

The Ageas Bowl: Mixed Use Development

Ecological Impact Assessment

J00765/Version 1.2

Client: Land & Development Advisory Ltd

Date: May 2022

DOCUMENT CONTROL

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Land & Development Advisory Ltd

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DOCUMENT REVISIONS

Version	Details	Date
V1.0	EclA issued to client for comment	23 rd March 2022
V1.1	Updated to take into account air quality modelling outputs	19 th April 2022
V1.2	Further updates to address WSP Air Quality Report	25 th May 2022

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1 INTRODUCTION

1.1 BACKGROUND

Johns Associates Ltd was commissioned by Land Development Advisory Ltd in September 2021 to undertake an Ecological Impact Assessment (EclA) in support of a full planning application for development proposals associated with the Ageas Bowl.

Johns Associates has been involved with the Ageas Bowl site since 2007 and consequently has developed a detailed understanding of the ecological value of the site and the distribution of habitats and species within the wider landholding. This EclA builds on this historical knowledge and draws on information gathered from a desk study and data search as well as field surveys carried out by Johns Associates during 2020 and 2021, the results of which are summarised in Section 4. Full details of the surveys undertaken, and certain assessments, are presented within a suite of Technical Notes presented as Appendices to this EclA.

1.2 SUMMARY OF PROPOSALS

The proposals comprise the erection of 185 new homes, a 71-bedroom care home (Use Class C2), a 142-bedroom hotel (Use Class C1), a well-being centre (Use Class E / F2), a new pavilion building and improvements to existing stadium, new vehicular access, car parking, pedestrian circulation and processional ramp, together with tree planting, landscaping, SuDS and biodiversity enhancements.

1.3 PURPOSE OF THIS ASSESSMENT

This Ecological Impact Assessment report presents the current ecological baseline at the site and informs a complete assessment of the potential effects of the proposed scheme on those ecological features (including legally protected species) associated with the Site, as defined by the information set out in this report.

It provides a description of elements of the ecological baseline, presents a scope of the assessment, defines integrated and embedded ecological mitigation and enhancement measures before considering the potential effects of the proposed development, and makes further recommendations for further monitoring and management measures.

1.4 ABOUT THIS ECOLOGICAL IMPACT ASSESSMENT

The EclA assessment methodology used has been adapted from the Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2019). EclA is a process of identifying, quantifying and evaluating potential effects of development-related or other proposed actions on habitats, species and ecosystems. The findings of this EclA will inform Eastleigh Borough Council of the ecological issues when determining the planning application for the site.

A key consideration in scoping and subsequently assessing the impacts of any development is to define the habitats and species that need to be considered. The approach set out below follows the standard guidance published by CIEEM and is widely considered to be current best practice.

Ecological features (habitats, species and ecosystems) present within the site and its zone of influence are scoped through the desk study and field survey process and their ecological importance determined with reference to a geographical context. In identifying these 'features' or receptors, it is important to recognise that a development can affect habitats and species directly (e.g. the land-take required) and indirectly, (e.g. through noise generation or lighting).

The key elements of the assessment process are as follows:

- Identifying and characterising impacts which may be beneficial (positive) or adverse (negative);
- Incorporating measures to avoid and/or mitigate these impacts;
- Assessment of the significance of any residual effects after mitigation has been applied;
- Where there are significant residual effects, identification of appropriate compensation measures to offset these; and
- Identifying opportunities for ecological enhancement.

A key principle of (EcIA) is to identify those impacts that are ecologically significant. A significant effect is an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the ecological consequences of permitting such a project (CIEEM, 2019).

Importantly, the design process has been iterative, drawing on historic and contemporary ecological information from data search results and field surveys undertaken by Johns Associates in 2020 and 2021 and making use of best practice design principals to ensure that avoidance, mitigation, compensation and enhancement measures have been formally incorporated into the final design taken forward for the planning submission.

The key elements of this EcIA report are:

- Section 1: Introduction – Overview of the proposals, the Site and purpose of report.
- Section 2: Legislation, Planning Policy & Technical Guidance.
- Section 3: Data Gathering Methodology - Consultation undertaken to ensure the most effective input to defining the initial scope of the assessment; Zones of Influence; Proposed surveys and methods for survey, evaluation and assessment provided.
- Section 4: Baseline Ecological Conditions – Desk study and field survey results and describing the ecological conditions.
- Section 5: Scope of the Assessment – Approach to identifying receptors, potential receptors and significant effects.
- Section 6: Environmental Measures Integrated and Embedded into the Proposals.
- Section 7: Ecological Impact Assessment – An assessment of whether ecological features will be subject to impacts and characterisation of these impacts and their effects. Assessment of the significance of the residual effects following implementation of embedded mitigation.
- Section 8: Defra Biodiversity Metric 3.0 Results – Tables and summary of results are provided.
- Section 9: Cumulative Effects – An assessment of cumulative impacts and effects including multiple activities and projects creating an additive effect; associated or connected development activity within the Site and consented or unconsented proposals within the agreed Zone of Influence.
- Section 10: Additional Mitigation or Compensation Requirements – Measures to avoid, reduce and compensate any residual negative ecological impacts and their effects.
- Section 11: Implementation of Biodiversity measures and Monitoring – Provision of mechanisms to evaluate and monitor impacts and their effects and evaluate implemented mitigation, compensation, and enhancement measures.
- Section 12: Conclusion of Significance Evaluation.

A number of appendices containing further detailed information are presented at the back of this report. A separate document providing information to Support a Habitats Regulations Assessment is also provided.

Appendix A: Ecological Desk Study

Appendix B: UKHab Survey Technical Note

Appendix C: Bat Technical Note

Appendix D: Great Crested Newt Technical Note

Appendix E: Reptile Survey Report

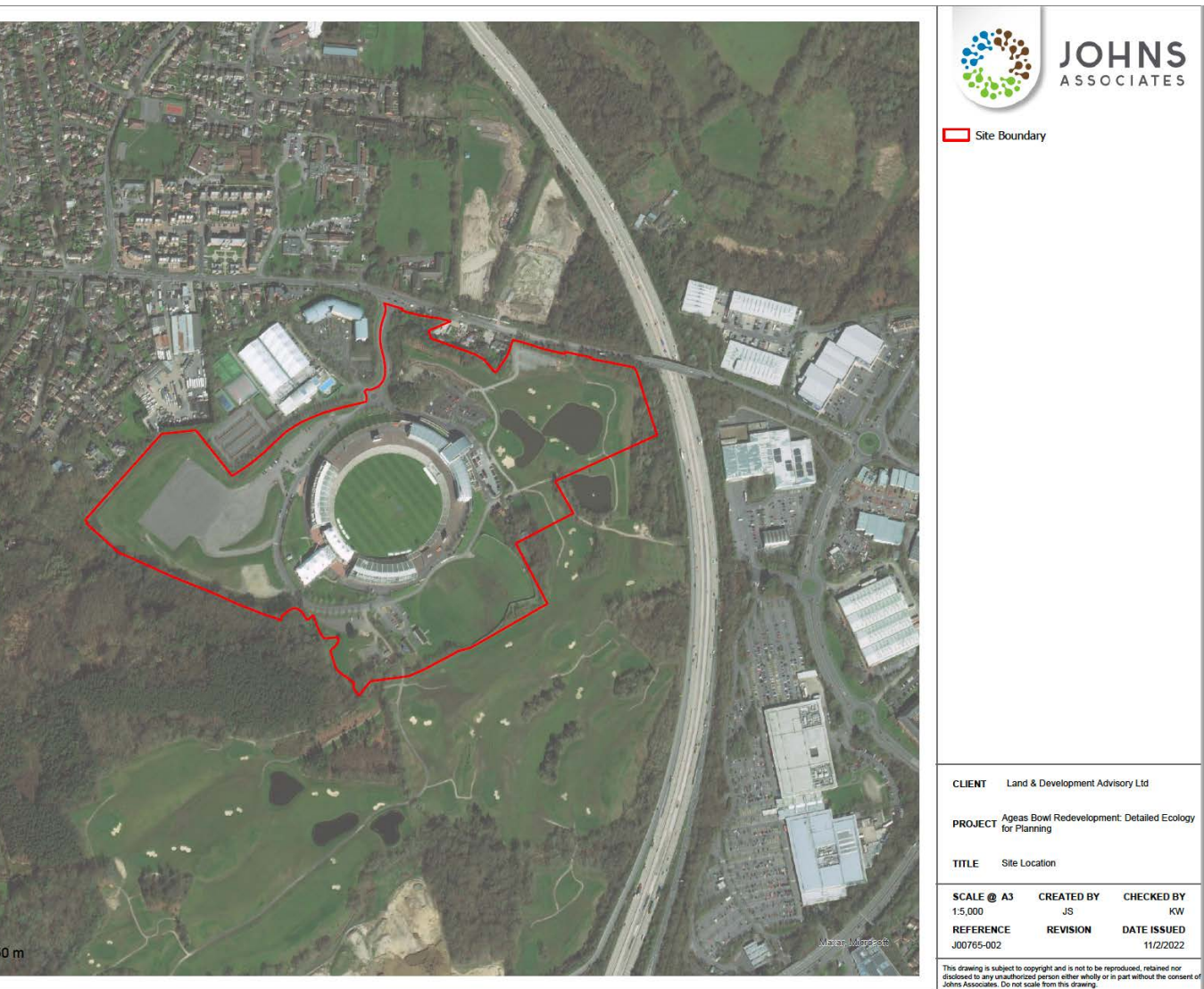
Appendix F Dormouse Survey Report

Appendix G: Badger Technical Note

Appendix H: BNG Metric – also provided as a separate Microsoft Excel File

1.5 SITE LOCATION AND CONTEXT

The planning application area (hereafter referred to as the 'Site') comprises the existing Ageas Bowl stadium and immediately adjacent areas (see Figure 1). The planning application boundary in total measures approximately 25.17ha. The Site is located in Eastleigh, approximately 6km northeast of Southampton and 2.3km northwest of Hedge End at central OS Grid Reference SU 4775 1406. The M27 is located 450m east of the Site. Boundary Lakes Golf Course is situated immediately adjacent to the southeastern Site boundary, with Telegraph Woods SINC adjacent to the southwest. The Site is surrounded by residential areas and major roads to the east, south and west, with pockets of woodland habitat present in the local area. The wider landscape to the north comprises of agricultural land with associated hedgerows and agricultural buildings.



2 LEGISLATION, PLANNING POLICY & TECHNICAL GUIDANCE

2.1 LEGISLATIVE CONTEXT

Many species of animal and plant receive some degree of legal protection. For the purposes of this report, legal protection refers to: species included on Annex II of the Habitats Directive 1992 (Council of European Communities, 22/07/1992), Schedules 2 and 5 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (UK Government, 2019) and Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended) (UK Government, 1981), excluding species that are only protected in relation to their sale (see Section 9[5] and 13[2]) reflecting the fact that the proposed development does not include any proposals relating to the sale of species.

Legal offences associated with species listed on Schedule 2 of the Conservation of Habitats and Species Regulations and Schedule 5 of the Wildlife and Countryside Act in England and Wales include *inter alia*:

- Deliberate capture, injury or killing of animals or taking or destroying their eggs;
- Deliberately disturb animals in a way that would significantly affect their local distribution or abundance, or affect their ability to survive, breed or rear young;
- Intentional or reckless disturbance of an animal in its place of shelter or protection;
- Damaging or destroying a resting place or breeding site;
- Intentionally or recklessly obstructing access to a place of shelter or protection; and
- Possess, control, transport, sell, exchange or offer for sale/exchange any live or dead animal or any part of an animal.

Relevant species listed on these Schedules that are potentially associated with this Site include bats and common reptiles (grass snake *Natrix natrix*). All bat species receive full protection from all legal offences listed above. Common reptile species receive partial protection under the Wildlife and Countryside Act in that they are protected from killing and injury only.

All species of wild bird are protected under the Wildlife and Countryside Act (1981) (as amended) from killing or injury. In addition, it is an offence to take or damage/destroy their eggs and to damage or destroy a nest whilst it is in use. Species listed on Schedule 1 (such as barn owl) receive additional protection in that it is illegal to disturb birds or their young whilst occupying, or near to, an active nest.

Badgers *Meles meles* are protected under the Protection of Badgers Act 1992 (UK Government, 1992), which makes it an offence to wilfully kill, injure or take (or attempt to kill, injure or take) a badger; or to disturb badgers whilst occupying their setts.

A number of wild plants, habitats and animals (including reptiles, hedgehog and most species of bat) are also included within Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (UK Government, 2006) which lists flora, fauna and habitats considered by the Secretary of State to be of principal importance for conserving biodiversity. The publication of the "England Biodiversity List" satisfies the requirements of Section 41 of the NERC Act 2006 for the conservation of biodiversity. Section 40 of the NERC Act 2006 requires public bodies, including local planning authorities, to have regard for the conservation of biodiversity in England, when carrying out their normal functions.

Relevant habitats listed within Section 41 that are potentially associated with the development proposals include hedgerows, lowland mixed deciduous woodland, wet woodland, pond and freshwater stream.

2.2 POLICY CONTEXT

2.2.1 National

There are numerous national and local planning policies associated with flora and fauna (also referred to as biodiversity) that need to be addressed as part of the planning process. The Government has issued its National Planning Policy Framework (NPPF) (UK Government, 2019), which requires impacts to biodiversity to be minimised. Paragraph 176 of the NPPF applies the same protection to Ramsar sites as that conferred by the Habitats Regulations to SACs and SPAs. The NPPF requires development to:

- Minimise impacts on and provide net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressure;
- Ensure that there will be no adverse impacts to SSSIs (such development would not normally be permitted);
- Ensure that there will be no loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees), unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- Where significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts) adequate mitigation, or as a last resort compensation, must be provided.

The NPPF and associated Planning Practice Guidance also emphasise the requirement for ecological networks to be created throughout the wider landscape (paragraph 174).

2.2.2 Local – Eastleigh Borough Council

As well as national policy, there is relevant biodiversity policy contained within Eastleigh Borough Council Local Plan 2001 – 2011 (Adopted on 25 May 2006). A Draft Local Plan 2011 – 2029 was submitted for examination in 2014 and is currently undergoing consultation and examination prior to adoption. The following saved policies are considered relevant to this EclA and the proposals for the site:

23.NC Sites of Importance for Nature Conservation

Development which is likely to have a direct or indirect adverse effect on a Site of Importance for Nature Conservation (SINC) will not be permitted, unless it can be demonstrated to the satisfaction of the Borough Council that the benefits of the development clearly outweigh the need to safeguard the nature conservation value of the site. If development is to be permitted, the Council will require appropriate measures to be taken to mitigate for the adverse effects on the SINC.

24.NC Protected Species

Development will not be permitted where it would adversely affect species or habitats which are protected by legislation unless appropriate measures are proposed which would acceptably mitigate the impact on those species.

25.NC Biodiversity

Development which will adversely affect a habitat or feature of importance for wild fauna and flora will not be permitted, unless it can be demonstrated to the satisfaction of the Council that:

- i. the benefits of the development outweigh the adverse impacts;
- ii. the adverse impacts are unavoidable; and
- iii. appropriate measures are taken which would mitigate or compensate for any adverse impact.

26.NC Biodiversity

Development proposals will be required to include measures to enhance the value of features and habitats of nature conservation importance where reasonable opportunities exist in common with the development.

2.2.3 Local Biodiversity Action Plans

The "England Biodiversity List" satisfies the requirements of Section 41 of the NERC Act 2006 and includes those habitats and species listed in the Act and considered to be of Principal Importance for the conservation of biodiversity in England and Wales. This list replaces the UK BAP Priority Habitats and Species.

However, many local authorities/ counties still maintain a Local Biodiversity Action Plan (LBAP) document which includes those habitats and species considered to be a priority within the local area in terms of their biodiversity importance.

The Biodiversity Action Plan for Eastleigh Borough 2012 - 2022 has identified:

- 10 Priority Biodiversity Areas (PBAs), which contain hotspots for biodiversity, and are areas where conservation action can achieve the greatest biodiversity gain;
- 15 Priority Biodiversity Links (PBLs), where conservation work can achieve biodiversity stepping stones or corridors for wildlife movement;
- 18 Borough Priority Habitats;
- Circa 500 Borough Priority Species;
- Actions across the Borough and within the Priority Biodiversity Areas and Priority Biodiversity Links to achieve the greatest possible benefits for biodiversity.

2.3 TECHNICAL GUIDANCE

There are a number of technical guidance documents that have been used to define the adopted approach to undertaking EclA. These include methods for characterising the ecological baseline and the appropriate interpretation of data, as well as the specific approach to be adopted for the EclA. The technical guidance of relevance to this EclA is listed in Table 2.1.

The Natural Environment White Paper 'The Natural Choice: Securing the Value of Nature' outlines the Government's approach and vision for nature in the UK including protecting and improving our natural environment, growing a green economy and reconnecting people and nature.

Biodiversity 2020: A strategy for England's wildlife and ecosystem services, are the country level strategies for England and builds on the Natural Environment White Paper. It sets out the strategic direction for biodiversity policy for the next decade on land (including rivers and lakes) and at sea. The priorities for action include a more integrated large-scale approach to conservation, putting people at the heart of biodiversity policy, reducing environmental pressure and improving knowledge.

A Green Future: Our 25 Year Plan to Improve the Environment (2018) is the UK Government's 25-year plan for the environment and frames its goals and targets around the primary goods and benefits provided by a healthy environment. It is underpinned by the natural capital approach and seeks to embed a 'net environmental gain' principle into development.

Table 2.1: Technical guidance adopted for assessing the impacts on Biodiversity

Guidance reference	Usage
Amphibian and Reptile Groups of the UK: ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index, May 2010	Standard guidance for conducted HSI Assessment of pond including use and limitations, categorising of HSI scores and details of suitability indices and definitions of categories.
Bat Conservation Trust: Bat Surveys for Professional Ecologists	Provides standard good practice guidelines for conducting bat surveys including ecological considerations, timings,

Guidance reference	Usage
	preliminary roost assessments, emergence and re-entry surveys, bat activity, licensing, data analysis and interpretation and reporting.
British Standards Institute (BSI): BS 42020:2013 Biodiversity – Code of practice for planning and development	Provides recommendations on topics such as professional practice, proportionality, pre-application discussions, ecological surveys, adequacy of ecological information, reporting and monitoring.
Chartered Institute of Ecology and Environmental Management (CIEEM): Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine	Provides technical guidance for assessing the potential ecological impacts of a development. EcIA is a process of identifying, quantifying and evaluating potential effects of development- related or other proposed actions on habitats, species and ecosystems. EcIA can be used for the appraisal of projects of any scale including the ecological component of EIA. When undertaken as part of an EIA, EcIA is subject to the relevant EIA Regulations. Includes guidance on scoping; establishing the baseline; identifying important ecological features; assessing potential impacts; incorporating measures to avoid, reduce and compensate ecological impacts and the provision of ecological enhancements. Guidance on the consideration of the legal and policy framework throughout the EcIA process is also included.
Surveying Badgers, The Mammal Society, 1989	Provides standard guidance for surveying badgers including survey timing, recording sett data, classifying setts, recording signs of badgers and recording habitat data.
UK Government	Provides standing advice on assessing impacts on a range of protected species, including bats, great crested newts (GCN), badgers, otters, water voles, dormouse, reptiles, wild birds, protected plants, invertebrates and ancient woodland. Includes guidance on survey effort, methods, assessing impacts and mitigation. Incorporates current Natural England (NE) guidance.

3 DATA GATHERING METHODOLOGY

3.1 CONSULTATION

A formal pre-application consultation was submitted to Eastleigh Borough Council in 2021 (Reference Q/21/90701). The response received from the Council Ecologist, Paul Howe, on 15/10/21 highlighted the following. Please note that only part of the response is reproduced below:

“General Ecology Observations:

A full application should be accompanied by an Ecological Impact Assessment (EclA) carried out to the standards outlined by the Chartered Institute of Ecology and Environmental Management (CIEEM). Any Phase 2 protected species surveys which are identified as being necessary as part of the desk study and Phase 1 habitat survey need to be completed prior to any submission.

As outlined in the NPPF, the associated Natural Environment Planning Guidance note and policy DM11 of the emerging Eastleigh Local Plan the proposals will need to demonstrate a quantified net gain for biodiversity adhering to the mitigation hierarchy framework. The DEFRA Metric 3.0 biodiversity calculator should be used to quantify the baseline and post-intervention impacts on biodiversity and demonstrate sufficient uplift (recommended as a minimum of 10%). The concept of delivering this net gain should be introduced at as early stage as possible in the design process.

The proposals will need to undertake an HRA to assess the impacts of additional recreational pressure generated on the New Forest and will need to demonstrate that it can achieve Nutrient Neutrality as per the local authority guidance and methodology. (See separate HRA document submitted as part of this application).

Character Area 1

This involves the creation of a large carpark and will result in the loss of some trees and a considerable amount of greenspace. In terms of achieving a “net gain” for biodiversity the creation of this carpark is likely to make this a much more difficult task. It is likely to require significant uplift elsewhere on the site.

Character areas 2 & 3

There looks to be some potential for impact on trees but generally speaking in ecology terms are likely to be less sensitive. However, all will need full consideration as part of the EclA.

Character areas 4 & 5

Both of these areas lie adjacent to the boundary of Telegraph Woods Site of Importance for Nature Conservation (SINC). This is less of an issue for character area 4 as this appears to be more landscaping but this still needs to reflect the proximity of the woodland and also will need to contribute towards the biodiversity uplift.

Character area 5 includes residential development and I have concerns from the concept layout plans that there is insufficient buffering between the woodland the proposed dwellings. I would also be concerned about the impacts on the woodland resulting from the extra footfall generated and the fact the paths are shown providing access straight into the woodland. This would be contrary to policy DM11 as they are presented at the moment.”

3.2 ZONE OF INFLUENCE AND FEATURES OF INTEREST

The proposed mixed-use development comprises:

- The construction of 185 new dwellings
- 71-bedroom independent living facility (Use Class C2)
- 142-bedroom hotel (Use Class C1)
- Well-being centre (Use Class E/ F2)
- New pavilion buildings and improvements to existing stadium
- Vehicular access, car parking, pedestrian circulation and processional ramp
- Tree-planting, landscaping, SUDs and biodiversity enhancements.

Appendix A provides details of the proposed Site layout. The scheme has undergone amendments through the pre-submission design process to avoid and minimise ecological impacts.

Detailed knowledge regarding the biodiversity associated with the planning application site has been developed through a robust updated desk study completed by Johns Associates in September 2021, including the review of freely available online information and records held by the Hampshire Biodiversity Information Centre (HBIC). Johns Associates also completed a series of site surveys in 2020 and 2021 to update the existing ecological baseline, including: a UK Habitat Classification survey (UKHab), dormouse surveys, badger survey, reptile surveys, great crested newt surveys (including eDNA) and a range of bat surveys.

This baseline information has been used to inform the study area associated with the multiple ecological receptors under consideration, which include:

- The habitats and plants and associated fauna (including invertebrates, bats, reptiles, amphibians, birds, badgers, dormice and common mammals) associated with the planning application boundary and adjacent land under the same ownership as shown in Figure 1;
- Adjacent land where accessible/observed from its boundary and/or interpreted using imagery provided by Google Earth Professional; and
- Consideration to potential effects on designated sites and their features of interest, with an examination of statutorily designated sites extending to 5km from the proposed development site and non-statutorily designated sites to 2km. This allows consideration of potential effects to biodiversity receptors associated with air quality, road transport and noise beyond the Site boundaries.

Data from the desk study, field surveys and consultation response were used to determine the current ecological baseline for the Site in terms of the priority habitats and species, legally protected and notable species and statutory and non-statutory designated sites located within the likely Zone of Influence (Zol) of the proposals. In line with current CIEEM guidance, these are the sites, habitats and species that are of sufficient importance that effects upon them could be significant (see Box 3.1 and Box 3.2).

Box 3.1: Designated Biodiversity Sites

Statutory biodiversity sites

Internationally important sites (collectively referred to in this EclA as European sites – whilst recognising that Ramsar sites are designated at a global level):

- SACs
- Candidate SACs
- SPAs
- Listed or proposed Ramsar sites, potential SPAs, possible/ proposed SACs; and
- Sites identified or required as compensatory measures for adverse effects on other European sites.

Nationally important sites:

- SSSIs; and
- National Nature Reserves (NNRs).

Locally important sites:

Local Nature Reserves (LNR): Statutory sites that are of importance for recreation and education as well as biodiversity. Their level of importance is defined by their other statutory or any non-statutory designations (e.g. if an LNR is also an SSSI but is not a European site, it will be of national importance). If an LNR has no other statutory or non-statutory designation it should be treated as being of borough/district-level importance for biodiversity (although it may be of greater socio-economic value).

Non-statutory nature conservation sites

- Sites of county importance: non statutory nature conservation sites in Eastleigh are called Sites of Importance for Nature Conservation (SINCs).

Priority Habitats and Species

In this EclA (and following the CIEEM guidance), the geographic level at which a species/habitat has been identified as a priority for biodiversity conservation is referred to as its level of 'species/habitat importance'. For example, habitats and species of principal importance for the conservation of biological diversity in England are identified as of national species or habitat importance reflecting the fact that the importance of these species or habitats has been defined at a national level. The level of importance pertains to the species or habitat as a whole rather than to individual areas of habitat or species populations, which cannot be objectively valued (other than for waterfowl, for which thresholds have been defined for national or international 'population' importance).

- International importance: populations of species or areas of habitat for which European sites are designated
- International importance: populations of birds meeting the threshold for European importance (1% of the relevant international population)¹
- National importance: priority habitats and species of principal importance (HPI and SPI) for the conservation of biological diversity in England¹
- National importance: species listed as being of conservation concern in the relevant UK Red Data Book (RDB) or the Birds of Conservation Concern (BoCC) Red List

- National importance: Nationally Rare and Nationally Scarce species, which are species recorded from, 1-15 and 16-100 hectads (10x10km squares of the national grid) respectively
- National importance: populations of birds comprising at least 1% of the relevant British breeding/wintering population (where data are available); and
- Borough/district importance: habitats and species listed in the Borough or District Biodiversity Action Plan (BAP).

