Alderholt Meadows, Dorset

ES TA 9.2: Information for Habitats Regulations Assessment

Prepared on behalf of

Dudsbury Homes (Southern)

ALDERHOLT MEADOWS

Final Report

12 January 2023

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Alderholt Meadows, Dorset

Information for Habitats Regulations Assessment

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Executive Summary

An assessment has been undertaken of potential significant effects from the Proposed Development at Alderholt Meadows, Dorset on nature conservation designations of International importance located within the zone of influence, including the Dorset Heaths Special Area of Conservation (SAC), Dorset Heathlands Special Protection Area (SPA) and Ramsar, the River Avon SAC, the Avon Valley SPA and Ramsar, and the New Forest SAC, SPA and Ramsar.

The Proposed Development, located on the southern edge of Alderholt, includes the creation of a garden village settlement comprised of 1,700 dwellings, 10,000sqm employment space, a local centre, associated infrastructure and Suitable Alternative Natural Greenspace (SANG).

Information presented in this report is to assist Dorset Council (DC), as competent authority, in undertaking a Habitats Regulations Assessment (HRA) of the proposals in respect of these International Sites, as is required by the Conservation of Habitats and Species Regulations 2017 (as amended). Consideration has been given to the potential for likely significant effects to arise, either alone or in combination with other plans and projects, in relation to loss of offsite supporting habitat (habitat within the Site and beyond the designated site boundary that plays a role in supporting qualifying SPA species); hydrological change; air pollution; increased recreational pressure and other urban effects.

Measures set out as part of an Impact Avoidance and Mitigation Strategy (IAMS) are proposed where likely significant effects are predicted or cannot be confidently precluded. No adverse residual effects on the integrity of any International site are predicted to remain following implementation of these measures.

The IAMS includes the provision of:

- New and enhanced foraging habitat for Nightjar within the SANG and green infrastructure network;
- Lighting Strategy;
- Strategy for Nutrient Neutrality with respect to the River Avon SAC;
- Construction Environmental Management Plan (CEMP);
- Drainage (SuDS) Strategy;
- CIL contribution to the Dorset Heathlands Interim Air Quality Strategy (IAQS);
- Bespoke SANG; and
- Financial contribution to the Dorset Heathlands SPD for Strategic Access Management and Monitoring (SAMM).

This report advises that, due to the reliance on mitigation measures to protect Internationally designated sites, an Appropriate Assessment should be conducted by DC in accordance with Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) and case law established as part of the ‘People Over Wind’ case in the Court of Justice of the European Union (CJEU). However, it is the conclusion of this report that DC can confidently

conclude, as a result of that Appropriate Assessment, that there will be no adverse effect on the integrity of any Internationally designated site resulting from the Proposed Development either alone or in combination with other plans and projects.

Alderholt Meadows, Dorset
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1. INTRODUCTION

Background

1.1 Ecological Planning & Research Ltd (EPR) has been appointed by Dudsbury Homes (Southern) (the 'Applicant') to carry out ecology services pursuant to an Outline Planning Application for the creation of a garden village settlement at Alderholt Meadows, Dorset (hereafter referred to as 'the Site').

1.2 Land in close proximity to the Site forms part of the Dorset Heaths Special Area of Conservation (SAC), and the Dorset Heathlands Special Protection Area (SPA) and Ramsar Site. The Site is also within 5km of the River Avon SAC, Avon Valley SPA and Ramsar, and the New Forest SAC, SPA and Ramsar (**Map 1**). These designated sites of International conservation importance (hereafter referred to as 'International Sites') are afforded protection under the Conservation of Habitats and Species Regulations 2017 (as amended; the 'Habitats Regulations').

1.3 Consequently, it will be necessary for Dorset Council (DC), as Competent Authority under the Habitats Regulations, to carry out a Habitats Regulations Assessment (HRA) of the Proposed Development to determine whether it is likely to have a significant effect on any of the aforementioned International Sites, either alone or in combination with other plans and projects, and if so to carry out an Appropriate Assessment (AA) to determine whether there will be an adverse effect on site integrity.

1.4 EPR was therefore commissioned by the Applicant to advise on HRA matters and to prepare this report, which contains the information that DC will require in order to carry out an HRA of the Proposed Development, and if necessary an AA; these processes are described in more detail below.

Relevant Legislation, Policy, Guidance and Case Law

1.5 To improve document flow, information relating to relevant legislation, policy, guidance and case law is included at **Appendix 1**.

Preceding Plan-level HRA

1.6 The *'Dorset Council Local Plan Habitats Regulations Assessment: Screening Report'* (January, 2021) sets out the potential impact pathways identified for the Dorset Council Local Plan in relation to a number of International Sites. Potential threats, pressures or activities considered include (as cited): water pollution; air pollution; public access, disturbance and other human intrusion; sport, leisure and recreational activities; urbanisation and industrial activities; habitat fragmentation; and coastal squeeze.

Dorset Heathlands Planning Framework 2020-2025 SPD

1.7 The Dorset Heathlands Planning Framework 2020 – 2025 Supplementary Planning Document (SPD) provides a strategy for the avoidance and mitigation of impacts of residential development, including recreational pressure and other urban effects, upon the Dorset Heathlands.

1.8 The strategy consists of two mutually dependent and supporting policy mechanisms:

- Restrictions on certain types of development within 400m of the heathland area; and
- Mitigation associated with some types of development within the 400m to 5km zone around the heathland area.

1.9 Avoidance and mitigation of potential impacts from development within the 400m to 5km zone around the heathland area consists of two dependent approaches:

Part 1: Strategic Access Management and Monitoring (SAMM); and

Part 2: Heathland Infrastructure Projects (HIPs), including SANG.

Conceptual Impact Assessment Model

1.10 In carrying out an assessment of the potential effects of a development proposal on an International Site, the 'source-pathway-receptor' concept provides a useful model for framing and objectively evaluating the mechanisms through which potential effects may occur and has been employed in this assessment. **Table 1.1** below sets out the various parts of the model and how they relate to each other.

Table 1.1: Conceptual Impact Assessment Model

Source	Pathway	Receptor
Elements of the development proposals that are likely to generate or contribute towards certain environmental effects.	Changes in environmental conditions caused by aspects of the development proposals that have the potential to affect an identified impact receptor.	The interest features / conservation objectives of the International Site concerned, and the environmental conditions required to support it.

1.11 During the assessment process, information has been gathered relating to each part of the conceptual assessment model in respect of each potential impact upon nearby International Sites. The consideration of this information will then allow DC as the Competent Authority to determine whether or not a potentially viable impact pathway exists between the development proposals and International Sites within the Zone of Influence (ZoI) of the proposals.

Scope of the Habitats Regulations Assessment Report

1.12 In view of the above considerations, the scope of this Information for HRA (IfHRA) report is as follows:

- To gather information to establish whether or not the Proposed Development is likely to contribute to a significant effect on any International Sites located within the ZoI, either alone or in combination with other plans and projects;
- To gather information to establish, if a significant impact is likely, whether or not it would adversely affect the integrity of any International Sites;
- To recommend impact avoidance and mitigation measures, if required, to address any potential impacts identified; and
- To make recommendations in relation to the requirements of the Conservation of Habitats and Species Regulations 2017 (as amended) in view of the information collected, if possible.

Consultation

1.13 Natural England was consulted regarding the Proposed Development during a Discretionary Advice Service (DAS) meeting on 17 June 2022.

2. CHARACTERISATION OF THE SITE AND THE PROPOSED DEVELOPMENT

Introduction

2.1 Guidance from the European Commission (as listed in **Appendix 1**) indicates that the first stage of providing the information that is necessary for a Competent Authority to undertake the HRA process is for all those aspects of the subject project or plan, which either alone or in combination with other plans and projects have the potential for having a significant effect on an International Site, to be identified and characterised.

2.2 Undertaking such a systematic characterisation in respect of the Proposed Development will enable the various aspects of the project to then be related to the particular sensitivities of the International Sites, so that the potential ways in which the former may affect the latter can be examined.

Site Location and Context

2.3 The Site encompasses an area of 122ha and is located either side of the Ringwood Road on the southern edge of Alderholt, Dorset (approximate centre SU11941172, **Map 1**). The land is in agricultural use across three farms, and is comprised of arable land and agriculturally improved grassland surrounded by a network of hedgerows. There are also some small blocks of woodland and several ponds (**Map 2**).

2.4 Beyond the Site to the west is Cranborne Common Site of Special Scientific Interest (SSSI), a component of both the Dorset Heaths SAC and the Dorset Heathlands SPA and Ramsar. To the south lies Ringwood Forest, a large area of Forestry England land characterised by predominantly coniferous and mixed woodland. To the north is the existing settlement of Alderholt, beyond which lies further woodland at High Wood. Further to the east the River Avon runs through Fordingbridge, beyond which lies the New Forest.

Proposed Development

2.5 The Proposed Development is the creation of a garden village settlement adjoining the southern edge of Alderholt, described as follows:

> *"Outline application for a mixed use development of up to 1700 dwellings including affordable housing and care provision; 10,000sqm of employment space in the form of a business park; village centre with associated retail, commercial, community and health facilities; open space including the provision of Suitable Alternative Natural Greenspace (SANG); biodiversity enhancements; solar array; and new roads, access arrangements and associated infrastructure. (All matters reserved apart from access off Hillbury Road)"*

2.6 The principal land use types proposed are shown on **Map 3**.

Likely Biophysical Changes and Zone of Influence

2.7 The activities associated with the proposed development which are likely to lead to biophysical changes and could accordingly give rise to ecological effects on sensitive designated site

features in the absence of mitigation, are summarised in **Table 2.1** below, which draws from Box 9 of the EcIA Guidelines (CIEEM, 2018).

2.8 The Zone of Influence (ZoI) of a proposed development is defined by the EcIA Guidelines as:

> *"… the area(s) over which ecological features may be affected by the biophysical changes caused by the proposed project and associated activities"*.

2.9 In this case, the ZoI of the Proposed Development will encompass different areas, and thus potentially impact upon different ecological receptors, depending upon the spatial extent of the relevant biophysical change (e.g. light, noise, habitat loss, recreational disturbance). The ZoI(s) relevant to this assessment are also summarised in **Table 2.1**.

Table 2.1: Activities, potential impacts, and associated ZoI

Activity	Potential Impact(s)	Zone of Influence
Construction Phase		
Access and travel to/within the Site	Temporary dust, water-borne pollution, noise and light pollution; soil compaction and damage to habitats; disturbance of vulnerable species	Site and immediate surroundings
Assembly and storage areas for machines and materials; construction compounds	Temporary loss and fragmentation of habitats; temporary noise, dust, visual, lighting disturbance to vulnerable species; potential for environmental accidentals (e.g. chemical and fuel spillages, fires) and water-borne pollution to cause permanent damage to vulnerable habitats or harm to species	Site and immediate surroundings; functionally linked watercourses
Removal of vegetation and soil Groundworks and excavations	Temporary or permanent habitat loss and fragmentation; direct harm to species; dust and water-borne pollution; hydrological changes; loss and compactions of soil; temporary disturbance (noise, vibration, visual, lighting) to vulnerable species	Site and immediate surroundings; functionally linked watercourses
Construction of new structures, buildings and laying down of hard surfacing	Permanent loss of habitat; changes to ground and surface water flows and quality; changes to vulnerable habitats fed by these flows	Site and immediate surroundings; functionally linked watercourses
Habitat creation and management	Creation of new habitat and resources for wildlife; changes in habitat type, composition and condition, with consequent effects on associated species	Site but benefitting faunal assemblages surrounding the Site

Operational Phase		
Drainage	Hydrological changes to existing habitats within and beyond the Site (drying, flooding, levels of pollution)	Site and immediate surroundings; functionally linked watercourses and hydrological catchment
Increases in foul water discharge	Eutrophication of sensitive aquatic systems	Downstream of point of discharge from Waste Water Treatment Works
Urban effects	Increase in pet predation and other urban effects such as noise, light and visual disturbance, fly-tipping, spread of non-native invasive species, increased risk of wildfire.	Site and land within 400m radius
Increase in recreational pressure	Damage, degradation, loss and/or fragmentation of habitats via public access (e.g. through trampling and eutrophication); recreational disturbance of vulnerable species	Site and up to 5km radius or more for recreational damage/disturbance
Access and travel to and within the Proposed Development	Increased pollution resulting in air quality changes	Within 200m of affected roads

3. CHARACTERISATION OF INTERNATIONAL SITES

Introduction

3.1 This section of the IfHRA report describes and characterises International Sites within the Potential ZoI of the Proposed Development, including their qualifying features and conservation objectives, in order to enable an assessment to be made of the likelihood of significant effects arising in the absence of impact avoidance and mitigation measures.

International Sites Considered to be Within the Potential Zone of Influence of the Proposed Development

3.2 **Map 1** shows the locations of International Sites within 5km of the Site, which includes:

- Dorset Heaths SAC (adjacent to the Site);
- Dorset Heathlands SPA/Ramsar (adjacent to the Site);
- River Avon SAC (within 2km of the Site);
- Avon Valley SPA and Ramsar (within 2km of the Site); and
- The New Forest SAC, SPA and Ramsar (3km and beyond).

Site Background, Qualifying Features & Component SSSIs

3.3 **Table 3.1** below provides a summary of the relevant background, qualifying features, component SSSIs and SSSI condition for each of the International Sites located within the potential ZoI of the Proposed Development.

Table 3.1: Summary information for International Sites within the potential ZoI

Site Name	Type	Area (ha)	Qualifying Features*	Closest Component SSSI (and distance from Site)	SSSI Condition
Dorset Heaths SAC	Suite of heathland sites	5,731	Annex I habitats: • 4010 Northern Atlantic wet heaths with *Erica tetralix*;* • 4030 European dry heaths*; • 7150 Depressions on peat substrates of the *Rhynchosporion*;* • 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); • 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae;* • 7230 Alkaline fens; and • 9190 Old acidophilous oak woods with *Quercus robur* on sandy plains. Annex II species: • 1044 Southern damselfly *Coenagrion mercurial*; and* • 1166 Great crested newt *Triturus cristatus.*	Cranborne Common SSSI	• Favourable – 8.64%; • Unfavourable, recovering – 82.84%; • Unfavourable, no change – 8.52%.
Dorset Heathlands SPA	Suite of heathland sites	8,185	Annex I species: • A302 Dartford warbler *Sylvia undata**; • A224 Nightjar *Caprimulgus europaeus**; • A246 Woodlark *Lullula arborea**; • A082 Hen harrier *Circus cyaneus**; and • A098 Merlin *Falco columbarius**.	Cranborne Common SSSI	• Favourable – 8.64%; • Unfavourable, recovering – 82.84%; • Unfavourable, no change – 8.52%.

Site Name	Type	Area (ha)	Qualifying Features*	Closest Component SSSI (and distance from Site)	SSSI Condition
Dorset Heathlands Ramsar	Suite of heathland sites	6,730	• Ramsar criterion 1a – Contains particularly good examples of (i) northern Atlantic wet heaths with cross-leaved heath *Erica tetralix* and (ii) acid mire with *Rhynchosporion;* • Ramsar criterion 1d – Contains largest example in Britain of the southern Atlantic wet heaths with Dorset heath *Erica ciliaris* and cross-leaved heath *Erica tetralix;* • Ramsar criterion 2a - Supports 1 nationally rare and 13 nationally scarce wetland plant species and at least 28 nationally rare wetland invertebrate species; and • Ramsar criterion 2b – Has a high species richness and high ecological diversity of wetland habitat types and transitions, and lies in one of the most biologically rich wetland area of lowland Britain being continuous with three other Ramsar sites: Poole Harbour, Avon Valley and the New Forest.	Cranborne Common SSSI	• Favourable – 8.64%; • Unfavourable, recovering – 82.84%; • Unfavourable, no change – 8.52%.
River Avon SAC	Large lowland river system	498	Annex I habitats: • 260 Water courses of plain to montane levels with the *Ranunculion fluitantis;* and • *Callitricho-Batrachion* vegetation*. Annex II species: • 1016 Desmoulin's whorl snail *Vertigo moulinsiana**; • 1095 Sea lamprey *Petromyzon marinus**; • 1096 Brook lamprey *Lampetra planeri**; • 1106 Atlantic salmon *Salmo salar**; and • 1163 Bullhead *Cottus gobio**.	River Avon System SSSI	• Favourable – 2.82%; • Unfavourable, recovering - 7.46%; • Unfavourable, no change - 85.61%; • Unfavourable, declining - 4.10%.

Site Name	Type	Area (ha)	Qualifying Features*	Closest Component SSSI (and distance from Site)	SSSI Condition
Avon Valley SPA	River valley encompassing the lower reaches of the River Avon and its floodplain	1,351	Annex I species: • A037 Bewick's swan *Cygnus columbianus bewickii**; and • A051 Gadwall *Anas strepera.*	Avon Valley (Bickton to Christchurch) SSSI	• Favourable – 59.34%; • Unfavourable, recovering - 26.81%; • Unfavourable, no change - 6.06%; • Unfavourable, declining - 7.79%.
Avon Valley Ramsar	River valley encompassing the lower reaches of the River Avon and its floodplain	1,385	• Ramsar criterion 1 - The site shows a greater range of habitats than any other chalk river in Britain, including fen, mire, lowland wet grassland and small areas of woodland; • Ramsar criterion 2 - The site supports a diverse assemblage of wetland flora and fauna including several nationally-rare species; and • Ramsar criterion 6 -species/populations occurring at levels of international importance: Gadwall *Anas strepera strepera*.	Avon Valley (Bickton to Christchurch) SSSI	• Favourable – 59.34%; • Unfavourable, recovering - 26.81%; • Unfavourable, no change - 6.06%; • Unfavourable, declining - 7.79%.
New Forest SAC	Largest area of 'unsown' vegetation in lowland England and includes large-scale mosaics of habitats	29,262	Annex I habitats: • 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)*; • 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea**; • 4010 Northern Atlantic wet heaths with *Erica tetralix**; • 4030 European dry heaths*;	The New Forest SSSI	• Favourable – 54.68%; • Unfavourable, recovering - 41.65%; • Unfavourable, no change - 2.11%; • Unfavourable, declining - 1.55%.

