles

2.15 Habitat surveys were carried out to assess the potential of the site to hold populations of reptile species. This involved looking for the presence of factors that would increase the suitability of the site for reptiles such as:

- Scrub and grassland (long sward) mosaic across the site;
- Features that offer potential hibernation sites for common reptiles such as log piles;
- Grass tussocks within the grassland that can act as shelter and burrowing sites;
- Water bodies or damp places on site (grass snakes);
- Compost heaps or decaying vegetation (slow worms);
- Features that can act as refugia on the ground such as disused roofing felt.

Habitat Suitability for Great Crested Newts (GCN)

2.16 Habitat surveys were carried out to assess the potential of the site to hold great crested newts (*Triturus cristatus*). This involved looking at the types of habitat present in the wider landscape using Google Earth and MAGIC, and looking for the presence of factors that would increase the suitability of the site for great crested newts such as:

- The presence of suitable breeding places (water bodies) on site and within 500m of the site in the wider landscape;
- Habitat connectivity between ponds (if present) in the wider landscape and on site;
- The condition of the ponds and whether there were factors that would render them unsuitable for great crested newts (GCN) such as fish presence;
- Land uses surrounding the site that could affect the potential of the site to hold GCN such as agriculture;
- Type of suitable habitat on site such as scrub/grassland mosaic;
- Patches of woodland in the wider landscape that can provide terrestrial habitat;
- Any barriers between known populations of GCN such as motorways and roads;
- Hibernation features on site for GCN such as log and rubble piles.

2.17 Any ponds present were surveyed for their potential to support GCN using the Habitat Suitability Index (HSI). The suitability index value is calculated for each of the 10 pre-determined categories. These are then analysed using the equation below to obtain the geometric mean or HSI score of the ten suitability indices.

$$\mathbf{HSI=(SI_1\ xSI_2\ xSI_3xSI_4\ xSI_5\ xSI_6\ xSI_7\ xSI_8\ xSI_9\ xSI_{10})^{1/10}}$$

The calculated score should be between 0 and 1 and will fall within one of several bands, which correspond to a given category for the pond (Table 2).

Table 2: HSI scores and pond suitability

HSI	Pond Suitability
<0.5	Poor
0.5-0.59	Below Average
0.6-0.69	Average
0.7-0.79	Good
>0.8	Excellent

Other Protected Species

2.18 The site was also inspected for indications of the presence of other protected species, as follows:

- Relevant habitat for dormice, such as dense deciduous woodland, coppice and thick shrubbery;
- The presence of fresh water stream/rivers for otters;
- Suitable nesting places for common birds;
- Other potential protected species.

Limitations

2.19 It should be noted that while every effort has been made to provide a comprehensive description of the site, no single investigation could ensure the complete characterisation and prediction of the natural environment. The site was visited over the period of one site visit, as such seasonal variations cannot be observed and potentially only a selection of all species that potentially occur within the site have been recorded. Therefore, the survey provides a general assessment of potential nature conservation value of the site and does not include a definitive plant species list.

2.20 The protected species assessment provides a preliminary view of the likelihood of protected species occurring on site, based on the suitability of the habitat and any direct evidence on site. It should not be taken as providing a full and definitive survey of any protected species group. The assessment is only valid for the time when the survey was carried out. Additional surveys may be recommended if, on the basis of this assessment, it is considered reasonably likely that protected species may be present.

3.0 Results

Desktop Study

3.1 The site lies on the northeast edge of Fishbourne, west of Chichester. The site off Clay Lane, just west of the A27 and to the east of Deeside Avenue. The site is dominated by rough grassland with scrub, surrounded by hedgerows and with ditches running through and around the site.

3.2 Chichester and Langstone Harbour SPA and Ramsar, Solent Maritime SAC, Chichester Harbour SSSI lie approximately 400m south of the site. Therefore, the site sits well within the 5.6km 'zone of influence' as specified in the planning policy. See figure 2 below for the location of the site in relation to the designated sites.

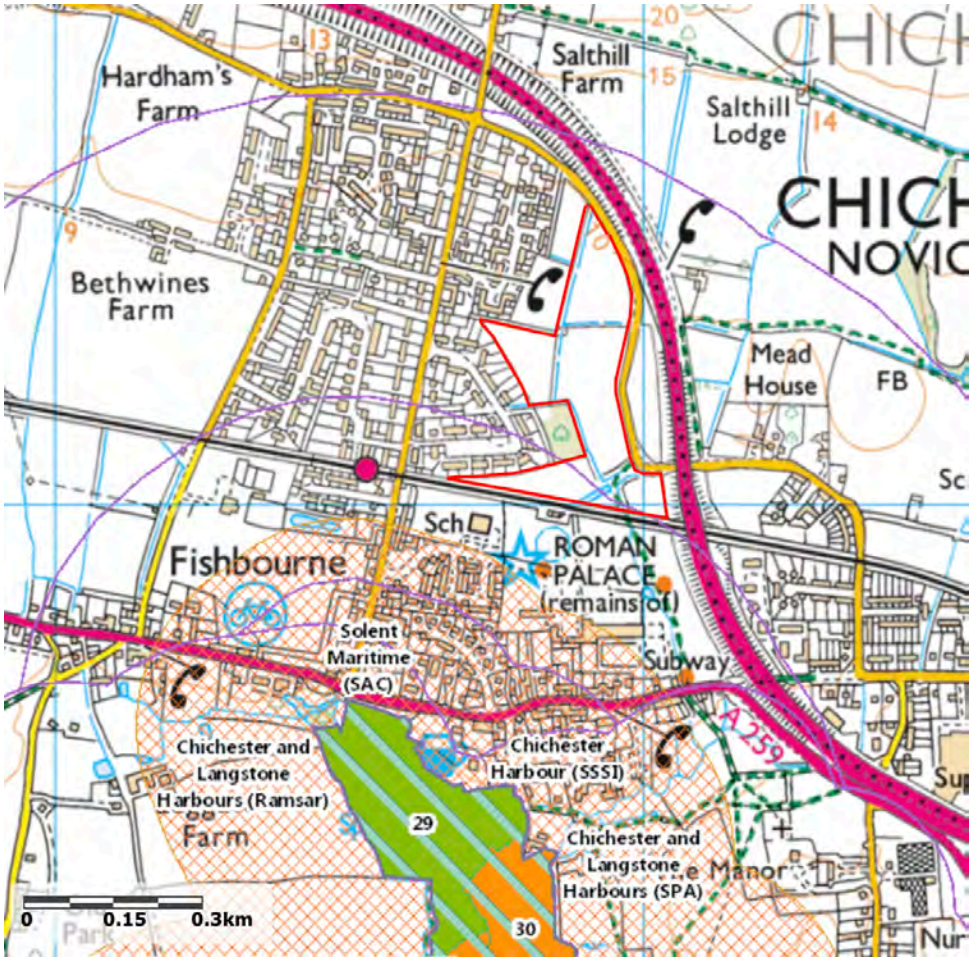


Figure 2: Locations of the SPA, SAC and SSSI in relation to the site (shown in red outline)

3.3 There are 11 additional internationally designated sites within 10km of the site:

- Kingly Vale (SAC, NNR and SSSI) approximately 4.7km to the north west;
- Pagham Harbour SPA, Ramsar and SSSI is located approximately 5.8km south east and is located outside the 3.5km 'zone of influence', as per the planning policy;
- Solent Maritime (SAC) approximately 6.7km west;
- East Dean Park Wood (SSSI) approximately 8.4km north east;
- Eartham Pit Boxgrove (SSSI) approximately 8.6km north east;
- Halnaker Chalk Pit (SSSI) approximately 8.7km north east;
- Singleton and Cocking Tunnels (SAC, SSSI) approximately 9.1km north east;
- Bognor Reef (SSSI) approximately 9.2km south east;
- Solent and Dorset Coast (SPA) approximately 9.2km south east;
- Bracklesham Bay (SSSI) approximately 9.3km south west;
- West Dean Woods (SSSI) approximately 9.6km north.

3.4 The site does not lie within or adjacent to any priority habitats, such as ancient woodland. However, priority habitats are located within the local landscape. Non-statutory sites are also located within 2km: River Lavant Marsh Local Wildlife Site (LWS) is approximately 300m south and Fishbourne Meadows LWS is approximately 1.2km south.

3.5 Protected habitats located within 2km of the site include: Deciduous Woodland along part of the western boundary; Ancient & Semi-Natural Woodland approximately 450m east; Reedbeds approximately 500m south; Mudflats approximately 530m south; Coastal and Floodlain Grazing Marsh approximately 450m south; Lowland Meadows approximately 440m south east; Coastal Saltmarsh approximately 600m south; Woodpasture & Parkland 290m north; Ancient Replanted Woodland approximately 1.3km north west. A satellite image search and OS maps revealed a ditch system present on site and three waterbodies within 250m of the site (Figure 3).

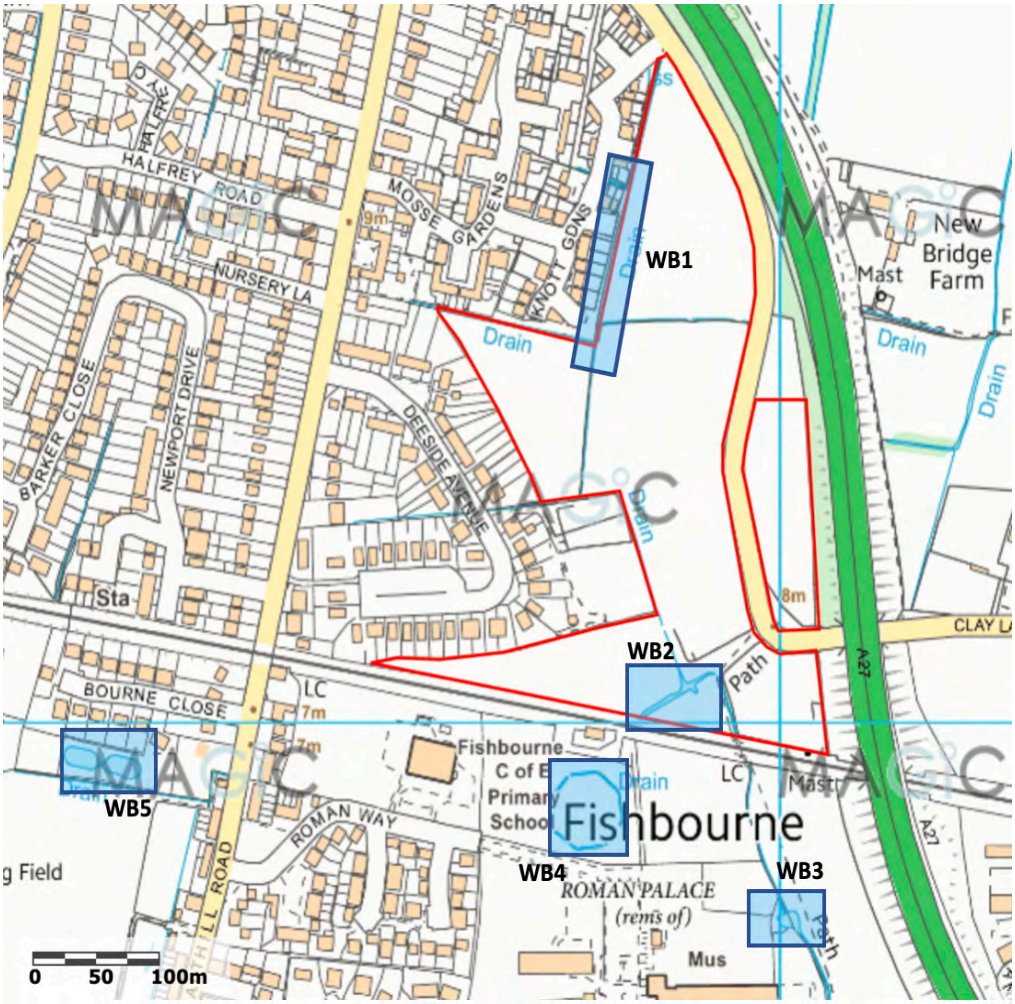


Figure 3: Waterbodies present on site and within 250m - site boundary shown in red, waterbodies highlighted with blue boxes

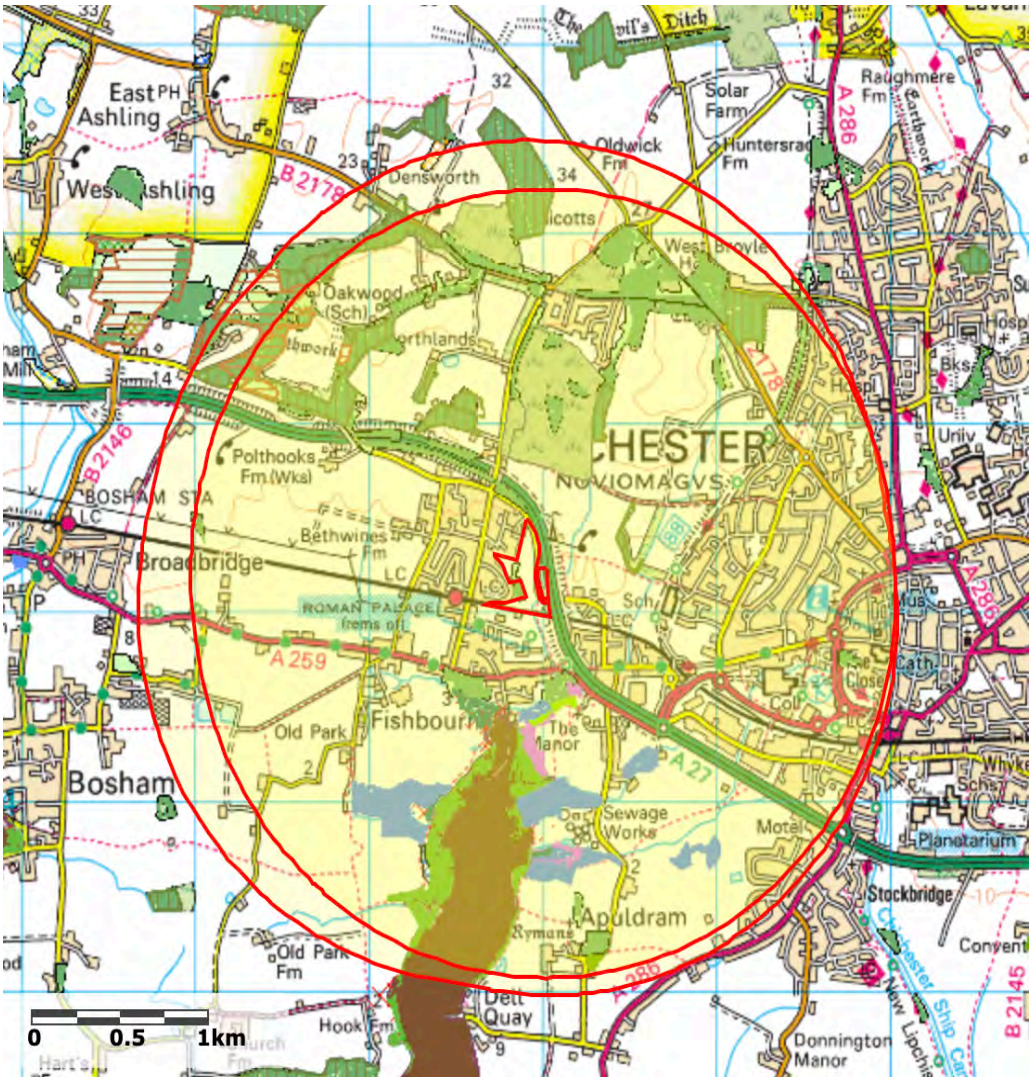


Figure 4: Habitats found within the wider landscape in relation to the site (site boundary shown in red with 2km buffer). Deciduous Woodland is shown in green; Woodland is shown in light green; Ancient Replanted Woodland is shown in brown horizontal hatching; Ancient & Semi-Natural Woodland is shown in brown vertical hatching; Reedbeds in dark green; Mudflats in brown; Coastal and Floodplain Grazing Marsh in blue; Good Quality Semi-improved Grassland in pink; Coastal Saltmarsh in olive green; Lowland Meadows in lime green and Wood-pasture & Parkland in light green with vegetative icons

3.6 A data search for protected species was requested from Sussex Biodiversity Records Centre. The results are detailed in Table 2. This table includes species that are considered likely to use the habitats on site and are a high conservation priority.

Table 2: Protected species records located within 2km of the site boundary from the last 10 years as provided by Sussex Biodiversity Records Centre.

Species*	Status	Distance from site	Most recent record
Stag Beetle *Lucanus cervus*	Wildlife and Countryside Act (1981 as amended) Schedule 5; Habitats Directive Annex 2; NERC Act (2006) Section 41; Bern Convention Appendix 3	Approximately 1.7km West of the site	2018
Slow Worm *Anguis fragilis*	Wildlife and Countryside Act (1981 as amended) Schedule 5; NERC Act (2006) Section 41; Bern Convention Appendix 3	Approximately 1.9km West of the site Also known to be present on land adjacent to the site.	2018 (2013)
Common Lizard *Zootoca vivipara*	Wildlife and Countryside Act (1981 as amended) Schedule 5; NERC Act (2006) Section 41; Bern Convention Appendix 3	Approximately 1.7km South-West of the site Also known to be present on land adjacent to the site.	1995 (2013)
Hazel Dormouse *Muscardinus avellanarius*	Wildlife and Countryside Act (1981 as amended) Schedule 5; Conservation of Habitats and Species Regulations (2017) Schedule 2; Habitats and Species Directive (1992) Annex 4; NERC Act (2006) Section 41; Bern Convention Appendix 3	Approximately 500m South of the site (2 records)	2018
Serotine Bat *Eptesicus serotinus*	The Conservation of Habitats and Species Regulations (2017) Schedule 2; Habitat and Species Directive (1992) Annex 4; Wildlife and Countryside Act (1981 as amended) Schedule 5; UK BAP Priority	Approximately 700m South of the site (30 records)	2016
Noctule Bat *Nyctalus Noctula*	Same as above	Approximately 700m South of the site (15 records)	2016
Common Pipistrelle Bat *Pipistrellus pipistrellus*	Same as above	Approximately 700m South of the site (29 records)	2016
Soprano Pipistrelle Bat *Pipstrellus Pygmaeus*	Same as above	Approximately 700m South of the site (22 records)	2016
Brown Long-eared Bat *Plecotus auritus*	Same as above	Approximately 900m North-East of the site (6 records)	2012
European Water Vole *Arvicola amphibius*	Wildlife and Countryside Act (1981 as amended) Schedule 5; NERC Act (2006) Section 41	Approximately 900m South of the site (21 records)	2018

Grey Partridge *Perdix perdix*	NERC Act (2006) Section 41; Red List BoCC	Within 2.0km of the site	2012
Red Kite *Milvus milvus*	Birds Directive Annex 1; Wildlife and Countryside Act (1981 as amended) Schedule 1; Convention on Migratory Species Appendix 2; Red List BoCC	Approximately 1km South-West of the site	2016
Hen Harrier *Circus cyaneus*	Birds Directive Annex 1; Wildlife and Countryside Act (1981 as amended) Schedule 1; Convention on Migratory Species Appendix 2; NERC Act (2006) Section 41; Red List BoCC	Within 2.0km of the site	2011
Merlin *Falco columbarius*	Wildlife and Countryside Act (1981 as amended); Birds Directive Annex 1; Red List BoCC	Within 2.0km of the site	2013
Hobby *Falco subbuteo*	Wildlife and Countryside Act (1981 as amended) Schedule 1; Bern Convention Appendix 2	Approximately 500m West of the site	2012
Peregrine *Falco peregrinus*	Wildlife and Countryside Act (1981 as amended); Birds Directive Annex 1; Bern Convention Appendix 2	Within 2.0km of the site	2018
Turtle Dove *Streptopelia turtur*	NERC Act (2006) Section 41; Red List BoCC	Within 2.0km of the site	2012
Cuckoo *Cuculus canorus*	NERC Act (2006) Section 41; Red List BoCC	Within 2.0km of the site	2017
Barn Owl *Tyto alba*	Wildlife and Countryside Act (1981 as amended) Schedule 1: Bern Convention Appendix 2	Approximately 900m North-West of the site	2014
Cetti's Warbler *Cettia cetti*	Wildlife and Countryside Act (1981 as amended) Schedule 1	Approximately 900m South of the site	2017
Skylark *Alauda arvensis*	NERC Act (2006) Section 41; Red List BoCC	Within 2.0km of the site	2017
Yellow Wagtail *Motacilla flava*	NERC Act (2006) Section 41; Red List BoCC	Within 2.0km of the site	2013
Grey Wagtail *Motacilla cinerea*	Red List BoCC	Within 2.0km of the site	2018
Nightingale *Luscinia megarynchos*	Red List BoCC	Within 2.0km of the site	2011
Black Redstart *Phoenicurus ochruros*	Wildlife and Countryside Act (1981 as amended) Schedule 1; Bern Convention Appendix 2; Red List BoCC	Within 2.0km of the site	2017
Fieldfare *Turdus pilaris*	Wildlife and Countryside Act (1981 as amended) Schedule 1;	Within 2.0km of the site	2017

	Birds Directive Annex 2.2; Red List BoCC		
Song Thrush *Turdus philomelos*	NERC Act (2006) Section 41; Red List BoCC	Within 2.0km of the site	2018
Redwing *Turdus iliacus*	Wildlife and Countryside Act (1981 as amended) Schedule 1; Birds Directive Annex 2.2; Red List BoCC	Within 2.0km of the site	2017
Mistle Thrush *Turdus viscivorous*	Red List BoCC	Within 2.0km of the site	2017
Firecrest *Regulus ignicapilla*	Wildlife and Countryside Act (1981 as amended) Schedule 1	Approximately 1.7km South-East of the site	2014
Willow Tit *Poecile montana*	NERC Act (2006) Section 41; Red List BoCC	Within 2.0km of the site	2007
Marsh Tit *Poecile palustris*	NERC Act (2006) Section 41; Red List BoCC	Within 2.0km of the site	2010
Starling *Sturnus vulgaris*	NERC Act (2006) Section 41; Red List BoCC	Within 2.0km of the site	2017
House Sparrow *Passer domesticus*	NERC Act (2006) Section 41; Red List BoCC	Within 2.0km of the site	2017
Linnet *Linaria cannabina*	NERC Act (2006) Section 41; Red List BoCC	Within 2.0km of the site	2017
Brambling *Fringilla montifringilla*	Wildlife and Countryside Act (1981 as amended) Schedule 1	Within 2.0km of the site	2014
Hawfinch *Coccothraustes coccothraustes*	NERC Act (2006) Section 41; Red List BoCC	Within 2.0km of the site	2013

*Additional species are present within the records list that are not considered to use the habitats on site.

Phase 1 Habitat Survey

3.7 The survey allows for a general site assessment of the flora present on site and the broad habitats present on site.

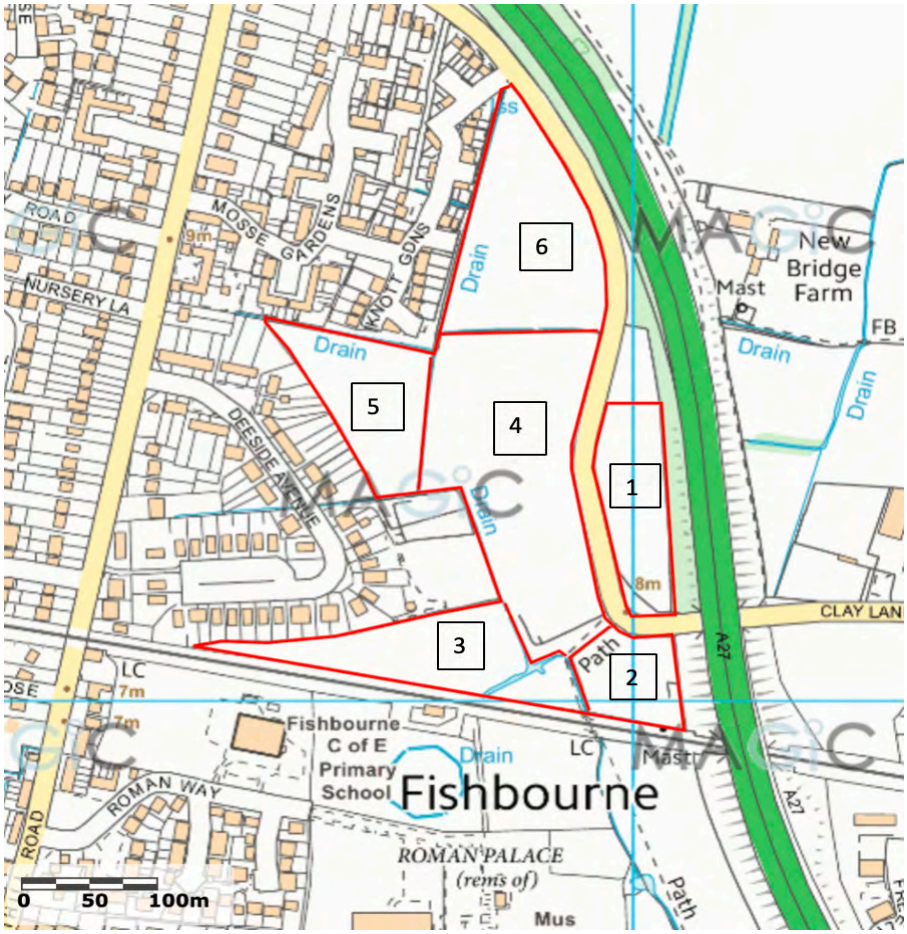


Figure 5: Numbering for the different fields present on the site

3.8 The site consisted of a collection of fields to the west of the A27 (Figure 5). Field 1 had been heavily grazed and had livestock on it at the time of survey, supporting hedgerows with trees around its perimeter. Field 2 was separated into two sections, one of which was being grazed by Shetland ponies and the other appeared to have been grazed until recently. There was a small stable within the field which was deemed unsuitable to support roosting bats due to its construction. The other 4 fields were contiguous and appeared to have been left un-managed resulting in a mixture of tall ruderals, grassland, bare earth, rushes and

scrub at the time of survey. These fields were also surrounded by hedgerows, trees of varying maturity and supported a network of ditches.

Heavily Grazed Semi-Improved Neutral Grassland with Bare Earth

3.9 The grassland in field 1 had been heavily grazed. The main grass species present included: perennial rye grass (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), white clover (*Trifolium repens*) and agrostis sp. Other species present included: creeping cinquefoil (*Potentilla reptans*), dandelion (*Taraxacum officinale*), cut-leaved cranes-bill (*Geranium dissecticum*), moss, creeping buttercup (*Ranunculus repens*), daisy (*Bellis perennis*) and greater plantain (*Plantago major*).

Trees

3.10 The site and individual field boundaries supported a number of tree species. Species present included: oak (*Quercus robur*), hawthorn (*Cratageus monogyna*), field maple (*Acer campestre*), elder (*Sambucus nigra*) ash (*Fraxinus excelsior*) rowan (*Sorbus aucuparia*), hazel (*Corylus avellana*), dogwood (*Cornus sp.*). Field 3 also supported a stand of goat willow (*Salix caprea*).

Horse Grazed Semi-Improved Grassland

3.11 Field 2 was split into two sections by electric fence, one was being actively grazed and the other appeared to have been grazed until recently. Grass species present included: perennial rye grass (*Lolium perenne*), smooth meadow grass (*Poa pratensis*), Yorkshire fog (*Holcus lanatus*), crested dog's tail (*Cynosurus cristatus*), white clover (*Trifolium repens*). Other species present included: creeping buttercup (*Ranunculus repens*), yarrow (*Achillea millefolium*), daisy (*Bellis perennis*), cut-leaved cranes-bill (*Geranium dissecticum*), thistle sp., common mouse ear (*Cerastium fontanum*), ragwort (*Senecio jacbaea*), scarlet pimpernel (*Anagallis arvensis*), selfheal (*Prunella vulgaris*) and sea mayweed (*Tripleurospermum maitimum*).

Tall Ruderals and Bare Ground

3.12 An area of tall ruderals with bare ground was present in the north west corner of field 2. Species present included: broad leaved dock (*Rumex obtusifolius*), creeping thistle (*Cirsium arvense*), forget me not (*Myosotis scorpiodes*), scarlet pimpernel (*Anagallis arvensis*), cut leaved cranes-bill (*Geranium dissecticum*) and common nettle (*Urtica dioica*).

Tall Ruderals/Grassland Mosaic

3.13 Field 3 consisted of heavily disturbed ground covered with a mosaic of tall ruderals and grassland. Species present included: hard rush (*Juncus inflexus*), ground ivy (*Glechoma hederacea*), creeping thistle (*Cirsium arvense*), Yorkshire fog (*Holcus lanatus*), bramble (*Rubus fruticosus*), curled dock (*Rumex crispus*), rosebay willowherb (*Chamerion augustifolium*), teasel (*Dipsacus fullonum*), soft rush (*Juncus effusus*), creeping buttercup (*Ranunculus repens*), forget me not (*Myosotis scorpiodes*), fern sp., spear thistle (*Cirsium vulgare*), buddleia (*Buddleja davidii*), ragwort (*Senecio jacbaea*) and a small number of common spotted orchids (*Dactylorhiza fuchsii*).

Tall Ruderals/Scrub Mosaic

3.14 The southern section of field 4 and the eastern end of field 3 supported a mosaic of tall ruderals and scrub. Species present included: cleavers (*Galium aparine*), hogweed (*Heracleum sphondylium*), common nettle (*Urtica dioica*), broad leaved dock (*Rumex obtusifolius*), cow parsley (*Anthriscus sylvestris*), Yorkshire fog (*Holcus lanatus*), cocksfoot (*Dactylis glomerata*), rough meadow grass (*Poa trivialis*), bindweed (*Calystegia sepium*), creeping buttercup (*Ranunculus repens*), willow herb (*Epilobium sp.*), pendulous sedge (*Carex pendula*) and teasel (*Dipsacus fullonum*).

Semi-improved Grassland with Tall Ruderals and Scrub

3.15 The majority of field 4 supported a mix of semi-improved grassland, tall ruderals and patches of scrub. This extended into the north east corner of field 5. Species present

included: Yorkshire fog (*Holcus lanatus*), curled dock (*Rumex crispus*), hogweed (*Heracleum sphondylium*), common nettle (*Urtica dioica*), bramble (*Rubus fruticosus*), bindweed (*Calystegia sepium*), creeping thistle (*Cirsium arvense*), broad leaved dock (*Rumex obtusifolius*), creeping buttercup (*Ranunculus repens*), false fox sedge (*Carex otrubae*), rough meadow grass (*Poa trivialis*), teasel (*Dipsacus fullonum*), soft rush (*Juncus effusus*), upright brome (*Bromus erectus*), Timothy grass (*Phleum pratense*), willow herb (*Epilobium sp.*), common mouse ear (*Cerastium fontanum*), false brome (*Brachypodium sylvaticum*), vetch sp., woody nightshade (*Solanum dulcamara*) and soft brome (*Bromus hordeaceus*).

Marshy Grassland

3.16 The north west corner of field 5 was comprised primarily of rushes and bramble and the ground became more marshy. Species present included: compact rush (*Juncus conglomeratus*), hard rush (*Juncus inflexus*), soft rush (*Juncus effusus*), a small number of common spotted orchids (*Dactylorhiza fuchsii*), pendulous sedge (*Carex pendula*), yellow iris (*Iris pseudacorus*) and ox-eye daisy (*Leucanthemum vulgare*).

Tall Ruderals/Bare Earth/Scrub Mosaic

3.17 The southern section of field 5 was more dominated by a mosaic of tall ruderals, bare earth and scrub. Species present included: broad leaved dock (*Rumex obtusifolius*), bramble (*Rubus fruticosus*), soft rush (*Juncus effusus*) and compact rush (*Juncus conglomeratus*)

Tall Ruderals

3.18 Field 6 supported two strips of tall ruderals along the southern and western edges. Species present included: curled dock (*Rumex crispus*), common nettle (*Urtica dioica*), bramble (*Rubus fruticosus*), false brome (*Brachypodium sylvaticum*), rough meadow grass (*Poa trivialis*), Timothy grass (*Phleum pratense*), cleavers (*Galium aparine*), woody nightshade (*Solanum dulcamara*) and false fox sedge (*Carex otrubae*).

Semi-Improved Grassland

3.19 The centre of field 6 was dominated by rough grassland that had formed tussocks in places. Species present included: Timothy grass (*Phleum pratense*), false oat grass (*Arrhenatherum elatius*), cocksfoot (*Dactylis glomerata*), sweet vernal grass (*Anthoxanthum odoratum*), silverweed (*Potentilla anserina*), Yorkshire fog (*Holcus lanatus*), meadow buttercup (*Ranunculus acris*), creeping thistle (*Cirsium arvense*), curled dock (*rumex crispus*), ragwort (*Senecio jacobaea*), ribwort plantain (*Plantago lanceolata*), yarrow (*Achillea millefolium*), foxglove (*Digitalis purpurea*), woody nightshade (*Solanum dulcumara*).

Scrub

3.20 A small section of scrub was present in the south east corner of field 6 and was primarily comprised of: bramble (*Rubus fruticosus*), cleavers (*Galium aparine*) and common nettle (*Urtica dioica*). Another small section of scrub was present along the west side of field 1 and was primarily composed of bramble (*Rubus fruticosus*).

Marginal vegetation

3.21 On the banks of the ditches running across the site were collections of marginal vegetation. Species present included: pendulous sedge (*Carex pendula*), rosebay willowherb (*Chamaenerion augustifolium*), fool's watercress (*Apium nodiflorum*), false brome (*Brachypodium sylvaticum*), figwort sp., crack willow (*Salix Fragilis*), bulrush (*Typha latifolia*).

Hedgerows and Trees

3.22 The hedgerows around the site were fairly uniform with some gaps present and scattered mature trees present. The species found are listed in full below.

3.23 The hedgerows were assessed under the criteria of the Hedgerow Regulations 1997 (as amended 2002) as detailed previously in the methodology section. The assessment is detailed in Table 3 below. The table details the number of woody species present, averaged

between the 30m sections surveyed (one 30m section per 100m of hedge), alongside the associated features. The hedgerows were not assessed for their 'importance' in terms of historic value or archaeological interest. See Figure 6 below for hedgerow numberings and locations.

