



11 ECOLOGY AND NATURE CONSERVATION

INTRODUCTION

11.1 This chapter of the ES assesses the likely levels of significant effects of the Proposed Development in terms of Ecology and Nature Conservation and incorporates a summary of the Baseline Ecological Appraisal, which is included at **Appendix 11.1**.

11.2 The chapter describes the assessment methodology; the baseline conditions at the Site and its surroundings; the likely significant environmental effects; the mitigation and compensation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed. Information to inform a Habitats Regulations Assessment is also included. This chapter has been prepared by Aspect Ecology.

11.3 The scope of the assessment is largely focused on the Site itself, although consideration has been given to ecological features within the wider area. In particular, the desktop study has included a search for ecological designations up to 10km from the Site boundary.



ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

Zone of Influence

11.4 To inform the scope of the assessment, consideration has been given to the zone of influence of the Proposed Development. The zone of influence is defined as the area over which ecological features may be affected by the biophysical changes caused by the proposed project and associated activities. The extent of such changes will typically reduce over distance, and whether effects are experienced is dependent on the sensitivity of individual habitats, species or other ecological features, such that it is difficult to define a specific zone of influence which captures all potential effects arising from the Proposed Development. As such, two broad zones are identified:

- A primary zone of influence largely relating to the Site itself, incorporating habitats and associated species directly affected by the development footprint and associated works (in terms of habitat loss or damage). This zone also includes areas affected by factors such as noise, vibration, lighting, dust and pollution, the effects of which will be focused within the nearby surrounds (i.e. within 100m) of the development. Survey work has specifically focused on this area, to allow an assessment of habitats and species directly affected by the Proposed Development;
- Beyond this, a wider (or secondary) zone of influence exists, where ecological features may be subject to wider scale effects such as recreational disturbance, air pollution from traffic or water pollution within the wider river catchment. The assessment of features within this zone is largely based on background information identifying ecological designations or known habitats or species populations of importance which could be sensitive to such wider scale effects.

Scoping

11.5 The Proposed Development and the preparation of this chapter has been informed by scoping. Natural England's Scoping Opinion (dated 24 June 2016) recommends that further assessment is undertaken in relation to The Swale Special Protection Area (SPA), Ramsar site and Site of Special Scientific Interest (SSSI).

11.6 Kent County Council's Ecological Advice Service also provided a Scoping Opinion on 28th June 2016. This recommended that an assessment of the impact of the Proposed Development on wintering birds is undertaken, given the Site's proximity to The Swale SPA. In



addition, information to assess the impact of the construction and operational phase on The Swale SPA and Milton Creek Local Wildlife Site was requested. KCC also requests that ecological mitigation and enhancements be incorporated and clearly demonstrated.

Assessment Methodology

11.7 The methodology utilised for the survey work can be split into three main areas: a desktop study, habitat survey and faunal surveys, as discussed below.

Desktop Study

11.8 In order to compile background information on the Site and its immediate surroundings, Kent and Medway Biological Records Centre (KMBRC) was contacted. Information on statutory designated sites was obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC) database, which utilises data provided by Natural England. Other data sources checked as part of the desktop study included the National Biodiversity Network (NBN) database, the Freshwater Habitats Trust database of Priority Ponds or Important Areas for Ponds, and the Woodland Trust database of notable, veteran and ancient trees. Further detail is provided in the Baseline Ecological Appraisal at **Appendix 11.1**.

Habitat Survey

11.9 The Site was surveyed over a number of visits between May 2014 and September 2016, based on Phase 1 Habitat Survey methodology (Ref. 11.1), as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail through Phase 2 surveys. This method was extended, in line with the Guidelines for Preliminary Ecological Appraisal (Ref. 11.2) to record details on the actual or potential presence of any notable or protected species or habitats.

Faunal Surveys

11.10 General faunal activity, such as mammals or birds observed visually or by call during the course of the surveys was recorded during all visits to the Site. Particular attention was also paid to the potential presence of any protected, rare or notable species.



11.11 Specific Phase 2 surveys were undertaken in respect of bats, Badger, reptiles, Great Crested Newt and breeding birds in 2014 to 2016. A summary of survey work undertaken is set out at Table 11.1 below. Further detail on survey methodologies is provided in the Baseline Ecological Appraisal at **Appendix 11.1**.

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Table 11.1: Summary of Phase 2 Faunal Survey Methodologies

Faunal Group	Survey Methodology	Date of Surveys	Guidance
Bats – tree inspection	As part of the habitat surveys, any trees supporting particular features likely to be of value to bats, such as splits, cracks, rot holes, coverings of ivy, peeling bark or similar, were recorded. The potential for the trees to support roosting bats has been assessed in accordance with the criteria set out in the Bat Conservation Trust guidelines (BCT, 2016)	As part of habitat surveys in May 2014, September 2015, June 2016, September 2016	'Natural England Standing Advice: Bats'; 'Bat Mitigation Guidelines' (English Nature, 2004); 'Bat Surveys – Good Practice Guidelines' (Bat Conservation Trust, 2012); 'Bat Surveys for Professional Ecologists – Good Practice Guideline' (Bat Conservation Trust, 2016)
Bats – activity surveys	A series of dusk and dawn activity surveys were undertaken at the Site, to gather information on the use of the Site by foraging and commuting bats. This involved surveyors walking a predetermined transect route, recording all bat activity.	September and October 2015	
Badger	The entire Site and immediate surrounds were surveyed for evidence of Badger setts and activity, including presence of well-worn paths, push-throughs, snagged hair, footprints, latrines and foraging signs.	As part of habitat surveys in May 2014, September 2015, June 2016, September 2016	'Natural England Standing Advice: Badger'; 'Occasional Publication No. 9 – Surveying Badgers' (Mammal Society, 1989); 'Density and distribution of Badgers in south-west England – a predictive model'. Mammal Review 18: 11-23 (Thornton, 1988)
Great Crested Newt	Waterbodies within 250m of the Site were subject to specific Great Crested Newt survey work, where they were considered suitable to support the species. This comprised an environmental DNA survey on the first visit, followed by up to three visits where possible utilising bottle-trapping, torching, egg-searching and netting, in May and June 2015. Following this, the ponds were entirely dry. An update eDNA survey was undertaken in May 2016.	May to June 2015, May 2016	'Natural England Standing Advice: Great Crested Newts'; 'Great Crested Newt Mitigation Guidelines' (English Nature 2001)
Breeding Birds	Breeding bird surveys involved walked transects of part of the Site, under suitable weather conditions. Observations of all bird species were noted, and territories mapped.	May to June 2015	'Natural England Standing Advice: breeding birds'; 'British Trust for Ornithology (BTO) Common Bird Census' (Gibbons et al., 1994)



Evaluation of Ecological Baseline

11.12 The evaluation of ecological features and resources should be based on sound professional judgement whilst also drawing on the latest available industry guidance and research. The approach taken in this report is based on that described in 'Guidelines for Ecological Impact Assessment in the UK and Ireland' published by the Chartered Institute of Ecology and Environmental Management (CIEEM) (Ref. 11.3) whereby important ecological features are identified, and these are considered within a defined geographical context using the following frame of reference:

- International;
- National;
- Regional;
- County;
- District;
- Local;
- Site (not of elevated importance at a local level).

11.13 Features considered to be of importance at the site level only have been scoped out of this assessment (with the exception of protected species which are considered in terms of mitigation and any legislative requirements).

11.14 Further details on this approach and the criteria used for evaluation are provided in the Baseline Ecological Appraisal at Appendix 11.1.

Assessment of Impacts and Significance

11.15 The CIEEM publication (Ref. 11.3) also sets out a methodology for the assessment of potential effects arising from development. These methods are followed which can be summarised as below.

11.16 Using the agreed parameters of the scheme, likely effects are determined with reference to aspects of the ecological structure and function on which the feature or resource depends. This includes factors such as the available resources, ecological processes, human influences, historical context, ecological relationships, ecological role or function and ecosystem properties. Based on this context, the nature of the effect is characterised and considered under the following parameters:



- Positive or negative – will the activity lead to an adverse, beneficial or neutral effect;
- Extent – the size or amount of an impact, the area of habitat or number of individuals affected;
- Duration – the time for which the impact is expected to last prior to recovery or replacement, i.e. short-term or long-term;
- Reversibility – an effect may be irreversible in that recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it, i.e. permanent or temporary;
- Timing and frequency – some changes may only cause an impact if they coincide with critical life-stages or seasons, whilst frequent events may cause a greater effect than a single event.

11.17 Based on these parameters, the scale of effect (or magnitude) can be summarised as follows. This is in relation to adverse effects, although a similar scale can be applied to beneficial effects.

Table 11.2: Assessment of Scale of Effect

Scale of Impact	Nature of Effect
Major	A permanent or long-term effect on the receptor, which may result in severe damage to key characteristics and implications for the integrity of the receptor or its conservation status.
Moderate	Impacts resulting in partial loss of or damage to a receptor, which could have implications for the integrity of the receptor or its conservation status.
Minor	Short-term or temporary impacts resulting in only minor loss of or damage to a receptor, unlikely to have implications for the integrity of the receptor or its conservation status.
Negligible	No effect or only a short-term reversible impact with no long-term effect on the receptor.