Site Name	Type	Area (ha)	Qualifying Features*	Closest Component SSSI (and distance from Site)	SSSI Condition
	formerly common but now fragmented		• 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)*; • 7150 Depressions on peat substrates of the *Rhynchosporion**; • 9120 Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*)*; • 9130 *Asperulo-Fagetum* beech forests*; • 9190 Old acidophilous oak woods with *Quercus robur* on sandy plains*; • 91D0 Bog woodland*; • 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae, Salicion albae*)*; • 7140 Transition mires and quaking bogs; and • 7230 Alkaline fens. Annex II species: • 1044 Southern damselfly *Coenagrion mercuriale*;* • 1083 Stag beetle *Lucanus cervus*; and* • 1166 Great crested newt *Triturus cristatus.*		
New Forest SPA		27,998	Annex I species: • A302 Dartford Warbler *Sylvia undata*;* • A072 Honey Buzzard *Pernis apivorus*;* • A224 Nightjar *Caprimulgus europaeus*;*	The New Forest SSSI	• Favourable – 54.68%; • Unfavourable, recovering - 41.65%; • Unfavourable, no change - 2.11%;

Site Name	Type	Area (ha)	Qualifying Features*	Closest Component SSSI (and distance from Site)	SSSI Condition
			• A246Woodlark *Lullula arborea*;* • A082 Hen Harrier *Circus cyaneus**; • A099 Eurasian Hobby *Falco Subbuteo;* and • A314 Wood warbler *Phylloscopus sibilatrix.*		• Unfavourable, declining - 1.55%.
New Forest Ramsar		28,003	• Ramsar criterion 1 - Valley mires and wet heaths are found throughout the site and are of outstanding scientific interest. The mires and heaths are within catchments whose uncultivated and undeveloped state buffer the mires against adverse ecological change. This is the largest concentration of intact valley mires of their type in Britain; • Ramsar criterion 2 - The site supports a diverse assemblage of wetland plants and animals including several nationally rare species. Seven species of nationally rare plants are found on the site, as are at least 65 British Red Data Book species of invertebrate. The higher plants *Cicendia filiformis*, *Illecebrum verticillatum* and *Myosurus minimus* are considered vulnerable by the GB Red Book; while *Mentha pulegium* and *Ranunculus tripartitus* are included as endangered; and *Pulicaria vulgaris* as critically endangered. The Dark Guest Ant *Anergates atratulus* is also considered vulnerable by the IUCN Red List; and • Ramsar criterion 3 - The mire habitats are of high ecological quality and diversity and have undisturbed transition zones. The invertebrate fauna of the site is important due to the concentration of rare and scarce wetland species. The whole site complex, with its examples of semi-natural habitats is essential to the genetic and ecological diversity of southern England. The site contains a rich invertebrate fauna.	The New Forest SSSI	• Favourable – 54.68%; • Unfavourable, recovering - 41.65%; • Unfavourable, no change - 2.11%; • Unfavourable, declining - 1.55%.

* present as qualifying feature AND primary reason for site selection.

Conservation Objectives

SAC Sites

3.4 The Natural England conservation objectives for the SAC sites listed in **Table 3.1** are as follows:

> "*Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;*
>
> - *The extent and distribution of qualifying natural habitats and habitats of qualifying species;*
> - *The structure and function (including typical species) of qualifying natural habitats;*
> - *The structure and function of the habitats of qualifying species;*
> - *The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;*
> - *The populations of qualifying species; and*
> - *The distribution of the qualifying species within the site."*

SPA Sites

3.5 The Natural England conservation objectives for the SPA sites listed in **Table 3.1** are as follows:

> *"Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;*
>
> - *The extent and distribution of the habitats of the qualifying features;*
> - *The structure and function of the habitats of the qualifying features;*
> - *The supporting processes on which the habitats of the qualifying features rely;*
> - *The population of each of the qualifying features; and*
> - *The distribution of the qualifying features within the site."*

Ramsar Sites

3.6 Although Natural England do not set out conservation objectives for Ramsar Sites owing to the differing legislative origin in comparison to SACs and SPAs, Ramsar Sites are nevertheless afforded the same level of protection as SACs and SPAs as a matter of National Planning Policy. As Ramsar designations usually coincide with SAC and/or SPA designations, the conservation objectives for an SAC and/or SPA may be considered in assessment terms as extending to apply to coinciding Ramsar designations, whilst noting often slightly differing qualifying features.

Natural England Supplementary Advice

3.7 Natural England has also published 'Supplementary Advice on Conserving and Restoring Site Features' for SAC and SPA sites described above and in **Table 3.1**. Natural England's supplementary advice includes site-specific targets intended to support the achievement of the conservation objectives, and these have been considered throughout this assessment.

3.8 The relevant publication dates for the Supplementary Advice for each designated site is listed in **Table 3.2** along with a summary of the site-specific targets of most relevance to the HRA of the Proposed Development.

Table 3.2: Summary of Natural England Supplementary Advice for SAC and SPA sites within the ZoI

Site Name	Publication Date	Site-specific Targets
Dorset Heaths SAC	March, 2019	• Maintain the extent of habitats; • Maintain and restore the structure and function of vegetation communities; • Maintain the properties of soil types; • Maintain or restore air quality; and • Maintain or restore water quality and hydrological regimes.
Dorset Heathlands SPA	Feb, 2019	• Maintain population abundance; • Restore extent of supporting habitats; • Maintain connectivity; and • Minimise disturbance caused by human activity.
River Avon SAC	March, 2019	• Restore the extent of habitats; • Restore the natural flow regime of the river; • Restore free movement of typical species of the SAC through the site; • Maintain supporting habitats beyond the site boundary upon which characteristic biological communities of the SAC may depend; • Maintain low organic pollution levels, limit anthropogenic enrichment and maintain a good water status in relation to other pollutants; • Restore water quantity; and • Maintain deposition of air pollutants below the relevant Critical Load.
Avon Valley SPA	Jan, 2019	• Maintain hydrological processes; • Maintain surface water quality and quantity; and • Restrict the frequency, duration and/or intensity of disturbance.
New Forest SAC	March, 2019	• Maintaining the extent of habitats; • Maintaining and restoring the structure and function of vegetation communities; and

Site Name	Publication Date	Site-specific Targets
		• Maintaining water and air quality.
New Forest SPA	March, 2019	• Maintaining population abundance; • Maintaining extent of supporting habitats; • Maintaining connectivity; • Maintaining and restoring air and water quality; and • Minimising disturbance caused by human activity.

Site Improvement Plans

3.9 Site Improvement Plans (SIPs) produced by Natural England set out measures to address prioritised issues affecting site condition. **Table 3.3** below provides a summary of the prioritised issues for the International Sites considered above.

Table 3.3: Summary of SIPs for International Sites within the potential ZoI

Site Name	Date of SIP	Prioritised Issues
Dorset Heaths	Oct, 2014	• Inappropriate scrub control; • Public Access/Disturbance; • Undergrazing; • Forestry and woodland management; • Drainage; • Water pollution; • Invasive species; • Habitat fragmentation • Conflicting conservation objectives; • Wildfire/arson; • Air pollution: impact of atmospheric nitrogen deposition; and • Deer.
Avon River and Valley	Oct, 2014	• Physical modification; • Siltation; • Water pollution; • Water abstraction; • Invasive species; • Public Access/Disturbance; • Hydrological changes; • Inappropriate weed control; • Change in land management; and • Habitat fragmentation.
New Forest	Nov, 2014	• Drainage; • Inappropriate scrub control; • Fish stocking; • Public Access/Disturbance; • Deer; • Air pollution: impact of atmospheric nitrogen deposition; • Public access/disturbance; • Change in land management; • Change in species distributions; • Water pollution;

Site Name	Date of SIP	Prioritised Issues
		• Forestry and woodland management; • Inappropriate ditch management; • Invasive species; • Vehicles; • Inappropriate cutting/mowing; and • Direct impact from 3rd party.

4. ASSESSMENT OF POTENTIAL EFFECTS ON INTERNATIONAL SITES

Introduction

4.1 The Source-Pathway-Receptor model described in **Section 1** has been used to consider whether the International Site qualifying features listed in **Section 3** might be adversely affected by the biophysical changes predicted to arise as a result of the Proposed Development in **Section 2** *in the absence of impact avoidance and mitigation* measures. Relevant impact pathways scoped in for further assessment are then considered in greater detail in the proceeding sections.

4.2 The source of potential effects in each case derives from the construction and operation of the Proposed Development, and the receptor is the qualifying features of the SAC, SPA and Ramsar Sites.

Potential Impact Pathways and Vulnerability of Receptors

4.3 **Table 4.1** below summarises the vulnerability of designated site receptors listed in **Section 3** to a number of potential impact pathways, and records whether each designated site is considered to fall within the predicted ZoI for each impact type generated by the Proposed Development (as described in **Section 2**). The relevant sections of this report where further assessment is set out are also listed.

4.4 Where an impact pathway is 'scoped in' then it is not possible to conclude, on the basis of objective information, that the Proposed Development would result in no likely significant effects on the designated site in question, either alone or in combination with other plans and projects, in the absence of mitigation measures.

4.5 Conversely, 'scoped out' means that likely significant effects, either alone or in combination with other plans and projects, on the designated site in question can be precluded on the basis of objective information, without the need for further impact avoidance and mitigation measures.

4.6 Note: Water quality impacts on the Solent Marine Sites through increased nutrient loads are screened out as neither the Site nor its Wastewater Treatment Works outfall occur within the Solent ‘nutrient neutrality’ catchment, as identified on the map in Natural England’s (2022) current guidance on nutrient neutrality.

Table 4.1: Scoping of potential impact pathways

Impact Pathway	Vulnerability	Scoped In/Out					Report Section
		Dorset Heaths SAC	**Dorset Heathlands SPA**	**Dorset Heathlands Ramsar**	**River Avon SAC, Avon Valley SPA/Ramsar**	**New Forest SAC, SPA/Ramsar**	
Loss of offsite supporting habitat	Habitat within the Site may play a role in supporting populations of SPA birds, and/or SAC qualifying/typical species, beyond the designated site boundaries. This may be loss or negatively affected by the Proposed Development.	Scoped Out – no viable impact pathway	*Scoped In*	Scoped Out – no viable impact pathway	Scoped Out – outside ZoI	Scoped Out – outside ZoI	**5**
Hydrological change	Habitats may be sensitive to changes in surface water and groundwater quality from pollution, and to changes in water quantity which may affect the water table and water levels essential for supporting habitats, with consequent effects on associated species.	Scoped Out – no viable impact pathway[1]	Scoped Out – no viable impact pathway[1]	Scoped Out – no viable impact pathway[1]	*Scoped In*	Scoped Out – outside ZoI	**6**
Air pollution	Dust liberation can damage habitats through deposition, with consequent effects on structure and function.	*Scoped In*	*Scoped In*	*Scoped In*	Scoped Out – outside ZoI	Scoped Out – outside ZoI	**7**
	Where material increases in traffic are predicted to arise on roads located within c.200m of designated sites airborne pollutants or resultant deposition can affect sensitive habitats and their ability to support associated species.	*Scoped In*	*Scoped In*	*Scoped In*	Scoped Out – no viable impact pathway, P limited system	Scoped Out – no viable impact pathway[2]	**7**
Increased recreational pressure	Birds can be sensitive to increased recreational use of nearby accessible land since this may disturb feeding and breeding behaviour, potentially leading to adverse effects. In addition to disturbance effects on birds, increased recreational pressure has the potential to result in effects on habitats from trampling, fragmentation, eutrophication; and increased risk of wildfire.	*Scoped In*	*Scoped In*	*Scoped In*	Scoped Out – no viable impact pathway due to limited public access across private land	*Scoped In*	**8**

Impact Pathway	Vulnerability	Scoped In/Out					Report Section
		Dorset Heaths SAC	**Dorset Heathlands SPA**	**Dorset Heathlands Ramsar**	**River Avon SAC, Avon Valley SPA/Ramsar**	**New Forest SAC, SPA/Ramsar**	
Other urban effects	Close proximity of developments to sensitive areas can result in other urban effects not already considered above, including increases in cat predation, noise, light and visual disturbance of species, and also other urban impacts on habitats/supporting habitats, such as fly-tipping, spread of non-native invasive species and increased risk of wildfire.	Scoped Out – no viable impact pathway due to residential development being located outside of 400m Dorset Heathlands SPD exclusion zone. Part of the SANG is located within 400m of the SAC/SPA/Ramsar, however the car park, the only location accessible to vehicles, is located over 700m from the designated site boundary. The SANG is also physically separated from the SAC/SPA/Ramsar by the wetland valley associated with Sleep Brook.			Scoped Out – outside ZoI	Scoped Out – outside ZoI	**N/A**

[1] The 'Surface Water Flow Paths' plan provided by Campbell Reith show that Cranborne Common is not hydrologically connected to the Site – see **Appendix 2.**

[2] Research carried out by EPR on behalf of the New Forest National Park Authority and New Forest District Council found no evidence of adverse effects from air pollution on New Forest vegetation (qualifying habitats of the SAC and Ramsar and supporting habitats for SPA/Ramsar species)(EPR, 2018). The New Forest District Council Air Quality Assessments in New Development Supplementary Planning Document (Adopted June 2022), states the following at paragraph 9.2 *et seq*:

" 9.2 The Habitat Regulations Assessment which accompanied the Local Plan Part 1 concluded that implementation of the Local Plan and New Forest National Park Local Plan alone will not have an adverse effect on the integrity of any European site. While there is no evidence of current negative effects from traffic related air pollution, uncertainty remains about whether in combination traffic growth and related air pollution could adversely affect the integrity of New Forest SAC, SPA and Ramsar site during the Local Plan period up to 2036. 9.3 With this uncertainty in the data, the precautionary principle applies requiring a modest financial contribution from development for ongoing monitoring of the effects of traffic emissions on sensitive locations, to trigger management or mitigation measures and developer contributions to implement them if harmful effects are confirmed in the future. 9.4 The Council has instigated a monitoring regime to monitor the condition of sensitive vegetation within the New Forest SPA, SAC and RAMSAR sites, to assess whether or not nutrient nitrogen deposition, acid deposition and ammonia levels from traffic emissions are having an adverse effect on these designated European sites. 9.5 If air quality monitoring identifies that significant adverse effects are occurring or likely, legal agreements or other appropriate mechanisms will be put in place to ensure that homes subsequently permitted would be required to make reasonable and proportionate developer contributions for air quality management or mitigation.".

5. LOSS OF OFFSITE SUPPORTING HABITAT

Introduction

5.1 This section considers potential effects arising from the Proposed Development during construction and operation on the Dorset Heathlands SPA through loss or degradation of offsite supporting habitat – that is, habitat that supports the SPA bird populations outside of the designated SPA boundary. The scope of impact avoidance and mitigation measures is considered where the potential for likely significant effects is identified.

Relevant Background Information

Receptor Sensitivity

5.2 The Annex 1 bird species associated with the SPA (listed in **Table 3.1** of **Section 3**) depend, to varying degrees influenced by species, upon supporting habitat both within and outside the designated site boundary for their various life history requirements and the ultimate achievement of the favourable conservation status of populations.

5.3 Natural England's 'Supplementary Advice on Conserving and Restoring Site Features' sets out the following which are of relevance to this assessment:

> *"Supporting habitat (both within and outside the SPA): extent and distribution: Extent and distribution of supporting breeding habitat: Conserving or restoring the extent of supporting habitats and their range will be key to maintaining the site's ability and capacity to support the SPA population. Restoration of open heathland is required on those areas where it has declined compared with the historic open heathland extent (usually through invasion by trees and scrub) and where this restoration is readily achievable.*
>
> *Supporting habitat (both within and outside the SPA): function/ supporting process: Conservation measures: Restore management or other measures (whether within and/or outside the site boundary as appropriate) necessary to restore the structure, function and/or the supporting processes associated with the feature and its supporting habitats."*

5.4 With respect to Nightjar, recent GPS tracking research commissioned by W H White at Canford Heath (a component part of the Dorset Heathlands SPA) between 2015-2019 shows that Nightjar forage extensively away from core breeding territories on the heath, commuting an average distance of 1.5km to foraging locations (EPR, 2021). This finding is consistent with previous Nightjar tracking research carried out by Alexander and Cresswell (1990) at Wareham Forest, and Sharps and Evens in Thetford Forest (see Sharps et al. 2015 and Evens et al. 2018).

Assessment Methodology

5.5 ABR Ecology completed the most recent baseline ecology surveys to inform assessment of the Proposed Development. Further details are provided in Technical Appendix (TA) 9.1 of the submitted Environmental Statement (ES).

5.6 Breeding bird surveys following the Common Bird Census methodology were conducted by PV Projects Ltd. as subcontractor to ABR Ecology (ABR). Five surveys were completed between May and July 2021.

5.7 Nocturnal surveys for Nightjar were also conducted by ABR, with three dusk transects completed following methods set out in Gilbert et al. (1998) in June and July 2021.

5.8 The aim of the surveys was to collect sufficient information to determine the presence, abundance and approximate breeding territories of bird species on Site. The complete description of survey and assessment methodology, as well as survey metadata, are provided in the ABR Ecological Assessment report included at Annex 3 of ES TA 9.1 (ABR, 2022).

Assessment of Likely Significant Effects

5.9 Woodlark, Hen Harrier and Merlin were not recorded during the surveys. A single Dartford Warbler call was recorded on the western boundary of the Site, located within the adjacent heathland. No other calls were heard over the course of the surveys. The Site does not therefore provide supporting habitat for these species, and the potential for likely significant effects arising from habitat loss can therefore be screened out.

5.10 However, Nightjar were recorded foraging across the western and northern fields (with the western half of the Site the most frequently used) and flying along the hedgerows within the Site. The Site therefore provides supporting habitat for Nightjar breeding within the heathland at Cranborne Common SSSI to the west of the Site. **Map 4** shows the records of Nightjar within the Site, overlaid against the baseline habitats recorded by ABR. The predominant baseline habitats within these areas are arable and improved grassland, but also include smaller areas of woodland, neutral grassland and wetland (a pond and a small area of rush pasture).