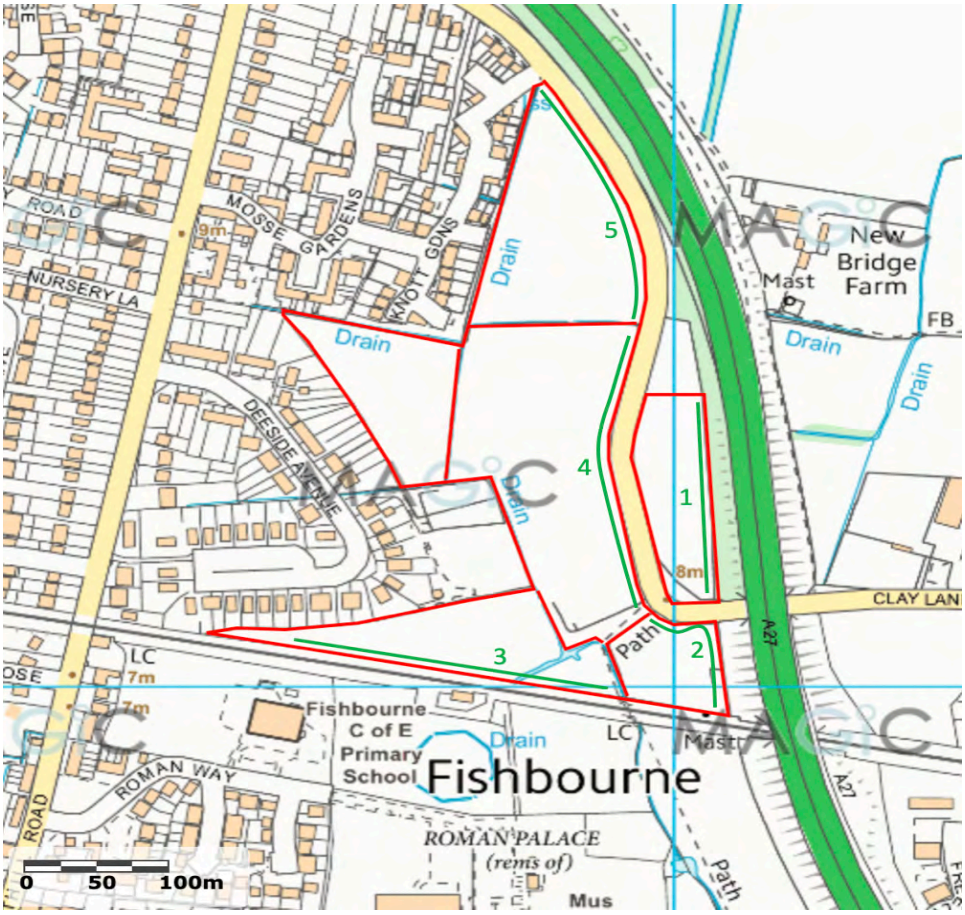


Figure 6: Locations and numberings for the hedgerows present on site

Table 3: Hedgerow Assessment

Hedgerow	Woody species	Ground layer species	Features	Species rich 'Important'
1: Field 1, western edge	Average of **4** species in 30m Including: Hawthorn Elder Field maple Wild privet	Common nettle (*Urtica dioica*); bramble (*Rubus fruticosus*)	Less than 10% gaps; connected to **1** other hedgerow; 1 tree per 50m	No

2: Field 2, northern edge	Average of **9** species in 30m Including: Oak Cherry sp. Hawthorn Wild privet Field maple Dogwood Ash Hazel Rowan	Common nettle; bramble (*Rubus frutiocosus*) broad leaved dock (*Rumex obtusifolius*)	Less than 10% gaps; 1 tree per 50m; connected to 1 other hedgerow	Yes
3: Field 3, southern edge	Average of **4** species in 30m Including: Blackthorn Elder Dogwood Dog rose	Common nettle; bramble (*Rubus frutiocosus*) broad leaved dock (*Rumex obtusifolius*); creeping buttercup (*Ranunculus repens*); thistle sp.	connected to 1 other hedgerow	No
4. Field 4, eastern edge	Average of **6** species in 30m Including: Hawthorn Blackthorn Elder Wild privet Hazel Oak	Common nettle; bramble (*Rubus frutiocosus*) broad leaved dock (*Rumex crispus*)	connected to 2 other hedgerows; less than 10% gaps	No
5. Field 6, north eastern edge	Average of **6** species in 30m Including: Hawthorn Field Maple Oak Wild privet Hazel Ash	Common nettle; bramble (*Rubus frutiocosus*) curled dock (*Rumex crispus*)	connected to 2 other hedgerows; less than 10% gaps	No

Ditch Network

3.24 The ditches running throughout fields 3-6 were heavily vegetated. Primarily the ditches were dry or only contained damp soil or leaf litter. However, the ditch in the south east

corner of field 3 supported a few inches of water and the same was true of the section of ditch in the north west corner of field 4. The ditch running along the west of field 6 also had a small section that contained a few inches of water at its centre that extended into a further ditch and drain off-site.

3.25 The bankside vegetation was very thick in places which likely obscured other species and potential holes along the banks.

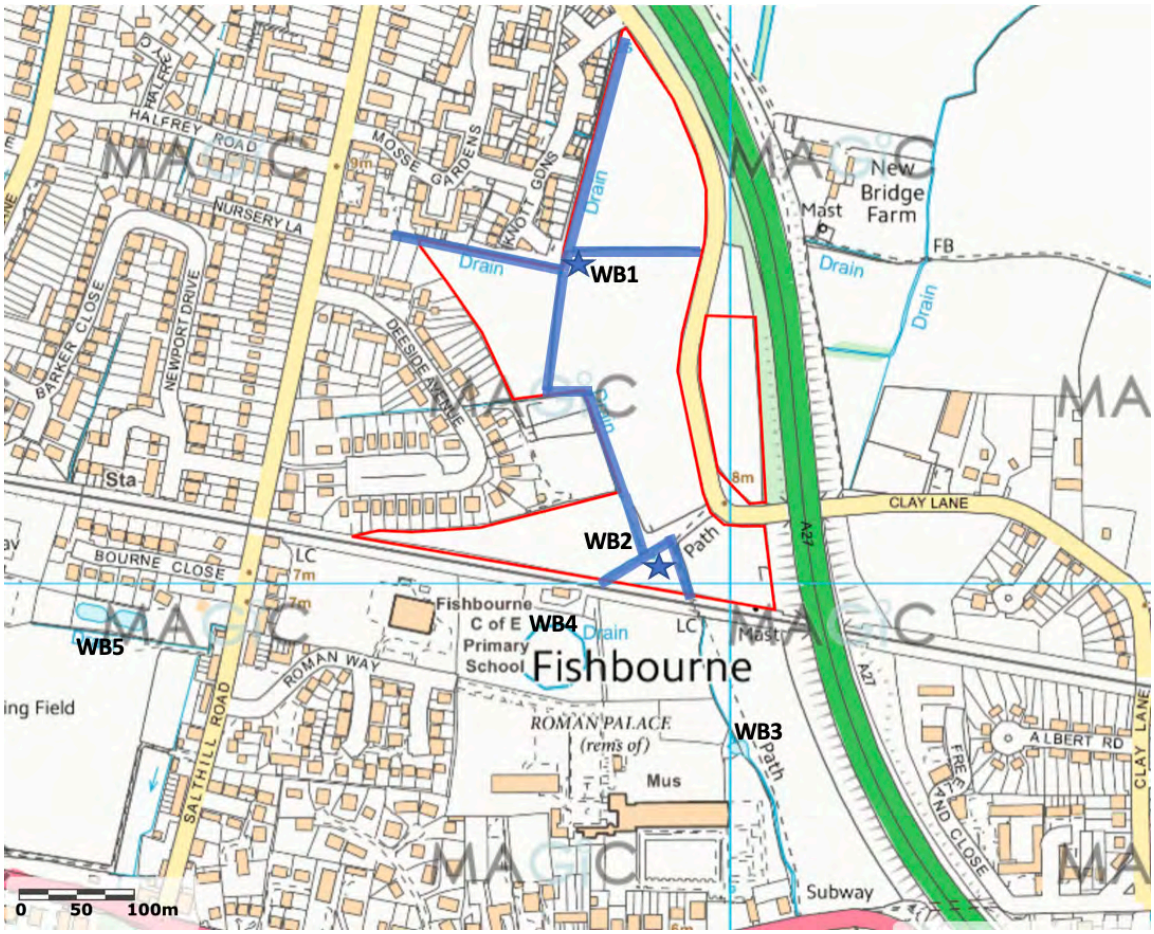


Figure 7: The ditch network and waterbodies present on-site and within 250m of the red line boundary (blue stars denote standing water in ditch)

Protected Species

Bats

3.26 There are no buildings on site to asses for roosting bats, however a number of Schwegler bat boxes from the adjacent developments 13/02278/OUT, land on Clay Lane (now called Taylors Copse) and 15/02331/FUL, land east of Mosse Gardens, have been erected on a number of mature trees along the western edge of the redline boundary. These boxes can only be inspected by a Natural England Bat Licence holder and should only be done so if the trees on which they hang require removal.

3.27 A significant number of the large trees around the perimeters of the fields on site had potential to support roosting bats. Many of the mature oak trees included in this group had high or medium potential to support roosting bats due to the presence of cracked limbs, woodpecker holes and rot holes. There were also two high potential oak trees located just off-site to the south of field 5 which extend onto site. A large number of trees with a low potential to support roosting bats were also identified. The bat potential trees have been located on the Habitat Map in Appendix 1 (locations approximate only). There are additional cracks and crevices in smaller trees that may also provide roosting potential for bats.

3.28 The boundary hedgerows are considered to offer moderate foraging habitat for bats. The boundaries have been kept as darkened corridors with no street lighting along Clay Lane, which has hedgerows on either side, creating a suitable foraging network along this boundary. The hedgerows have a number of connections across the local landscape and connect to sections of off-site woodland to the north and south. The hedges have a range of species and include species with flowers and berries which can attract invertebrates, providing a food source for bats.

Water Voles

3.29 The ditch network running throughout the site was heavily vegetated and contained water in some sections. No evidence of water voles was observed during the initial survey, but

the dense bankside vegetation would likely have obscured most signs of water vole presence.

3.30 The ditch network on site is considered to be suitable for supporting water voles. A high density of small mammal holes were found at the northern end of the ditch along the western edge of field 6 during a previous survey by the Ecology Partnership in December 2018. These holes were consistent with the shape and size of water vole burrows, but could also have been being used by rats.

3.31 Azure Ecology undertook a PEA of land adjacent to the west in 2013. The report concluded that recent dredging was likely to have removed suitable habitat.

Barn Owls

3.32 The majority of the site is rough semi-improved grassland or tall ruderals, with scrub. The grassland was quite tussocky in places and the vegetation was quite tall over the majority of the site. Both of these factors contribute to suitable foraging habitat for barn owls. Several small mammal holes were noted within field 6 during the December 2018 survey after the vegetation had been recently flailed. These holes were likely to have been made by field voles or shrews (primary barn owl prey species), and buzzard and kestrel were seen on site during the 2018 survey and a red kite was seen during this survey, indicating that appropriate prey species are likely present on site. What appeared to be a bird of prey nest box was also present on one of the oak trees in the north west corner of field 6. The site is considered to provide suitable habitat for foraging barn owls.

Reptiles

3.33 The majority of the site is a mix of rough semi-improved grassland, tall ruderals and scrub. The habitats on site create a grassland-scrub mosaic with tussocky grassland that is ideal for common reptile species. There are log piles along the western bank and on the southern edge of field 6; a hibernaculum in the north east corner of field 5; a brash pile in the southern section of field 4; and a brash pile in the north west corner of field 2, providing further potential for hibernating or breeding reptile species within these refugia.

3.34 Azure Ecology carried out a reptile survey on land adjacent in 2013 and found slow worms and common lizards. CSa Environmental Planning produced a Reptile Mitigation Strategy in 2015 for 15/02331/FUL for the land adjacent to the west of the site, for a low number of slow worms and common lizards. It is likely that reptiles are present with the redline boundary due to the proximity of these previous reptile records.

Dormice

3.35 The majority of the site is surrounded by hedgerows, one of which is species rich. The species present in the hedgerows provide suitable food sources for dormice. The hedgerows are also well connected to other hedgerows, in particular the corridor that runs along the A27, and to woodland patches to the north and south. There are records for Dormice within 500m south of the site on the A27 corridor. The site is only separated from this corridor by Clay Lane, which is not considered to be a significant barrier to dispersal.

Badgers

3.36 No evidence of badgers using the site were recorded. No setts, latrines or snuffle holes were present within the redline boundary. Adjacent houses and gardens could not be accessed and surveyed for the presence of badgers.

3.37 Mammal pathways were present, but no setts were identified.

Great Crested Newts (GCN)

3.38 A network of ditches with some sections supporting standing water was present across fields 3-6. Three other waterbodies were identified within 250m of the red line boundary (figure 2). No ponds were surveyed and assessed using the Habitat Suitability Index (HSI).

3.39 The ditch network on-site has connectivity to the off-site pond to the south west of the site. The standing water present in sections of the on-site ditches makes them suitable for supporting GCN. The prevalence of thick vegetation across fields 3-6 offers suitable terrestrial habitat for GCN and the refugia described in paragraph 3.33 present suitable hibernation sites for GCN.

3.40 The habitats within the redline boundary of the site are considered to offer potential habitat for GCN during their terrestrial phase and the waterbodies on and off site could support GCN in their aquatic phase.

Other Species

3.41 The trees and hedgerows on site were considered to have potential to support nesting birds with several common bird species seen on site at the time of the survey.

3.42 The habitats on site are not considered to be suitable for supporting breeding birds for which the SPA is so designated, However, some of the habitats on site have potential to support the winter birds and the on passage birds, for which the SPA has also been designated. These species use fields located within proximity to the SPA.

3.43 A bird of prey nesting box has been erected in the north east corner of field 6 on a mature oak tree. The use of the box by a bird species is not confirmed.

3.44 Deer droppings were also found on site.

4.0 Discussion

Designated Sites

4.1 Approximately 400m to the south of the site lies the Chichester Harbour SPA and Ramsar site, Solent Maritime SAC and Chichester Harbour SSSI. The site therefore is located within the 5.6km 'zone of influence' of the Chichester Harbour SPA and Ramsar site and the Solent Maritime SAC as specified in the planning policy. These habitats are of international importance and any impacts on these designated sites must be considered within the application, and must be considered in line with Policy 50 of the local plan.

4.2 The EU Habitats Directive requires that any project which may have a significant effect or impact (either alone or in combination with other plans or projects) on the integrity of one

or more European site(s), and which is not necessary for the management of the site, must be subject to a process of Habitat Regulations Appraisal (HRA).

4.3 European Sites, in this context, include Special Areas of Conservation (SACs) and Sites of Community Importance (SCIs) designated under the Habitats Directive (92/43/EEC) and Special Protection Areas (SPAs) designated under Council Directive (2009/147/EC) on the conservation of wild birds (the 'Birds Directive'). In addition, Ramsar sites (internationally important wetlands designated under the Ramsar Convention 1971) are to be subject to the same process.

4.4 In the UK, the Conservation of Habitats and Species Regulations 2010 (as amended) (the 'Habitats Regulations') transpose the requirements of the EU Habitats Directive into domestic UK law. The Regulations aim to protect sites in the UK that have rare or important habitats and species in order to safeguard biodiversity.

4.5 Impacts can be divided into direct and indirect impacts. Direct impacts are usually associated with development adjacent to or on land which has been designated. Indirect effects, which may not result in the loss or fragmentation of habitats, are also significant in terms of protected habitats' integrity and functionally linked land. Indirect impacts are often associated with the increase in population levels as a result of new development.

4.6 From the initial assessment of the development on the SPA, SSSI and Ramsar site, it is considered to be of no direct impact to any of the sites under review. The direct impacts which are considered significant include:

- Causing damage to the coherence of the site or to the Natura 2000 series (for example, presenting a barrier between isolated fragments, or reducing the ability of the site to act as a source of new colonisers);
- Causing reduction in the area of habitat or of the site;
- Causing direct change to the physical quality of the environment (including the hydrology).

4.7 Due to the location of the site, there is no habitat loss, or habitat isolation or fragmentation, of habitats which are covered by the designations. Further surveys would be required to ensure that the land is not considered to be functionally linked to the SPA in as such as it supports qualifying features (wintering birds / breeding birds etc).

4.8 Indirect impacts can be considered significant in terms of specially protected sites. Indirect impacts include noise from construction work, dust and pollutions from construction and impacts on water courses. Consideration for water pollution, and other hydrological impacts would have to be considered as part of the proposals. Light and noise pollution are considered unlikely due to distances involved between the proposed development site and the SPA / Ramsar location. However, consideration during construction and following best practice working methods would have to be adhered to.

4.9 Further impacts are those which are associated with an increase in the local human population of an area and how this increase affects the surroundings. This includes recreational issues associated with a greater number of people (and dogs) using designated sites for recreation.

4.10 The interim 'Solent Recreational Mitigation Strategy- An interim framework to mitigate the impact on the Solent Special Protection Areas of increased visitor pressure arising from house building – December 2014 Solent Recreation Mitigation Partnership' has been reviewed. This publication has been produced by the Solent Recreation Mitigation Partnership which comprises the fifteen Solent local authorities, Natural England, the Royal Society for the Protection of Birds, Hampshire & Isle of Wight Wildlife Trust, and Chichester Harbour Conservancy. The local authorities are: Chichester District Council, East Hampshire District Council, Eastleigh Borough Council, Fareham Borough Council, Gosport Borough Council, Hampshire County Council, Havant Borough Council, Isle of Wight Council, New Forest District Council, New Forest National Park Authority, Portsmouth City Council, Southampton City Council, South Downs National Park Authority, Test Valley Borough Council, Winchester City Council.

4.11 Based on the research such as conducted by Footprint Ecology and the precautionary principle, it is assumed that any development which would result in additional dwellings within 5.6 kilometres of the Solent SPA is likely to have a significant effect unless evidence specific to the development shows otherwise. The strategic mitigation approach set out in this mitigation document will enable the majority of housing developments to address this issue without the developer having to undertake implement bespoke mitigation measures. However, it is recommended that early consultation with the LPA is advised to ensure mitigation measures are achievable for recreational impact.

4.12 This report proposes the following strategy:

- a team of 5-7 coastal rangers to advise people on how to avoid bird disturbance, liaise with landowners, host visits etc.;
- Communications, marketing and education initiatives and an officer to implement them;
- initiatives to encourage responsible dog walking and an officer to implement them;
- preparation of codes of conduct for a variety of coastal activities;
- site-specific projects to better manage visitors and provide secure habitats for the birds;
- providing new/enhanced greenspaces as an alternative to visiting the coast;
- a partnership manager to coordinate and manage all of the above.

4.13 A sliding scale for developer contributions will be required to fund the necessary mitigation measures in perpetuity. In addition, individual planning authorities may also apply an administrative charge. The scale is currently set at:

£337 for 1 bedroom dwelling

£487 for 2 bedroom dwelling

£637 for 3 bedroom dwelling

£749 for 4 bedroom dwelling

£880 for 5 bedrooms or more

4.14 The authorities will require a contribution for "every net additional dwelling within 5.6 kilometres of the boundaries of the Solent Special Protection Areas unless the developer can demonstrate to the satisfaction of the local planning authority and Natural England that it will provide alternative 'bespoke mitigation' which will fully mitigate the recreational impact of the new development."

4.15 Each individual local planning authority, in this case Chichester District Council, will decide which legal mechanisms to use to secure developer contributions from schemes within its area with legal agreements in place prior to the commencement of development. The authorities which receive payment will pool the developer contributions and implement the mitigation measures (which are discussed above).

4.16 The site itself is not designated for its nature conservation value and does not lie adjacent to European designated sites. However, it is likely that a Habitats Regulations Assessment may be required by the LPA to ensure that other impacts, which are considered uncertain (notably water and hydrological impacts), are assessed.

'Wildlife Corridor'

4.17 The habitats on site have been identified as forming part of a proposed wildlife corridor. The text taken from the 'Chichester District Council Strategic Wildlife Corridors Local Plan Review Background Paper December 2018 below highlights the area surveyed which forms part of the proposed network;

Proposed West of Chichester to Fishbourne Strategic Wildlife Corridor

The southern end of the proposed corridor starts at the Chichester Harbour SPA, connecting to Fishbourne Meadows LWS, with connections through the fields north of Fishbourne Meadows, where bat network, water vole network and barn owl habitat overlap. Although the corridor at this point is quite narrow, ***the watercourses and field margins are key in providing connectivity up to the A27 and beyond*** *(our emphasis) (see figure 4b). Water vole records on the Whitehouse Farm site indicate they are able to move through the culverting under the A27. The hedgerows and treelines north of the A27 connect up the parcels of woodland, including ancient woodland (the*

Slab) which records indicate is extensively used by bats for commuting, and the Local Nature Reserve (LNR) at Brandy Hole Copse beyond.

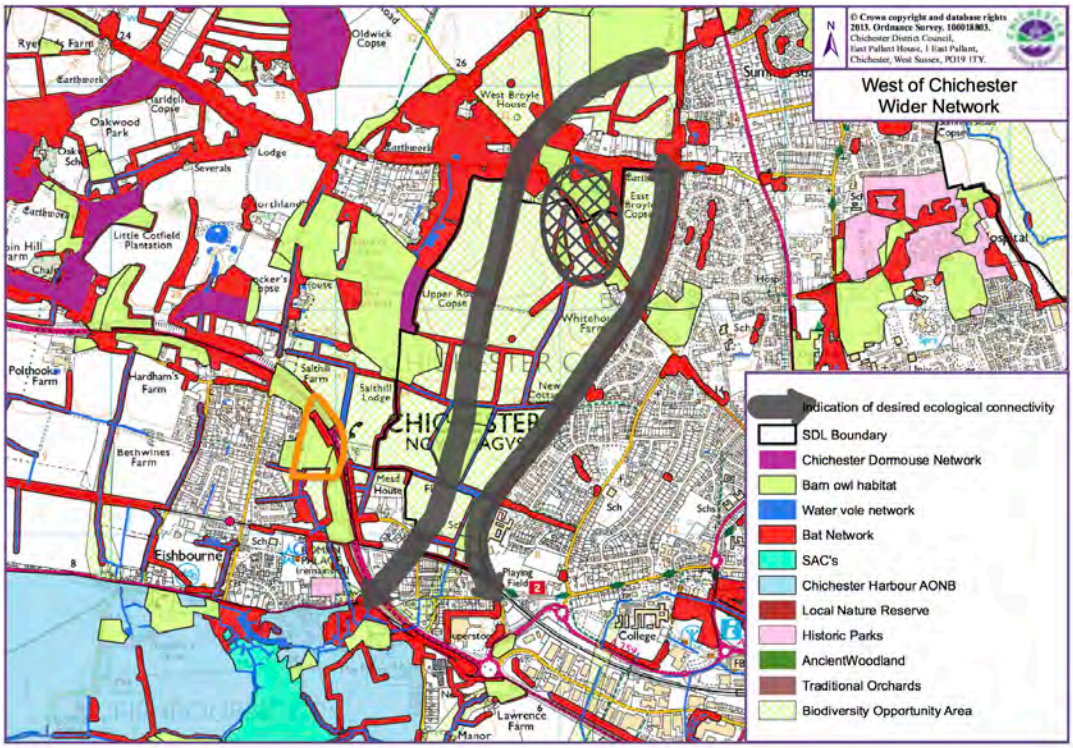


Figure 8: Assessment of the site's habitat suitability taken from the Green Infrastructure Appendices in the Chichester Local Plan

4.18 It is noted that within the extract, that the key features of interest within this section of corridor include the field margins and watercourses. Within the red line boundary, it is the waterbodies and the field margins including the tree lines, which have indeed been identified as having potential to support a range of species. As such the requirement to maintain such features, and indeed enhance these features, is in line with both national policy (NPPF) and local policy.

4.19 The waterbodies on site have suitability for supporting priority species such as water voles and GCN. It is recommended that surveys for both these species are undertaken. Any development would have to consider the waterbodies and seek improvements to site biodiversity under the NPPF. As such there is an opportunity within the site to provide

new features of ecological importance – such as enhanced drainage ditch networks with suitable planting – to be developed as part of any new site proposals.

4.20 The wildlife corridor (Figure 8) has been identified as supporting potential overlapping habitats for bats, water voles and barn owls. Any development within the red line boundary can accommodate a range of site level enhancements which can ensure the long term survival and even potential expansion for bats and water voles. Furthermore, the maintenance of the tree line, site margins and ditch network, provide robust green edges which still maintain a viable wildlife corridor. The loss of some suitable habitat for foraging barn owls is considered to be a residual loss, albeit one which is not significant (see barn owl discussion below).

4.21 With this in mind, it is recommended the eastern corridor along Clay Lane be robustly enhanced through a double hedgerow and additional in-filling planting, creating a thick green corridor for foraging bats as well as other species using this corridor. This is detailed within the species sections and enhancement recommendations later within this report.

4.22 Maintaining the green corridor along the eastern edge of the site will help maintain the connectivity between the South Downs NP and the Manhood Peninsula. The individual corridors around the site are able to be maintained and enhanced with a housing allocation within the centre of the site, having a positive impact on this network as a whole.

Site Habitats

4.23 The site is dominated by semi-improved grassland, tall ruderals and scrub, surrounded by hedgerows and matures trees with a ditch network running through fields 3-6.

4.24 All hedgerows are Habitats of Principle Importance and therefore should be considered within the planning process. One of the hedgerows on site has been classified as **'important'** under the Hedgerow Regulations 2002. This habitat type should be retained and enhanced on site under any new development proposals or management scheme on site. Details of these enhancements can be found later in this report.

4.25 The majority of the grassland, tall ruderals and scrub would be lost to the allocation for housing. Mitigation for this would include a species-rich planting scheme around the edges of the site and potential off-site planting. The introduction of new garden spaces and road verges would also provide space for species-rich native planting and street tree planting within the site. Details for planting schemes can be found detailed later on.

4.26 The habitats within the red boundary have been assessed for their potential to support a number of protected species. These are discussed individually below.

Protected Species

Bats

4.27 The '*West of Chichester wider ecological network'* map in the CDC Local Plan (2014-2049) has identified the site has having 'bat networks' on site, along the boundary hedgerows. This is a result of the 2012-2014 district wide Green Infrastructure Mapping Project. Local records also identify a number of bats within 2km of the site, albeit the species recorded are more common and widespread species, such as common and soprano pipistrelles and noctules.

4.28 Any proposed development must consider ecological networks and green infrastructure, both in line with national and local policies. As such, the hedgerows should be retained in their current state and unlit to preserve their ecological functionality including their capacity to support foraging and commuting bats.

4.29 A number of mature oak trees were identified as having moderate roosting potential for bats. These trees are recommended to be retained for any future development. These trees should also be kept within darkened corridors and remain unlit. A buffer area of 15m around the tree is recommended and Root Protection Areas should be established around all mature trees to ensure their protection.

4.30 The Bat Conservation Trust survey guidelines, it is important that proportionality is employed when recommending further survey work for bat species on a proposed

development site. As stated within section 8.2.7 of the latest survey guidelines (2016), the following points need to be taken into account with regard to planning activity surveys:

- Likelihood of bats being present;
- Likely species concerned;
- Number of individuals;
- Type of habitat affected;
- Predicted impacts of the proposed development on bats;
- Type and scale of proposed development.

4.31 The proposals are looking to allocate the land for housing. Consequently, given the scale of the development and the habitats present on site, it is considered that manned bat activity surveys along with static recorders would be necessary on site to establish the levels of bat activity present on site. It is recommended that static recording devices be left on site once a season for five consecutive nights between the months of April to October. These devices should be placed on habitat features considered suitable for commuting and foraging bats that are likely to be impacted by the proposals. In this case, the hedgerows around the site. One transect survey per season should be performed on the site. This will assist in identifying what species are present in the area and in what capacity they use the site.

4.32 With an appropriate mitigation strategy in place, the favourable conservation status of bat species within the local area will be able to be maintained post-development. Certainly, developments that consider bats within the master planning will be more able to reduce impacts to bat species to a level which would not be considered significant. As such, it is recommended that a lighting scheme that is sensitive to the surrounding environments should be incorporated, and new planting along the boundaries should be undertaken.

4.33 The total hedgerow length along all site boundaries is approximately 2.0km, covering almost the entire site perimeter.

4.34 As bats are considered likely to use these corridors (further surveys can confirm the activity levels), these hedgerows would need to be retained as dark corridors with no

external lighting. Bats are known to be influenced by light levels, which can affect both their roosting and foraging behaviour. This needs to be considered with a sympathetic lighting scheme for the development. The following guidance is taken from The Bat Conservation Trust guidance. Recommendations include, but are not limited to:

- Installing lighting only if there is a significant need;
- Using light-emitting diodes instead of mercury or metal halide lamps where glass glazing is preferred due to its UV filtration characteristics;
- Directing light to where it is needed and avoiding light spillage;
- Using baffled lighting where light is directed towards the ground;
- Avoid putting lighting near treelines or hedgerows and angling light away from these linear features which are used by commuting and foraging bats;
- Planting a barrier or using man-made features required within the scheme to form a barrier.

4.35 A buffer of 15m is recommended along the hedgerows, between any development and the hedgerows. This will retain the integrity of the hedgerow was a connective corridor, maintaining its value and use as part of a wildlife network.

4.36 It is considered that should the site be allocated for housing, mitigation is possible within the site to minimise the impact on potential bat networks. Enhancement planting and additional hedgerow creation within the site along with the maintenance of the hedgerow corridors as darkened flight paths will allow the continued functionality of these corridors to be retained.

4.37 It is also recommended that any subsequent developments should incorporate bat friendly features such as brick bat houses and/or bat tubes in order to enhance the roosting opportunities for bats along the network. The use of Schwegler 2FR Bat Tubes (see Figure 9) are recommended for use in the construction of any new developments. The 2FR is suitable for bat species that inhabit buildings, such as the common and soprano pipistrelle, which are likely to be found on site. They are unobtrusive and can fit flush into the masonry of a wall. It is recommended that these be placed on unlit south or west facing walls.

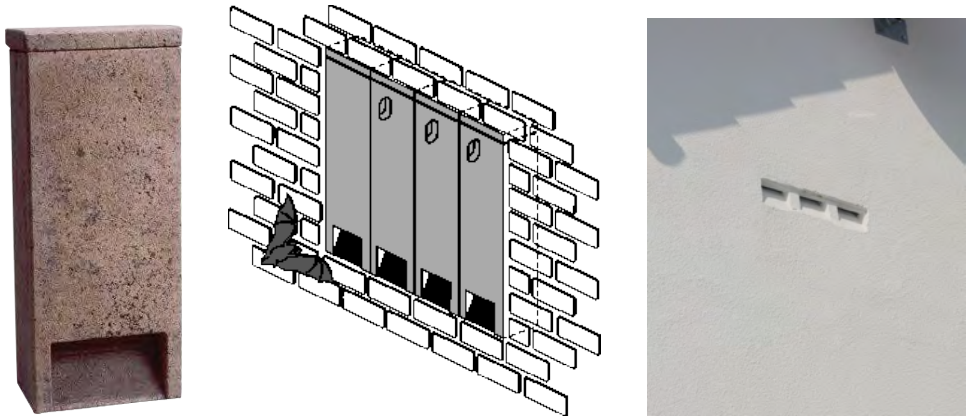


Figure 9: Schwegler 2FR Bat Tubes

4.38 It should be noted that the above recommendations are advisory only, a more robust and informed mitigation strategy would be included as part of a full bat report following completion of the activity surveys.

4.39 As part of the adjacent development, bat boxes have been erected along northern section of the western hedgerow, to enhance the local bat population and provide roosting opportunities. Additional boxes could be erected along the remaining hedgerows. Recommended boxes include:

- Schwegler 2F Bat Box – These boxes are attractive to small bats such as pipistrelles and long-eared bats and can be hung on trees (Figure 10).
- Schwegler 1FD Bat Box - This box has been designed specifically for smaller bats and provides opportunities as a maternity roost (Figure 10).

Figure 10: Schwegler 2F (left) and 1FD (right) bat boxes

Water Voles

4.40 The '*West of Chichester wider ecological network'* map in the CDC Local Plan (2014-2049) has identified the site has having water vole networks as a part of the 2013 district wide Green Infrastructure Mapping Project. Water voles are also listed within the SxBRC report, in close proximity of the site.

4.41 The on-site ditch network was well vegetated and supported standing water in two sections of its length and was dry along approximately 60% of the total combined length. Overall the ditch network was considered to provide some good habitat for water voles in the sections where it supported standing water.

4.42 Azure Ecology undertook a PEA of land adjacent to the west in 2013 for 15/02331/FUL. The report concluded that recent dredging was likely to have removed suitable habitat for water voles and landscape features were likely to have reduced connectivity to known populations to the south. However, the ditches have regenerated in terms of vegetation cover and now have some potential to support water voles in terms of food sources and cover.

4.43 It is therefore considered that water voles could potentially be present within the ditch network on site due to the quality of the habitats present and connectivity to other suitable habitat areas. However, this habitat could also be enhanced for the species. Additional aquatic planting along the banks and deepening the ditches in places may help increase the water level within the ditch and provide food sources for the species.

4.44 Further survey work is recommended to be undertaken along the ditch network between March and October. This involves searching for field signs such as latrines and feeding stations along the banks and water edge. If present, this species will need to be considered within the design of the masterplan.

4.45 As the associated ditch network holds some potential water vole habitat and is primarily located along the boundaries of the site, it is recommended that a buffer zone be maintained between the development and the ditch network. According to Natural

England guidelines, this should be between 5-10m from the top of the bank to protect the water voles from any direct impacts and to minimise disturbance. All construction activities and access by personnel and machinery should be prohibited in this buffer zone. Any ground works that are to take place near the ditch network should be completed as quickly as possible to reduce disturbance and should be avoided between late April and late August when water voles are likely to have young.

4.46 Through buffer zones and enhancement planting it is considered that water voles can be accommodated within a future housing scheme on this site.

Barn Owls

4.47 The '*West of Chichester wider ecological network'* map in the CDC Local Plan (2014-2049) (Figure 8) has identified the site has having Barn Owl foraging habitat on site. This is a result of the 2013 district wide Green Infrastructure Mapping Project. Records for barn owls are known within 1km of the site.

4.48 The Green Infrastructure map was created by overlapping known habitat types with home range areas from known occupied roosting sites from biological records. This resulting allocation of suitable habitat has not been supported by ecology appraisals and the use of the site by barn owls has not been substantiated by manned survey effort. However, the habitats present do support the deep tussock grasslands which are suitable habitat for barn owl prey, and as such some of the field networks have the potential to be used by foraging barn owls. Furthermore, the use of the site by birds of prey is confirmed by the presence of buzzard, kestrel and red kite on site during surveys. Suitable prey availability for barn owls is therefore considered to be likely.

4.49 A home range of a barn owl varies throughout the year with prey availability. On average it is between 5000 and 350 hectares and is not often circular but will follow commuting and foraging routes of suitable habitat. The site off Clay Land is approximately 7ha in size. This represents a very small percentage of a barn owl's potential home range, even in the summer months when the range is at its smallest. It is considered that there are far greater

areas of suitable foraging habitat to the north west and east of Fishbourne, that would provide sufficient foraging habitat for a potential local barn owl population. Any loss of habitat for foraging barn owls would therefore be considered a residual impact. Whilst it would be considered unlikely that post development barn owls would use the green infrastructure proposed within the red line boundary, notably the edges associated with the ditches and tree line, these features will be sensitively managed for wildlife to ensure some suitable habitat is retained within the scheme.

Reptiles

4.50 The habitats within the red line boundary have the potential to support common reptile species. The majority of the habitats present on site including the tussocky grassland, field margins, scrub, tall ruderal, and hedgerow have potential to support reptiles. Reptiles have been identified as being on site in adjacent land parcels for applications 13/02278/OUT and 15/02331/FUL and within the biological records report.

4.51 It is illegal to intentionally disturb habitats occupied by common species of reptile, as they are fully protected under the Wildlife and Countryside Act 1981. As the majority of the habitats on site have been highlighted as potential reptile habitats, it is recommended that further survey work be undertaken to establish if a population of reptiles is present on site and the size of the population.