Notes to Box 3.1:

- SACs are designated under Article 4(4) of Directive 92/43/EEC
- Candidate SACs are designated under Article 4.1 of Directive 92/43/EEC
- SCIs are sites that have been nominated or submitted by Member States and entered onto the list of sites compiled by the European Commission that form (along with SACs and SPAs) the Natura 2000 network. SCIs are subject to the provisions of Article 6(2) of Directive 92/43/EEC. SCIs are afforded full protection by law under the Conservation of Habitats and Species Regulations 2017 (regulation 8(1)(b)) as amended.
- SPAs are classified pursuant to the requirements of Directive 2009/147/EC (Article 4). As European Sites, they are provided with full protection by law under the Conservation of Habitats and Species Regulations 2017 as amended.
- Government policy in England (see paragraph 176 of the NPPF) protects Ramsar sites, potential SPAs and possible SACs as if they were fully classified SPAs or a fully designated SACs.
- Government policy in England (see paragraph 176 of the NPPF) is that any such compensatory land or water must itself be protected as if it were a fully classified SPA or a fully designated SAC.
- Some SSSIs also wholly or partially fall within a European Site boundary
- The JNCC prepared guidelines to assist in the selection of SPAs (The Birds Directive: Selection guidelines for Special Protection Areas). Stage 1 of the two-stage process identifies those areas used regularly by 1% or more of the Great Britain (or in Northern Ireland, the all-Ireland) population of a species listed in Annex I of the Birds Directive in any season. The JNCC undertakes reviews of the SPA network and populations of its qualification species at roughly decadal intervals with the last (third) review published in 2016.
- Habitats and Species of Principle Importance (HPI and SPI).
- Natural England (2018). UK BAP priority species and habitats, [online]. Available at: <http://naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/prioritylist.aspx>

The data have been used to enable a full assessment of the likely impacts of the proposed activities on designated sites, habitats and species of conservation interest both on Site, in immediately adjacent areas and within the wider local area.

Box 3.2: Legally protected and controlled species

Legal Protection

Many species of animal and plant receive some degree of legal protection. For the purposes of this document, legal protection refers to:

- Species included in Schedules 1, 5 and 8 of the WCA (as amended), excluding:
 - ▶ Species that are only protected in relation to their sale (see Section 9(5) and 13(2) of the WCA 1981), given that the Proposed Development does not include any proposals relating to the sale of species; and
 - ▶ Species that are listed in Schedule 1 of the WCA 1981 that are likely to breed on or near the site (given that this schedule is only applicable whilst birds are breeding).
- Species included in Schedules 2 and 5 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019
- Badgers, which are protected under the Protection of Badgers Act 1992; and
- Hedgerows, some of which are protected under The Hedgerows Regulations 1997.

Legal Control

Schedule 9 of the WCA 1981 lists species of animal that it is an offence to release or allow to escape into the wild and species of plant that it is an offence to plant or otherwise cause to grow in the wild.

3.3 DESK STUDY

A full ecological desk study was undertaken by Johns Associates Ltd in July 2021 to inform the scope for the remaining ecological surveys at the Site, this Ecological Impact Assessment, and the emerging masterplan. All relevant records of legally protected and/or notable species, statutory and non-statutory designated sites within a 2km radius of the Site were reviewed. The following sources of information were used:

- Hampshire Biodiversity Information Centre (HBIC) provided records of legally protected/notable species and non-statutory designated sites within a 2km radius of the Site on 13 July 2021
- Multi Agency Geographic Information for the Countryside (MAGIC) website. Records and citations for national statutory designated sites, granted European Protected Species Natural England mitigation licences to a radius of 2km; international statutory designated sites to a radius of 5km and priority habitats to a radius of 2km from the Site boundary (www.gov.uk, www.designatedsites.naturalengland.org.uk) in September 2021
- Google Maps (www.maps.google.com); and
- Ordnance Survey maps (www.ordnancesurvey.co.uk) to identify any ponds within 500m of the Site, along with the presence of any significant barriers to the migration of great crested newt from these ponds to the Site itself

The desk study data is presented in a Technical Note as Appendix A to this EclA. The data have been used to enable a full assessment of the likely impacts of the proposed activities on designated sites, habitats and species of conservation interest.

3.4 FIELD SURVEYS

3.4.1 Phase 1 and UK Habitat Classification Surveys

Full methodologies and results of the habitat surveys undertaken at the Site are presented in a Technical Note contained in Appendix B to this Ecological Impact Assessment.

Phase 1 Habitat Survey

A Phase 1 Habitat Survey of the Site and the adjacent golf course was carried out on 7th and 14th May 2020 and updated on 7th September 2021 by experienced ecologist and botanical surveyor Katherine Newbert, BSc (Hons) MSc of Johns Associates. The weather was dry and bright with good visibility on both occasions. This survey was completed in accordance with Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017) and BS 42020:2013 Biodiversity – Code of practice for planning and development (British Standards Institute, 2013). The survey also used information gathered from historical habitat surveys undertaken at the Ageas Bowl site by Johns Associates since 2007.

The on-Site habitats were classified following the standardized system for classifying and mapping British Habitats using the Joint Nature Conservancy Council (JNCC, 2010) Handbook for Phase 1 Habitat survey – a technique for environmental audit. An annotated habitat map together with descriptions of the recorded habitat types was produced, which was subsequently digitized using a geographical information system (ArcGIS). The survey also included identification of any non-native invasive plant species. Flora taxonomy follows the nomenclature detailed in New Flora of the British Isles (4th Edition) (Stace, C., 2019).

UK Habitat Classification Survey (UKHab)

The on-Site habitats were classified following UK Habitat Classification (UKHab) (2020) guidelines, which provides a more detailed interpretation of baseline habitat survey data than previous habitat classifications systems, such as Phase 1 Habitat assessments.

The professional edition of UKHab “UK Habitat Classification – Professional Edition” (UKHab-P) was used which includes Priority Habitat Types, all Annex 1 Habitats and the habitats listed in EUNIS. The classification of primary habitats is hierarchical with five levels, which include terrestrial/ freshwater/ marine, ecosystem types, broad habitats, priority habitats and Annex 1 habitats.

Habitat types were assigned a primary code to a hierarchical level of at least three, and secondary codes were used to further clarify the habitat and record additional information linked to the primary habitat such as habitat management. The full range of secondary codes following UKHab-P will be used as necessary, which are grouped under the following headings of which the first three listed are considered mandatory sections:

- Habitat Mosaics (10 - 18)
- Habitat Complexes (19 – 32)
- Origin (33 – 49)
- Management (51 – 85)
- Land Use (86 – 116)
- Environmental Qualifier (117 – 138)
- Species Feature (139 – 166)
- Hydrological Regime (167 – 199)
- Green Infrastructure (200 – 1232) - The Green Infrastructure section is numbered from 200 upwards. As this section is hierarchical, the first level of the GI hierarchy goes up in hundreds (200, 300 etc.), the second in tens (210,220 etc.) and the third in ones (211, 212 etc).

During the UKHab survey the condition of the habitats found within the site were individually assessed using the habitat condition assessment criteria defined by DEFRA.

Where appropriate, maps are supplemented with target notes which provide specific information on habitats present that are too limited in extent to map at the scale at which data is presented, or the presence of species and habitats of ecological interest.

An annotated habitat map together with descriptions of the recorded habitat types was produced, which was subsequently digitized using a geographical information system (ArcGIS). The survey also included identification of any non-native invasive plant species. Flora taxonomy follows the nomenclature detailed in New Flora of the British Isles (4th Edition) (Stace C., 2019). Flora, where appropriate, are given a descriptive score of abundance using the DAFOR scale, as follows:

- D – Dominant
- A – Abundant
- F – Frequent
- O – Occasional
- R – Rare
- L – Locally (to be used as a prefix for any of the above)
- V – Very (to be used as a prefix for any of the above)

ArcGIS Symbology

At the time of production, a complete symbology for all habitats in the UK Habitat Classification Professional Edition (UKHab-P) was not available. The UK Habitat Classification Basic Edition (UKHab-B) symbology has therefore been used, and where necessary to add in habitats not included in UKHab-B we have designed our own hatching system within the Level 2 colours for those habitats – following the guidance provided in the UK Habitat Classification Basic Edition: Suggested Symbology for Maps document (UKHab, 2020).

3.4.1 Protected Species Surveys

A full range of protected species surveys have been carried out at the Site in 2020 and 2021. Details of the survey methodologies employed, and the results have been compiled into a series of Technical Notes which are presented as Appendices to this EclA (see Table 3.1). The results of these protected species surveys are presented as the current Site baseline in Section 4 of this EclA.

Table 3.1: Ecological Surveys Completed (2019-2021)

Receptor	Investigations/surveys	Technical Guidance to Inform Methodology Used	Appendix Number
Habitats	Phase 1 Habitat Survey UK Habitat Classification (UKHab) Survey	JNCC., 2010. Handbook for Phase 1 Habitat Survey – a technique for environmental audit. London. JNCC UK Habitat Classification – Professional Edition (UKHab-P)	Appendix B
Bats	Building Roost Inspection (BRI) Building Emergence/ Re-Entry Surveys Ground Level Tree Assessment (GLTA) Transect Activity Surveys	BSI: BS 8596:2015 Surveying for bats in trees and woodland. Guide. London. BSI Bat survey guidelines for professional ecologists: Good practice guidelines. (Third ed.). London. BCT Bat Conservation Trust., 2009. Bats	Appendix C

Receptor	Investigations/surveys	Technical Guidance to Inform Methodology Used	Appendix Number
	Automated Static Detector Surveys Lux Surveys	and lighting in the UK. London. BCT. Andrews, H. (2013). Bat tree habitat key. Andrews Ecology. Mitchell-Jones, A. J., 2004. Bat Mitigation Guidelines. English Nature. Institute of Lighting Professionals and the Bat Conservation Trust, 2018. Bats and Artificial Lighting in the UK. Bats and the Built Environment Series. Guidance Note 08/18	
Great Crested Newt	Habitat Suitability Assessment (HSI) Environmental DNA (eDNA) Surveys	Gent, A. H. & Gibson, S. D., 2003. Herpetofauna Worker's Manual. Peterborough. Joint Nature Conservation Committee (JNCC). Oldham, R. K. (2000). Evaluating the suitability of habitat for the great crested newt (<i>Triturus cristatus</i>). Herpetological Journal, 143-155. Freshwater Habitats Trust Technical Advice Note for field and laboratory sampling of great crested newt environmental DNA, 2014.	Appendix D
Reptiles	Artificial Refugia Surveys	Gent, A. H. & Gibson, S. D., 2003. Herpetofauna Worker's Manual. Peterborough. Joint Nature Conservation Committee (JNCC). Froglife. (1999). Advice Sheet 10: reptile survey. Froglife, Halesworth.	Appendix E
Dormice	Nest Tube Surveys	English Nature, 2006. The Dormouse Conservation Handbook. (Second ed).	Appendix F
Badger	Field survey for setts and other evidence	Harris, S., Cresswell, P. & Jeffries, D., 1989. Surveying Badgers (First ed.) London. Mammal Society. Neal, E. & Cheeseman, C., 1996. Badgers. London. Poyser Natural History.	Appendix G

3.4.2 The Biodiversity Metric

The Defra Biodiversity Metric 3.0 provides a nationally measurable structured calculation methodology to account for biodiversity losses and gains resulting from development or land management change. The calculation for this assessment has used the 'beta test' version which is the most up to date version for consultant use.

The Defra Metric Biodiversity score has been calculated for the existing and proposed habitats within the planning application boundary. Biodiversity Net Gain (BNG) is an approach to development that seeks to halt the current loss of biodiversity through development and through the planning system; restore ecological networks through early masterplanning and increase the natural habitat resource and ecological features. This has been outlined within the Environment Act 2021, with a legal requirement for developments to enhance the ecological value of a site by a minimum of 10% to come into force in 2023. However, many Local Planning Authorities already have planning policies covering the need for biodiversity net gain to be demonstrated as part of development proposals through the planning system.

3.4.3 Ecological Assessment Methodology

Information for the assessment derives from the results of the desk study, baseline surveys, supplemented by published information (e.g. on the potential biodiversity receptors' status, distribution, and sensitivity to ecological changes) and professional knowledge of ecological processes and functions.

For each scoped-in receptor, effects have been assessed against the predicted future baseline conditions for that receptor (assumed to be no notable difference to the current baseline as noted in Section 4 during construction and operation). This future baseline has been defined using information as defined in Section 5 about the likely future use and management of the site in the absence of development, known population trends (for species) and any other proposed developments (consented or otherwise) that may act cumulatively with the scheme to affect biodiversity receptors. A precautionary basis has also been taken where appropriate.

Throughout the assessment process, the potential for significant effects were used to inform the definition of requirements for additional baseline data collection and the identification of ecological measures to be incorporated into the Proposed Development design (in order to avoid or reduce adverse effects or to deliver enhancements). Measures to comply with relevant policies and legislation have also been included. The results of the assessment reflect the final design (i.e. incorporating the ecological measures).

For each receptor, the assessment deals with the effects of construction, and the effects of the post-construction operation of the elements of the masterplan within the Ageas Bowl Site. As more information has become available about the Proposed Development and about the populations of important and legally protected species, the scope of the assessment has been refined to focus on those receptors that have potential to be significantly affected. Each scoped-in receptor has then been subject to further assessment of how it is likely to be affected by the Proposed Development, allowing for ecological changes that could affect the receptor during construction and operation.

A worst-case scenario has been used for the assessment, based upon the extensive existing baseline and expert opinion, to ensure that the predicted impacts are not underestimated. The ecological measures have been identified based on the worst-case scenario to ensure that any effects upon valued receptors are avoided where possible and minimised where this is not possible so that residual effects are not significant.

The results from additional monitoring will confirm whether the worst-case scenario is present or, whether the effects are less severe. If the effects are less severe than the worst-case mitigation, compensation and habitat provision (which has been designed based on a worst-case assessment) can be refined and targeted at actual effects.

3.4.4 Methodology for Prediction of Effects

The method for the prediction of effects is based on Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines, 2019; these guidelines are widely regarded by the ecology profession as the 'industry standard'.

The assessment is based upon not only the results of the desk study and field surveys, but also relevant published information (on the potential biodiversity receptors' status, distribution, sensitivity to environmental changes and ecology), and professional knowledge of ecological processes and functions.

The effects on each scoped-in receptor have been assessed against the predicted future baseline conditions for that receptor during construction and operation. The future baseline has been defined using information about the likely future use and management of the area in the absence of the Proposed Development, known population trends (for species where available) and any other proposed developments (consented or otherwise) that may act cumulatively with the Proposed Development to affect biodiversity receptors.

Throughout the assessment process, findings about potential likely significant effects were used to inform the definition of requirements for additional baseline data collection and the identification of embedded ecological measures that are incorporated into the Proposed Development design (in order to avoid or reduce adverse effects or to deliver required enhancements as necessary for receptors where legislation has been derogated). The results of the assessment, as set out later in Section 7, reflect the final proposed scheme design (i.e. incorporating the embedded ecological measures, which include construction methodology and design) as well as location specific embedded ecological measures.

The spatial extent of the assessment of each potential likely significant effect reflects the area occupied by the receptor that is being assessed and the Zol associated with the environmental changes that are likely to affect the receptor (refer to Box 3.3). Thus, if part of a designated biodiversity site is located within the ecological Zol relating to a particular ecological change, an assessment was made of the effects on the site as a whole. A similar approach was taken for areas of notable habitat. For species that occur within an ecological Zol that relates to a change that could significantly affect that species, an assessment was carried out on the total area that is used by the affected individuals or population of the species (e.g. for foraging).

Where appropriate, for each receptor, the assessment deals in an integrated way with the effects of all phases of the development. Effects within each of the phases have been detailed, where there are distinct differences between those phases. The level of magnitude of change is subsequently concluded, which is a consequence of the levels of change within each phase, considering transitions between those changes, and the length of time over which those changes persist.

3.4.5 Significance Evaluation Methodology

The assessment has been informed by the specific details of all proposed development works and embedded ecological mitigation. The evaluation of effects on receptors are considered following the methodology presented below, and in the context of the scheme description (see Section 1.2). Integrated and embedded ecological measures consist of those described in Section 6.

This EclA uses the Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2019) to assess the significance of effects upon ecological receptors.

Using information about the way in which sites/habitats/species are likely to be affected by the Proposed Development, each change (from the baseline situation) that is assessed has been assigned a level of 'magnitude', based on the definitions set out in Table 3.2.

Table 3.2: Guidelines for the Assessment of Change Magnitude

Magnitude of Change	Criteria and Resultant Effect
Major	The change permanently (or over the long-term) negatively affects the conservation status of a habitat/species, reducing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource/species population, a large area of habitat or large proportion of the wider species population is affected. For designated sites, integrity is compromised. There may be a decrease in the level of biodiversity conservation value of the receptor.
Moderate	The change permanently (or over the long-term) negatively affects the conservation status of a habitat/species reducing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource/species population, a small-medium area of habitat or small-medium proportion of the wider species population is affected. There may be a decrease in the level of biodiversity conservation value of the receptor. Although there may be some effects on individuals or parts of a habitat area or designated site, the quality or extent of sites and habitats, or the size of species populations would experience little or no reduction. Any changes are likely to be within the range of natural variability and there would be no short-term or long-term change to the conservation status of habitat/species receptors or the integrity of designated sites.
Minor	The quality or extent of designated sites or habitats or the sizes of species' populations, experience some small-scale reduction. These changes are likely to be within the range of natural variability and there is not expected to be any permanent change in the conservation status of the species/habitat or integrity of the designated site. The change is unlikely to modify the evaluation of the receptor in terms of its biodiversity conservation value
Minor/Neutral	A change to the level of which is so low, it is not discernible on designated sites or habitats or the sizes of species' populations, or changes that balance each other out over the lifespan of a project.
Will not occur	The effect will not occur due to an absence of an environmental pathway to the sensitive receptor.

The criteria in Table 3.2 refer to the terms: 'integrity' and 'conservation status.' For habitat areas and species, an effect is assessed as being significant if the favourable conservation status of a receptor would be changed by the Proposed Development. Conservation status is defined by the CIEEM guidelines as follows:

- For habitats – the sum of the influences acting on the habitat and its typical species, that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area; and
- For species - the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area.

3.4.6 Negative Effects

A negative effect is considered to be significant if the favourable conservation status of a receptor is compromised by the Proposed Development.

A similar procedure has been used for designated sites that are affected by the development, except that the focus is on the effects on the integrity of each site, defined by the CIEEM guidelines as:

"...the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified."

The assessment of effects on integrity draws upon the assessment of effects on the conservation status of the features for which the site has been designated.

The decision as to whether the favourable conservation status has been compromised is made using informed judgement based on the findings of the assessment of how the resource would be affected.

3.4.7 Positive Effects

A positive effect is assessed as being significant if development activities are predicted to cause:

- An improvement in the condition of a habitat/species population from unfavourable to favourable recovering or favourable (noting that condition data are only available for SSSIs but that professional judgement has been used to apply the same principle to habitats/species elsewhere); or
- Partial or total restoration of a site's favourable condition.

If a species population, habitat or site is already in favourable condition, it is still possible for there to be a significant positive effect. There is, however, no simple formula for determining when such effects are significant and decisions about significance therefore have to be made on a case-by-case basis using professional judgement.

3.5 LIMITATIONS, CONSTRAINTS AND ASSUMPTIONS

The findings of this report are valid at the time of writing (January 2022). Should there be delays to the project timetable and/or implementation of the proposed development, updated desk study and/or survey work may be required. In this instance, advice should be sought to ensure the data, recommendations and conclusions set out in this report remain valid.

It has been assumed that the development proposals are as described in this document and that all proposed mitigation, enhancement and management measures will be implemented in full.

This EclA has been produced by Johns Associates Ltd using data gathered from baseline surveys carried out in 2020 and 2021 supported by records centre data. The assessment based upon the data presented in this report is considered to be robust.

4 BASELINE ECOLOGICAL CONDITIONS

4.1 DESK STUDY

4.1.1 Statutory Designated Sites

International Importance

There are three statutory designated sites of international importance within 5km of the Site boundary:

Solent & Southampton Water SPA and Ramsar Site

The Solent & Southampton Water SPA and Ramsar Site is located approximately 2.5km southeast of the Site. The site qualifies under Article 4.1 of the Birds Directive (79/409/EEC) by supporting populations of European importance of the species shown in Tables 4.1 (breeding) and 4.2 (migratory). All species are listed on Annex I of the Directive.

Table 4.1: Breeding birds associated with the Solent & Southampton Water SPA

Common Name	Latin Name	No. pairs	Details
Common tern	<i>Sterna hirundo</i>	267	Represents at least 2.2% of the breeding population of Great Britain (5-year peak mean, 1993-1997)
Little tern	<i>Sterna albifrons</i>	49	Represents at least 2.0% of the breeding population of Great Britain (5-year peak mean, 1993-1997)
Mediterranean gull	<i>Larus melanocephalus</i>	2	Represents at least 8.2-13.9% of the breeding population of Great Britain (5-year peak mean, 1994-1998)
Roseate tern	<i>Sterna dougallii</i>	2	Represents at least 3.1% of the breeding population of Great Britain (5-year peak mean, 1993-1997)
Sandwich tern	<i>Sterna sandvicensis</i>	231	Represents at least 1.7% of the breeding population of Great Britain (5-year peak mean, 1993-1997)

Table 4.2: Migratory birds associated with the Solent & Southampton Water SPA

Common Name	Latin Name	No. individuals	Details
Black-tailed godwit	<i>Limosa limosa islandica</i>	1,125	Represents at least 1.6% of the wintering Iceland-breeding population (5-year peak mean, 1992/93-1996/97)
Dark bellied Brent goose	<i>Branta bernicula bernicula</i>	7,506	Represents at least 2.5% of the wintering Western Siberia/ Western European population (5-year peak mean, 1992/93-1996/97)
Ringed plover	<i>Charadrius hiaticula</i>	552	Represents at least 1.1% of the wintering European/ North African population (5-year peak mean, 1992/93-1996/97)
Teal	<i>Ansa crecca</i>	4,400	Represents at least 1.1% of the wintering Northwestern Europe population (5-year peak mean, 1992/93-1996/97)

Over winter, the area regularly supports 53,948 individual waterfowl (5-year peak mean, 1991/92 – 1995/96).

River Itchen SAC

The River Itchen SAC is located approximately 3.1km northwest of the Site. The Natura 2000 Standard Data Form for the River Itchen SAC gives the qualifying features of interest as:

Annex I Habitats that are a Primary Reason for Site Selection:

Watercourses of plain to montane levels with the *Ranunculon fluitantis* and *Callitricho-Batrachion* vegetation: The Itchen is a classic example of a sub-type 1 chalk river. The river is dominated throughout by aquatic *Ranunculus* species. The headwaters contain pond water-crowfoot *R. peltatus*, whilst two *Ranunculus* species occur further downstream: stream water-crowfoot *R. penicillatus* ssp. *pseudofluitans*, a species especially characteristic of calcium-rich rivers, and river water-crowfoot *R. fluitans*.

Annex II Species that are a Primary Reason for Site Selection:

Southern damselfly *Coenagrion mercurial*: Strong populations of southern damselfly occur here, estimated to be in the hundreds of individuals. The site in central southern England represents one of the major population centres in the UK. It also represents a population in a managed chalk-river floodplain, an unusual habitat for this species in the UK, rather than on heathland.

Bullhead *Cottus gobio*: The Itchen is a classic chalk river that supports high densities of bullhead throughout much of its length. The river provides good water quality, extensive beds of submerged plants that act as a refuge for the species, and coarse sediments that are vital for spawning and juvenile development.

Annex II Species present as a Qualifying Feature, but not a Primary Reason for Site Selection:

- White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*
- Brook lamprey *Lampetra planeri*
- Atlantic salmon *Salmo salar*; and
- Otter *Lutra lutra*

Solent Maritime SAC

The Solent Maritime SAC is located approximately 3.3km southeast of the Site. The Natura 2000 Standard Data Form for the Solent Maritime SAC gives the qualifying features of interest as:

Annex I Habitats that are a Primary Reason for Site Selection:

Estuaries: The Solent encompasses a major estuarine system on the south coast of England with four coastal plain estuaries (Yar, Medina, King's Quay Shore, Hamble) and four bar-built estuaries (Newtown Harbour, Beaulieu, Langstone Harbour, Chichester Harbour). The site is the only one in the series to contain more than one physiographic sub-type of estuary and is the only cluster site. The Solent and its inlets are unique in Britain and Europe for their hydrographic regime of four tides each day, and for the complexity of the marine and estuarine habitats present within the area. Sediment habitats within the estuaries include extensive estuarine flats, often with intertidal areas supporting eelgrass *Zostera* spp. and green algae, sand and shingle spits, and natural shoreline transitions. The mudflats range from low and variable salinity in the upper reaches of the estuaries to very sheltered almost fully marine muds in Chichester and Langstone Harbours. Unusual features include the presence of very rare sponges in the Yar estuary and a sandy 'reef' of the polychaete *Sabellaria spinulosa* on the steep eastern side of the entrance to Chichester Harbour.

Spartina swards (*Spartinion maritimae*): Solent Maritime is the only site for smooth cord-grass *Spartina alterniflora* in the UK and is one of only two sites where significant amounts of small cord-grass *S. maritima* are found. It is also one of the few remaining sites for Townsend's cord-grass *S. x townsendii* and holds extensive areas of common cord-grass *Spartina anglica*, all four taxa thus occurring here in close proximity. It has additional historical and scientific interest as the site where *S. alterniflora* was first recorded in the UK (1829) and where *S. x townsendii* and, later, *S. anglica* first occurred.