11.18 Based on the nature of the effect, an assessment is then made whether the effect on a habitat or species is likely to be ecologically 'significant'. CIEEM guidance defines a 'significant effect' as *"an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general"*, going onto state that *"significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution)."*



11.19 Significance is also assessed at an appropriate geographic scale. For example, a significant effect on a Site of Special Scientific interest (SSSI) would be of national significance. Notwithstanding this however, consideration is also given to whether an effect is significant at a scale below the geographic context in which the feature is considered important.

11.20 For some ecological features (notably designations), there may be an existing statement of the conservation status of a feature and objectives and targets against which the effect can be judged. For example, Sites of Special Scientific Interest (SSSI) are assessed under six condition categories, namely favourable, unfavourable recovering, unfavourable no change, unfavourable declining, part destroyed, and destroyed. An effect that exerts a change between these condition categories would be considered as significant.

11.21 Where no existing statement of conservation status is available, an assessment is made against the existing status and condition of the habitat or species population, as recorded by survey data and background information, taking into account the level of ecological resilience or existing conditions that a habitat or species is currently subject to. An effect resulting in a long-term change to the existing background population trend or status at a given geographical level would be considered as significant. In this regard, a significant beneficial impact could be defined as one that prevents or slows an existing decline in the favourable conservation status of a habitat or population as much as one that permitted a population or habitat area to increase.

11.22 The likelihood or uncertainty of an effect occurring as predicted is also considered. To assist with defining certainty, the following scale is used (with broad confidence levels indicated in percentage terms):

- Certain/near-certain: probability estimated at 95% chance or higher;
- Probable: probability estimated above 50% but below 95%;
- Unlikely: probability estimated above 5% but less than 50%;
- Extremely unlikely: probability estimated at less than 5%.

Habitats Regulations Assessment

11.23 The approach to the formalised assessment of potential impacts arising on a European site from any proposals (termed plans or projects) is set out within the Conservation of



Habitats and Species Regulations 2010. Guidance on the process and procedures for assessment are contained in a number of documents, principally:

- National Planning Policy Framework (NPPF) and the accompanying ODPM/DEFRA Circular (ODPM 06/2005, DEFRA 01/2005);
- Managing Natura 2000 sites 'The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. April 2000;
- Assessment of plans and projects significantly affecting Natura 2000 sites. European Commission November 2001.

11.24 As set out within the above documents, the procedure for assessment is an ordered process following a number of key stages. The first stage is to identify whether the proposals are directly connected with or necessary to site management for conservation. The second stage examines whether the proposals will result in any 'likely significant effect' on the designated features of the European sites, either alone or in combination with other plans or projects. Should it be determined that a plan or project will result in 'likely significant effects' on a European site, a full 'Appropriate Assessment' of the likely effects of the plan or project should be undertaken.

Limitations of the Assessment

11.25 All of the botanical species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of year, since different species are apparent during different seasons. However, the survey area was visited on a number of occasions over the optimal period, ensuring that detailed habitat information could be gathered. It is therefore considered that the survey work has allowed a robust assessment of habitats and botanical interest across the Site.

11.26 The specific Phase 2 surveys were undertaken at the appropriate time of year and during suitable weather conditions to an appropriate level of survey effort, given the nature of the Proposed Development. Any specific limitations are noted in the relevant sections above or discussed in the results section, although no significant constraints were experienced.

11.27 The surveys undertaken are therefore considered to allow a robust assessment of the ecological interest of the Site to be made.



LEGISLATION, PLANNING POLICY AND GUIDANCE

Legislation

11.28 The applicable legislative framework for ecology and nature conservation is summarised as follows:

- The Conservation of Habitats and Species Regulations, 2010 (as amended);
- Wildlife and Countryside Act, 1981 (as amended);
- The Natural Environment and Rural Communities Act, 2006;
- The Countryside and Rights of Way Act, 2000;
- Town and Country Planning (Environmental Impact Assessment) Regulations, 2011;
- The Hedgerows Regulations, 1997;
- The Protection of Badgers Act, 1992;
- The Wild Mammals (Protection) Act, 1996.

11.29 Discussion of this legislation in relation to particular ecological features and fauna is set out in the relevant sections of this chapter and the Baseline Ecological Appraisal (see Appendix 11.1).

11.30 In relation to Special Protection Areas (SPAs), these receive statutory protection under the Conservation of Habitats and Species Regulations 2010 (the Regulations). These Regulations transpose into UK legislation the 'Habitats Directive' 1992 (92/43/EEC) and the 'Birds Directive' 2009 (2009/147/EC). The Regulations impart a duty on Local Planning Authorities (competent authorities) to carefully consider whether any proposals may have a significant effect on a European designation, either alone or in combination with other plans or projects. In most circumstances, permission may only be given for a plan or project to proceed if it has been ascertained that it will not have an adverse effect on the integrity of any such designation.

Policy Background

National Planning Policy

11.31 Guidance on National Policy for biodiversity and geological conservation is provided within the National Planning Policy Framework (NPPF), published by the Department for Communities and Local Government (DCLG) in March 2012. The NPPF confirms the Government's commitment to conserving and enhancing the natural and local environment



through the planning system, including specific reference to maintenance and enhancement of biodiversity.

11.32 The NPPF requires local authorities to fully consider the effect of planning decisions on biodiversity and geodiversity, and ensure that appropriate weight is attached to statutory nature conservation designations, protected species and biodiversity, and geological interests within the wider environment. It also considers the potential biodiversity and geological conservation gains which can be secured within developments, including the use of planning obligations.

11.33 National policy therefore implicitly recognises the importance of biodiversity and that with sensitive planning and design, development and conservation of the natural heritage can co-exist and benefits can, in certain circumstances, be obtained.

Local Planning Policy

Adopted Local Plan

11.34 The Swale Borough Local Plan was adopted in February 2008. The majority of policies were subsequently saved under direction of the Secretary of State in July 2010. Of the saved policies, the following are relevant to ecology and nature conservation:

11.35 **Policy SP2** is a strategic policy relating to the environment, and sets out that “*planning policies and development proposals will protect and enhance the special features of the ... ecological... environments of the Borough and promote good design in its widest sense.*” With regard to biodiversity, the policy states “*Where a planning decision would result in significant harm to biodiversity interests, which cannot be prevented or adequately mitigated against, appropriate compensation measures will be sought.*”

11.36 In addition, the following development control policies of the Local Plan are of particular relevance to ecology:

11.37 **Policy E10** sets out measures to protect trees and hedgerows, including the imposition of Tree Preservation Orders and Hedgerow Protection Orders, and states “*Development proposals should retain trees as far as possible and provide for new tree planting to maintain and enhance the character of the locality.*”



11.38 **Policy E11** relates to the protection and enhancement of biodiversity interests. This policy states “*Developments will be permitted that conserve or enhance the biodiversity of the area and/or locality.*” The policy also sets out criteria should proposals potentially adversely impact on biodiversity interests.

11.39 **Policy E12** relates to ecological designations, setting out a designation hierarchy and policy tests for the protection of European designations, SSSIs and local designations. These tests reflect the legislative and national policy tests.

Emerging Local Plan

11.40 Swale Borough Council’s emerging plan was submitted for examination in April 2015. Following this, a Main Modifications document was issued for consultation in June 2016. Core policy **Policy CP7** of the emerging Local Plan is of particular relevance to ecology, and states that development proposals will, where appropriate, “*Protect the integrity of the existing green infrastructure network*”, “*ensure there is no adverse effect on the integrity of a SAC, SPA or Ramsar site*”, “*For sites within 6km of the North Kent Marshes development must contribute to its Strategic Access Management and Monitoring Strategy*”, “*make the enhancement of biodiversity and landscape as their primary purpose*”, and “*achieving, where possible, a net gain of biodiversity*”.

11.41 In addition, a number of development management policies in the emerging Local Plan are relevant. In particular, **Policy DM28** sets out the hierarchy of designations, with policy tests, and promotes the preservation, re-creation and restoration of priority habitats and local Biodiversity Action Plan habitats, whilst encouraging a net gain in biodiversity to be achieved.

11.42 **Policy DM29** seeks to protect and enhance woodlands, orchards, trees and hedges, including the creation of these habitats where possible.

11.43 The Site is subject to an allocation for mixed-use development within the emerging Local Plan. The allocation, referred to as ‘Land at South-west Sittingbourne’, includes the following ecological criteria:

- “*Varied widths of woodland, copses, wide hedgerows, orchards and other natural green space appropriate to the local landscape character of the area...*”
- “*The establishment of green linkages between existing (adjoining) and proposed open spaces;*”



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- *Demonstration of a net gain in biodiversity...*
 - *Development proposals will need to reduce recreational disturbance on the SPA, by ensuring the provision of appropriate recreational and accessible natural greenspace opportunities on-site for use by residents and visitors. Such proposals will be subject to an HRA and where demonstrated as necessary to avoid likely significant effects on the SPA, a financial contribution towards wider management of recreational pressures on the North Kent Marshes will be sought in accordance with Policies CP7 and DM28."*

National and Local Biodiversity Action Plans (BAPs)

11.44 The UK Biodiversity Action Plan, originally published in 1994, was the UK Government's response to signing the Convention on Biological Diversity (CBD) at the 1992 Rio Earth Summit. This has now been replaced by the new UK post-2010 Biodiversity Framework which focuses on the 4 individual countries of the United Kingdom and Northern Ireland.

