



Forty Acres Farm, Havant

Report to Inform Habitats Regulations Assessment Stage 1 and Stage 2

Barratt David Wilson Homes

June 2019

The Pavilion, 1st Floor, Botleigh Grange Office Campus, Hedge End, Southampton SO30 2AF

Tel: 02382 022 800

Email: ecology@wyg.com



Document Control

Project: Forty Acres Farm, Havant
 Client: Barratt David Wilson Homes
 Job Number: A095024
 File Origin: \\LDS-DC-VM-002\Group Ecology\Projects\Projects A095000
 on\A095024 Westways\REPORTS\HRA

Issue 3	June 2019	FINAL
Prepared by:		Kevin Wood Grad CIEEM Senior Ecologist
Checked By:		John Simper MCIEEM Senior Ecologist
Verified By:		David West CEnv MCIEEM Associate Ecologist

Rev:	Date:	Updated by:	Verified by:	Description of changes:
2	May 2019	DW	DW	Updated to include reference to Havant Local Plan Air Quality HRA.
3	May 2019	DW	DW	Updated figures for nitrogen balancing.
4	June 2019	DW	DW	Updated nitrogen figures with new NE methodology.

WYG Environment Planning Transport Ltd. accept no responsibility or liability for the use which is made of this document other than by the Client for the purpose for which it was originally commissioned and prepared.



Contents

Glossary.....	3
1.0 Introduction	4
1.1 Background	4
1.2 Site Location.....	4
1.3 Development Proposals	4
1.4 Requirements for the HRA	4
2.0 Assessment Methodology	6
2.1 Assessment Guidance.....	6
3.0 Stage 1: Screening.....	7
3.1 Step 1 – Determining whether the development proposals are directly connected with or necessary to the management of the internationally designated site(s)	7
3.2 Step 2 – Description of the development proposals and the description and characterisation of other projects or plans that in combination have the potential for having significant effects on the internationally designated site(s)	7
3.3 Step 3 – Identifying the Potential Effects on Internationally Designated site(s)	13
3.4 Step 4 – Assessing the significance of any effects on the Natura 2000 site(s)	13
4.0 Stage 2: Appropriate Assessment	17
4.1 Atmospheric pollution.....	17
4.2 Disturbance from recreation	18
4.3 Loss / degradation of supporting habitats	18
4.4 Water resources & abstraction	20
4.5 Construction noise /activity	23
5.0 Summary	25
6.0 References	27



Glossary

ACIEEM	Associate Member of Chartered Institute of Ecology & Environmental Management
ALSE	Assessment of Likely Significant Effects
CEMP	Construction Environment Management Plan
CEnv	Chartered Environmentalist
CIEEM	Chartered Institute of Ecology & Environmental Management
CIRIA	Construction Industry Research and Information Association
CJEU	Court of Justice of the European Union
EMMP	Ecological Mitigation and Management Plan
Habitats Regulations	Conservation of Habitats and Species Regulations 2017
HES	Hampshire Ecological Services
HRA	Habitats Regulations Assessment
IAQM	Institute for Air Quality Management
IROPI	Imperative Reasons of Over-riding Public Interest
JNCC	Join Nature Conservancy Council
LSE	Likely Significant Effect
MCIEEM	Member of Chartered Institute of Ecology & Environmental Management
Natura 2000 site	A European site designated for its nature conservation value
NE	Natural England
NNR	National Nature Reserve
SAC	Special Area of Conservation
SIP	Site Improvement Plan
SPA	Special Protection Area
SuDS	Sustainable Drainage System

1.0 Introduction

1.1 Background

WYG was commissioned by Barratt Homes in September 2018, to prepare a report to inform a Habitats Regulations Assessment for the proposed development for Forty Acres Farm, Havant (hereafter referred to as 'the site'). This report provides information to inform a Habitats Regulations Assessment under Regulation 63 of the Habitats Regulations 2017 by Havant Borough Council as decision maker and therefore competent authority under the Habitats Regulations for the purposes of this assessment. The report has been written by WYG Associate Ecologist David West CEnv MCIEEM.

1.2 Site Location

The site covers approximately 22.9 hectares, located to the south west of Havant in Hampshire, centred on Ordnance Survey grid reference SU692057. Directly south of the site is a railway line and beyond this is the A27 and Chichester and Langstone Harbour, a designated RAMSAR Site, Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI). A component of the Solent and Isle of Wight Lagoons Special Area of Conservation (SAC) lies 280m south of the site and the Solent Maritime SAC lies 180m south of the site. South west of the site lies Farlington Marshes, a designated Local Nature Reserve (LNR). Directly west of the site lies the residential area of Farlington along with East Lodge Farm and East Lodge Playing Field. To the north of the site lies the A2030 Havant Road beyond which lie further residential areas along with arable fields. North east of the site is a major junction of the A3 with the A3 slip road extending south along the eastern boundary of the site. The western extent of the site has been designated as a Site of Importance for Nature Conservation (SINC), known as Forty Acre Farm B, due to the historic presence of dark-bellied brent geese (*Branta bernicla bernicla*).