5.11 **Map 5** displays the same survey results against proposed land use types. This shows that <u>all</u> of the potential supporting habitat within the Site – that is, the approximate area Nightjar appear to target for the purpose of foraging extending to c. 52ha - is located within areas proposed as SANG, other semi-natural green infrastructure and as a potential location for solar arrays. Baseline habitats in the SANG and other green infrastructure areas would be significantly enhanced by the SANG Habitat Creation and Management Plan (ES TA 9.4) proposals and the Ecological Mitigation and Enhancement Strategy (ES TA 9.3), elements from which are covered by the overarching Landscape Strategy for the scheme (Urban Design Initiatives, 2022). The enhancements and in perpetuity management proposed will increase the biodiversity value of the habitats, which in turn will increase the diversity and abundance of invertebrate prey, making them more suitable for foraging Nightjar. This would support the conservation objectives for the SPA. No areas of potential supporting habitat would be lost to built development.

5.12 Whilst the increased suitability of these enhanced green infrastructure habitats would not be affected by their recreational use, since Nightjar are largely active at night, operation of the Proposed Development could cause light disturbance which would negatively affect their suitability for foraging Nightjar. The potential for likely significant effects on Nightjar cannot therefore not be excluded in the absence of mitigation, and further consideration as part of an Appropriate Assessment is required.

Information for Appropriate Assessment

Impact Avoidance and Mitigation

5.13 Much of the potential for unmitigated light spill from the residential elements of the Proposed Development is inherently avoided by the existing woodland and hedgerow vegetation on Site. The only offsite supporting habitat that could be affected, in the absence of mitigation, is that located along the western and southern boundaries of the northwestern residential parcel, which lies adjacent to the existing solar farm. Habitat potentially used by foraging Nightjar in this location would be incorporated into a green infrastructure corridor, the design for which aligns with the Dorset Natural Environment Team Biodiversity Appraisal Protocol Guidance in terms of the offset of development and composition of habitats. Extensive GPS tracking research commissioned by WH White has shown that Nightjar forage widely across urbanised locations away from the SPA, some of which include well-lit locations. Nevertheless, a Lighting Impact Assessment, which incorporates a Lighting Strategy to reduce obtrusive light spill, has been produced by Designs for Lighting (2022). On the basis of this strategy, the habitat enhancement proposals within areas of offsite supporting habitat would still be expected to result in positive effects on Nightjar foraging, therefore the potential for adverse effects can be excluded.

Conclusion

5.14 The Proposed Development would not result in the loss of offsite supporting habitat potentially used by foraging Nightjar. The habitat enhancement, creation and management proposals for the proposed SANG and other green infrastructure areas would increase the suitability of offsite foraging habitat for Nightjar in close proximity to breeding sites on the adjacent heathland, overall helping to achieve the conservation objectives for the SPA. A Lighting Strategy is proposed to ensure that these enhanced habitats would not be degraded by obtrusive light spill. Therefore overall, the foraging resources available to Nightjar beyond the SPA boundary would increase as a result of the Proposed Development, consequently there will not be an adverse effect on the integrity of the SPA.

6. HYDROLOGICAL CHANGE

Introduction

6.1 This section considers the potential for the Proposed Development, either alone or in combination with other plans or projects, to generate effects arising from changes in water quality or quantity upon the River Avon SAC, and the Avon Valley SPA and Ramsar site (collectively, the 'Avon Sites').

6.2 Although the Site is relatively proximate to the Dorset Heaths SAC and the Dorset Heathlands SPA and Ramsar site, the potential for any hydrological effect thereupon is screened out on the basis of the intervening presence of a watercourse known as Sleep Brook, which flows south and east away from the heath and toward the Avon Valley.

Assessment Methodology

6.3 Existing information regarding the sensitivity of the Avon Sites to effects arising from hydrological changes was investigated through desktop study, including review of SSSI unit condition assessments, Natural England guidance, and strategic-level assessments such as the *River Avon Special Area of Conservation Nutrient Management Plan for Phosphorus* (DTA, 2015).

6.4 The potential effects of the Proposed Development have been assessed by application of Natural England's current 'Nutrient Neutrality Budget Calculator' for development in the Avon catchment.

Assessment of Likely Significant Effects

Water Quantity

6.5 Water abstraction is identified in the *Avon River Valley Site Improvement Plan* as a threat to each of the qualifying features of the SAC. However, in view of the conclusion presented in Wessex Water's *Final Water Resources Management Plan* (2019), that existing licensed water abstraction sources are adequate to accommodate planned levels of growth, and in accordance with the findings of the *East Dorset Local Plan Review Options Consultation HRA Screening Report* (2018), the Proposed Development is not considered likely to result in a significant water quantity effect on the Avon Sites.

Water Quality

6.6 Water pollution is identified in the *Avon River Valley Site Improvement Plan* as a threat to each of the qualifying features of both the SAC and SPA, which substantially overlap those of the Ramsar designation. In respect of the SAC in particular, Natural England's *Supplementary Advice on Conserving and Restoring Site Features* reports that elevated levels of nutrient phosphorus input arising from anthropogenic sources are preventing the achievement of water quality target values across much of the catchment.

6.7 In view of the excessive level of phosphorus loading upon the Avon, Natural England considers that, with certain limited exceptions, the additional nutrient load exerted by any new residential development in the fluvial catchment will have a likely significant effect on the SAC. The Avon

Valley SPA and Ramsar site are not explicitly identified in Natural England's current guidance as being in unfavourable condition due to excessive nutrient levels - although the qualifying features of the latter designation are potentially susceptible to eutrophication effects. Each of the Avon Sites could also potentially be affected by other forms of upstream water pollution such as uncontrolled siltation, chemical spills, or surface water contamination.

Information for Appropriate Assessment

Projected Nutrient Contribution

6.8 Natural England's current guidance sets out a stepwise approach to quantifying the net nutrient contribution generated by proposed development. The completed nutrient budget calculation is separately appended at **Appendix 3**; its various steps are summarised below.

Wastewater Effects

6.9 Application of the Natural England calculator tool indicates that the proposed provision of up to 1,700 new dwellings will annually generate 160.94 kg/year of total phosphorus through discharge of treated wastewater from the receiving Water Recycling Centre (WRC) at Fordingbridge, which currently operates within an effluent permit limit of 1mg/l.

6.10 In July 2022, the Secretary of State for the Environment announced the intention to impose a new statutory duty on water companies to upgrade wastewater treatment works within 'nutrient neutrality' areas to the highest technically achievable limits by 2030. The respective limit for phosphorus is identified as 0.25 mg/l in a letter concurrently issued by the Chief Planner to the affected local authorities.

6.11 The implementation of a 0.25 mg/l treatment standard at Fordingbridge WRC would reduce the wastewater nutrient contribution from the proposed development to 44.71 kg/year. This figure would of course increase if first occupation precedes the anticipated institution of improved standards in 2030 - but only very minutely, as the overall nutrient budget would be based on a weighted average of pre- and post-2030 effects over the entire perpetuity period.

Land Use Change Effects

6.12 In lieu of farm records, information regarding the Site's pre-development use has been collated from the results of habitat assessment undertaken between 2017 and 2022. As represented in **Map 2**, the site is in agricultural use and predominantly occupied by improved grassland and arable land used for forage cropping. The discontinuation of this relatively intensive baseline use is projected to reduce phosphorus export to the Avon by 46.28 kg/year.

6.13 As represented in **Map 3**, the proposed use of the application site comprises both residential and commercial development, large expanses of formal and informal greenspace, and areas used for community food growing. The institution of the proposed use is projected to generate 76.06 kg/year in phosphorus export. The net effect of proposed land use change is therefore an additional contribution of 29.78 kg/year.

Nutrient Budget Summary

6.14 Under the current wastewater permitting regime, the overall net effect of wastewater discharge and land use change arising from the Proposed Development is a total phosphorus contribution of 190.72 kg/year. The application of a precautionary 20% buffer, as prescribed by Natural England's guidance, indicates an outline mitigation liability of 228.87 kg/year.

6.15 Upon the realisation of central government commitments to upgrade wastewater treatment in nutrient neutrality catchments to the highest achievable limits, the projected nutrient contribution would fall to approximately 74.49 kg/year (subject to the date of occupation), indicating a mitigation liability of 89.39 kg/year, after the application of the 20% buffer.

Impact Avoidance and Mitigation

Nutrient Mitigation

6.16 Natural England's nutrient budget calculator ascribes an exceptionally high phosphorus export rate to land used for residential development – in this case, 2.5 times higher than the rate ascribed to cereal cropping, the most nutrient intensive of the pre-development uses, and more than six times higher than the rate ascribed to the existing dairy use. The predicted effects of post-development nutrient export consequently make a substantial contribution to the project nutrient budget, accounting for 40% thereof under current wastewater treatment standards and more than 100% thereof under anticipated 2030 standards. There is accordingly substantial scope to reduce the respective mitigation target through the attenuation and treatment of surface water run-off.

6.17 The nutrient budget calculator includes no mechanism for accounting the water quality benefits of Sustainable Drainage Systems (SuDS) or of percolation to ground – which has the beneficial effect of attenuating nutrient phosphorus within soil and subsoil. Natural England has yet to issue any practical guidance on how these benefits may be quantified for nutrient budgeting purposes, although it is understood that joint Natural England and CIRIA guidance is due for publication at some future date.

6.18 Natural England's now superseded 2019 guidance on nutrient neutral development within the Stour catchment suggests the use of a generic value of 37% to represent the predicted phosphorus removal efficiency of mitigation wetlands in general, this being the lower bound of the 95% confidence interval for mean treatment wetland performance presented in a systematic review (Land *et al.*, 2016). Higher levels of performance are achievable, and published accounts of the typical efficiency values attributed to particular SuDS components in the extant literature include rates of 82% (Maniquiz *et al.*, 2010), 60% (WDEQ, 1999), and 100% (Winer, 2000) for infiltration trenches; 55-60% for infiltration basins (CIRIA, 2004); 55% for vegetated swales (Deletic & Fletcher, 2006); 85-94% for vegetated bioretention systems (Henderson *et al.*, 2007); and 70-80% for discharge to tree roots (Denman *et al.*, 2011). Kadlec & Wallace (2009) identify a median phosphorus removal efficiency of 41% from a review of nineteen urban run-off treatment wetlands.

6.19 By way of a preliminary indication, the use of SuDS to achieve a modest 37% reduction in post-development nutrient export would reduce the project nutrient contribution by approximately 28 kg/year – and there is considerable scope to achieve a greater reduction through the integration of green and blue infrastructure, and by designing the surface water drainage strategy with a particular emphasis on water quality amelioration.

6.20 The residual nutrient mitigation liability will be met by a proportionate in-perpetuity nutrient offsetting solution – undertaken elsewhere in the catchment and secured by means of a Grampian-type condition or suitable planning obligation. The actual quantum of mitigation will be determined by recalculation of the project nutrient budget at subsequent planning stages, so as to take account of the detailed layout of the development; the final number and type of dwellings proposed; details of the surface water strategy and SuDS design; the effects of any

further subsequent changes in Natural England guidance; and the formalisation of central government commitments to optimise wastewater treatment standards across the Avon catchment and other affected areas.

Pollution Prevention

6.21 Other forms of pollution that might affect local watercourses upstream of the Avon Sites - such as chemical spills, excessive siltation, or contaminated surface water run-off – will be avoided during the construction of the Proposed Development by the implementation of pollution prevention prescriptions provided in an approved Construction Environmental Management Plan (CEMP), and during its operation by the implementation of an approved SuDS strategy.

Conclusion

6.22 In view of the extant regulatory framework and the conclusions of strategic-level water supply assessments, the Proposed Development is not considered likely to generate a significant water quantity effect on the Avon Sites, either alone or in combination with other plans or projects.

6.23 Subject to the achievement of nutrient neutrality through the implementation of a nutrient mitigation or offsetting solution, secured by condition or legal obligation, the Proposed Development will not result in an adverse eutrophication effect on the integrity of the Avon Sites.

6.24 Subject to the implementation of an approved CEMP and SuDS strategy, the Proposed Development will not result in any broader water pollution effect on the integrity of the Avon Sites.

7. AIR POLLUTION

7.1 This section considers the potential effects of changes to levels of air pollution generated by the Proposed Development during construction (including dust generated during construction works and emissions from construction vehicles) and from development-related traffic (exhaust emissions) during operation on the Dorset Heath(land)s SAC/SPA/Ramsar. It has been informed by the underlying transport assessment carried out by Paul Basham Associates and an air quality assessment carried out by Waterman (See ES Chapters 7 and 14, respectively).

Relevant Background Information

National Air Quality Strategy & Trends

7.2 Under the requirements of the Environment Act 1995, the UK government published an Air Quality Strategy (AQS). The AQS sets out the UK's national standards and objectives for ambient air quality, and measures to help achieve the objectives. The overall aim of the AQS is to achieve steady improvement in air quality into the long term. The objectives are transcribed into regulations in the Air Quality (England) Regulations 2000, as amended.

7.3 In 2019, the Government published their Clean Air Strategy. The Strategy sets out the measures that the Government intends to take to achieve the legally binding international targets to reduce emissions of key pollutants.

7.4 Notwithstanding the implementation, or otherwise, of the Proposed Development, future air quality baseline conditions are expected to improve as there will likely be a reduction in vehicle emission rates and background concentrations following the uptake of less polluting vehicles.

Critical Levels and Loads

European CAFE Directive (2008/50/EC) and Air Quality Standards Regulations 2010

7.5 The Directive details air quality limit values, target values, and Critical Levels for a number of air pollutants established by the European Parliament and Council for the protection of human health, vegetation and ecosystems. These have been transposed into UK legislation by the Air Quality Standards Regulations 2010 (as amended).

United Nations Economic Commission for Europe Critical Loads

7.6 The United Nations Economic Commission for Europe (UNECE) has set Critical Loads for N-Deposition for specific sensitive ecosystems (UNECE, 2003).

The Air Pollution Information System (APIS)

7.7 The Air Pollution Information System (APIS) is the UK's principal source of information on pollutant levels, including at designated nature conservation sites (SAC/SPA/SSSI) and on the sensitivity of their component habitats, providing a continually updated web-based data resource. Ramsar sites are not covered separately, although Ramsar qualifying features overlap with SAC/SPA designations, therefore potential effects on Ramsar sites are assessed by proxy through the assessment of effects on SAC/SPA sites.

7.8 APIS sets out the relevant environmental standards for pollutant types (as defined by the 2010 Regulations and UNECE), which vary by habitat type where Nitrogen (or N) deposition is concerned. Critical Levels define the environmental standard for airborne gaseous pollutants (Nitrogen oxides, NOx and Ammonia, NH_3) and Critical Loads define the environmental standard for deposited pollutants (N deposition).

7.9 Critical Levels and Loads (referred to collectively as the 'CL') are defined as:

> *Critical Level (ug/m3): "concentrations of pollutants in the atmosphere above which direct adverse effects on receptors, such as human beings, plants, ecosystems or materials, may occur according to present knowledge".*
>
> *Critical Load (kg N/ha/yr): "a quantitative estimate of exposure to one or more pollutants, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge."*

7.10 For NOx the Critical Level for all habitats is a concentration of 30µg/m^3.

7.11 For NH_3 the Critical Level for lower plant habitats, including those supporting sensitive lichens and bryophytes, is 1 µg/m^3 – this is the relevant CL for the Dorset Heaths SAC. The CL for all higher plant habitats, including the broad habitats supporting the Dorset Heathlands SPA qualifying features, is a concentration of 3µg/m^3.

7.12 For N deposition the Critical Load is habitat specific, with lower and upper ends of a CL range cited for application in different circumstances (for example differing hydrological or management regimes); in practice there is rarely sufficient information to justify use of anything but the lower CL, and lower CLs are used throughout this assessment on a precautionary basis.

7.13 The specific sensitivities to air pollution and CLs cited by APIS as relevant to the assessment of air pollution effects on the Dorset Heaths SAC and the Dorset Heathlands SPA are set out below in **Tables 7.1** and **7.2.**

7.14 When pollutant loads (or concentrations) exceed the CL, it is considered that there is a <u>risk</u> of harmful effects. A value in excess of the CL is termed the 'exceedance'. A larger exceedance is often considered to represent a greater risk of damage, although other factors also influence this.

Natural England's Approach to Air Quality Assessment

7.15 Natural England's guidance to Local Authorities regarding air quality assessment and HRA (Natural England, 2018) takes account of case law of relevance to air quality assessment (the 'Wealden Judgment', described in **Appendix 1**) and describes the screening threshold for appropriate assessment as follows:

> *"widely accepted Environmental Benchmarks for <u>imperceptible impacts</u> are set at 1% of the critical load or level" [our emphasis].*

Table 7.1: Dorset Heaths SAC qualifying habitats and their N deposition Lower Critical Loads (with reference to APIS).

Annex 1 Habitat	Habitat sensitive to N?	Relevant N CL class	Lower CL kg N/ha/yr
North Atlantic wet heaths with *Erica tetralix*	Yes	Wet heath	10
European dry heath	Yes	Dry heath	10
Molinia meadows on calcareous peaty or clayey-silt-laden soils	Yes	Moist and wet oligotrophic grasslands	15
Depressions on peat substrates of the *Rhynchosporion*	Yes	Valley mires, poor fens and transition mires	10
Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*	Yes	Rich fens	15
Alkaline fens	Yes	Rich fens	15
Old acidophilous oak woods with Quercus robur on sandy plains	Yes	Acidophilous Quercus-dominated woodland	10
Southern Damselfly	Yes	Dwarf shrub heath	10
Great Crested Newt	Yes	Standing open water	None (site specific decision required)

Table 7.2: Dorset Heathlands SPA habitats supporting qualifying birds and their N deposition Lower Critical Loads (with reference to APIS).