4.52 Proposed surveys will involve the positioning of artificial refugia (roofing felt mats) along the edges of the suitable habitat areas located within the red line boundary. The mats are warmed by sunlight and reptiles can often be found warming up under them before foraging. The mats should be put in place between late March – early October, one week in advance prior to starting the surveys to allow the mats to bed in to the current habitat. The mats should then be checked on seven different visits under suitable weather conditions to assess presence/absence and current population counts.

4.53 If reptiles are found on site, it is considered possible to mitigate for common species on site. One line of mitigation could include keeping the reptiles on site, translocated into a

receptor area within the redline boundary using exclusion fencing along the edges of the site adjacent to the retained and enhanced hedgerows.

4.54 For application to the west of the site 15/02331/FUL Lane East of Mosse Gardens, CSa Environmental moved a low number of common reptiles off site to Brook Meadow Local Nature Reserve as a receptor site. This strategy could also work on this site to maintain the local population.

Dormice

4.55 The data search from Sussex Biodiversity Records Centre showed records for dormice within 500m south of the site in 2018 on the A27 corridor. This corridor is only separated from the site by Clay Lane and this is not considered to be a significant barrier to dispersal.

4.56 The hedgerows on site are, in places, species rich and are considered to provide year-round food sources for dormice. The suitable habitat on site, the hedgerows, covers a total of 2.0km in length.

4.57 The areas of scrub present across the site provide habitats that dormice can use. Scrub is a seasonally important habitat for dormice and the presence of dormice within 420m means that dormice could be present within the local area.

4.58 Dormouse surveys are recommended to be carried out across the site. Dormouse surveys should be performed over a number of months. Each month of the year is given a score of suitability. A survey effort adding up to a score of 20 will be required over the course of year in order to achieve suitable survey effort. In areas where hazel is present on site, a hazel nut search should be also performed to identify whether dormice have opened nuts.

4.59 Assuming presence, it is considered that the species can be mitigated for on-site and within the master plan. As detailed in the bat mitigation section earlier, the on-site hedgerows provide an opportunity for enhancement and increasing the biodiversity value of this habitat on site. Thickening the hedgerows along the boundaries and creating a layered structure would enhance the corridors around the site for this species as well as

others. Berry and flower producing species should be planting to enhance the food sources, and planting if thorny species such as blackthorn would provide a thorny buffer to help minimise cat predation.

Badgers

4.60 While no direct evidence of badgers, such as setts or latrines, was identified on site, it is probable that badgers may use the habitats on site to forage or commute across. Mammal pathways were found across the site.

4.61 While the foraging and commuting habitat of badgers is not legally protected, precautions can be taken during the construction process to ensure no harm comes to badgers using the site. It is recommended that any excavations and trenches associated with construction are either covered at night or supplemented with a means of escape for any badgers that may fall into the excavation whilst foraging. Any open pipes or conduits laid should be blocked off each night to prevent badgers from entering them. If possible, construction work should only take place between dawn and dusk with no late evening work to reduce possible disturbance.

Great Crested Newts (GCN)

4.62 There are 2 waterbodies on site (WB1 and WB2 – Figure 6) and a further 3 within 250m of the site. The 2 on-site waterbodies are connected to each other and to WB3 by a series of ditches. All 5 waterbodies identified were considered to offer suitable habitat to support GCN.

4.63 Given the presence of suitable waterbodies on-site and within 250m of the site eDNA surveys were recommended and undertaken on the 2 on-site waterbodies and WB3 (being the only off-site waterbody that access was granted to). The results of these surveys will determine the future course of action regarding this species. If GCN are present on site then a licence will need to be applied for from Natural England. The ditches on site will likely form part of the Sustainable Drainage Systems (SuDS) for the site and so will

probably need to be retained offering opportunities to accommodate GCN within the site master plan.

4.64 The log piles/brush piles/hibernacula on site may provide potential hibernacula for GCN and it is recommended that these are sensitively dismantled under ecological supervision outside the winter period, as this is when GCN are most likely to be present within the aquatic phase.

4.65 During construction work, construction materials should be stored on hardstanding where possible and should be elevated off the ground. This is so that no features are created that GCN could potentially use as refuge habitat. Where trenches and holes are dug, these should not be left open overnight. GCN (and other amphibians, reptiles and small mammals) may get trapped in vertical-sided trenches. Therefore, where there is a risk of this occurring, the holes should be refilled or planks of wood should be placed so that any trapped animals may use these to escape.

4.66 It is recommended that some enhancements for GCNs are included within the scheme. Creation of log piles and brash piles under the retained hedgerows and tree lines for use as refugia by amphibians and invertebrates should be undertaken. Log piles should be located in a variety of locations, such as damp places, with some situated in more sunny locations and these should be stacked then have leaf litter added (see Figure 11). Planting around log piles with such species as honeysuckle or clematis can also add value. Such refugia created.

Figure 11: Images showing how log piles can be created within the edges of the site or in the retained habitats on site

Other species

4.67 It is recommended that if any trees, hedgerow sections or scrub on site are to be removed that this should be implemented outside the breeding bird season (March–September) or immediately after a nesting bird check by a suitably qualified ecologist. If active nests are identified, works in the vicinity of the nest must cease until the birds have fledged the nest. The bird of prey box on the mature tree in the northern corner should be retained in situ.

4.68 Birds are mobile and species that are qualifying features of the SPA, either individually or as a part of the waterbird assemblage, may feed on land outside of the SPA boundaries. Occasionally impacts to such habitats can have a significant effect upon the special interest of a European site, through an impact on conservation objectives (effect on the population). Habitats used by significant numbers of qualifying features of the SPA are defined as ***functionally linked*** to the site and so require assessment under the Habitats Directive and Regulations, as if they were within the SPA boundary (Chapman and Tyldesley 2016). As such further surveys over the winter months are recommended to identify if the land within the redline boundary is used by bird species for which the SPA was desiganted.

4.69 No rabbit warrens have been identified on site, however rabbits may use the site and holes may have been missed in the initial survey particularly within the hedgerows and tree

lines. If any warrens or small mammal holes are to be affected by a future development, then they should be excavated sensitively by hand rather than using mechanical equipment. This is because the Wild Mammals Protection Act 1996 states that it is an offence to crush or cause asphyxiation to mammals. If there is any suspicion that a mammal hole could have been created by a badger, then works should be stopped and a suitably qualified ecologist should be called to assess further.

Site Enhancements

4.70 A masterplan has not been created for the site and therefore there is the opportunity for a number of enhancements to be incorporated into the final design to help reduce potential ecological impacts and aid in compliance with local planning policy. It is important to use native species of local provenance in landscaping schemes to enhance the ecological value of a development.

Additional planting schemes along the site boundaries

4.71 All hedgerows on site are recommended to be retained and enhanced within any future scheme. Trees provide foraging opportunities for bats through provision of insect prey, as such it is recommended a number of the following native tree species are planted along the hedgerows, infilling gaps, as well as along internal streets across the site post-development and newly created habitat areas. This will help to improve wildlife corridors around the site for species such as bats, badgers, amphibians, small mammals and birds. The following species are recommended to be used in enhancing existing hedgerows and in the creation of new hedgerows and individual standing trees across the site:

- Oak (*Quercus robur*)
- Rowan (*Sorbus aucuparia*)
- Elder (*Sambucus nigra*)
- Goat willow (*Salix caprea*)
- Hazel (*Corylus avellana*)
- Hornbeam (*Carpinus betulus*)
- Common alder (*Alnus glutinosa*)
- Hawthorn (*Crataegus monogyna*)

- Blackthorn (*Prunus spinosa*)
- Field maple (*Acer campestre*)
- Dog rose (*Rosa canina*);

4.72 Buffer areas are recommended to be retained between the hedgerows and any proposed future development. This is to retain the integrity of the hedgerow habitats and enhance the green corridor network for a range of wildlife species, as well as retain the biodiversity value of the site. Rough grassland and wildflowers are recommended to be planted in the retained buffer areas. Gardens and similar green spaces in developed areas can also provide suitable foraging habitat for bats, in particular for pipistrelle species. It is recommended that post development gardens and amenity grasslands are planted with wildflower species. Of particular benefit to bats are night-flowering species that attract night-flying invertebrate prey. The following native species are considered suitable:

- Nottingham catchfly (*Silene nutans*)
- Night-flowering catchfly (*Silene noctiflora*)
- Bladder campion (*Silene vulgaris*)
- Soapwort (*Saponaria officinalis*)
- Wild marjoram (*Orignaum vulgare*)
- Borage (*Borago officinalis*)
- Yarrow (*Achillea millefolium*)
- Primrose (*Primula vulgaris*)
- Corn marigold (*Glebionis segetum*)
- Perforate St John's-wort (*Hypercium perforatum*)
- Wood forget-me-not (*Myosotis sylvatica*)
- Ox-eye daisy (*Leucantheum vulgare*)
- Corncockle (*Agrostemma githago*)
- Cornflower (*Centaurea cyanus*)

4.73 The ditch along the western edge should be enhanced for use by water voles as well as other wildlife species. Sustainable Drainage Systems (SuDS) may also need to be created in various locations across the site. This habitat can create new foraging opportunities for bats as well as other species. A pond edge mix is proposed for use along the main water

retention areas as well as the ditch network and should contain wildflowers and grasses suitable for sowing at the margins of pond, streams and ditches. The mixture proposed includes:

- Sneezewort (*Achillea ptarmica*)
- Wild Angelica (*Angelica sylvestris)*
- Marsh Marigold (*Caltha palustris*)
- Hemp Agrimony (*Eupatorium cannabinum*)
- Meadowsweet (*Filipendula ulmaria*)
- Square-stalked St John's Wort (*Hypericum tetrapterum*)
- Yellow Iris (*Iris pseudacorus*)
- Greater Birdsfoot Trefoil (*Lotus pedunculatus*)
- Gypsywort (*Lycopus europaeus*)
- Purple Loosestrife (*Lythrum salicaria*)
- Meadow Buttercup (*Ranunculus acris*)
- Water Figwort (*Scrophularia auriculata*)
- Ragged Robin *Silene flos-cuculi - (Lychnis flos-cuculi)*
- Devil's-bit Scabious (*Succisa pratensis*)
- Common Meadow-rue (*Thalictrum flavum*)
- Tufted Vetch (*Vicia cracca*)
- Meadow foxtail (*Alopecurus pratensis*)
- Sweet vernal-grass (*Anthoxanthum odoratum*)
- Crested dogstail (*Cynosurus cristatus*)
- Tufted hair grass (*Deschampsia cespitosa*)
- Common bent (*Agrostis capillaris*

4.74 Additional habitat can be created for a variety of species such as birds and insects in the form of green walls, which in turn will increase foraging opportunities for bats. Climbing plants can be grown onto trellis along the fence line dividing the two gardens. Species which can be planted include:

- Honeysuckle (*Lonicera japonica; L. fragantissima; L. standishii*);
- Clematis (*Clematis vitalba, C. armandii, C. alpina, C. montana, C. tangutica*);
- Ivy (*Hedera helix*);

- Climbing hydrangea (*Hydrangea petiolaris*);
- Dog rose (*Rosa canina*).

4.75 Shrub species can be planted along the retained hedgerows to create a layered habitat. These can provide a food source for invertebrates which in turn attract further species such as birds and bats. The layered structure is also beneficial to dormice and can provide food sources for this species. Recommended native species include

- dogwood (*Cornus sanguinea*),
- guelder rose (*Virbinum opulus*),
- wayfaring tree (*Virbinum lantana*),
- sweet briar (*Rosa rubigniosa*),
- burnet rose (*Rosa pimpinellifolia*),
- wild privet (*Ligustrum vulgare*),
- buckthorn (*Rhamnus cathartica*),
- butcher's broom (*Ruscus aculeatus*).

4.76 Bird boxes can also be installed on site to provide additional nesting opportunities for birds. Recommended boxes include Schwegler 1B and 2M nest boxes. Both provide added protection against cats. They can be placed on buildings or trees post-development.

4.77 Log and brush piles should be created under hedgerows to provide refugia and hibernacula for amphibians, reptiles, small mammals and invertebrates. Log piles should be located in a variety of locations, such as damp places, with some situated in more sunny locations. These should be stacked and perhaps some amounts of leaf litter added. Planting around log piles with such species as honeysuckle or clematis can also add value. Several of these should be added within the receptor area.

5.0 Impact Assessment

5.1 This section of the report forms an EcIA (Ecological Impact Assessment) and is designed to quantify and evaluate the potential impacts of the development on habitats and species present on site, or within the local area.

Methodology

5.2 The approach to this assessment accords with guidance presented within the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM 2018). The guidelines recommend the following approach to EcIA:

- Identification of the ecological features on site, both habitats and species, from baseline surveys;
- Identification of the works on site, both during construction and operation that are likely to have impacts on ecological features (habitats and species);
- Identification of the zone of influence;
- Evaluation of the ecological receptors likely to be affected;
- Identification of impacts, for example positive or negative, on receptors and assess their significance;
- Incorporation of mitigation measures to reduce potential impacts;
- Review assessment in light of mitigation of negative impacts;
- Assessment of cumulative impacts;
- Assessment of residual effects and the potential need for compensation for negative effects which remain significant after mitigation.

5.3 Receptors are defined as a feature affected by an impact that may have negligible value for nature conservation, and may have value at site, local, county, national, or international level. Impacts on ecology are assessed by (a) determining the level of important/sensitivity of the receptor, for example: national, county, or local; (b) determining the type, magnitude and timescale of the impact; and then (c) using this information on the receptor and impact to determine the significance of the impact: descried as major, moderate, or minor significant, or of negligible significance.

5.4 In essence, an EcIA assesses the activities associated with a proposed scheme that are likely to generate changes, within identified zone of influences, on identified ecological features and receptors. The proposals are subsequently reviewed, and iteration undertaken to include enhancements and mitigation to reduce negative impacts.

Assessment

5.5 The site is within 400m of the Chichester Harbour SPA. SAMMS contributions are likely to be required for housing developments on this site. Further consideration of the SPA would be required in terms of habitat linkages, functionally linked land and assessing potential impacts. Consultation with the LPA is advised.

5.6 The habitats on site are considered to have potential for supporting a range of protected species. Further surveys are required to establish whether dormice, water voles and reptiles are present on-site. The site hedgerows are also suitable habitat for foraging bats and breeding birds. The field networks may support over wintering bird populations.

5.7 In general, the habitats are widespread and common throughout the local area and the UK as a whole. The development of the site will not isolate or fragment nearby habitats or impact upon landscape connectivity, so long as boundary features are maintained. Enhancements recommended would maintain the ecological linkages and provide the basis of the green infrastructure development and the net gain provision within the site in line with local policy.

5.8 The impacts upon the site of the development cannot be fully assessed until the individual species surveys have been completed.

6.0 Conclusions

6.1 No masterplan for the site has been designed. This assessment is for the allocation of the site for future housing. The site is located within the zone of influence of Chichester and Langstone Harbour SPA and Ramsar, Solent Maritime SAC. SAMMS contributions are

likely to be required per dwellings built on site. Indirect impacts on the SPA must be considered with future proposals.

6.2 The site has been identified as having 'bat networks', 'water vole networks' and 'barn owl foraging habitat' on site through a mapping project from Forest Research and Chichester District Council.

6.3 This assessment found that the hedgerows on site would provide suitable foraging habitat for bats, and that through enhancement planting and mitigation, this network could be maintained and enhanced on site, through a sensitive design of future development plans. Trees identified as having roosting potential are recommended to be retained within a future design and all existing bat boxes on site are also recommended to be retained in situ.

6.4 The ditch network on site was considered suitable for supporting water voles and further surveys are recommended to be carried out between March and October. It is considered that through implementation of a buffer zone and native aquatic planting schemes, the ditches on site could also be enhanced for this species and accommodated alongside a new housing development on site.

6.5 No evidence of barn owls using the site was found at the time of the survey, however other birds of prey were noted on site. The site has been identified as having suitable foraging habitat. Land of better quality and of larger quantity is present further north west, past the A27, and is considered to be of greater benefit to barn owls than the small area on site. While the habitat loss would be a residual impact, the loss of such a small, fragmented area, is not considered to be significant in terms of barn owl conservation.

6.6 The site was considered to provide suitable habitat for dormice and reptiles. Local records are also present for these species close by. Further survey work would be required before any future planning application be made on site. Again, these species can be provided for within the site, through enhanced boundary habitats, or translocations off-site (reptiles only).

6.7 No evidence of badgers using the site was found at the time of the survey, however update surveys would be required prior to any development.

6.8 The site is considered to be suitable to support GCN and eDNA surveys have been undertaken on all waterbodies on-site and within 250m that were accessible.

6.9 Any shrub, hedgerow and tree removal is to be carried out outside of nesting bird season (March-September) inclusive, or after a nesting bird check by a suitably qualified ecologist. Any current bird boxes on site are recommended to be retained.

6.10 Recommendations for enhancements have been made within this report, aimed at improving the ecological value of the site and providing a net gain in biodiversity post-development.

6.11 It is considered that any development of the site can accommodate both wildlife and future housing if recommendations set out within this report are followed. While species specific works would help inform the master plan, general and species-specific site enhancements have been recommended within this report. These recommendations will help to accommodate both wildlife corridors and housing within the red line boundary.

7.0 References

Bright, P., Morris, P. & Mitchell-Jones, T. (2006) *The dormouse conservation handbook (Second edition).* English Nature, Peterborough.

Collings, J. (ed.) (2016) *Bat surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London.

Creswell, P., Harris, S. & Jeffies, D.J. (1990) *The history, distribution status and habitat requirements of the badger in Britain.* Nature Conservancy Council, Peterborough.

Joint Nature Conservation Committee (2010) *Handbook for Phase 1 habitat survey – a techniques for environmental audit.* JNCC, Peterborough.

Mitchell-Jones, A.J. (2004) *Bat Mitigation Guidelines.* English Nature, Peterborough.

Natural England (2001) *Great Crested Newt Mitigation Guidelines.* Natural England, Peterborough.

Neal, E. & Cheeseman, C. (1996) *Badgers*. T & A D Poyser Ltd, London.

Wilson, G.J., Harris, S. & McLaren, G. (1997) *Changes in British badger population, 1988-1997.* People's Trust for Endangered Species, London.

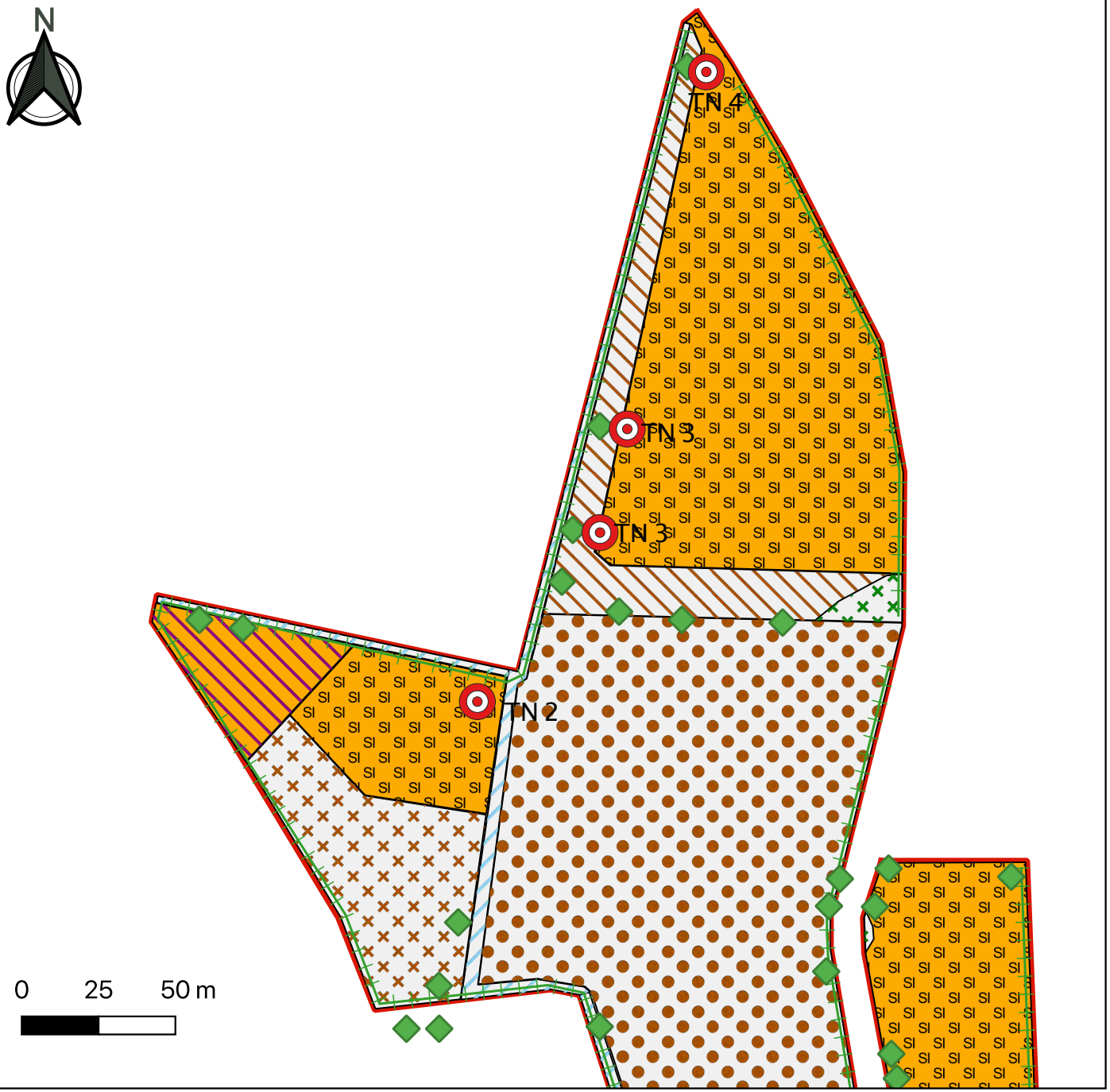
Internet resources:

Google Maps: www.google.co.uk/maps

Magic Interactive Map: www.magic.gov.uk

Chichester District Council: https://www.chichester .gov.uk/

Appendix 1: Phase 1 Habitat Map



Legend

- TN 4 - Bird of Prey Box
- TN 3 - Bat Boxes
- TN 2 - Hibernaculum
- Bat Potential Trees
- Hedgerows
- Marshy Grassland
- Scrub
- Tall Ruderals
- Semi-Improved Grassland with Tall Ruderals and Scrub
- Marginal Vegetation
- Tall Ruderals/Bare Earth/Scrub Matrix
- Semi-Improved Grassland
- Clay Lane Redline

Cient: Gleeson Strategic Land

Site: Land off Clay Lane, Fishbourne

Surveyors: Chris Jennings and Joel Cronin

Survey Date: 5th June 2019

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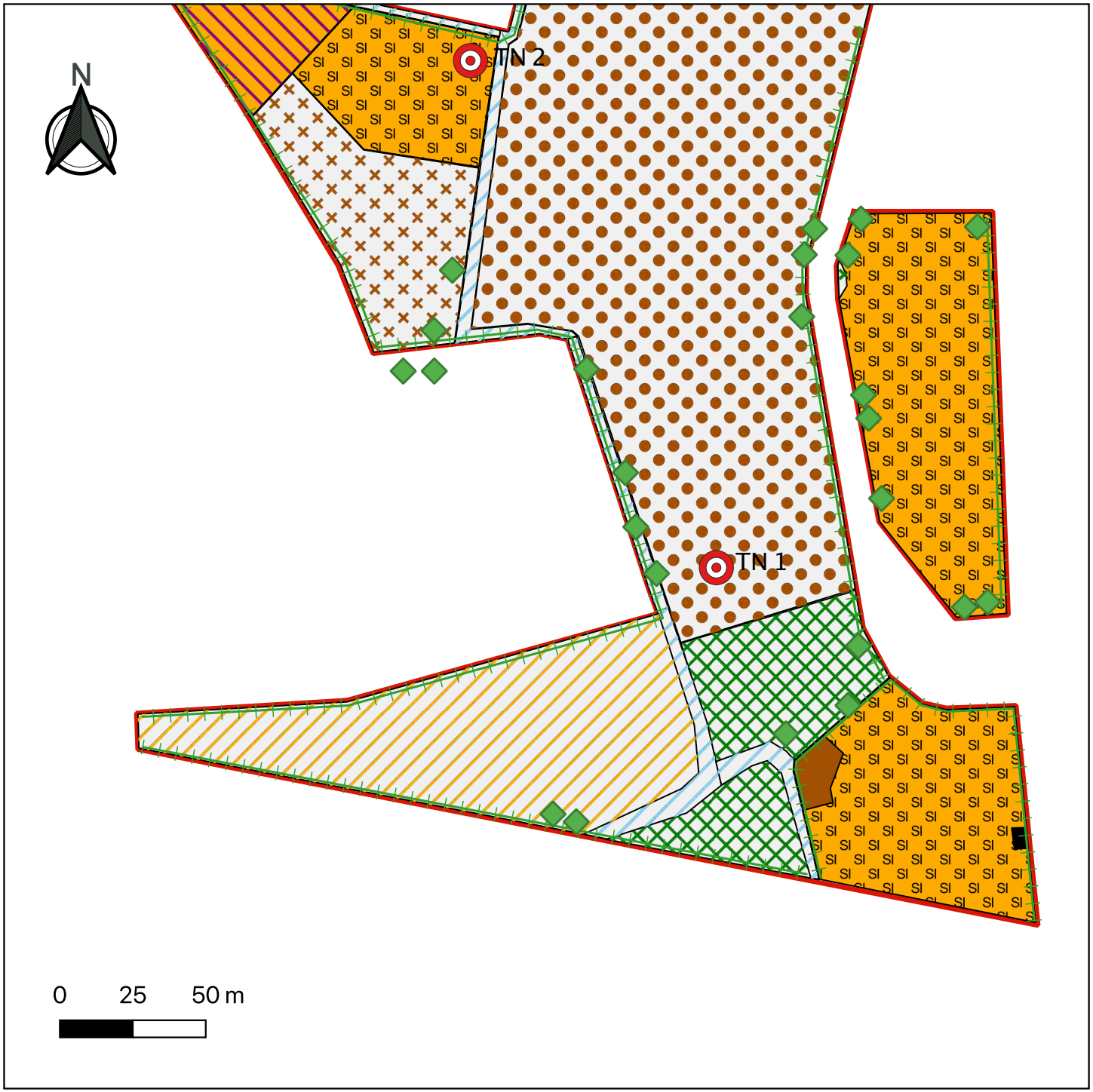

Legend

- TN 2 - Hibernaculum
- TN 1 - Brush Pile
- Bat Potential Trees
- Hedgerows
- Tall Ruderals/Grassland Mosaic
- Marshy Grassland
- Scrub
- Semi-Improved Grassland with Tall Ruderals and Scrub
- Marginal Vegetation
- Tall Ruderals/Scrub Mosaic
- Buildings
- Tall Ruderals and Bare Ground
- Tall Ruderals/Bare Earth/Scrub Matrix
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Appendix 2: Photo Document

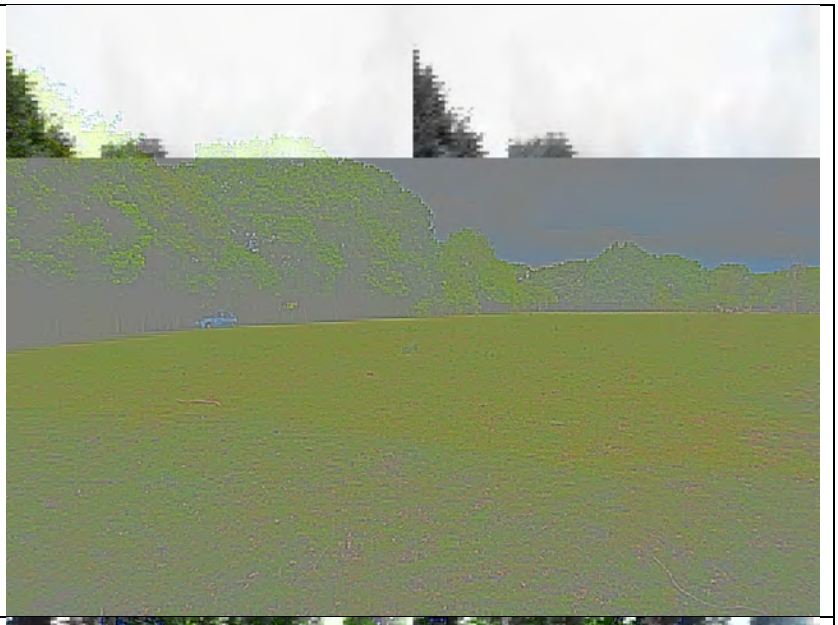
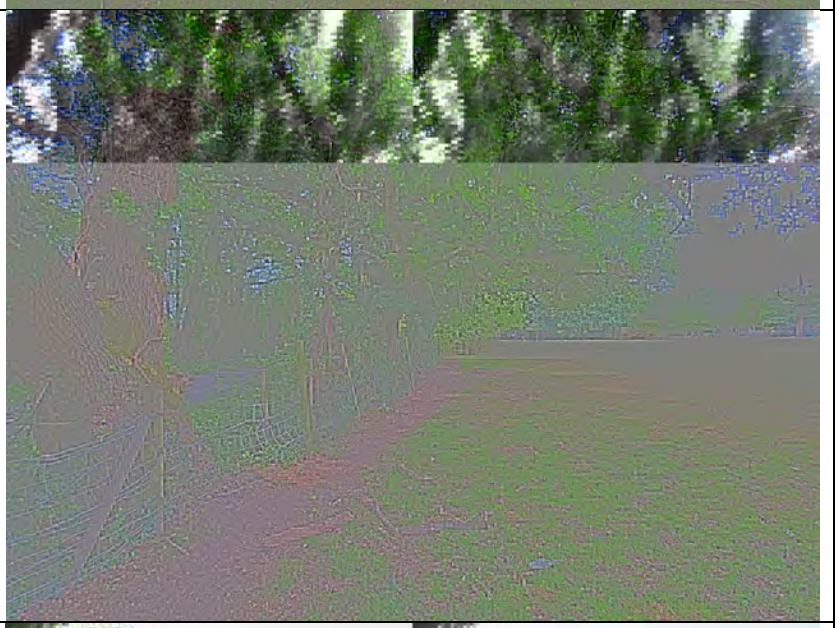
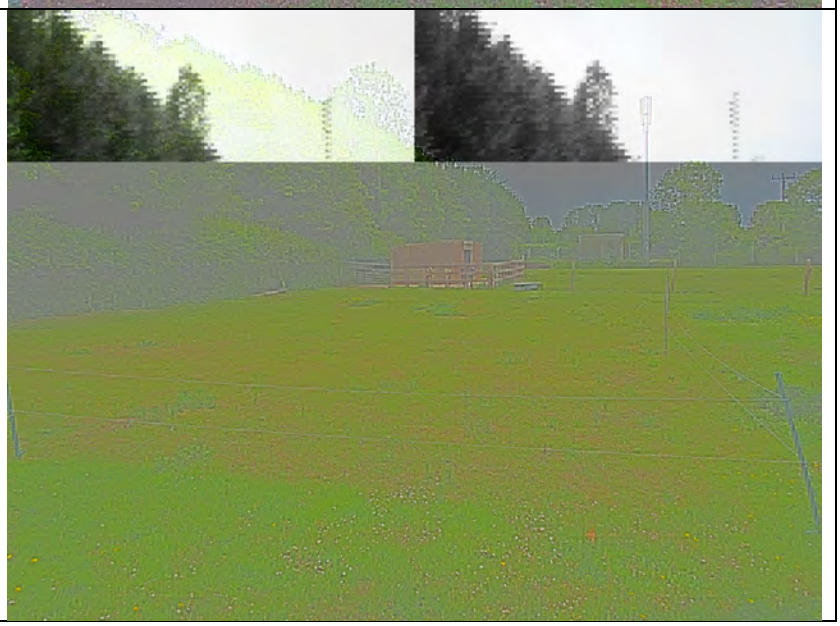
Photo 1: View from southern end of field 1	
Photo 2: View along western tree-line in field 1	
Photo 3: View of field 2 showing fence partitions	

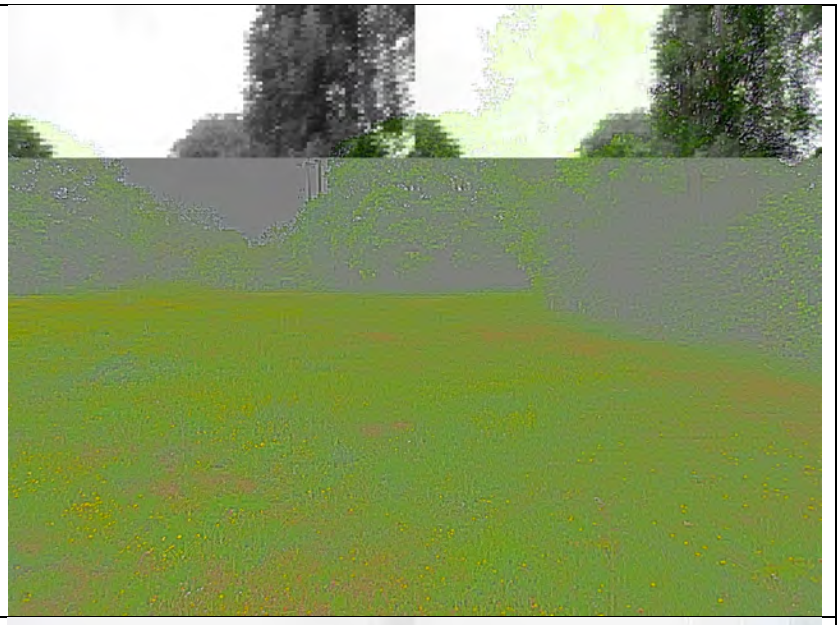
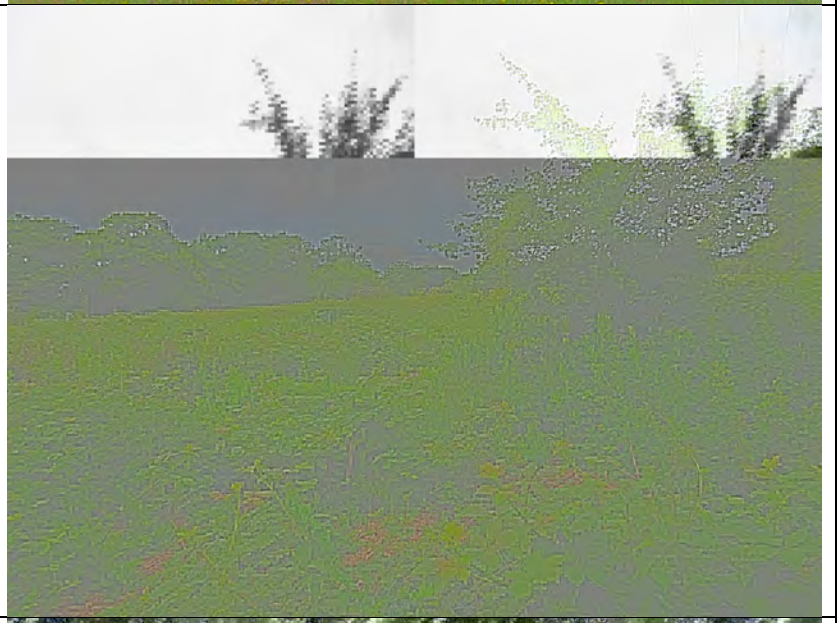
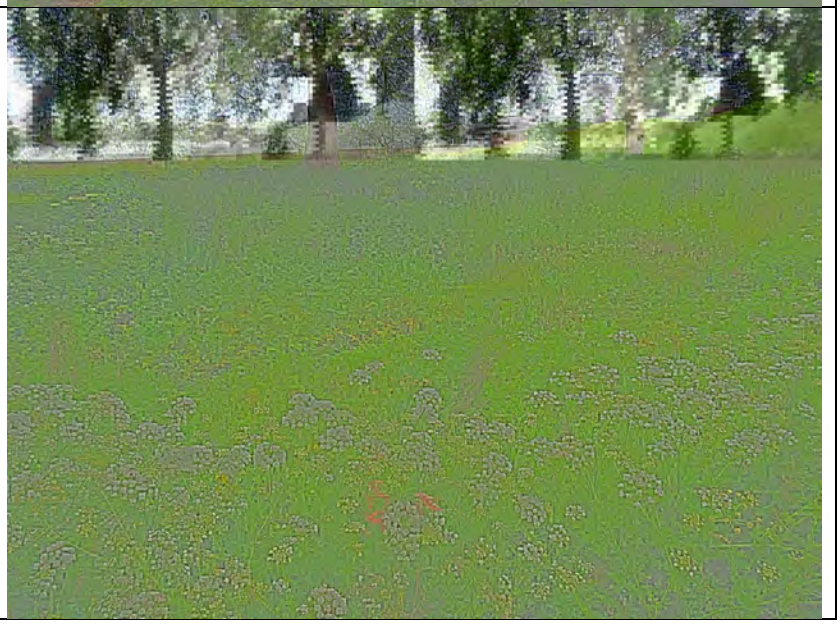
Photo 4: View of field 2 showing the hedgerow assessed as important (hedge 2)	
Photo 5: View from the southern end of field 4	
Photo 6: View of waterbody 3	