Atlantic salt meadows (*Glauco-Puccinellietalia maritima*): The Solent contains the second-largest aggregation of Atlantic salt meadows in south and south-west England. Solent Maritime is a composite site composed of a large number of separate areas of saltmarsh. In contrast to the Severn estuary, the salt meadows at this site are notable as being representative of the un-grazed type and support a different range of communities dominated by sea-purslane *Atriplex portulacoides*, common sea-lavender *Limonium vulgare* and thrift *Armeria maritima*. As a whole, the site is less truncated by man-made features than other parts of the south coast and shows rare and unusual transitions to freshwater reedswamp and alluvial woodland as well as coastal grassland. Typical Atlantic salt meadow is still widespread in this site, despite a long history of colonisation by cord-grass *Spartina* spp.

Annex I Habitats present as a Qualifying Feature, but not a Primary Reason for Site Selection:

Sandbanks which are slightly covered by sea water all the time;

- Mudflats and sandflats not covered by seawater at low tide;
- Coastal lagoons;
- Annual vegetation of drift lines;
- Perennial vegetation of stony banks;
- *Salicornia* and other annuals colonizing mud and sand; and
- "Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')."

Annex II Species present as a Qualifying Feature, but not a Primary Reason for Site Selection:

- Desmoulin's whorl snail *Vertigo moulinsiana*

National Importance

There are three statutory designated sites of national importance within 2km of the Site boundary:

Moorgreen Meadows SSSI

This SSSI is located 200m northeast of Site boundary. The Site is separated from this SSSI by the M27 motorway. The SSSI is 14ha in size comprising neutral meadows and alder wood surrounding a small tributary of the River Hamble. The sward is of scientific importance for its populations of marsh orchids, including examples such as northern marsh orchid, *Dactylorhiza purpurella*, along with other species of *Dactylorhiza*. On this site can be found hybrids between many species of marsh orchid, making it a centre of micro-evolution.

Wildern Local Nature Reserve (LNR)

This LNR is located 300m southeast of the Site boundary and is separated from this LNR by the M27 motorway/slip road. Wildern is a 10ha wetland habitat site comprising ponds, flood meadows woodlands and a valley mire, all linked by streams. It supports a variety of finches, including goldfinch *Carduelis carduelis*, chaffinch *Fringilla coelebs* and greenfinch *Chloris chloris*. It also supports a range of invertebrates including purple hairstreak *Favonius quercus*, large skipper *Ochlodes sylvanus* and golden-ringed dragonfly *Cordulegaster boltonii*.

Netley Common LNR

This LNR is located 1.14km south of the Site boundary. Netley Common is a 12.75ha urban fringe site comprising the last remaining open heathland in the local area, including habitats such as grassland, scrub and mixed woodland. The fragmented heathland is particularly rare and is of national biodiversity importance, along with its role of hosting a variety of wildlife; for these reasons it has LNR status.

4.1.2 Non-Statutory Designated Sites

There are 18 non-statutory Sites of Importance for Nature Conservation (SINCs) within 2km of the Site. Details of these are given in Table 4.3.

Table 4.3: Non-statutory SINC's located within 2km of the Site boundary

SINC Name	Central Grid Reference	Description (Hampshire County Council)	Area (ha)	Location relative to Site
West End Copse	SU 4580 1450	Ancient semi-natural woodland	5.65	1.33km west/northwest
Dummers Copse South	SU 4620 1530	Ancient semi-natural woodland	0.84	1.52km northwest
Dummers Copse North	SU 4630 1540	Ancient semi-natural woodland	3.98	1.56km northwest
Hatch Grange Meadows	SU 4660 1490	Semi-natural woodland comprising community types of County importance and semi-improved grassland	2.56	970m northwest
Thornhill Park Plantation	SU 4667 1285	Semi-improved grassland of nature conservation interest and Community Wildlife Site	3.41	550m southwest
Harefield Copse	SU 4670 1320	Ancient semi-natural woodland	5.97	320m west
Withybed Covert/Ridgeway Copse	SU 4700 1600	Ancient semi-natural woodland	3.37	1.69km northwest
West End Covered Reservoir	SU 4710 1362	Impoverished grassland containing relic unimproved grassland. Site supports more than one notable species.	1.09	110m west
Telegraph Woods	SU 4730 1380	Pasture woodland and wooded commons of considerable biological and historical interest. Afforested heathland site with remnants of heathland recovery areas	20.30	Directly adjacent to the west
Winslowe House Meadow	SU 4750 1580	Agriculturally unimproved grassland	2.57	1.35km north
Dumbleton's Copse	SU 4760 1210	Afforested heathland site with open area of heathland	11.09	840m south
Meadow adjacent to Home Covert	SU 4770 1570	Semi-improved grassland	2.95	1.32km north
Home Covert, West End	SU 4780 1580	Ancient semi-natural woodland	1.17	1.32km north
Netley Hill Heath	SU 4800 1190	Heathland vegetation – afforested heathland with remnants of heathland recovery areas	2.54	1.23km south
Hogsty Corner	SU 4840 1320	Ancient semi-natural woodland, semi-natural woodland comprised of community types of County importance. Afforested heathland with remnants of heathland recovery areas. Fen grasslands that support flora and fauna of unimproved and waterlogged conditions	2.39	300m southeast
Bridget Mary Garden	SU 4860 1280	Semi-natural woodland comprising community types of County importance. Semi-improved grassland	3.28	740m southeast
Moorgreen Woodlands	SU 4860 1451	Ancient semi-natural woodland. Semi-natural woodland comprising community types of County importance.		500m northeast

SINC Name	Central Grid Reference	Description (Hampshire County Council)	Area (ha)	Location relative to Site
Wildern Nature Park	SU 4890 1330	Ancient semi-natural woodland. Semi-natural woodland comprising community types of County importance. Agriculturally unimproved grassland. Fen grassland that supports flora and fauna of unimproved and waterlogged conditions	4.60	650m southeast

4.1.3 Priority Habitats

The Site includes one Priority Habitat - lowland mixed deciduous woodland - located along the northern, western and eastern Site boundaries. Additional areas of this habitat type are distributed within 2km.

Six additional Priority Habitats are present within 2km of the Site, including lowland heathland, purple moor-grass rush pasture, wet woodland, coastal and floodplain grazing marsh, lowland dry acid grassland and lowland meadow.

4.1.4 Ancient Woodland

There are eight ancient woodland sites located within 2km of the Site boundary. Details are given in Table 4.4.

Table 4.4: Ancient woodlands within 2km of the Site

Woodland type	Area (ha)	Distance from the site boundary
Ancient & semi-natural woodland	3.62	1.41km west
Ancient and semi-natural woodland	0.55	1.58km northwest
Bushy/Withybed Copses - Ancient and semi-natural woodland	4.56	1.73km northwest
Dummers Copse – Ancient and semi-natural woodland	3.80	1.55km northwest
Ancient and semi-natural woodland	2.74	1.67km east
Ancient and semi-natural woodland	2.05	1.84km east
Catland/Fosters/Bottom Copses – Ancient and semi-natural woodland	3.15	1.83km southeast
Ancient replanted woodland	0.38	1.94km northwest

4.1.5 Priority Species

Relevant legally protected and/or notable species records received from HBIC through the desk study are contained in Table 4.5. These includes only those records from the last 10 years, as older records may not present a true reflection of current species distributions. A more extensive table of records is contained in Appendix A to this report.

Table 4.5: Records of legally protected and/ or notable species obtained through the Desk Study

Common Name	Latin Name	Legal Status	Location of Record	Distance from Site (of closest record)
Mammals				
Western European hedgehog	<i>Erinaceus europaeus</i>	NERC s41, UKBAP	SU 4691 1368	360m west
Hazel dormouse	<i>Muscardinus avellanarius</i>	HabRegs2, HSD4, NERC s41, UKBAP, WCA5/9.4c	SU 480 135	Present historically within the Ageas Bowl landholding
Eurasian badger	<i>Meles meles</i>	PBA	SU 478 134	On site
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	County, HabRegs2, HSD4, WCA5/9.4c	SU 472 141	110m west
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	County, HabRegs2, HSD4, NERC s41, UKBAP, WCA5/9.4c	SU 472 141	110m west
Nathusius's pipistrelle	<i>Pipistrellus nathusii</i>	County, HabRegs2, HSD4, WCA5/9.4c	SU 471 151	1km northwest
Western barbastelle	<i>Barbastella barbastellus</i>	County, HabRegs2, HSD2p, HSD4, NERC s41, UKBAP, WCA5/9.4c	SU 474 133	One record from within the Site
Natterer's bat	<i>Myotis nattereri</i>	County, HabRegs2, HSD4, WCA5/9.4c	SU 480 147	400m north
Brown long-eared bat	<i>Plecotus auritus</i>	County, HabRegs2, HSD4, NERC s41, UKBAP, WCA5/9.4c	SU 493 145	1.2km east
Serotine	<i>Eptesicus serotinus</i>	County, HabRegs2, HSD4, WCA5/9.4c	SU 472 141	110m west
Noctule	<i>Nyctalus noctula</i>	County, HabRegs2, HSD4, NERC s41, UKBAP, WCA5/9.4c	SU 472 141	110m west
Birds				
Red kite	<i>Milvus milvus</i>	BD1, WCA1i	SU 47 14	Adjacent to the west
Herring gull	<i>Larus argentatus</i>	BRed	SU 48 13	350m south
Barn owl	<i>Tyto alba</i>	WCA1i	SU 48 15	710m north
Kingfisher	<i>Alcedo atthis</i>	BD1, WCA1i	SU 48 14	One record on Site
Firecrest	<i>Regulus ignicapilla</i>	WCA1i, County	SU 46 14	1.3km west
House sparrow	<i>Passer domesticus</i>	BRed, NERC s41, UKBAP	SU 48 13	350m south
Lesser redpoll	<i>Acanthis cabaret</i>	BRed, NERC s41, UKBAP	SU 487 130	770m east
Reed bunting	<i>Emberiza schoeniclus</i>	NERC s41, UKBAP	SU 46 15	1.6km northwest
Tree pipit	<i>Anthus trivialis</i>	NERC s41, BRed	SU 49 12	1.7km southeast
Dark-bellied brent goose	<i>Branta bernicla</i>	County	SU 485 129	680m east
Hawfinch	<i>Coccothraustes coccothraustes</i>	County, NERC s41, BRed	SU 47 13	300m southwest
Cuckoo	<i>Cuculus canorus</i>	NERCs41, BRed	SU 49 12	1.7km southeast
Lesser spotted woodpecker	<i>Dryobates minor</i>	BRed	SU 471 130	210m southwest

Common Name	Latin Name	Legal Status	Location of Record	Distance from Site (of closest record)
Pied flycatcher	<i>Ficedula hypoleuca</i>	BRed	SU 468 147	800m northwest
Reptiles				
Grass snake	<i>Natrix natrix</i>	NERC s41, UKBAP, WCA5/9.1k/I	• SU 486 146	600m northeast
Slow worm	<i>Anguis fragilis</i>	NERC s41, UKBAP, WCA5/9.1k/I	SU 472 141	140m west
Common Lizard	<i>Zootoca vivipara</i>	NERC s41, UKBAP, WCA5/9.1k/I	SU 489 133	860m east
Amphibians				
Common toad	<i>Bufo bufo</i>	NERC s41, UKBAP	SU 472 141	140m west
Plants				
Stinking chamomile	<i>Anthemis cotula</i>	IUCN list of threatened species	SU 48 16	1.7km north
Heather	<i>Calluna vulgaris</i>	IUCN list of threatened species	SU 473 138	Adjacent to west
Star sedge	<i>Carex echinata</i>	IUCN list of threatened species	SU 467 132	530m west
Wild strawberry	<i>Fragaria vesca</i>	IUCN list of threatened species	SU 48 12	1.3km south
Marsh pennywort	<i>Hydrocotyle vulgaris</i>	IUCN list of threatened species	SU 48 14	On Site record
Marsh ragwort	<i>Jacobaea aquatica</i>	IUCN list of threatened species	SU 486 146	600m northeast
Field scabious	<i>Knautia arvensis</i>	IUCN list of threatened species	SU 46 12	1.7km southwest
Corn mint	<i>Mentha arvensis</i>	IUCN list of threatened species	SU 473 141	Adjacent to the west
Wood sorrel	<i>Oxalis acetosella</i>	IUCN list of threatened species	SU 48 14	On Site
Tormentil	<i>Potentilla erecta</i>	IUCN list of threatened species	SU 48 14	On Site
Creeping willow	<i>Salix repens</i>	IUCN list of threatened species	SU 484 145	390m northeast
Sanicle	<i>Sanicula europaea</i>	IUCN list of threatened species	SU 473 138	Adjacent to the west
Ragged robin	<i>Silene flos-cuculi</i>	IUCN list of threatened species	SU 48 14	On Site
Goldenrod	<i>Solidago virgaurea</i>	IUCN list of threatened species	SU 46 12	1.7km southwest
Autumn lady's tresses	<i>Spiranthes spiralis</i>	IUCN list of threatened species	SU 47 13	300m southwest
Devil's bit scabious	<i>Succisa pratensis</i>	IUCN list of threatened species	SU 4814	On Site
Common valerian	<i>Valeriana officinalis</i>	IUCN list of threatened species	SU 48 14	On Site
Heath speedwell	<i>Veronica officinalis</i>	IUCN list of threatened species	SU 48 14	On Site
Marsh speedwell	<i>Veronica scutellata</i>	IUCN list of threatened species	Not given	460m northeast

Status codes and abbreviations:

BD1 - Birds Directive Annex

1BRed - Bird Population Status- red

County – Hampshire County notable

HabRegs2 - Schedule 2 of Conservation of Habitats and Species Regulations 2010 (European Protected Species animal)

HSD2p - Habitats and species directive Annex 2 - priority species **HSD4** - Habitats and species directive Annex 4

HSD5 - Habitats and species directive Annex 5

Lr (NT) – International Union for Conservation of Nature 2001 - Lower risk - Near Threatened

Nb – Nationally notable B

NERC s41 – Priority Species listed under Section 41 of the Natural Environment and Rural Communities Act 2006

NS – Nationally scarce (occurring in 16 -100 10km squares in Great Britain)

PBA – Protection of Badgers Act 1992

RLGB – Red List Great Britain

UKBAP – UK Biodiversity Action Plan 1994

Vu – International Union for Conservation of Nature 2001 – Vulnerable

WCA1i - The Wildlife and Countryside Act 1981 - Schedule 1 Part 1

WCA5/9.1k/I – The Wildlife and Countryside Act 1981- Schedule 5 Section9 Part 1 (killing/injuring)

WCA5/9.4c – The Wildlife and Countryside Act 1981 - Schedule 5 Section 9 Part 4c

4.2 FIELD SURVEYS

4.2.6 Habitats

A total of 23 Phase 1 habitat types were identified during the course of the field surveys (see Figure 2).

The UKHab classifications within the Site included modified grassland (g4), other neutral grassland (g3c), bracken (g1c), bramble scrub (h3d), other lowland mixed deciduous woodland (w1f7) other broadleaved woodland types (w1g7), other woodland, mixed, mainly coniferous (w1h6), line of trees (w1g6), hedgerow (h2), eutrophic standing water (r1a), rivers and streams (r2) and built urban habitats (u1b, u1b5, u1c, u1d and u1e). These are shown in Figure 3 and full habitat descriptions and species lists can be found in Appendix B. The proportion of the Site comprising built urban habitats is of negligible ecological value.

Overall, the habitats found within the Site were considered to be common and ubiquitous. However, there was one habitat (lowland mixed deciduous woodland) classified as UK BAP Priority Habitat and listed under S41 of the Natural Environment and Rural Communities (NERC) Act (UK Government, 2006), where they are listed as a Priority Habitat and a Habitat of Principal Importance respectively.

Figure 2: Phase 1 Habitat Map – including Boundary Lakes Golf Course and part of Telegraph Woods (both outside the current application boundary)

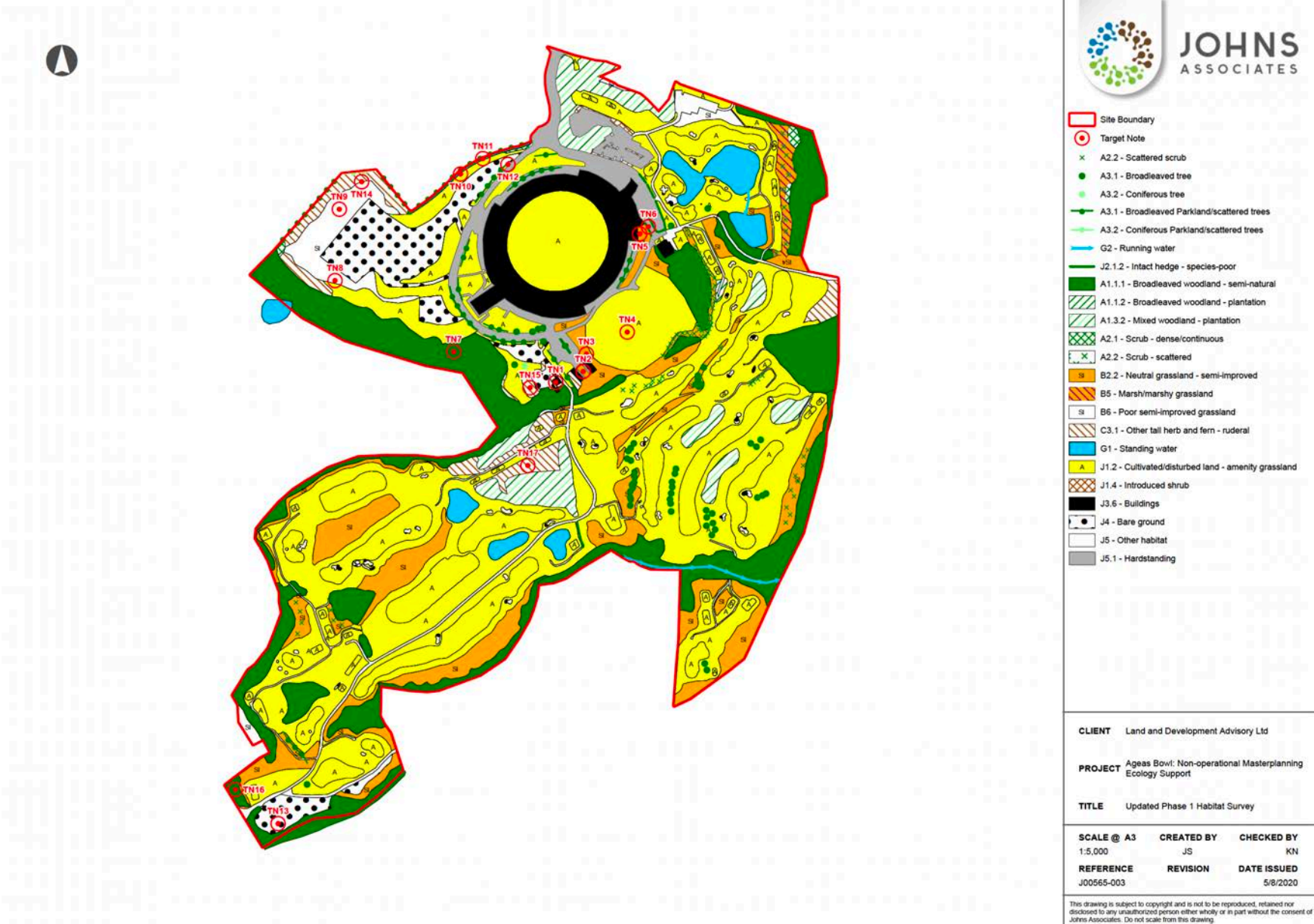
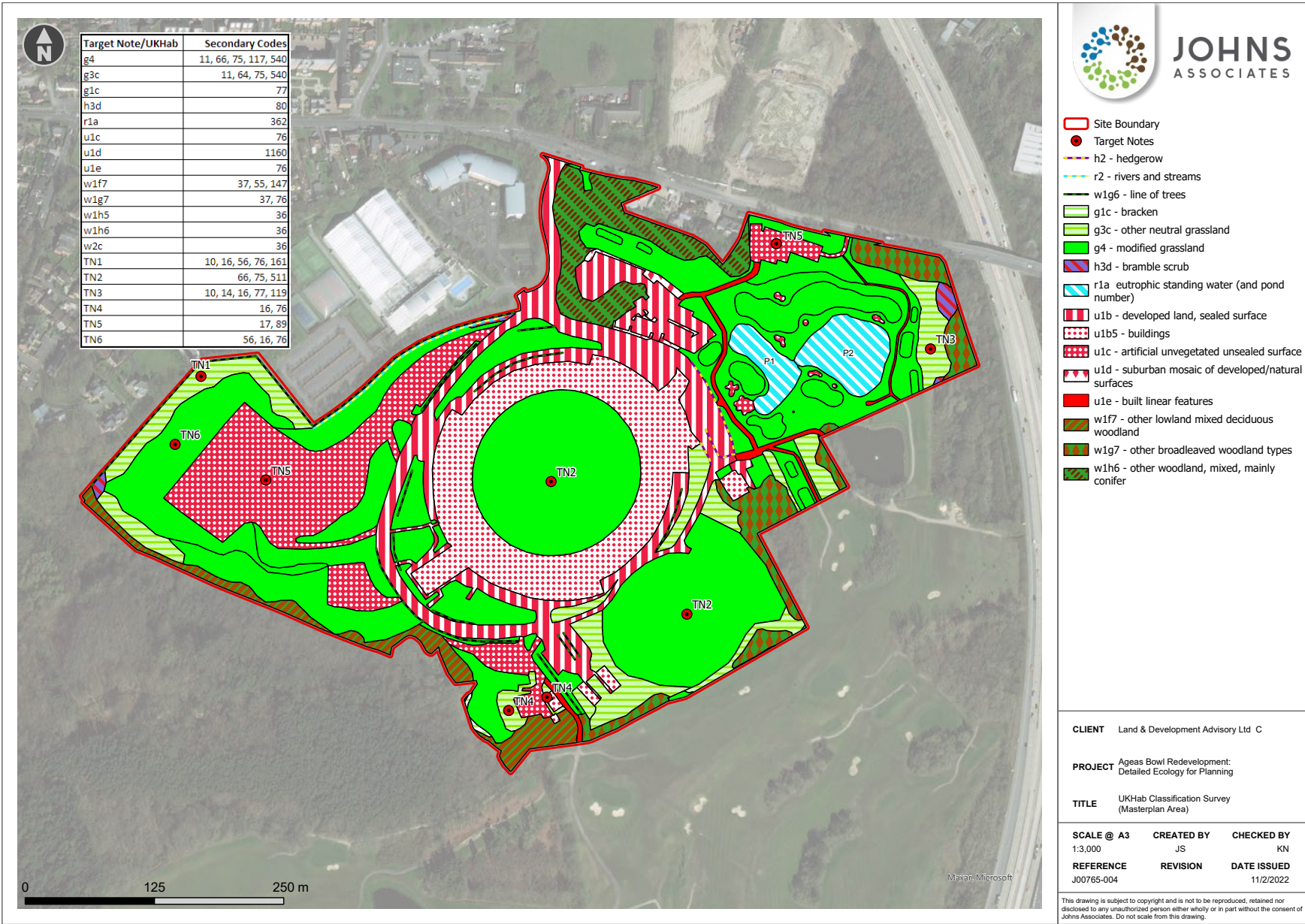


Figure 3: UKHab Habitat Classification Map



4.2.7 Species and Species Groups

The following section provides summary results of the protected species surveys carried out in 2020 and 2021. Detailed survey methodologies and results can be found in the Appendices to this EclA.

Bats

The Bat Surveys Technical Note is provided as Appendix C to this EclA.

Habitat Suitability

Habitats within the Site have been assessed as presenting moderate suitability for bats. Positive/promoting features included semi-improved grassland, wooded copses, tree lined boundaries and waterbodies. Negative/limiting factors included large areas of intensively mown golf playing surfaces and the cricket stadium/hotel, car parking, roads and lighting that dominate key areas of the Site.

Bat Roost Inspection (BRI) – Buildings

All buildings were inspected on 9th August 2021 to assess their potential to support roosting bats. Only two buildings offered any suitability. These were the Greenkeepers Cottages and Wellbeing Centre. No evidence of bats was observed at the time of survey, and both buildings were assessed as having low suitability.

Ground Level Tree Assessment (GLTA)

Ground Level Tree Assessments of trees within the redevelopment Site boundary were carried out on 9th August 2021 and any Potential Roost Features (PRFs) recorded. A total of twenty trees within the development footprint supported PRFs, of which seven were classified as having Low suitability, three Moderate suitability and ten High suitability. A total of eighteen trees adjacent to the development Site boundary supported PRFs.

Aerial Tree Climbing Inspections

The tree climbing inspections allowed further consideration and clarification of the PRF status of trees. A total of 13 trees were climbed, (see Appendix C and Table 4.6 below).

Table 4.6: Final PRF status of trees within the development footprint

Tree	Co-ordinates		Species	PRF Type	Stem or Limb?	PRF Orientation	PRF Height	Ivy present	PRF Status
T1	-1.3194823	50.924358	Oak	Multiple features	Stem/limb – rot present			No	Negligible
T7	-1.3183312	50.9260777	Oak	Multiple features				Yes	Negligible
T8	-1.3183312	50.9260777	Oak	Low vertical dead stem crack	Stem	NW	6m	Yes	Low
T13	-1.319093902	50.92632835	Oak	Rot hole	Limb	North	10m	No	Negligible
T14	-1.320004343	50.92598666	Oak	Multiple features	Limbs			No	Negligible
T15	-1.320089492	50.9260286	Oak	Unknown				Yes - partial	Negligible
T16	-1.321401088	50.92640468	Sweet chestnut	Unknown				No	Negligible
T17	-1.321401088	50.92640468	Oak	Unknown				Yes	Negligible
T18	-1.321604232	50.92635974	Sweet chestnut	Woodpecker holes domed roof (squirrel	Stem	South	6m	No	High

Tree	Co-ordinates		Species	PRF Type	Stem or Limb?	PRF Orientation	PRF Height	Ivy present	PRF Status
				and slugs present)					
T19	-1.321766072	50.92630946	Sweet chestnut	Woodpecker holes x 3	Stem	South	4 & 5m	No	Negligible
T37	SU 47825 14234		Oak					Yes	Negligible
T38	SU 47824 14234		Ash	Hazard beam in low grounded limb	Stem	SW	1-2m	No	Low
T39	SU 47806 14254		Wild cherry	Woodpecker holes x 2	Stem	E	5m	No	High
				Woodpecker hole	Stem	SW	5m		
				Rot hole	Stem	S	8m		

T8 (low suitability), T18 (high suitability), T38 (low suitability) and T39 (high suitability) have viable PRFs and are located within the development footprint. At the time of writing, it is anticipated that these trees can be retained with light levels no greater than current. If this is not the case, further inspections will be carried out and a Natural England bat licence obtained if they are confirmed as roosts.