11.45 Within England, the latest biodiversity strategy is entitled, 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services', published by Defra on 19 August 2011 with a progress update provided in July 2013 (Ref. 11.4). This provides a comprehensive picture of how England is implementing its international and EU commitments and sets out the strategic direction for biodiversity policy for the next decade.

11.46 The approach is informed by the list of species and habitats of 'Principal Importance' under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, which largely reflects those species and habitats previously listed under the UK Biodiversity Action Plan (BAP) that occur in England.

11.47 A number of local BAPS have also been produced, identifying priorities and targets for action at a local level. This includes the Kent Biodiversity Action Plan, produced by the Kent Biodiversity Partnership, and the Swale BAP, produced by the Swale Countryside Working Group and revised in 2008.

11.48 Reference to habitats and species listed as Priority Habitats and Species under Section 41 of the NERC Act and local BAPs is made where relevant in the following sections of this chapter.

Discussion



11.49 The policies outlined above have been taken into account during the design of the Proposed Development, and when considering mitigation and enhancement measures, with features and species of nature conservation interest protected and enhanced where possible. These measures are detailed in the relevant sections of this report, and an overview of how the Proposed Development complies with relevant policy is given in the Summary section.

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BASELINE CONDITIONS

Ecological Designations

11.50 Ecological designations that occur within the local area are represented on Figure 11.1 (**Appendix 11.1**) and summarised in Table 11.3. Further detail is provided in Section 3 of the Baseline Ecological Appraisal at **Appendix 11.1**.

Table 11.3: Ecological designations in the vicinity of the Site (within 10km radius for European designations, 5km radius for national-level designations, 2km for local designations)

Designation	Status*	Qualifying Features	Approx. Distance from Site
Medway Estuary & Marshes	SPA	Breeding Avocet <i>Recurvirostra avosetta</i> and Little Tern <i>Sterna albifrons</i> , and a number of overwintering bird species. Important breeding bird assemblage and wetland of international importance.	3.8 km north-west
	Ramsar	Rare plants and invertebrates, assemblages of international importance of waterfowl, and important populations of Grey Plover, Common Redshank, Dark-bellied Brent Goose, Common Shelduck <i>Tadorna tadorna</i> , Northern Pintail <i>Anus acuta</i> , Ringed Plover, Red Knot <i>Calidris canutus islandica</i> , and Dunlin <i>Calidris alpina alpina</i>	
	SSSI	Largest area of intertidal habitats identified as of value for nature conservation in Kent. Comprises a complex of mudflats and saltmarsh, with some grazing marsh.	
The Swale	SPA	Populations of overwintering Brent Goose <i>Branta bernicla bernicla</i> and Dunlin <i>Calidris alpina alpina</i> . Breeding bird and waterbird assemblages of international importance.	3.9km north-east
	Ramsar	Nationally scarce plants and rare invertebrates, waterfowl assemblage of international importance, important populations of Common Redshank <i>Tringa totanus totanus</i> , Dark-bellied Brent Goose <i>Branta bernicla bernicla</i> , and Grey Plover <i>Pluvialis</i>	



		<i>squatarola</i>	
	SSSI	Largest remaining area of freshwater grazing marsh in Kent, other habitats comprise mudflats, and saltmarsh. Important area for a number of breeding birds, with a rich assemblage of plants and invertebrates.	
Queendown Warren	SAC	Semi-natural dry grassland supporting rare plant species.	4.5 km west
	SSSI	Grassland and woodland with a rich assemblage of plants and rare plant species	
	LNR	One of the most important areas of chalk grassland in Kent, supporting a diverse flora and fauna	
Elmley	NNR	Wide expanse of grazing marsh, which supports a range of wildlife, including large numbers of breeding waders and birds of prey.	4.9 km north-east
Borden Nature Reserve	Parish Council reserve	Publicly-accessible capped landfill	Adjacent to south (separated by road)
Highsted Quarries	LWS	Former chalk quarry with chalk flora	1.6 km south-east
Milton Creek	LWS	Mosaic of habitats, principally saltmarsh and mudflats with reedbed, dykes, ponds, scrub, unimproved grassland.	2.0 km north-east

* SPA - Special Protection Area

SAC – Special Area of Conservation

SSSI - Site of Special Scientific Interest

NNR - National Nature Reserve

LNR – Local Nature Reserve

LWS – Local Wildlife Site

11.51 No areas of designated ancient woodland or notable trees were identified within 500m of the Site.



Habitats and Ecological Features

11.52 A full description of habitats and ecological features within the study area is set out in Section 4 of the Baseline Ecological Appraisal at Appendix 11.1, whilst the locations of habitats and ecological features are represented on Figure 11.2 (**Appendix 11.1**).

11.53 A summary of the habitats considered to be of ecological importance occurring within and adjacent to the Site (i.e. within the primary zone of influence) is set out at Table 11.4 below.

Table 11.4: Summary and evaluation of important habitats and ecological features present within and adjacent to the Site.

Habitat type	Description	Level of Importance
Continuous and scattered scrub	A number of areas of scrub are present within and adjacent to the Site. The scrub habitats are dominated by native species and vary in structure from dense thickets to more scattered colonising shrubs. The south-eastern area is of some residual ecological interest due to its status as a former Cherry orchard, with many of the Cherry trees still remaining.	Local
Hedgerows (with trees)	A number of hedgerows are present within the Site, forming field boundaries in places. These tend to be unmanaged, with several including trees, and generally support a moderate range of woody species, the majority of which are native and therefore likely to qualify as UK Priority Habitat. Some of the more species-rich hedgerows within the Site are considered likely to qualify as 'important' under the Hedgerows Regulations 1997. The hedgerows collectively form a locally important habitat network, albeit this is somewhat limited by the poor connectivity of many of the hedgerows.	Local
Woodland	Five distinct areas of small woodland were recorded within or adjacent to the Site. These are all young in nature, either forming recent plantations for screening, or in the case of W5 in the south-east of the Site, having apparently developed naturally from a former Cherry orchard in the absence of management. The woodlands are dominated by native species and are therefore likely to qualify as UK Priority Habitats. However, the woodlands are of relatively uniform structure, of a young age and support an impoverished ground flora due to their recent nature and heavy canopy shading.	Local

11.54 The remainder of the Site is dominated by arable land with smaller areas of semi-improved grassland, tall ruderal vegetation, scattered trees, recent planting, dry ditches, a building and hardstanding. These habitats are not considered to form habitats of ecological



importance and are not subject to specific assessment (albeit the faunal species they may support are assessed where appropriate).

Faunal Use of the Site

11.55 A range of faunal surveys were undertaken during 2014 to 2016 for bats, Badger, Great Crested Newt and breeding birds. In addition, general observations were made of any faunal use of the Site with particular attention paid to the potential presence of protected or notable species.

11.56 Full details of this survey work are included in the Baseline Ecological Appraisal at Appendix 11.1, whilst a summary of faunal species considered to be of ecological importance occurring within the Site and its immediate surrounds (i.e. the primary zone of influence) is set out in Table 11.5 below.

Table 11.5: Summary and evaluation of important faunal species present within and adjacent to the Site.

Faunal Species / Group	Description	Level of Importance
Bats (roosting)	Two trees with bat roosting potential have been recorded within the Site, located at the Site margins.	Local
Bats (foraging and commuting)	Bat activity recorded during the survey work undertaken was generally low and restricted to Common Pipistrelle, a common species. Prolonged foraging activity was recorded in very limited areas of the Site, particularly along some hedgerows, although other hedgerows, woodland and scrub outside of the bat survey area may also provide similar foraging opportunities.	Local
Badger	Two disused Badger setts were recorded within the Site, whilst two further active setts are located offsite in the relatively near vicinity. Furthermore, signs of Badger foraging activity were recorded at various locations within the Site.	Local
Other mammals	The Site provides some opportunities for UK Priority Species of mammal including Hedgehog, which could utilise hedgerows, scrub and woodland to some extent, albeit no evidence of its presence was recorded.	Local
Amphibians	Two ponds have been identified within 250m of the Site, both of which frequently dry out. The presence of Great Crested Newt was confirmed in one of these ponds using eDNA surveys. This pond is located some 230m north of the Site, and separated from the Site by residential development. Furthermore, the onsite habitats within 250m of the pond are limited to arable land. As such, the presence of Great Crested Newt within the Site is considered unlikely. However, more wide-ranging species such as the UK Priority Species Common Toad could occasionally enter	Site



	the Site, although the habitats present are considered unlikely to be of importance to any local population.	
Reptiles	The habitats within the Site are generally of poor suitability for reptiles, being intensively cultivated. However, the areas of tall ruderal vegetation and longer-sward areas of semi-improved grassland provide some limited opportunities for reptiles. This is limited by their small extent, isolation and suboptimal habitat condition. Nevertheless, low numbers of common reptile species could be present in small parts of the Site.	Site (legislative importance only)
Birds	Breeding bird survey work identified possible breeding by Skylark within the arable fields, albeit the winter-sown nature of the arable land is suboptimal for breeding Skylark. Furthermore, the hedgerows, scrub and woodland are likely to support a range of breeding bird species including a number of Priority Species such as Dunnock, Song Thrush and Linnet. The Site is considered unlikely to be of importance to waterbirds associated with the North Kent Marshes SPAs, based on the distance and alternative habitats.	Local
Invertebrates	The intensively cultivated nature of the majority of the Site is likely to preclude an important invertebrate assemblage. However, the tall ruderal, scrub, woodland and hedgerow habitats within the Site are likely to be of relatively increased value in the local context.	Local

Future Baseline

11.57 In the absence of the Proposed Development, and assuming current management regimes continue, the baseline conditions within the Site are expected to remain relatively constant in the future, albeit the areas of woodland and scrub are likely to become more established and mature in time. This would likely have mixed implications for biodiversity. Although the woodland could be of increased value as it establishes, this would also result in the loss of the residual Cherry orchard in the south-east of the Site. Furthermore, scrub encroachment is likely to continue in the south-eastern part of the Site, resulting in the loss of tall ruderal vegetation, the development of relatively uniform scrub and associated reduction in structural diversity.