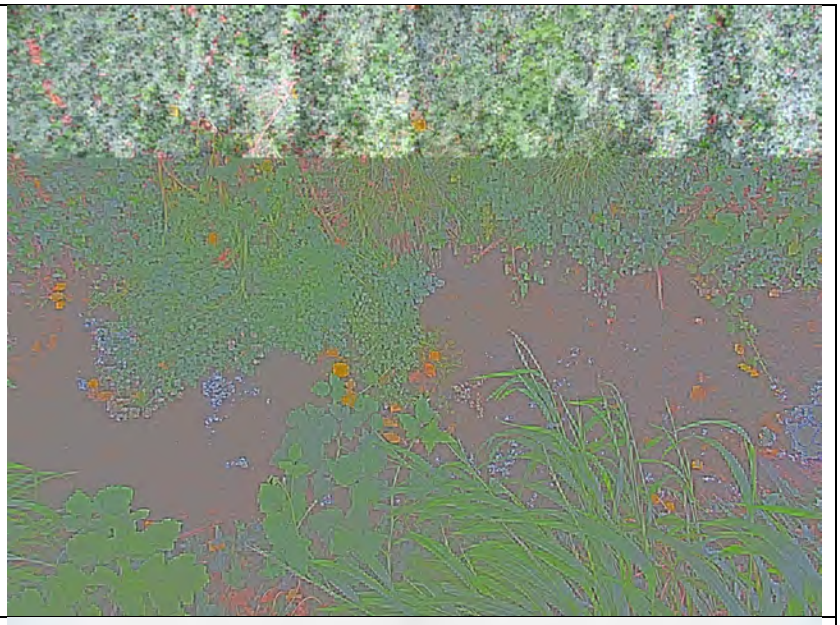
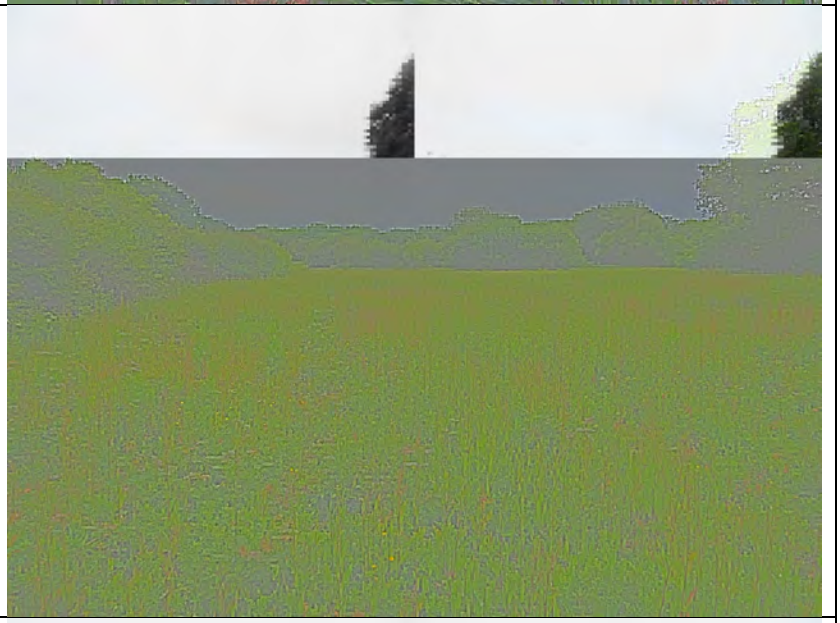
Photo 7: View of waterbody 2 showing standing water present	
Photo 8: View of field 3 from the western end	
Photo 9: View of one of the brash piles in field 4	

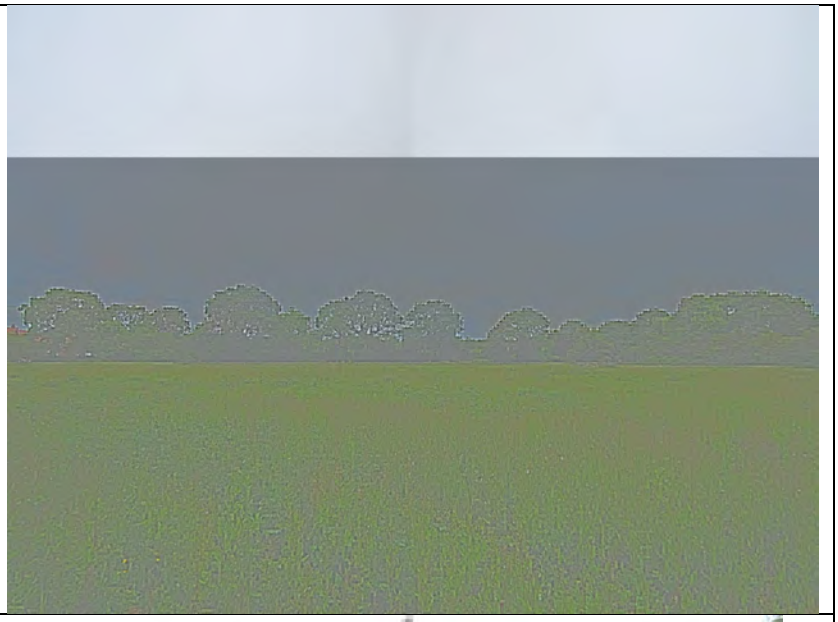
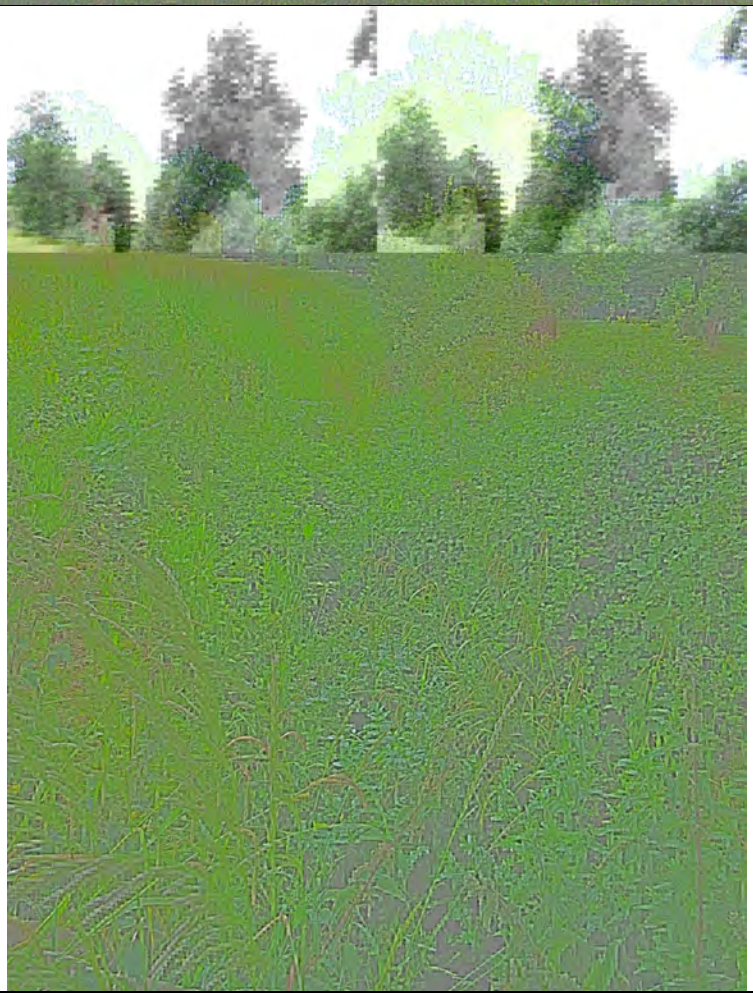
Photo 10: View of field 4	
Photo 11: View of the ditch between fields 4 and 5	

Photo 12: View of field 5	
Photo 13: View of the hibernacula on field 5	
Photo 14: View of waterbody 1	

Photo 15: View of hedge 4	
Photo 16: View of field 6	
Photo 17: View of the bird of prey box in field 6 north west corner	

Photo 18: View of one of the mature oak trees along the western edge of field 6 with a bat box in-situ	

Appendix 3: Biological Records

Ecological Data Search SxBRC/18/681 - Summary Report

An ecological data search was carried out for land at Clay Lane, Fishbourne on behalf of Emma Bagguley (The Ecology Partnership) on 11/12/2018.

The following datasets were consulted for this report:

	Requested	Radius/buffer size
Designated sites, habitats & ownership maps	Yes	2km
Protected, designated and invasive species	Yes	2km

Summary of results

Sites and habitats

Statutory sites	1 SAC / 1 SPA / 1 Ramsar / 1 SSSI / 1 AONB / 1 LNR
Non-statutory sites	2 LWS / 1 Notable Road Verge
Section 41 habitats	8 habitats
Ancient and/or ghyll woodland	Present

Protected and designated species

International designations	49 species	1,152 records
National designations	127 species	3,836 records
Other designations	312 species	7,548 records
Total	**338 species**	**8,285 records**
Invasive non-native	39 species	171 records

The report is compiled using data held by Sussex Biodiversity Record Centre (SxBRC) at the time of the request. SxBRC does not hold comprehensive species data for all areas. Even where data are held, a lack of records for a species in a defined geographical area does not necessarily mean that the species does not occur there – the area may simply not have been surveyed.

This summary page may be published.
The full report and maps may not be published or otherwise shared.

The data search report is valid until 11/12/2019 for the site named above.

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Approved: Alexia Tamblyn MA (Oxon) MSc CEnv MCIEEM FRGS

Date: 01/07/2019

Appendix 5555-01/2:

Great Crested Newt Survey

the ecology partnership

Great Crested Newt Survey 2019

Land off Clay Lane
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Contents

LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living animals and plants are capable of migration/establishing and whilst such species may not have been located during the survey duration, their presence may be found on a site at a later date.

The recommendations contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background

1.1 The Ecology Partnership was commissioned by Gleeson Strategic Land to undertake an eDNA survey for great crested newts on land off Clay lane, Fishbourne, Chichester, PO19 3RP.

1.2 This report presents the results of the eDNA survey, which aims to determine the likely presence or absence of great crested newts in the local area. This survey was recommended based on findings from the preliminary ecological appraisal carried out in June 2019.

1.3 Relevant legislation summarised in section 2. Section 3 of this report sets out the methodology of The Ecology Partnership's great crested newt surveys and the results of these surveys are found in section 4. These results are discussed in section 5 and conclusions are drawn in section 6 of this report.

Site Context and Status

1.4 The site is split into two land parcels, the larger parcel is situated to the west of Clay Lane with the smaller parcel situated to the east of Clay Lane (SU 83929 05210– site centre point). The site covers approximately 6ha and consists of mainly rough grassland and scrub with tall ruderals and some livestock grazed areas. Hedgerows and tree lines run along most of the site edges and there is a ditch network running through the site. The wider landscape is comprised largely of residential development and agricultural land with the A27 running to the east of the site.

1.5 There is new development to the west of the site and Fishbourne Roman Palace is located to the south. The Chichester and Langstone Harbour Special Protection Area (SPA), Ramsar, and SSSI (Special Site of Scientific Interest) is located 400m south. There is also Chichester Harbour AONB (Area of Outstanding National Beauty), Solent Maritime SAC

(Special Area of Conservation), and Brandy Hole Copse LNR (Local Nature Reserve) all located within the 2km radius of the site (shown on Figure 1 below).

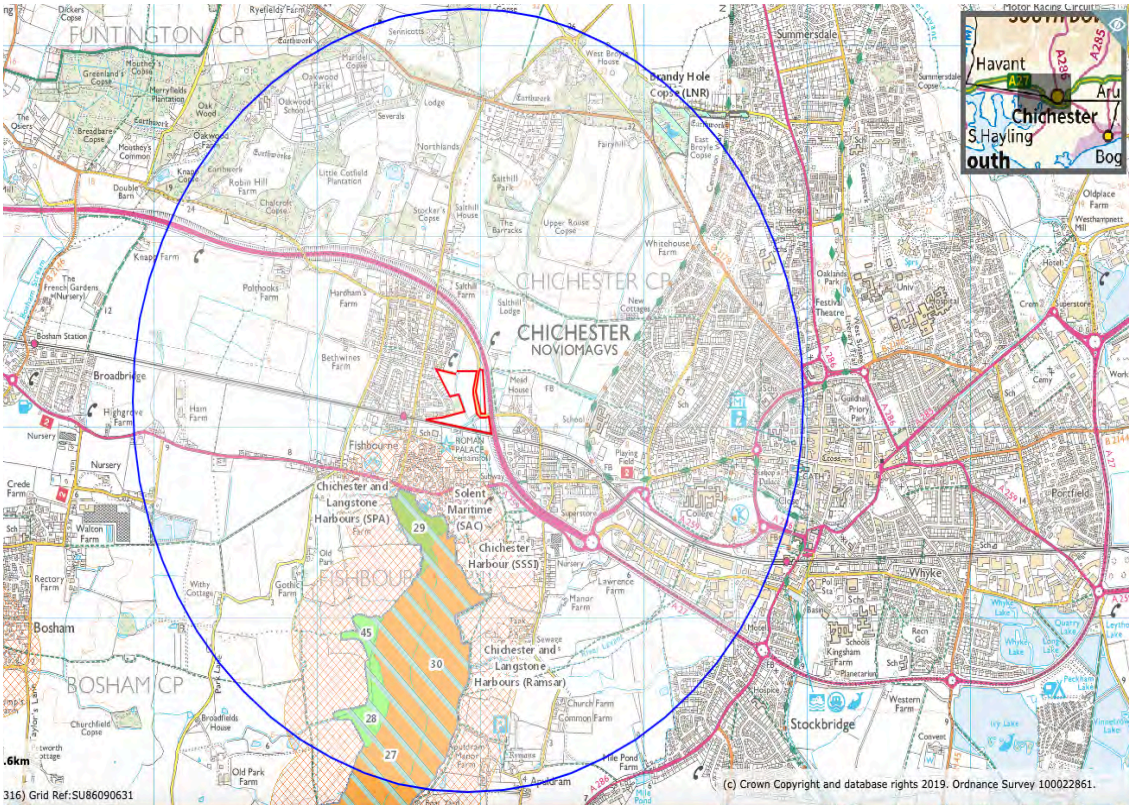

Figure 1: Map showing the various designations within a 2km search radius (blue line) around the site (red line

1.6 The approximate red line boundary of the site is show in Figure 2 below. This is also the approximate survey area.

Figure 2: Approximate red line boundary around the site

2.0 Legislation

2.1 Great crested newts are a European Protected Species (EPS) under Schedule 2 of the Conservation of Habitats and Species Regulations 2017, known as the Habitats Regulations. Great Crested Newts (GCN) are also protected in England under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

2.2 Under the Habitats Regulations 2017, it is an offence to:

- Deliberately capture, injure or kill any wild animal of an EPS;
- Deliberately disturb wild animals of any EPS;
- Deliberately take or destroy the eggs of an EPS;
- Damage or destroy a breeding site or resting place of an EPS

2.3 Under the Wildlife and Countryside Act 1981 (as amended), it is illegal to:

- Intentionally or recklessly disturb any GCN while it is occupying a structure or place which it uses for shelter or protection;
- Intentionally or recklessly obstruct access to any structure or placed used by a GCN for shelter or protection;
- Sell, offer or expose for sale any GCN

3.0 Great Crested Newt Survey Methodology

3.1 A ditch network was identified running across the site and 4 waterbodies were identified within 250m of the site (WB3-WB5) (Figure 3).

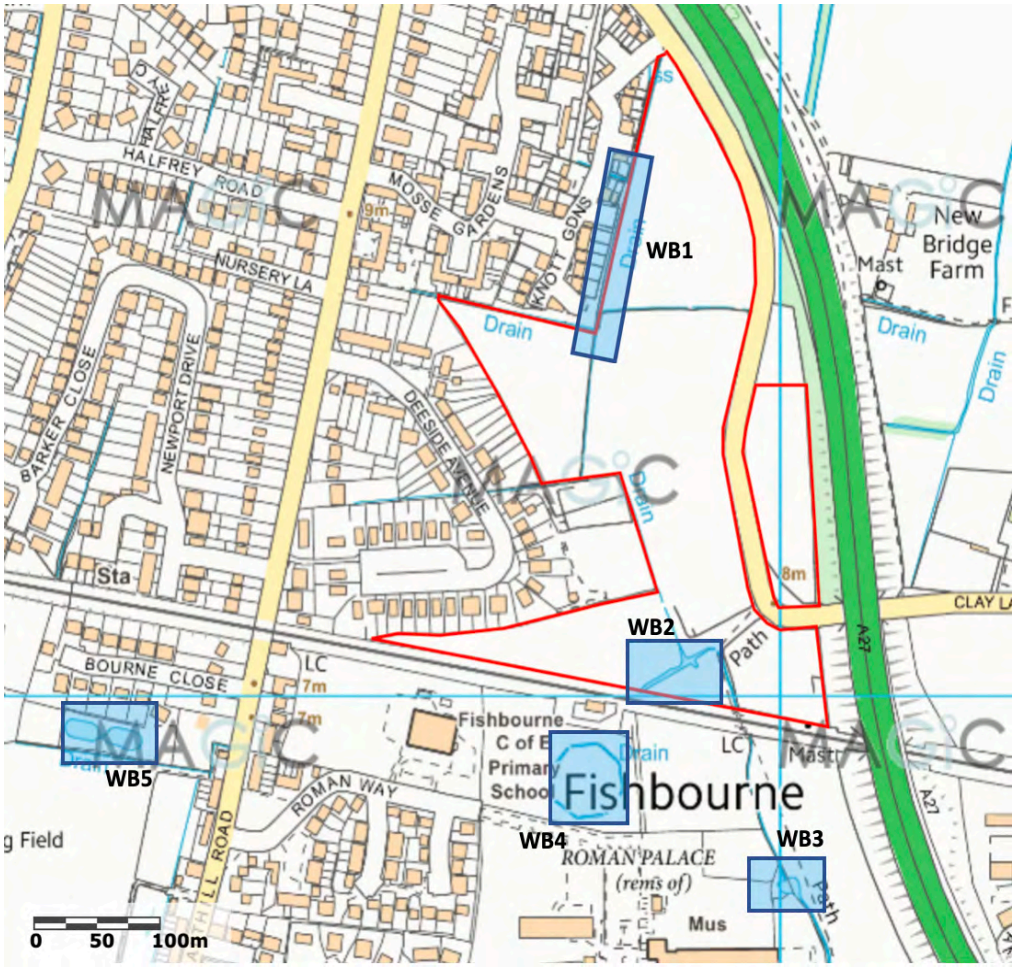

Figure 3: Location of ponds on-site and within 250m of site boundary.

Habitat Suitability Index Assessment

3.2 All accessible ponds were assessed for their current suitability to support GCN using the Habitat Suitability Index (HSI) assessment. Unfortunately, waterbodies 4 and 5 could not be accessed during the preliminary ecological appraisal, as they were located on private property and permission was not granted. Waterbody 3 was assessed on 5th June 2019 by surveyors Chris Jennings BSc (Hons) MSc MCIEEM and Joel Cronin BSc (Hons) MSc QCIEEM. Waterbody 4 was later observed from a public footpath during the reptile set-up on the 17th July 2019 by surveyors Joel Cronin BSc (Hons) MSc QCIEEM and Kieran McGranaghan BSc (Hons) PGDip GradCIEEM and was observed to be dry. The vegetation and leaf litter present suggested that this waterbody remains dry most years.

3.3 The HSI assessment calculates the suitability index for each of 10 categories. These are then analysed using the equation below to obtain the geometric mean or HSI score of the ten suitability indices.

$$HSI = (SI_1 x SI_2 x SI_3 x SI_4 x SI_5 x SI_6 x SI_7 x SI_8 x SI_9 x SI_{10})^{1/10}$$

The calculated score should be between 0 and 1 and will fall within one of several bands, which correspond to a given category for the pond.

Table 1: HSI scores and pond suitability

HSI score	Pond Suitability
<0.5	Poor
0.5-0.59	Below Average
0.6-0.69	Average
0.7-0.79	Good
>0.8	Excellent

eDNA Survey

3.4 An eDNA survey was also carried out. This survey analyses samples taken from the pond's water column for GCN DNA in order to give an indication of historical presence of GCN

in the pond. Access for sampling was requested from the land owners containing waterbodies 3, 4 and 5. Unfortunately, access was only granted for samples to be collected from waterbody 3.

3.5 In addition, the ditch network on site was also surveyed for GCN DNA in both the northern and southern sections.

3.6 All water samples were taken by Natural England GCN class licence holder Chris Jennings BSc (Hons) MSc MCIEEM on 24th June 2019. The samples were then analysed by SureScreen Scientifics in accordance with protocol set out in Appendix 5 of Biggs *et al.* (2014). Full details can be found within Appendix 1 of this report.

4.0 Survey Results

4.1 The HSI assessment score for waterbody 3 is summarised in Table 2 below. Waterbody 3 was assessed as having 'good' habitat suitability.

Table 2: HSI scores for Waterbody 3

Suitability Indices No.	Feature	Waterbody 3
1	Location	1
2	Area	0.4
3	Permanence	0.9
4	Water quality	0.67
5	Shading	1
6	Presence of waterfowl	0.67
7	Presence of fish	0.67
8	Pond density	1
9	Suitable newt habitat within 500m	0.33
10	Macrophyte content	1
	10th Root	0.72
	Pond Suitability	**Good**

4.2 Following analysis by SureScreen Scientifics, the following results were obtained for the eDNA surveys (Appendix 1):

- **Waterbody 3 (ID 3639): Negative**
- **Northern ditch Section (3637): Negative**
- **Southern ditch section (3638): Negative**

5.0 Discussion

5.1 Of the five waterbodies identified on and within 250m of the site:

- Waterbody 1 was the northern section of the on site ditch network and returned a negative result for GCN eDNA indicating likely absence;
- Waterbody 2 was the southern section of the on site ditch network and returned a negative result for GCN eDNA indicating likely absence;
- Waterbody 3 was assessed using the HSI as having 'good' suitability for GCN, but returned a negative GCN eDNA result indicating likely absence;
- Waterbodies 4 and 5 were located on private land and access for surveys was not granted, but WB 4 was observed to be dry and subsequently ruled out;

5.2 There are no biological records for GCN within 2km of the red line boundary in the past 10 years. As such it is considered unlikely that there are GCN present in metapopulations within the local area.

5.3 Movement and activity of newts from ponds depends on the surrounding habitat. If local refuges and food are abundant in habitats close to the pond, the newts are likely to remain in this area exploiting such resources. In addition, research by Jehle (2000) identified a 'terrestrial zone' of 63m around a breeding pond, within which 95% of summer refuges were located. A subsequent survey showed that after the breeding season, 64% of newts were recorded within 20m of the pond site (Jehle & Arntzen 2000). The off-site waterbody 5, which could not be accessed, was located approximately 250m south west of the red line boundary and separated by gardens and Salthill Road, making it unlikely for GCN to move onto site if the waterbody were to support them.

5.4 It is considered highly unlikely that GCN would be present on site due to the lack of suitable waterbodies within 250m and the negative eDNA results for waterbodies 1, 2 and 3. Consequently, no further surveys for GCN are recommended.

5.5 Considering that water voles and reptiles are known to be present on site, sensitive clearance of the vegetation on site will take place under ecological supervision. In the unlikely event that a GCN is found during the clearance, then works on site will stop and a suitably qualified ecologist will be required to assess the situation.

General Mitigation and Enhancement Strategy

5.6 When designing the final plan for the site, the use of the site as well as the local landscape as a whole must be considered in terms of the development proposals. The tree lines, hedgerows and ruderal margins should be retained where possible.

5.7 The edges of the site should be managed and enhanced according to the specifications in the June 2019 PEA. This will allow the hedgerows to act as corridors for a range of wildlife, including amphibians.

5.8 It is known that amphibians often get washed or fall into drainage gully pots along access roads and are subsequently unable to escape. Special wildlife-friendly kerb stones have been developed to include a bypass recess along the rear edge of the drainage grid (Figure 4). This provides a safe route around the road gullies for amphibians and other wildlife. These should be used on all gully pots within the development.

Figure 4: Wildlife kerb to be used on all gully pots within the development

5.9 Sustainable Urban Drainage Systems (SUDS) should also be incorporated into the design of the scheme to reduce surface water run-off and therefore the chance of amphibians being washed into gully pots. Examples include porous surfaces, permeable paving, filter beds, swales, green roofs, buffer strips and pond creation. A new pond / SUDS system is also recommended and will be enhanced for wildlife, including water voles, which in turn will provide suitability to support a range of common amphibians.

6.0 Conclusions

6.1 Five waterbodies were identified within 250m of the red line boundary, including a ditch network present on site (WB1-WB5). WB4 was ruled out as it contained no water.

6.2 The ditch network and the off-site WB3 were all surveyed for GCN eDNA on the 24th June 2019. All three waterbodies returned negative results.

6.3 WB 5 was unable to be accessed, but lies approximately 250m south west of the red line boundary, is separated from the site by Salthill Road. Considering the distance from the

site and the fragmented habitats between, if newts are present within this pond, it is considered highly unlikely that they would be present on site.

6.4 Therefore, it is considered highly unlikely that GCN are using the site, and the development of the site would not impact upon the ability of any GCN in the area to survive, breed, reproduce, rear young or migrate nor would it significantly affect the local distribution or abundance of the species.

6.5 All tested waterbodies were negative for eDNA and there are no local records. As such it is considered that GCNs are not present on site and no further survey work would be recommended.

7.0 References

English Nature (2001) *Great Crested Newt Mitigation Guidelines.* Natural England, Peterborough.

Gent, T. & Gibson, S. eds. (1998) *Herpetofauna Workers Manual*. Joint Nature Conservation Committee, Peterborough.

Langton, T.E.S., Beckett, C.L. and Foster, J.P. (2001) *Great Crested Newt Conservation Handbook.* Froglife, Halesworth.

HGBI (1998) *Evaluating local mitigation/translocation programmes: Maintaining Best Practices and Lawful Standards. HGBI advisory notes for Amphibian and Reptile Groups (ARGs).* Herpetofauna Groups of Britain and Ireland, c/o Froglife, Halesworth.

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)**: 143-155.

Internet sources:

Google Maps: www.maps.google.co.uk

Magic Maps: www.magic.gov.uk

Appendix 1: eDNA Survey Results

SureScreen Scientifics

Folio No: E5960
Report No: 1
Order No: TEP100
Client: THE ECOLOGY PARTNERSHIP
Contact: Vicky Hale
Contact Details: vicky@ecologypartnership.com
Date: 17/07/2019

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS

Date sample received at Laboratory: 04/07/2019
Date Reported: 17/07/2019
Matters Affecting Results: None

RESULTS

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
3637	Fishbourne N Ditch, Land Off Clay Lane	SU 83817 05279	Pass	Pass	Pass	Negative	0
3638	Fishbourne S Ditch, Land Off Clay Lane	SU 83944 05033	Pass	Pass	Pass	Negative	0
3639	Fishbourne Off Site Pond, Land Off Clay Lane	SU 84005 04859	Pass	Pass	Pass	Negative	0

SUMMARY

When Great Crested Newts (GCN); Triturus cristatus inhabit a pond, they deposit traces of their DNA in the water as evidence of their presence. By sampling the water, we can analyse these small environmental DNA (eDNA) traces to confirm GCN habitation, or establish GCN absence.

The water samples detailed below were submitted for eDNA analysis to the protocol stated in DEFRA WC1067 (Latest Amendments). Details on the sample submission form were used as the unique sample identity.

RESULTS INTERPRETATION

Lab Sample No.- When a kit is made it is given a unique sample number. When the pond samples have been taken and the kit has been received back in to the laboratory, this sample number is tracked throughout the laboratory.

Site Name- Information on the pond.

O/S Reference – Location/co-ordinates of pond.

SIC- Sample Integrity Check. Refers to quality of packaging, absence of tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to results errors. Inspection upon receipt of sample at the laboratory. To check if the Sample is of adequate integrity when received. Pass or Fail.

DC- Degradation Check. Analysis of the spiked DNA marker to see if there has been degradation of the kit since made in the laboratory to sampling to analysis. Pass or Fail.

IC- Inhibition Check- PCR inhibitors can cause false results. Inhibitors are analysed to check the quality of the result. Every effort is made to clean the sample pre-analysis however some inhibitors cannot be extracted. An unacceptable inhibition check will cause an indeterminate sample and must be sampled again.

Result- NEGATIVE means that GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as no evidence of GCN presence. POSITIVE means that GCN eDNA was found at or above the threshold level and the presence of GCN at this location at the time of sampling or in the recent past is confirmed. Positive or Negative.

Positive Replicates- To generate the results all of the tubes from each pond are combined to produce one eDNA extract. Then twelve separate analyses are undertaken. If one or more of these analyses are positive the pond is declared positive for the presence of GCN. It may be assumed that small fractions of positive analyses suggest low level presence but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive.

METHODOLOGY

The laboratory testing adheres to strict guidelines laid down in WC1067 Analytical and Methodological Development for Improved Surveillance of The Great Crested Newt, Version 1.1

The analysis is conducted in two phases. The sample first goes through an extraction process where all six tubes are pooled together to acquire as much eDNA as possible. The pooled sample is then tested via real time PCR (also called q-PCR). This process amplifies select part of DNA allowing it to be detected and measured in ‘real time’ as the analytical process develops. qPCR combines PCR amplification and detection into a single step. This eliminates the need to detect products using gel electrophoresis. With qPCR, fluorescent dyes specific to the target sequence are used to label PCR products during thermal

cycling. The accumulation of fluorescent signals during the exponential phase of the reaction is measured for fast and objective data analysis. The point at which amplification begins (the Ct value) is an indicator of the quality of the sample. True positive controls, negatives and blanks as well as spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared so they act as additional quality control measures.

The primers used in this process are specific to a part of mitochondrial DNA only found in GCN ensuring no DNA from other species present in the water is amplified. The unique sequence appropriate for GCN analysis is quoted in DEFRA WC 1067 and means there should be no detection of closely related species. We have tested our system exhaustively to ensure this is the case in our laboratory. We can offer eDNA analysis for most other species including other newts.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. Kits are manufactured by SureScreen Scientifics to strict quality procedures in a separate building and with separate staff, adopting best practice from WC1067 and WC1067 Appendix 5. Kits contain a ‘spiked’ DNA marker used as a quality control tracer (SureScreen patent pending) to ensure any DNA contained in the sampled water has not deteriorated in transit. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd also participate in Natural England’s proficiency testing scheme and we also carry out inter-laboratory checks on accuracy of results as part of our quality procedures.

Reported by: Sarah Evans **Approved by:** Chris Troth

End Of Report

The Ecology Partnership

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www.ecologypartnership.com

Approved by: Alexia Tamblyn MA (Oxon) MSc CEnv MCIEEM FRGS,

Managing Director

Date: 25/11/2019

Appendix 5555-01/3:

Reptile Survey

Reptile Survey 2019

Land off Clay Lane
Chichester, West Sussex

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Contents

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Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living animals and plants are capable of migration/establishing and whilst such species may not have been located during the survey duration, their presence may be found on a site at a later date.

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It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background

1.1 The Ecology Partnership was commissioned by Gleeson Strategic Land to undertake a reptile survey of land off Clay lane, Fishbourne, Chichester, PO19 3RP. This survey was recommended based on findings from the preliminary ecological appraisal carried out in June 2019 and the accompanying biological records search from SxBRC.

1.2 This report presents the results of the surveys on site, which aim specifically to determine the likely presence or absence of reptiles on the site.

1.3 Section 2 of this report sets out the methodology of The Ecology Partnership's survey. The results are contained in Section 3 and the implications discussed in Section 4. Conclusions are provided in section 5 of this report.

Site Context and Status

1.4 The site is split into two main land parcels, the larger parcel is situated to the west of Clay Lane with the other smaller parcel situated to the east of Clay Lane (SU 83929 05210– site centre point). The site covers approximately 6ha and consists of mainly rough grassland and scrub with tall ruderals and some livestock grazed areas. Hedgerows and tree lines run along most of the site edges and there is a ditch network running through the site. The wider landscape is comprised largely of residential development and agricultural land with the A27 running to the east of the site.

1.5 There is new development to the west of the site and Fishbourne Roman Palace is located to the south. The Chichester and Langstone Harbour Special Protection Area (SPA), Ramsar, and SSSI (Special Site of Scientific Interest) is located 400m south. There is also Chichester Harbour AONB (Area of Outstanding National Beauty), Solent Maritime SAC (Special Area of Conservation), and Brandy Hole Copse LNR (Local Nature Reserve) all located within the 2km radius of the site (shown on Figure 1 below).