Emergence/Re-Entry Surveys

One dawn re-entry survey of the Wellness Centre was carried out on the 16th September 2021 and one dusk emergence survey of the Greenkeepers Cottages was carried out on 21st September, in compliance with Bat Survey Guidelines for Professional Ecologists: Good Practice Guidelines (Bat Conservation Trust (BCT) 2016). No bats were observed or recorded entering or leaving either of the buildings surveyed and as such it is considered reasonable to conclude these buildings are not bat roosts.

Activity Transect Surveys

The transect route covered all habitat types present across the Site. In total six species were recorded during the activity transect surveys. Typically, common pipistrelle was the most common species recorded accounting for 70% of the total recordings, the second being noctule at 20% of the total. Soprano pipistrelle, Myotis sp., Serotine and Plecotus sp. were also recorded during the course of the activity surveys.

Within the application area, activity was highest around boundary habitats, particularly those containing mature trees and water features. A high level of activity by Noctule bats was recorded within the woodland habitat to the west of the Site during the July activity transect. These were likely to be foraging over the tree canopy.

The areas of broadleaved woodland, scrub, tall ruderal habitats and areas of standing water recorded the largest amount of bat activity. This is typical as these habitat types are darker, provide more protection, and usually attract a greater assemblage of invertebrate prey species. The amenity grassland and hard standing areas recorded relatively low levels of activity which is not surprising considering these areas are open and are relatively poor with regards to plant species assemblage, however local pockets of activity were observed, particularly for noctule and common pipistrelle foraging on invertebrates attracted to the lighting around the parking areas.

The records of light-sensitive species were very limited within the application boundary and almost entirely restricted to Myotis bats (likely to be Daubenton's or Natterer's) foraging over the waterbodies in the east.

Automated Static Detector Surveys

A total of 102,451 recordings were collated into a single dataset for the Site and were analysed using R Studio. The survey recorded a total of 9 species on Site: common pipistrelle (70,626 records or 68.94% of the total); noctule (25,751 or 25.13%); soprano pipistrelle (5,413 or 5.28%); Myotis sp (124 or 0.12%); serotine (449 or

0.44%); *Plecotus* sp. (38 or 0.04%); Leisler's (23 or 0.02%); *Nathusius'* pipistrelle (18 or 0.01%); barbastelle (7 or 0.01%) and *Nyctalus* sp. (2 or 0.01%).

Amphibians

Seven on-Site ponds were subject to Habitat Suitability Index assessment on 24th April 2020 and were then sampled for GCN environmental DNA (eDNA) on the 14th May 2020.

Pond 1 was a semi-natural pond located within Thorneywoods and was assessed as having 'Below Average' suitability for GCN.

Pond 2 was a large golf course waterbody located within Boundary Lakes Golf Course. It was assessed as having 'Average' suitability for GCN.

Pond 3 was also a large golf course waterbody located within Boundary Lakes Golf Course. Connected to pond 4, it was assessed as having 'Average' suitability for GCN.

Pond 4 was a large irrigation lagoon situated within Boundary Lakes Golf Course. Connected to pond 2 it was also assessed as having 'Average' suitability for GCN.

Ponds 5, 6 and 7 were all large golf course waterbody located within Boundary Lakes Golf Course and were assessed as having 'Average' suitability for GCN.

All water samples were negative for GCN eDNA. Only one record of great crested newt (GCN) was highlighted by the data search: this record was located over 2km from the Site to the south.

Isolated areas of suitable terrestrial habitat are present within the Site boundary, comprising woodland edge habitat, hedgerows and longer areas of grassland. However, these are isolated from other areas of suitable habitat in the wider local area and it is therefore considered reasonable to conclude that this species is absent from the Site.

The Great Crested Newt Technical Note can be found in Appendix D.

Reptiles

Reptiles are known to be present within the wider Ageas Bowl site following surveys undertaken in 2007 and 2017.

Historically, only a small number of individuals of common reptile species have been recorded in limited locations at the Site.

Reptile surveys were undertaken in suitable habitat areas within the proposed Mixed Use Development Site by Johns Associates in 2020. A total of 70 artificial refugia, comprising 0.5m x 0.5m and 1m x 0.5m squares of roofing felt and corrugated iron 'tins', were laid out within areas of suitable habitat across the Site in May 2020 and left to 'bed-in' before the survey visits commenced. A second phase of surveys in September 2020 included this original area and a further 200-250 refugia.

On each subsequent survey visit, all artificial refugia were checked for the presence of basking reptiles. Natural refugia such as logs, rocks and potential basking spots including areas of bare ground were also surveyed where these features were present on Site. Other artificial refugia such as discarded plastic sheeting and other refuse objects were also observed for evidence of reptiles.

Semi-natural habitats suitable for use by common reptiles were present across the Site (including retained areas of habitat around the perimeter and those newly created as part of the Ageas Bowl and golf course refurbishment works). Suitable habitats include areas of longer semi-improved grassland, hedgerows, landscape bunds, scrub, tall ruderal, standing/running water and areas of woodland (including edge habitats).

Results of the September surveys confirmed the presence of a low population of slow worm within the surveyed area, with a peak count of six individuals. Slow worms were recorded at seven different locations: in the west and north of the redevelopment Site and from within the adjacent golf course. No common lizards were recorded during the 2020 surveys; however, on a precautionary basis it should be assumed that common lizards are likely to be present on Site having been recorded during previous surveys.

The Reptile Technical Note can be found in Appendix E.

Dormouse

Dormouse are known to be present within a small central southern area of the wider Boundary Lakes Golf Course following surveys undertaken in 2007/2008 and 2016/2017.

Available habitats within the Site were assessed for their suitability to support dormouse in 2020 and again in 2021. Nest tube surveys were undertaken to help detect the presence of or demonstrate the likely absence of dormouse. Fifty nest tubes were installed along the northern and western tree line boundaries in May 2020 and an additional 50 nest tubes were installed in June 2020 along the eastern tree line boundary and along the tree line where historic survey results have confirmed presence. Survey visits were undertaken in June and July 2020. Tubes were checked by a suitably experienced and licensed ecologist.

Additional nest tube surveys were carried out in 2021, in areas of suitable habitat to the north of the Masterplan site. This area has not been previously surveyed for this species. Fifty nest tubes were deployed on 23rd June 2021 and checked on 2nd November 2021.

Areas of suitable habitat are present within the Site boundary including semi-natural broadleaved woodland, hedgerows and dense scrub. However, these are relatively isolated in a wider local context and of a small size unlikely to be able to support a dormouse population in the absence of good links to other suitable areas off-site. No signs of dormouse were identified during the course of the nest tube surveys. It is therefore considered reasonable to conclude that this species is absent from the Site.

The Dormouse Technical Note can be found in Appendix F.

Badger

Active badger setts are not associated with the proposed Mixed Use Development Site. The Confidential Badger Technical Note can be found in Appendix G. This Technical Note should not be made publicly available owing to the levels of persecution suffered by this species.

Other Mammals - Hedgehog

Although not recorded within the Site, the habitats present within the red line boundary and immediately adjacent areas offer potential foraging and resting places for hedgehogs such as hedgerows, grasslands, woodland and shrub cover. Hedgehogs are legally protected and a S41 Priority Species.

5 SCOPE OF THE ASSESSMENT

The scope of the assessment was established through the review of the overall baseline and the proposed development design.

5.1 APPROACH TO IDENTIFYING RECEPTORS

The identification of receptors is based on relevant guidance and the professional judgement of qualified technical specialists who have undertaken a desk study and a range of ecological field surveys at the application Site.

In some cases, even without quantified information, it is reasonable to conclude that some potential receptors will not experience significant effects. This is sometimes the result of mitigation measures that have been incorporated into the proposed development, which might reasonably be expected to be effective.

The following considerations have been considered in identifying potential receptors:

- The importance (or value) of the receptor at a local, regional and national level;
- The extent to which important ecological receptors will be affected by changes that are expected to result from the proposed development;
- The sensitivity of the important ecological receptors to the changes that are likely to occur;
- The likely magnitude, duration and other characteristics of the effects; and
- Relevant best practice and guidance where specialist methodologies have been developed as detailed below.

5.2 POTENTIAL RECEPTORS

A key consideration in assessing the effects of the proposed development on flora and fauna is to define the habitats and species that need to be included in the assessment. In identifying these receptors, it is important to recognise that a development can affect flora and fauna both within the site (e.g. through the land-take required) as well as beyond the site (e.g. through noise generation, changes in air quality or local hydrology etc.). The approach that has been taken in preparing this EclA is to identify important biodiversity resources, (the sites, habitats and species of sufficient importance that effects upon them could be significant), as well as considering legally protected species.

Assessment of the effects of the proposed development on biodiversity was undertaken with reference to CIEEM's EclA Guidelines (September 2019). The assessment has focused on legally protected and otherwise important biodiversity resources (refer to Boxes 3.1 and 3.2).

The starting point for the assessment was to undertake an exercise, using the baseline data that were collected through the desk study and knowledge of the local area, to subdivide the recorded biodiversity receptors (i.e. designated sites, together with species populations and habitats) into:

- Those that could be significantly affected by the proposed development or for which the development could result in the contravention of relevant legislation, and that therefore required more detailed assessment; and
- Those that were assessed as not being likely either to be significantly affected or whose presence was not likely to result in any relevant legislation being contravened, and that did not therefore require further assessment (i.e. that were 'scoped out' of the assessment).

For sites/habitats/species that meet the criteria in Box 5.1 and/or 5.2, the next stage of the scoping assessment is to determine whether the identified receptors are likely to be of sufficient 'biodiversity conservation value' that an effect upon them could be significant in EclA terms. In this context:

- Biodiversity conservation value relates to the quality and/or size of sites or habitats, or the size of species populations (see Box 5.1); and
- Potential significance means that the effect could be of sufficient concern, or for positive effects, of such substantial benefit that it could influence the decision about whether or not development consent or a specified other consent should be granted.

Box 5.1: Value and Importance for Biodiversity Conservation

The distinction between importance and value can be illustrated by common species such as the house sparrow. This species is important at a national level because it is a priority species (Section 41, NERC Act 2006). However, a small population that could be affected by a development would often be assessed as being of insufficient value for an effect (whether adverse or beneficial) to be of potential significance, due to the small size of the population. On this basis, it would not need to be assessed further (i.e. it would be 'scoped out' of the assessment).

5.3 SPATIAL SCOPE

The spatial scope of the assessment of each potential significant effect reflects:

- The area occupied by the receptor that is being assessed; and
- The Zol associated with the ecological changes that will result from the proposed development that are likely to affect the receptor.

Thus, if part of a designated biodiversity site is located within the ecological Zol relating to a particular ecological change, an assessment is made of the effects on the biodiversity site as a whole. A similar approach has been taken for areas of notable habitat. For species that occur within an ecological Zol that relates to a change that could significantly affect the species, an assessment has been carried out on the total area that is used by the affected individuals or population of the species (e.g. for foraging or commuting).

Receptors that are of sufficient value that an effect upon them would have the potential to be significant, together with all relevant legally protected species, are taken through to the assessment stage. This involves identifying, for each receptor:

- Any ecological changes that are likely to be caused by the proposed development which have the potential to lead to a significant effect and/or to contravene relevant legislation;
- For these ecological changes, determining the area within which each change could cause a likely significant effect or could contravene relevant legislation (i.e. an 'ecological Zol' - see Box 5.2);
- Comparing the area where the receptor occurs with the ecological Zol; and
- If the receptor occurs or is likely to occur within the Zol, concluding that either the receptor could be subject to a significant effect and/or the relevant legislation could be contravened, in which case the effects upon the receptor are scoped in, or no significant effect is likely to occur and it is scoped out.

Box 5.2: Defining Ecological Zol

The ecological Zol that is the most straightforward to define is the area affected by land- take and direct land-cover changes associated with the development. This zone is the same for all affected receptors. By contrast, for each environmental change that can extend beyond the area affected by land-take and land-cover change (e.g. changes in noise associated with development activities within the land-take area), the Zol may vary between receptors, dependent upon the receptors' sensitivity to the change and the precise nature of the change.

For example, dormouse might be unaffected by noise associated with a development unless the noise is generated very close to where the dormouse nests, while another mammalian species might be disturbed at much greater distances; other species (e.g. of invertebrate) may be unaffected by changes in noise. A further complication is that the response of a receptor to a change associated with one development may differ to the response of the same receptor to a similar change on another development. This can occur as a result of the wide range of variables that influences the precise nature of any change (e.g. for noise this can include: differing baseline noise conditions; specific magnitude, timing or other characteristics of the noise; and the effects of screening and topography).

In view of these complexities, the definition of the zones of influence that extend beyond the land-take area will be based upon professional judgement, informed by discussions with the technical specialists who are working on other aspects of the planning application. These specialists will provide information about the environmental changes that they have assessed if required. This information will be combined with available ecological information about receptors' sensitivities to different environmental changes in order to define the extent of each ecological Zol.

The key issues relating to biodiversity receptors and the proposed development are as follows:

- The effects of temporary and permanent habitat loss from land take by construction areas;
- Damage/harm to flora and fauna;
- The effects of pollution (construction dust and pollution from accidental spillage of fuels, lubricants etc. that may enter waterbodies or terrestrial habitats);
- Noise, visual or light disturbance to fauna;
- The positive effects of ecological enhancement from creation, enhancement and management of the following habitats/ features: species rich neutral grassland, marginal planting around the standing waterbodies, green roofs and woodland.

There are a wide range of biodiversity receptors at the application Site and there is also a wide variation in the spatial influence of different elements of the development proposals. For example, the majority of changes in habitat/land cover are localised (e.g. loss of improved grassland habitat for development).

Consequently, the spatial scope of the assessment varies between different receptors and the Zol associated with each of the different components of the construction and operational phases of the development proposals.

The effects of temporary and permanent habitat loss from land take construction and operational phases of the proposed development were initially considered across the whole application Site, but then refined on the basis of the presence/absence of specific habitats within the development footprint (e.g. extensive undisturbed potential breeding bird habitat within or adjacent to an area of change/development), the affinity of particular species for these habitats, in combination with the function of the on-site habitat to species that use key habitats located off-site (e.g. bats roosting within 2km).

Emissions of dust from construction activity (including construction of structures, earth-moving, and track-out of dust due to vehicles leaving dusty sites) are potentially significant for sensitive habitats and have been included in the assessment.

Consideration of wider effects from potential accidental pollution to surface waterbodies has also been included in the assessment.

Consideration of potential disturbance to ecological receptors from noise, vibration, visual or light was extended across the application Site and surrounding parcels of land.

5.4 POTENTIAL ECOLOGICAL RECEPTORS AND SIGNIFICANT EFFECTS

Table 5.1 summarises information regarding the ecological receptors that have been identified through the scoping process as having the potential to be significantly affected by the proposed development and the legislation that could be contravened as a result of the proposed development without implemented mitigation and the potential effects that need to be assessed.

Additionally, Table 5.1 summarises the details of receptor habitats and species that have been scoped out of further assessment due to non-presence or no potential impacts predicted from the proposed development.

Table 5.1: Scoping Results of Potential Ecological Receptors and Legislation.

Potential receptor	Important/ valued and/or legally protected?	Relevant criteria (from Box 3.1) and legislation (from Box 3.2)	Potentially significant effects/ legal contravention and causal changes
Statutory Designated Wildlife Sites: Solent and Southampton Water SPA and Ramsar Site	Biodiversity conservation value Legal status	International importance Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 NERC Act 2006 S.41 Habitats and Species of Principal Importance Local BAP Priority habitats and species	This site is located approximately 2.5km southeast of the Site. However, site drainage ultimately discharges into the Hamble and the Solent. Therefore, potential changes/ effects are could arise as a result of the proposals. Scoped into the assessment.
Statutory Designated Wildlife Sites: River Itchen SAC	Biodiversity conservation value Legal status	International importance Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 NERC Act 2006 S.41 Habitats and Species of Principal Importance Local BAP Priority habitats and species	This site is located approximately 3.1km northwest of the Site with a likely environmental pathways identified from site foul drainage to the Portswood WwTW into the River Itchen. Therefore, no potential changes/ effects are considered likely as a result of the proposals.

Potential receptor	Important/ valued and/or legally protected?	Relevant criteria (from Box 3.1) and legislation (from Box 3.2)	Potentially significant effects/ legal contravention and causal changes
			Scoped into the assessment.
Statutory Designated Wildlife Sites: Solent Maritime SAC	Biodiversity conservation value Legal status	International importance Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 NERC Act 2006 S.41 Habitats and Species of Principal Importance Local BAP Priority habitats and species	This site is located approximately 3.3km southeast of the Site. However, site drainage ultimately discharges into the Hamble and the Solent. Therefore, potential changes/ effects are could arise as a result of the proposals. Scoped into the assessment.
New Forest SPA	Biodiversity conservation value Legal status	International importance Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 NERC Act 2006 S.41 Habitats and Species of Principal Importance Local BAP Priority habitats and species	The site is located approximately 20km away, but it has been identified by the New Forest National Park Authority and Natural England that residents in Eastleigh may still visit the New Forest resulting in a potential increase in recreational disturbance. Scoped into the assessment.
New Forest SAC	Biodiversity conservation value Legal status	International importance Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 NERC Act 2006 S.41 Habitats and Species of Principal Importance Local BAP Priority habitats and species	The site is located approximately 20km away. Although Eastleigh residents may visit the New Forest, it is unlikely that any additional recreational activity would result in effects on designated faunal/floral features of interest. There is no hydrological connection and it is highly unlikely that emissions to air associated with construction or operation will affect the SAC.

Potential receptor	Important/ valued and/or legally protected?	Relevant criteria (from Box 3.1) and legislation (from Box 3.2)	Potentially significant effects/ legal contravention and causal changes
			Scoped out of the assessment.
New Forest SSSI	Biodiversity conservation value Legal status	National importance Wildlife and Countryside Act 1981 (as amended) NERC Act 2006 S.41 Habitats and Species of Principal Importance Local BAP Priority habitats and species	The site is located approximately 20km away, but it has been identified by the New Forest National Park Authority and Natural England that residents in Eastleigh may still visit the New Forest resulting in a potential increase in recreational disturbance. Effects associated with hydrology, air quality and other faunal/floral receptors are not considered likely Effects associated with recreational disturbance and birds have been scoped into the assessment and are addressed as part of the SPA assessment.
Statutory Designated Wildlife Sites: Moorgreen Meadows SSSI	Biodiversity conservation value Legal status	National importance NERC Act 2006 S.41 Habitats and Species of Principal Importance Local BAP Priority habitats and species	This site is located approximately 200m northeast of the Site. It is within 200m of the Botley Road which will have increased traffic as a result of the development with potential air quality impacts. There are no other pathways and construction management measures (e.g. dust control) and implementation of a robust CEMP will be implemented.. Scoped into the assessment.
Statutory Designated	Biodiversity	County importance	This site is located

Potential receptor	Important/ valued and/or legally protected?	Relevant criteria (from Box 3.1) and legislation (from Box 3.2)	Potentially significant effects/ legal contravention and causal changes
Wildlife Sites: Wildern LNR	conservation value Legal status	NERC Act 2006 S.41 Habitats and Species of Principal Importance Local BAP Priority habitats and species	approximately 300m southeast of the Site with no likely environmental pathways identified. Within 200m of road potentially affected by air quality impacts: scoped into assessment.
Statutory Designated Wildlife Sites: Netley Common LNR	Biodiversity conservation value Legal status	County importance NERC Act 2006 S.41 Habitats and Species of Principal Importance Local BAP Priority habitats and species	This site is located approximately 1.14km south of the Site with traffic increases as a result of the development leading to potential air quality impacts. Scoped into the assessment.
Non-Statutory Designated Wildlife Sites (SINC): West End Copse Dummers Copse South Dummers Copse North Hatch Grange Meadows Thornhill Park Plantation Harefield Copse Withybed Covert/ Ridgeway Copse West End Covered Reservoir Winslowe House Meadow Dumbleton's Copse Meadow adj. to Home Covert Home Covert, West End Netley Hill Heath Hogsty Corner Bridget Mary Garden Moorgreen Woodlands Marhill Copse Wildern Nature Park	Biodiversity conservation value. Habitats including ancient semi-natural woodland, semi- improved grassland, unimproved grassland, heathland, fen grassland Priority Habitat (S41) including lowland heathland, lowland mixed deciduous woodland	County importance NERC Act 2006 S.41 Habitats and Species of Principal Importance Local BAP Priority habitats and species	Non-statutory SINCs are located between 110m and 1.5km from the Site. Excluding air quality issues, none of the sites listed here have likely environmental pathways identified taking into account best practice construction management measures (e.g. dust control) and implementation of a robust CEMP. Therefore, no potential changes/ effects are considered likely as a result of the proposals. Those SINCs within 200m of roads affected by increased traffic from the Development have been scoped into the assessment due to potential air quality impacts. These are:

Potential receptor	Important/ valued and/or legally protected?	Relevant criteria (from Box 3.1) and legislation (from Box 3.2)	Potentially significant effects/ legal contravention and causal changes
			West End Copse Dummers Copse South Dummers Copse North Harefield Copse Withybed Covert/ Ridgeway Copse West End Covered Reservoir Netley Hill Heath Hogsty Corner Moorgreen Woodlands Marhill Copse Wildern Nature Park The remaining SINC's listed have been scoped out of the assessment.
Non-Statutory Designated Wildlife Sites: Telegraph Woods SINC	Biodiversity conservation value: Pasture woodland and wooded commons. Heathland in recovery Priority Habitat (S41): Wood pasture and parkland, lowland heathland	County importance NERC Act 2006 S.41 Habitats and Species of Principal Importance Local BAP Priority Habitat	Construction activities have the potential to cause soil compaction and damage within root protection areas of trees along the edge of Telegraph Woods causing loss of trees/ damage to designated habitats. There is the potential for construction related contaminants to enter the soil through accidental spillages during construction and operation and for airborne pollutants (e.g. dust) to settle on vegetation associated with the SINC. Once the new residential dwellings are occupied and the budget hotel is open, there is potential for an increased recreational pressure on Telegraph Woods, which may lead to habitat damage/ degradation and/ or disturbance of species. A new

Potential receptor	Important/ valued and/or legally protected?	Relevant criteria (from Box 3.1) and legislation (from Box 3.2)	Potentially significant effects/ legal contravention and causal changes
			proposed pedestrian link from the Ageas Bowl residential area to Telegraph Woods has been identified as being important as part of the project strategy. This would utilise an existing but defunct path, require some scrub removal and use of no dig methods of path installation to minimise tree removal requirements. At this stage a concept design has been submitted and no detailed assessment has been conducted. Lighting levels will change – from periodic but very bright floodlighting for events/parking to well designed modern lighting provision in the residential areas. Lighting has been modelled and specifications will ensure dark corridors are maintained around the site boundary and Telegraph Woods. Air quality impacts from road traffic increases during the operational phase of the development are also considered. Scoped into the assessment.
Ponds	Biodiversity conservation value. Priority Habitat (S41):	District importance NERC Act 2006 S.41 Habitat of Principal	The ponds present on Site are man-made and designed primarily for irrigation of the golf

Potential receptor	Important/ valued and/or legally protected?	Relevant criteria (from Box 3.1) and legislation (from Box 3.2)	Potentially significant effects/ legal contravention and causal changes
	Ponds	Importance Local BAP Priority Habitat	course and are not therefore considered to meet the JNCC criteria for S41 Priority Habitat status. Scoped out of the assessment.
Broadleaved woodland	Biodiversity conservation value. Priority Habitat (S41): Lowland mixed deciduous woodland	District importance NERC Act 2006 S.41 Habitat of Principal Importance Local BAP Priority Habitat	Small areas of broadleaved woodland are present within the Site boundary, with boundary woodland habitat associated with Telegraph Woods located adjacent to the west/ southwestern Site boundaries. The areas of broadleaved woodland within the Site are to be protected and retained. Similarly, boundary woodland habitats associated with Telegraph Woods will be protected and retained. Ancient woodlands and SINC's with broad-leaved woodland within 200m of roads affected by increases in traffic during the operation of the development are also considered. Scoped into the assessment.
Bats	Biodiversity conservation value Legal status	International and national importance Habitats Regulations 2017 NERC Act 2006 S.41 Species of Principal	Direct loss of foraging habitat and change in land use adjacent to identified commuting features. Vegetation management

Potential receptor	Important/ valued and/or legally protected?	Relevant criteria (from Box 3.1) and legislation (from Box 3.2)	Potentially significant effects/ legal contravention and causal changes
		Importance Local BAP Priority Species Wildlife & Countryside Act 1981	/ change, loss of grassland habitat as well as increased artificial lighting and increase in anthropogenic disturbance could result in modification of bat activity, which could have implications for the viability of local populations that are connected to the Site. Scoped into the assessment.
Great crested newt (GCN)	Biodiversity conservation value Legal status	County importance Habitats Regulations 2019 Wildlife & Countryside Act 1981 NERC Act 2006 S.41 Species of Principal Importance	eDNA surveys of the on-Site waterbodies found no evidence of GCN. Habitat creation and management will result in an increase in suitable terrestrial habitat for amphibians within the Site. The proposed development will result in a positive beneficial effect for amphibian species overall. Scoped out of the assessment.
Badger	Legal status	Local Importance Protection of Badgers Act 1992	No signs of badger activity identified from surveys of the Site and immediately adjacent areas. Loss of limited foraging habitat as a result of the proposals. Operational affects from increased artificial lighting (external and internal) could result in

Potential receptor	Important/ valued and/or legally protected?	Relevant criteria (from Box 3.1) and legislation (from Box 3.2)	Potentially significant effects/ legal contravention and causal changes
			indirect low-level impacts on foraging and commuting badgers. Scoped out of the assessment.
Dormouse	Biodiversity conservation value Legal status	Wildlife & Countryside Act 1981 NERC Act 2002 S41 Species of Principal Importance	Presence/ absence surveys for this species associated with the proposed Mixed Use Development site found no evidence of dormice. Scoped out of the assessment.
Common reptiles (slow worm/common lizard)	Biodiversity conservation value Legal status	Local Importance Wildlife & Countryside Act 1981	Construction activity impacts arising from habitat removal and pre-commencement works (e.g. soil-stripping) have the potential to result in direct loss of resting, overwintering hibernation sites and risk of killing/injury offences. Direct loss of foraging habitat. Habitat creation and management of neutral grassland, bramble scrub and woodland habitats will result in an increase in suitable habitat for these species. Scoped into the assessment.
Birds	Biodiversity conservation value Legal status	National importance (BoCC Red List Species) Wildlife & Countryside Act 1981 NERC Act 2002 S41 Species of Principal	Construction could result in a direct loss of bird nesting, breeding and foraging habitat due to vegetation removal/ management. Construction activities

Potential receptor	Important/ valued and/or legally protected?	Relevant criteria (from Box 3.1) and legislation (from Box 3.2)	Potentially significant effects/ legal contravention and causal changes
		Importance Local BAP Priority Species	could result in the risk of accidental disturbance of nesting birds/ loss of adults/ young/ eggs. Habitat management would result in an increase in suitable foraging and nesting habitat within the Site. Scoped into the assessment.
Other NERC S.41 Mammals (hedgehog)	Biodiversity conservation value Legal status	NERC Act 2006 S.41 Species of Principal Importance Wildlife & Countryside Act 1981	Vegetation removal and construction activities have the potential to affect available foraging habitat. Habitat creation and management will result in an increase in grassland foraging habitat and hedgerow habitat. Scoped into the assessment.