IDENTIFICATION AND EVALUATION OF KEY EFFECTS

11.58 This section sets out the potential significant effects during the construction and operational phase on ecological receptors identified as being of ecological importance, as summarised in Table 11.6 below.

11.59 Receptors not considered to be of importance at the local level or above (of site importance only) are scoped out of this assessment, although consideration of mitigation and legislative requirements for protected species is set out in the relevant mitigation section.

Table 11.6: Potential effects on important ecological receptors arising from the Proposed Development.

Receptors	Potential effects								
	Construction phase (temporary effects)					Operational phase (permanent effects)			
	Temporary land-take / damage (construction)	Disturbance (visual, noise)	Hydrology and pollution (dust, run-off)	Lighting (construction)	Construction site hazards	Permanent land-take	Anthropogenic effects / disturbance	Hydrological effects	Permanent lighting
Statutory ecological designations							X		
Non-statutory ecological designations		X	X				X		
Habitats (including scrub, hedgerows, woodland)	X		X			X	X	X	
Bats - roosting		X		X	X	X			X
Bats - foraging	X			X		X			X
Badger	X	X		X	X	X	X		X
Other mammals	X			X	X	X	X		X
Birds	X	X		X		X	X		X
Invertebrates	X		X	X	X	X	X		X



11.60 [TBC pending final Parameters Plan and Illustrative Layout] The extent of areas affected by the Proposed Development is based on the Parameters Plan, which shows built development areas (e.g. residential development) within which habitats are likely to be lost, and landscape and open space areas within which habitats can likely be retained, subject to play areas and landscaping and SuDS features. This has been informed further by the Illustrative Layout which shows the likely extent of development areas, although given the outline nature of the application, the specific detail of individual habitat losses is to be confirmed at the detailed stage.

Mitigation within the Submitted Design

11.61 The scheme that is assessed in terms of likely significant effects has been developed following an iterative process of design, with a number of mitigation measures incorporated as part of the Proposed Development.

11.62 This is largely based on retention and protection of the existing features of ecological value, maintaining key habitat areas and connective habitat across the Site (except where gaps are required to allow road and pedestrian access).

Construction Phase Effects

Design Solutions and Assumptions

11.63 The potential effects considered within this section are those relating to temporary factors arising from the construction process, such as construction noise or dust production, and which will cease to apply following completion of the Proposed Development (referred to as 'Operational Phase'). Thus loss of habitats through permanent land take for development is considered as an 'Operational Phase' effect, although the land take actually occurs during the construction phase of the Proposed Development.

Effects on Statutory Ecological Designations

11.64 The nearest statutory designation is located approximately 3.8 km from the Site. At this distance, no construction phase effects are anticipated. Construction effects on statutory ecological designations are therefore considered to be **negligible** and **non-significant (near certain)**.



11.65 In terms of Habitats Regulations Assessment, it is not considered that there will be any 'likely significant effect' on European designations at the construction phase, and as such Appropriate Assessment should not be required.

Effects on Non-Statutory Ecological Designations

11.66 Borden Nature Reserve (a Parish Nature Reserve) is located adjacent to the Site, separated from the Site by a single-lane public road (Cryalls Lane). The Proposed Development therefore has the potential to result in disturbance and pollution effects, in the absence of mitigation, such as dust deposition, contaminated surface-water run-off, noise and lighting disturbance. However, these effects are likely to be highly localised to the immediately adjacent parts of the reserve, particularly given that the habitats within the reserve which bound the Site comprise dense shrubs and trees, which would likely ameliorate any disturbance and pollution effects to a large extent.

11.67 Other non-statutory designations in the local area are considered to be suitably removed from the Site by distance and intervening land uses such that no significant effects are anticipated.

11.68 Prior to mitigation, construction effects on non-statutory designations (limited to Borden Nature Reserve) would be **minor, adverse and short-term and non-significant (probable)**.

Effects on Habitats and Ecological Features

11.69 Large parts of the Site will be subject to construction works resulting in the loss of existing habitats. This permanent land-take of habitats (and resultant effects on fauna supported by such habitats) is discussed in the Operational Phase section below. This section relates to effects during the construction phase, which are largely temporary in nature.

11.70 Retained habitats of importance within the Site including scrub, hedgerows and woodland may be subject to potential effects such as damage to tree roots from compaction, damage to vegetation from construction machinery or vehicles, and pollution effects resulting from contaminated run-off and dust. However, any such effects are likely to be highly localised. As such, prior to mitigation, construction effects on retained habitats are considered to be **minor, adverse and medium-term, and non-significant (probable)**.



Effects on Fauna

Bats - roosting

11.71 Two trees with bat roosting potential were identified at the margins of the Site, one of which would be lost to the Proposed Development. The permanent loss of roosting resources is considered in the Operational Phase section below. During the construction phase, temporary effects on bat roosts could take place in the form of noise and lighting disturbance. Furthermore, the felling of the tree with bat potential during the construction phase could result in the mortality, injury or disturbance of any bats roosting within the tree. However, the likelihood of this is reduced by the nature of tree-dwelling bats, which generally occupy a high number of roosts over the year such that the likelihood of bats being present at the time of felling is reduced (if any use the tree at all).

11.72 Nevertheless, on the basis of the potential for killing or injury of bats in the absence of mitigation, construction effects on roosting bats are considered to be **minor to moderate, adverse** and **medium-term**, and potentially **significant (unlikely)**.

Bats – foraging and commuting

11.73 Foraging and commuting bats could be affected during the construction phase by temporary damage to habitats and light pollution. Any temporary damage to habitats is likely to be localised and small in extent in comparison to the overall foraging resource of bats, such that effects on foraging bats would be very minor. Light pollution on retained habitats such as hedgerows, scrub and woodland could deter bats from foraging in these areas, albeit no particularly light sensitive species were recorded during the survey work undertaken.

11.74 Accordingly, prior to mitigation, construction effects on foraging and commuting bats are considered to largely relate to increases in lighting levels, would be **minor, adverse** and **short-term** and **non-significant (probable)**.

Badger

11.75 No recorded Badger setts will be lost to the Proposed Development. However, retained Badger setts and foraging Badgers could be subject to temporary construction effects through temporary land-take, noise disturbance, construction lighting (which could deter foraging) and construction site hazards, such as the creation of trenches which could trap Badgers.



11.76 These effects are likely to be highly localised and temporary in nature. Furthermore, Badgers are a relatively versatile species which are able to utilise a wide range of habitats, such that any disturbance effects are unlikely to significantly effect the local population.

11.77 Accordingly, prior to mitigation, construction effects on Badger are considered to be **minor, adverse** and **short-term** and **non-significant (probable)**.

Other mammals

11.78 Construction works could result in adverse effects on other mammals such as the UK Priority Species Hedgehog through temporary land-take which could cause mortality or loss of foraging areas, construction lighting which could disrupt normal behaviour, and construction hazards such as creation of trenches which could trap mammals, and injury or mortality to mammals via movement of construction machinery.

11.79 These effects are likely to be highly localised, such that significant effects on local populations are unlikely. Accordingly, prior to mitigation, construction effects on other mammals are considered to be **minor, adverse** and **short-term** and **non-significant (probable)**.

Birds

11.80 Potential effects on bird species during the construction phase relate to the loss of active nests, resulting in a direct effect on local populations and also constituting an offence under the Wildlife and Countryside Act 1981 (as amended), which affords protection to wild birds and their eggs. In particular, areas of arable land may be used by nesting Skylark, whilst the removal of small areas of woody vegetation such as hedgerows, scrub and woodland could result in the loss of nests, if undertaken during the nesting season. The permanent loss of nesting habitat is considered separately under operational phase effects.

11.81 Construction activities could also result in noise, visual and lighting disturbance to nesting and foraging birds in close proximity to construction areas, albeit these effects are anticipated to be highly localised.

11.82 Accordingly, prior to mitigation, construction effects on birds are considered to be **minor, adverse** and **short-term** and **non-significant (probable)**.



Invertebrates

11.83 The generation of dust from construction activities and its subsequent deposition on vegetation could potentially affect invertebrates and egg-laying sites within retained habitats. Construction lighting could disrupt the normal behaviour of nocturnal invertebrates such as moths, whilst construction operations would likely result in direct mortality to invertebrates and temporary loss of habitats. These effects would generally be localised and highly temporary in nature.

11.84 Accordingly, prior to mitigation, construction effects on invertebrates are considered to be **minor, adverse** and **short-term** and **non-significant (probable)**.