Annex 1 Birds	Broad Habitat	Lower CL kg N/ha/yr	Sensitive to N dep impacts on broad habitat?
Nightjar	Coniferous woodland	5	No
	Dwarf shrub heath	10	Yes
Woodlark	Coniferous woodland	5	Yes
	Dwarf shrub heath	10	Yes
Dartford Warbler	Dwarf shrub heath	10	Yes
Hen Harrier	Dwarf shrub heath	10	No
	Fen, marsh & swamp	15	No
	Littoral sediment	20	No
Merlin	Dwarf shrub heath	10	No
	Littoral sediment	20	No

7.16 Natural England's (2018) guidance advocates the following stepwise approach to assessing the potential for likely significant effects from air pollution:

1) Does the proposal give rise to emissions which are likely to reach a European site?

2) Are the qualifying features of sites within 200m of a road sensitive to air pollution?

3) Could the sensitive qualifying features of the site be exposed to emissions?

4) Application of screening thresholds:

4a) Apply the threshold alone - consider the contributions of the project alone and whether they could exceed 1% of the CL or a change of more than 1,000 Average Annual Daily Trips (AADT) (or 200 Heavy Duty Vehicles, HDV) [our emphasis];

4b) Apply the threshold in-combination with emissions from other plans and projects - consider the contributions of the project in addition to other live plans and projects (but see further below) and whether collectively they could exceed 1% of the CL or a change of more than 1,000 AADT (or 200 HDV);

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

- If step 4 (a and b) does not result in exceedance of the screening threshold, then the potential for likely significant effects either alone or in combination can be screened out, and further investigation as part of an appropriate assessment is not required;

- If step 4 (a and/or b) results in exceedance of the screening threshold, then the need for appropriate assessment is triggered. This is because the development either alone or in combination is predicted to contribute pollutants to a site at a level above which harm could occur, irrespective of whether background levels already exceed the CLs. The guidance provides further advice on the information that should be considered as part of an appropriate assessment, which includes, amongst a plethora of factors, the potential for areas subject to air quality exceedance to coincide with sensitive qualifying features, and the specific conservation objectives for the sites concerned and how these relate to existing, and future predictions of, background levels of pollutants.

7.17 Natural England's 2018 guidance comments on the scope of in-combination assessment:

"4.44 It is generally well-established that the scope of an in-combination assessment is restricted to plans and projects which are 'live' at the same time as the assessment being undertaken. These can potentially include:

- *The incomplete or non-implemented parts of plans or projects that have already commenced;*
- *Plans or projects given consent or given effect but not yet started;*
- *Plans or projects currently subject to an application for consent or proposed to be given effect;*
- *Projects that are the subject of an outstanding appeal;*
- *Ongoing plans or projects that are the subject of regular review and renewal;*
- *Any draft plans being prepared by any public body;*
- *Any proposed plans or projects that are reasonably foreseeable and/or published for consultation prior to application; and*
- *As stated above, when considering this scope, competent authorities can be mindful of the assessment, reasoning and conclusions included in any previous HRAs for these plans or projects." [our emphasis]*

7.18 Their guidance also states:

> *"4.47 In general terms, it is important for a competent authority to remember that the subject plan or project remains the focus of any in-combination assessment. Therefore, it is Natural England's view that care should be taken to avoid unnecessarily combining the insignificant effects of the subject plan or project with the effects of other plans or projects which can be considered significant in their own right. The latter should always be dealt with by its own individual HRA alone. In other words, it is only the appreciable effects of those other plans and projects that are not themselves significant alone which are added into an in-combination assessment with the subject proposal (i.e. 'don't combine individual biscuits (=insignificant) with full packs (=significant)')." [our emphasis]*

Dorset Heathlands Interim Air Quality Strategy

7.19 A strategic approach to the mitigation of air quality effects arising from new development in South East Dorset on the Dorset Heathlands has been adopted via the Dorset Heathlands Interim Air Quality Strategy 2020-2025 (IAQS). This strategy covers the administrative areas of Dorset Council (DC) and Bournemouth, Christchurch and Poole Council (BCPC).

7.20 The strategy establishes the basis for funding of Phase 2 measures, with £50 per dwelling allocated from Community Infrastructure Levy (CIL) payments from developers.

Assessment Methodology

7.21 Full details of the air quality modelling and assessment parameters are set out in the Air Quality ES Chapter 14.

Construction Phase

7.22 Dust generated during demolition and construction works was assessed as part of the construction phase air quality assessment in accordance with the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction (2014). The study area was defined as the Site and the zone within 350m of the Site boundary, plus a 50m buffer of public roads used by construction traffic up to 500m from the Site access point(s). It was assumed that construction works would be carried out at the boundary of the Site throughout the construction phase, which places the Dorset Heathlands designations within 20m of this works area. In reality, works within the western part of the Site will be limited to SANG habitat creation and enhancement, and would not involve extensive dust generating construction activities. The approach taken therefore represents a worst-case assessment.

7.23 The potential for impacts during construction has been assessed using the IAQM methodology. The method is used to determine the potential dust emissions magnitude, the sensitivity of the area to dust and particulate matter effects, and the risk of impact for the four key aspects of construction works: demolition; earthworks; construction and trackout. Impact risk is based on the magnitude of potential dust emissions and receptor sensitivity, using risk category matrices for construction activity types, taken from the IAQM guidance.

7.24 With regards to assessing potential effects from construction vehicle exhaust emissions, this follows the same approach as the assessment of operational traffic impacts (for example, the stepwise process set out in Natural England's guidance, as described above). However, IAQM guidance on assessing construction effects states:

> *"Experience of assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a significant effect on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. For site plant and on-site traffic, consideration should be given to the number of plant/vehicles and their operating hours and locations to assess whether a significant effect is likely to occur. For site traffic on the public highway, if it cannot be scoped out, then if should be assessed using the same methodology and significance criteria as operational traffic impacts."*

7.25 The predicted number of construction vehicles is currently unknown; however, the potential impacts of construction vehicles would be set out and managed within a Construction Environmental Management Plan (CEMP). Construction vehicle emissions would be assessed if required when the construction vehicle traffic data is known. In the absence of available traffic data, a qualitative assessment has been undertaken. Given the size of the Site and the small contribution of emissions to local air quality, a quantitative assessment of the exhaust emissions from construction plant has not been undertaken.

Operational Phase

Screening for Likely Significant Effects

7.26 The methodology used to assess the potential for significant effects from air quality changes impacting upon on ecological sites during the operational phase is based on Natural England's guidance regarding air quality assessment of International sites, described above (Natural England, 2018).

7.27 International sites within 200m of an "affected road", a road where increases of more than 1,000 AADT (or 200 HDV) are predicted, were defined as 'sensitive receptors' that could be affected by airborne NOx and NH_3 emissions arising from the additional traffic generated by the Proposed Development, and subsequent N deposition from air to the ground. These sites were taken forward for further detailed air quality modelling as part of an Appropriate Assessment.

7.28 200m is set as the potential ZoI for air pollution impacts on International Sites, because traffic-generated pollutant levels drop off significantly within the first 50m from the roadside and concentrations approach background levels by 200m (Laxen & Marner, 2008; Ricardo-AEA, 2016).

7.29 The traffic data provided by Paul Basham Associates assumed a complete and operational year of 2033. The assessed effects for the 'without Proposed Development' and 'with Proposed Development' future scenarios presented in Chapter 14: Air Quality are therefore based on the year 2033, albeit that Defra only predicts future pollutant concentrations to the year 2030. However, for consistency with the rest of the ES, the anticipated year of completion/operation has been presented as 2041. The year 2019 was used to assess the baseline, as this is the latest full year of representative monitoring data due to the Covid-19 pandemic.

Air Quality Modelling for Appropriate Assessment

7.30 For sites taken forward for further air quality assessment, the likely effect on local air quality from operational scheme traffic was assessed using the atmospheric dispersion model ADMS-Roads. The ADMS-Roads dispersion model predicts how emissions from roads combine with local background pollution levels, taking account of meteorological conditions, to affect local air quality. The model was run for the completion year, using background data and vehicle emission rates for 2041 as inputs. For the verification assessment, background data and vehicle emission rates for 2019 were used. Pollutant concentrations were modelled at representative site locations, although worst case scenario pollutant levels were modelled at the roadside. Further details regarding air quality modelling parameters are provided in Chapter 14.

Assessment of Likely Significant Effects

Construction Phase

7.31 The results of the dust impact risk assessment, in the absence of mitigation, are described in detail in ES Chapter 14 and summarised in **Table 7.3**.

Table 7.3: Results of Construction Phase Dust Impact Risk Assessment

Construction Stage	Dust Emission Magnitude	Receptor Sensitivity (Dorset Heath(land)s)	Risk of Impacts from Dust Soiling
Demolition	Small	High	Medium
Earthworks	Large	High	High
Construction	Large	High	High
Trackout	Large	High	High

7.32 The high risk of dust soiling on sensitive ecological receptors means that likely significant effects cannot be excluded in the absence of mitigation. Impact avoidance and mitigation measures are therefore considered below as part of an Appropriate Assessment.

7.33 In terms of construction vehicle emissions, the number of HDV's could peak above 50 movements a day during the peak construction period. Trips are therefore likely to remain below the 200 HDV screening threshold advocated for Appropriate Assessment, such that likely significant effects can be excluded.

Operational Phase

7.34 As per the methodology outlined above, the screening stage assessment identified the road links predicted to experience an increase in traffic flows of more than 1,000 AADT (or 200 HDV) as a result of the Proposed Development either alone or in combination with other committed development.

7.35 International Sites located within 200m of these 'affected roads' were then identified as having the potential to be significantly affected by air pollution, requiring further detailed air quality modelling and assessment as part of an Appropriate Assessment.

7.36 **Map 6** shows the 'affected road network' (or ARN), and the sites located within a 200m linear distance (N.B. site identification numbers appear out of sequence for this report because other

sites not subject to HRA were included in the same modelling exercise, as presented in Chapter 9 of the ES). The following component SSSIs to the Dorset Heath(land)s SAC/SPA/Ramsar required further detailed air quality assessment, with two locations modelled for each site:

- Cranborne Common; and
- St Leonards and St Ives Heaths.

Information for Appropriate Assessment

Construction Phase

Impact Avoidance and Mitigation

7.37 A range of environmental management controls would be developed with reference to the IAQM Dust Guidance for high-risk sites. The mitigation measures would be included within a CEMP, to be secured via a planning condition and implemented to prevent the release of dust to the atmosphere with subsequent deposition on nearby receptors.

7.38 Mitigation measures are routinely and successfully applied to construction projects throughout the UK and are proven to significantly reduce the potential for adverse dust effects associated with the various stages of construction work. Adverse effects on the integrity of the SAC/SPA would therefore not arise.

Operational Phase

Overview

7.39 **Tables 7.4-7.6** present the results of the NOx, NH_3 and N deposition (respectively) modelling for the 'with development' (DS) and 'without development' (DM) scenarios. The DS scenario includes emissions from the Proposed Development and other committed developments. The development process contribution (PC), calculated as the difference between the DS and DM scenarios, therefore represents the 'in combination' assessment. PC for the Proposed Development alone has not been calculated. With regards to N deposition, results are presented for the most sensitive broad habitat type that has the lowest CL, as listed in **Table 7.2** above.

Results of Air Quality Modelling: NOx

7.40 Although the modelled in combination development PC exceeds 1% of the CL for both locations at Cranborne Common, indicating the possibility for harm of qualifying habitats and species, total future NOx concentrations under the DS scenario do not exceed the CL. For St Leonards and St Ives Heaths the PC does not exceed 1% of the CL and the future total NOx concentrations do not exceed the CL. Adverse effects from airborne NOx emissions are therefore not predicted.

Table 7.4: Results of NOx Modelling

ID	Receptor	CL	2041 Without Dev. (DM)		2041 With Dev. (DS)		PC (in comb Dev.)	PC % of CL
			Total NOx	CL Exceed.	Total NOx	CL Exceed.		
9a	Cranborne Common	30	7.38	-22.62	8.14	-21.86	0.76	2.55
9b	Cranborne Common	30	7.05	-22.95	7.79	-22.21	0.74	2.47
26a	St Leonards and St Ives Heaths	30	20.89	-9.11	21.08	-8.92	0.18	0.61
26b	St Leonards and St Ives Heaths	30	21.74	-8.26	21.93	-8.07	0.19	0.63

Table 7.5: Results of NH_3 Modelling

ID	Receptor	CL	2041 Without Dev. (DM)		2041 With Dev. (DS)		PC (in comb Dev.)	PC % of CL
			Total NH_3	CL Exceed.	Total NH_3	CL Exceed.		
9a	Cranborne Common	1	2.55	1.55	2.75	1.75	0.20	20.40
9b	Cranborne Common	1	2.31	1.31	2.49	1.49	0.19	18.61
26a	St Leonards and St Ives Heaths	1	7.06	6.06	7.11	6.11	0.04	4.27
26b	St Leonards and St Ives Heaths	1	6.71	5.71	6.75	5.75	0.04	3.86

Table 7.6: Results of Nitrogen Deposition Modelling

ID	Receptor	LCL (kgN/ha/yr)	2041 Without Dev. (DM)		2041 With Dev. (DS)		PC (in comb Dev.)	PC % LCL
			Total N dep kg/ha/yr	LCL Exceed.	Total N dep kg/ha/yr	LCL Exceed.		
9a/b	Cranborne Common, Dorset Heaths SAC	10	10.0	0.0	10.1	0.11	0.11	1.1
9a/b	Cranborne Common, Dorset Heathlands SPA	5	5.0	0.0	5.1	0.11	0.11	2.2
26a/b	St Leonards and St Ives Heaths, Dorset Heaths SAC	10	10.0	0.0	10.0	0.03	0.03	0.3
26a/b	St Leonards and St Ives Heaths, Dorset Heathlands SPA	5	5.0	0.0	5.0	0.03	0.03	0.5

Results of Air Quality Modelling: NH_3

7.41 At both Cranborne Common and St Leonards and St Ives Heaths, the modelled in combination development PC exceeds 1% of the CL for both modelled locations and total future NH3 concentrations under the DS scenario exceed the CL. In the absence of further data on the distribution of SAC/SPA qualifying habitats and species within the areas of exceedance, the potential for adverse effects cannot be ruled out. Mitigation is therefore required, and is described further below.

Results of Air Quality Modelling: Nitrogen Deposition

7.42 The modelled in combination development PC does not exceed 1% of the LCL at St Leonards and St Ives Heaths, both in respect of the LCL for the SAC and SPA. Adverse effects from N deposition on this component SSSI of the Dorset Heath(land)s SAC/SPA are therefore not predicted.

7.43 However, in respect of Cranborne Common, the modelled in combination development PC exceeds 1% of the LCL for both the SAC and SPA, and the total future N deposition rates under the DS scenario exceed the CL. Adverse effects cannot therefore be ruled out in the absence of further information or mitigation. Proposed mitigation is described further below.

Impact Avoidance and Mitigation

7.44 Financial contribution via CIL payment to the Phase 2 mitigation measures being delivered through the Dorset Heathlands IAQS will ensure that the Proposed Development will not contribute to adverse air quality effects on the integrity of the Dorset Heath(land)s SAC/SPA in combination with other plans and projects.

Conclusion

7.45 On the basis of the securement of a CEMP to control dust emissions, and a financial contribution to the Dorset Heathlands IAQS mitigation measures via CIL payment, the Proposed Development would not contribute to adverse air quality effects on the integrity of the Dorset Heath(land)s SAC/SPA/Ramsar either alone or in combination with other plans and projects.

8. INCREASED RECREATIONAL PRESSURE

Introduction

8.1 This section considers the potential effects of increased recreational pressure generated during the operational phase of the Proposed Development on the Dorset Heath(land)s SAC/SPA/Ramsar, using available information about the current and potential future levels of recreational pressure that could arise as a result of the Proposed Development either alone or in combination with other plans and projects.

8.2 This assessment is then used to determine the scope of measures considered necessary to avoid and mitigate adverse effects that would otherwise arise on the integrity of the International Sites.

8.3 The New Forest International Sites also have the potential to be affected by increases in recreational pressure, however as the impact pathway is identical to that assessed in relation to the Dorset Heath(land)s designations, any impact avoidance and mitigation measures prescribed in relation to the more proximate Dorset-based designations will inherently address effects on the more distant New Forest (Hampshire-based) designations. This position was agreed with Natural England during the pre-application consultation meeting in June 2022. Therefore, a detailed assessment in relation to the New Forest designations has not been undertaken.

Relevant Background Information

Receptor Sensitivity

8.4 Urban effects on lowland heaths and their wildlife have been the subject of various studies, which have been systematically reviewed by Underhill-Day (2005).

8.5 Effects from visitor access on habitats and associated species can be both indirect and complex, and include the following:

- Bird disturbance as a result of recreation, particularly walking dogs off leads, which has the potential to restrict nest site choice, reduce breeding success (as a result of adults being flushed off nests and young being separated from parents), reduce population breeding density and lower foraging rates;
- Disturbance of other species, in particular rare reptiles (Smooth Snake, Sand Lizard), affecting breeding success and species distributions;
- Predation of bird species, either through direct predation from dogs on birds, their eggs or chicks, or through disturbance resulting in an increase in natural predation (by corvids and mammalian predators) once birds are flushed from nests;
- Trampling causing habitat and soil erosion, accidental destruction of eggs on nests, and damage to bare ground reptile and invertebrate habitats and populations;
- Fragmentation within heathland as a result of the creation of new, and widening of existing, paths, reducing the overall extent of heathland habitat; and

- Enrichment through dog defecation and potentially littering resulting in effects on the composition of habitats.

Dorset Heathlands Planning Framework 2020-2025 SPD

8.6 As already touched upon in **Section 2**, the Dorset Heathlands Planning Framework 2020 – 2025 Supplementary Planning Document (SPD) provides a strategy for the avoidance and mitigation of impacts of residential development, including recreational pressure and other urban effects, upon the Dorset Heathlands.

8.7 The strategy consists of two mutually dependent and supporting policy mechanisms:

- Restrictions on certain types of development within 400 metres of the heathland area; and
- Mitigation associated with some types of development within 400 metres to 5km of the heathland area.