5.5 CLIMATE CHANGE

Greenhouse gas (GHG) emissions contribute to climate change, which could affect the designated features of local sites, habitats and species considered in this EclA. For example: climate change may lead to grassland management changes resulting in the loss of foraging habitat for bats and/or badgers. Climate change may also lead to, for example, changes in the distribution of bats due to other areas within the UK and abroad becoming more suitable for the species, leading to decline in Hampshire populations.

The Climate Change Adaptation Manual – Evidence to Support Nature Conservation in a Changing Climate produced by Natural England (2020) supports practical and pragmatic decision making and guides reasonable judgement on the potential effects of climate change on the key habitats associated with the application Site. The habitats that characterise the application site: for example, amenity grassland, semi-improved neutral grassland, and lowland deciduous woodland are of low relative vulnerability to climate change.

Climate change and its implications for biodiversity have been incorporated into the design of embedded ecological mitigation and enhancement habitats to reduce the risk of impact on legally protected and other species. Selection of measures that are based on habitats that are known to be more resilient to climate change and provide extended ecological functionality for a wide range of species across the Site have been selected.

This has largely been achieved through the creation of additional areas of replacement habitat that are considered to have a low level of sensitivity to climate change (subject to appropriate management). These measures are associated with the enhancement of existing woodland habitats (including boundary habitat associated with Telegraph Woods) and the establishment of neutral grassland, which will be managed and enhanced with the primary objective to support native wildlife. A Landscape and Ecological Management Plan will be produced to guide appropriate long-term care of all habitats.

As a result, no further biodiversity mitigation for climate change as part of the proposed development is required beyond that included in the embedded mitigation and enhancements set out in Section 7, including management and monitoring beyond that identified. It is considered that the proposed Silverwood school site development will be of benefit to biodiversity in providing a significant area of land that will be ecologically improved which will be of benefit at a local and regional strategic landscape scale.

5.6 TEMPORAL SCOPE

The temporal scope of the assessment of biodiversity is consistent with the period over which the proposed development would be carried out and therefore covers the construction and operational periods. Should permission be granted, the pre-construction phase of the proposed development is scheduled to commence in 2024 which is when ground works are due to start. The construction phase would be due to complete in 2027.

Potential effects on biodiversity receptors have the potential to arise for part of, or the entirety of, the construction phase. The impacts from all construction activities have been considered across the development programme and the assessment has identified which activities are likely to cause an effect on each specific biodiversity receptor.

The 'completion year' for the proposed redevelopment of the Ageas Bowl site is 2027 and this will be used as the basis for the start of the assessment of operational effects on biodiversity including maintenance activities.

The operational activities associated with the development of the Site are considered to be 'in perpetuity' and therefore no decommissioning activities have been considered.

5.7 INTER-RELATED EFFECTS

There are two types of inter-related effect:

- Combined effects: when individual effects of the proposed development combine to create a cumulative effect; and
- Interactive effects: consideration of interactions between different effects in relation to a specific receptor.

Combined effects normally occur when different activities associated with a project act upon the same ecological receptor (e.g. the additive effect of physical disturbance from construction activities upon nesting birds may occur at the same time as transport related noise and lighting, that may act upon the same receptor(s) during the construction phase). In determining such effects, consideration would be given to the sensitivity of the receptor and the magnitude of ecological change. This is considered directly within the assessments included in this EclA and, as such, is not reported separately.

Interactive effects are assessed in relation to a specific receptor where the effect could be caused by the interactions of different types of effect from project activities even if individually these are insignificant (e.g. the interaction of noise disturbance and lighting changes on bats).

The assessment of effects on biodiversity receptors has the potential to be exacerbated by climate change, and this has been incorporated into the approach to integrated and embedded mitigation as set out in this EclA.

5.8 RECEPTORS SCOPED OUT OF FURTHER ASSESSMENT

The following receptors have been scoped out of further assessment because potential effects are either absent or not considered likely to be significant:

- Impacts, other than operational air quality, to Moorgreen Meadows SSSI, Wildern LNR and Netley Common LNR are considered unlikely due to their distance from the Site and an absence of likely environmental pathways/effect that could result in any changes/effects.
- Six non-statutory Sites of Importance for Nature Conservation (SINCs), as listed in Table 5.1, have been scoped out of further assessment due to their distance from the application Site and an absence of established environmental pathways that could result in any changes/effects. A further 11 SINCs are only scoped in, in relation to potential air quality impacts during operational phase.
- Phase 1 habitat types that are not S41 priority habitat types, including bare ground, amenity grassland, poor semi-improved grassland, tall ruderal, buildings, species poor hedgerows, mixed plantation woodland, scattered scrub, and marshy grassland have been scoped out of further assessment as they are of limited biodiversity value and potential effects to these habitats are not considered significant (although that are taken into account in terms of the Defra 3 Biodiversity Metric and calculation of Biodiversity Net Gain).
- Although suitable habitat for dormouse is present in woodland areas within the Site boundary, no evidence of this species was recorded during the surveys. The level of survey effort undertaken is considered sufficient to conclude the likely absence of this species from the Site. Therefore, on this basis, dormouse have been scoped out of further assessment.
- Although areas of suitable terrestrial habitat for GCN are present within the Site boundary, (comprising woodland edge habitat, hedgerows and longer areas of grassland), these are isolated from other areas of suitable habitat in the wider local area and no evidence of this species was recorded during the 2021 eDNA surveys. In addition, only one record was identified during the desk study from a location approximately 2km south of the Site. It is therefore considered reasonable to conclude that this species is absent from the Site, and on this basis GCN have been scoped out of further assessment.
- Although suitable foraging habitat for badgers is present within the Site boundary, this is limited in extent and alternative areas are available in the wider locality. On this basis, impacts to the local badger population are not considered to be significant and therefore this species has been scoped out of further assessment.

6 ENVIRONMENTAL MEASURES INTEGRATED AND EMBEDDED INTO THE PROPOSALS

6.1 INTRODUCTION

A range of environmental measures have been integrated and embedded into the development proposals as outlined in this Section. The design process for the Ageas Bowl redevelopment has included consideration of the ecological constraints and has incorporated measures to reduce the potential for adverse ecological effects in accordance with the 'mitigation hierarchy' (Avoid, Mitigate, Restore, Offset, Compensate) and relevant planning policy. The measures identified and adopted include those that are inherent to the proposed development and can be expected to be applied as part of construction environmental best practice methods, which are a result of legislative requirements.

The development design and impact avoidance measures will be adopted during the construction and operational phases of the proposed development. Table 6.1 outlines how these embedded measures will influence the biodiversity assessment. A Construction Ecological Management Plan (CEMP) and a Landscape and Ecological Management Plan (LEMP) will be produced through Planning Conditions that will set out full details of the delivery/ aftercare/ monitoring and long-term management requirements of these measures.

Table 6.1: Summary of Integrated and Embedded Biodiversity Mitigation and Enhancement Measures

Receptor	Changes and Effects	Integrated/Embedded Measures and Influence on Assessment
Solent and Southampton Water SPA and Ramsar Site and Solent Maritime SAC (and constituent SSSI)	Increase in nutrient levels from development associated with an increase in eutrophication and reduction in species diversity and site condition. Increase in recreational pressure arising for an increase in visitor numbers, notably disturbance from dog walking / exercise on birds and in particular designated features of interest.	i: Discharge of foul water (sewage) to Portswood Waste Water Treatment Works and into River Itchen. Suitable treatment at Portswood Wastewater Treatment Works. Comprehensive SuDS infrastructure including features such as interceptors, permeable paving, rain gardens, swales, vegetated SuDS ponds, sediment forebays. Successful treatment of nitrates and phosphates using robust methodology. We understand that Eastleigh Borough Council (EBC) are currently putting in place a land assembly project that will provide a permanent Borough wide nitrogen (N) and phosphate (P) mitigation approach. Consequently, it is anticipated that the impacts associated with the development will be fully mitigated by EBCs Strategic Land Parcels offsetting scheme (or similar scheme, such as that run by Hampshire & Isle of Wight Wildlife Trust). Purchase of EBC nutrient credits to demonstrate overall net zero nutrient emissions from the development, monitoring regime to demonstrate no emissions and feedback mechanism to enable effective management intervention if necessary. This approach has been designed with the express requirement that the development is nutrient neutral and does not result in any increase in nitrate, phosphate or sediment runoff into the receiving watercourses, the River Itchen and the Solent systems. Please refer to the Hilson Moran Nutrient Neutrality Assessment report (2022) and the Shadow Habitats Regulations Assessment (Johns Associates 2022) for full details.

Receptor	Changes and Effects	Integrated/Embedded Measures and Influence on Assessment
		ii: <u>The design of the on-site recreational provision aims, as far as possible, to fully deal with the whole site's recreational impacts on the Solent SPAs/SAC/Ramsar and New Forest SPA/Ramsar/SAC recreational impacts. Subject to on-going negotiations with Natural England, should the on-site provision not be suitable to fully off-set recreational impacts to the Solent, then the payment to the Bird Aware scheme would be provided. See the Shadow Habitats Regulations Assessment (Johns Associates 2022) for full details.</u>
New Forest SPA (and SSSI)	Increase in recreational pressure arising from an increase in visitor numbers, notably disturbance from dog walking / exercise on birds and in particular designated features of interest.	iii: <u>The Development will include an extensive network of footpaths and play/sports facilities as part of the scheme, both within the developed areas and as green infrastructure across the site to provide easy local access to outdoor recreational facilities and to deliver on site recreational capacity for the new residents. This includes a 2.5km SANG to cater for informal access, recreation and dog walking in the adjacent Telegraph Woods.</u>
River Itchen SAC and SSSI	Increase in nutrient levels from development associated with an increase in eutrophication and reduction in species diversity and site condition.	<u>See i. above</u>
Telegraph Woods SINC and other SINCS	No detailed works are planned within or adjacent to the boundary of Telegraph Woods although changes within the application site may cause effects to the SINC. A possible new pedestrian footpath linking the residential area with Telegraph Road along a currently defunct path and existing path may be brought forward. This is only presented as a concept at this stage and as such only a preliminary appraisal of potential effects and necessary mitigation has been identified. Potential effects may include: <u>Construction</u> Construction activities have the potential to cause soil compaction and damage within root protection areas of trees along the edge of Telegraph Woods causing loss of trees/ damage to designated habitats. There is the potential for construction related contaminants to enter the soil through accidental spillages during construction and operation and for airborne pollutants (e.g. dust) to settle on vegetation associated with the SINC. Movement of plant/ machinery has the potential for accidental damage to the trunks/ branches of trees. There is also the potential for construction traffic/ personnel/ lighting to cause disturbance to legally protected and/or notable species associated with the woodland. <u>Operation</u>	<u>Construction</u> 1: Preparation and implementation of a Construction Ecological Management Plan (CEMP) implemented through a Planning Condition to set out specific measures, supervision and monitoring to avoid or minimise all potential construction related effects arising from; lighting, vibration, noise, dust and pollutants affecting retained vegetation and waterbodies, using industry best practice methodologies and guidance. All ecological elements to be supervised by a suitably qualified ecologist (Ecological Clerk of Works – ECoW) or carried out by ecologists and ecological contractors. 2: Preparation of a Landscape and Ecology Management Plan (LEMP) through Planning Condition to introduce a long-term programme of high quality and appropriate management of retained, enhanced and newly created habitats to maximise habitat diversity, quality and ecological value. All works to be supervised by a suitably qualified ecologist and carried out by ecologists and ecological contractors. 3: Tree protection fencing will be erected in order to prevent soil compaction and accidental damage to individual trees as a result of movement of plant/ machinery within root protection areas.

Receptor	Changes and Effects	Integrated/Embedded Measures and Influence on Assessment
	Once the new residential dwellings are occupied and the budget hotel is open, there is potential for an increased recreational pressure on Telegraph Woods, which may lead to habitat damage/ degradation and/ or disturbance of species. An increase in artificial lighting of off-site boundary habitats may cause disturbance to nocturnal species such as bats, badgers and hedgehogs. Habitat enhancement, creation and on-going management and an appropriate lighting strategy for the new residential area in the vicinity of Telegraph Woods will mitigate these potential effects. The establishments of a buffer between the development and Telegraph Woods will also protect these boundary habitats and maintain a dark corridor for foraging and commuting nocturnal species. Increasing awareness of the nature conservation value of the woodland through provision of signage/ homeowner packs will also assist in reducing recreational pressure through promoting responsible use of the footpaths within the SINC. In-combination effects from air pollutants from increased traffic on roads within 200m of SINCs.	4: Boundary habitats and individual trees will not be subject to an increase in lighting levels (<1 lux maintained) during the construction phase. There will be no construction lighting used between dusk and dawn, to minimise impacts on nocturnal species such as bats and hedgehogs. 5: A buffer strip will be retained and enhanced between the residential development and Telegraph Woods to ensure a dark corridor of semi-natural habitat is maintained. 6: Creation/ enhancement of 0.068ha of woodland, 4.245ha of species-rich neutral grassland, 0.344ha of modified grassland, 0.256ha of green roof, 0.5km of native species rich hedgerow, 0.171km of watercourse (by de-culverting a section of stream) and 0.241ha of marginal aquatic vegetation across the Site as part of the landscape design. These habitats have been incorporated into the landscape design to maximise the biodiversity net gain achievable through the development, despite the constrained nature of the Site. <u>Operation</u> A: No Site boundary habitats will be exposed to operational lighting levels that exceed 1 lux to ensure their continued functionality for light sensitive species of bat and other nocturnal animals. Lighting will be carefully planned to maintain a dark corridor between the residential dwellings and Telegraph Woods. Operational lighting for the site will be designed by specialist lighting consultants in consultation with the project ecologists to ensure the continued ecological functionality of the site for bats. Luminaries will be an LED type with a low colour temperature of 3000K, warm white, and will function on PIR timers to ensure the site has minimal impacts on nocturnal wildlife from artificial lighting. Existing luminaries within the site will be upgraded to the new lighting specification to further minimise the effects of artificial lighting. B: Monitoring of lux levels to ensure no illumination of the dark corridor adjacent to Telegraph Woods through Lux level mapping during summer and winter periods to ensure 0.5 lux levels are achieved at year 1, 3 and 5 of operation. C: The LEMP will be implemented during operation to manage the retained, enhanced and created habitats within the proposed development site. Habitats will be monitoring every 5 years and the results will feed into

Receptor	Changes and Effects	Integrated/Embedded Measures and Influence on Assessment
		updated LEMP specifications. Monitoring of recreational pressure on the SINC will be undertaken in Years 1, 3 and 5 to ensure the development is not having a detrimental effect on the SINC and will provide a mechanism for triggering additional management works to safeguard the designated features. D. A Homeowner Pack will be produced for all new owner/ occupiers of the residential dwellings which will highlight the nature conservation value of Telegraph Woods and contain advice pertaining to the correct use of formal footpaths etc. Additional signage may also be provided showing the location of footpaths throughout the woodland, with information about the habitats and species also included. By fostering an understanding and appreciation of the SINC, residents are more likely to protect it. E. Notable recreational facilities will be provided within the site including links to formal Public Rights of Way and existing permissive paths. Investment into recreational / amenity facilities and path condition/accessibility in Telegraph Woods is proposed as a mechanism to both increase the resilience of the Woods itself, as well as to moderate potential recreational effects on the New Forest to non-significant levels. F. A range of sustainable transport solutions will be employed at the Development to both reduce the need to travel and to travel by more sustainable options. The Site's Sustainable Transportation Plan includes measure to encourage more sustainable transport choices particularly walking and cycling. The proposed development is an existing urban fringe area which is served by 30 minute interval local bus links to the city centre. A Transport Assessment (TA) and Framework Travel Plan have been produced by transportation consultant WSP to accompany the planning application. The Travel Plan aims to create a more sustainable, community-driven environment for all residential users; and to discourage car ownership and visitors to adopt more sustainable travel choices. It will also include a fossil fuel-free strategy across the entire master plan including electric charge points.
Broadleaved Woodland	The areas of broadleaved woodland within the Site are to be protected and retained. However, there is potential for construction and operational activities within the application site to cause impacts to this habitat type. Potential effects may include:	<u>Construction</u> Measures 1, 2, 3, 4, 6 <u>Operation</u> Measure A, C

Receptor	Changes and Effects	Integrated/Embedded Measures and Influence on Assessment
	Construction Construction activities have the potential to cause soil compaction and damage within root protection areas causing loss of/ damage to individual trees. There is the potential for construction related contaminants to enter the soil through accidental spillages during construction and operation and for airborne pollutants (e.g. dust) to settle on vegetation. Movement of plant/ machinery has the potential for accidental damage to the trunks/ branches of trees. Operation • Habitat enhancement, creation and on-going management and an appropriate side-wide lighting strategy will maximise the biodiversity value of on-Site woodland habitats.	
Reptiles	Potential risk of accidental injury/killing though pre-commencement soil stripping and/or the removal of small areas of suitable habitat. Potential risk of accidental injury/killing though movement of soil, use of plant machinery and risk of individuals becoming trapped in open excavations. Habitat enhancement, creation and on-going management will provide additional areas of suitable reptile habitat.	<u>Construction</u> Measures 1, 2, 4, 5, 6 7: Production and implementation of a Precautionary Method Statement for herptiles (reptiles and amphibians) to ensure their protection during pre-commencement works and the construction phase of the development. Use of an Ecological Clerk of Works as required during construction. 8: Phased directional reduction in vegetation height and extent (first cut to 15cm, to 5cm and then to ground level) with arisings being removed from areas that will be affected by construction. Vegetation maintained with a short sward height until construction works commence. Precautionary hand search followed by destructive search of the dry ditch with adjacent stone wall overseen by an Ecological Clerk of Works. <u>Operation</u> Measure C
Breeding Birds	Potential direct effects on birds, young and/or eggs due to disturbance, damage or destruction of active nests associated with limited vegetation removal, and from construction related noise and vibration. Habitat enhancement, creation and on-going management will provide additional areas of suitable nesting habitat.	<u>Construction</u> Measures 1, 2, 4, 5, 6 9: Avoidance of potential effects on actively nesting birds, young, eggs and nest through the avoidance of vegetation clearance works between February and August inclusive, or through the use of a suitably qualified ecologist who has confirmed no nesting activity present within 48 hours of clearance between February and August.

Receptor	Changes and Effects	Integrated/Embedded Measures and Influence on Assessment
		10: Increased potential nesting and foraging habitat in newly created enhanced hedgerows, woodland and scrub for common garden and woodland bird species. Additional habitat and food sources are also likely within the residential gardens through planting and the provision of bird feeders by new homeowners. 11: Provision of a minimum of 5no. nest boxes within suitable mature trees. Addition of 20 swift nest boxes (multiple cavity type) under the eaves of the new residential dwellings. <u>Operation</u> Measure C
Bats	Potential for direct negative effects to the foraging and commuting behaviour of bat species associated with the Site and adjacent Telegraph Woods SINC. Negative effects could result from habitat degradation and increased lighting impacts on existing commuting routes. Loss of foraging habitat. Commuting and foraging habitat at the Site enhanced as a result of the proposed development. Creation of a dark corridor adjacent to Telegraph Woods will maintain the ecological functionality of this commuting route, with low lux levels maintained throughout the year.	<u>Construction</u> Measures 1, 2, 3, 4, 5, 6 12: Provision of a minimum of 10 no. artificial bat boxes will be mounted on retained mature trees within the Site and/or adjacent Telegraph Woods ahead of construction works commencing. Boxes will be a mixture of types in order to appeal to a range of species. Incorporation of 20 bat tubes within the fabric of the new residential buildings and care home. Introduction of new planting/areas of habitat (including gardens and swales) to replace large areas of stone car park, resulting in a biodiversity net gain suitable for foraging bats. 13: Any trees to be removed will be assessed by a suitably qualified and licenced ecologist for potential roosting features for bats. Subsequent emergence and/or tree climbing surveys will be undertaken as necessary prior to removal using appropriate techniques (e.g. soft felling). <u>Operation</u> Measure A, B, C
Hedgehogs	Potential risk of accidental injury/ killing through vegetation clearance, movement of soil and falling into open excavations. Habitat enhancement, creation and on-going management will provide additional areas of suitable hedgehog habitat.	<u>Construction</u> Measures 1, 2, 4, 5, 6 <u>Operation</u> Measure A, B, C

7 ASSESSMENT OF RESIDUAL EFFECTS AND EMBEDDED MITIGATION MEASURES

7.1 INTRODUCTION

A range of measures have been integrated and embedded into the development proposals as outlined in Table 6.1 in Section 6. The design process for the proposed development has included consideration of the ecological constraints from an early stage and has incorporated measures to reduce the potential for adverse ecological effects in accordance with the 'mitigation hierarchy', legal requirements and relevant planning policy. The measures identified and adopted include those that are inherent to the proposed development and can be expected to be delivered as part of the scheme.

7.2 LIKELY SIGNIFICANT EFFECTS

Based on the assessment methodology set out in Section 3, Table 5.1 presents those receptors that have been identified (through the scoping process) as having the potential to be significantly affected by the proposed development (due to their biodiversity conservation value and/or for which legislation could be contravened). Table 5.1 identifies the potential changes and effects that need to be assessed for each of these receptors.

In broad terms, the changes and effects that may occur as a result of the proposals and which may give rise to significant effects on those ecological receptors scoped into this assessment have been identified as:

- Habitat loss from construction;
- Pollution incidents during construction including dust generation and accidental spillages (e.g. hydrocarbons);
- Damage/harm to flora and fauna during construction activities from machinery/ plant or as a result of unauthorised access into valued areas of habitat;
- Disturbance (from noise, vibration, visual and light) to surrounding habitats and associated species;
- Air quality pollutant impacts to sites and habitats from traffic increases during operation;
- Habitat enhancement and creation prior to or during the construction phase; and
- Habitat management during future operation of the Ageas Bowl site.

The following sections present the assessment of effects on each of the receptors that have been scoped into this EclA, taking the embedded mitigation measures into account for both construction and operational phases of the development. Where significant residual effects remain, Section 10 presents the additional mitigation/ compensation measures that will be implemented in order to further reduce these residual effects until they are considered to be not significant.

7.3 ASSESSMENT OF RESIDUAL EFFECTS: RIVER ITCHEN SAC (AND CONSTITUENT SSSI)

General

The Itchen faces many pressures from water abstraction, flow diversions, discharges, agricultural runoff channel modifications, fisheries management and human impacts associated with the urbanisation alongside much of the river's valley"¹.

Elevated nutrients - notably nitrogen and phosphorus - in water interfere with the balance between plant species, favouring algae and leading to a loss of characteristic plant species. In classic chalk streams like the River Itchen, the keystone species is *Ranunculus penicillatus*. Over time, low river flows, combined with nutrient inputs from point sources (e.g. WWTW outflows) have increased the proportion of filamentous algae and nutrient-tolerant

¹ Natural England (2014) Site improvement plan – River Itchen

plants in the River Itchen, at the expense of *Ranunculus*². In turn, the changes to plant community composition and structure, and the periodic reductions in dissolved oxygen due to large swards of algae, can affect the wider food web.

A 2013 study found that the water quality of the lower reaches of the River Itchen, which includes those parts of the river closest to the Site, was 'unfavourable' due to inappropriate water levels; inappropriate weirs, dams and other structures; invasive freshwater species; water pollution / agricultural run-off; and water pollution discharge³. The Site will discharge to Portswood Wastewater Treatment Works. With reference to Southern Water records, foul sewage from the Site is currently conveyed to Portswood WwTW, which lies approximately 3.8 km to the west of the site and discharges treated effluent directly into the tidal reach of the River Itchen. The WwTW, which is projected to serve an inhabitant population for 2025/2026 of 81,033 PE and has a consented DWF of 27,700 m³/day, does not have a permit concentration limit for either TN or TP.