1.3 Development Proposals

The proposed development is for 320 dwellings (including a 30% provision of affordable homes), 66 bed care home, provision of public open space, wader and brent goose refuge, allotments, community building and associated infrastructure.

1.4 Requirements for the HRA

The requirement for an HRA is established through Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora, hereby referred to as the 'Habitats Directive', in Articles 6(3) and 6(4). The Habitats Directive is transposed into national legislation by the Conservation of Habitats and Species Regulations 2017. These are hereafter referred to as the 'Habitats Regulations'.

Under Regulations 613 and 105, any project which is likely to have a significant effect on a European site (either alone or in-combination with other projects) and is not directly connected with, or necessary for the management of the site, must be subject to an HRA to determine the implications for the site in view of its conservation objectives. This is determined during the Stage 1: Screening Assessment of an HRA (see below).



Under Article 6(3) of the Habitats Directive, a Stage 2: Appropriate Assessment then needs to be carried out in respect of any plan or project which:

- either alone or in combination with other plans or projects would be likely to have a significant effect on a site designated within the European network; and
- is not directly connected with the management of the site for nature conservation.

The term European site is defined fully in Regulation 8 of the Habitats Regulations and includes:

- Special Areas of Conservation (SACs);
- candidate and proposed SACs;
- Special Protection Areas (SPAs);
- potential SPAs;
- proposed Wetlands of International Importance designated or proposed for their wetland features under the auspices of the Convention of Wetlands of International Importance (commonly referred to as 'Ramsar sites'); and
- sites identified for Natura 2000 compensatory measures.

The final two categories are afforded the same level of protection as SACs and SPAs as a matter of Government policy, and the assessment provisions of the Habitats Regulations are applied to them (Natural England, 2017).

2.0 Assessment Methodology

2.1 Assessment Guidance

The Habitats Directive and Regulations do not specify how assessment should be undertaken. In undertaking this HRA, the process we have adopted is that recommended in official EC guidance (EC, 2001). In this report, our Stage 1: Screening found that LSE were possible and so a Stage 2: Appropriate Assessment was required. These two stages form the first of four HRA stages, as described below:

- **Stage 1: Screening** – the process which identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant. This is also known as an ‘assessment of likely significant affects (ALSE)’;
- **Stage 2: Appropriate assessment** – the consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in-combination with other projects or plans, with respect to the site’s structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts (in accordance with guidance following the recent decision by the CJEU; *People Over Wind and Sweetman v Coillte Teoranta* (C-323/17) regarding application of embedded mitigation at Stage 1 or Stage 2 of an HRA (Freeths, 2018);
- **Stage 2: Assessment of alternative solutions** – the process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site; and
- **Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain** – an assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Over-riding Public Interest (IROPI), it is deemed that the project or plan should proceed (it is important to note that this guidance does not deal with the assessment of IROPI).

The Stage 1 Screening Assessment and comprises four stages:

- **Step 1.** Determining whether the project or plan is directly connected with or necessary to the management of the Natura 2000 site(s);
- **Step 2.** Describing the project or plan and the description and characterisation of other projects or plans that in-combination have the potential for having significant effects on the Natura 2000 site(s);
- **Step 3.** Identifying the potential effects on the Natura 2000 site(s); and
- **Step 4.** Assessing the significance of any effects on the Natura 2000 site(s).

The Stage 2: Appropriate Assessment should identify the effects of those plans or projects on qualifying features of the European sites in relation to the Conservation Objectives of those sites and determine whether these effects will result in an adverse effect on the integrity of the designated site. Only where the decision maker (the Competent Authority – in this case the Planning Inspector), is satisfied that there will be no adverse effect on integrity, or where there are imperative reasons of overriding public interest, can the plan or project be approved.

3.0 Stage 1: Screening

The Stage 1 Screening Assessment comprises four stages:

- **Step 1.** Determining whether the project or plan is directly connected with or necessary to the management of the Natura 2000 site(s);
- **Step 2.** Describing the project or plan and the description and characterisation of other projects or plans that in-combination have the potential for having significant effects on the Natura 2000 site(s);
- **Step 3.** Identifying the potential effects on the Natura 2000 site(s); and
- **Step 4.** Assessing the significance of any effects on the Natura 2000 site(s).

The Habitats Regulations Assessment Handbook (DTA Publications, 2018) states that during the Screening Stage:

"If significant effects cannot be excluded on the basis of objective information without extensive investigation, a plan or project should be considered to have a likely significant effect and taken through to an appropriate assessment."

3.1 Step 1 – Determining whether the development proposals are directly connected with or necessary to the management of the internationally designated site(s)

The development proposals are not connected with and are not necessary for the management of any internationally designated sites, although it does have the potential to affect them.

3.2 Step 2 – Description of the development proposals and the description and characterisation of other projects or plans that in combination have the potential for having significant effects on the internationally designated site(s)

3.2.1 Description of the Development Proposals

As described in Section 1.3, the development proposals are for the residential development of 320 dwellings (including a 30% provision of affordable homes), 66 bed care home, provision of public open space, wader and brent goose refuge, allotments, community building and associated infrastructure.