Operational Phase Effects

11.85 The potential effects considered within this section are those relating to the 'operational' phase of the Proposed Development. This includes the loss of habitats through permanent land take for development, in addition to potential effects resulting from the operation of the Proposed Development such as recreational pressure and noise and light disturbance.

Effects on Statutory Ecological Designations

11.86 The Site lies within the recognised zone of influence of two statutory designations, namely Medway Estuary & Marshes SPA, Ramsar and SSSI, and The Swale SPA, Ramsar and SSSI. These two SPAs form part of a wider network of contiguous SPAs, collectively named the 'North Kent Marshes' SPAs (which also includes The Thames Estuary & Marshes SPA which is located further afield to the north-west).

11.87 An assessment of potential effects on the North Kent Marshes SPAs arising from the Proposed Development is set out below. This information is intended to inform a Habitats Regulations Assessment.

Habitat / species fragmentation and loss

11.88 As set out in the Baseline Ecological Appraisal, the Site is considered unlikely to support species associated with the North Kent Marshes SPAs with any regularity. Background records included the designated species Avocet and Mediterranean Gull in the vicinity of the Site, but not within the Site itself, and may relate to birds in flight. A high



availability of apparently suitable grassland and arable fields are present in the near vicinity of the SPA, which are likely to be used by species such as Brent Goose in preference over the Site, which is separated from the SPA by the town of Sittingbourne. As such, the loss of habitats within the Site is considered to result in a negligible effect on the SPAs.

Disturbance

11.89 Research commissioned by the North Kent Environmental Planning Group (NKEPG) (Ref. 11.5) has identified recreational disturbance as a potential cause of declines of SPA qualifying species at the North Kent Marshes SPAs. The research report subsequently advises that mitigation measures need to be considered for development that falls within 6km of the North Kent Marshes SPAs.

11.90 Research commissioned by NKEPG also devises a formula to calculate the predicted number of visitors to North Kent Marshes SPAs. According to this formula, based on a distance of 3.8km from the SPA and a total of 700 new residential units, the Proposed Development would theoretically result in an increase of 5 to 6 visitors per winter day to each access point. However, this figure is unlikely to represent the actual increase in visitors resulting from the Proposed Development, given that a significant number of people moving into the Site will likely be moving from within the local area, whilst the formula also assumes all areas of the North Kent Marshes SPAs are equally accessible and attractive to visitors.

11.91 As the Site is located some 3.8 km from the SPAs, it is considered highly unlikely that residents would walk from the Site to visit the SPA, particularly as this would involve a convoluted route through Sittingbourne and/or crossing two major roads. Instead, consideration is given to the accessibility of the SPA via car.

11.92 The closest access point to the SPA is at Lower Halstow to the north-west, which would involve a journey of approximately 3.5 km (2.2 miles) by car, amounting to a 10 minute journey, from the nearest Site access. Alternatively, the SPA can be accessed from the Sheppey Crossing, which is a 3.8 km (2.4 mile) journey, but only taking 6 minutes. Both of these access points have public footpaths leading along the coastline within the SPA, whilst both are also in the vicinity of existing built-up areas. As such, they are likely to be subject to regular recreational use at present, which limits the threshold for a significant increase in disturbance.

11.93 A number of alternative areas of open space are located in the vicinity of the Site. Firstly, an extensive network of public footpaths is present in and around the Site, which



provide numerous opportunities for walks through the local countryside. In addition, the Borden Nature Reserve adjacent to the south of the Site is open for public access, and features a network of pathways through the reserve, providing good off-lead dog walking opportunities in a naturalistic environment. Furthermore, an area of abandoned land adjacent to the north-east of the Site, which comprises scrub and rank grassland, is used for informal recreational such as dog walking by local residents, such that new residents within the Proposed Development can be expected to utilise these areas as a convenient recreational space.

11.94 Further afield, Milton Creek Country Park is located some 2.5km north-east of the Site. This Country Park provides an extensive network of footpaths through a variety of habitats including meadows, scrub, lakes and the tidal creek itself, and has recently been enhanced in the form of new footpath surfacing, a new car park and play areas. As such, it is well set up to accommodate visitors. A programme of regular events and volunteer days is maintained by the Milton Creek Trust. It also provides a coastal experience, providing views over Milton Creek. Therefore, it is considered that residents arising from the Proposed Development are more likely to be attracted to the Country Park than the SPA, the former being closer and having improved visitor facilities. A number of other recreational opportunities are located in the vicinity of Sittingbourne.

11.95 The Proposed Development incorporates a high level of open space (to be quantified when finalised Parameters Plan available), which has been designed to encourage recreational use so as to reduce recreational pressure on the SPA. Further detail on the design of open space can be provided at the detailed stage. The open space is well spread across the Site such that all residents can readily access it on foot, whilst it also connects to existing footpath links, which increases the opportunity for circular walks of varying lengths and provides opportunities for residents arising from outside of the Site.

Other Effects and Conclusion

11.96 The distance between the Site and SPA is likely to preclude any adverse effects associated with hydrology or air quality. In regard to the latter, few roads are present in the vicinity of the SPA which lead from the Site, the main exception being the A249 to Sheppey which is unlikely to attract a significant increase in traffic, whilst the SPA is not highly sensitive to air quality effects.

11.97 In conclusion, the embedded mitigation in the form of on-site open space is considered to avoid any likely significant effect on the North Kent Marshes SPA (or other statutory



designations) resulting from the Proposed Development in isolation, such that effects on statutory designations are considered to be **negligible** and **non-significant (probable)**.

11.98 In terms of Habitats Regulations Assessment, it is not considered that the Proposed Development, in isolation, would result in a likely significant effect on European designations, and therefore no Appropriate Assessment is required in this regard. Cumulative effects are considered separately in the relevant section below.

Effects on Non-Statutory Ecological Designations

11.99 A single non-statutory ecological designation is located in the close vicinity of the Site, comprising Borden Nature Reserve, which lies adjacent to the south of the Site. The Reserve is currently relatively well used by residents for recreational activities. The habitats present within the Reserve are dominated by grassland and scrub, which are not considered to be particularly sensitive to disturbance effects. Furthermore, the presence of scrub across much of the Reserve limits the potential for creation of additional pathways, whilst an existing pathway network is present. In addition, any increase in recreational use of the Reserve would be limited by the creation of on-site open space, the latter of which is likely to be more readily accessible to the majority of residents within the Proposed Development. As such, although the Proposed Development would likely result in an increased use of the Reserve, this is considered unlikely to result in a significant adverse effect on its ecological value.

11.100 Two other non-statutory ecological designations were identified within 2km of the Site, namely Highsted Quarries LWS and Milton Creek LWS. Highsted Quarries does not appear to be publicly accessible, and as such is highly unlikely to be affected by the Proposed Development.

11.101 Milton Creek LWS forms part of Milton Creek Country Park, as described above. The LWS is unlikely to be accessed on foot by residents arising from the Site, given the distance and intervening land uses, which comprise dense development within Sittingbourne. The LWS can be reached by car in approximately 6 minutes from the nearest Site access point. The LWS is well set up for visitor access and management, including a footpath network, and is managed by the Milton Creek Trust, which provides regular events and volunteer days. The location of the LWS in close proximity to Sittingbourne and its design to encourage visitor use is likely to result in high existing levels of recreational use, such that any fauna present is likely to be relatively well habituated to disturbance, and the habitats present are unlikely to be sensitive to disturbance or subject to existing visitor control measures.



11.102 As discussed above, the Proposed Development includes a high level of open space, which is likely to absorb the majority of regular recreational use arising from the Site, such as daily dog walking. This will serve to limit any increase in recreational pressure at the LWS. Nevertheless, given the proximity of the LWS to the Site by car and its expected appeal to visitors, residents within the Site are likely to visit the LWS on occasion, although less so than most residents within Sittingbourne who are located closer to the LWS (further info regarding LWS interest features pending information from KMBRC).

11.103 Overall, based on the existing levels of use of the LWS, current management, and the level of open space within the Proposed Development, it is considered that effects on Milton Creek LWS (and other non-statutory designations) will be **negligible** and **non-significant (probable)**.

Effects on Habitats and Ecological Features

11.104 An assessment of operational effects on habitats considered to form important ecological features is set out below. This largely relates to permanent habitat loss, together with anthropogenic effects such as damage to vegetation from recreational disturbance and pollution. Potential effects such as noise and lighting and disturbance from areas of built development are considered separately below in relation to faunal species.

11.105 [Habitat losses to be quantified pending final Parameters Plan] The area of scrub in the south-east of the Site largely falls within open space within the Proposed Development. However, parts of the scrub will require removal to create a new access road onto Borden Lane. The route of the access road largely avoids the areas of denser scrub, with the majority of scrub requiring removal comprising younger or scattered specimens.

11.106 The majority of hedgerows will be retained under the Proposed Development. However, the creation of access roads will require the removal of parts of hedgerows H2, H4, H10 and H13.

11.107 The majority of woodland recorded within the Site falls within open space under the Proposed Development, such that it will be retained. However, parts of woodlands W1 and W2 will require removal to construct a new access road.

11.108 Anthropogenic effects on retained woodlands are likely to be minimal, on the basis of their dense impenetrable nature or, in the case of W5, the existing public use of the wood



including much dumped waste. Some hydrological effects on retained habitats could occur, in the form of increased run-off from hard surfaces or contaminated surface run-off.