8.8 The mitigation strategy set out in the Dorset Heathlands SPD is comprised of two parts:

- Part 1: Strategic Access, Management and Monitoring (SAMM); and
- Part 2: Heathland Infrastructure Projects (HIPs).

8.9 SAMM measures focus on wardening, awareness raising and monitoring, with contributions paid on the basis of the 'per dwelling' tariff set out in the SPD or collected via CIL.

8.10 Heathland Infrastructure Projects (HIPs) provide facilities to attract people away from the protected heathland sites, including via the provision of Suitable Alternative Natural Greenspace (SANGs). HIPs can also include Heathland Support Areas (HSAs), which are sites, usually adjacent to the Dorset Heathlands, where the area provides important functional support to the protected site. This may be in spreading public access pressure, enabling better site management or making the designated site more resistant to external effects. Contributions to HIPs are generally collected through CIL payments or secured through Section 106 agreements, or through bespoke provision.

8.11 Mitigation must be delivered in advance of first occupation and be provided in perpetuity (80 years).

8.12 The SPD sets out the quality requirements for SANGs in Appendix D.

Assessment of Likely Significant Effects (Operational Phase only)

Baseline Recreational Pressure

General Trends

2005 Visitor Survey

8.13 The original baseline survey of the Dorset Heathlands commissioned by Natural England (then English Nature) and reported in 2005 by Clarke *et al*. collected visitor questionnaire data across

20 different heathland access points, including both urban and rural heaths. The following points are drawn out (amongst others) in the report summary:

- 80% of the people interviewed were mainly using the heaths to walk their dog(s);
- Overall, 90-94% of the dogs with the questioned people were not on a lead while on the heaths;
- The average total distance walked by dog-walkers was 2,181m [the average for all users reported within the main report is 2,241m];
- More than half (59%) of all people arrived at access points by car; and
- Of the people who walked to the site, 75% had walked less than 500m to reach the heath, and 89% had walked less than 1km.

8.14 The report discussion states:

> *"The vast majority of visitors visit heaths to walk their dogs, very few other access types were encountered. Although 80% of people on a heath at any one time are dog-walkers, many of these people walk their dog on the heath daily or at least much more regularly than the typical non-dog walker."*

2008 Dorset Household Survey

8.15 A household survey of south-east Dorset residents was conducted by Footprint Ecology in 2008 (Liley *et al*. 2008). A total of 1,632 households responded to the survey, which found that over 61,000 visits per annum are made each year by the 1,632 households surveyed to heathland sites. This is the equivalent of 37 heathland visits per household per year.

2019 Visitor Survey

8.16 The 2019 visitor monitoring survey carried out by Footprint Ecology followed the same methodology as the previous survey to allow comparison, although surveyed 23 locations. The report summary (Panter & Caals, 2020) draws out the following:

- The top 4 busiest locations (total number of people recorded entering), were: Avon Heath Country Park, Holt Heath, Upton footbridge and West Parley (all > 6 people per hour);
- 92% of visitors visiting from home;
- The most common activity was dog walking (74% of interviewees), followed by walking (15%);
- 52% of interviewees arrived by car;
- 30% of interviewees visited daily (or more than once a day) and 72% visited at least once a week;
- It was estimated that an average visitor would make 206 visits per year;

- The average route was 2.7 km (mean value), but half were under 1.5 km (median value); and

- Most interviewees (78%) were aware of sensitive habitats and species present at the interview location and could also name those habitats/species (albeit not necessarily correctly). 52% of interviewees named reptiles and 42% breeding birds.

Recreation on Foot from Alderholt

8.17 A public right of way (PROW) runs from the centre of Alderholt southwest towards Cranborne Common, passing in between the northwest parcels of land within the Site (although not into the Site itself). During pre-application consultation with Natural England, it was suggested that a visitor count of this PROW could usefully be completed to provide some baseline information about the use of this route and the potential for SANG in this location to intercept visits that would otherwise be made to Cranborne Common.

8.18 A visitor count was therefore carried out by EPR in August 2022 (10th, 11th and 14th). Survey timings followed those of the Dorset Heathlands SPA visitor monitoring surveys, with 4x two-hour count sessions completed during weekdays (Mon-Fri) and 4x two-hour count sessions completed on weekend days (Sat/Sun): sessions were 0700-0900, 1000-1200, 1300-1500, 1700-1900. The count was completed at the location shown on **Figure 8.1**, where movements to/from Cranborne Common/Alderholt could be observed and recorded.

8.19 During the 16 hours of survey 16 people and 6 dogs were recorded heading towards Cranborne Common, with 13 people and 6 dogs recorded heading back towards Alderholt. Taking the upper figure of 16 people entering Cranborne Common during 16 hours of survey, this would account for an estimated 4,380 visits a year made via this PROW. However, the count was completed during the summer heatwave of 2022, in order to obtain data to meet a former project programme, therefore the above count is considered to represent an underestimate of likely use during 'normal' weather conditions. An updated count, completed to inform the detailed design stage, would therefore provide a more accurate baseline for future monitoring purposes.

Potential Changes in Recreational Pressure

8.20 The Proposal is for the development of 1,700 residential dwellings. On the basis of an average household occupancy of 2.4 people per dwelling, the Proposed Development would result in a population increase of 4,080.

8.21 As mentioned above, the 2008 Dorset Household Survey found that households made the equivalent of 37 visits to the heaths per year. Using this statistic, the 1,700 new dwellings might be expected to make 62,900 visits to the heaths per year, in the absence of mitigation.

8.22 The UK Pet Food website sets out statistics for pet ownership across the UK, and reports that in 2022 34% of households owned a dog. More than 21,000 of the above visits to the heaths might therefore be expected to be accompanied by at least one dog, and be made for the purpose of dog walking. This would be likely to result in a significant effect on the SAC/SPA qualifying habitats and species, in the absence of mitigation, when acting in combination with the existing baseline of recreational pressure and pressure exerted by other plans and projects. A bespoke Impact Avoidance and Mitigation Strategy (IAMS) has therefore been developed, which is described further below.

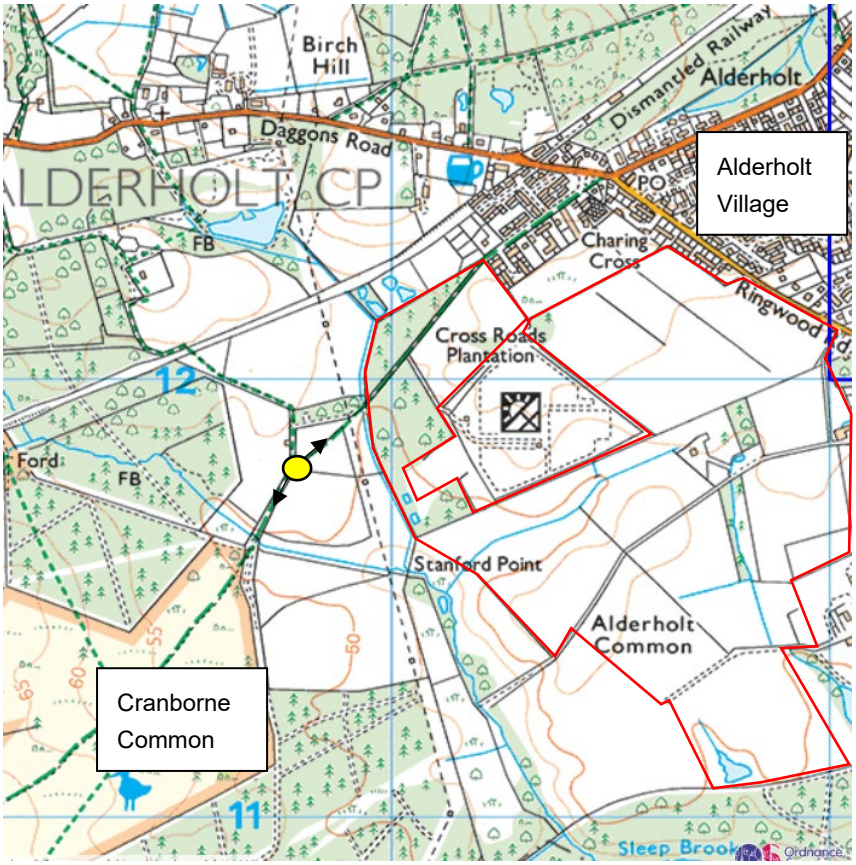

Figure 8.1: Location of PROW visitor count shown as yellow dot

Information for Appropriate Assessment

Impact Avoidance and Mitigation

Overview

8.23 A bespoke IAMS has been developed for the Proposed Development, comprised of the following two elements, in accordance with the requirements of the Dorset Heathlands SPD:

- Bespoke provision of SANG; and
- Contribution to SAMM via CIL payment.

SANG

8.24 The Dorset Heathlands Planning Framework SPD requires an appropriate contribution towards the delivery of HIPs to draw visitors away from the sensitive habitats and features on the designated heathland.

8.25 The Proposed Development therefore includes the provision of 53ha of bespoke SANG, located between the new residential development and the existing settlement of Alderholt and the SAC/SPA/Ramsar to the west. For the 1,700 dwellings proposed, this quantum equates to a SANG provision rate of 13 ha/1,000 population, based on a household occupancy ratio of 2.4 people per dwelling.

8.26 The SANG is comprised of three principal compartments, each with differing qualities for visitor interception, together forming a connected greenspace network for the expanded community of

Alderholt. This network is further supported by other blue and green infrastructure elements, amounting to a further 19ha of public open space, which when combined with the SANG accounts for 57% of the overall Site area.

8.27 A summary of the characteristics of the three proposed SANG compartments, reviewed against the SPD quality criteria, is provided in **Table 8.1. T**he proposed SANG compartments and key features are shown on **Map 7**. The proposed landscape strategy is then shown in **Figure 8.2**.

8.28 Delivery of the SANG compartments will be phased, with the first compartment delivered prior to first occupation, and the remaining compartments delivered in line with housing occupation requirements. The SANG will then be managed in perpetuity by an appointed Management Company.

8.29 Further information on the design and proposals for habitat creation and ongoing management and maintenance is provided in the Landscape Strategy report produced by Urban Initiatives Studio (November, 2022) and the EPR SANG Habitat Creation and Management Plan (ES TA 9.4). All of the details relating to the delivery and subsequent management of the SANG will be secured via planning obligation.

SAMM

8.30 As set out in the Dorset Heathlands Planning Framework SPD, Dorset Council will collect a contribution towards the delivery of SAMM measures per home from CIL. This can be secured by planning obligation. This will help to fund access management and monitoring on the heath, thereby ensuring, alongside the delivery of HIPs, no adverse effect on the integrity of the designated sites from development in the area.

Conclusion

8.31 Subject to delivery of the above IAMS the Proposed Development would accord with the requirements set out within the Dorset Heathlands SPD, therefore adverse effects on the integrity of the SAC/SPA/Ramsar would not arise either alone or in combination with other plans and projects.

Table 8.1: Summary of Proposed SANG compartments against SPD quality criteria

SPD Quality Criteria		Proposals by SANG compartment		
		Cross Roads Plantation (20.2ha)	**Alderholt Common (23.5ha)**	**Harbridge Drove (9.7ha)**
Access				
1	Sites must have adequate parking for visitors, unless the site is intended for local pedestrian use only, i.e. within easy walking distance (400m as a straight line) of the developments linked to it.	This compartment is located on the PROW that connects Alderholt with Cranborne Common. A 2022 baseline visitor count estimates at least 4,380 visits/year currently made to Cranborne Common via this route. This SANG compartment is ideally located to divert a proportion of these baseline visits. It will also draw residents on foot from the northwest residential parcel. Access to this compartment will therefore be for local pedestrian use, so parking is not proposed.	This largest and centrally located SANG compartment is intended to be the principal focus for informal recreation on site. A car park is therefore proposed on the eastern edge of the SANG, accessible via the central residential parcels. The car park will provide 35-40 spaces in total, so the majority of the car parking requirement for the SANG network (at a provision rate of 1 space/ha). Parking provision will be phased to cater for the increasing pace of demand, with the initial number of spaces provided at first occupation to be agreed with Natural England and DC.	This smaller SANG compartment is intended to serve as a doorstep SANG for the eastern residential parcels. Although access will be primarily for local pedestrian use, its location immediately adjacent to Ringwood Road makes it a desirable location for quick access by car. Therefore a second car park is proposed, to accommodate the remainder of the parking requirement for the SANG network – approximately 15 to 20 spaces, again with phased provision.
2	Car parks must be easily and safely accessible by car, be of an open nature and be clearly sign posted.	No car park proposed.	The car park will be easily accessible and clearly sign posted from Ringwood Road and through the new central residential parcels.	The car park will be easily accessible and clearly sign posted from Ringwood Road.
3	There should be easy access between the car park or housing and the SANG with the facility to take dogs safely from the car park to the SANG off the lead.	Access from the northwest residential parcel will be direct via the northwestern green infrastructure corridor. Access for the existing residents of Alderholt will be via the PROW.	The car park is located on the eastern edge of the SANG, enabling visitors arriving by car to take dogs safely off the lead straight into the SANG. Access to the SANG on foot will be possible via multiple green infrastructure corridors.	The car park is located on the western edge of the SANG to the south of Ringwood Road, enabling visitors arriving by car to take dogs safely off the lead straight into the SANG. Access to the SANG on foot will be possible via multiple green infrastructure corridors.
4	Access points should have signage showing the SANGs layout and the routes	Signage showing the SANG layout and routes will be provided at access points.		

SPD Quality Criteria		Proposals by SANG compartment		
		Cross Roads Plantation (20.2ha)	Alderholt Common (23.5ha)	Harbridge Drove (9.7ha)
Paths, Tracks & Infrastructure				
5	Paths must be easily used and well maintained but most should remain unsurfaced to avoid the site becoming too urban in feel.	To be sympathetic to the existing semi-natural habitats within this compartment (described further below), paths within the woodland will remain unsurfaced and paths within the grassland will be mown. Should areas within the woodland become muddy during the winter, short sections could be stabilised with woodchip. The short section around the larger southern SuDS pond in this compartment will be boardwalked, providing further interest.	To maintain an appropriately rural feel whilst ensuring year-round all-abilities access, the primary circular route will be finished in bound gravel or hoggin. Secondary and linking routes will be provided as simple mown grass paths. Short sections through wetland areas will be boardwalked, providing further interest and to protect the existing area of rush pasture by the northeast woodland.	To maintain an appropriately rural feel whilst ensuring year-round all-abilities access, the primary circular route will be finished in bound gravel or hoggin. Secondary and linking routes will be provided as simple mown grass paths. The short section between the north-central pond/wetland area will be boardwalked, providing further interest.
6	Most paths should be suitable for use in all weathers and all year around. Boardwalks may be required in wet sections.			
7	SANGs with car parks must have a circular walk which starts and finishes at the car park.	No car park proposed.	The main circular route will start and finish at the car park.	The main circular route will start and finish at the car park.
8	A circular walk of 2.3-2.5km around the SANGs is available - for larger SANGs a variety of circular walks created	This compartment is likely to be delivered as the first SANG phase. A 2.5km circular walk will be possible, with part of the walk taking advantage of the northwestern green infrastructure corridor to complete the loop.	This SANG compartment will follow as a second phase, expanding the area of accessible routes from that delivered within the Cross Roads Plantation SANG. A 2.3km circular walk will be possible within this central area, with loops of varying lengths passing through different habitats possible.	This compartment will accommodate a 1.2km circular walk as a convenient doorstep loop, but with longer walks possible within the wider SANG and green infrastructure network.
9	It must be designed so that visitors are not deterred by safety concerns	The SANGs have been designed and will be managed to promote their safe enjoyment by visitors. Areas of existing woodland will be managed to ensure long sight lines within open woodland rides.	The SANGs have been designed and will be managed to promote their safe enjoyment by visitors. This compartment will provide wide open paths and expansive views.	The SANGs have been designed and will be managed to promote their safe enjoyment by visitors. The future scheme will alter the existing flow of traffic along Ringwood Road, making it access only, with limited traffic flows. Crossing between the northern and southern sections of this SANG

SPD Quality Criteria		Proposals by SANG compartment		
		Cross Roads Plantation (20.2ha)	**Alderholt Common (23.5ha)**	**Harbridge Drove (9.7ha)**
				compartment will therefore feel safe, like crossing a countryside lane.
10	Good green infrastructure links with nearby development to encourage use of SANG	The SANG network will be easily accessible to new and existing residents via a multitude of wide semi-natural green infrastructure corridors.		
Advertising & Marketing Checklist				
11	It should be clearly sign-posted and advertised	The new SANGs will be clearly sign-posted at access points and advertised by leaflets posted to existing local residents at the point of opening.		
12	Leaflets and/or websites advertising their location to potential visitors should be produced and provided at the sales office of the new development and to the new homeowners	The new SANGs will be publicised online and through provision of information to new homeowners within welcome packs.		
Landscape & Vegetation				
13	They must be perceived as natural spaces without intrusive artificial structures, except in the immediate vicinity of car parks. Visually-sensitive way-markers and some benches are acceptable	The SANGs have been designed to complement the existing rural setting, providing new open space for recreation in a countryside setting. The existing habitats within the SANGs, namely woodland and hedgerows, act to provide immediate visual containment. In order to avoid any urbanising feel, all site furniture will be low-key and minimalistic; seating, waymarkers and interpretation boards will be of timber construction and 'rustic' design.		
14	They must aim to provide a variety of habitats for visitors to experience (e.g. some of woodland, scrub, grassland, heathland, wetland, open water)	This compartment will retain and enhance the existing broadleaved and mixed woodland, and the area of neutral grassland. The grassland will be diversified, with central and peripheral areas managed as wildflower meadow. Two new ponds and a large SuDS basin will also be created, providing wetland	The biodiversity poor intensively farmed arable and improved grassland is this large compartment will be enhanced to create a diverse open parkland landscape. Habitats will include wildflower grassland, with central areas managed as tall meadows, new woodland scrub and standard trees, large SuDS basins set in a	The species-poor grassland in this compartment will be diversified to provide visual interest, and existing woodland will be expanded to tie in with the wooded landscape of Ringwood Forest to the south. In the northern section, two large SuDS basins will be created to provide surface water drainage, but

SPD Quality Criteria		Proposals by SANG compartment		
		Cross Roads Plantation (20.2ha)	**Alderholt Common (23.5ha)**	**Harbridge Drove (9.7ha)**
		interest and opportunities for dog dipping.	wetland complex and a smaller pond suitable for dog dipping.	also a central focus for the circular walking route.
15	Access within the SANGs must be largely unrestricted with plenty of space provided where it is possible for dogs to exercise freely and safely off lead but under control so as not to deter others.	The SANGs will provide unrestricted open space that will be enclosed to allow the safe exercise of dogs off lead.		
16	They must avoid where possible unpleasant visual and auditory intrusions (e.g. derelict buildings, intrusive adjoining buildings, dumped materials, loud intermittent or continuous noise from traffic, industry, sewage treatment works, waste disposal facilities).	The proposed SANG occupies a countryside setting that is largely free from urban intrusion.		