Impact of the Development Site

There are no significant watercourses on Site. The likelihood of sediment/silt running into other SPA/SAC watercourses from the Development Site is negligible. With reference to the associated 2022 Andy Clay Consulting "Flood Risk Assessment: HCC Strategic" report:

"The site is in the overall catchment of the River Hamble, located ~4.3km to the east of the site. This watercourse then drains south-west into Southampton Water near Hamble-le-Rice ~8.4km to the south of the site. The River Hamble is tidal for approximately half of its length, and navigable in its lower reaches. The drainage of water from the site into the River Hamble is achieved through a tributary of Pudbrook Lake. This flows within a culverted section to the east of the M27 motorway, adjacent to the eastern boundary of the overall site."

With regard to the local Telegraph Brook, which dissects the site, the above FRA highlights that:

"The site is within the local catchment of Telegraph Brook, which is a small watercourse that drains from the central part of Telegraph Wood....Water would ordinarily be conveyed into an inlet within Telegraph Wood that is just outside of the site and then through a culverted section of the watercourse that is situated beneath the western part of the site. There is a culvert outlet at the downstream-end of the culvert which drains into an open section of channel located along the northern site boundary and adjacent to the David Lloyd Gym and Tennis Centre....This section of watercourse is semi-natural in that it is a simple trapezoidal channel aligned with trees and hedges. It then flows into a culverted section that passes beneath Marshall Road roundabout. The lower section of Telegraph Brook flows within a less natural channel. It has a very shallow gradient with the channel banks formed by wooden sleepers. This drains through the eastern part of the site. The watercourse then drains into an upper and lower lake separated by a weir at the edge of the site. The upper lake is connected to the lower lake via a weir, on the eastern side of the upper lake and which is on the western side of the lower lake....The lower lake then drains via another lake to the south-east, with this located outside of the site extent. It then drains to another culverted section under the M27 motorway. This culverted section is understood to continue under the retail estate to the east of the site, eventually draining into the River Hamble."

Current land use on the site includes buildings, sealed surfaces, unvegetated unsealed surface, modified/amenity grassland and woodland. Future land uses will be partly built-up and partly green infrastructure, including wetlands/SUDS.

The Shadow HRA sets out a proposed Construction Environment Management Plan and on-site SuDS measures to address water pollution issues on affected European sites.

² Eastleigh Borough Council (2015) Issues and Options Eastleigh Borough Local Plan, Habitat Regulations Assessment Screening Report, <https://www.eastleigh.gov.uk/media/1715/habitats-regulation-assessment.pdf>; Poynter, A.J.W. (2013) Impacts of environmental stressors on the River Itchen *Ranunculus* community, PhD thesis, University of Birmingham, <https://etheses.bham.ac.uk/id/eprint/5112/1/Poynter14PhD.pdf>.

³ Environment Agency (2013) Test & Itchen River Restoration Strategy, https://s3-eu-west-2.amazonaws.com/wp-cainbio/wp-content/uploads/2018/02/18074217/T_I_RR_Strategy_Management_report_Issue_5_FINAL.pdf

Additional Mitigation measures

Additional mitigation measures are proposed to deal with any residual, post-avoidance impacts on the integrity of the River Itchen SAC. They include:

- Site-wide nutrient neutrality and balancing: A nitrate neutrality assessment and phosphate assessment has been completed (see 5.3 below) and focuses on the use of Portswood Common WwTW to receive, treat and discharge all sewage associated with the site. This WwTW currently does not possess a discharge limit neither for Total Phosphorous (TP) nor Total Nitrogen (TN). Mitigation measures are set out in 5.3.4 below.

Such measures will ensure that pollutants from the Site will not affect the Integrity of the River Itchen SAC.

In combination impacts

'In combination' impacts on the River Itchen SAC arising from the Development Site are not predicted because of the robust design of the drainage systems. In addition, should it be required as a result of future discussions or monitoring, further wetland treatment systems could be introduced and/or nutrient credits could be purchased. We understand that Eastleigh Borough Council (EBC) are currently putting in place a land assembly project that will provide a permanent Borough wide nitrogen (N) and phosphate (P) mitigation approach. Consequently, it is anticipated that the impacts associated with the development will be fully mitigated by EBCs Strategic Land Parcels offsetting scheme (or similar scheme, such as that run by Hampshire & Isle of Wight Wildlife Trust).

Conclusions re. water pollution to River Itchen SAC

No significant effects are predicted, together with the mitigation and enhancement including:

- robust measures to manage any construction effects, managed through a CEMP supported by monitoring and management intervention, that could result in water pollution during the construction phase. The Site drains into the River Hamble;
- treatment of foul effluent at Portswood WwtW to an approved standard;
- the management of potable water supply and flows in the River Itchen through separate and strategic measures by Southern Water; and
- a suite of on site and off-site mitigation set out in 5.3.4 below.

Therefore, it is concluded that no likely significant effects associated with water quality on the River Itchen will occur.

7.4 ASSESSMENT OF RESIDUAL EFFECTS: SOLENT MARITIME SAC/SOLENT AND SOUTHAMPTON WATER SPA – WATER QUALITY

The Solent Maritime SAC / Solent and Southampton Water SPA also suffer from nitrogen and phosphorus pollution. This has caused excessive growth of green weed, which can form dense mats in the intertidal areas, inhibiting the natural functioning of these habitats. The Environment Agency has observed evidence of toxic contamination and thermal pollution in some areas of the SPA/SAC: both of these affect the fauna which are the qualifying features of the SAC/SPAs⁴.

Research by Natural England found the condition of the Solent Maritime SAC features - estuary, mudflat & sandflats, sandbanks – to be unfavourable. The unfavourable assessment is based in part on poor water quality. Other attributes were also found to be failing, such as, for seagrasses, their extent, distribution, rhizome structure

⁴ Eastleigh Borough Council *ibid*.

and reproduction as well as biomass, and for the intertidal mud and sand features their faunal quality. These failures are considered to be in part due to impacts from elevated nutrients⁵.

The HRA for the Eastleigh Local Plan⁶ notes that major sources of nitrogen to the Solent European marine sites are from:

- Coastal background seawater from the English Channel;
- Direct rivers and streams discharging into the sites;
- Indirect rivers and streams discharging elsewhere in the Solent; and
- Effluent discharges permitted by the Environment Agency.
- Impact of the Development Site

Please refer to the supporting Habitat Regulations Assessment submitted as part of this application which lists the potential impacts of the Development Site, after the avoidance measures, on water quality in the Solent and Southampton Water SPA, Solent Maritime SAC and Solent and Dorset SPA. In combination impacts.

The impact avoidance measures listed in the shadow HRA will already reduce the impacts of the Development Site with respect to runoff to drains. However, there is remaining uncertainty as to whether new 'in combination' developments, including the Development Site, will further deteriorate water quality at the SPAs/SAC. In addition, Eastleigh Borough Council (EBC) are currently putting in place a land assembly project that will provide a permanent Borough wide nitrogen (N) and phosphate (P) mitigation approach. Consequently, it is anticipated that the impacts associated with the development will be fully mitigated by EBCs Strategic Land Parcels offsetting scheme (or similar scheme, such as that run by Hampshire & Isle of Wight Wildlife Trust).

Since March 2018, Natural England has been advising that one means of addressing this uncertainty for larger developments such as the Site, that have the potential to result in increases of nitrogen and phosphates entering a European site, is to calculate a nutrient budget and achieve nutrient neutrality^{7,8}. The shadow HRA and the separate Nutrient Neutrality report (Hilson Moran 2022) present a nitrate calculation for the Site. NE's guidance states:

Mitigation for nutrient impacts is discussed and set out in Section 4 of the January 2022 Hilson Moran report. In summary:

The use of 'soft SuDS', such as swales, detention basins and the de-culverting of the existing Telegraph Brook to provide a two-stage channel, with restored floodplain and the potential for new wetland habitats, as surface water flooding mitigation measures. Although not quantified at this stage, these new stormwater attenuation/conveyance features and floodplain habitats will help to remove N and P from site runoff (as well as sediment), and in terms of the de-culverted Telegraph Brook, could be used to reduce nutrient existing nutrient loadings in the brook itself.

⁵ Natural England (June 2020) Advice on achieving nutrient neutrality for new development in the Solent region, <https://www.push.gov.uk/wp-content/uploads/2020/06/Natural-England%E2%80%99s-latest-guidance-on-achieving-nutrient-neutrality-for-new-housing-development-June-2020.pdf>

⁶ Urban Edge (2019) Habitats Regulations Assessment: Eastleigh Borough Local Plan, <https://www.eastleigh.gov.uk/media/5477/ed12a-41-hra-main-report.pdf>

⁷ <https://www.push.gov.uk/wp-content/uploads/2020/06/Natural-England%E2%80%99s-latest-guidance-on-achieving-nutrient-neutrality-for-new-housing-development-June-2020.pdf>

⁸ Parcel 51, in the south-eastern corner of the masterplan, is covered by a separate planning application (Ref. X/19/86475) and so has not been included in the nitrate neutrality calculations.

EBC are currently putting in place a land assembly project that will provide a permanent Borough wide N (and P) mitigation approach. Consequently, it is anticipated that the 872.2 Kg/TN/yr loss associated with the development will be fully mitigated by EBCs Strategic Land Parcels offsetting scheme (or similar scheme, such as that run by Hampshire & Isle of Wight Wildlife Trust).

A range of land management best practice recommendations are presented in the Hilson Moran report to minimise N and P loadings during the construction and operational phases of the scheme.

Consequently, the N impacts of the proposals will be fully mitigated and P losses minimised in order to ensure that they do not detrimentally affect local biodiversity or the conservation status of the downstream European Designated Sites.

Therefore, it is concluded that no likely significant effects associated with water quality on the Solent and Southampton Water SPA, Solent Maritime SAC and Solent and Dorset SPA will occur.

7.5 ASSESSMENT OF RESIDUAL EFFECTS: SOLENT MARITIME SAC/SOLENT AND SOUTHAMPTON WATER SPA – RECREATION

The Solent coast, particularly its mudflats, shingle and saltmarshes, provide essential winter feeding and roosting grounds for birds that spend the winter here. The Solent and Southampton Water SPA is designated for its feeding and roosting estuarine birds. The Solent and Dorset SPA is designated for breeding terns using shingle and other habitats.

However, a wide range of recreational activities which take place on the Solent coast can disturb birds, both breeding and wintering. Birds may need to be more alert, reducing the amount of food that they eat. They may move away from the disturbance, reducing their feeding time and using energy to fly. Substantial disturbance may cause food-rich areas to be little used by the birds or avoided altogether, leading to other areas hosting a higher density of birds and intensifying the competition for the available food. Cumulatively this can lead to increased bird mortality, or to a bird having less energy available at the end of the winter period to fly back to its breeding grounds. If birds cannot complete their migratory journey or are not in sufficiently good condition to breed when they arrive, then the bird population can drop⁹.

Research carried out in 2009-2013 found that by far the most popular activity taking place at the Solent coast is walking. Along with jogging and cycling, this accounted for 91% of all recreational activity. Other types of recreational use included surfing, horse riding and rowing. Dogs off lead accounted for 47% of all incidents where birds flew more than 50m to escape disturbance. The research predicted a 13% increase in visitor numbers to the Solent coast as a result of planned new housing¹⁰.

The Solent Recreation Mitigation Strategy undertakes measures to reduce impact of recreation and people on SPA birds and is funded by 'developer contributions' calculated according to the bedroom numbers of the development, equivalent to an average of £564 per dwelling (increased annually to take into account inflation). This applies to new homes built within 5.6 kilometres of the SPAs. This 5.6 kilometre zone is where the majority of coastal visitors live. Some developments may require additional mitigation due to their size or proximity to a SPA. Suitable alternative natural greenspace (SANGs) located away from the European site can draw users away from the European sites by providing comparable alternative facilities, especially for dog walkers. However, SANGs need to be tailored to provide a viable and attractive alternative destination, matching the draw of the relevant

⁹ Bird Aware Solent (2017) Solent Recreation Mitigation Strategy, https://solent.birdaware.org/media/29372/Bird-Aware-Solent-Strategy/pdf/Solent_Recreation_Mitigation_Strategy.pdf

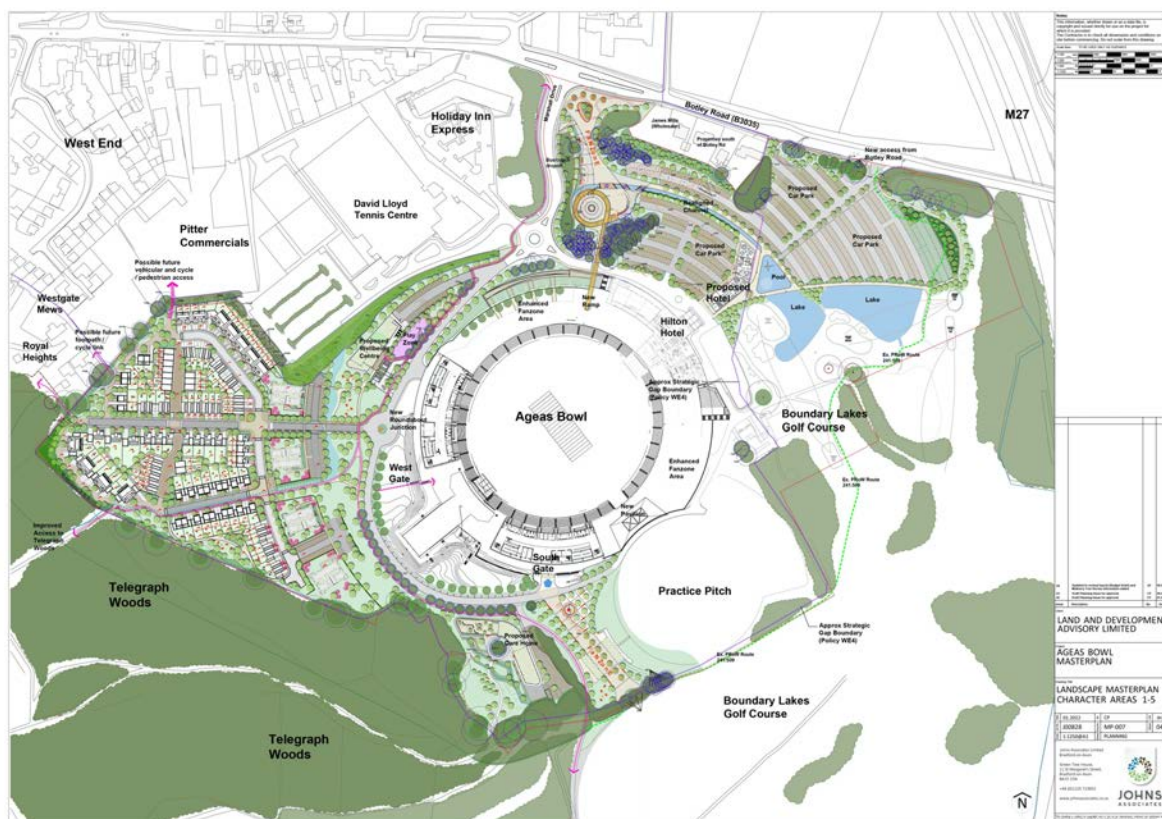
¹⁰ Ibid.

designated European site or providing a near-equivalent recreational experience in a more convenient location. This may be difficult to do for estuarine sites like the Solent and Southampton SPA, Solent Maritime SAC and Solent and Dorset SPA. This is because many people who visit the Solent coast do so for the sea views and the feeling of 'being beside the sea'. In a survey of visitors to the Solent, one-third of respondents stated that nothing could be done to make an alternative site more attractive to them¹¹.

Impact of the Development Site

The Development will include an extensive network of footpaths and play/sports facilities as part of the scheme, both within the developed areas and as green infrastructure across the site to provide easy local access to outdoor recreational facilities and to deliver on site recreational capacity for the new residents. This includes a 2.5km SANG to cater for informal access, recreation and dog walking in the adjacent Telegraph Woods. This should cater for many day-to-day walking and cycling journeys of new residents, although some will still want to visit the SPAs and SAC, and other nearby European sites for coastal walks and water based recreational pursuits. The new recreational provision at Ageas Bowl may also draw some nearby residents who currently visit the SPAs/SAC, thus further lessening the recreational impact of the new development on European sites.

Figure 7.1 Masterplan showing open space network at the Development Site.



Please refer to the separate Shadow Habitats Regulations Assessment for a summary of how the recreational facilities planned for the Site fill the SANGs locational criteria set out in Appendix B of the Solent Recreational Mitigation Strategy (Bird Aware Solent, 2017)¹².

The Development falls wholly within the Solent Mitigation and Disturbance Zone. If payment is required, then the cost would be £102,389.

¹¹ Ibid.

¹² [https://solent.birdaware.org/media/29372/Bird-Aware-Solent-Strategy/pdf/Solent Recreation Mitigation Strategy.pdf](https://solent.birdaware.org/media/29372/Bird-Aware-Solent-Strategy/pdf/Solent%20Recreation%20Mitigation%20Strategy.pdf)

In combination impacts

It is not necessary to consider 'in combination' impacts for this issue assuming that the proposed Development is committing to a payment in relation to the Solent Bird Aware strategy¹³.

Conclusion of appropriate assessment re. recreational impacts to Solent and Southampton Water SPA, Solent Maritime SAC and Solent and Dorset SPA

The high quality green infrastructure on and immediately adjacent to the Site, characterised by extensive woodland and other habitats together with the connected wider Public Right of Way Network provides an extensive resource for walking, exercising dogs and other recreational activities that will be both immediately available and of value to the new residents of the proposed Development. However, any residual recreational pressure will be fully mitigated through the provision of an appropriate payment to the Solent Bird Aware scheme.

7.6 ASSESSMENT OF RESIDUAL EFFECTS: NEW FOREST SAC/SSSI– RECREATION

The New Forest SAC/SPA/Ramsar hosts a range of breeding heathland birds that are sensitive to disturbance. Ground and near-ground nesting birds such as the Dartford warbler, nightjar and woodlark are particularly sensitive. The breeding success of nightjar is significantly lower close to paths, and nightjar populations decrease with proximity of housing. Dartford warblers in heavily disturbed areas delay the start of their breeding, preventing multiple breeds. Most of this disturbance is from dogs running through vegetation. Removal of human disturbance results in an increase of 13 – 48% in the breeding population of woodlark. Other impacts from visitor pressure include arson, litter and fly-tipping, trampling and soil compaction, localised nutrient and predation by people and pets.¹⁴ In addition, consideration needs to be given to localised nutrient increased from dog urine/faeces and emissions to air and associated deposition from road traffic.

The New Forest National Park received 15.2 million recreation and leisure visitor-days (one person coming for at least part of one day) in 2017¹⁵. A telephone survey of 2000 people – including 138 from Eastleigh Borough – was carried out in late 2018 to investigate factors that lead to tourism visits to the New Forest. It found that 75% of visitors live within 13.8km of the New Forest. Of the 138 interviewees from Eastleigh:

- About two-thirds (64%) had visited the New Forest heaths and woods in the past year
- The proportion of people visiting the New Forest, and the number of visits, declined the further people lived from the New Forest, as did the proportion of visits to the New Forest compared with other green space locations
- The most common frequency of visits from people living 10-25km away was less than once a month, followed by once a month
- The most common activity carried out by interviewees in the New Forest was walking and dog walking. The proportion of dog walking generally declined with distance, but dog walkers tended to visit more frequently than other users.¹⁶

For Eastleigh residents the top four reasons for visiting the New Forest were:

1. Habit / familiarity / previous experience
2. Quick and easy travel route / en route
3. Choice of routes and

¹³ <https://solent.birdaware.org/strategy>

¹⁴ Urban Edge (2019) Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036, <https://www.eastleigh.gov.uk/media/5477/ed12a-41-hra-main-report.pdf>.

¹⁵ <https://www.newforestnpa.gov.uk/conservation/managing-recreation/future-forest/recent-changes-affecting-forest/>

¹⁶ Eastleigh Borough Council (2019) Eastleigh Borough Local Plan 2016-2036, Interim New Forest Recreation Mitigation, <https://www.eastleigh.gov.uk/media/5479/ed12c-update-44-new-forest-interim-mitigation.pdf>

4. Scenery/variety of views.

Greenspaces nearer to where people live are likely to act as alternatives for at least some visits to the New Forest, including for existing residents. This is particularly the case if they can replicate some of these attractions such as providing a network of routes, and if they are more convenient and offer other facilities or reasons to visit.

Impact of the proposed Development

The Site lies approximately 10 km east of the New Forest at as the crow flies, but it takes about 23km to drive there, as Southampton Water is between the Site the New Forest. The proposed Development will have 183 residential units (plus 136 bed hotel and 81 bedroom independent living facility) (estimated 439 residents from the housing) when completed. Some of these residents are likely to visit the New Forest SPA/SAC/Ramsar site and could cause effects through:

Recreational disturbance and habitat degradation e.g. erosion/poaching from human and dog walking in areas associated with sensitive bird species, notably with effects on breeding viability.

Change in nutrient status in localised areas and change in associated habitat condition from dog urine/faeces and emissions to air and deposition from road traffic

-

In combination impacts

By 2037, the New Forest is expected to receive over 17 million recreational visitor days, up from 15.2 million currently¹⁷. Eastleigh Borough Council calculates that, over the lifetime of the Local Plan 2016 – 2036, there will be an additional 27,994 recreational visits from new council residents to the New Forest every year¹⁸. Some of these will be from the proposed Development and as such in-combination effects may occur.

Mitigation measures

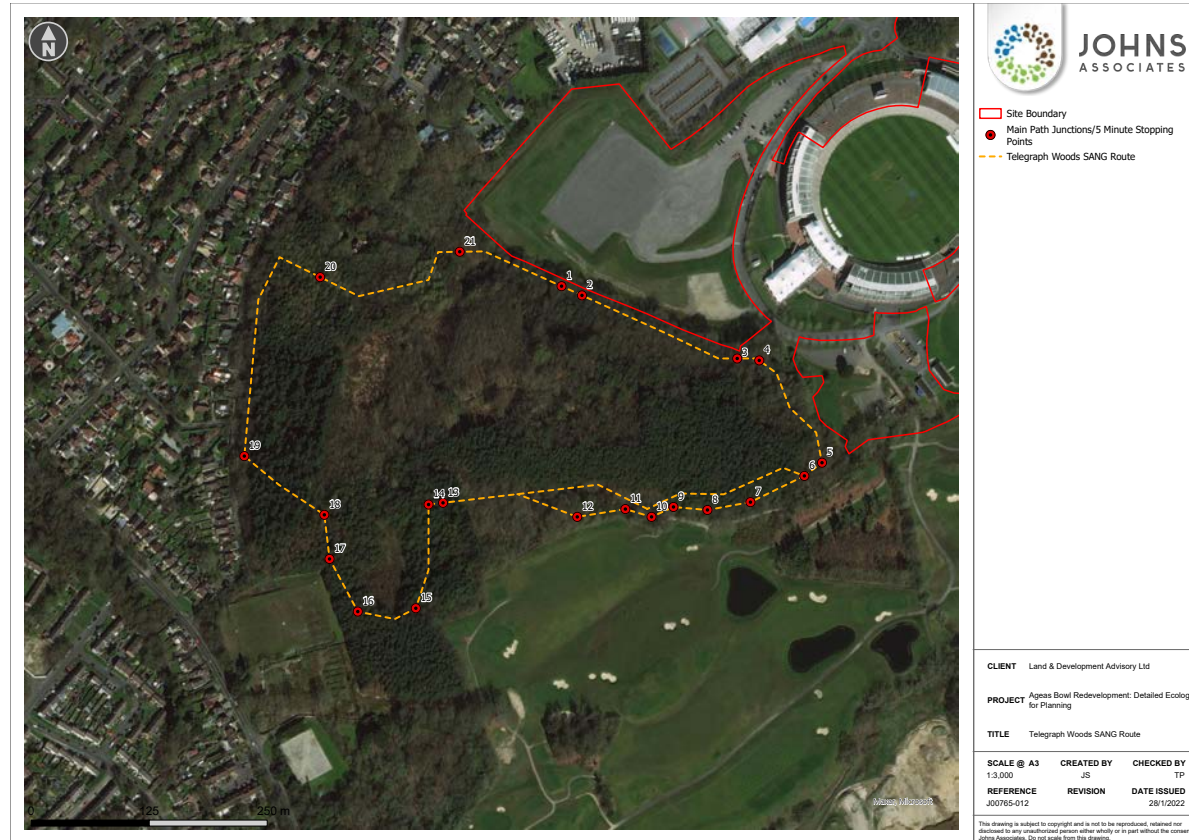
The proposed Development will provide significant on-site recreational resources, designed using approved SANGs criteria. A SANGs network from the Site through and around Telegraph Wood will provide a route of 2.5 km through mature and varied woodland (varied topography, open glades with wet mires etc). Natural England updated its SANG guidance in August 2021.

The draft proposal for the SANG is shown in Figure 7.2 below.

¹⁷ <https://www.newforestnpa.gov.uk/conservation/managing-recreation/future-forest/recent-changes-affecting-forest/>

¹⁸ Ibid.

Figure 7.2 Proposed SANG adjacent to Site



The Shadow HRA sets out the full details of how a proposed SANGs on site including Telegraph Wood meets the SANG criteria.

The proposed on site SANG will reduce the need for most day-to-day recreational journeys of the type made to the New Forest. The recreational provision at the proposed Development site may also attract some residents from the vicinity who might otherwise have visited the New Forest. The number of new journeys to the New Forest sites as a result of the Proposed Development will be very limited but cannot be completely discounted due to the inherent attraction of the area and for secondary activities such as visiting pubs and cafes.

The Eastleigh Borough Council's Interim New Forest recreation mitigation strategy¹⁹ takes 20km as the distance within which recreational disturbance could occur but does not specify how the impacts on the New Forest can be resolved.