11.109 Overall therefore, largely due to the loss of small areas of habitats of ecological value, effects on habitats from the operational development prior to mitigation are considered to be **minor, adverse** and **long-term**, and **non-significant** at the local level (**probable**).

Effects on Fauna

Bats - roosting

11.110 A single tree with bat roosting potential will be lost to the Proposed Development, to create an access road onto Borden Lane at the east of the Site. However, tree roosting bats tend to occupy a large number of roosts in a local area, such that even if it were a bat roost, a number of alternative roosts are likely to remain available. A further tree with bat roosting potential will be retained, which could be adversely affected by light disturbance during operation of the development.

11.111 Overall therefore, largely as a result of the loss of a tree with high bat roost potential, effects on roosting bats from the operational development prior to mitigation are considered to be **minor-moderate, adverse** and **long-term**, and **non-significant** at the local level (**probable**).

Bats – foraging and commuting

11.112 The habitats within the Site of greatest value to bats, namely hedgerows, woodland and scrub, are largely retained under the Proposed Development, with the exception of the removal of sections to create access roads. This could create severance effects and deter bat commuting activity across the affected sections of habitat.

11.113 Foraging and commuting areas could also be affected by lighting during the operational phase. Effects of lighting vary between species, with some bat species such as Pipistrelles able to cope with relatively high light levels (of up to 14 lux) (Ref. 11.6) and known to utilise lights as a foraging focus for insects attracted to lights (Ref. 11.7). However, many bat species (particularly late emerging species such as *Myotis* bats) will avoid lit areas, and attraction of insects to lit areas can result in adjacent habitats supporting reduced numbers of insects, further impacting on the ability of bats being able to feed. Activity recorded during the survey work was limited to Pipistrelle species, such that bats are likely to continue foraging



and commuting across the Site, although substantial lightspill, particularly at road crossings, could adversely affect bat activity.

11.114 Overall therefore, effects on foraging and commuting bats from the operational development prior to mitigation are considered to be **minor to moderate, adverse and long-term, and non-significant (probable)**.

Badger

11.115 No recorded Badger setts will be lost to the Proposed Development. However, retained setts could be affected by recreational disturbance, particularly off-lead dog walking and noise. In addition, foraging Badgers could be disturbed by recreational activities and by an increase in lighting. However, this species is relatively tolerant of such effects and is able to occupy suburban areas, whilst also being relatively versatile in terms of foraging habitat requirements.

11.116 Overall therefore, effects on Badgers from the operational development prior to mitigation are considered to be **minor, adverse and long-term, and non-significant (probable)**.

Other mammals

11.117 Other mammals, particularly Hedgehog, are likely to be primarily associated with the scrub, hedgerow and woodland habitats, which are largely retained under the Proposed Development, although some habitat loss will occur. Recreational disturbance such as off-lead dog walking could result in adverse effects on these species, whilst an increase in lighting could affect foraging behaviour of nocturnal mammals such as Hedgehog. However, any such effects are likely to be relatively localised. The creation of impermeable boundaries such as garden fences and walls could disrupt connectivity for small mammals, particularly Hedgehog.

11.118 Overall, effects on other mammals from the operational development prior to mitigation are considered to be **minor, adverse and long-term, and non-significant (probable)**.

Birds

11.119 Retention of the majority of hedgerow, scrub and woodland habitats under the Proposed Development will maintain suitable habitat for a range of species, whilst the creation



of new habitats within gardens and areas of green space could increase nesting and foraging opportunities for bird species.

11.120 The Proposed Development will however result in the loss of arable land, which was recorded to support possible breeding Skylark numbering up to a likely maximum of seven territories (extrapolating survey data). The arable habitat within the Site is suboptimal for Skylark, comprising winter-sown crops at the time of surveys, which are generally too tall and dense to allow multiple broods. This farming practice is widely considered to be a principal cause of Skylark population declines nationally.

11.121 Reference to the Kent Ornithological Society's New Breeding Atlas (2008-2011) finds that Skylark was recorded as 'possible' breeding within the tetrad that contains the majority of the Site (except for the western-most arable field). The majority of adjacent tetrads state that Skylark is 'confirmed' breeding, amounting to 5 of the 8 adjacent tetrads, whilst a further one adjacent tetrad had 'possible' breeding. It is therefore apparent that the species is widespread locally, with more successful breeding in the surrounding area than within the tetrad which contains the site itself. As such, the possible loss of seven territories (albeit this is likely to be an over-estimate) in sub-optimal habitat is likely to result in a minor impact.

11.122 Birds may also be affected by cat predation, disturbance associated with recreational use and residential areas, and increased risk of road traffic accidents (albeit, as set out above, this is less likely given the low traffic speeds which will be in place). Some bird species may also be affected by lightspill from roads and areas of built development.

11.123 Overall, effects on the bird assemblage supported by the Site are considered to be **minor to moderate, adverse and long-term**, and would be **non-significant (probable)**.

Invertebrates

11.124 The areas proposed for built development are largely dominated by arable land, providing few opportunities for invertebrate species. Key areas likely to be of value to invertebrates including tall ruderal vegetation, scrub, hedgerows and woodland are largely retained, whilst invertebrates are also likely to benefit from opportunities provided by newly created open spaces and gardens as they establish in the long-term.

11.125 Nocturnal invertebrates could be adversely affected by lighting, which may disrupt their normal behavioural patterns. Anthropogenic effects on retained habitat could also result in minor adverse effects, for example from trampling and pet predation.



11.126 Overall, effects on the invertebrate assemblage supported by the Site are considered to be **minor, adverse** and **long-term**, and would be **non-significant (probable)**.

ASSESSMENT OF CUMULATIVE EFFECTS

11.127 [Awaiting confirmation on schemes from Entran].

11.128 Assessment to include cumulative effects on North Kent Marshes SPAs. Contribution to SPA SAMMS to be included.

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ENHANCEMENT, MITIGATION AND RESIDUAL EFFECTS

Mitigation During Construction Phase

11.129 Potentially significant effects on roosting bats have been identified during the construction phase. In addition, a number of non-significant effects have been identified. Measures to mitigate for these effects are set out below, together with measures to ensure legislative requirements are met. These relate to measures to be adopted as part of construction activities; measures relating to long-term habitat losses to be incorporated as part of the detailed design are set out under mitigation relating to the operational phase.

General Construction Safeguards

11.130 A number of effects on retained habitats within the Site and its immediate surrounds (such as Borden Nature Reserve) were identified during the construction phase including dust deposition, damage to vegetation, compaction, lighting and noise pollution. In order to minimise such effects, standard mitigation measures will be put in place during the construction phase. These measures could be included within a Construction Environmental Management Plan (CEMP) at the detailed stage, and will include:

- Erection of tree protection fencing around retained woodlands, hedgerows and trees in accordance with BS5837:2012;
- Damping down of dust sources and covering of loose materials to reduce dust deposition within adjacent habitats;
- Use of lighting in the vicinity of retained habitats and Borden Nature Reserve to be kept to a minimum, with use of directional lighting or screening as required to reduce lightspill;
- Storage of chemicals and hazardous materials in line with best practice guidelines, ensuring that they are secure, well away from the Site boundaries and cannot be accessed or knocked over by roaming animals;
- Fires should only be lit in secure compounds and not allowed to remain lit during the night;
- Pollution control measures, such as petrol/water interceptors and temporary silt traps, should be used where appropriate to minimise the risk of polluted surface water runoff entering offsite habitats;
- Routing of construction traffic to avoid sensitive areas wherever possible, particularly the section of Cryalls Lane adjacent to the Nature Reserve.



Non-Statutory Designations

11.131 The above pollution control measures are considered to reduce construction effects on non-statutory designations to a negligible level.

Habitats and Ecological Features

11.132 The above construction safeguards are considered to reduce construction effects on retained habitats to a negligible level.

Effects on Fauna

11.133 A number of general safeguarding measures will be implemented in relation to faunal species, which will be incorporated within a CEMP:

- To minimise adverse effects as a result of lighting during the construction phase, temporary lighting will be minimised, wherever practical. Where required for health and safety, security or other reasons, it will be positioned so as to minimise light spill on to woodlands, hedgerows and other boundary features;
- Any trenches or deep pits within the Site that are to be left open overnight will be provided with a means of escape should a Badger or other mammal enter. This could simply be in the form of a roughened plank of wood placed in the trench as a ramp to the surface. This is particularly important if the trench fills with water;
- Any trenches/pits will be inspected each morning to ensure no animals have become trapped overnight;
- The storage of topsoil or other 'soft' building materials in the Site will be given careful consideration. Badgers will readily adopt such mounds as setts. So as to avoid the adoption of any mounds, these will be kept to a minimum and will be subject to inspections by site contractors with consideration given to temporarily fencing any such mounds to exclude Badgers;
- The storage of any chemicals at the Site will be contained in such a way that they cannot be accessed or knocked over by any roaming animals;
- Fires will only be lit in secure compounds and not allowed to remain lit during the night;
- Food and litter will not to be left within the working area overnight;
- Disturbance from noise will be minimised by the adoption of good working practice.