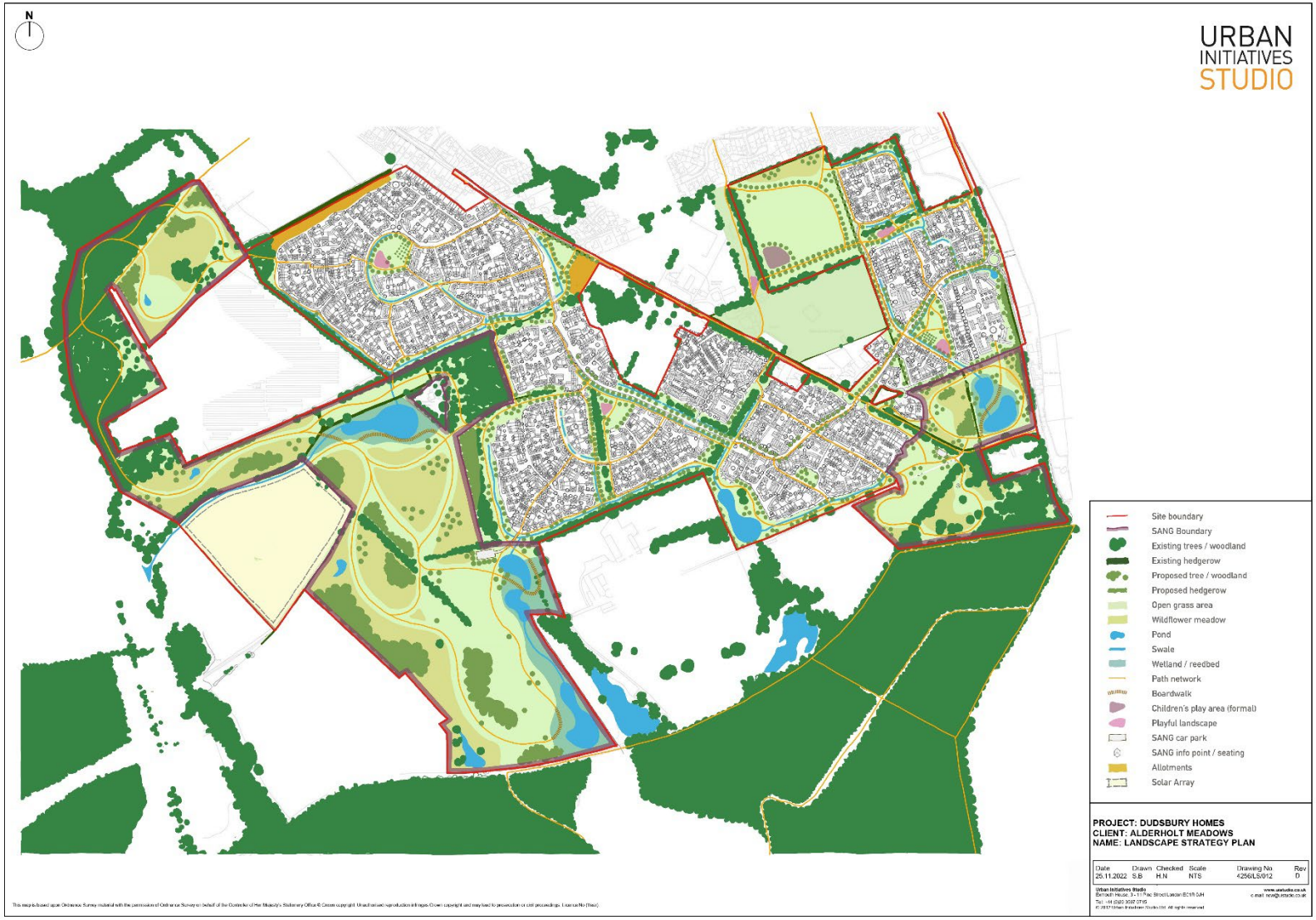

Figure 8.2: Proposed Landscape Strategy (Urban Initiatives Studio)

9. SUMMARY AND CONCLUSION

Summary

9.1 **Table 9.1** below provides a summary of the impact pathways considered in this Information for HRA report; the conclusion of the screening stage assessment carried out in respect of each; and includes a summary of the impact avoidance and mitigation strategy (IAMS) that is proposed to address the potential for likely significant effects.

Table 9.1: Summary of information for HRA

Report Section	Impact Pathway	Scoping					Screening Stage Conclusion (ex. mitigation)	Impact Avoidance and Mitigation Measures Proposed to Ensure No Adverse Effect (alone and in combination)
		Dorset Heaths SAC	Dorset Heathlands SPA	Dorset Heathlands Ramsar	River Avon SAC/Avon Valley SPA/Ramsar	New Forest SAC/SPA/Ramsar		
5	Loss of offsite supporting habitat	OUT	IN	OUT	OUT	OUT	LSE	• New and enhanced habitats within SANG and GI network • Lighting Strategy
6	Hydrological change	OUT	OUT	OUT	IN	OUT	LSE	• Strategy for nutrient neutrality • CEMP • SuDS Strategy
7	Air pollution	IN	IN	IN	OUT	OUT	LSE	• CEMP • CIL contribution to Dorset Heathlands IAQS
8	Increased recreational pressure	IN	IN	IN	OUT	IN	LSE	• Bespoke SANG provision • Contribution to SAMM via Dorset Heathlands SPD

9.6 The IAMS summarised above, delivered in advance of first occupation/operation and secured in perpetuity, will ensure that adverse effects on the integrity of International Sites considered in this assessment will not arise as a result of the Proposed Development, either alone or in combination with other plans and projects.

Conclusion in Respect of the Habitats Regulations

9.7 In view of the above, in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended) and taking into account the most recent relevant case law, it is considered that DC can safely conclude that the proposals will not have an adverse effect on the integrity of the International Sites considered in this assessment alone or in combination with other plans and projects. Consequently, an Appropriate Assessment of the proposals under Regulation 63(1) of the Conservation of Habitats and Species Regulations 2017 (as amended) can be passed.

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Maps

MAP 1 Site Location and International Designated Sites

KEY

- Site boundary
- 2km linear distance from site boundary
- 5km linear distance from site boundary
- 400m linear distance from Dorset Heath(land)s SAC/SPA/Ramsar
- Special Protection Areas (SPA)
- Special Areas of Conservation (SAC)
- Ramsar

SCALE: 1:45,000 at A3

0 500 1,000 1,500 2,000 Metres

N

EPR

CLIENT: Dudsbury Homes (Southern)

PROJECT: Alderholt Meadows, Fordingbridge

DATE: 05 December 2022

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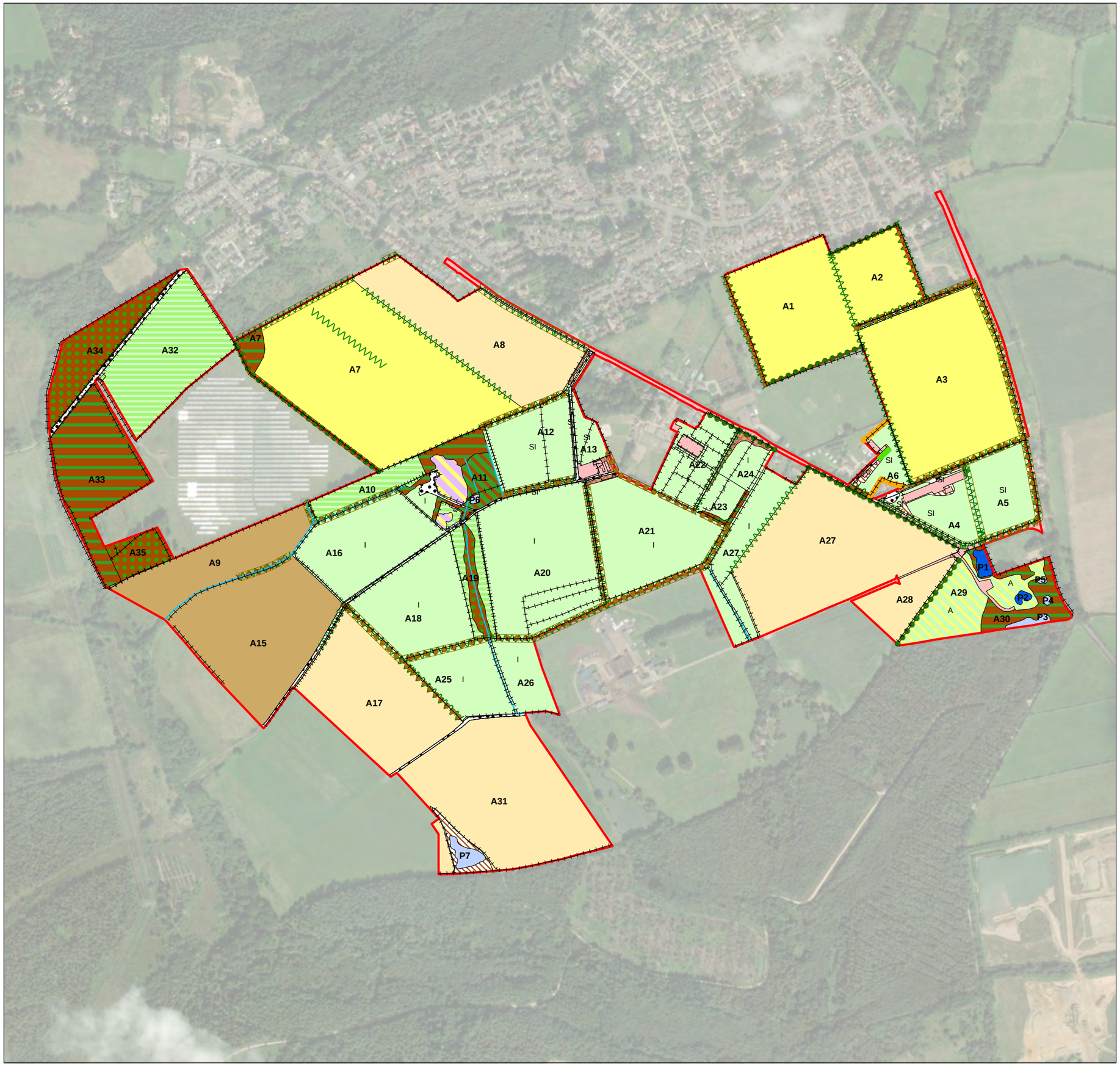

MAP 2 Baseline Habitats

KEY

- Site boundary
- Ditches
- Fences
- Hedge Ornamental Non Native
- Line of Trees - Associated with bank or ditch
- Line of Trees (Ecologically Valuable)
- Line of Trees (Ecologically Valuable) - with Bank or Ditch
- Native Hedgerow
- Native Species Rich Hedgerow
- Native Species Rich Hedgerow - Associated with bank or ditch
- Native Species Rich Hedgerow with trees
- Native Species Rich Hedgerow with trees - Associated with bank or ditch
- Temporary grass and clover leys
- Cereal crops
- Non-cereal crops
- Purple moor grass and rush pastures
- Other neutral grassland
- A — Modified grassland (Amenity grassland)
- I — Modified grassland (Improved grassland)
- SI — Modified grassland (Poor semi-improved grassland)
- Bramble scrub
- Ruderal/Ephemeral
- Ponds (Priority Habitat)
- Ponds (Non- Priority Habitat)
- Developed land; sealed surface
- Vacant/derelict land/ bareground
- Lowland mixed deciduous woodland
- Other woodland; mixed
- Wet woodland

SCALE: 1:7,500 at A3

N

0 100 200 300 400 500 Metres

EPR

CLIENT: Dudsbury Homes (Southern)

PROJECT: Alderholt Meadows, Fordingbridge

DATE: 29 November 2022

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P22/40

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

MAP 3 Proposed Land Use Types

KEY

- Site boundary
- Dorset heath(land)s SAC/SPA/Ramsar
- 400m linear distance from Dorset Heath(land)s SAC/SPA/Ramsar

SCALE: 1:8,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: Dudsbury Homes (Southern)

PROJECT: Alderholt Meadows, Fordingbridge

DATE: 19 December 2022

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MAP 4 Nightjar Survey Results & Baseline Habitats

KEY

- Site boundary
- Approximate location of Nightjar churring
- Nightjar foraging
- Direction of flight
- Ditches
- Fences
- Hedge Ornamental Non Native
- Line of Trees - Associated with bank or ditch
- Line of Trees (Ecologically Valuable)
- Line of Trees (Ecologically Valuable) - with Bank or Ditch
- Native Hedgerow
- Native Species Rich Hedgerow
- Native Species Rich Hedgerow - Associated with bank or ditch
- Native Species Rich Hedgerow with trees
- Native Species Rich Hedgerow with trees - Associated with bank or ditch
- Temporary grass and clover leys
- Cereal crops
- Non-cereal crops
- Purple moor grass and rush pastures
- Other neutral grassland
- A — Modified grassland (Amenity grassland)
- I — Modified grassland (Improved grassland)
- SI — Modified grassland (Poor semi-improved grassland)
- Bramble scrub
- Ruderal/Ephemeral
- Ponds (Priority Habitat)
- Ponds (Non- Priority Habitat)
- Developed land; sealed surface
- Lowland mixed deciduous woodland
- Other woodland; mixed
- Wet woodland

SCALE: 1:7,500 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: Dudsbury Homes (Southern)

PROJECT: Alderholt Meadows, Fordingbridge

DATE: 29 November 2022

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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

MAP 5 Nightjar Survey Results & Proposed Land Use

KEY

- Site boundary
- Approximate location of Nightjar churring
- Nightjar foraging
- Direction of flight

SCALE: 1:8,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: Dudsbury Homes (Southern)

PROJECT: Alderholt Meadows, Fordingbridge

DATE: 19 December 2022

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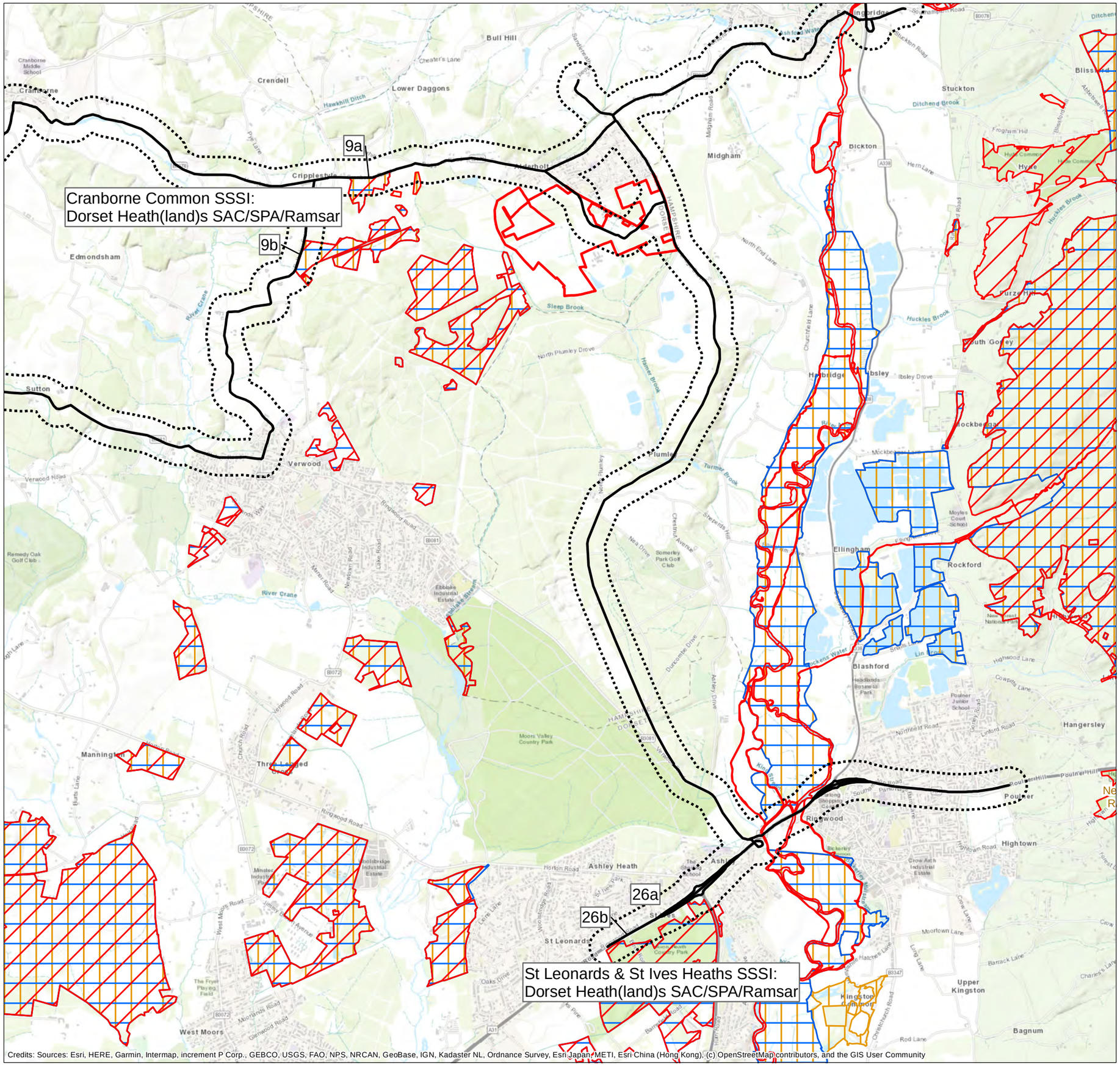
Basemap: Masterplan Overview, Scott Worsfold Associates, 22-1126, MPO, Rev P3, April 2022



Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

MAP 6 International Sites within 200m of ARN Subject to Detailed Air Quality

KEY

- Site boundary
- ADMS roads
- ADMS roads 200m buffer

Statutory Sites

- Special Protection Areas (SPA)
- Special Areas of Conservation (SAC)
- Ramsar

SCALE: 1:42,000 at A3

0 500 1,000 1,500 2,000 Metres

N

EPR

CLIENT: Dudsbury Homes (Southern)

PROJECT: Alderholt Meadows, Fordingbridge

DATE: 29 November 2022

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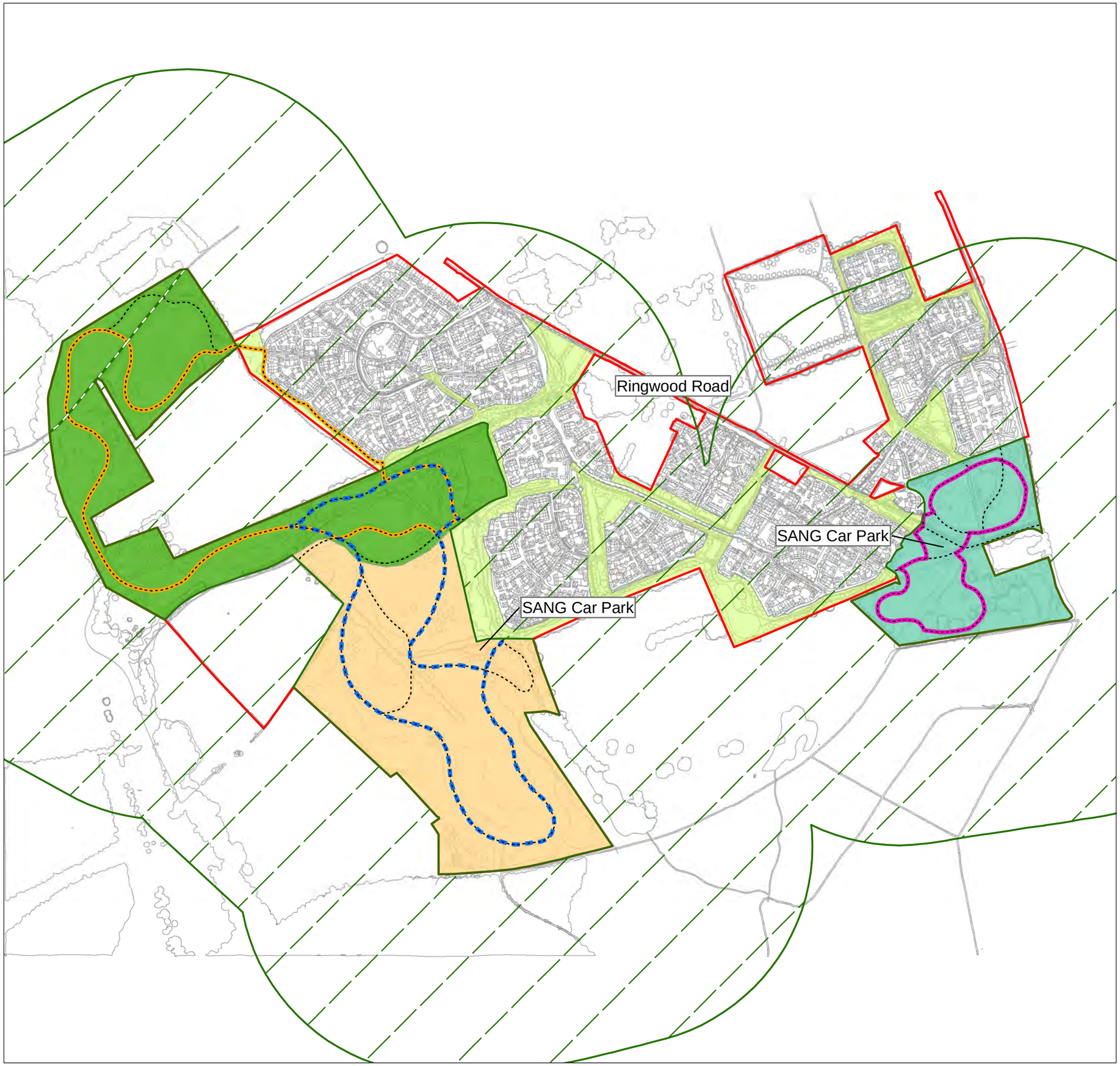

MAP 7 Proposed SANG Network

KEY

- Site boundary

Proposed SANG network

- Cross Roads Plantation SANG - 20.2ha
- Alderholt Common SANG - 23.5ha
- Harbridge Drove SANG - 9.7ha
- 400m linear distance from Proposed SANGs
- Green infrastructure corridors
- Public right of way
- SANG paths
- Circular walk 1 - 2.5km
- Circular walk 2 - 2.3km
- Circular walk 3 - 1.2km

SCALE: 1:7,500 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: Dudsbury Homes (Southern)

PROJECT: Alderholt Meadows, Fordingbridge

DATE: 05 December 2022

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Appendix 1

Relevant Legislation, Policy, Guidance and Case Law

Relevant Legislation, Policy, Guidance and Case Law

Legislation

The Conservation of Habitats and Species Regulations 2017 (as amended) (known as the "Habitats Regulations") were originally drawn up to transpose the European Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the "Habitats Directive") into UK legislation. Following the UK's exit from the European Union, the Habitats Regulations – as amended by Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 – remain in force until such a time as they are superseded by new or updated domestic legislation.

The key sections of relevance to projects appear from Regulation 63 onwards. Regulation 63 states that:

> *"(1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which—*
>
> *(a) is **likely to have a significant effect** on a European site or a European offshore marine site (either **alone or in combination with other plans or projects**), and*
>
> *(b) is not directly connected with or necessary to the management of that site,*
>
> *must make an **appropriate assessment** of the implications of the plan or project for that site in view of that site's conservation objectives.*
>
> *(2) A person applying for any such consent, permission or other authorisation must provide such information as the competent authority may reasonably require for the purposes of the assessment or to enable it to determine whether an appropriate assessment is required."* **[our emphasis]**

The above legislation thus requires that a sequential approach be adopted when addressing potential impacts upon International Sites. Guidance for doing this in practice has been published by the European Commission and others, and is discussed below.

The requirement for HRA under the Habitats Regulations applies to Special Areas of Conservation (SACs) designated under for certain Internationally important habitat types and animal populations under the aforementioned Habitats Directive, and Special Protection Areas (SPAs) classified under the earlier Birds Directive (now codified under Directive 2009/147/EC).

SACs and SPAs are collectively referred to as either European Sites or Natura 2000 sites in Europe, and are now part of the UK's "National Sites Network". However, as the National Planning Policy Framework (2019) also applies the protection afforded to these sites to Ramsar Sites (which are wetlands of International Importance designated under the separate Ramsar Convention in Iran in 1979) as a matter of National Planning Policy, these three types of site are collectively referred to as 'International Sites' for expediency.

Policy

National Planning Policy Framework (NPPF)

Section 15 ('Conserving and enhancing the natural environment') of the NPPF (2021) sets out expectations and principles regarding the protection of designated sites of importance for biodiversity, including international or 'habitats' sites. Paragraph 182 states:

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

Local Planning Policy

The currently adopted Christchurch and East Dorset Local Plan (2014) includes the following relevant policies:

Policy ME1: Safeguarding Biodiversity and Geodiversity

"*The Core Strategy aims to protect, maintain and enhance the condition of all types of nature conservation sites, habitat and species within their ecological networks, including:*

- *International designated sites (SPA, SAC, Ramsar)*
- *Sites of Special Scientific Interest (SSSI)*
- *Sites of Nature Conservation Interest (SNCI)*
- *Local Nature Reserves*
- *Priority species and habitats*
- *Important geological and geomorphological sites*
- *Riverine and coastal habitats*
- *Suitable Alternative Natural Greenspace (SANG)*

Within Strategic Nature Areas identified on Map 13.3, specific action will be taken towards meeting targets for maintenance, restoration and recreation of priority habitats and species, and linking habitats to create more coherent ecological networks that are resistant to climate change.

Where development is considered likely to impact upon particular sites, habitats or species set out within the Dorset Biodiversity Protocol, it will need to be demonstrated that the development will not result in adverse impacts, To determine the likelihood of harm occurring, there should be an assessment of effects on any existing habitats, species and/or features of nature conservation importance, and the results of this assessment documented. The method of survey and level of detail will vary according to the size and type of development and whether any priority species and habitats exist on site. The survey should involve consultation and advice from Natural England, the Dorset Wildlife Trust, and Dorset County Council.

In considering the acceptability of proposals, the Council will assess their direct, indirect and cumulative impacts relative to the significance of the features' nature conservation value. National policy will be applied to ensure the level of protection afforded international, national and locally designated sites and species is commensurate with their status.

The following criteria should be addressed when development is proposed:

- *Avoidance of harm to existing priority habitats and species through careful site selection, artificial lighting design, development design and phasing of construction and the use of good practice construction techniques.*

- *Retention of existing habitat and features of interest, and provision of buffer zones around any sensitive areas.*
- *Enhancement of biodiversity through improving the condition of existing habitats and achieving net gains in biodiversity, where possible. Particular attention should be paid to priority habitats and species referred to in Section 41 of the Natural Environment and Rural Communities Act 2006 and the Dorset Biodiversity Strategy, and the Strategic Nature Area identified on the Dorset Nature Map.*
- *Where harm is identified as likely to result, provision of measures to avoid or adequately mitigate that harm should be set out. Development should be refused if adequate mitigation or, as a last resort, compensation cannot be provided.*
- *Provision of adequate management of the retained and new features.*
- *Monitoring of habitats and species for a suitable period of time after completion of the development to indicate any changes in habitat quality or species numbers, and put in place corrective measures to halt or reverse any decline.*

In addition, and in recognition of the function of the New Forest National Park, the Core Strategy will carefully consider any adverse impacts on the New Forest as a result of development."

Policy ME2: Protection of the Dorset Heathlands

"*In accordance with the advice from Natural England, the evidence available to the authorities and Core Strategy Habitats Regulations Assessment (HRA), no residential development will be permitted within 400m of protected European and internationally protected heathlands.*

Any residential development between 400m and 5km of these areas will provide mitigation through a range of measures as set out in the Core Strategy, Site Specific Allocations Development Plan Document and the Dorset Heathlands Planning Framework Supplementary Planning Document including:

- *Provision of on-site and off-site suitable alternative natural greenspace (provided in accordance with guidelines set out Appendix 5).*
- *Provision of other appropriate avoidance/mitigation measures.*

The avoidance or mitigation measures are to be delivered in advance of the developments being occupied and must provide for mitigation in perpetuity. Suitable Alternative Natural Greenspaces (SANGs) will be secured by way of a legal agreement between the developer and the relevant council. The delivery of Heathland mitigation measures will be secured as set out in the Councils' Regulation 123 list. The authority will ensure that mitigation measures to avoid harm are given priority as required by this policy.

The Dorset Heathlands Planning Framework Supplementary Planning Document will set out the type of development circumstances where mitigation is required, and a list of mitigation projects. The Councils' Core Strategy and Site Specific Allocations Development Plan Document sit alongside the Supplementary Planning Document in identifying SANG provision. This will ensure that suitable measures are in place by the time development is occupied. The combination of the 400m exclusion zone with the heathland mitigation measures set out above

are designed to function together as an effective package avoiding the harmful effects of additional residential development on the European and internationally designated heathlands."

The emerging Dorset Council Local Plan includes the following relevant policies:

Policy ENV2: Habitats and species

International and European sites

i. *"Proposals for development must not adversely affect the integrity of International or European sites either alone or in-combination with other plans and projects, unless the tests set out under the Conservation of Habitats and Species Regulations (2017) (as amended) are met. Where adverse impacts are identified measures must be put in place to avoid, mitigate or compensate these impacts. Adverse impacts that cannot be avoided or adequately mitigated will not be permitted other than in exceptional circumstances. These circumstances only apply where:*

   - *there are no suitable alternatives;*
   - *there are Imperative Reasons of Overriding Public Interest; and*
   - *necessary compensatory provision can be secured to ensure that the overall coherence of the National Site Network of SACs, SPAs and Ramsars is protected.*

ii. *Where specific impacts have been identified in relation to particular sites, mitigation measures for these sites will include:*

   - *In relation to Dorset Heaths SAC, Dorset Heaths (Purbeck and Wareham) and Studland Dunes) SAC and Dorset Heathlands SPA/Ramsar, contributions from development within 5km of the heathland designations towards the sustainable management of the heathland sites or contributions towards the provision of suitable alternative natural greenspace (SANG).*
   - *In relation to the Poole Harbour SPA/Ramsar,*
     - *contributions towards the effective management of the site to reduce eutrophication from additional nitrates arising from development,*
     - *contributions towards the effective management of the site to reduce recreational pressure*
   - *In relation to Chesil and the Fleet SAC and Chesil Beach and the Fleet SPA/Ramsar, contributions towards the effective management of the site to reduce recreational pressure or contributions towards the provision of suitable alternative natural greenspace.*
   - *In relation to Fontmell and Melbury Downs SAC, Cerne and Sydling Downs SAC and Rooksmoor SAC, contributions towards measures to reduce aerial nutrient deposition arising from increased traffic linked to new development.*
   - *In relation to Somerset Levels and Moors SPA/Ramsar, River Avon SAC, Avon Valley SPA/Ramsar and the River Axe SAC, contributions towards measures to reduce increased levels of phosphate arising from development."*

Guidance

The Habitats Regulations Assessment Process

Reference has been made to European Commission guidance on Habitats Regulations Assessment (EC, 2000, 2001, 2018), in particular the European Commission's *'Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites'* (2001). This guidance provides advice on meeting the correct stepwise approach required by Article 6 of the Habitats Directive. The whole process is usually referred to in the UK as "Habitats Regulations Assessment" (HRA) and is split into the following stages that are undertaken in sequence:

- Screening the need for an Appropriate Assessment;
- The "Appropriate Assessment" (AA);
- The Assessment of Alternative Solutions; and
- Assessment where no alternative solutions exist and where adverse impacts remain (also known as the test for ''Imperative Reasons of Overriding Public Interest'' or IROPI).

Each of the stages determines the requirement for the next one in the sequence to be carried out. For example, if it is concluded at the Screening stage that the plan or project is unlikely to generate significant adverse effects upon the International site in question, there is no need to proceed to the Appropriate Assessment stage, and so on.

Undertaking the Habitats Regulations Assessment process is the responsibility of the decision maker as the Competent Authority for the purposes of the Habitats Regulations (in this case Dorset Council (DC) as the Local Planning Authority); although it is the responsibility of the proponent of a plan or project to provide the Competent Authority with the information that they require for this purpose.

In the first instance, this report is intended to provide the Competent Authority under the Habitats Regulations with the information that is required in order to determine whether or not the proposals are likely to have a significant effect on an International Site either alone or in combination with other plans and projects, and consequently whether or not an Appropriate Assessment is required. Should it be considered that an Appropriate Assessment is required, then this report also aims to supply the information that will be necessary in determining whether or not there will be an adverse effect on the integrity of the International Site(s) concerned.

Other HRA guidance that has been taken into account during the preparation of this document includes:

- The European Commission's *'Managing Natura 2000 Sites'* document (2018) that provides guidance on some of the key concepts enshrined in Article 6 of the Habitats Directive;
- The *'Communication from the Commission on the Precautionary Principle'* (2000) which provides guidance on the correct application of the precautionary principle, stating that it should be applied with proportionality and should not aim at zero risk;
- Plans and Projects Significantly Affecting Natura 2000 Sites' (2001),
- Circular 06/05 *'Biodiversity and Geological Conservation – Statutory Obligations and Their Impact Within the Planning System'*;

- *'Planning for the Protection of European Sites'* (DCLG, 2006); and

- PINS NOTE 05/2018 *'Consideration of avoidance and reduction measures in Habitats Regulations Assessment: People over Wind, Peter Sweetman v Coillte Teoranta'* (Planning Inspectorate 9 May 2018).

The National Planning Policy Framework (NPPF) (2021) also contains sections of relevance to HRA and International Sites, and this has been taken into account. Other topic-specific guidance is included in the relevant preceding report sections.

The Chartered Institute of Ecology and Environmental Assessment's Guidelines for Ecological Impact Assessment in the United Kingdom (CIEEM, 2018)

Whilst the key guidance documents for the HRA process are those produced by the European Commission (EC, 2000, 2001, 2018), the approach taken in this document has also been carried out in accordance with the broad process advocated in the Chartered Institute of Ecology and Environmental Management's "Guidelines for Ecological Impact Assessment'' (2018, version 1.2 updated 2022) (the "EcIA Guidelines").

These guidelines are endorsed by the main stakeholders in the UK planning system that have a specific responsibility for wildlife and nature conservation, including Natural England, the Environment Agency and the Wildlife Trusts.

Broadly, the EcIA Guidelines prescribe an approach that can be summarised as the following sequential process:

- Establishing the spatial extent of the Zone of Influence (ZoI) within which the proposed development is likely to exert biophysical changes upon the environment during either the site clearance, construction or operational phase;

- The identification, description and valuation (where possible) of ecological features and resources of value within that ZoI (note that in this case the ecological features of relevance will be those for which the relevant International Sites were designated, and consequently of International nature conservation value);

- The assessment of the likely magnitude and significance of potential impacts and effects that might be exerted upon those features and resources in the absence of any impact avoidance or mitigation measures;

- The development of impact avoidance and/or mitigation measures to avoid and/or minimise potentially significant effects;

- The assessment of any residual effects (positive or negative) that would remain following the application of any impact avoidance and/or mitigation measures, and the development of appropriate compensation measures where significant residual negative effects remain;

- The development of ecological enhancement measures to be incorporated into the project proposals to deliver net gains; and

- Advice on the consequent potential implications of relevant nature conservation related legislation or planning policy.