It notes that:

'Mitigation can include measures within boroughs to provide and improve alternative locations to the New Forest and measures within the New Forest to manage access within designated sites and promote alternative sites and routes outside designated sites. Contributions may also be used for education, awareness and monitoring... The following measures are likely to be appropriate in Eastleigh borough:

New open space within or adjoining development ...and SGO developments... (SANGS)

Improvements to routes and existing open spaces in Eastleigh borough – linking up areas to create longer routes, physical and access improvements to routes, improved facilities within open spaces such as dog waste bins, dog exercise areas and seating, signage, information boards, providing facilities for dog walkers; and

¹⁹ Ibid., consistent with the New Forest National Park Recreation Management Strategy 2010 -2030, <https://www.newforestnpa.gov.uk/app/uploads/2019/12/RMS-TOWEB.pdf>

Where appropriate, contributions to measures within the New Forest with funding sought from national sources – to fund access management, rangers, education and awareness projects’.

The interim mitigation strategy is being updated and fine-tuned in discussion with the Ecological Steering Group (see note in Appendix A). EBC has commissioned further research to investigate several issues²⁰, which will affect the mitigation measures required for development sites in the Borough.

Conclusion of Appropriate Assessment re. Recreational Impacts to New Forest SPA/SAC/Ramsar

The provision of significant on-site recreational resources, designed to meet SANG criteria, within Telegraph Woods and the remaining high quality green infrastructure at the Development Site, provides an extensive resource for walking, exercising dogs and other recreational activities that will be both immediately available and of value to the new residents of the Site. These on-site facilities will help limit the number and frequency of visits to the New Forest SPA/SAC/Ramsar, reducing the magnitude of any disturbance to features of interest that are sensitive to recreational disturbance.

7.7 AIR QUALITY IMPACTS (RIVER ITCHEN SAC, SOLENT MARITIME SAC, SOLENT AND DORSET COAST MARITIME SAC, NEW FOREST SPA SAC AND RAMSAR)

7.7.1 Background

Natural England have issued guidance on assessing road traffic emissions under the Habitat Regulations²¹ which recommends a five step approach.

7.7.2 Impact of Proposed Development

Step 1: Does the proposal give rise to emissions which are likely to reach a European site? Key issue is whether any roads used by traffic generated by the development either in construction or operation are within 200m of a European site. Traffic (construction and operational) from the Development is likely to generate increases on the A27 and M27 where they cross River Itchen SAC, Solent Maritime SAC and Solent and Dorset Coast Maritime SPA.

Step 2: Are the qualifying features of sites within 200m of a road sensitive to air pollution? From the APIS website, the Solent Maritime SAC habitats are sensitive to air pollution.

Step 3: Could the sensitive qualifying features of the site be exposed to emissions? Habitats that are susceptible to air pollution occur within 200m of the crossing points.

Step 4: Application of screening thresholds. The Development would not, in isolation, generate an increase in average annual daily traffic flows of 1000 vehicles or more (or 200 or more increase in HGVs on motorways). Traffic modelling for the two crossing points over the River Itchen SAC (M27 and A27) is set out in Table 5.11 below. Where the M27 and A27 cross the River Itchen SAC, the development will result in an increase of 478 vehicles AADT for M27 and 847 vehicles for the A27 (for 2027). Traffic modelling for the two crossing points over the River Hamble (M27 and A27) is also set out in Table 5.11 below. Where the M27 and A27 cross the Solent Maritime SAC, the development will result in an increase of 477

²⁰ A draft of their findings is due mid-December

²¹ Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations Version: June 2018

vehicles AADT for M27 and 75 vehicles for the A27 (for 2027). HGV traffic numbers for construction and operational use are not significant²².

Table 5.11 Traffic modelling

Location	2019 AADT baseline	2027 AADT	2027 AADT (+ Development in brackets)	Increase in AADT from Development	Total increase 2019-2027 including development
M27 (North of J7) EB (Between Junction 7 and 5)	65,326	73,128	73,270	142	7,944
M27 (North of J7) WB (Between Junction 7 and 5)	65,439	73,254	73,590	336	8,151
A27 Mansbridge Road EB	7,941	8,890	9,318	428	1,377
A27 Mansbridge Road WB	7,531	8,431	8,850	419	1,319
Providence Hill NB	7,189	8,048	8,085	37	896
Providence Hill SB	7,455	8,346	8,384	38	929
M27 (South of J8) EB (Between Junction 8 and 9)	54,610	61,132	61,468	336	6,858
M27 (South of J8) WB (Between Junction 8 and 9)	54,473	60,979	61,120	141	6,647

In Combination Assessment

Step 4b: apply the threshold in-combination with emissions from other road traffic plans and projects and Step 4c: apply the threshold in-combination with emissions from other non-road plans and projects

The above traffic modelling includes increases due to other plans and projects between 2019 and 2027.

In-combination with other traffic increases, rather than specific projects or plans (see table above), traffic increases between 2019 and 2027 will go over the 1000 AADT threshold for all 4 sites.

Step 5: Advise on the need for Appropriate Assessment where thresholds are exceeded, either alone or in-combination

Appropriate Assessment would be required given that in-combination with other traffic increases, rather than specific projects or plans (see table above), traffic increases between 2021 and 2027 will go over the 1000 AADT threshold for all 4 sites.

The WSP methodology for calculating the in-combination traffic data was highly conservative. The WSP report states:

²² Ageas Bowl Air Quality Assessment. WSP. May 2022. Project 70073579, ref 001.

It should be noted that for this worst case 'in- combination' scenario the predicted changes are considered to be highly conservative. If you take into account improvements in vehicle emissions and backgrounds concentrations, there is predicted to be decreases in NOX concentrations which equate to between 272.0 % and 21.3 % of the Critical Level.

The worst case changes in nutrient N deposition 'in-combination' with other plans and projects are above 1% of the relevant CL at locations within the Solent and Southampton Water Ramsar/SPA, the River Itchen SAC, River Itchen SSSI, Moorgreen Meadows SSSI, Chessel Bay LNR, Netley Common LNR, Wildern LNR, several AW sites and the Telegraph Woods SINC. Again, the changes are considered to be highly conservative and when improvements in vehicle emissions and backgrounds are taken into account, predicted decreases in nutrient N deposition are predicted at all receptors. These decreases range between 18.2% and 7.2% for the grassland habitats and 44.4 % to 25.3 % for the woodland habitats.

The changes in annual mean NH3 are above 1% at several locations with the ecologically designated sites when considering the impacts of both the Proposed Development 'in-combination' scenarios, this occurs as both background and road traffic emissions of NH3 are predicted to increase in the future. Increases are predicted to be 1 % (or more) of the relevant Critical Level and above the Critical Level within the River Itchen SAC, within the Moorgreen Meadows SSSI and within one of AW sites.

Therefore, with predicted improvements in vehicle emissions and backgrounds, impacts are predicted not to be significant.

In addition, the Ageas Bowl area was allocated for development within the previous versions of the Local Plan, which considered the potential 'in-combination' impacts of this Site with others in the area. The HRA for the Local Plan reached the following conclusions:

- Significant effects through atmospheric pollution are not likely for Solent Maritime SAC or Solent and Southampton Water SPA/Ramsar, either alone or in combination with other plans and projects.
- There will be no adverse effect on the integrity of River Itchen SAC as a result of atmospheric pollution, either alone or in combination with other plans and projects.

Therefore, we consider that the Local Plan HRA adequately addresses -in-combination air quality issues.

7.7.3 Mitigation Measures

The contribution of the Development site to increased traffic flows through to 2027 is marginal and the 2027 increases represent the in combination effect of traffic growth associated with all planned development for South Hampshire. The Eastleigh Local Plan (which included the Development site) HRA ruled out in-combination effects from traffic air pollutants on relevant European Sites.

Nevertheless, a range of sustainable transport solutions will be employed at the Development to both reduce the need to travel and to travel by more sustainable options. The Site's Sustainable Transportation Plan includes measure to encourage more sustainable transport choices particularly

walking and cycling. The proposed development is an existing urban fringe area which is served by 30 minute interval local bus links to the city centre.

A Transport Assessment (TA) and Framework Travel Plan have been produced by transportation consultant WSP to accompany the planning application. The Travel Plan aims to create a more sustainable, community-driven environment for all residential users; and to discourage car ownership and visitors to adopt more sustainable travel choices. It will also include a fossil fuel-free strategy across the entire master plan including electric charge points.

7.8 ASSESSMENT OF RESIDUAL EFFECTS: MOORGREEN SSSI

Operation

Moorgreen Meadows SSSI lies within 200m of the M27, Botley Road and Tollbar Way. It is designated as neutral meadows supporting an important population of marsh orchids *Dactylorhiza*. Grazing management is the main controlling factor – no evidence or indication of air pollution being a factor in site condition.

There are no predicted exceedances when assessing the development site alone.

In terms of in-combination assessment, the following locations are those where there is predicted to be a **1% (or more) change in Annual Mean NO_x concentrations and an exceedance of the Critical Level of 30µg/m³ if no offsetting in improvements is assumed, which is highly unlikely to occur in reality:**

- Ecological Receptors 23, 24, 25 (at all distances modelled) and Receptor 26 at 150 m from the roadside. Ecological receptor 23 refers to an SSSI unit that has been destroyed so is no longer relevant. Ecological receptors 24, 25 and 26 run from the M27 northwards across areas of woodland (some non SSSI) to areas of SSSI grassland.

The maximum predicted increase in nutrient N deposition is 2.7 kgN/ha/year when considering the Proposed Development ‘in-combination’ with other plans and projects, which is 27.3 % of the Critical Load of 10 kgN/ha/year. This occurs at Ecological Receptor 23 within the Moorgreen Meadows (where relevant grassland habitat is present) at 7 m from the roadside. Again, of this only 0.1 kgN/ha/year is contributed by the Proposed Development ‘alone’ . As this affects SSSI unit 4 which no longer exists, it is insignificant.

In terms of nutrient nitrogen deposition, those locations and distance from the roadside where there is predicted to a **1% (or more) change in concentrations and an exceedance of the relevant Critical Load if no offsetting in improvements is assumed, which is highly unlikely to occur in reality are:**

- Ecological Receptor 23 (at 60 m from roadside where habitat is present), Ecological Receptors 24, 25, 26, 28, 29, 30 and 31 at all locations where relevant habitat is present.

Those locations and distance from the roadside where there is predicted to a 1% (or more) change in concentrations and an exceedance of the relevant Critical Load for nutrient N deposition (woodland) if no offsetting in improvements is assumed, which is highly unlikely to occur in reality: **along entire transects of all modelled receptors where woodland habitat is present (Ecological Receptors 23 to 32).**

In both 'in-combination' scenarios, there are additional exceedances of 1 % (or more) of the relevant Critical Level for annual mean NH₃ concentrations (woodland and grassland) when considering the Proposed Development 'in-combination' with other plans and projects, however, at the majority of these locations the Critical Level of 3 µg/m³ is not exceeded. Concentrations are predicted to increase by more than 1% in 2027 and exceed the Critical Level at the ecological receptor 23 for both 'in-combination scenarios'. However, the SSSI unit impacted (4) no longer exists, so this impact is insignificant.

The M27 is 60-120m away from the SSSI boundary and is fringed by tall hedge/tree vegetation and large retail park lies in between the road and the SSSI. It is considered unlikely that airborne pollutants would reach the SSSI over this distance with such intervening habitat/buildings. Moreover, the SSSI unit (2) nearest to the road is primarily woodland currently too dense to meet targets in relation to orchids. Given the orchid features are primarily in grassland habitat beyond the woodland edge, any impacts are considered insignificant.

The in-combination air quality methodology is a highly conservative worst case scenario which does not take into account improvements to vehicle from sustainable transport measures and cleaner fuels: when such improvements are taken into account, there are no in-combination effects.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a minor/neutral magnitude of change (in-combination effect) is predicted which generates no likely significant effect on the SSSI.

7.9 ASSESSMENT OF RESIDUAL EFFECTS: SINCS

Operation

The following SINCS are within 200m of roads that may receive additional traffic as a result of operational use of the Site and therefore may suffer air quality pollution impacts, together with reasons for designation²³:

- West End Copse – ancient and other woodland. Those locations and distance from the roadside where there is predicted to a 1% (or more) change in concentrations and an exceedance of the relevant Critical Load for nutrient N deposition (woodland) if no offsetting in improvements is assumed, which is highly unlikely to occur in reality: Ecological Receptor 49 at 315 m from the roadside.
- Dummers Copse South – ancient woodland. 1% (or more) change in Annual Mean NO_x concentrations and an exceedance of the Critical Level of 30µg/m³ if no offsetting in improvements is assumed, which is highly unlikely to occur in reality. At ecological receptor 44 (all distances modelled). Those locations and distance from the roadside where there is predicted to a 1% (or more) change in concentrations and an exceedance of the relevant Critical Load for nutrient N deposition (woodland) if no offsetting in improvements is assumed, which is highly unlikely to occur in reality: ecological receptor 44 (entire transect). In both 'in-combination' scenarios, there are additional exceedances of 1 % (or more) of the relevant Critical Level for annual mean NH₃ concentrations (woodland and grassland) when considering the Proposed Development 'in-combination' with other plans and projects, however, at the majority of these locations the Critical Level of 3

²³ Criteria for the Selection of Sites of Importance for Nature Conservation (SINCS) in Hampshire, Updated October 2021

$\mu\text{g}/\text{m}^3$ is not exceeded. Concentrations are predicted to increase by more than 1% in 2027 and exceed the Critical Level at ecological receptor 44 for both ‘in-combination scenarios’ :

- Dummers Copse North – ancient woodland. 1% (or more) change in Annual Mean NO_x concentrations and an exceedance of the Critical Level of 30 $\mu\text{g}/\text{m}^3$ if no offsetting in improvements is assumed, which is highly unlikely to occur in reality. At ecological receptors 42 (at 137m from M27 roadside) and 43 (150m). The maximum predicted increase in nutrient N deposition is 2.4 kgN/ha/year when considering the Proposed Development ‘in-combination’ with other plans and projects, which is 23.6 % of the Critical Load of 10 kgN/ha/year. This occurs at Ecological Receptor 42 within the Dummers Copse North at 17 m from the roadside. Of this only 0.1 kgN/ha/year is contributed by the Proposed Development ‘alone’ . Those locations and distance from the roadside where there is predicted to a 1% (or more) change in concentrations and an exceedance of the relevant Critical Load for nutrient N deposition (woodland) if no offsetting in improvements is assumed, which is highly unlikely to occur in reality: ecological receptors 42 and 43 (entire transects). In both ‘in-combination’ scenarios, there are additional exceedances of 1 % (or more) of the relevant Critical Level for annual mean NH₃ concentrations (woodland and grassland) when considering the Proposed Development ‘in-combination’ with other plans and projects, however, at the majority of these locations the Critical Level of 3 $\mu\text{g}/\text{m}^3$ is not exceeded. Concentrations are predicted to increase by more than 1% in 2027 and exceed the Critical Level at ecological receptor 42 for both ‘in-combination scenarios’ :
- Withybed Covert/ Ridgeway Copse – ancient woodland (and woodland patch to west). Those locations and distance from the roadside where there is predicted to a 1% (or more) change in concentrations and an exceedance of the relevant Critical Load for nutrient N deposition (woodland) if no offsetting in improvements is assumed, which is highly unlikely to occur in reality: along entire transects of all modelled receptors (Ecological Receptors 45-48).
- Netley Hill Heath – heathland, heathland succeeding to woodland. 1% (or more) change in Annual Mean NO_x concentrations and an exceedance of the Critical Level of 30 $\mu\text{g}/\text{m}^3$ if no offsetting in improvements is assumed, which is highly unlikely to occur in reality – at ecological receptor 35 at 2m from the roadside. Considered insignificant due to 2m distance. In terms of nutrient nitrogen deposition, those locations and distance from the roadside where there is predicted to a 1% (or more) change in concentrations and an exceedance of the relevant Critical Load if no offsetting in improvements is assumed, which is highly unlikely to occur in reality are: Ecological Receptor 35 at 172 m from the roadside (only where relevant habitat is present). Those locations and distance from the roadside where there is predicted to a 1% (or more) change in concentrations and an exceedance of the relevant Critical Load for nutrient N deposition (woodland) if no offsetting in improvements is assumed, which is highly unlikely to occur in reality: along entire transects of all modelled receptors where woodland habitat is present (Ecological Receptors 35 and 36).
- Hogsty Corner – ancient woodland, wet woodland, heathland succeeding to woodland, fens/wetland. Wildern LNR. Those locations and distance from the roadside where there is predicted to a 1% (or more) change in concentrations and an exceedance of the relevant Critical Load for nutrient N deposition (woodland) if no offsetting in improvements is assumed, which is highly unlikely to occur in reality: along entire transects of all modelled receptors (Ecological Receptors 37 and 38).
- Marhill Copse. Those locations and distance from the roadside where there is predicted to a 1% (or more) change in concentrations and an exceedance of the relevant Critical Load for nutrient N deposition (woodland) if no offsetting in improvements is assumed, which is highly unlikely to occur in reality: along entire transects of all modelled receptors (Ecological Receptors 39-41).
- Moorgreen Woodlands – ancient woodland, wet woodland (see SSSI above).

Using the Natural England 5 Step approach (set out above), none of the roads within 200m of these sites (Step 4) except Moorgreen Woodlands (addressed by Moorgreen SSSI above) will experience traffic increases of more than 1000 AADT as a result of the development alone.

However, the in-combination traffic increases will go over the 1000 AADT threshold for all these SINC.

Data from APIS suggests for Nitrogen pollution, the main traffic pollutant:

- For woodland sites, N deposition is not believed to have a direct, major effect on tree growth in the UK, but can be indirect effects on woodland understory and edge
- Improved grasslands (and to a lesser extent semi-improved grasslands) receive very high doses of Nitrogen in fertilisers and manures negative effects of atmospheric N deposition are not expected. In this case the atmospheric Nitrogen inputs could be considered as beneficial, providing a small additional source of 'fertiliser'. Major threats to neutral grassland communities include nutrient run off, selective herbicides, lack of or unsuitable management, all year round horse grazing (poaching) since many are close to suburbia, neglect, age of owners and thus change of land ownership, isolation through urban and communication encroachment. Because these systems are generally nutrient poor as result of grazing and mowing off-take, they will be sensitive to N deposition. N deposition has the potential to both eutrophy and acidify neutral grasslands.
- Lowland heathlands can be impacted through a decline in heather and an increased dominance of grasses, although there is still high uncertainty regarding the scale of impacts on heathlands adjacent to major roads or cities. The nearness to agricultural grassland also increases the likelihood of invasion by more nitrophilic grasses. N inputs will enhance N availability via increased litter production, decomposition and increased N mineralization.
- Wetlands receive run off or polluted water from surrounding areas and atmospheric N will not be the only source of N. These habitats are influenced primarily by other factors.
- Green winged orchids are known to grow on roadside verges²⁴ and have even colonised London rooftops so are considered tolerant to traffic pollutants

The in-combination air quality methodology is a highly conservative worst case scenario which does not take into account improvements to vehicle from sustainable transport measures and cleaner fuels: when such improvements are taken into account, there are no in-combination effects.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a minor/ neutral magnitude of change (in-combination effect) is predicted which generates no likely significant effect on SINC and their habitats.

7.10 ASSESSMENT OF RESIDUAL EFFECTS: TELEGRAPH WOODS SINC

Telegraph Woods SINC is located adjacent to the western/ southwestern Site boundary. No detailed works are proposed within the SINC that are associated with the development, although concept proposals for a new pedestrian link between the residential part of the site and Telegraph Road has been proposed. In addition, Investment into recreational / amenity facilities and path condition/accessibility in Telegraph Woods is proposed as a mechanism to both increase the resilience of the Woods itself, as well as to moderate potential recreational effects on the New Forest to non-significant levels.

7.10.1 Construction

Accidental damage to habitats

There is the potential for accidental damage to edge habitats to occur as a result of soil compaction and damage within root protection areas of trees along the edge of Telegraph Woods causing loss of trees/ damage to designated habitats. There is also the potential for construction related contaminants (e.g. fuels) to enter the soil through accidental spillages during construction and for airborne pollutants (e.g. dust) to settle on vegetation

²⁴ NE Internal Guidance – Approach to Advising Competent Authorities on Road Traffic Emissions and HRAs V1.4 Final - June 2018

associated with the SINC. Accumulation of rubbish/ waste may also occur. Movement of plant/ machinery has the potential to cause accidental damage to the trunks/ branches of trees.

The implementation of embedded mitigation measures 1, 2 and 5 outlined in Table 6.1 will ensure these potential effects are avoided or minimised. The production and implementation of a CEMP will reduce the potential for construction related effects through the implementation of standard industry working methods, including those for dust suppression, correct storage of fuels and other potential contaminants and disposal of waste materials. Ecological toolbox talks will be mandatory for all construction personnel, with certain tasks being supervised by an ECoW.

No habitat removal from the SINC will be undertaken as part of the proposals. There is, however, the potential for accidental damage to the perimeter of the woodland to occur as a result of vehicle movements within root protection zones (soil compaction) and/or direct damage to tree trunks/ limbs from machinery/plant movements. The installation of site demarcation fencing to prevent accidental access (Measure 3) will protect trees from direct damage by plant/ machinery and will also reduce the likelihood root damage occurring as a result of soil compaction. Signage will be used as appropriate to identify no-access areas. The implementation of embedded mitigation measure 5 provided in Table 6.1 will further safeguard trees located close to the working area, thereby protecting the non-statutory SINC.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a minor/ neutral magnitude of change is predicted which generates no likely significant effect on Telegraph Woods SINC.

Lighting

There is the potential for disturbance to foraging and commuting bats and other nocturnal species (e.g. badgers and hedgehogs) from construction lighting illuminating woodland edge habitats. Integrated/ embedded measure 4 will ensure that artificial lighting of boundary habitats is kept below 0.5 lux. There will be no overnight lighting during the construction phase of the development.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a minor/ neutral magnitude of change is predicted which generates no likely significant effect on Telegraph Woods SINC.

Habitat Enhancement

As part of the proposals, 0.068ha of woodland will be created within the Site boundary (Measure 6). The LEMP (Measure 2, Table 6.1) to be produced for the proposed development will include details of the enhancement measures for the woodland habitat as well as appropriate management actions to maximise its biodiversity value. In addition, a buffer strip between the residential area and Telegraph Woods (Measure 5) will be maintained as a dark corridor of semi-natural habitat for legally protected and/or notable species but will also protect the valuable edge habitats associated with the SINC.

Consequently, a minor/ neutral magnitude of change is predicted which generates no likely significant effect on Telegraph Woods SINC.

7.10.2 Operation

Habitat Management

Appropriate monitoring and management of all retained, newly created and enhanced habitats during the operational phase of the proposed development will be required to ensure maximum biodiversity net gain is achieved (and maintained) as a result of the development and no habitat loss through degradation/ increased recreational pressure occurs. The implementation of Measure C in Table 6.1 (LEMP) will ensure that all habitats are appropriately managed, including new areas of woodland.

Consequently, a minor magnitude of change is predicted, which is positive but does not constitute a significant effect on Telegraph Woods SINC.

Lighting

There is the potential for disturbance to foraging and commuting bats and other nocturnal species (e.g. badgers and hedgehogs) from lighting of the new residential dwellings illuminating Telegraph Woods SINC edge habitats. Integrated/embedded measure A (see Table 6.1) will reduce these potential effects. No Site boundary habitats (including woodland edges) will be exposed to operational lighting levels that exceed 0.5 lux to ensure their continued functionality for nocturnal species. Lighting of retained trees has been avoided. Operational lighting for the site will be designed by specialist lighting consultants in consultation with the project ecologists to ensure continued ecological functionality of the Site. Luminaries will function on PIR timers to ensure the site has minimal impacts on nocturnal wildlife from artificial lighting. Existing luminaries within the site will be upgraded to the new lighting specification to further minimise the effects of artificial lighting.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a minor/neutral magnitude of change is predicted which generates no likely significant effect on Telegraph Woods SINC.

Air quality

The A27 and Telegraph Road pass within 200m of this SINC. Traffic modelling shows an increase of 76 vehicles from the development alone on Telegraph Road that runs along the northern side of the woodland (1,825 in-combination which has been calculated 2027 Do-Something Traffic – 2019 Baseline traffic), and an increase of 420 vehicles from the development alone on the A27 running 100m+ to the west of the woodland (1,842 in-combination). Therefore, there is no impact from air traffic pollutants for the development in isolation (forecast increase below 1000 AADT, as described above).

Those locations and distance from the roadside where there is predicted to a 1% (or more) change in concentrations and an exceedance of the relevant Critical Load for nutrient N deposition (woodland) in combination if no offsetting in improvements is assumed, which is highly unlikely to occur in reality: along entire transects of all modelled receptors (Ecological Receptors 50-55).

The in-combination air quality methodology is a highly conservative worst case scenario which does not take into account improvements to vehicle from sustainable transport measures and cleaner fuels: when such improvements are taken into account, there are no in-combination effects.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a minor/neutral magnitude of change (in-combination effect) is predicted which generates no likely significant effect on Telegraph Woods SINC.

Recreational Impacts

There is the potential for increased recreational pressure on Telegraph Woods SINC following occupation of the residential dwellings and opening of the new budget hotel which may lead to habitat damage/ degradation and/ or disturbance of species. It is considered that the implementation of Measures C and D will ensure that recreational impacts are minimised as far as possible through monitoring of recreational pressure on the SINC in Years 1, 3 and 5, and by educating new residents by providing a Homeowner Pack which will highlight the nature conservation value of Telegraph Woods SINC and contain advice around correct use of the SINC for recreational purposes (keeping to footpaths, removing all rubbish and dog waste etc.). Information boards may also be provided at key locations to provide further information about the SINC, its habitats and species. By fostering an understanding and appreciation for Telegraph Woods, residents are more likely to strive to protect it as a valuable local ecological resource.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a minor magnitude of change is predicted which is negative but which generates no likely significant effect on Telegraph Woods SINC.

7.11 ASSESSMENT OF RESIDUAL EFFECTS: S41 HABITAT OF PRINCIPAL IMPORTANCE – BROADLEAVED WOODLAND

Several small areas of broadleaved woodland are present within the Site boundary. These will be protected and retained as part of the proposals.