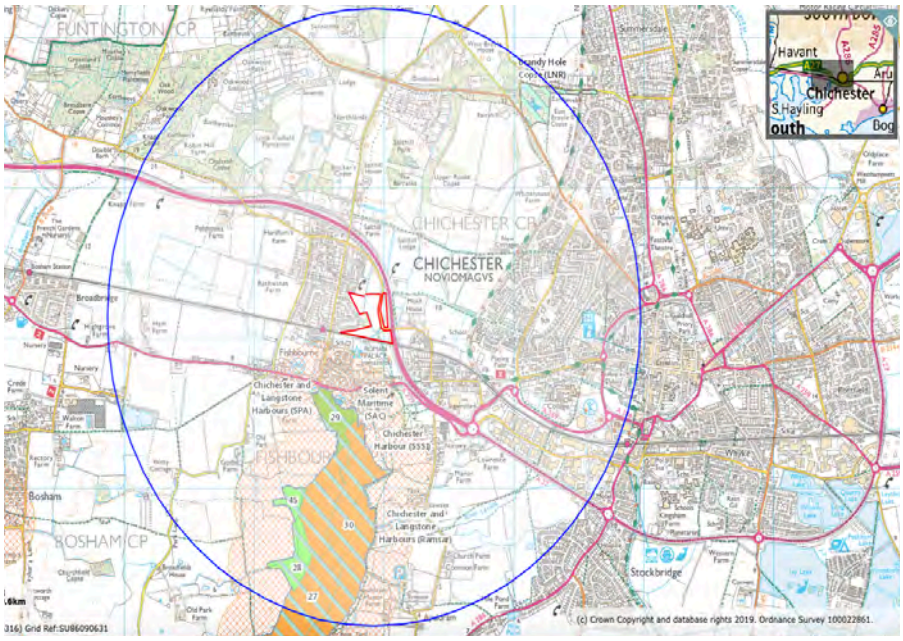

Figure 1: Map showing the various designations within a 2km search radius (blue line) around the site (red line)

1.6 The approximate red line boundary of the site is shown in Figure 2 below. This is also the approximate survey area.

Figure 2: Approximate red line boundary around the site

1.7 The proposals have yet to be finalised and will be influenced by a number of surveys, of which ecology is one. However, plans will include a residential development.

Legislation

1.8 In the UK, there are six native reptile species. The four widespread species are adder (*Vipera berus*), grass snake (*Natrix helvetica*), common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*). The two rare species are smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*).

1.9 The widespread reptiles are protected under the Wildlife and Countryside Act 1981 (as amended) against intentional killing and injuring and the sale of a wild reptile or any part of such animal. The rare reptiles also receive legal protection under the Conservation of Habitats and Species Regulations 2010 against deliberate injury, killing, capture or disturbance of a rare reptile and damage or obstruction of any place used for shelter or protection.

1.10 All six reptile species are also listed as species of principal importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, which means local authorities have a legal duty to take their conservation into account.

2.0 Reptile Survey Methodology

2.1 A terrestrial survey of the site for reptiles was carried out over 7 survey visits between 29th July and 18th September 2019. Prior to the commencement of the survey, the site was set up with artificial refugia (roofing felts) for reptiles on the 17th and 25th of July 2019.

2.2 Reptile mats were placed liberally around the areas of suitable habitat on site, concentrated mainly along the site boundaries as seen in Figure 3 below. The two areas without reptile mats, the south east corner and the field to the east of Clay Lane, were not surveyed as they were being grazed by livestock. The mats were left in place for a bedding-in period of 7 days prior to the commencement of the reptile survey as recommended in advice from

Natural England. The timing and number of surveys completed were based on guidelines produced by Froglife (1999) and Gent and Gibson (1998). A total of seven survey visits were carried out to check the refugia for the presence of reptiles. Visits were only carried out if the weather conditions were suitable for locating reptiles. On each visit to the site, a minimum of one circuit to check all refugia was carried out.

Figure 3: Approximate locations of reptile mats, shown by the blue lines

2.3 Any accessible natural refugia were also surveyed during the visits. Any natural refugia, such as log piles and brash piles, were lifted and hand searched for evidence of reptiles.

3.0 Reptile Results

3.1 Over seven visits a peak count of 7 adult common lizards (*Zootoca vivipara*) with 3 adult male, 39 adult female, 14 sub-adult and 7 juvenile slow worms (*Anguis fragilis*) was recorded. The results are summarised in Table 1 below.

Table 1: Reptile survey results

Visit	Date	Temperature (°C)	Weather	Reptile species & number
1	30/06/2019	20	Warm and overcast evening	1 adult female, 2 adult and 4 juvenile common lizards
2	22/08/2019	18	Bright and sunny morning	1 adult male, 13 adult female, 13 sub-adult and 2 juvenile slow worms
3	28/08/2019	16	Bright and sunny morning	1 adult common lizard 3 adult male, 7 adult female, 3 sub-adult and 6 juvenile slow worms
4	10/09/2019	17	Overcast and humid afternoon	1 adult male, 2 adult and 8 juvenile common lizards 4 adult male, 8 adult female, 4 sub-adult and 15 juvenile slow worms
5	12/09/2019	18	Overcast and muggy	7 adult common lizards 3 adult male, 39 adult female, 14 sub-adult and 7 juvenile slow worms
6	16/09/2019	16	Bright and sunny morning	3 adult male, 5 adult female, 5 sub-adult and 13 juvenile slow worms
7	18/09/2019	14	Bright and sunny morning	2 adult male, 3 adult female, 1 sub-adult and 1 juvenile slow worm

3.2 The slow worms and common lizards were found dotted at various points around the site with some hot-spots were reptiles were often found shown below (Figure 4). The hot-spots where reptiles were found most often were generally areas with a mix of habitat types such as at the wooded edges of the site or at grassy clearings within the scrub.

Figure 4: Location of reptile hot-spots (green circles) on the site

3.3 No suitable habitat for reptiles was identified to the east of Clay Lane due to extensive grazing by sheep and horses, and later cows.

4.0 Discussion

4.1 Two species of reptile were found on site: common lizards and slow worms. No evidence of any other reptile species was found on site, but their presence cannot be ruled out with any certainty.

4.2 The size of a reptile population can be estimated using the Froglife (1999) scoring system. This system assumes a density of 10 refugia per hectare, a number exceeded in our survey. A population size class assessment, which is based on the number of adults recorded in one survey visit, can be made using Table 2.

Table 2: Population class assessment categories (Froglife 1999)

	Low Population (Score 1)	Good Population (Score 2)	Exceptional Population
Adder	<5	5-10	>10
Common Lizard	<5	5-20	>20
Grass Snake	<5	5-10	>10
Slow Worm	<5	5-20	>20

4.3 According to the Froglife criteria, it is considered that there is a 'good' population of common lizards on site and an 'exceptional' population of slow worms. The recommended number of mats per hectare was exceeded during the survey, but the number of slow worms detected was still so high that the population is considered to be 'exceptional'.

4.4 To qualify as a Key Reptile Site, the site must meet at least one of the following criteria:

- Supports three or more reptile species
- Supports two snake species
- Supports an exceptional population of one species (See table 2 above)
- Supports an assemblage of species scoring at least 4 (See table 2 above)
- Does not satisfy the first 4 criteria, but which is of particular regional importance due to local rarity.

4.5 This site is classified as a key reptile site due to the presence an 'exceptional' population of slow worms. Consequently, it is recommended that a mitigation strategy is developed to ensure that reptiles are not harmed by the development.

Reptile Mitigation Strategy

4.6 The final plans are not yet known, but will likely result in the majority of the semi-improved grasslands, scrub, tall ruderals and mosaics of all three being cleared to build a residential development. Therefore, the reptiles in this area must be moved outside the construction zone to ensure that individuals are not harmed by the proposals.

4.7 Mitigation will involve the construction of a reptile fence around the development footprint. The habitats outside the reptile fence are to be maintained and enhanced. The habitats within the fence are to be cleared of reptiles. The reptile fence will be constructed following the standard below (Figure 5).

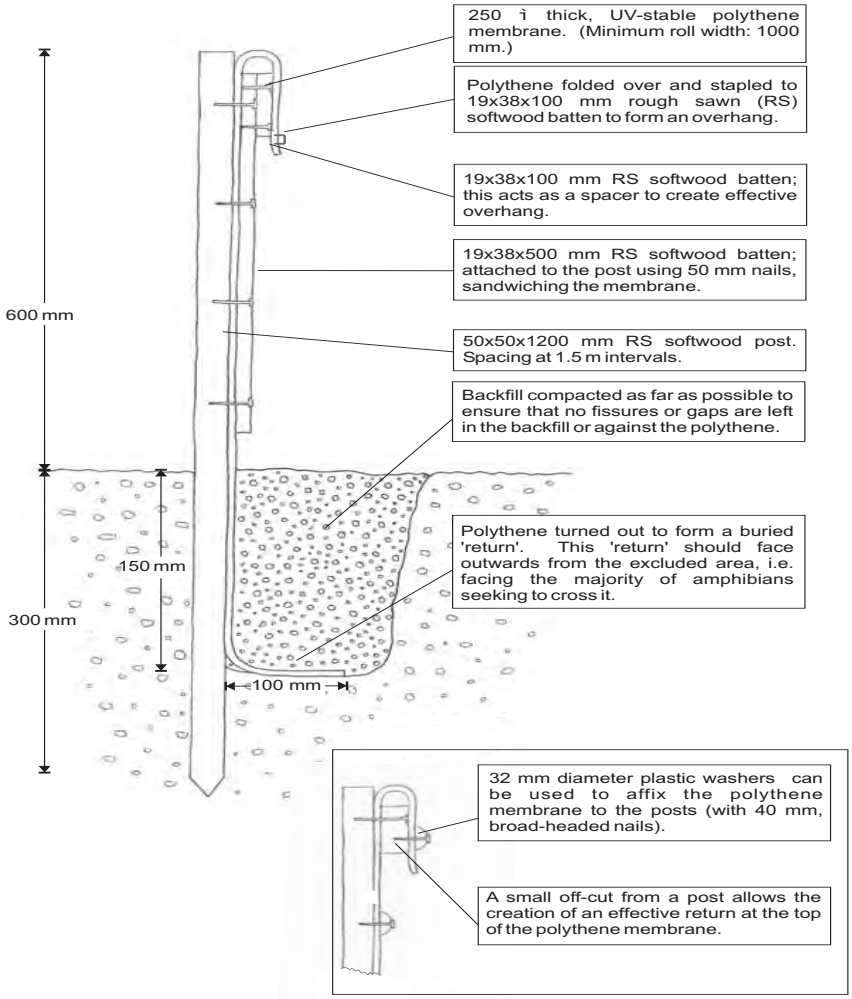

Figure 5: Fence line standards

4.8 With the exclusion fence set-up, the area inside can be trapped intensively for reptiles. Artificial refugia for the reptiles would be set out in a density of at least 50 refugia per hectare of suitable habitat (HGBI guidelines 1998) and allowed to bed in. Trapping will take place in optimal weather conditions, between March and October (inclusive). The published guidance states that a period of at least 90 days trapping in suitable weather is required for an 'exceptional' population of slow worms (HGBI guidelines 1998). However, the size of the site also needs to be considered. An initial period of at least 60 days is advocated before review by a suitably qualified ecologist.

4.9 A receptor site for the reptiles that are to be removed needs to be identified in-situ. Given the size of the site, it is considered that there will be sufficient space for the reptiles to be relocated within the red line boundary, but a suitably sized area will need to be specified within the masterplan. It is suggested that an area in the southern section of the site of at least 0.8ha is allocated for reptiles, which could tie in with the water vole mitigation strategy. The receptor site will need to be managed for reptiles and additional reptile refugia will need to be created to increase the reptile carrying capacity. It is also recommended that the site is compartmentalised during the trapping and mitigation.

4.10 Once the trapping has been completed, and 5 consecutive no reptile catch days are reached, the vegetation requiring removal will then be strimmed to 150mm, checked, and then finally strimmed down to ground level. This will be undertaken under ecological supervision. The arisings can be taken off site or placed in several compost heaps within the retained habitat, providing good habitat for breeding slow worms and grass snakes.

4.11 For the final stage of the translocation process, any natural reptile refugia will need to be dismantled by hand or using sensitive machine work under close supervision of an ecologist.

4.12 The mitigation strategy will therefore follow:

- Reptile fencing being placed around the edges of the site (and across the site to compartmentalise different areas for trapping), ensuring that the area outside the development footprint is fenced off, therefore preventing any potential movement of

reptiles on to the site. This physical barrier will protect any species using the edges of the site.

- The site will be trapped until there are 5 clear days. The slow worms and common lizards will be removed from the site. The fence line will prevent them from moving back on to the construction zone.
- This area will be monitored during site works by an ecologist to ensure that the fence line is fit for purpose and that the area is respected as a 'wildlife exclusion area'.
- Once 5 consecutive no reptile catch days have been gained, the vegetation within the development zone will be strimmed.
- Any areas which support dense vegetation should be removed sensitively under ecological supervision. The process would entail a visual inspection and fingertip search by an ecologist for the presence of reptiles. This is followed by a cut of the vegetation to 150mm above ground. This cut is inspected once more for the presence of reptiles. Finally, vegetation is cut to ground level.
- Final clearance works and sensitive soil removal will also be carried out under the supervision of an ecologist.
- Once this is complete, development works can start.

4.13 It is always recommended that enhancements are included within the plans for a range of species. Including, understorey planting with species such as hawthorn, blackthorn, honeysuckle and hazel, along with shrubs such as dog rose, holly and dogwood which are important sources of food for native wildlife and provide a layering of different habitats along the boundaries of the site.

4.14 Any open green spaces as part of the development should aim to leave a section of meadow which is cut only once a year to provide an area on site for reptiles and other wildlife, such as invertebrates and birds. These areas can be planted with species of value to wildlife and appropriate seed mixes can be purchased from native species stockists.

4.15 It is also recommended that log piles are created for use as refugia by reptiles, amphibians, small mammals and invertebrates (Figure 6). These can be located in a variety of locations, such as damp places with some situated in sunnier locations. They can be placed close to retained scrub and grassland, around the very edges of the site and positioned under

mature trees. These should be stacked and perhaps some leaf litter added. Planting around log piles with species such as honeysuckle or clematis can also add value.

Figure 6: Log piles and hibernacula can be created within the edges of the site or in the retained habitats on site

5.0 Conclusions

5.1 The site contained a 'good' population of common lizards and an 'exceptional' population of slow worms within the red line boundary. Both species were found dotted across the site.

5.2 The development will involve the loss of some semi-improved grassland, tall ruderals and scrub habitat. The common lizards and slow worms present are required to be translocated from the area to be affected by future works. The receptor site for the reptiles to be translocated into will be incorporated into the design of the site and should be enhanced for reptiles prior to the start of the translocation.

5.3 It is considered that the translocation of common lizards and slow worms would ensure that none are harmed by the development.

5.4 General site enhancements have also been recommended to provide new opportunities for a range of wildlife post-development.

6.0 References

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

Gent, T. & Gibson, S. eds. (1998) *Herpetofauna Workers Manual*. Joint Nature Conservation Committee, Peterborough.

HGBI (1998) *Evaluating local mitigation/translocation programmes: Maintaining Best Practices and Lawful Standards. HGBI advisory notes for Amphibian and Reptile Groups (ARGs).* Herpetofauna Groups of Britain and Ireland, c/o Froglife, Halesworth.

Internet resources:

Google Maps: www.maps.google.co.uk

Magic Maps: www.magic.gov.uk

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Approved by: Alexia Tamblyn MA (Oxon) MSc CEnv MCIEEM FRGS,

Managing Director

Date: 25/11/2019

Appendix 5555-01/4:

Dormouse Survey

Dormouse Surveys 2019 – 2020

Land off Clay Lane,

Fishbourne,

Chichester

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Contents

LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living animals and plants are capable of migration/establishing and whilst such species may not have been located during the survey duration, their presence may be found on a site at a later date.

This report provides a snap shot of the species that were present at the time of the survey only and does not consider seasonal variation. Furthermore, where access is limited or the site supports habitats which are densely vegetated only dominant species maybe recorded.

The recommendations contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background

1.1 The Ecology Partnership was commissioned by Gleeson to undertake a dormouse survey of land off Clay Lane, Fishbourne, Chichester, PO19 3RP. This survey was recommended based on findings from the preliminary ecological appraisal (PEA) carried out in June 2019 and the presence of dormouse records within the last ten years within 500m south of the site. It is believed that the record likely came from the area of woodland to the south of the A259 or the woodland corridor flanking the A27 which both have connectivity to the site.

1.2 This report presents the results of the surveys on site, which aims specifically to determine the likely presence or absence of dormice on site.

1.3 Section 2 of this report summarises previous surveys and section 3 sets out the methodology of The Ecology Partnership's survey. The results are contained in Section 4 and the implications discussed in Section 5. Conclusions are provided for in section 6 of this report.

Site Context and Status

1.4 The site is split into two parcels, the larger parcel is situated to the west of Clay Lane with the other smaller parcel situated to the east of it (SU 83929 05210– site centre point). The site covers approximately 6ha and consists of mainly rough grassland and scrub with tall ruderals and some livestock grazed areas. Hedgerows and tree lines run along most of the site edges and there is a ditch network running through the site. The wider landscape is comprised largely of residential development and agricultural land with the A27 running to the east of the site.

1.5 There is new development to the west of the site and Fishbourne Roman Palace is located to the South. The Chichester and Langstone Harbour Special Protection Area (SPA), Ramsar, and SSSI (Special Site of Scientific interest) is located 400m south. There is also Chichester Harbour AONB (Area of Outstanding National Beauty), Solent Maritime SAC

(Special Area of conservation), and Brandy Hole Copse LNR (Local Nature Reserve) all located within the 2km radius of the site (shown on Figure 1 below).

Figure 1: Map showing the various designations within a 2km search radius (blue line) around the site (red line)

1.6 The approximate red line boundary of the site is shown in Figure 2 below. This is also the approximate survey area.

Figure 2: Approximate red line boundary around the site

1.7 The proposals have yet to be finalised and will be influenced by a number of surveys, of which ecology is one. However, plans will include a residential development.

2.0 Dormouse Survey Methodology

2.1 A total of 50 dormouse tubes were established in the hedgerows, tree lines and woodland edge within the site on 25th of June 2019 (Figure 3). Tubes could not be put up along some boundaries due to the gappy nature of the hedgerows. Each dormouse tube was established as per Natural England guidelines, attached to the underside of a suitable branch.

Figure 3: Approximate location of dormouse tubes shown in green on and around the site

2.2 Checks were undertaken once a month in August-November 2019 and continued in April-May 2020. The tubes are due to be collected in June 2020.

2.3 Surveys were carried out by licence holder Alexia Tamblyn and accredited agents.

2.4 In addition to the nest tube check, hazelnut searches were also carried out in November 2019. Areas of 10 x 10 metres around heavily fruiting hazel were searched for 20 minutes, with all nuts picked up so that no double counting occurred. All opened nuts were inspected to see if they had been opened by dormice. Using this method, it has been estimated that after checking three such squares, there is an 80% chance of finding a nut

opened by a dormouse, if dormice are indeed present. If no nuts opened by dormice have been found in five squares, it is considered that there is a 90% chance that dormice are not present on site. False negatives are possible due to squirrel competition etc., so this method should never be used in isolation to determine likely absence. It should be noted, that there was a limited amount of hazel present within the redline boundary.

3.0 Results

3.1 Surveys undertaken between October-November 2019 and April-May 2020 did not find any evidence of dormice, such as nests, feeding remains or live individuals, in any of the nest tubes on site. The only species found to be using the tubes were wood/yellow-neck mice.

3.2 The nut search carried out in November 2019 did not identify any hazel nuts which had been opened by dormice. There was very little fruiting hazel on site which made finding hazel nuts difficult. Those that were found had either been opened by other species or remained unopened.

3.3 Using the Index of Probability outlined in the Dormouse Conservation Handbook (Bright *et al.* 2006), a score of 17 had been achieved after the November check. Further checks in April and May achieved a score of 22, surpassing the total recommended score of 20 deemed necessary to detect presence/likely absence of dormice. As the recommended score has been reached it is considered that dormice are likely to be absent from the site.

4.0 Discussion

4.1 A total of 50 dormouse tubes were checked on site from August to November 2019 and again from April to May 2020 with the final check in May 2020. The tubes are due to be taken down in June 2020. No dormice or evidence of dormice, such as nests or feeding remains, were found anywhere on site. Only wood/yellow neck mice were found to be using a small number of the tubes. Consequently, it is considered that dormice are likely to be absent from the site.

4.2 The survey effort has exceeded the level recommended by the Dormouse Conservation Handbook (Bright *et al.* 2006) and as such, no further surveys are required. The species does not need to be considered further with regard to the design of the scheme.

4.3 There are records for dormice within 500m of the site. It is recommended that where possible, provisions are made so that the woodland and hedgerows are enhanced and managed to support a range of species, including dormice. Woodland edges should also be considered with planting schemes providing new ecological niches through graduated habitat boundaries and more diverse native species planting. Further details of recommended enhancements are included within the June 2019 PEA.

5.0 References

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

Bright, P. & MacPherson, D. (2002) *Hedgerow management, dormice and biodiversity (Report number 454).* English Nature, Peterborough.

Bright, P.W. (1996) *Status and woodland requirements of the dormouse in England (Report number 166).* English Nature, Peterborough.

Internet sources:

Google Maps: www.maps.google.co.uk

Magic Maps: www.magic.gov.uk

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Approved by: Alexia Tamblyn MA (Oxon) MSc CEnv MCIEEM FRGS,

Managing Director

Date: 29/05/2020

Appendix 5555-01/5:

Water Vole Survey

Water Vole Survey 2019

Land off Clay Lane
Chichester, West Sussex

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The recommendations contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background

1.1 The Ecology Partnership was commissioned by Gleeson Strategic Land to undertake a water vole survey on land off Clay Lane, Fishbourne, Chichester, West Sussex, PO19 3RP. This survey was recommended based on the findings from the preliminary ecological appraisal (PEA) carried out in June 2019 by the Ecology Partnership.

1.2 The PEA undertaken in June 2019 concluded that the drainage ditch network throughout the site offered suitable habitat for water voles. Water vole records are noted within close proximity to the site, approximately 900m south of the site and are detailed in the SxBRC species report.

1.3 The site is listed in the Chichester District Council Local Plan as forming a strategic wildlife corridor, with the ditches within the site being identified as 'water vole networks'.

1.4 This report presents the results of the surveys on site, which aim specifically to determine the likely presence or absence of water voles on site. The ditch network extends across the site and supported thick vegetation along its banks and a large amount of vegetation within the majority of the ditch channel.

1.5 Section 2 of this report sets out the methodology of the water vole survey and section 3 presents the results of the survey. Discussions and implications for development are found in section 4. Section 5 presents the conclusions drawn from the report.

Site Context and Status

1.6 The site is split into two land parcels, the larger parcel is situated to the west of Clay Lane with the smaller parcel situated to the east of it (SU 83929 05210– site centre point). The site covers approximately 6ha and consists of mainly rough grassland and scrub with tall ruderals and some livestock grazed areas. Hedgerows and tree lines run along most of the site edges and there is a ditch network running through the site. The wider landscape is comprised largely of residential development and agricultural land with the A27 running to the east of the site.

1.7 There is new development to the west of the site and Fishbourne Roman Palace is located to the South. The Chichester and Langstone Harbour Special Protection Area (SPA), Ramsar, and

SSSI (Special Site of Scientific interest) is located 400m south. There is also Chichester Harbour AONB (Area of Outstanding National Beauty), Solent Maritime SAC (Special Area of conservation), and Brandy Hole Copse LNR (Local Nature Reserve) all located within the 2km radius of the site (shown on Figure 1 below).

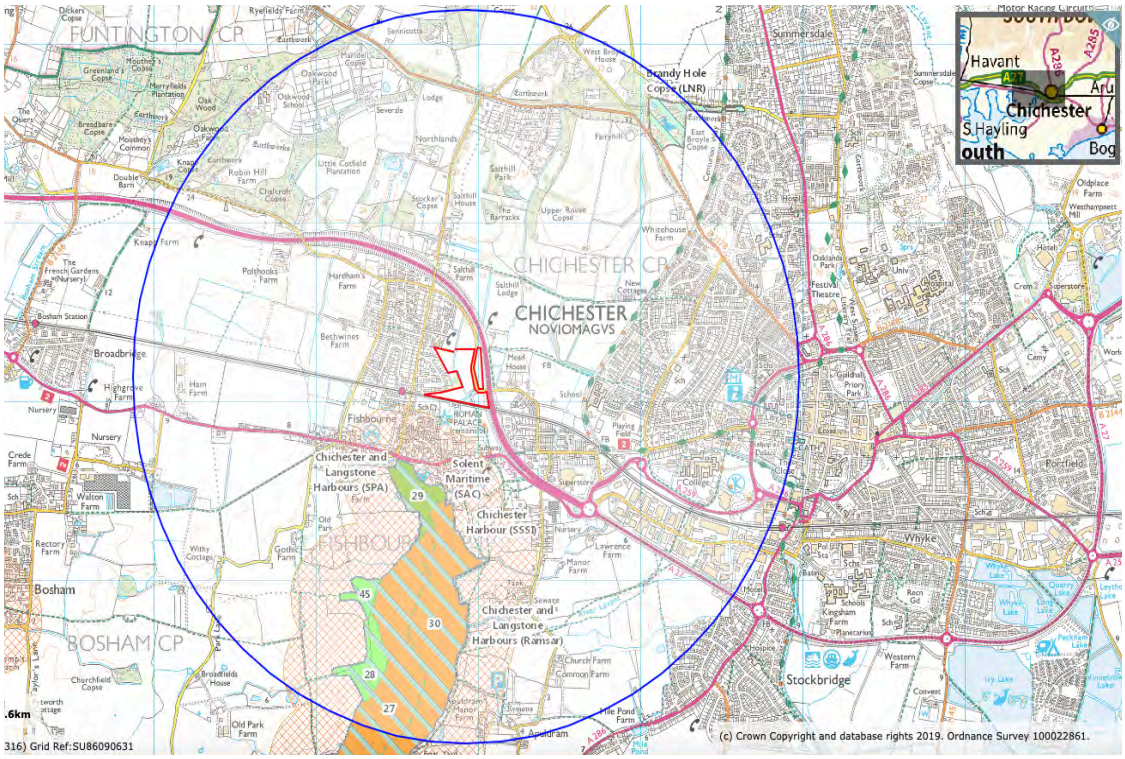

Figure 1: Map showing the various designations within a 2km search radius (blue line) around the site (red line)

1.8 The approximate red line boundary of the site is shown below (Figure 2). This is also the approximate survey area.

Figure 2: The ditch network on site (green, turquoise, pink and blue lines) and water vole mat placements (yellow pins) within the approximate site boundary (red line)

1.9 The proposals have yet to be finalised and will be influenced by a number of surveys, of which ecology in one. However, plans will include a residential development.

2.0 Methodology

2.1 The water vole survey was undertaken on 25th July 2019 by Joel Cronin BSc (Hons) MSc QCIEEM and Kieran McGranaghan BSc (Hons) PGDip QCIEEM. The ditch was surveyed for the presence/likely absence of water voles. The presence/likely absence of water voles is largely determined by field signs. These include:

- Latrines;
- Feeding stations of neatly piled food cuttings;
- Burrows;
- Short grazed 'lawns' close to burrows;
- Runways in vegetation;
- Footprints;
- Sightings or sounds of water voles entering the water; and
- Nests consisting of finely shredded grasses or reeds.

2.2 Both sides of the ditches were searched for signs of water voles, where possible. However, access was very limited due to the dense vegetation that covered the banks of the ditch network. All signs were counted and recorded.

2.3 Water vole mats were also deployed in accessible sections of the ditch network that supported water at the time of survey. The mats were made from insulation board cut into small sections and placed within the ditch. These mats provide a platform for water voles to use as latrines which can then be observed more easily. These mats were checked monthly from July to October.

3.0 Results

3.1 The small areas of ditch that could be accessed were surveyed for evidence of water voles and in some places access paths were made to permit ditch access.

3.2 The vegetation along the banks of the ditch network was unmanaged and obscured the majority of the ditch network. Where vegetation was present species included pendulous sedge (*Carex pendula*), rosebay willowherb (*Chamaenerion augustifolium*), fool's watercress (*Apium nodiflorum*), false brome (*Brachypodium sylvaticum*), figwort sp., crack willow (*Salix Fragilis*), bulrush (*Typha latifolia*).

3.3 The water depth varied throughout the ditch network with some sections being dry during the survey period. The section of ditch running from north to south across the site (ditch B) contained a large amount of leaf litter and all sections of the ditch network contained large

amounts of aquatic vegetation. No evidence of water voles such as latrines, droppings, feeding remains or burrows were found along the sections of the ditch that were surveyed.

3.4 The southern section of the ditch network (ditch C) where water vole mats 1,2 and 3 were placed supported approximately 10-15cm of water at the time of survey. The section of ditch where water vole mat 4 was placed (ditch B, southern end), contained about 5cm of water and the channel itself was heavily vegetated. The north west section of the ditch network (ditch A) supported approximately 5-15cm of water at the time of survey. The section of ditch running across the northern site boundary (ditch D) was dry at the time of survey. All of the ditch sections, excluding ditch D, supported thick vegetation along their banks which obscured much of the ditch network from view and prevented access. In areas where the ditch could be accessed and where access paths had been made, the ditch network supported a large amount of vegetation within the channel.

3.5 Water vole droppings were found on water vole mats 2 and 3 (Figure 2) along ditch C. These droppings were confirmed by DNA analysis to be from water voles (Appendix 2). No other evidence of water vole presence was detected, such as feeding lawns or burrows, but any further field signs would likely have been obscured by the dense vegetation present on the banks of the ditch network.

4.0 Discussion and Recommendations

4.1 Evidence of water voles was found in the southern section of the ditch network. Water vole droppings were found on water vole mats 2 and 3 within ditch C. It is likely that there was other evidence of water voles in this section of the ditch network, but the dense vegetation surrounding the ditch network obscured this evidence. The ditch network extends off-site to the south, into suitable water vole habitat, and finally down to the Chichester and Langstone Harbours (SSSI, SPA and Ramsar). These additional off-site ditches form a network within which water voles could travel.

4.2 The proposals are not yet known, but the master plan will need to consider the presence of water voles. It is considered that impacts on water voles can be largely avoided or minimised through consideration of the location of the extent of the proposals for the habitats associated with the ditch network, certainly to the south of the site.

4.3 Water vole is fully protected by the Wildlife and Countryside Act 1981 (and subsequent amendments). The legislation makes it an offence to:

- Intentionally kill, injure or take a water vole.
- Possess or control a live or dead water vole, any part of, or anything derived from a water vole.
- Intentionally or recklessly damage, destroy or obstruct access to any place that a water vole uses for shelter or protection.
- Intentionally or recklessly disturb a water vole while it is occupying a structure or place that it uses for shelter or protection.

4.4 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 states that public authorities must have regard to the conservation of biodiversity. Section 41 of the Act requires the Secretary of State to maintain a list of Habitats and Species of Principal Importance in England; the list includes water vole.

4.5 It is recommended that ditch networks are protected within the red line boundary, certainly where water vole presence has been confirmed. Notably along ditch C. The ditch networks should be accommodated within the design of the site, including ensuring that the networks of ditches are maintained, especially off site to the south where extensive water vole habitat is noted.

4.6 It is recommended that a 5m buffer from the tops of the ditch banks is maintained alongside the ditches themselves, to maintain the green network. It is considered that the ditches along the southern boundary support water voles (ditches B and C), with ditches (A and D) considered unlikely to support water voles at this time.

4.7 It must be noted that update surveys would be required prior to development to ensure that water voles have not extended throughout the site.

Enhancements

4.8 Although the plans for the site are not yet known, it is recommended that enhancements are made to improve the value of the site to wildlife. It is recommended that management of the ditch is undertaken in accordance with prescribed practices provided by Natural England and the Environment Agency.

4.9 In order to achieve conservation benefits it will be necessary to implement a habitat creation or enhancement strategy. This could include creating new areas of wetland linked to the main ditch network. This would help to mitigate against any potential habitat loss related to development but also provides additional habitat for a species which is the fastest declining mammal in the UK and is vulnerable to extinction. Indeed, one of their biggest threats is habitat loss and fragmentation from unsympathetic riverside management. This additional habitat should be linked with the existing southern ditch network to provide connectivity to the wider landscape.

4.10 Balancing ponds (SUDs ponds) are a likely requirement if the site is to be development. It is recommended that a pond is constructed in the southern aspect of the site and be planted and designed for water voles. The banks should be stable and stepped with good vegetation cover and should use substrate that voles can easily dig into (Figure 3). There should be some depth to the water immediately in front of the bank to allow the voles to escape quickly. The watercourse should contain water at all times of the year.

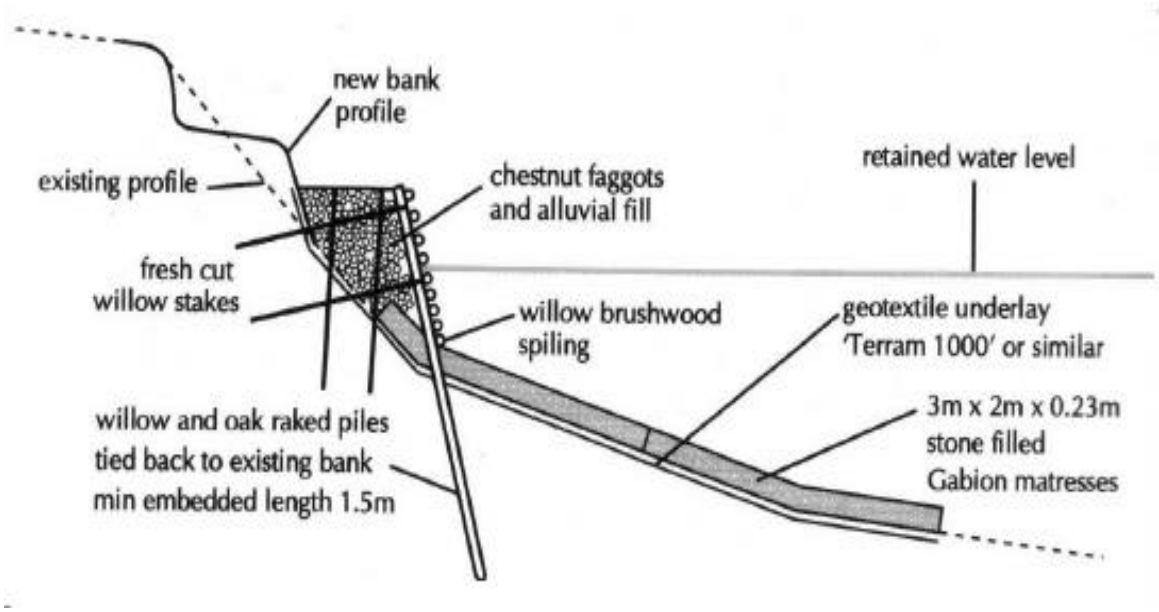

Figure 3: Example of water vole bank design (Strachan 1998)

4.11 The water's edge should be planted with tall wetland plants of local provenance, which are used for foraging and protection from predators. Species should include:

- Sedges (*Carex sp.*) e.g. Greater tussock sedge (*Carex paniculata*)
- Branched bur-reed (*Sparganium erectum*)
- Reed sweet-grass (*Glyceria maxima*)

- Reed-canary grass (*Phalaris arundinacea*)
- Yellow flag iris (*Iris pseudacorus*)
- Meadowsweet (*Filipendula ulmaria*)
- Willowherb (*Epilobium sp.*)
- Soft rush (*Juncus effusus*)

4.12 The banks of the ditch networks and any new features, such as a new balancing pond should be managed in a sensitive method. The long term management of these habitats will form part of the wider management of the site, including the public open space and the wildlife corridor.