Other subject specific guidance is referred to in the relevant assessment sections in this document.

Relevant Case Law

Case C-127/02 of the European Court of Justice (ECJ) – The 'Waddenzee' Case

The ECJ Waddenzee Case clarified a number of important points in relation to the correct interpretation of Article 6(3) of the Habitats Directive in particular. This clarification has been helpfully set out in Government Circular 06/05 *'Biodiversity and Geological Conservation'*.

In particular, one of the key messages from the ECJ was that, where a plan or project has the potential to affect a Natura 2000 site, an 'Appropriate Assessment' is necessary:

> *"….if it cannot be excluded, on the basis of **objective information**, that it will have a significant effect on that site, either alone or in combination with other plans and projects"* [our emphasis]
>
> [Paragraph 13 of Circular 06/05 or paragraph 44 of the Waddenzee Judgment]

The ECJ expanded upon this by saying that:

> *''…where such a plan or project has an effect on that site but is not likely to undermine its conservation objectives, it cannot be considered likely to have a significant effect on the site concerned.''*
>
> [Paragraph 47 of the Waddenzee Judgement]

Further to the above the ECJ clarified that, once an Appropriate Assessment has been triggered, except in the circumstances outlined in Article 6(4) of the Directive, a plan or project can only be authorised where it will not have an adverse effect on the integrity of the Natura 2000 site, and that:

> *''That is the case where no reasonable scientific doubt remains as to the absence of such effects''.*
>
> [Paragraph 21 of Circular 06/05, or paragraph 59 of the Waddenzee Judgement]

Champion in the Supreme Court

The Supreme Court ruling of R. (Champion) v North Norfolk DC [2015] 1 WLR 3710 considers the "Screening" stage in HRA and clarifies the level of certainty required in an Appropriate Assessment, further building on the Waddenzee Judgment.

This case related to an earlier Court of Appeal decision which upheld the consenting of a proposed development by North Norfolk District Council for the Crisp Malting Group to erect two silos and construct a lorry park near the river Newsum, an SAC, without the need for an EIA, or an Appropriate Assessment under the Habitats Regulations. After the developer produced a report that recommended pollution prevention strategies and mitigation measures and bodies such as Natural England and the Environment Agency withdrew their objections, NNDC approved the development with planning conditions attached.

The Supreme Court said that first stage of Article 6(3) was to consider whether there "may" be a significant effect, until Champion it was common to call this first stage a "Screening" stage, and much of the guidance and case-law pre-dating (and indeed post-dating) this case uses this language. Lord Carnwath said:

"the Habitats Directive and Regulations contain no equivalent to "screening" under the EIA Regulations. Mr Buxton relies on the opinion of Advocate General Sharpston in the Sweetman case [2014] PTSR 1092 itself. She was principally concerned to dispel confusion created by different terminology used in some of the cases to describe the test under article 6(3) . In her view all that was needed at what she called "the first stage" of article 6(3) was to show that there "may" be a significant effect …

However, there is nothing in the language of the Habitats Directive to support a separate stage of "screening" in any formal sense. Nor is it reflected in the reasoning of the CJEU [Court of Justice of the European Union] *itself. In Sweetman the first stage was the appropriate assessment, the second the decision whether in the light of its conclusions the project could be permitted. "Triggering" was simply the word the CJEU used to set the threshold for the first stage. The same approach is also found in the European Commission's guidance Managing Natura 2000 Sites …*

… At least in this country the use of the term "screening" in relation to the Habitats Directive is potentially confusing, because of the technical meaning it has under the EIA Regulations. The formal procedures prescribed for EIA purposes, including "screening", preparation of an environmental statement, and mandatory public consultation, have no counterpart in the Habitats legislation" [our addition]

Champion therefore clarified that there is no prescribed filtering process at the Screening Stage of the Directive, but that does not mean that a Competent Authority must ignore information in front of them when deciding whether or not to carry out an Appropriate Assessment. This is supported by the Dilly Lane Case (discussed further below).

The process for, and certainty required in an Appropriate Assessment is also considered:

"All that is required is that, in a case where the authority has found there to be a risk of significant adverse effects to a protected site, there should be an appropriate assessment. Appropriate is not a technical term. It indicates no more than that the assessment should be appropriate to the task in hand: that task being to satisfy the responsible authority that the project will not adversely affect the integrity of the site concerned taking account of the matters set in the article. As the court itself indicated in Waddenzee the context implies a high standard of investigation. However, as Advocate General Kokott said in Waddenzee [2005] All ER (EC) 353, para 107:

"the necessary certainty cannot be construed as meaning absolute certainty since that is almost impossible to attain. Instead, it is clear from the second sentence of article 6(3) of the Habitats Directive that the competent authorities must take a decision having assessed all the relevant information which is set out in particular in the appropriate assessment. The conclusion of this assessment is, of necessity, subjective in nature. Therefore, the competent authorities can, from their point of view, be certain that there will be no adverse effects even though, from an objective point of view, there is no absolute certainty."

In short, no special procedure is prescribed, and, while a high standard of investigation is demanded, the issue ultimately rests on the judgment of the authority."

The 'Dilly Lane' and 'People over Wind' Judgments

The High Court, in the judgment of J Sullivan in Hart DC v Secretary of State for Communities and Local Government (2008), has for some time formed the basis of established HRA Practice pertaining to the Thames Basin Heaths SPA, insofar as it has determined the approach to the Screening and Appropriate Assessment stages of the HRA process.

Up until recently the established approach derived from the Dilly Lane Case meant that where impact avoidance and mitigation measures (such as SANG) were put forward as integral parts of a plan or project, and where the Competent Authority was also satisfied that those measures would both be effective, deliverable and could be secured, then there was no need for an Appropriate Assessment to be carried out.

This was because in such circumstances it was considered that the information pertaining to the efficacy of those impact avoidance and mitigation measures represented the 'objective information' referred to by the European Court of Justice (ECJ) in the Waddenzee case (above)

More recently however, in case C-323/17 of the ECJ (referred to as 'People over Wind'), the ECJ concluded that it was not appropriate to take account of *"…measures intended to avoid or reduce the harmful effects of the plan or project…"* at the Screening stage of the HRA process. Although there appear to be some inconsistences between this judgment and previous ECJ case law, until such time as the ECJ may provide further clarification, it will be necessary to consider the efficacy of impact avoidance and mitigation measures such as SANG and SAMM through the medium of an Appropriate Assessment in order to ensure compliance with the findings of the judgment.

A further more recent ECJ case, known as the *Grace and Sweetman* case (July 2018)(Case C-164/17) appears to have reiterated the approach taken in *'People over Wind'* with respect to measures intended to avoid or reduce the harmful effects of a plan or project, as well as outlining that compensatory measures should only be taken into consideration in the circumstances laid out by Article 6(4) of the Habitats Directive (i.e. where there are imperative reasons of overriding public interest).

R (on the application of Boggis) v Natural England

The Court of Appeal (Civil Division) ruling on R (on the application of Boggis) v Natural England [2009] EWCA Civ 1061, concerned a dispute over the extension of a SSSI on the Suffolk Coast to include an area subject to cliff erosion, as this could prevent affected residents from creating sea defences to protect their properties.

The case is of interest as it reiterates the earlier ruling in Waddenzee 2004 that the requirement for an appropriate assessment is conditional on there being *"a probability or a risk that the [plan or project] will have significant effects on the site concerned."*

The Appeal Court found that *"a claimant who alleges that there was a risk which should have been considered by the authorising authority so that it could decide whether that risk could be "excluded on the basis of objective information", must produce* ***credible evidence that there was a real, rather than a hypothetical, risk*** *which should have been considered."* (para 37).

R (on the Application of Prideaux) v Buckinghamshire CC

The Administrative Court ruling on R (on the application of Christopher Prideaux) v Buckinghamshire County Council [2013] EWHC 1054 (Admin) is notable in that it discusses the weight that should be given to Natural England's expert opinion in planning decisions.

In this case, the claimant (Prideaux) challenged a planning permission granted by the defendant (Buckinghamshire CC) for an energy from waste facility, on nature conservation related grounds. Natural England had initially objected to the proposals due to likely negative impacts on the interest features of nearby SSSIs. Following continued consultation with the applicant, and the provision of the further information by the applicant's ecologist regarding the mitigation and compensation proposed, Natural England withdrew their objection.

Mr Justice Lindblom considers the weight that should be given to Natural England's opinion at paragraph 116:

> *"(…) It is clear that the committee gave considerable weight to the conclusions reached by Natural England. This is hardly surprising. It is exactly what one would expect. Natural England is the "appropriate nature conservation body" under the regulations. Its views on issues relating to nature conservation deserve great weight. An authority may sensibly rely on those views. It is not bound to agree with them, but it would need cogent reasons for departing from them."*

At paragraph 133 he goes on to underline the importance of making a decision based on the sum of information provided, including any extra material submitted following the initial application:

> *"It is important, I think, to view the relevant ecological material as a whole, as it was after a process of consultation, the submission of further information, the refinement of FCC's proposals, the evolution of the intended measures for avoiding harmful impacts on the species potentially affected by the development, SLR's correspondence [SLR were the developer's ecological consultants] and dialogue with Natural England, and the withdrawal of Natural England's objection."* [our addition]

The Wightlink Appeal

The Wightlink Appeal (APP/B1740/A/11/2152093 and APP/B9506/A/11/2152094) establishes the basis for a 'monitor and manage' approach in HRA, and also considers the level of certainty that is required in Appropriate Assessment.

It considered whether the operation of new W Class ferries between Lymington and Yarmouth would adversely affect the integrity of the Solent and Southampton Water SPA and Solent Maritime SAC. As part of the project, Wightlink proposed a series of 'offsetting measures', both to reduce the effects at source (implementation of ferry speed restrictions and limiting the number of annual ferry trips) and provide *"…habitat benefit mitigation (by way of the recharge scheme) to deliver a benefit to the conservation objectives to offset the predicted impact of the ferry erosion"*.

The Section 106 agreement provided for Wightlink to carry out the recharge scheme under an 'adaptive management process' which included monitoring and review of the recharge scheme in accordance with an agreed monitoring protocol; and to establish and administer an Environmental Management Panel (EMP).

The EMP's purpose is to supervise implementation of the adaptive management process which entails monitoring the effects of the ferries, the success of the habitat works and adapting the recharge scheme if necessary (for example using different recharging techniques) to ensure its objective is achieved.

The Inspector comments at para. 178 that:

> *"…the adaptive management process removes the uncertainty from the offsetting measures by introducing a flexible and robust process of monitoring and management. It provides for the EMP to review evidence and amend the measures taken so as to ensure that the recharge is adapted as necessary to be successful. This could include the number and extent of the recharges and also could include adjustments to the operational measures, for example extending the period of the temporary speed limit if monitoring of the channel indicates this as being advantageous."*

And concludes at para. 179 that:

> *"Given the adaptive management regime built into the project through the S106, NE has confirmed that it is satisfied that no reasonable scientific doubt exists and that any uncertainty is well catered for. I conclude on this matter that there can be confidence that the recharge of Boiler Marsh can be achieved and would be successful in its aims."*

The Inspector also considered (at para. 177) the degree of confidence which could be placed in the success of the recharge scheme, following criticism from an objector:

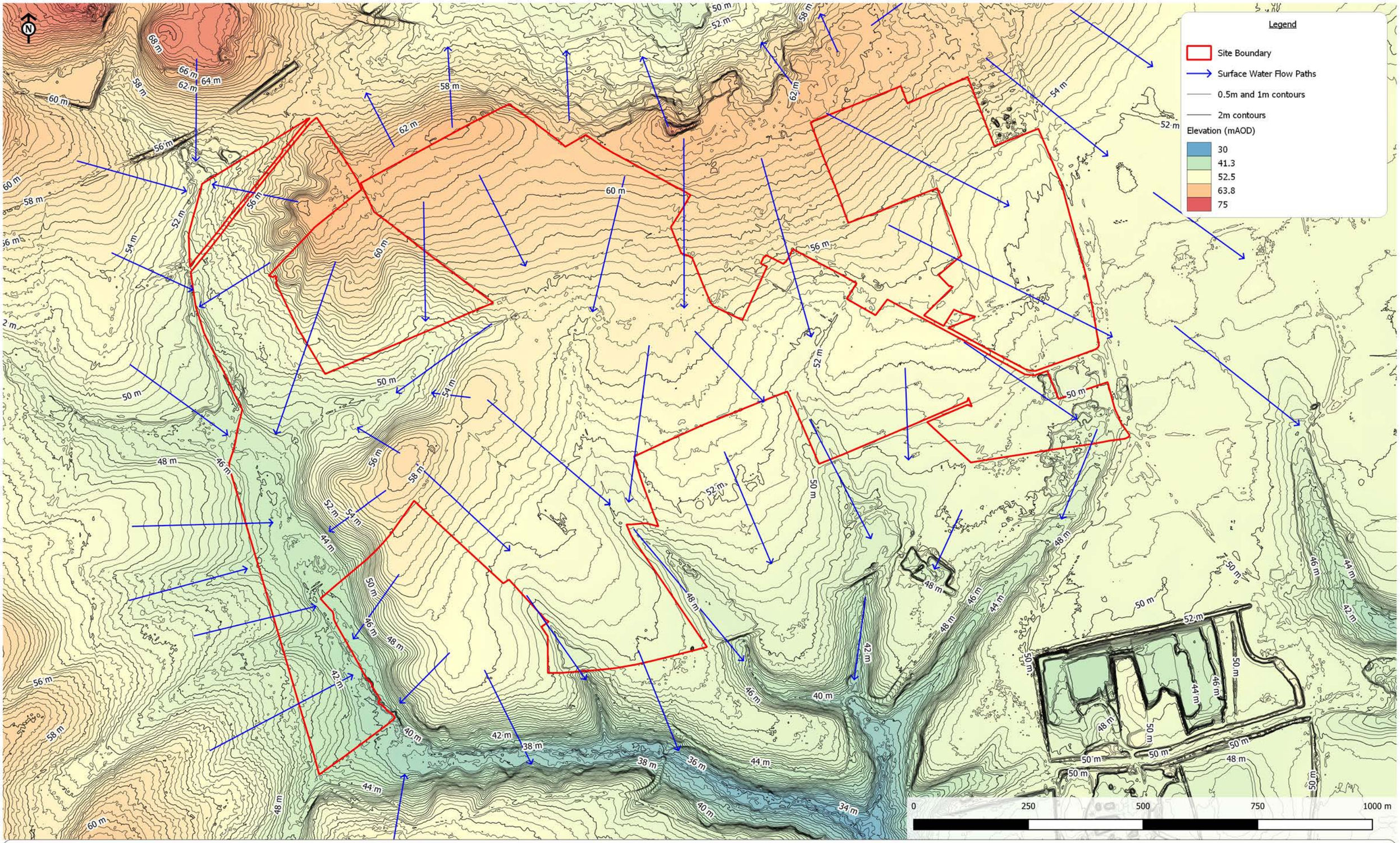
> *"The competent authority must be 'convinced' that the plan or project will not, alone or in combination, adversely affect the integrity of the protected site…….it does not mean that all scientific uncertainty, however minor, must be removed before a conclusion of no adverse effect can be reached."* [our emphasis]

The Inspector disagreed with the criticism of the objector (the Lymington River Association) stating:

> *"…the LRA [the objector] sought to apply a pedantic degree of statistical certainty in an area where conclusions are reached on the basis of expert judgement applied to the data and having regard to other examples."* [our emphasis]

Appendix 2

Surface Water Flow Paths Plan, Campbell Reith



Land South and West of Alderholt

Client:

Surface Water Flow Paths

Scale: 1:7500@A3

Job Number: 13577
Drawn by - Checked by: RLF/RP - DS/RF
Drg No - Status/Revision: 13577-CRH-XX-XX-FG-G-7001 - P3
File location: \\red-data1\gis-data\13500 - 13749\13577 R - Land South and West of Alderholt\Project_Workspaces (pdf in Outputs)
Date (Revision History): 12/05/2022 (P1, First Issue, 07/12/20, RLF; P2, Boundary Update, 12/02/21, RP; P3, Boundary Update, 12/05/22, RLF)

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Appendix 3

Nutrient Budget Calculation

Stage 1

User Inputs

Date of first occupancy:	01/01/2025
Average occupancy rate:	2.40
Water usage (litres/person/day)**:**	120
Development Proposal (dwellings/units)**:**	1700
Wastewater treatment works:	Fordingbridge WRC
Wastewater treatment works P permit (mg TP/litre)**:**	1

Stage 1 Calculated Loading

TP discharge from WwTW	440640	mg TP/day
Convert to kg/TP/d	0.44064	kg TP/day
Convert to kg/TP/yr	160.94	kg TP/yr
Annual wastewater TP load	**160.94**	**kg TP/yr**

Stage 2

User Inputs

Catchment:	Avon Hampshire
Soil drainage type:	Variable
Annual average rainfall (mm)**:**	800.1 - 850
Within Nitrate Vulnerable Zone (NVZ):	No

Existing land use type(s)	**Area** (ha)	**Annual phosphorus nutrient export** (kg TP)
Cereals	28.30	18.69
General	36.50	14.87
Dairy	41.30	10.77
Greenspace	12.90	0.26
Commercial/industrial urban land	1.40	1.69
Total:	**120.4**	**46.28**

Stage 3

User Inputs

New land use type(s)	**Area** (ha)	**Annual phosphorus nutrient export** (kg TP)
Residential urban land	38.80	64.07
Commercial/industrial urban land	1.70	2.05
Greenspace	67.80	1.36
Open urban land	9.40	8.33
Community food growing	2.70	0.25
Total:	**120.4**	**76.06**

Stage 4

Calculated Outputs

Annual Nutrient Budget

The total annual phosphorus load to mitigate is:	**228.87 kg TP/year**