7.11.1 Construction

Accidental damage to habitat

There is the potential for accidental damage to broadleaved woodland habitats to occur as a result of soil compaction and damage within root protection areas of trees causing loss of trees/ damage to priority habitats. There is also the potential for construction related contaminants (e.g. fuels) to enter the soil through accidental spillages during construction and for airborne pollutants (e.g. dust) to settle on vegetation. Accumulation of rubbish/ waste may also occur. Movement of plant/ machinery has the potential to cause accidental damage to the trunks/ branches of trees.

The implementation of embedded mitigation measures 1, 2, 3, 4 and 6 outlined in Table 6.1 will ensure these potential effects are avoided or minimised. The production and implementation of a CEMP will reduce the potential for construction related effects through the implementation of standard industry working methods, including those for dust suppression, correct storage of fuels and other potential contaminants and disposal of waste materials. Ecological toolbox talks will be mandatory for all construction personnel, with certain tasks being supervised by an ECoW.

The installation of tree protection fencing to prevent accidental access (Measure 3) will protect trees from direct damage by plant/ machinery and will also reduce the likelihood root damage occurring as a result of soil compaction. Signage will be used as appropriate to identify no-access areas.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a minor/ neutral magnitude of change is predicted which generates no likely significant effect on broadleaved woodland.

Lighting

There is the potential for disturbance to foraging and commuting bats and other nocturnal species (e.g. badgers and hedgehogs) from construction lighting illuminating woodland habitats. Integrated/ embedded measure 4 will ensure that artificial lighting of woodland habitats is kept below 0.5 lux. There will be no overnight lighting during the construction phase of the development.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a minor/ neutral magnitude of change is predicted which generates no likely significant effect on broadleaved woodland.

Habitat Enhancement

As part of the proposals, 0.068ha of woodland will be created within the Site boundary (Measure 6). The LEMP (Measure 2, Table 6.1) to be produced for the proposed development will include details of the enhancement measures for the woodland habitat as well as appropriate management actions to maximise its biodiversity value.

Consequently, a minor/ neutral magnitude of change is predicted which generates no likely significant effect on broadleaved woodland Priority Habitat.

7.11.2 Operation

Habitat Management

Appropriate monitoring and management of all retained, newly created and enhanced habitats during the operational phase of the proposed development will be required to ensure maximum biodiversity net gain is achieved (and maintained) as a result of the development and no habitat loss through degradation/ increased recreational pressure occurs. The implementation of Measure C in Table 6.1 (LEMP) will ensure that all habitats are appropriately managed, including new areas of woodland.

Consequently, a minor magnitude of change is predicted, which is positive but does not constitute a significant effect on broadleaved woodland habitat.

Lighting

There is the potential for disturbance to foraging and commuting bats and other nocturnal species (e.g. badgers and hedgehogs) from lighting within the Site. Integrated/embedded measure A (see Table 6.1) will reduce these potential effects. No Site boundary habitats (including woodland edges) will be exposed to operational lighting levels that exceed 0.5 lux to ensure their continued functionality for nocturnal species. Lighting of retained trees has been avoided. Operational lighting for the site will be designed by specialist lighting consultants in consultation with the project ecologists to ensure continued ecological functionality of the Site. Luminaries will function on PIR timers to ensure the site has minimal impacts on nocturnal wildlife from artificial lighting. Existing luminaries within the Site will be upgraded to the new lighting specification to further minimise the effects of artificial lighting.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a minor/ neutral magnitude of change is predicted which generates no likely significant effect on broadleaved woodland habitats.

7.12 ASSESSMENT OF RESIDUAL EFFECTS: REPTILES

The Site is considered to support a low population of slow worm, and on a precautionary basis, common lizard.

7.12.1 Construction

Injury/ killing of individuals and Habitat Loss

Implementation of integrated/ embedded measures 1, 2, 4, 5, 7 and 8 will avoid or mitigate for the potential effects on this species. There is a potential risk of accidental injury/killing of individual reptiles as a result of the planned removal of suitable areas of habitat within the Site. A Method Statement for herptiles (Measure 7) will be produced and implemented to ensure their protection during pre-commencement works and the construction phase of the development. A phased directional reduction in vegetation height and extent (first cut to 15cm, to 5cm and then to ground level), will also be implemented (Measure 8). Vegetation will be maintained with a short sward height until any construction works commence to deter reptiles from moving into the construction area. A precautionary hand search of suitable features (including the stone wall) followed by a destructive search will be completed by an ECoW prior to the commencement of infilling the dry ditch. The working area will be maintained in a condition unsuitable for reptiles during construction works. Holes/ trenches will have a means of escape for herptiles. Materials will be appropriately stored to deter reptiles from using them as refugia.

The production of a CEMP (Measure 1) will minimise the potential construction related effects through the implementation of best practice industry working methods. The installation of site demarcation fencing to prevent

accidental access into areas of suitable reptile habitat that is to be maintained will protect retained woodland edge and scrub habitats from damage by vehicle movements and plant/machinery, with signage to be used as appropriate. Ecological toolbox talks will be mandatory for all construction personnel, with certain tasks being supervised by an ecological clerk of works. Supervision of contractors during clearance of suitable habitat by an ecological clerk of works will ensure no legal offences are committed under the Wildlife and Countryside Act and will safeguard individual reptiles.

With the proposed measures in place, a minor/ neutral magnitude of change is predicted which generates no likely significant effect on the reptile population identified on Site.

Habitat Creation and Enhancement

Habitat enhancement, creation and on-going management will provide additional areas of suitable reptile habitat. An area of approximately 4.245ha of species-rich neutral grassland and 0.068ha of woodland will be created within the Site, whilst 0.5km of species rich native hedgerow will be created as a result of the proposals. This will provide additional areas of suitable habitat for a number of common reptile species, (including slow worm and common lizard), if present in the wider local area.

A minor magnitude of change is predicted as a result of the habitat creation and enhancement proposals, which although positive, generates no significant effect for reptiles.

7.12.2 Operation

Habitat Management

The proposed operational use of the Site will not result in any loss or reduction in habitat used by reptiles. The on-going management of hedgerows, grassland, and woodland in accordance with the proposed LEMP (Measure C), is likely to result in a positive overall effect on reptiles at the Site.

Consequently, a minor magnitude of change is predicted which is positive, but which generates no significant effect as a result of the habitat management proposals across the Site for reptiles.

7.13 ASSESSMENT OF RESIDUAL EFFECTS: BREEDING BIRDS

7.13.1 Construction

Disturbance and Habitat Loss

Construction phase impacts on birds relate to the potential disturbance to foraging and active nests and breeding birds/eggs and young through the removal of limited areas of suitable habitat. The implementation of mitigation measures 1, 2, 4 and 5 will avoid or minimise potential effects to breeding birds during the construction phase of the proposed development.

The implementation of a CEMP, (Measure 1 in Table 6.1), will minimise potential construction related effects through the use of best practice industry working methods. Potential effects to birds, their nests, eggs and/or young will also be avoided through the implementation of integrated/ embedded Measure 9, whereby vegetation clearance will occur outside the bird nesting season, (March to August inclusive). Where this is not possible, a suitably qualified ecologist will confirm no nesting activity is present within 48 hours of clearance by undertaking a careful search of the area of vegetation to be removed. Should active nests be present, the nest and a 5 - 10m buffer will need to be protected and clearance works within this area delayed until the chicks have fledged (as confirmed by an ecologist).

By undertaking vegetation removal works outside of the bird nesting season, or by implementing a system of checks immediately prior to clearance where this is not possible, legal offences under the Wildlife and Countryside

Act are considered unlikely to occur. Alternative areas of suitable habitat exist both in retained on-Site habitats and in immediately adjacent areas.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a minor/neutral magnitude of change is predicted which generates no likely significant effect on the local breeding bird population.

Habitat Creation and Enhancement

Provision of increased bird nesting and foraging habitat, (including 0.5km of newly created hedgerow habitat, 4.245ha species-rich neutral grassland and 0.068ha of woodland), will ensure bird species have an increased availability of suitable habitat following the improvement works (Measure 10). The net increase in available habitat will ensure additional nesting, shelter and foraging habitat for breeding birds is available on-Site. Until these habitats have become established and are dense enough to provide adequate cover for nesting birds, a minimum of 5 no. bird nest boxes will be installed prior to any habitat removal within the on-Site woodland areas (Measure 11). 20 swift boxes (multi cavity types) will be installed under the eaves of the new residential dwellings. After the new habitats have become established, these nest boxes will provide an enhancement of the Site for nesting birds.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a positive minor magnitude of change is predicted which generates no likely significant effect on the local breeding bird population.

7.13.2 Operation

Habitat Management

Potential operational effects on breeding birds relate to the improved habitat availability through the integrated landscape and ecological mitigation measures associated with grassland, tree and hedgerow planting as they begin to mature, and from improvements in existing habitats as management appropriate measures are implemented. Detailed management prescriptions will be agreed with Eastleigh Borough Council and implemented for all retained, enhanced and newly created habitats as part of a LEMP (Measure C). No lighting of boundary features will be implemented as part of the proposals, thereby reducing the potential for disturbance effects to nesting birds (Measure A). It may be necessary to produce a Bird Hazard Management Plan (associated with Southampton Airport), which would sit alongside the LEMP.

Consequently, a positive minor magnitude of change is predicted, but which generates no significant effect as a result of the habitat management proposals across the Site for breeding birds.

7.14 ASSESSMENT OF RESIDUAL EFFECTS: BATS

The planning application site provides suitable commuting and foraging habitat for a range of bat species. The following sections present an assessment of the residual effects associated with all bat species using the Site as a result of the development proposals.

7.14.1 Construction

Implementation of integrated/ embedded measures 1, 2, 3, 4, 5, 6, 12 and 13 will ensure that potential impacts on bat species as a result of the development proposals are avoided or minimized.

Foraging and Commuting Habitat

There is the potential for direct negative effects to the foraging and commuting behaviour of bat species associated with the Site and adjacent Telegraph Woods SINC. Negative effects could result from habitat degradation and increased lighting impacts on existing commuting routes (although it should be noted that high

levels of bat foraging (Noctule and Pipistrelle sp.) were recorded in 2020 when very high lighting of the adjacent area was in place during International cricket events.

The CEMP (Measure 1) will minimise potential construction related effects on bats through the implementation of good practice industry working methods. The installation of site demarcation fencing to prevent accidental access will protect woodland and woodland edge habitats from damage by vehicle movements and plant/machinery, with signage to be used thereby maintaining dark corridors for foraging and commuting bats (Measure 3). The establishment of a dark corridor adjacent to Telegraph Woods SINC (Measures 5) will ensure that foraging and commuting bats continue to use this area of the Site during the construction phase of the development.

Boundary habitats and individual trees will not be subject to an increase in lighting levels (<0.5 lux) during the construction phase. There will be no construction lighting used between dusk and dawn, to minimise impacts on nocturnal species such as bats (Measure 4).

Based on the information currently available, there is considered to be a minor negative effect on foraging and commuting bats, although this is not likely to be significant.

Habitat Creation and Enhancement

Creation of 4.245ha of species-rich neutral grassland, 0.068ha of woodland habitat and 0.5km of species rich native hedgerow will be delivered as a result of the proposals. These measures will provide additional foraging and commuting habitat for bats. The proposed increase in species diversity within the grassland will also support a higher abundance of invertebrate prey for foraging bats.

Integrated/ embedded measure 5 (the creation of a dark corridor adjacent to Telegraph Woods), will be implemented prior to the start of construction to provide immediate screening from potential light spill. This buffer zone will support and protect key connective habitat during the construction phase.

Embedded measure 12 will ensure the provision of a minimum of 10 no. artificial bat boxes to be mounted on retained mature trees throughout the Site, alongside 20 bat tubes and improved habitat areas for bats to provide additional roosting and foraging opportunities for bats.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a positive minor magnitude of change is predicted for the local bat population as a result of the proposed habitat creation and enhancement measures, although this is not considered to be significant.

7.14.2 Operation

Habitat Management

There is the potential for on-site habitats used by bats to become degraded over time through a lack of appropriate management. The production and implementation of a LEMP (Measure C) will introduce a long-term programme of high-quality and appropriate management of all retained, enhanced and newly created habitats within the Site, which will increase their ecological quality and function. All works will be supervised where necessary by a suitably qualified ecologist and carried out by experienced ecological contractors.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a positive minor magnitude of change is predicted which generates no likely significant effect on the local bat population.

Lighting

Integrated/ embedded measure A will ensure that Site boundary habitats will not be exposed to operational lighting levels that exceed 0.5 lux to ensure their continued function for light sensitive species of bat and other nocturnal animals. Operational lighting for the Site will be designed by lighting consultants with the project

ecologist to ensure the continued ecological functionality of the Site for bats. Luminaries have been selected which are an LED type with a low colour temperature of 3000K, warm white, and will function on PIR timers to ensure the Site has minimal impacts on nocturnal wildlife from artificial lighting. Existing luminaries within the Site will be ungraded to the new lighting system to further minimise effects.

Monitoring will be conducted to assess lighting lux levels and to ensure no illumination of the dark corridor adjacent to Telegraph Woods occurs throughout the initial operation of the Site. Lux level mapping will be conducted during summer and winter periods to ensure <1 lux levels along the boundary/dark corridor are achieved. This would take place in year 1, 3 and 5 of operation.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a positive minor magnitude of change is predicted which generates no likely significant effect on the local bat population.

7.15 ASSESSMENT OF RESIDUAL EFFECTS: S41 HEDGEHOGS

Suitable habitat for hedgehogs is present within the Site boundary and includes hedgerow and woodland edge habitats. Without integrated/ embedded mitigation measures in place, there is the potential for negative effects on this species as a result of the development proposals to occur.

7.15.1 Construction

Habitat Loss

There is the potential risk of accidental injury/ killing through vegetation clearance, movement of soil and individual hedgehogs falling into open excavations. Habitat loss/ modification also has the potential to impact the local hedgehog populations. The implementation of embedded mitigation measures 1, 2, 4 and 5 will ensure these potential effects are avoided or minimised. The production and implementation of a CEMP will minimise potential construction related effects through the use of best practice industry working methods. The installation of site demarcation fencing to prevent accidental access will protect boundary habitats from damage by vehicle movements and plant/machinery, with signage to be used as appropriate. Ecological toolbox talks will be mandatory for all construction personnel, with certain tasks being supervised by an ECoW.

A Method Statement for herptiles (mitigation measure 7) will also protect hedgehogs (if present) and ensure their protection during pre-commencement works and the construction phase of the development. A phased directional reduction in vegetation height and extent (first cut to 15cm, to 5cm and then to ground level), will be implemented with arisings being blown/removed from Site and not left in compost piles (Measure 8). Grassland will be maintained with a short sward height until construction works commence to deter hedgehogs from the working area. A precautionary hand search followed by destructive search will be completed prior to the works commencing to ensure hedgehogs are absent. The working area will be maintained in a condition unsuitable for hedgehogs during all construction works.

Taking into account the inherent mitigation measures contained in Table 6.1 and discussed above, a minor/ neutral magnitude of change is predicted which generates no likely significant effect on the local hedgehog population.

Habitat Creation and Enhancement

Implementation of integrated/ embedded measure 6 will ensure the suitability of areas of retained and newly created habitat for a range of species, including hedgehog. Creation of an area of approximately 4.245ha of species-rich neutral grassland and of 0.5km of species rich hedgerow represents a net increase in suitable habitat and will increase shelter and foraging opportunities for hedgehogs.

A minor magnitude of change is predicted as a result of the habitat creation and enhancement proposals, which although positive, generates no significant effect for hedgehogs.

7.15.2 Operation

Habitat Management

There is the potential for the areas of suitable retained, enhanced and newly created habitat to become degraded over time through the lack of suitable management practices. Implementation of integrated/ embedded measure C (LEMP) will ensure that appropriate management and monitoring protocols are in place, which will serve to increase the ecological quality and function of these habitat for a range of species, including hedgehog. All works will be supervised where necessary by a suitably qualified ecologist and will be carried out by appropriate ecological contractors.

Consequently, a minor magnitude of change is predicted which is positive, but which generates no significant effect as a result of the habitat management proposals across the Site for hedgehogs.

8 DEFRA BIODIVERSITY METRIC 3.0 ASSESSMENT RESULTS

A summary of the Biodiversity Net Gain calculations is given in Table 8.1 Baseline Habitat, Table 8.2 Baseline Hedgerow Habitat and Table 8.3 Baseline River Habitat. The overall On-Site Baseline Habitat Units are 44.98 Units, the on-Site Baseline Hedgerow Units are 2.77 and the on-Site Baseline River Units are 1.70.

The On-Site Post-Intervention Habitat Units are 61.69 Units, the On-Site Post-Intervention Hedgerow Units are 5.95 and the On-Site Post-Intervention River Units are 1.10 although the on-site stream is being re-directed within the redevelopment proposals and will result in a minor loss in terms of habitat units, despite the watercourse being taken out of culvert.

There is a positive 37.14% Total Net increase in Habitat Units and a 114.48% Total Net Increase in Hedgerow Units. However, there is a negative (-35.20%) Total Net Loss in River Units. However, the stream has previously been re-directed and culverted through the Site as part of a previous planning application and is not in its natural state.

Table 8.1: Baseline habitats

Habitat Type	Area (Ha)	Condition	Total Habitat Units	Units Retained/Enhanced	Units Lost
Grassland - Bracken	0.2	Poor	0.40	0	0.40
Grassland – Modified Grassland	11.095	Poor	22.19	13.58	8.61
Grassland – Other Neutral Grassland	1.896	Poor	7.58	3.31	4.27
Heathland and shrub – Bramble scrub	0.098	Poor	0.39	0.22	0.17
Lakes – Ornamental Lakes or Ponds	0.735	Poor	1.47	0.92	0.55
Urban – Developed land; sealed surface	3.002	N/A - Other	0	0	0
Urban – Developed land; sealed surface, buildings	2.671	N/A - Other	0	0	0
Urban – Artificial unsealed surface	2.829	N/A - Other	0	0	0
Urban – Introduced shrub	0.085	Poor	0.17	0	0.17
Urban – Built linear features	0.255	N/A - Other	0	0	0
Woodland and forest – Lowland mixed deciduous woodland	0.443	Moderate	5.32	5.32	0
Woodland and forest – Other woodland; broadleaved	0.89	Poor	3.56	3.56	0
Woodland and forest – Other woodland; mixed	0.975	Poor	3.90	2.74	1.16
Total	25.174	-	44.98	29.65	15.33

Table 8.2: Baseline Hedgerow Habitats

Habitat Type	Length (km)	Condition	Total Hedgerow Units	Units Enhanced	Units Lost
Line of Trees	1.231	Poor	2.46	0	0.16
Native Hedgerow	0.214	Poor	0.31	0	0.03
Total	1.386	-	2.77	0	0.19

Table 8.3: Baseline River Habitats

Habitat Type	Length (km)	Condition	Total River Units	Units Enhanced	Units Lost
Other Rivers and Streams	0.416	Poor	1.70	0	1.03
Total	0.416	-	1.70	0	1.03

Tables 8.4, 8.5 and 8.6 provide a summary of the net changes in habitat, hedgerows and rivers across the development Site, considering the new areas of habitat enhancement and creation set out in the Proposed UKHab Plan (see Figure 4). The percentage increase meets the requirement for measurable net gain as a result of proposed development outlined within the NPPF 2019 and exceeds the 10% Biodiversity Net Gain that is a requirement of the Environment Act 2021 from 2023.

Table 8.4: Habitat Creation and Enhancement Units Delivered

Habitat Type	Area (Ha)	Condition	Total Habitat Units Created	Total Habitat Enhanced
Grassland – Other Neutral Grassland	4.245	Moderate	16.80	10.76
Grassland – Modified Grassland	0.344	Moderate	1.19	0
Woodland and Forest – Other Woodland Broadleaved	0.068	Moderate	0.32	0
Lakes – Ornamental Lake or Pond	0.005	Moderate	0.02	0
Urban – Vegetated Garden	0.887	Poor	1.71	0
Urban – Developed Land, Sealed Surface	5.22	N/A - Other	0	0
Urban – Developed Land, Sealed Surface, buildings	0.963	N/A - Other	0	0
Urban – Introduced Shrub	0.574	Poor	1.11	0
Urban – Built Linear Features	0.016	N/A - Other	0	0
Urban – Street Tree	0.3821	Moderate	1.17	0
Urban – Green Roof	0.256	Moderate	0.92	0
Wetland – Reedbeds/ Marginal Aquatic Vegetation	0.241	Moderate	1.51	0
Total	11.4661	-	24.75	10.76

Table 8.5: Hedgerow Habitat Creation and Enhancement

Habitat Type	Length (km)	Condition	Total Habitat Units Created	Total Habitat Enhanced
Native Species Rich Hedgerow	0.503	Moderate	3.37	0
Total	0.503	-	3.37	0

Table 8.6: River Habitat Creation and Enhancement

Habitat Type	Length (km)	Condition	Total Habitat Units Created	Total Habitat Enhanced
Other Rivers and Streams	0.171	Moderate	0.43	0
Total	0.171	-	0.43	0

The unlocked Defra Metric 3.0 calculation spreadsheet is contained in Appendix H to this EclA.

9 CUMULATIVE EFFECTS

A search of the Eastleigh Borough Council planning portal for the area within 1.5km of the Site for developments that could have a cumulative effect alongside the Ageas Bowl proposals was undertaken by Johns Associates Ltd in January 2022. Currently registered and previous planning applications within the last 3 years were considered to be predominantly small scale in nature and included domestic extensions, building alterations, tree works, signage/ lighting, small-scale developments (single dwellings) and change of use applications.

Due to the scale and nature of the proposed development, (including the comprehensive integrated/ embedded mitigation and enhancement measures described in Table 6.1 that form part of the proposals), the associated localised Zone of Impact and low magnitude of predicted change, it is concluded that no additional in-combination effects will arise from the construction or operation of the re-developed Ageas Bowl when considered alongside other current and recent planning applications in the local area. The overall ecological enhancement of the Site is likely to have a positive effect on the ecological status of protected species within the local area and the biodiversity value of habitats within the Site and immediately adjacent areas.

10 IMPLEMENTATION OF BIODIVERSITY MEASURES & MONITORING

Table 10.1 summarises the environmental measures embedded within the proposed development and the means by which they will be implemented.

Table 10.1: Summary of Environmental Measures to be Implemented

Environmental measure	Responsibility for implementation	Compliance mechanism
Production and implementation of a Construction Ecological Management Plan (CEMP)	Contractor/Project Ecologist	Planning condition
Production and implementation of a Landscape and Ecology Management Plan	Contractor/Project Ecologist	Planning condition
Ecological toolbox talk and register of attendance for all persons working within the construction area	Contractor/Project Ecologist	Planning condition
Suitably Qualified Ecologist/Ecological Clerk of Works/Ecological Contractors to manage, monitor and implement all ecological aspects of the development.	Contractor/Project Ecologist	Planning condition
Retention and protection of all woodland/ woodland edge habitats and trees (apart from those specifically identified as being removed as part of the redevelopment proposals) with suitable offsets and barriers	Contractor	Planning condition
Use of dust suppression techniques	Contractor	Planning condition
Use of pollution control and response methods during construction and operation	Contractor/Operator	Planning condition
Implementation of all on site landscape/habitat measures in accordance with CEMP/LEMP and the Integrated/Embedded Mitigation and Enhancement Plan submitted with the Planning Application.	Eastleigh Borough Council /Project Ecologist/ Contractor/Operator	Planning Condition
Implementation of a programme of robust ecological monitoring, reporting and intervention to ensure all integrated and embedded mitigation and enhancement measures are successful in the short and long term.	Eastleigh Borough Council /Project Ecologist	Planning condition
Provision of features for faunal species including bird and bat boxes.	Contractor/Operator	Planning condition
Payment to the Solent Bird Aware Scheme	Contractor/Operator	Planning condition
Provision of additional recreational / amenity facilities to reduce potential recreational effects on the New Forest SAC o acceptable levels.	Contractor/Operator	Planning condition
Delivery of nutrient neutrality strategy in line with the Hilson Moran report	Contractor/Operator	Planning condition

Periodic UK Habitat Classification (UKHab) surveys to confirm the successful delivery of the habitat creation, enhancement and management measures and therefore of the Biodiversity Net Gain for the Site will be

undertaken following completion of the proposed works in years 1, 3, 5 and 10. An repeat of the baseline survey set out in this report will be completed one year after construction is completed (2028).

The overall condition of each habitat area will be monitored during these site visits and proposals for any necessary amendments to the management prescriptions will be provided to Eastleigh Borough Council for approval in order to maximise the ecological value of these habitat and those species they may support.

11 CONCLUSIONS OF SIGNIFICANCE EVALUATION

Considering the detailed ecological baseline, the integrated and embedded ecological mitigation and enhancement measures and the assessment of likely significant effects as set out in Section 7 of this EclA, it is considered reasonable to conclude that no negative significant effects will occur to important biodiversity receptors, including legally protected species and designated sites, from either the construction or operational stages of the proposed development. A range of positive effects on biodiversity are considered likely as a result of the proposals.

There are no known proposed developments within the wider landscape surrounding the Site that will have a cumulative effect with the proposed development.

Furthermore, the development proposals are considered to meet the requirements of local and national planning policy alongside best practice in relation to the construction and long-term management of the Site.

The use of the Defra Biodiversity Metric has demonstrated that the proposals will also deliver a positive 37.14% Biodiversity Net Gain in line with national policy as well as best practice, demonstrating the credible benefits this development has for biodiversity from national level to district level.

Appendix A: Ecological Desk Study

Appendix B: UKHab Survey Technical Note

Appendix C: Bat Technical Note

Appendix D: Great Crested Newt Technical Note

Appendix E: Reptile Survey Report

Appendix F Dormouse Survey Report

Appendix G: Badger Technical Note

Appendix H: BNG Metric – also provided as a separate Microsoft Excel File