Bats - roosting

11.134 The above construction safeguards will minimise potential disturbance effects on roosting bats. To minimise the risk of mortality or injury to bats during felling of the tree with bat potential, a pre-felling survey will be undertaken, in the form of an endoscope inspection and/or a dawn re-entry survey under suitable weather conditions. Should no evidence of roosting bats be recorded, as a precaution the tree will be soft-felled under ecological supervision. This will involve felling the tree without cutting through the potential bat roost cavity if at all possible. The potential roost cavity will be removed within a single section, and placed in an area of retained habitat overnight, so that any bats within the cavity can escape (in the unlikely event that any are present). If evidence of roosting bats is recorded at any time during the process, the requirement for a Natural England licence will be considered.

11.135 Following the implementation of the measures, residual effects on roosting bats are considered to be negligible.

Bats – foraging and commuting

11.136 Following the implementation of the above construction safeguards, residual effects on foraging and commuting bats are considered to be negligible.

Badger

11.137 Given Badgers are a highly mobile species which readily move and re-use setts, such that there is potential for the status of setts to change or new setts be dug, an update Badger survey will be undertaken prior to the commencement of construction works within any area of the Site. Should any Badger setts displaying signs of current use be identified which will be affected by construction works, appropriate mitigation will be put in place in accordance with legislative requirements, under a Natural England licence if necessary.

11.138 The above construction safeguards will minimise adverse effects to retained setts. Following this, residual effects on Badgers are considered to be negligible.

Other mammals

11.139 Following the implementation of the above construction safeguards, residual effects on other mammals are considered to be negligible.



Reptiles

11.140 Although limited opportunities are available for reptiles within the Site, to minimise the risk of an offence, a precautionary approach will be taken to the clearance of suitable habitat, namely tall ruderal vegetation and long-sward grassland. This will involve a pre-works contractor briefing, cutting of vegetation using hand tools under weather conditions suitable for reptiles to be active, vegetation cutting in a two-stage process (i.e. to around 15 cm, then to ground level) to encourage reptiles to vacate the area, and cutting vegetation towards retained habitats to allow a suitable means of escape.

Birds

11.141 To avoid an offence under the Wildlife & Countryside Act, the potential loss of active nests during construction will be avoided by either undertaking clearance of potential bird nesting habitat (including arable land where considered to remain suitable by an ecologist) outside of the bird nesting season (March to August inclusive) or, if necessary, preceding any clearance with an inspection by a suitably qualified ecologist. Any nests identified will be cordoned off and protected until they cease to be active. Disturbance during construction will be minimised by employing the above construction safeguards.

11.142 Following this, residual effects on birds are considered to be negligible.

Invertebrates

11.143 Following the implementation of the above construction safeguards, residual effects on invertebrates are considered to be negligible.

Mitigation During Operational Phase

11.144 No significant effects on ecological receptors have been identified during the operational phase, however, a number of non-significant effects have been identified. Measures required to mitigate for these effects are detailed below, together with other measures to ensure legislative requirements are met. These include measures to be implemented as part of the detailed design, together with ongoing management or monitoring activities to be implemented during the operational phase.

Statutory Designations



11.145 Although no adverse effects on statutory designations have been identified based on the provision of on-site open space, the Proposed Development will provide a contribution to the Strategic Access Management and Monitoring Strategy for the North Kent Marshes SPAs to avoid potential cumulative effects, in accordance with Policy CP7 of the draft Local Plan.

Habitats and Ecological Features

11.146 A number of measures will be implemented in regard to habitats to minimise adverse effects during the operational phase. This will include:

- Where practical, the detailed layout of housing areas adjacent to retained habitats will be designed so that houses face out onto retained and newly created habitats of ecological value, providing visual surveillance and avoiding gardens backing onto habitats, preventing issues such as informal garden extensions and flytipping. This will be further reinforced by provision of a hard edge to the built development where practical, in the form of roads or footpaths;
- Long-term management of wildlife habitat areas will also allow for remedial action or alleviation of any recreational issues;
- A SUDS scheme will be implemented to manage run-off from built development areas. The use of SUDS features will help to reduce the potential effect of point source pollution incidents from garden chemicals and/or domestic chemicals. Pollution control measures such as filter drains or petrol / water interceptors will also be used to minimise the risk of polluted surface water runoff entering adjacent habitats. Attenuation areas are also proposed to control surface water runoff rates to the required greenfield rate and to attenuate pollutants prior to discharge into the wider surface water network.

11.147 It is proposed that such measures are secured as part of the detailed design, and could be detailed in an Ecological Mitigation and Management Plan to be secured by planning condition.

Fauna

11.148 To minimise effects on foraging and commuting bats, birds, Badgers and other species potentially sensitive to lightspill, a lighting design for the Proposed Development will be prepared at the detailed design stage incorporating measures to minimise adverse effects of



lighting on bats and other fauna. Measures which will be incorporated into the lighting design include:

- Careful siting of lighting columns, or avoidance of lighting where possible, in the proximity of retained and newly created habitats of ecological value, particularly hedgerows, scrub and woodland;
- Column heights to be minimised in proximity to habitats of ecological value;
- Use of LED lighting with a low UV component where possible;
- Consideration given to part-night lighting where safe to do so, e.g. switching off between midnight and 5.30am;
- Use of buildings and landscape planting to act as screening of light-spill.

11.149 To maintain connectivity across the Site for ground-based fauna such as Hedgehogs, other small mammals, amphibians and reptiles, boundary treatment solutions such as fence cut-outs, missing bricks at wall bases, or landscaped boundaries (e.g. hedgerows) will be employed within areas of built development.

Compensation and Enhancement During Operational Phase [TBC subject to landscape scheme]

11.150 The National Planning Policy Framework (NPPF) encourages new developments to maximise the opportunities for biodiversity through incorporation of enhancement measures. The Proposed Development presents the opportunity to deliver ecological enhancements at the Site for the benefit of local biodiversity, thereby making a positive contribution towards the broad objectives of national conservation priorities and the Swale and Kent BAPs. Such measures will also help to offset non-significant habitat losses and other effects of the Proposed Development, helping to achieve an overall net gain in biodiversity.

11.151 It is proposed that such measures are detailed in an Ecological Enhancement and Management Plan to be produced at the detailed stage and secured by planning condition.

Hedgerows

11.152 It is proposed that existing hedgerows are subject to supplementary tree and shrub planting to fill any gaps and strengthen the ecological connectivity provided by these features, whilst wildflower grassland is seeded along the edges to provide a floristic resource in association with the wooded habitat. The margins should be subject to low-intensity mowing



(every 1-2 years) to allow establishment of long-sward grassland and a varied habitat structure along the hedgerow. This will form a valuable ecotone (a transitional area between two different plant communities, often supporting a higher diversity of wildlife). Hedgerows should be subject to low-intensity cutting every 2-3 years on rotation to allow establishment of a wide, bushy hedgerow structure. Where practical, hedgerow cutting will be carried out at the end of winter to retain feeding opportunities for wildlife.

11.153 In addition, new hedgerows will be planted within the Site, to provide additional habitat and enhance connectivity across the Site. A species-rich mix of native species will be used where appropriate, and subject to aftercare to ensure successful establishment.

11.154 Hedgerows are a UK Priority Habitat, whilst species-rich hedgerows are a Kent BAP habitat. As such, this enhancement measure will contribute to national and local level nature conservation targets.

Orchard

11.155 The south-eastern part of the Site, east of Cryalls Lane, contains a former Cherry orchard. The Proposed Development will restore parts of the Cherry orchard, through the removal of the majority of non-fruit trees, whilst retaining some thicket areas for habitat diversity. Supplementary planting of heritage fruit trees will be carried out to provide an appropriate tree density for a traditional orchard. The ground flora will be largely cut back and seeded with wildflower grassland, subject to low intensity management, with the aim of creating a tall flower-rich sward below the fruit trees. Informal pathways will be provided through the orchard to encourage community use.

11.156 In addition, a new orchard will be created elsewhere within the Site, by planting a variety of fruit trees at a low density over wildflower grassland.

11.157 Traditional orchards are a UK Priority Habitat, Kent BAP habitat and Swale BAP habitat, therefore this measure will contribute to national and local conservation targets.

Wildflower Grassland

11.158 Wildflower grassland will be created by sowing an appropriate native wildflower mix. The grassland will be subject to low intensity management, e.g. cutting one or twice per year, with some areas maintained at a long sward. In order to maintain the grassland as a habitat of ecological value, the use of fertilisers and herbicides should be avoided. This will create a



habitat of relatively high wildlife value, and will provide a foraging resource for a number of birds, invertebrates and small mammal species.

11.159 The creation of wildflower grassland will contribute to the UK Priority Habitat and Kent BAP habitat 'lowland meadows', and the Swale BAP habitat 'wildflower grassland'.

Wetland Habitats

11.160 Features created as part of the SUDS scheme will be primarily designed and managed for drainage, although benefits to biodiversity will be incorporated where practical, with measures such as shallow, sinuous margins, areas of permanent water and planting with native vegetation. This will provide additional habitat for species such as amphibians, wetland birds and aquatic invertebrates.