4.13 Management practices are to include rotational clearance of in-channel and marginal vegetation, such as common reed and bramble, and supplementing vegetation with native marginal and emergent species, such as soft rush (*Juncus effusus*), water plantain (*Alisma plantago-aquatica*), meadowsweet (*Filipendula ulmaria*), yellow flag iris (*Iris pseudacorus*) and water mint (*Mentha aquatica*). It is also recommended that enhancements for the edges of the ditches are made such as creating wildflower edges.

5.0 Conclusions

5.1 An initial PEA was undertaken in June 2019. The ditch network was considered to have suitability to support water voles, with the southern section providing the most suitability, although no evidence of water voles was noted during the PEA. Consequently, water vole surveys were recommended.

5.2 Water vole droppings were found on water vole mats 2 and 3. The droppings on mat 3 were confirmed as water vole droppings using DNA analysis (Appendix 1). No other evidence of water vole presence was detected, although the thick vegetation present on the banks of the ditch network prevented access to the majority of the ditch network and would likely have obscured any further evidence of water vole presence.

5.3 Due to the confirmed presence of water voles on site it is recommended that a minimum buffer of 5m is maintained from the top of the banks either side of the ditch network during any works to take place on the site.

5.4 Avoidance measures in the form of buffer zones have been recommended to avoid negative impacts on water voles. If complete avoidance is not possible then mitigation methods using

habitat manipulation can be implemented. Compensation measures can then be used to offset any residual negative impacts that cannot be mitigated for. It is considered that works should be undertaken under an ecological watching brief. If any water voles or water vole burrows are discovered during works, then works will need to cease immediately and a suitably qualified ecologist will need to assess the situation. Recommendations to enhance the ditch network post-development have been made within this report.

6.0 References

Dean, M. *et al* (2016) *The Water Vole Mitigation Handbook.* The Mammal Society, London;

Natural England (2008) *Water Voles – The Law in Practice: Guidance for Planners and Developers.* http://www.naturalengland.org.uk;

Strachan, R. *et al* (2011) *Water Vole Conservation Handbook.* Wildlife Conservation Research Unit, Oxford.

Appendix 1: Photos

Photo 1: View of the southern section of the ditch network	
Photo 2: View of the central section of the ditch network	
Photo 3: View of the northern section of the ditch network looking south	

Photo 4: The north west corner of the ditch network	
Photo 5: Water vole latrine found on water vole mat 2	
Photo 6: Water vole latrine found on water vole mat 3	

Appendix 2: DNA Analysis

SureScreen Scientifics

Folio No: E6267
Report No: 1
Order No: wsus 6644
Client: THE ECOLOGY PARTNERSHIP
Contact: Joel Cronin
Contact Details: joel@ecologypartnership.com
Date: 18/09/2019

TECHNICAL REPORT

Date sample received at Laboratory: 12/09/2019
Date Reported: 18/09/2019
Matters Affecting Results: None

RESULTS

Lab Sample ID.	Site Name	O/S Reference	Genetic Sequence	Common Name	Result	Sequence Simliarity
E6267	Fishbourne 1	-	ATAGNATTCCCACGAATAAATAACATG AGCTTCTGACTCCTTCCCCCATCATTC CTTCTCCTTTTAGCCTCATCAATAGTC GAAGCTGGGGCTGGAACAGGATGAAC CGTCTACCCTCCACTAGCCGGAAACC TAGCCCACGCAGGAGAANANTN	European water vole	Arvicola amphibius	96.92%

METHODOLOGY

First, the DNA from the sample is extracted and purified. Then, a short fragment of a mitochondrial gene is amplified using polymerase chain reaction (PCR). The amplified product is analysed on a gel to confirm that the expected product size was amplified. It then goes through one more purification step before being Sanger sequenced. The sequence results are aligned against a library of known sequences using bioinformatics software, and we are able to confirm that the sample came from a certain species with the reported percent sequence similarity.

INTERPRETATION

Degradation: Samples are extracted following protocol. If DNA is unsuccessfully amplified with using universal primers appropriate for the sample type received, then another set of universal primers are used. If extraction is unsuccessful a second time, then another part of sample is then extracted following protocol yet this time with a restorase enzyme which helps repair degraded DNA. Universal primers will amplify the most prolific mitochondrial DNA in the sample so will detect mouse DNA or bacterial DNA. If bacterial DNA is found this is an indicator that the sample has degraded to such an extend that the SFF primers can no longer detect other species DNA. If no DNA is amplified whatsoever then the sample has long been degraded as the technique is ultra sensitive. We get very few samples with DNA degradation. DNA degrades with time and expedited with the environmental conditions it is exposed to such as sunlight and temperature and moisture, therefore we recommend samples are taken out of direct sunlight, away from moisture and away from warmth where possible. If the sample with the freshest

appearance, on top of the surface, is collected taking in to account these environmental parameters then it is likely that the sample has degraded due to the sample being there a long time and the species may no longer be present. We analyse a sample up to three times to achieve a result. If no DNA is detected after three times, we are confident, there is no longer any DNA in the sample to detect.

Genus: A samples goes through DNA extraction, PCR to amplify, electrophoresis and then genetically sequenced to give the genetic code for that sample GCTATATACGCGC etc. The genetic sequence obtained is used to cross reference against millions of known genomes to find the closest match. If the sample sequence is not long enough due to sample degradation, or if a non specific part of the genetic code is obtained, then the results may indicate the precise genus but not the precise species.

Reported by: Chris Troth **Approved by:** Sarah Evans

End Of Report

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Approved by: Alexia Tamblyn MA (Oxon) MSc CEnv MCIEEM FRGS

Managing Director

Date: 25/11/2019

Appendix 5555-01/6

Bat Survey

Bat Activity Survey 2019

Land Off Clay lane
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1.0 Introduction

Background

1.1 The Ecology Partnership was commissioned by Gleeson Strategic Land to undertake a site bat activity survey on land off Clay Lane, Fishbourne, Chichester, PO19 3RP.

1.2 Further bat surveys were recommended following a preliminary ecological appraisal (PEA) undertaken in July 2019. The habitats on site, particularly the woodland edge and tree lines, were considered to provide opportunities for foraging and commuting bats.

1.3 This report presents the results of The Ecology Partnership's surveys in and around the site, which aims specifically to assess how bats are using the site between July and September 2019.

Site Context and Status

1.4 The site is split into two parcels, the larger parcel is situated to the west of Clay Lane with the other smaller parcel situated to the east of it (SU 83929 05210– site centre point). The site covers approximately 6ha and consists of mainly rough grassland and scrub with tall ruderals and some livestock grazed areas. Hedgerows and tree lines run along most of the site edges and there is a ditch network running through the site. The wider landscape is comprised largely of residential development and agricultural land with the A27 running to the east of the site.

1.5 There is new development to the west of the site and Fishbourne Roman Palace is located to the South. The Chichester and Langstone Harbour Special Protection Area (SPA), Ramsar, and SSSI (Special Site of Scientific interest) is located 400m south. There is also Chichester Harbour AONB (Area of Outstanding National Beauty), Solent Maritime SAC (Special Area of Conservation), and Brandy Hole Copse LNR (Local Nature Reserve) all located within the 2km radius of the site (shown on Figure 1 below).

Figure 1: Map showing the various designations within a 2km search radius (blue line) around the site (red line)

1.6 The approximate red line boundary of the site is shown in Figure 2 below. This is also the approximate survey area.

Figure 2: Approximate red line boundary around the site

Legislation

1.7 Under the Natural Environment and Rural Communities (NERC) Act 2006, it is now the duty of every Government department in carrying out its functions "*to have regard, so far as it is consistent with the proper exercise of those functions, to the purpose of conserving biological diversity in accordance with the Convention*". Seven species of bat (Barbastelle, Bechstein's, Noctule, Soprano pipistrelle, Brown long-eared, Greater horseshoe and Lesser horseshoe) are listed as Species of Principal Importance in England under Section 41 of the NERC Act.

1.8 All bats are covered by the following relevant legislation: The Wildlife and Countryside Act (WCA) 1981 (as amended); the Countryside and Rights of Way Act 2000; the Natural

Environment and Rural Communities Act 2006; and by the Conservation of Habitats and Species Regulations (CHSR) 2010.

1.9 Under the WCA 1981, it is an offence to:

- intentionally, recklessly or deliberately disturb a roosting or hibernating bat i.e. disturbing it whilst it is occupying a structure or place used for shelter or protection);
- intentionally or recklessly obstruct access to a roost (i.e. a structure or place used for shelter or protection).

1.10 Under the CHSR 2010, it is an offence to:

- deliberately capture (or take), injure or kill a bat;
- intentionally, recklessly or deliberately disturb a bat, in particular (i) any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young; (ii) any disturbance which is likely to impair their ability in the case of hibernating or migratory species, to hibernate or migrate; or (iii) any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong;
- damage or destroy a breeding site or resting place (roost) of a bat.

2.0 Methodology

Bat activity surveys

2.1 Dusk activity surveys were carried out on 29th July, 14th August and 10th September 2019. The surveys followed Bat Conservation Trust guidelines (Collins 2016). A pre-determined route was walked by surveyors in order to cover areas of interest and record any flyovers and activity around the site (Figure 3). Trees of interest were observed for emergence activity. Each transect was walked at least twice in order to cover all linear features present.

2.2 Dusk surveys started at sunset and observations were maintained for at least 2 hours after sunset. Bats usually emerge about twenty minutes after sunset depending on the species,

light level, weather conditions and time of year. Peak activity will normally last for about two hours after sunset, during times of peak insect activity.

2.3 Surveyors included Joel Cronin BSc (Hons) MSc QCIEEM, Kieran McGranaghan BSc (Hons) PGDip GradCIEEM, Alice Bailey BSc (Hons) QCIEEM, Owen Allpress BSc (Hons) M. Arbor and Nick Davey BSc (Hons) MSc. The surveyors were equipped with an Echometer Touch and an Elekon Batlogger M bat detector.

Remote recording surveys

2.4 Anabat Expresses were set up in three locations to cover the linear features on site (Figure 3). These were deployed on 29th July and 29th August 2019. They were left for at least 5 nights and then collected in for analysis.

Figure 3: Transect routes (blue-route 1 and green-route 2) and Anabat locations (orange markers)

Figure 4: Field numberings and approximate locations on the site

Limitations

2.5 It should be noted that while every effort has been made to provide a comprehensive description of the site, no single investigation could ensure the complete characterisation and prediction of the natural environment.

2.6 The recording ability of the Anabat recording devices is impacted on by insect calls and other forms of background noise, which can vary over the course of the recording season. Partial or very quiet bat calls can also be difficult to correctly identify. Consequently, the actual number of bat passes is predicted to be higher than those recorded on the Anabats.

3.0 Results

Transect activity surveys

3.1 The first transect survey was carried out at dusk on 29th July 2019 August 2018. Sunset was at 20:45 and the weather was overcast with a temperature of 21°C and 75% cloud cover. The first bat recorded was a noctule (*Nyctalus noctula*) heard on transect route 1 in the south west of field 4 (Figure 3) at 21:10 and again at 21:24 in the north west corner of field 4. This was followed by a common pipistrelle (*Pipistrellus pipistrellus*) and a serotine (*Eptesicus serotinus*) foraging underneath a large oak tree shortly afterwards and in the same location. Common pipistrelle passes were then recorded in the north east corner of field 4 at 21:42 and these were then followed by soprano pipistrelle (*Pipistrellus pygmaeus*) calls. Both soprano and common pipistrelles were recorded foraging along the treeline on the eastern edge of field 4. A myotis bat was recorded in the south east corner of field 4 at 22:00. A small number of soprano and common pipistrelle calls were then recorded along the eastern edge of field 3 and south west corner of field 4 with the final bat call being recorded at 22:12. On transect route 2 the first call was a soprano pipistrelle on the northern edge of field 3 at 21:12. This was then followed by a common pipistrelle call and a noctule call at the south western corner of field 3. A myotis call was then recorded along the southern edge of field 3 at 21:35. Two more common pipistrelle calls were recorded along the western edge of field 1 along with three soprano pipistrelle calls also within field 1 along the hedgerow edges. A single myotis call was also recorded at 21:58 along the western edge of field 1. Finally, two pipistrelle calls (suspected to be common) were recorded in field 3. No other bats were recorded.

3.2 The second transect survey was conducted at dusk on 14th August 2019. Sunset was at 20:26 and the weather was overcast with a light breeze and a temperature of 19°C. On transect route 1 the first bats recorded were a soprano pipistrelle and a commuting noctule at 20:35 in the south west corner of field 4. A soprano pipistrelle call was then detected in the north west corner of field 4 at 20:53. This was followed by a common pipistrelle call in the north west corner of field 5 and a myotis call and a soprano pipistrelle call along the northern edge of field 4 just after 21:00. At 21:08 a common pipistrelle call followed by an unknown

big bat call (suspected to be a serotine) were detected along the eastern edge of field 4. A myotis call and a soprano pipistrelle call were recorded along the southern edge of field 4 at 21:34 and 21:36. The final bat call was a common pipistrelle call detected in the centre of field 4 at 21:39. On transect route 2 a pair of noctules were detected commuting west to east at 20:36 in the north west corner of field 1. A pair of serotines were then recorded foraging in the southern corner of field 1 from 20:47 and made 9 passes. This was followed by 4 myotis passes at 20:56 along the western edge of field 1. Two soprano pipistrelles were recorded commuting north to south at the north east corner of field 2 along with a single serotine call at 20:58. A soprano pipistrelle was recorded commuting north to south along the western edge of field 2 at 21:03 along with 7 myotis calls and a foraging common pipistrelle in the same location at 21:05. At 21:10 a myotis was recorded commuting west to east over field 2 followed by a common pipistrelle call at 21:11. Three soprano pipistrelle passes and a single common pipistrelle call were recorded in the north east corner of field 3 at 21:26. This was followed by a common pipistrelle call at 21:31 and a noctule call at 21:32 in the south west corner of field 3. A single myotis call was recorded along the southern edge of field 3. Two serotine passes were recorded at 21:45 in the north east corner of field 3. Three common pipistrelle passes were recorded at 21:59 in the north west corner of field 2. Finally, 8 common pipistrelle passes were recorded foraging along the tree line on the western edge of field 1. No other bats were recorded.

3.3 The third survey was conducted at dusk on 10th September 2019. Sunset was at 19:31 and the weather was mild with very little breeze and a temperature of 17°C. On transect route 1 the first bat recorded was a noctule at 19:38 and was recorded commuting from north to south in the south west corner of field 3 and was followed by two other noctules doing the same and a fourth noctule foraging. A soprano pipistrelle was then recorded commuting east to west in the centre of field 4 at 19:51. A serotine and a soprano pipistrelle were both recorded commuting south to north at the north west corner of field 4 along with 2 common pipistrelle passes. Another common pipistrelle call was recorded at 20:24 along the eastern edge of field 4 followed by a myotis call and a soprano pipistrelle call at 20:31 and 20:32 in the same location. A common pipistrelle call was recorded in the south east corner of field 4 at 20:34 followed by a soprano pipistrelle call recorded along the southern edge of field 4 at 20:36. A soprano pipistrelle call, a common pipistrelle call and a noctule

call were all recorded in the south west corner of field 4 at 20:46, 20:47 and 20:49. A myotis call was then recorded in the centre of field 4. Three soprano pipistrelle passes and a common pipistrelle call were then recorded in the same location at 20:56. Two common pipistrelle passes were then recorded at 21:00 in the north west corner of field 4 followed by a single myotis call at 21:04 in the same location. Finally, a Leisler's (*Nyctalus leisleri*) call and a myotis call were recorded at 21:10 in the north east corner of field 4. On transect route 2 the first bats that were detected were several noctules flying east to west at the southern end of field 1 at 19:37. One soprano pipistrelle call was then recorded at 19:45 in the same location. Two common pipistrelles were recorded foraging along the eastern edge of field 2 at 19:50. Two serotines were then seen commuting along the hedgerow at the eastern edge of field 2 from south to north. Noctule, serotine and soprano pipistrelle calls were then heard from 20:00 to 20:04 within field 2. Two soprano pipistrelle passes and a myotis call were recorded in the north east corner of field 3. Three common pipistrelle calls were then recorded around the perimeter of field 3 from 20:17 to 20:22. A single soprano pipistrelle call and 3 noctule calls were recorded at 20:36 and 20:38 in field 1. A single myotis call and a single noctule call were recorded at 20:44 in field 2. Two noctule calls and 2 common pipistrelle calls were recorded around 21:00 in field 3. No other bats were recorded.

3.4 In summary, during the transect surveys, the following species were recorded:

- Common pipistrelle (*Pipistrellus pipistrellus*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Noctule (*Nyctalus noctula*)
- Serotine (*Eptesicus serotinus*)
- Myotis species (*Myotis spp.*)
- Leisler's (*Nyctalus leisleri*)

Remote recording surveys

3.5 The bat activity levels recorded by the three Anabat Express units during the survey period were considered to be low to moderate, with the total number of bat calls per night ranging from 2-112 (see Appendix 1 for raw data).

3.6 It should be noted that a lot of background noise was recorded during all surveys which can obscure bat calls and make them difficult to identify to species level. Anabat Express recorders are zero crossing detectors, meaning only the loudest sound at a given point in time is recorded. As a result, high amplitude insect or background noise can result in poor rendering of bat calls when using zero crossing detectors. Consequently, bat activity for these months may not be fully representative.

3.7 Eight different species were recorded over the three months: common pipistrelle, soprano pipistrelle, noctule, serotine, brown long-eared (*Plecotus auritus*) (BLE), barbastelle (*Barbastella Barbastellus*), Leisler's and myotis species. The high levels of background noise and fragmented nature of many of the calls meant that it was not possible to identify the myotis calls to species level. Common pipistrelle was the most frequently recorded species.

3.8 In summary, during the remote recording surveys, the following species were recorded:

- Common pipistrelle (*Pipistrellus pipistrellus*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Noctule (*Nyctalus noctula*)
- Serotine (*Eptesicus serotinus*)
- Myotis species (*Myotis spp.*)
- Brown Long-Eared (BLE) (*Plecotus auritus*)
- Barbastelle (*Barbastella barbastellus*)
- Leisler's (*Nyctalus leisleri*)

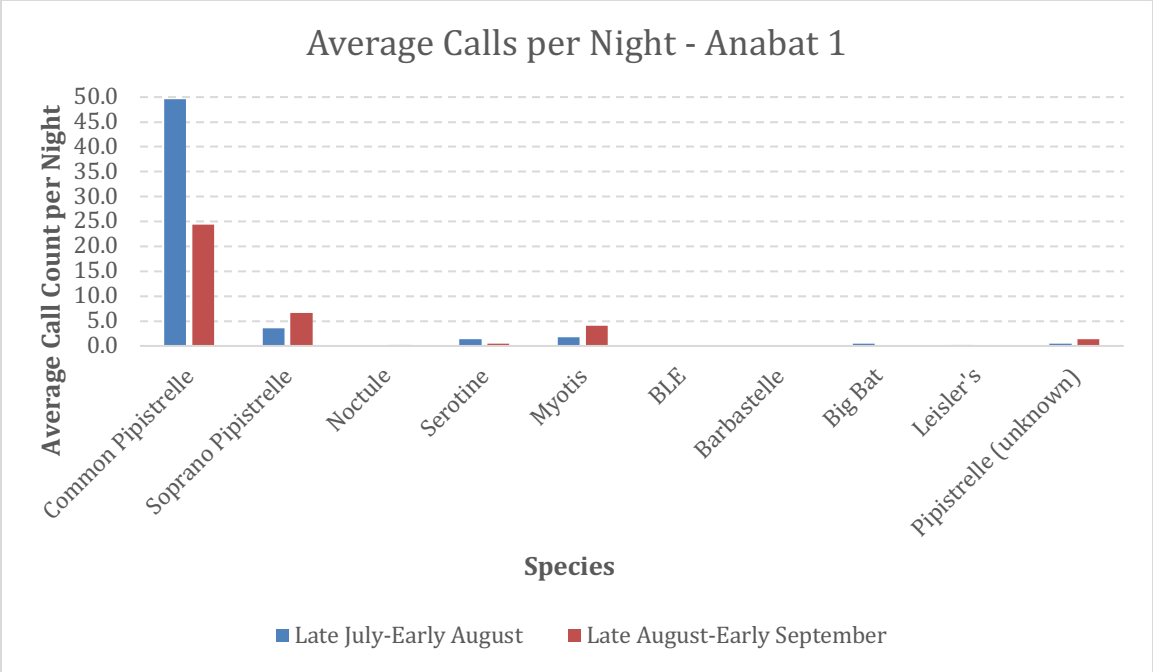

Figure 5: Average calls per night by species recorded by Anabat 1

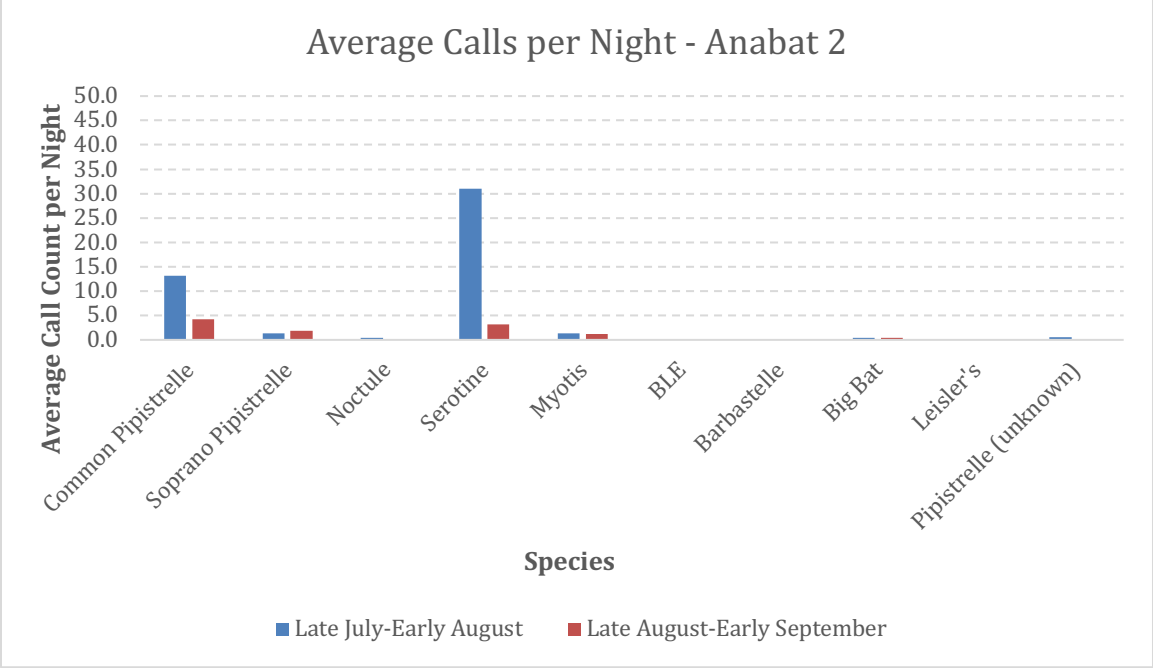

Figure 6: Average calls per night by species recorded by Anabat 2

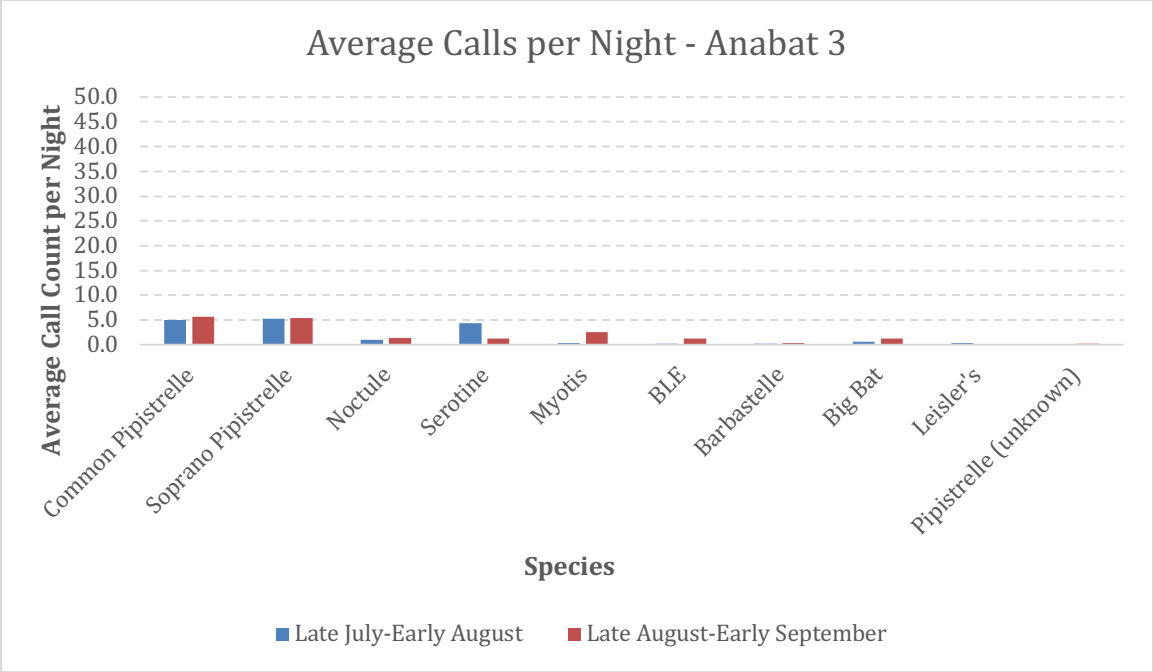

Figure 7: Average calls per night by species recorded by Anabat 3

Table 1. Total number of bat passes recorded over survey period

Species	Call Count	Percentage of Total Calls
Pipistrelle	510	53.63
Soprano Pipistrelle	120	12.62
Serotine	208	21.87
Noctule	15	1.58
Big bat (Noctule / serotine / leislers)	15	1.58
Myotis	57	5.99
BLE	7	0.74
Barbastelle	3	0.32
Leisler's	3	0.32
Pipistrelle (unknown)	13	1.37
Total	**951**	

Table 2. Bat activity per month by detector

Month	Detector	Call Count	Total Call Count by Period
Late July-Early August	AB1	287	616
	AB2	242	
	AB3	87	
Late August-Early September	AB1	185	335
	AB2	54	
	AB3	96	

4.0 Discussion

4.1 Monthly activity surveys were undertaken from July to September 2019. These surveys can provide an indication of how bats are using the site in addition to the species present and their relative abundances.

4.2 The transect surveys identified a number of different bat species using the site. Generally, low levels of bat activity were recorded during the transect surveys. Common pipistrelle, soprano pipistrelle and serotine species were observed foraging on site, it was considered that the other species detected on site were likely commuting through the site given the lower numbers of the calls detected. Common and soprano pipistrelle calls dominated the transect surveys and the majority of the activity recorded was along the site boundaries with individual bats commuting or foraging along these features.

4.3 The remote recording surveys were dominated by common pipistrelle calls and serotine calls, with moderate numbers of soprano pipistrelle passes. In general, moderate levels of bat activity were recorded. The relatively high number of recordings is thought to be due to repeated passes by a low number of bats foraging rather than a high number of individual bats. A total of 9 different species were identified during the transect and remote recording surveys, including myotis species, noctules, Leisler's, brown long-eared (BLE) and barbastelles.

Transect Activity Surveys

4.4 Throughout each monthly transect low to moderate bat activity levels were recorded. The activity was primarily due to common and soprano pipistrelles, with some additional high numbers of serotine passes on transect 2 only.

4.5 There were notable levels of activity concentrated in the north west corner of field 4 on transect 1, with activity on transect 2 spread across the transect route. Bats were regularly observed commuting along the eastern edges of fields 1, 2 and 4 and the southern edges of fields 1, 3 and 4.

Anabat Data

4.6 The Anabat recording devices recorded greater levels of bat activity than the transects, but they were actively recording for much longer time periods and cannot distinguish between a single individual making multiple passes and multiple individuals.

4.7 Anabat 1 recorded the highest levels of bat activity and Anabat 3 recorded the highest level of bat species diversity. Anabat 2 recorded a high number of serotine bat passes, possibly due to the presence of livestock within the field and the insects that they attract. Anabat 3 recorded the lowest levels of bat activity and this is possibly due to there being fewer mature trees along this route, compared to the other anabat locations.

4.8 The Anabat data revealed a greater diversity of bat species than the transect surveys alone, with brown long-eared and barbastelle bats being detected by the Anabats only.

4.9 The Anabat recordings identified a low number of *Myotis* passes that were unable to be identified to species level. Given the infrequency of the passes, it is considered likely that this species uses the site on an occasional basis while passing through the local area and that the site does not form part of their core foraging and commuting habitat.

4.10 Noctules and Leisler's bats were recorded by the Anabat units but in low numbers (15 and 3 calls respectively in total across the survey). It is considered that the site is only used as a commuting route for low numbers of this species.

4.11 A small number of brown long-eared (BLE) calls (7 calls in total) were recorded by Anabat 3. Given the low number of calls it is considered that these this species was commuting through the site or using the site infrequently and as such the site is not considered to be an important site. Brown long eared bats

4.12 A small number of barbastelle (3 in total) were recorded during the survey period. Barbastelle are considered a rare species and data deficient, with no reliable population estimate or trends available. The species was recorded only three times during the remote recording survey. Certainly, the site does not support significant levels of foraging or commuting activity for the species and given the absence of the species from the walked transect, it is considered most likely the activity comprises individual bats commuting across the site.

4.13 Barbastelle bats have a large home range, with studies indicating commuting bats travelling as far as 20km, often rapidly and directly over open habitats to reach foraging grounds (Zeale et al., 2012). Barbastelle bats are predominantly a tree roosting species, having a preference for trees within mature woodland. Certainly, no extensive stands of woodland are present on-site, it is therefore considered more likely the species is roosting in an off-site location. It should also be noted that the site lies approximately 9.3km from the Singleton and Cocking Tunnels Special Area of Conservation (SAC) for which the species is a qualifying feature, and the site lies outside the core sustenance zone, which is identified as being 6.5km around such SACs.

Recommendations and Enhancements

4.14 The linear features on site, including the woodland edge and tree lines, were considered to provide good value for bats and this was reflected in the survey results. The grassland, tall ruderals and scrub areas offer moderate numbers of invertebrate prey. The livestock grazed areas and perimeter tree lines also support high numbers of invertebrate prey. Bats were observed foraging over all three areas in addition to commuting, but with the majority of the activity occurring along the tree lines.

4.15 The final plans for the site are not yet known, but it is expected that much of the grassland, tall ruderals and scrub areas will be lost. It has already been recommended that the eastern tree and hedgerow corridor along Clay Lane be robustly enhanced through a double hedgerow and additional in-filling planting (full details are provided in the June 2019 PEA) and shown in figure 8 below as a graded edge planting. The loss of the grassland, tall ruderals and scrub is not considered significant in terms of foraging and commuting bats, provided that the tree lines and hedgerows are maintained. However, dark corridors should be maintained along the boundary tree lines and hedgerows and a sensitive lighting scheme should be conditioned.

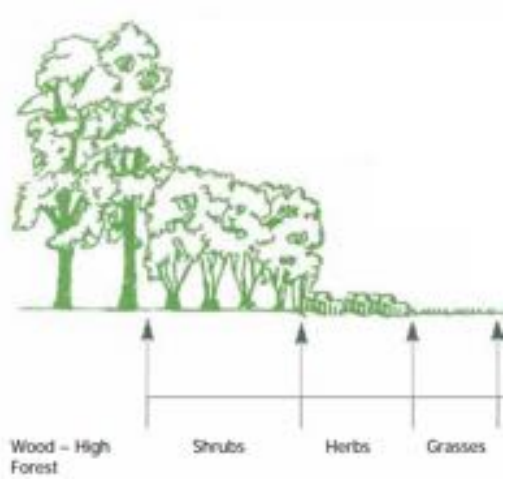

Figure 8: A graded edge profile (Forestry Commission 2005)

4.16 Maintaining and enhancing the existing habitats on site, in particular the boundary features, would be considered necessary to ensure that bats would not be adversely affected by the proposals. It is considered that the use of enhanced planting of new hedgerows and treelines on site would enhance the site for foraging and commuting bats in addition to other species. New treeline planting should be concentrated in gaps within the existing treelines to improve connectivity along these features. These features should be planted in such a way as to create variety in the species composition, structure and age, which would provide a range of niches for bats favoured invertebrate prey.

4.17 Any trees that need to be removed should be replaced elsewhere on site. New tree planting is also recommended where possible, including in any areas of open green space and

within road networks. Native species of value to wildlife should be used such as oak, ash, hazel, beech, cherry, hornbeam or rowan.

4.18 Oak trees (*Quercus robur*) are present along the boundaries and field margins of the site. Oak trees are known for their ability to support a range of invertebrates; indeed, the oak tree provides habitats for more organisms than any other tree in the UK. Large numbers of moth larvae feed on oak trees including micro moths. Beetles and weevils are also associated with the oak, boring into the wood or using acorns as nurseries. Therefore, it is recommended that these are retained on site and sensitively managed to ensure their longevity.

4.19 The northern boundary hedgerow of field 4 is gappy in places and should be enhanced with additional planting to improve this corridor. Native species should be used such as hazel, field maple, elder, privet, dog rose and dog wood to reduce gaps. Shade-tolerant wildflower seeds can also be sewn along the base of the hedgerows. Thick hedges with tussocks and an accumulation of leaf litter are preferred by invertebrates as well as the herbaceous plants which are characteristically associated with hedgerows, including species such as cow parsley and hogweed, wild parsnip and hedge parsley (the umbellifer species). Common nettles and brambles are also associated with a range of invertebrates. These hedgerows should not be included within gardens as their long-term management and longevity cannot be guaranteed under private ownership.

4.20 As long as the development considers bats within the master planning, by retaining important landscape features and providing enhancements, then any impacts to bat species can be reduced to a level which would not be considered significant to the conservation status of their local populations.

4.21 A new pond /SUDS feature could be incorporated into the design of the scheme. This can be planted to enhance invertebrate species and again increase the diversity of food sources for bats provided on site (Figure 9). However, care must be taken to ensure that aggressive alien species are not accidentally introduced. Different plants occur at different depths in a pond and so banks with a stepped gradient are best to increase biodiversity, even if only

on one side of the pond. Connective habitat between ponds is important to consider and a hedgerow or tree line connecting the two would be hugely beneficial not only for a range of species (including common amphibians and invertebrates) but also bats.

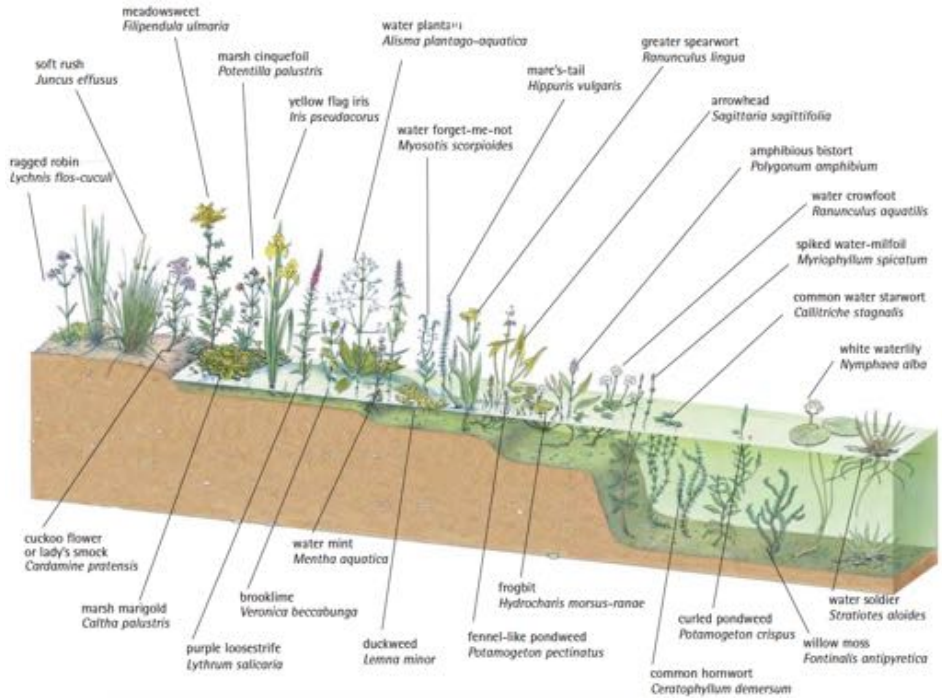

Figure 9: Typical aquatic plants in a wildlife pond (Langton et al. 2001)

4.22 As a number of bat species have been shown to use the hedgerows and tree lines on site, it is recommended that a sensitive lighting scheme is conditioned as part of the permission. Lighting can be detrimental to roosting, foraging and commuting bats. Any new lighting on site should only be installed if there is a significant need and must be directed away from the tree lines and hedgerows along the edges of the site in order to maintain 'dark corridors'. Lighting should also be aimed away from any potential roosting sites such as bat boxes/tubes.

4.23 The Bat Conservation Trust's guidance on 'Bats and artificial lighting in the UK' by Miles *et al*., (2018) advises the following which should be considered as part of the proposals:

- The impact on bats can be minimised by the use of Light Emitting Diodes (LEDs) instead of mercury, fluorescent or metal halide lamps where glass glazing is preferred due to their sharp cut-off, lower intensity and their dimming capability

- Lighting should be directed to where it is needed and light spillage avoided
- This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only
- Soft landscape planting should also be used as a barrier or manmade features such as walls or fencing with planted climbers where required within the build can be positioned so as to form a barrier between any development and the linear features used by bats

4.24 Bollard lighting is recommended to be used across the site, along internal streets where possible, in place of full street lighting (Figure 10). The treeline edges should be maintained as dark corridors with no lighting installed in these areas. This will maintain the integrity of these corridors for foraging bats. Warm-white or red lights are recommended to be used if health and safety concerns are great as these are said to limit the impact on insects and therefore bat activity.

Figure 10: Example red bollard lights that are considered to be 'bat friendly'

4.25 To enhance the local bat population and provide additional roosting opportunities within the new development, it is recommended that integrated bat boxes/tubes be incorporated into the structures of any new buildings erected on site, close to linear features such as the woodland edge (Figure 11). These provide good opportunities for crevice-dwelling species such as pipistrelles. The opening of the bat box/tube will be the only section visible and they are designed so that they require little to no maintenance. Several of these tubes can be established in a row together providing a good-sized roost space. The bat tubes should

be inserted as high up as possible in the brickwork. Habibat, in association with the Bat Conservation Trust, provide a range of boxes which are unfaced for render or designed to match the brickwork of the building.

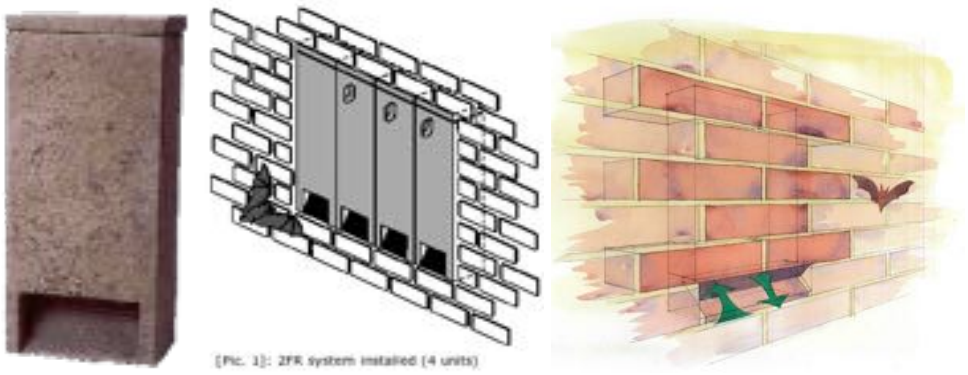

Figure 11: Bat tubes incorporated into the wall of a building to provide roosting space

4.26 To enhance the local bat population and provide further roosting opportunities, it is recommended that boxes should be hung on retained mature trees and have clear flight paths. Recommended boxes include the below, but any similar woodcrete bat box would be sufficient.

- Schwegler 2F Bat Box – these boxes are attractive to small bats, such as pipistrelles, and can be hung on any of the mature trees (Figure 12).
- Schwegler 2FN Bat Box – this box is slightly larger than the 2F and provides opportunities for larger bats.
- Schwegler 1FD Bat Box – this box has been designed specifically for smaller bats and provides opportunities as a maternity roost (Figure 12).
- Schwegler Improved Cavity Bat Box – this is designed for cavity-dwelling species such as brown long-eared bats.

Figure 12: Schwegler 2F (left) and 1FD (right) bat boxes

4.27 Incorporating specially designed bat boxes onto mature trees along the boundaries can enhance the habitat on site for bats. Bat boxes should be erected on the trees prior to any works starting on site. Woodcrete boxes have been recommended as they do not require much maintenance and are long-lasting.

4.28 Gardens and similar green spaces in developed areas can provide suitable foraging habitat for bats, in particular for pipistrelle species. It is recommended that post-development gardens and amenity grasslands on site are planted with wildflower species. Of particular benefit to bats are night flowering species that attract night-flying invertebrate prey. The following native species are considered suitable:

- Nottingham catchfly (*Silene nutans*)
- Night-flowering catchfly (*Silene noctiflora*)
- Bladder campion (*Silene vulgaris*)
- Soapwort (*Saponaria officinalis*)
- Wild marjoram (*Orignaum vulgare*)
- Borage (*Borago officinalis*)
- Yarrow (*Achillea millefolium*)
- Primrose (*Primula vulgaris*)
- Corn marigold (*Glebionis segetum*)
- Perforate St John's-wort (*Hypercium perforatum*)

- Wood forget-me-not (*Myosotis sylvatica*)
- Ox-eye daisy (*Leucantheum vulgare*)
- Corncockle (*Agrostemma githago*)
- Cornflower (*Centaurea cyanus*)

4.29 Other habitats can also be created on site for a variety of other species such as birds and insects in the form of green walls, which would then increase foraging opportunities for bats. Climbing plants can be grown onto trellis along the fence line dividing the two gardens. Species which can be planted include:

- Honeysuckle (*Lonicera japonica; L. fragantissima; L. standishii*);
- Clematis (*Clematis vitalba, C. armandii, C. alpina, C. montana, C. tangutica*);
- Ivy (*Hedera helix*);
- Climbing hydrangea (*Hydrangea petiolaris*);
- Dog rose (*Rosa canina*)

4.30 Log and brash piles are recommended to be created on the site to provide refugia and hibernacula for reptiles, amphibians and small mammals at the edges of the site. They are also important for saprophytic bryophytes and saprophytic insects, and in turn bats. They should be placed in a variety of locations (damp and sunny spots) and next to existing vegetation, such as near to the treelines so that there is cover immediately adjacent. They should contain a mixture of log piles and shapes with some small diameter material to create a diverse structure. Approximately 6 should be used adjacent to the treeline boundaries. Examples of the log pile structures that should be used are in Figure 12.

Figure 12: Example log piles to be created across the site

5.0 Conclusions

5.1 A range of bat species were recorded using the site for foraging and commuting purposes. The main areas for foraging were the tree lines and habitat edges, therefore these areas should be retained and enhanced where possible to continue to provide foraging opportunities for the species using the site and to allow bats to move with ease across the landscape.

5.2 Monthly transect surveys from July to September were undertaken alongside remote monitoring using three Anabat Express recording devices. Activity was dominated by common pipistrelles with high numbers of serotine calls recorded within field 1 and moderate numbers of soprano pipistrelles across the site.

5.3 Recommendations and enhancements have been outlined within this report and the June 2019 PEA, aimed at maintaining and enhancing the most ecologically valuable features of the site and creating new habitats post-development. Additionally, mitigation measures including the planting of and enhancement of hedgerows, the careful use of lighting, the creation of log piles and pond ? SUDS creation.

5.4 It is considered that the development would not impact upon the favourable conservation status of bats in the local area if significant features are to be retained and that mitigation measures and enhancements, as outlined, are included within the masterplan.

6.0 References

Bat Conservation Trust (2008) *Bats and Lighting in the UK – Bats and the built environment series (Version 2).* Bat Conservation Trust, London.

Bat Conservation Trust (2018) *Bats and artificial lighting in the UK.* Guidance Note 08/18, London.

CIRIA C567 (2005) *Working with wildlife – site guide*. CIRIA, London.

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

English Nature (1994) *Species Conservation Handbook*. English Nature, Peterborough.

Langton, T., Beckett, C. & Foster, J. (2001) *Great crested newt conservation handbook.* Froglife, Peterborough.

Miles, J., Ferguson, J., Smith, N. and Fox, H., (2018). *Guidance note: Bats and artificial lighting in the UK*. The Bat Conservation Trust, London.

Mitchell-Jones, A.J. (2004) *Bat Mitigation Guidelines*. English Nature, Peterborough.

Internet resources:

Magic Interactive Map: www.magic.gov.uk

Google Maps: www.google.co.uk/maps

IUCN Red List: www.iucnredlist.org

Appendix 1 – Raw Anabat Data

Anabat Number	Month	Date	Pipstrelle	Soprano Pipi	Noctule	Serotine	Myotis	BLE	Barbastelle	Big Bat	Leis	Pip (unknown)	Totals
AB1	Late July-Early August	30/07/2019	9	3		2	4						18
		31/07/2019	21	3		2							26
		01/08/2019	18	4			2						24
		02/08/2019	94	5		3	2			1	1	1	107
		03/08/2019	106	3			1			1		1	112
	Late August-Early September	30/08/2019	13	1			5					1	20
		31/08/2019	30	12			5					3	50
		01/09/2019	60	1	1		6					1	69
		02/09/2019	5	3		1	2					1	12
		03/09/2019	14	16		1	2					1	34
		Totals	**370**	**51**	**1**	**9**	**29**	**0**	**0**	**2**	**1**	**9**	**472**

Anabat Number	Month	Date	Pipstrelle	Soprano Pipi	Noctule	Serotine	Myotis	BLE	Barbastelle	Big Bat	Leis	Pip (unknown)	Totals
AB2	Late July-Early August	30/07/2019	35			52	3						90
		31/07/2019	15		1	20						2	38
		01/08/2019	2			12						1	15
		02/08/2019	13	7		43	2			1			66
		03/08/2019	1		1	28	2			1			33
	Late August-Early September	30/08/2019		1		3	1						5
		31/08/2019	1			2	4						7
		01/09/2019	9	2		5							16
		02/09/2019	5	5		6	1			1			18
		03/09/2019	6	1						1			8
		Totals	**87**	**16**	**2**	**171**	**13**	**0**	**0**	**4**	**0**	**3**	**296**

Anabat Number	Month	Date	Pipstrelle	Soprano Pipi	Noctule	Serotine	Myotis	BLE	Barbastelle	Big Bat	Leis	Pip (unknown)	Totals
AB3	Late July-Early August	04/08/2019	8	6	1	5	1	1	1				23
		05/08/2019	4	3	2	4				1	1		15
		06/08/2019	2	7	1	3							13
		07/08/2019	6	4		6	1				1		18
		08/08/2019	5	6	1	4				2			18
	Late August-Early September	30/08/2019	6	5	3	1	4	2	1	2			24
		31/08/2019	1							1			2
		01/09/2019	4	5			4	3				1	17
		02/09/2019	6	9	3	4	1		1	2			26
		03/09/2019	11	8	1	1	4	1		1			27
		Totals	**53**	**53**	**12**	**28**	**15**	**7**	**3**	**9**	**2**	**1**	**183**

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Date: 25/11/2019

Appendix 5555-01/7:

Winter Bird Survey

Wintering Bird Survey 2019

Land off Clay lane
Chichester, West Sussex

The Ecology Partnership, Thorncroft Manor, Thorncroft Drive, Leatherhead, Surrey KT22 8JB
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Contents

LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living animals and plants are capable of migration/establishing and whilst such species may not have been located during the survey duration, their presence may be found on a site at a later date.

This report provides a snap shot of the species that were present at the time of the survey only and does not consider seasonal variation. Furthermore, where access is limited or the site supports habitats which are densely vegetated only dominant species maybe recorded.

The recommendations contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background and planning context

1.1 The Ecology Partnership was commissioned by Gleeson Strategic Land to undertake an assessment of wintering birds at land off Clay Lane, Fishbourne, Chichester (SU 83929 05210).

1.2 This is one of a number of specialist ecological assessments identified as needed, due to: (i) the proximity of the *European Site*[1] Chichester and Langstone Harbour Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar, from which birds could use the proposed development site, creating a functional link; and (ii) the potential value of the site for common, but declining farmland birds, the conservation of which is identified as a priority at both national and local levels, as discussed further in section 1.6.

Site context

1.3 The site is situated off Clay Lane to the west and east of the road (SU 83962 05144 – centre point), west of the A27 Chichester Bypass. There is new development to the west and Fishbourne Roman Palace to the south. The Chichester and Langstone Harbour Special Protection Area (SPA), Ramsar and SSSI is located 400m south. There are additional designated sites within 2km.

1 *Sensu* Part 2 of the Conservation of Habitats and Species Regulations 2017

Figure 1: Approximate location of the site, indicated by red line boundary

Description of the Proposed Development

1.4 The proposal has currently not been finalised. Any development will be informed by a number of surveys, of which ecology is one.

2.0 Legislation and Policy

2.1 There are a number of designated sites within the local area, both National and International sites which have been reviewed to support this application.

Statutory Sites: European sites

2.2 The site is at its nearest point *c*. 400m south from Chichester and Langstone Harbour Special Protection Area (SPA), Ramsar, LNR and SSSI. It should also be noted that Pagham Harbour (Ramsar, SPA, SSSI and LNR), which is also known for its importance for

wintering birds, is *c.* 5.8km south-east of the site. The proposed development site does not fall within the 3.5km 'Zone of Influence' for the Pagham Harbour SPA detailed in policy 51. Therefore it is deemed unlikely that the development will have a direct impact on this SPA. Consequently, the main focus of this report will be functional links with the Chichester and Langstone Harbours SPA.

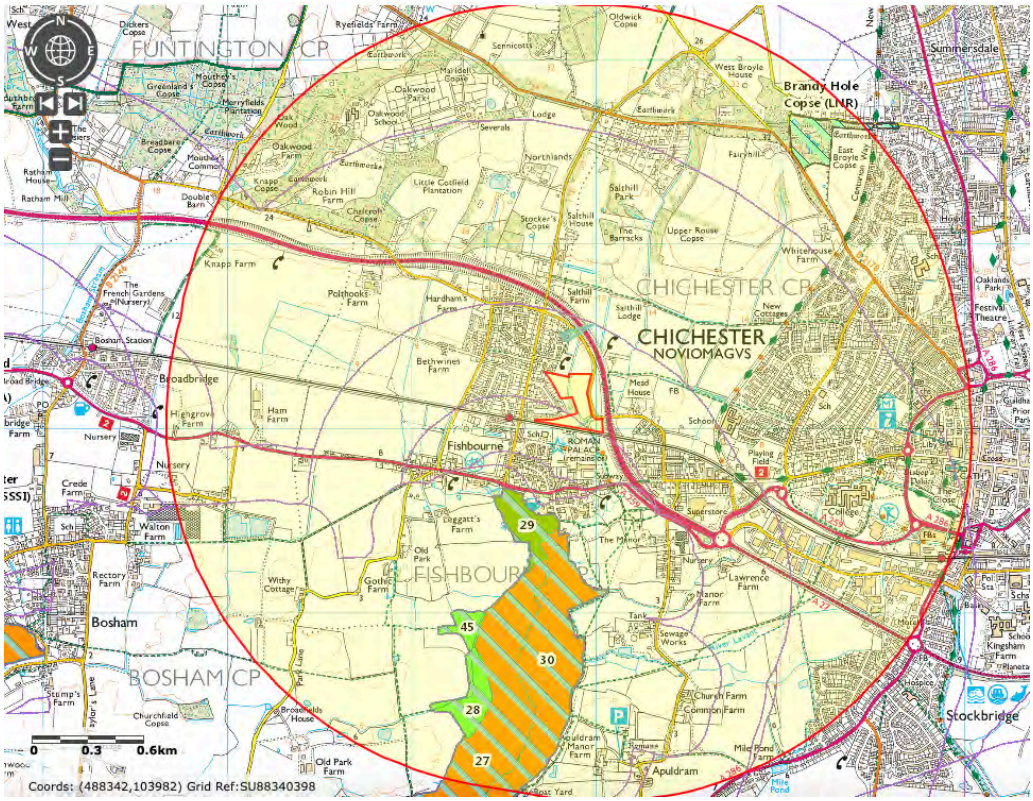

Figure 2. The site (red outline) in relation to statutory sites; Chichester and Langstone Harbour SPA/Ramsar (hatched orange) and nearby LNRs (aqua green hatching)

2.3 The protection of European Sites of interest for birds, through the ***Directive 2009/147/EC on the conservation of wild birds***, is transposed into UK legislation through the ***Conservation of Habitats and Species Regulation 2017***. Section 61 of this Regulation states:

"61.(1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which—

a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and

b) *is not directly connected with or necessary to the management of that site, must make an appropriate assessment of the implications for that site in view of that site's* **conservation objectives**."

Chichester and Langstone Harbour's conservation objectives are to:

"*Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;*

1. *The extent and distribution of the habitats of the qualifying features*
2. *The structure and function of the habitats of the qualifying features*
3. *The supporting processes on which the habitats of the qualifying features rely*
4. *The population of each of the qualifying features, and*
5. *The distribution of the qualifying features within the site*"

2.4 The nineteen qualifying features of the SPA[2] are, with those relevant to this winter survey in bold:

- **A046a *Branta bernicla bernicla*; Dark-bellied brent goose (Non-breeding)**
- **A048 *Tadorna tadorna*; Common shelduck (Non-breeding)**
- **A050 *Anas penelope*; Eurasian wigeon (Non-breeding)**
- **A052 *Anas crecca*; Eurasian teal (Non-breeding)**
- **A054 *Anas acuta*; Northern pintail (Non-breeding)**
- **A056 *Anas clypeata*; Northern shoveler (Non-breeding)**
- **A069 *Mergus serrator*; Red-breasted merganser (Non-breeding)**
- **A137 *Charadrius hiaticula*; Ringed plover (Non-breeding)**
- **A141 *Pluvialis squatarola*; Grey plover (Non-breeding)**
- **A144 *Calidris alba*; Sanderling (Non-breeding)**
- **A149 *Calidris alpina alpina*; Dunlin (Non-breeding)**
- **A157 *Limosa lapponica*; Bar-tailed godwit (Non-breeding)**
- **A160 *Numenius arquata*; Eurasian curlew (Non-breeding)**
- **A162 *Tringa totanus*; Common redshank (Non-breeding)**
- **A169 *Arenaria interpres*; Ruddy turnstone (Non-breeding)**

[2] http://publications.naturalengland.org.uk/publication/6543516511502336

- A191 *Sterna sandvicensis*; Sandwich tern (Breeding)
- A193 *Sterna hirundo*; Common tern (Breeding)
- A195 *Sterna albifrons*; Little tern (Breeding)
- **Waterbird assemblage**

Current status of the qualifying features.

2.5 The citation notes that Chichester and Langstone Harbours are *"internationally important because it regularly supports more than 10,000 wintering wildfowl (average 25,000) and also by regularly supporting more than 20,000 wintering waders (average 77,000).*

The site also supports internationally important numbers of the following species: grey plover (Pluvialis squatarola) (3.9% of the west European population), sanderling (Calidris alba) (3.1%), dunlin (Calidris alpina) (2.6% and over 20,000 birds), redshank (Tringa totanus) (1.4%), brent goose (Branta bernicla) (12%), shelduck (Tadorna tadorna) (4%), and teal (Anas crecca) (1%).

The site qualifies under Article 4.2 by supporting internationally important numbers of the migratory bird species listed above and nationally important wintering numbers of the following migratory bird species: ringed plover (Charadrius hiaticula), curlew (Numenius arquata), bar-tailed godwit (Limosa lapponica), turnstone (Arenaria interpres), wigeon (Anas penelope), pintail (Anas acuta), Shoveler (Anas clypeata) and the red-breasted merganser (Mergus serrator).

The site also qualifies under Article 4.1 because it provides a breeding site for three species of terns (Sterna spp.)."

2.6 The most recent five year mean peak winter waterbird counts for Chichester and Langstone Harbour between 2013/14 -17/18[3] are listed below in order of abundance (Tables 1 & 2). Only those in double figures or more are shown.

3 https://app.bto.org/webs-reporting/

Table 1: Five year mean peak winter (October-March) counts of the more numerous waterbirds between 2013/14 - 17/18 within Chichester Harbour

Species	5 year mean peak
Brent Goose	14,265
Dunlin	11,853
Black-headed Gull	3,320
Wigeon	2,922
Knot	2,574
Redshank	1,854
Lapwing	1,754
Oystercatcher	1,693
Curlew	1,489
Grey Plover	1,444
Teal	1,235
Golden Plover	765
Bar-tailed Godwit	715
Black-tailed Godwit	643
Ringed Plover	506
Shelduck	486
Mallard	439
Common Gull	397
Sanderling	304
Coot	280
Mute Swan	270
Turnstone	226
Canada Goose	203
Pintail	201
Little Egret	201
Herring Gull	159
Red-breasted Merganser	153
Greenshank	90
Mediterranean Gull	82
Little Grebe	82
Gadwall	81
Moorhen	77
Tufted Duck	73
Snipe	73
Cormorant	73

Whimbrel	70
Great Crested Grebe	45
Avocet	38
Common Tern	31
Shoveler	13

Table 2: Five year mean peak winter (October-March) counts of the more numerous waterbirds between 2013/14 - 17/18 within Langstone Harbour

Species	5 year mean peak
Dunlin	13,819
Brent Goose	5,322
Black-headed Gull	2,360
Oystercatcher	1,341
Curlew	1,197
Wigeon	1,077
Redshank	921
Grey Plover	798
Lapwing	759
Black-tailed Godwit	534
Shelduck	454
Teal	447
Knot	407
Turnstone	352
Canada Goose	301
Ringed Plover	244
Herring Gull	241
Bar-tailed Godwit	220
Common Gull	184
Red-breasted Merganser	183
Pintail	174
Gadwall	124
Little Egret	112
Coot	106
Mallard	89
Great Crested Grebe	88
Shoveler	79
Whimbrel	62

Moorhen	56
Avocet	53
Snipe	41
Mediterranean Gull	40
Little Grebe	35
Barnacle Goose	33
Barnacle Goose (naturalised)	33
Mute Swan	33
Golden Plover	31
Tufted Duck	28
Cormorant	27
Greenshank	25
Goldeneye	16
Sanderling	16
Grey Heron	15
Black-necked Grebe	14

2.7 Chichester and Langstone Harbour is cited as qualifying through supporting up to 3.2% of the national wintering population of an Annex 1 species, **bar-tailed godwit**. At the time of the citation and the second SPA review (Stroud *et al.* 2001), the 3.2% threshold for Chichester and Langstone Harbour comprised of 1,692 individuals. The five year mean peak count for Chichester and Langstone Harbours declined to 935 individuals between 2013/14 -17/18.

2.8 Chichester and Langstone Harbour is cited under Article 4.2 though regularly supporting more than 1% of the national wintering populations in 1987/88-92/93 of **dark-bellied brent goose** (17,119 birds or 5.7%), **dunlin** (44,294 birds or 3.2%), **grey plover** (3,825 or 2.5%), **redshank** (1,788 birds or 1.2%) and **ringed plover** (846 or 1.7%). The most recent (2013/14-17/18) sum of five year mean peaks for Chichester and Langstone Harbours are 19,588 brent goose, 25,672, dunlin, 2,242 grey plover, 2,775 redshank and 750 ringed plover. Brent goose and redshank have increased in population on the site, whilst dunlin, grey plover, and ringed plover have all declined over time.

2.9 Ramsar sites (wetlands of international importance), designated or proposed under the Ramsar Convention 1971, are included by the UK government in its list of European sites[4]. Chichester and Langstone Harbour Ramsar site has the same boundary as the SPA and it is designated for supporting peak counts of wintering water birds exceeding 20,000 individuals and internationally and nationally important number of several bird species.

Functionally linked land

2.10 Birds are mobile and species that are qualifying features of the SPA, either individually or as a part of the waterbird assemblage, may feed on land outside of the SPA boundaries. Occasionally impacts to such habitats can have a significant effect upon the special interest of a European site, through an impact on conservation objective 4 (effect on the population). Habitats used by significant numbers of qualifying features of the SPA are defined as ***functionally linked*** to the site and so require assessment under the Habitats Directive and Regulations, as if they were within the SPA boundary (Chapman and Tyldesley 2016).

2.11 Recent discretionary advice from Natural England for a development in Kent (Cleve Hill Solar 2018), is that Habitats Regulations Assessment for functionally linked land should consider effects on bird assemblages, in addition to individually qualifying species. The advice given by Natural England to Cleve Hill Solar, in relation to The Swale SPA's non-breeding bird assemblage, is the most recent relevant advice of which we are aware. The relevant sections of the advice are as follows.

"The integrity of the assemblage (for both breeding and non-breeding) is generally recognised as a product of both abundance and diversity. However, as it is impractical to list all the waterbird species and assess each one individually, it is generally recognised that some constituent species contribute more towards the integrity of the overall assemblage than others, and the assessment should therefore focus on these.

4 http://www.legislation.gov.uk/uksi/2017/1012/contents/made

Recognising this, and as a tool to assist with assessing the ecological impacts of any plan/project on the waterbird assemblage feature, it is useful to identify the 'main component species'. These are:
(i) Those present in nationally important numbers and
(ii) Migratory species present in internationally important numbers (which may also be qualifying feature in their own right, though this is not always the case) and
(iii) Those that occur in the assemblage in numbers >2000 individuals and
(iv) Named component species otherwise listed on SPA citation."

2.12 The underlined "and"s are assumed, from their application by NE, to mean "or"; i.e one or more, not all, the four criteria need to apply for a species to be considered in the assessment. In following this advice and referring to the 1987 SPA citation for Chichester and Langstone Harbour, the 1987 Ramsar Information Sheet and any of the more recent (2000 – 2018) five year mean peak waterbird counts, functional linkage for non-breeding birds will in this report consider, in addition to the qualifying species, a further 9 species, following the NE criteria above to select "main component species". The full list of species to be assessed is in Table 2 below.

Table 3: Species to be considered in the assessment of functional linkage for the waterbird assemblage and as individually qualifying species. The most recent five year mean peak qualifying counts are provided that qualify species for national importance or >2000 individuals

Species	Reasons for selection as main component species			
	National importance	International importance and not qualifying	>2000 individuals	Named on SPA citation
Dark-bellied brent goose	✓ (Ramsar)	-	✓ (13/14-17/18)	✓
Common shelduck	✓ (Ramsar)	-	-	✓
Eurasian wigeon	-	-	-	✓
Eurasian teal	-	-	-	✓
Northern pintail	-	-	-	✓
Northern shoveler	-	-	-	✓

Red-breasted merganser	✓ (13/14-17/18)	-	-	✓
Ringed plover	✓ (13/14-17/18)	-	-	✓
Grey plover	✓ (13/14-17/18)	-	-	✓
Sanderling	✓ (13/14-17/18)	-	-	✓
Dunlin	✓ (13/14-17/18)	-	✓ (13/14-17/18)	✓
Bar-tailed godwit	✓ (13/14-17/18)	-	-	✓
Eurasian curlew	-	-	-	✓
Common redshank	✓ (13/14-17/18)	-	-	✓
Ruddy turnstone	-	-	-	✓
Sandwich tern	-	-	-	✓
Common tern	✓ (Ramsar)	-	-	✓
Little tern	✓ (Ramsar)	-	-	✓
Black headed gull	-	-	✓ (13/14-17/18)	-
Wigeon	-	-	✓ (13/14-17/18)	-
Knot	-	-	✓ (13/14-17/18)	-
Little Egret	✓ (13/14-17/18)	-	-	-
Curlew	✓ (13/14-17/18)	-	-	-
Greenshank	✓ (13/14-17/18)	-	-	-
Mediterranean gull	✓ (13/14-17/18)	-	-	-
Common ringed plover	✓ (Ramsar)	-	-	-
Black-tailed godwit	✓ (Ramsar)	-	-	-

Statutory Sites: national sites

2.13 Within 5km of the site there are two Sites of Special Scientific Interest (SSSI), designated for their wildlife interest (Figure 1). None is cited as selected for its bird interest. However, there may be some lag between the current SSSI guidelines for birds (Drewitt *et al*. 2015) and reasons given for designation in the SSSI citations. Table 3 lists the ornithological features of each SSSI mentioned in the citations.

2.14 Chichester Harbour's SSSI bird interest does not mention any species additional to those for which the SPA, including assemblages, qualifies.

Table 4: Ornithological interest of SSSIs within 5km of the development site

SSSI name	Summary of citation's bird interest
Chichester Harbour	The site is of particular significance for wintering wildfowl and waders and also breeding birds both within the Harbour and in the surrounding permanent pasture fields and woodlands. The extensive intertidal mudflats are the feeding grounds, at the relevant times of year for internationally important numbers of ringed plover, grey plover, redshank, black-tailed godwit, dunlin, sanderling, curlew and greenshank (the latter two in autumn particularly). Bar-tailed godwit numbers are of European importance. Amongst the wildfowl, shelduck, teal and dark-bellied brent goose numbers are of international importance with 5% of the world population of the latter.
Kingly Vale	The site supports a rich community of breeding birds.

Local Wildlife Sites

2.15 The River Lavant Marsh Local Wildlife Site (LWS) is approximately 300m south from the site the site. In winter it contains wet grassland which is an important feeding and roosting site for waders and wildfowl, particularly when flooded. It attracts large numbers of Black-tailed Godwit, Brent Geese and Redshank. Other species such as Curlew, Oystercatcher, Snipe, Jack Snipe and Shelduck occur regularly in winter.

Other ornithological interest

2.16 Of separate concern, unrelated to statutory sites and their component species, a number of bird species of the wider countryside are in steep decline in the UK. Several are classified, through inclusion on the Section 41 list of the Natural Environment and Rural Communities Act 2006, as of "Principal importance for the purpose of conserving biodiversity" in England. The requirement of the Secretary of State under Section 41(3) of this Act to "further the conservation…." of the listed species and "promote the taking by others of such steps" is often met through Local Plan policy and Local Biodiversity Action Plans (LBAP). The Chichester District Council Local Plan (Adopted July 2015) has a number of policies which explicitly or implicitly guide habitat creation or protection for birds.

2.17 **Policy 49: Biodiversity** notes that development will be permitted if:

"Demonstrable harm to habitats or species which are protected or which are of importance to biodiversity is avoided or mitigated".

2.18 A number of common farmland birds are in decline in the UK and are classified, through inclusion on the Section 41 list of the Natural Environment and Rural Communities Act (NERC) 2006, as of "Principle importance for the purpose of conserving biodiversity" in England. These species and others are also classified as of Red or Amber List concern in the UK (Eaton et al. 2015), due to declines in their breeding or wintering population size or range. This non-statutory assessment is based on more recent national data than the Section 41 List and can be used alongside that list for the purposes of conservation evaluation. The requirement of the Secretary of State under Section 41(3) of the NERC Act to "further the conservation…." of the listed species and "promote the taking by others of such steps" implies obligations to Local Planning Authorities, often met through local Biodiversity Action Plans (BAP). The document "Biodiversity and Planning in Sussex" (Sussex Wildlife Trust 2014) notes that there are 52 BAP priority bird species in Sussex and mentions farmland birds as an example of a group that could be "protected or enhanced through the planning system", specifically;

"*Farmland birds, including skylark, linnet, yellowhammer, reed-bunting, curlew, tree sparrow, grey partridge, bullfinch, starling, song thrush and turtle dove, have shown dramatic declines within the last 30 years. All individual birds are protected under the Wildlife and Countryside Act 1981, however, opportunities should be taken to maintain and enhance the populations of these farmland birds wherever possible. Development could impact on these species by direct loss of habitat, but also through increased recreational disturbance, especially associated with residential developments."*

3.0 Methodology

Field surveys, winter 2019

3.1 The survey unit for counts was a field for waterbirds (Figure 3), subdivided into the field itself and its boundary features such as hedgerows and ditches for other farmland birds. Each field was initially scanned with 10x42 Leica binoculars and a Swarovski telescope.

The specific identity, number and behaviour of any waterbirds recorded. Behaviour categories classified birds as feeding, searching for food or resting. Any human activities that could cause disturbance to waterbirds and therefore have caused an a-typical low count or absence were noted.

Figure 3: Numbering for the different fields present on the site

Table 5: Weather conditions and state of tide during bird surveys conducted on the site

Date	Start time	Weather conditions	Surveyors	Time of high tide	Visit ref
18/11/2019	09.00	Low wind, overcast, 9^{0}C	JD	15.20	1
22/12/2019	09.30	Low wind, overcast, 10^{0}C	JD	08.12	2

3.2 Farmland birds, other than waterbirds, may use field boundaries, for example hedgerows, or feed within the field. The most efficient method (Atkinson *et al.* 2006) of recording all species is to walk the boundaries of each field and walk one or more transects through the field, so that all of the field is within 20m of a transect. Otherwise, a number of target species that are more likely to use land the centre of the field, including skylark and yellowhammer, risk being under-recorded. This method was used. Each bird was identified to species, its location assigned to "hedgerow/field boundary" and "field" and the behavioural category recorded when possible, although it was generally not possible to separate feeding and other behaviours for smaller birds. Movement of birds was noted during the survey, in order to minimise double counting.

3.3 Observations were made of the direction, numbers and specific identification of qualifying species of the SPA and all raptors, for two hours up to dusk. Flight lines were sub-divided into two 180 degree sections; towards the site and towards Chichester and Langstone Harbour SPA.

3.4 Surveys were undertaken by Dr Jonty Denton FRES FLS CEcol MCIEEM.

Evaluation

3.5 The evaluation of waterbird numbers on the site in relation to qualifying numbers for nearby SPAs uses current Wetland Bird Survey (WeBS) data and the counts used to qualify the SPAs[5], which are out of date. The evaluation of farmland birds makes use of the current listing of birds of conservation concern in the UK (Eaton *et al.* 2015) and the Section 41 list. The evaluation of the use of the site's habitats for species of conservation concern, hence any impact and mitigation, references recent literature on habitat and resource selection and response to habitat loss or disturbance for the relevant species.

Survey constraints

3.6 Surveys of non-breeding birds, which can be mobile over several sites when not holding territories and can change their distribution with weather conditions, are always vulnerable to the risk of missing occasional use of a site. The survey effort, at monthly

5 http://publications.naturalengland.org.uk/publication/5199409650335744

intervals, is considered reasonable as it follows national survey effort for wading birds on farmland (Gillings *et al*. 1999, 2007) and wintering farmland birds (Gillings *et al.* 2008).