Faunal Enhancements

11.161 The above habitat restoration and creation measures will provide enhancements to a range of fauna. In particular, foraging and commuting bats are likely to benefit from the increased availability of high quality foraging habitats such as hedgerows, orchard and woodland, whilst the cessation of an intensive agricultural regime is predicted to improve the availability of insect prey. Birds associated with hedgerows, woodland and urban areas are likely to benefit in the long-term, particularly as new habitats become established. The creation of habitats, particularly orchards and hedgerows, will benefit Badgers by providing enhanced foraging habitat. Habitat creation and reduction in the use of agricultural pesticides will provide enhanced opportunities for invertebrates. In particular, orchards are recognised to be valuable invertebrates habitats, whilst wildflower grassland will provide greatly improved pollen and nectar sources for foraging insects.

11.162 To provide specific nesting and roosting opportunities for a range of faunal species, and compensate for the loss of bird nesting and bat roosting habitat under the Proposed Development, it is proposed that faunal habitat features are provided in association with new buildings and open space areas.

11.163 In particular, bat boxes will be provided on new buildings and retained trees within the Site. Box specifications will be selected to be long lasting and provide benefits to UK Priority Species recorded in the local area, such as Brown Long-eared Bat, Soprano Pipistrelle and Noctule.



11.164 In addition, nesting opportunities for birds will be provided in the form of nest boxes installed on new buildings and retained trees. Box specifications will be selected to benefit the UK Priority Species Starling and House Sparrow, and the Amber List species Swift.

11.165 Additional enhancements for invertebrates will be provided by creating log piles in habitat areas, using arisings from Site clearance works and management. This will provide benefits to dead-wood specialist species, many of which are declining due to lack of habitat.

Residual Effects

11.166 Following the implementation of the above mitigation, compensation and enhancement measures, no adverse effects on ecological receptors are anticipated. Furthermore, minor to moderate beneficial effects are predicted with regard to habitats, bats, and invertebrates, largely due to the restoration and creation of habitats.

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SUMMARY

11.167 Ecological surveys of the Site have been undertaken, including a desk study, an extended Phase 1 habitat survey and a range of Phase 2 faunal surveys.

11.168 A number of ecological designations were identified by the desk study, notably Medway Estuary & Marshes SPA, Ramsar and SSSI, located approximately 3.8km from the Site. In addition, a number of non-statutory designations are present in the vicinity, including Borden Nature Reserve adjacent to the south of the Site, and Milton Creek LWS which is located approximately 2km from the Site.

11.169 The Site itself is dominated by arable land which is not considered to form a habitat of ecological importance. Habitats within and surrounding the Site considered to be of importance at the local level comprise scrub, hedgerows and woodland. Surveys of protected species have identified that the Site supports foraging and commuting bats, bat roosting opportunities, foraging Badger, and possibly breeding Skylark. The habitats also offer some potential for Priority Species including Hedgehog.

11.170 A range of potential effects have been identified on ecological receptors within and surrounding the Site, although none of these are likely to be significant. Mitigation measures are nonetheless proposed, including construction safeguards, detailed design of housing layout, management of recreational activity to avoid detrimental effects on wildlife habitats, implementation of a SUDS scheme and lighting design. Furthermore, compensation and enhancement measures are proposed, including restoration and creation of habitats of conservation importance, including hedgerows, orchards and wildflower grassland, whilst a range of specific faunal enhancements are proposed.

11.171 The Proposed Development and mitigation scheme have been designed to achieve compliance with relevant legislation and planning policy. Measures are proposed to avoid killing or injury of protected species such as bats, reptiles and breeding birds (protected under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations) and opportunities for enhancements to biodiversity are also proposed, in accordance with NPPF, the NERC Act 2006 and local policies. Proposed enhancements will also deliver benefits in terms of green infrastructure, providing a network of green links and corridors through and around the Site.

11.172 Following mitigation, compensation and enhancement measures, it is considered that the Proposed Development would result in an overall benefit to biodiversity, with particular benefits in respect of habitats, bats and invertebrates.



Table 11.7: Ecology and Nature Conservation Summary Table

Potential Effect	Nature of Effect (Permanent or Temporary)	Significance	Mitigation/ Enhancement Measures	Residual Effects
Construction Phase				
<i>Statutory ecological designations</i>	Temporary	Negligible	None	Negligible
<i>Non-statutory ecological designations</i> Degradation of habitats from disturbance and pollution (dust, surface water run-off)	Temporary	Minor adverse	Construction safeguards including pollution controls	Negligible
<i>Habitats and Ecological Features</i> Temporary habitat loss/damage, pollution	Temporary	Minor adverse	Construction safeguards including tree protection, pollution controls	Negligible
<i>Bats – roosting</i> Risk of killing, injury and/or disturbance	Temporary	Minor to moderate adverse, potentially significant	'Soft felling' of tree with bat potential, lighting controls	Negligible
<i>Bats – foraging and commuting</i> Temporary habitat loss and damage, light pollution	Temporary	Minor adverse	Construction safeguards including tree protection, lighting controls	Negligible
<i>Badger</i> Disturbance from noise and light, construction site hazards	Temporary	Minor adverse	Update Badger survey, construction safeguards	Negligible
<i>Other mammals</i> Habitat damage, light disturbance, construction site hazards	Temporary	Minor adverse	Construction safeguards including tree protection, lighting controls	Negligible
<i>Birds</i> Nest destruction/damage, disturbance	Temporary	Minor adverse	Sensitive timing of habitat clearance or pre-clearance survey	Negligible
<i>Invertebrates</i> Pollution, light disturbance	Temporary	Minor adverse	Construction safeguards including pollution and lighting controls	Negligible
Operational Phase				



Table 11.7: Ecology and Nature Conservation Summary Table

Potential Effect	Nature of Effect (Permanent or Temporary)	Significance	Mitigation/ Enhancement Measures	Residual Effects
<i>Statutory designations</i>	Permanent	Negligible	Contribution to Strategic Access Management and Monitoring Strategy	Negligible
<i>Non-statutory designations</i>	Permanent	Negligible	None	Negligible
<i>Habitats and ecological features</i> Small-scale loss of habitats of ecological value	Permanent	Minor adverse	Habitat restoration and creation including hedgerows, orchards, wildflower grassland and wetland habitats	Moderate beneficial
<i>Bats – roosting</i> Loss of roosting opportunity	Permanent	Minor to moderate adverse	Provision of additional roosting habitat	Minor to moderate beneficial
<i>Bats – foraging and commuting</i> Habitat loss/severance, light pollution	Permanent	Minor to moderate adverse	Sensitive lighting scheme, creation of valuable foraging habitats	Minor to moderate beneficial
<i>Badger</i> Recreational disturbance, light pollution	Permanent	Minor adverse	Sensitive lighting scheme, creation of valuable foraging habitat	Negligible
<i>Other mammals</i> Recreational disturbance, light pollution, disruption to connectivity	Permanent	Minor adverse	Sensitive lighting scheme, habitat creation	Negligible
<i>Birds</i> Loss of Skylark habitat, cat predation, disturbance, light pollution	Permanent	Minor to moderate	Provision of nesting habitat for urban / woodland species, sensitive lighting scheme	Negligible
<i>Invertebrates</i> Light pollution, disturbance	Permanent	Minor	Sensitive lighting scheme, creation and restoration of valuable habitats	Moderate beneficial



REFERENCES

Ref 11.1: Joint Nature Conservation Committee (2010); 'Handbook for Phase 1 habitat survey: A technique for environmental audit', JNCC.

Ref 11.2: Chartered Institute for Ecology and Environmental Management (CIEEM) (2013); 'Guidelines for Preliminary Ecological Appraisal', CIEEM.

Ref 11.3: Chartered Institute for Ecology and Environmental Management (CIEEM) (2016); 'Guidelines for Ecological Impact Assessment in the UK and Ireland', CIEEM.

Ref 11.4: Defra (2011); 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services', Defra.

Ref 11.5: Liley D, Lake S & Fearnley H (2012); 'Phase 1 – Bird Disturbance Report', Footprint Ecology.

Ref 11.6: Fure A (2006); 'Bats and Lighting', The London Naturalist: No. 85

Ref 11.7: BCT and Institute of Lighting Engineers (ILE) (2009); 'Bats and Lighting in the UK', BCT

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APPENDIX 11.1

Baseline Ecological Appraisal

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NON-TECHNICAL SUMMARY TEXT

11.173 Ecological surveys of the Site have been undertaken by Aspect Ecology, including a desk study, habitat survey and specific faunal surveys.

11.174 A number of nature conservation designations are present in the vicinity of the Site. In particular, Medway Estuary and Marshes Special Protection Area (SPA), Ramsar and Site of Special Scientific Interest (SSSI) lies approximately 3.8km from the Site, notified for its important numbers of waterbirds, particularly overwintering birds. In addition, Borden Nature Reserve, a Parish reserve, is located adjacent to the Site, whilst two Local Wildlife Sites are located 2km from the Site.

11.175 Much of the Site comprises low value habitats, predominantly arable land, with habitats of ecological value limited to scrub, hedgerows and woodland. In terms of fauna, the Site supports foraging and commuting bats, bat roosting opportunities, foraging Badger, and possible breeding Skylark.

11.176 The Proposed Development has been designed to minimise effects on ecology, including providing a high level of open space, with scope for significant habitat restoration and creation. Mitigation measures are proposed to minimise effects during construction and upon operation, whilst enhancements can be achieved by creating and restoring habitats of ecological value such as orchards, hedgerows and wildflower grassland. Following mitigation, compensation and enhancement measures, it is considered that the Proposed Development would result in an overall benefit to biodiversity.