3.7 Some of the target waterbirds do have different feeding distributions at night (Gillings *et al.* 1999, 2007). The survey attempted to detect movement of birds onto the site around dusk, but would not have recorded birds moving at night onto the site.

3.0 Results

Habitats and land use

3.1 Fields 3, 4 and 5 still comprised of mainly rough grassland and scrub with tall ruderals. Fields 1 and 2 comprised of grazed grassland. Hedgerows and tree lines still ran along most of the site edges and there was a ditch network running through the site. There was one public right of way along the boundaries of fields 2, 3 and 4. This was used as a dog walking route.

Figure 4: Land use in winter 2019. Fields of grassland, tall ruderals and scrub (yellow) and grazed grasslands (orange). The single public footpath on site is also shown (dashed black line).

Waterbirds

3.2 No waterbirds were seen to land within or directly adjacent to the site but a low number were identified flying overhead, including black headed gull, herring gull and common gull. The observations can reasonably be assumed to be waterbirds using the site's air space on transit between locations.

3.3 No other waterbirds were recorded within the red or blue line boundaries of the main site.

Priority Species

3.4 The survey recorded a total of 30 species on or over the site of which 7 were priority species. This included amber list **dunnock** and red list **song thrush** which were only recorded scattered within the site's peripheral hedgerows (Table 5). Red list **stock dove, starling, herring gulls** and **black headed gulls** were recorded as frequent flyovers only (Table 5). A low number of **grey wagtails** were also head passing overhead along the ditch line (Table 5).

3.5 In terms of abundance, corvids were the most recorded group, with relatively high numbers of wood pigeons were feeding within the field boundaries and a single woodpecker was seen feeding within a field. A moderate number of small common garden passerines were found along the boundaries of the site, within hedgerows and trees.

Table 6: Species of Conservation Concern recorded during the breeding bird survey, of Red, Amber and Section 41 status. Non-priority species have also been listed.

Species	Fields		Hedges and scrub		Flyovers	
	Visit 1	Visit 2	Visit 1	Visit 2	Visit 1	Visit 2
Priority species						
Dunnock			6	5		
Song thrush S41			3	2		
Starling S41						1
Stock dove						1
Herring gulls S41					8	6
Black-headed gulls					2	8

Grey wagtails					2	
Other species						
Pheasant				3	2	
Green Woodpecker	1		1			
Great Spotted Woodpecker			1	1		
Buzzard					1	1
Mew (Common) Gull					8	6
Wood Pigeon			12			
Pied Wagtail	2				1	
Wren			7	6		
Robin			6	8		
Redwing		1		5		
Blackbird			5	14		
Goldcrest				2		
Long tailed Tit			8	7		
Great Tit			4	12		
Blue Tit			6	9		
Magpie	2	1	2	1		
Carrion Crow			1	1	1	1
Rook					2	
Jackdaw						6
Chaffinch			4	2		
Greenfinch			6	4		
Goldfinch			4	2		

4.0 Discussion and Recommendations

Assessment of wintering bird species of conservation importance: European Sites

4.1 The site is located within the 'zone of influence' for the Chichester and Langstone Harbour SPA. 27 bird species were identified as requiring assessment for functional linkage between the site and the SPA. One species, black-headed gull, was observed flying over the site during both surveys but no individuals were seen to land within or directly adjacent to the site. Therefore, it is not considered likely that the development will have any direct or indirect impacts on this species. Given that no birds of interest were seen within the site, it has been concluded that there is no functional linkage between the site and the SPA, and the development on site will likely have **no significant effect on the conservation objective of the SPA.**

Assessment of wintering bird species of conservation importance: Red list species

4.2 Six of the species recorded during the survey are included in the BOCC Red list (Eaton *et al.*, 2015). BoCC Red List species are those whose UK breeding population or breeding range has contracted by 50% or more in the preceding 25 years, or in the case, over the period since BoCC assessment began in 1969: 'longer term'. Winter habitats are vital for these species in providing suitable over-winter feeding grounds and ensuring survival to the next breeding season.

4.3 These are song thrush, starling, stock dove, herring gulls, black-headed gulls and grey wagtails. Of these, only song thrush were observed using the boundary habitats. Thrush species mostly utilise the winter-berries in the boundary hedgerows and treelines. It is recommended that these habitats are retained within the scheme were possible to minimise any direct or indirect impacts on these species. Native berry-rich species should also be used within any new hedgerow and treeline planting schemes on site.

4.4 The remaining species were observed flying over only, as such their observation is not considered to be significant and it is not considered that the loss of the fields on site would impact these species.

Assessment of wintering bird species of conservation importance: Amber List species

4.5 Dunnock was also observed on site and this is a BoCC Amber list species. Dunnock are considered to be utilising the scrub, hedgerows and ground flora close to the hedgerows. It is recommended that these features are retained where possible within the scheme to minimise any direct or indirect impacts on this species. Additional scrub and hedgerow planting should also occur across the site to provide additional opportunities on site post-development.

5.0 Conclusions

5.1 The site was assessed for wintering birds by monthly field utilisation counts during November and December 2019 of each field. During the same visits, flight line surveys were also conducted towards dusk to assess movement of waterbirds and raptors between the site and Chichester and Langstone Special Protection Area (SPA).

5.2 The site is *c.* 5 ha of grassland, scrub and tall ruderals and it is located *c.* 400m south of Chichester and Langstone Harbour SPA at its nearest point. The five fields were at the time of the survey comprised of grazed grasslands and a mixture of tall ruderals, grassland and scrub.

5.3 The assessment is against the conservation objectives of Chichester and Langstone Harbour SPA, for which the site is potentially functionally linked land and the populations of declining farmland birds on the UK Red and Amber lists and Section 41 List.

5.4 Based on the outlined criteria, 27 bird species were identified as requiring assessment for functional linkage between the site and Chichester and Langstone Harbour SPA. Of these, only 1 species, black-headed gulls, was observed during the surveys and individuals were observed flying over the site only. Due to only one of the 27 species being observed near the site, it is not considered likely that there is a functional linkage between the site and the SPA, or that the proposals would have any significant effects on the conservation objectives of the SPA.

5.5 The number of wintering waterbirds on the site was low, with only dunnock and song thrush being observed using the boundary features only. None of the species of conservation concern were identified on site and only low numbers of stock dove, herring gulls, starlings, black-headed gulls and grey wagtails were also observed flying over the site. The observation of these individuals is not considered to be significant.

5.6 Development on site will likely result in the loss of the fields but it is not considered likely that there will be any residual impacts on any bird species of interest as long as the boundaries features are retained and enhanced where possible.

6.0 References

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Stroud, D. *et al.* 2016. The status of UK SPAs in the 200s. The third network review. JNCC

Internet resources:

Google Maps: www.maps.google.co.uk
Magic Interactive Map: www.magic.gov.uk

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Date: 15/01/2020

Appendix 5555-01/8:

Evaluation Methodology

Evaluation Methodology

1. The evaluation of ecological features and resources is based on professional judgement whilst also drawing on the latest available industry guidance and research. The approach taken in this report is based on that described by the Chartered Institute of Ecology and Environmental Management (CIEEM) 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (2018)[1].

Importance of Ecological Features

2. Ecological features within the site/study area have been evaluated in terms of whether they qualify as 'important ecological features'. In this regard, CIEEM guidance states that *"it is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable".*

3. Various characteristics contribute to the importance of ecological features, including:

- Naturalness;
- Animal or plant species, sub-species or varieties that are rare or uncommon, either internationally, nationally or more locally, including those that may be seasonally transient;
- Ecosystems and their component parts, which provide the habitats required by important species, populations and/or assemblages;
- Endemic species or locally distinct sub-populations of a species;
- Habitat diversity;
- Habitat connectivity and/or synergistic associations;
- Habitats and species in decline;
- Rich assemblages of plants and animals;
- Large populations of species or concentrations of species considered uncommon or threatened in a wider context;
- Plant communities (and their associated animals) that are considered to be typical of valued natural/semi-natural vegetation types, including examples of naturally species-poor communities; and
- Species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change.

4. As an objective starting point for identifying important ecological features, European, national and local governments have identified sites, habitats and species which form a key focus for biodiversity conservation in the UK, supported by policy and legislation. These are summarised by CIEEM guidance as follows:

Designated Sites

- Statutory sites designated or classified under international conventions or European legislation, for example World Heritage Sites, Biosphere Reserves, Wetlands of International Importance (Ramsar sites), Special Areas of Conservation (SAC), Special Protection Areas (SPA);

[1] CIEEM (2018) '*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*', Chartered Institute of Ecology and Environmental Management, Winchester

- Statutory sites designated under national legislation, for example Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR);
- Locally designated wildlife sites, e.g. Local Wildlife Sites (LWS).

Biodiversity Lists

- Habitats and species of principal importance for the conservation of biodiversity in England and Wales (largely drawn from UK BAP priority habitats and priority species), often referred to simply as Priority Habitats / Species;
- Local BAP priority species and habitats.

Red Listed, Rare, Legally Protected Species

- Species of conservation concern, Red Data Book (RDB) species;
- Birds of Conservation Concern;
- Nationally rare and nationally scarce species;
- Legally protected species.

5. In addition to this list, other features may be considered to be of importance on the basis of local rarity, where they enable effective conservation of other important features, or play a key functional role in the landscape.

<u>Assigning Level of Importance</u>

6. The importance of an ecological feature should then be considered within a defined geographical context. Based on CIEEM guidance, the following frame of reference is used:

- International (European);
- National;
- Regional;
- County;
- District;
- Local (e.g. Parish or Neighbourhood);
- Site (not of importance beyond the immediate context of the site).

7. Features of 'local' importance are those considered to be below a district level of importance, but are considered to appreciably enrich the nature conservation resource or are of elevated importance beyond the context of the site.

8. Where features are identified as 'important' based on the list of key sites, habitats and species set out above, but are very limited in extent or quality (in terms of habitat resource or species population) and do not appreciably contribute to the biodiversity interest beyond the context of the site, they are considered to be of 'site' importance.

9. In terms of assigning the level of importance, the following considerations are relevant:

Designated Sites

10. For designated sites, importance should reflect the geographical context of the designation (e.g. SAC/SPA/Ramsar sites are designated at the international level whereas SSSIs are designated at the national level). Consideration should be given to multiple designations as appropriate (where an area is subject to differing levels of nature conservation designations).

Habitats

11. In certain cases, the value of a habitat can be measured against known selection criteria, e.g. SAC selection criteria, 'Guidelines for the selection of biological SSSIs' and the Hedgerows Regulations 1997. However, for the majority of commonly encountered sites, the most relevant habitat evaluation will be at a more localised level and based on relevant factors such as antiquity, size, species-diversity, potential, naturalness, rarity, fragility and typicalness (Ratcliffe, 1977). The ability to restore or re-create the habitat is also an important consideration, for example in the case of ancient woodland.

12. Whether habitats are listed as priorities for conservation at a national level in accordance with Sections 41 and 42 of the Natural Environment and Rural Communities Act (NERC) 2006, so called 'Habitats of Principal Importance' or 'Priority Habitats', or within regional or local Biodiversity Action Plans (BAPs) is also relevant, albeit the listing of a particular habitat under a BAP does not in itself imply any specific level of importance.

13. Habitat inventories (such as habitat mapping on the MAGIC database) or information relating to the status of particular habitats within a district, county or region can also assist in determining the appropriate scale at which a habitat is of importance.

Species

14. Deciding the importance of species populations should make use of existing criteria where available. For example, there are established criteria for defining nationally and internationally important populations of waterfowl. The scale within which importance is determined could also relate to a particular population, e.g. the breeding population of common toads within a suite of ponds or an otter population within a catchment.

15. When determining the importance of a species population, contextual information about distribution and abundance is fundamental, including trends based on historical records. For example, a species could be considered particularly important if it is rare and its population is in decline. With respect to rarity, this can apply across the geographic frame of reference and particular regard is given to populations where the UK holds a large or significant proportion of the international population of a species.

16. Whether species are listed as priorities for conservation at a national level in accordance with Sections 41 and 42 of the Natural Environment and Rural Communities Act (NERC) 2006, so called 'Species of Principal Importance' or 'Priority Species', or within regional or local Biodiversity Action Plans (BAPs) is also relevant, albeit the listing of a particular species under a BAP does not in itself imply any specific level of importance.

17. Species populations should also be considered in terms of the potential zone of influence of the proposals, i.e. if the entire species population within the site and surrounding area were to be affected by the proposed development, would this be of significance at a local, district, county or wider scale? This should also consider the foraging and territory ranges of individual species (e.g. bats roosting some distance from site may forage within site whereas other species such as invertebrates may be more sedentary).

Appendix 5555-01/9:

Biodiversity Net Gain Calculations

Headline Results

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On-site baseline	*Habitat units*	25.57
	Hedgerow units	8.24
	River units	0.00
On-site post-intervention (Including habitat retention, creation, enhancement & succession)	*Habitat units*	20.72
	Hedgerow units	8.38
	River units	0.00
Off-site baseline	*Habitat units*	6.19
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation, enhancement &	*Habitat units*	11.69
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention/creation)	*Habitat units*	0.65
	Hedgerow units	0.14
	River units	0.00
Total net % change (including all on-site & off-site habitat creation + retained habitats)	*Habitat units*	2.55%
	Hedgerow units	1.74%
	River units	0.00%

A-1 Site Habitat Baseline

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Ref	Habitats and areas: Broad Habitat	Habitats and areas: Habitat type	Habitats and areas: Area (hectares)	Habitat distinctiveness: Distinctiveness	Habitat condition: Condition	Ecological connectivity: Ecological connectivity	Strategic significance: Strategic significance	Suggested action to address habitat losses	Ecological baseline: Total habitat units	Retention category biodiversity value: Area retained	Area enhanced	Area succession	Baseline units retained	Baseline units enhanced	Baseline units succession	Area lost	Units lost	Bespoke compensation agreed for unacceptable losses	Comments: Assessor comments	Comments: Reviewer comments
1	Grassland	Grassland - Modified grassland	0.505	Low	Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	1.16				0.00	0.00	0.00	0.51	1.16		F2 Grass - heavily grazed, species-poor and dominated by Perennial Rye-grass	
2	Grassland	Grassland - Other neutral grassland	0.1577	Medium	Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	0.73				0.00	0.00	0.00	0.16	0.73		F3 Grass - resembles g3c8 Holcus-Juncus neutral grassland. Dominated by Yorkshire-fog and is species-poor.	
3	Grassland	Grassland - Other neutral grassland	0.6585	Medium	Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	3.03				0.00	0.00	0.00	0.66	3.03		F4 Grass - some indicators of nicer grassland (Upright Brome). High abundance of undesirable species including - condition poor.	
4	Grassland	Grassland - Modified grassland	0.1481	Low	Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	0.34				0.00	0.00	0.00	0.15	0.34		F5 grass - Dominated by rushes, tufted hair-grass and Creeping Bent, with indicators of high fertility (Creeping Buttercup). High abundance of undesirable species (Dock).	
5	Heathland and shrub	Heathland and shrub - Bramble scrub	2.0869	Medium	Fairly Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	14.40				0.00	0.00	0.00	2.09	14.40		Dense Bramble scrub. Similar age, contains Creeping Thistle and Nettle. Bramble varies in age, with some very dense areas and other areas where younger scrub is encroaching the surrounding grassland. There are clearings in the scrub which contain grass and tall ruderal species. Accordingly, scrub doesn't fail all condition assessment criteria and is not 'poor' condition.	
6	Sparsely vegetated land	Sparsely vegetated land - Ruderal/Ephemeral	0.552	Low	Fairly Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	1.90				0.00	0.00	0.00	0.55	1.90		Tall Ruderal vegetation.	
7	Sparsely vegetated land	Sparsely vegetated land - Ruderal/Ephemeral	0.6986	Low	Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	1.61				0.00	0.00	0.00	0.70	1.61		Recently cut/cleared vegetation with young ruderal veg recolonising	
8	Heathland and shrub	Heathland and shrub - Mixed scrub	0.1714	Medium	Fairly Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	1.18	0.0438			0.30	0.00	0.00	0.13	0.88		Mixed scrub dominated by Willow (of varying ages) and Bramble.	
9	Lakes	Lakes - Ditches	0.1771	Medium	Fairly Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	1.22	0.167			1.15	0.00	0.00	0.01	0.07		Ditches including marginal vegetation.	
10	Urban	Urban - Developed land; sealed surface	0.0036	V.Low	N/A - Other	N/A	Within area formally identified in local strategy	Compensation Not Required	0.00				0.00	0.00	0.00	0.00	0.00		Horse shelter and hardstanding in F2.	
11	Urban	Urban - Developed land; sealed surface	0.1654	V.Low	N/A - Other	N/A	Within area formally identified in local strategy	Compensation Not Required	0.00	0.1654			0.00	0.00	0.00	0.00	0.00		Clay Lane	
12																				
13																				
14																				
15																				
		Total site area ha	**5.32**					**Total Site baseline**	**25.57**	**0.38**	**0.00**	**0.00**	**1.45**	**0.00**	**0.00**	**4.95**	**24.12**			

A-2 Site Habitat Creation

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Post development/ post intervention habitats: Proposed habitat	Area (hectares)	Distinctiveness	Condition	Ecological: Ecological connectivity	Strategic significance: Strategic significance	Temporal multiplier: Time to target condition/years	Difficulty: Difficulty of creation category	Habitat units delivered	Comments: Assessor comments	Comments: Reviewer comments
Urban - Developed land; sealed surface	0.5936	V.Low	N/A - Other	N/A	Within area formally identified in local strategy	0	Low	0.00	Roads	
Urban - Suburban/ mosaic of developed/ natural surface	2.7454	Low	Fairly Poor	N/A	Within area formally identified in local strategy	2	Low	8.82	Mosaic of houses and gardens	
Urban - Developed land; sealed surface	0.0456	V.Low	N/A - Other	N/A	Within area formally identified in local strategy	0	Low	0.00	Children's play area	
Grassland - Other neutral grassland	0.7986	Medium	Fairly Good	Low	Within area formally identified in local strategy	12	Low	5.99	Species-rich grassland in open areas	
Grassland - Other neutral grassland	0.3543	Medium	Fairly Good	Low	Within area formally identified in local strategy	12	Low	2.66	Areas of wildflower grassland	
Grassland - Modified grassland	0.0765	Low	Poor	Low	Within area formally identified in local strategy	1	Low	0.17	Amenity Grassland around children's play area	
Heathland and shrub - Mixed scrub	0.1286	Medium	Moderate	Low	Within area formally identified in local strategy	3	Low	1.06	Native scrub planting	
Urban - Sustainable urban drainage feature	0.2055	Low	Moderate	Low	Within area formally identified in local strategy	3	Medium	0.57	SUDS	
Totals	**4.95**							**19.27**		

B-1 Site Hedge Baseline

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	UK Habitats - existing habitats			Habitat distinctiveness	Habitat condition	Ecological connectivity	Strategic significance		Ecological baseline	Retention category biodiversity value						Comments	
Baseline ref	Hedge number	Hedgerow type	length KM	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Suggested action to address habitat losses	Total hedgerow units	Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost	Assessor comments	Reviewer comments
1	H2	Native Species Rich Hedgerow with trees	0.121	Medium	Good	Medium	Within area formally identified in local strategy	Like for like or better	1.83678	0.108		1.63944	0	0.013	0.19734	H2 - species-rich, not important, standard trees	
2	H4	Native Species Rich Hedgerow with trees	0.225	Medium	Good	Low	Within area formally identified in local strategy	Like for like or better	3.105	0.19		2.622	0	0.035	0.483	H4 - species-rich, not important, standard trees	
3	H7	Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.086	High	Poor	Medium	Within area formally identified in local strategy	Like for like	0.65274		0.069	0	0.52371	0.017	0.12903	H7 - line of mature trees with gappy shrub layer. Species-rich, not important	
4	H8	Native Hedgerow - Associated with bank or ditch	0.146	Medium	Moderate	Low	Within area formally identified in local strategy	Like for like or better	1.3432		0.146	0	1.3432	0	0	H8 - not species-rich or important and only young trees/scrub.	
5	H9	Hedge Ornamental Non Native	0.056	V.Low	Good	Low	Within area formally identified in local strategy	Same distinctiveness band or better	0	0.056		0	0	0	0	H9 - dominated by non-native species.	
6	H10	Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.079	High	Poor	Medium	Within area formally identified in local strategy	Like for like	0.59961		0.071	0	0.53889	0.008	0.06072	H10 - line of trees with gaps. Species-rich, not important and with standard trees.	
7	H11	Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.092	High	Poor	Medium	Within area formally identified in local strategy	Like for like	0.69828	0.092		0.69828	0	0	0	H11 - line of trees with gaps. Species-rich, not important and with standard trees.	
8																	
9																	
10																	
11																	
12																	
		Total Site length/KM	0.81					Total Site baseline	8.24	0.45	0.29	4.96	2.41	0.07	0.87		

B-3 Site Hedge Enhancement

Condense / Show Columns | Condense / Show Rows

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	Baseline Habitats	Post development/ post intervention habitats: Proposed	Change in distinctiveness and condition		Length KM	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Temporal multiplier	Difficulty Multipliers	Hedge units delivered	Comments	
Baseline ref	Baseline habitat		Distinctiveness movement	Condition movement					Strategic significance	Time to target condition/years	Difficulty of enhancement Category		Assessor comments	Reviewer comments
3	Native Species Rich Hedgerow with trees - Associated with bank or ditch	Native Species Rich Hedgerow with trees - Associated with bank or ditch	High - High	Poor - Good	0.069	High	Good	Medium	Within area formally identified in local strategy	20	Medium	0.87	Enhancement of H7 through bolstering of shrub layer with native shrub species	
4	Native Hedgerow - Associated with bank or ditch	Native Hedgerow - Associated with bank or ditch	Medium - Medium	Moderate - Good	0.146	Medium	Good	Low	Within area formally identified in local strategy	10	Medium	1.66	Enhancement of H8 through bolstering of shrub layer with native shrub species	
6	Native Species Rich Hedgerow with trees - Associated with bank or ditch	Native Species Rich Hedgerow with trees - Associated with bank or ditch	High - High	Poor - Good	0.071	High	Good	Medium	Within area formally identified in local strategy	20	Medium	0.89	Enhancement of H10 through bolstering of shrub layer with native shrub species	
				Total site length	0.29							3.42		

D-1 Off Site Habitat Baseline

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Baseline ref	Habitats and areas: Broad habitat	Habitat type	Area (hectares)	Habitat distinctiveness: Distinctiveness	Habitat condition: Condition	Ecological connectivity: Ecological connectivity	Strategic significance: Strategic significance	Suggested action to address habitat losses	Ecological baseline: Total habitat units	Retention category biodiversity value: Area retained	Area enhanced	Area succession	Baseline units retained	Baseline units enhanced	Baseline units succession	Area lost	Units lost	Bespoke compensation agreed for unacceptable losses	Comments: Assessor comments	Reviewer comments
1	Grassland	Grassland - Modified grassland	1.3318	Low	Poor	Low	Within area formally identified in local strategy	Same distinctiveness or better habitat required	3.06		0.5708		0	1.31	0.00	0.76	1.75		F7 grass - grazed by horses and dominated by Perennial Rye-grass.	
2	Heathland and shrub	Heathland and shrub - Bramble scrub	0.1431	Medium	Fairly Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	0.99	0.1298			0.89562	0.00	0.00	0.01	0.09		Dense Bramble scrub within F7	
3	Woodland and forest	Woodland and forest - Other woodland; mixed	0.1018	Medium	Fairly Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	0.70	0.1018			0.70242	0.00	0.00	0.00	0.00		Area of woodland within F7	
4	Heathland and shrub	Heathland and shrub - Mixed scrub	0.2089	Medium	Fairly Poor	Low	Within area formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	1.44		0.2089		0	1.44	0.00	0.00	0.00		Mixed scrub within F7	
5	Urban	Urban - Developed land; sealed surface	0.128	V.Low	N/A - Other	N/A	Within area formally identified in local strategy	Compensation Not Required	0.00	0.128			0	0.00	0.00	0.00	0.00		Hardstanding road within F7	
6																				
7																				
8																				
9																				
		Total site area ha	**1.91**					**Total Site baseline**	**6.19**	**0.36**	**0.78**	**0.00**	**1.60**	**2.75**	**0.00**	**0.77**	**1.84**			

D-2 Off Site Habitat Creation

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Post development/ post intervention habitats: Proposed habitat	Area ha	Distinctiveness	Condition	Ecological: Ecological connectivity	Strategic significance: Strategic significance	Temporal multiplier: Time to target condition/years	Difficulty: Difficulty of creation category	Spatial risk multiplier: Spatial risk category	Habitat units delivered	Comments: Assessor comments	Reviewer comments
Urban - Developed land; sealed surface	0.0196	V.Low	N/A - Other	N/A	Within area formally identified in local strategy	0	Low	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	0.00	Hardstanding	
Heathland and shrub - Mixed scrub	0.3751	Medium	Moderate	Low	Within area formally identified in local strategy	3	Low	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	3.10	Native scrub planting	
Urban - Sustainable urban drainage feature	0.3796	Low	Moderate	Low	Within area formally identified in local strategy	3	Medium	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	1.05	SUDS	
Totals	**0.77**								**4.15**		

D-3 Off Site Habitat Enhancment

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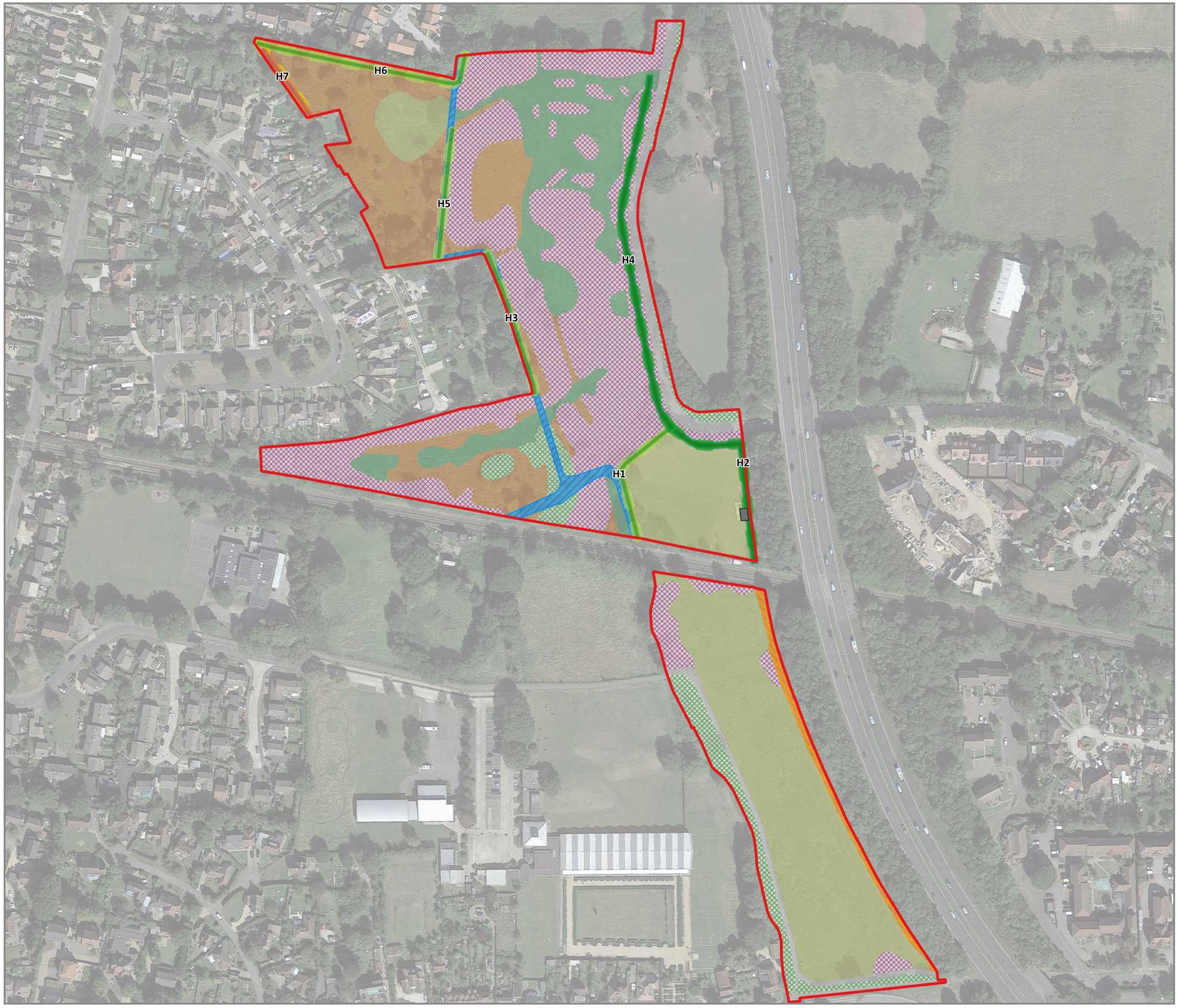
Baseline habitats: Baseline ref	Baseline habitat	Change in distinctiveness and condition: Proposed habitat (Pre-Populated but can be overridden)	Distinctiveness change	Condition change	Post development/ post intervention habitats: Area ha	Distinctiveness	Condition	Ecological connectivity: Ecological connectivity score	Strategic significance: Strategic significance	Temporal multiplier: Time to target condition/years	Difficulty multipliers: Difficulty of enhancement category	Spatial risk multiplier: Spatial risk category	Habitat units delivered	Comments: Assessor comments	Reviewer comments
1	Grassland - Modified grassland	Grassland - Other neutral grassland	Low - Medium	Lower Distinctiveness Habitat - Moderate	0.5708	Medium	Moderate	Low	Within area formally identified in local strategy	10	Low	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	4.07	Retained grassland to be enhanced through the sowing of a wildflower grassland mix	
4	Heathland and shrub - Mixed scrub	Heathland and shrub - Mixed scrub	Medium - Medium	Fairly Poor - Moderate	0.2089	Medium	Moderate	Low	Within area formally identified in local strategy	3	Low	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	1.87		
				Total site area	**0.78**							**Total off-site area**	**5.94**		



Key:

- Site Boundary
- Grassland - Other Neutral Grassland
- Grassland - Modified Grassland
- Sparsely Vegetated Land - Ruderal/Ephemeral
- Heathland and Shrub - Mixed Scrub
- Heathland and Shrub - Bramble Scrub
- Woodland
- Lakes - Ditches
- Hardstanding
- Urban - Developed Land; Sealed Surface
- Native Species-rich Hedgerow with Trees
- Native Species-rich Hedgerow with Trees - Associated with Bank or Ditch
- Hedge Ornamental Non-native

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Pre-development Metric Habitat Plan	TITLE
5555/BIA1	DRAWING NO.
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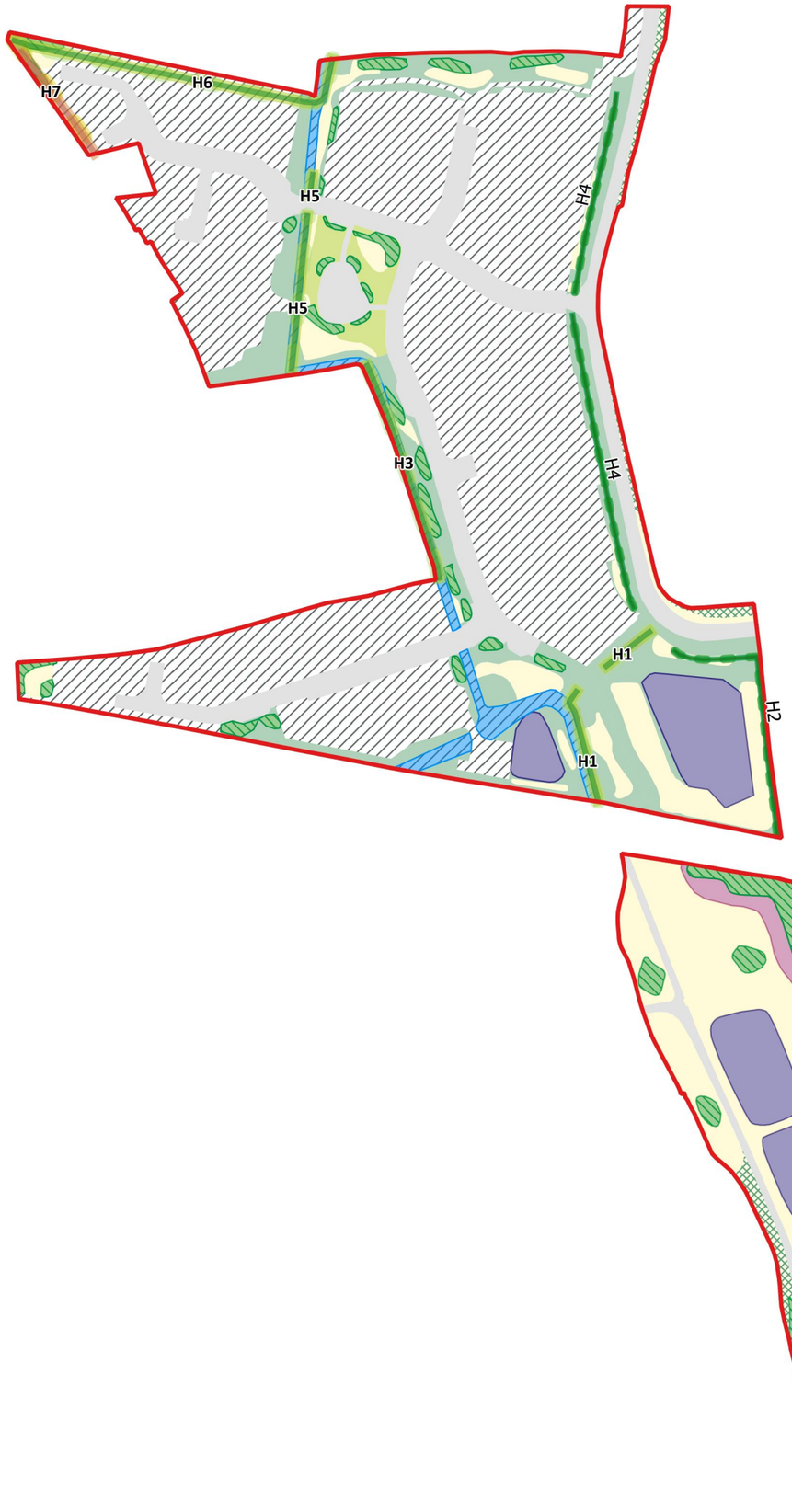
March 2022	DATE



Key:

- Site Boundary
- Grassland - Other Neutral Grassland
- Native Shrub
- Urban - Amenity Grassland
- Wildflower Mix
- Urban - Wetland for Nutrient Neutrality Purposes
- Urban - Suburban/Mosaic of Developed/ Natural Surface
- Urban - Developed Land; Sealed Surface
- Lakes - Ditches
- Scrubland
- Heatland and Shrub - Bramble Scrub (retained)
- Heatland and Scrub - Mixed Scrub (retained)
- Woodland (retained)
- Native Species-rich Hedgerow with Trees (retained)
- Native Species-rich Hedgerow withTrees - Associated with Bank or Ditch (retained)
- Hedge Ornamental Non-native (retained)

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