3.2.2 Description of other Plans and Projects to be Considered

The Development Proposals fall within the area covered by the Havant Borough Local Plan for which it is a draft allocation (H15). The HRA Draft Screening Statement for the Havant Borough Local Plan 2036 (Havant Borough Council, 2017) was therefore reviewed to identify pathways for potential LSE that could arise in-combination from other projects in the area. The effects, pathways and receptors identified in the Havant Local Plan 2036 are provided in Table 1.

Table 1 Summary of the LSE identified in the HRA of the Havant Local Plan

Effect	Pathway	Receptor
Atmospheric pollution	Eutrophication, acidification and physical injury to habitats and plant species as a result of emissions from vehicles associated with residential	Chichester & Langstone Harbours SPA ;Chichester & Langstone Harbours Ramsar; Portsmouth Harbour SPA; Portsmouth Harbour Ramsar; Solent Maritime SAC; Butser Hill SAC
Disturbance from recreation	Increasing recreational pressure from higher number of residents resulting from new housing and/or improved facilities	Chichester & Langstone Harbours SPA ;Chichester & Langstone Harbours Ramsar; Portsmouth Harbour SPA; Portsmouth Harbour Ramsar
Loss / degradation of supporting habitats	Loss of areas outside European site boundaries, which are important feeding or roosting sites for protected species	Chichester & Langstone Harbours SPA ;Chichester & Langstone Harbours Ramsar; Portsmouth Harbour SPA; Portsmouth Harbour Ramsar
Water resources & abstraction	Increased abstraction, pollution and changes in the composition and distribution of terrestrial and aquatic (freshwater and marine) ecological communities	Chichester & Langstone Harbours SPA ;Chichester & Langstone Harbours Ramsar; Solent Maritime SAC
Construction noise / activity / pollution	Loud noise and activity during construction causing disturbance of mobile qualifying species	Chichester & Langstone Harbours SPA ;Chichester & Langstone Harbours Ramsar

Based on the information in Table 1, effects with the potential to result in LSE arising from this development that are similar to those in the Fareham Core Strategy HRA are considered in-combination.

3.2.3 Description of the Internationally Designated Sites that may be Affected by the Development Proposals

Chichester and Langstone Harbours SPA

The qualifying features are provided below, as provided by the Joint Nature Conservation Committee (JNCC) (JNCC, 2001a).

This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

- During the breeding season;
 - Little tern (*Sterna albifrons*), 100 pairs representing up to 4.2% of the breeding population in Great Britain (5 year peak mean, 1992-1996); and
 - Sandwich tern (*Sterna sandvicensis*), 158 pairs representing up to 1.1% of the breeding population in Great Britain (1998).
- On passage;
 - Little Egret (*Egretta garzetta*), 137 individuals representing up to 17.1% of the population in Great Britain (Count as at 1998).
- Over winter:
 - Bar-tailed Godwit (*Limosa lapponica*), 1,692 individuals representing up to 3.2% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6); and

- Little Egret (*Egretta garzetta*), 100 individuals representing up to 20.0% of the wintering population in Great Britain (Count as at 1998).

This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

- On passage;
 - Ringed Plover (*Charadrius hiaticula*), 2,471 individuals representing up to 4.9% of the Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6).
- Over winter;
 - Black-tailed godwit (*Limosa limosa islandica*), 1,003 individuals representing up to 1.4% of the wintering Iceland - breeding population (5 year peak mean 1991/2 - 1995/6);
 - Dark-bellied brent goose (*Branta bernicla bernicla*), 17,119 individuals representing up to 5.7% of the wintering Western Siberia/Western Europe population (5 year peak mean 1991/2 - 1995/6);
 - Dunlin (*Calidris alpina alpina*), 44,294 individuals representing up to 3.2% of the wintering Northern Siberia/Europe/Western Africa population (5 year peak mean 1991/2 - 1995/6);
 - Grey Plover (*Pluvialis squatarola*), 3,825 individuals representing up to 2.5% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6);
 - Redshank (*Tringa tetanus*), 1,788 individuals representing up to 1.2% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6); and
 - Ringed Plover, 846 individuals representing up to 1.7% of the wintering Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6).

The area also qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl:

- Over winter, the area regularly supports 93,142 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Wigeon (*Anas Penelope*), Bar-tailed Godwit, Dark-bellied Brent Goose, Ringed Plover, Grey Plover, Dunlin, Black-tailed Godwit, Redshank, Little Grebe (*Tachybaptus ruficollis*), Little Egret (*Egretta garzetta*), Shelduck (*Tadorna tadorna*), Curlew (*Numenius arquata*), Teal (*Anas crecca*), Pintail (*Anas acuta*), Shoveler (*Anas clypeata*), Red-breasted Merganser (*Mergus serrator*), Oystercatcher (*Haematopus ostralegus*), Lapwing (*Vanellus vanellus*), Knot (*Calidris canutus*), Sanderling (*Calidris alba*), Cormorant (*Phalacrocorax carbo*), Whimbrel (*Numenius phaeopus*).

Chichester and Langstone Harbours Ramsar

The Ramsar Criteria for the Solent and Southampton Water Ramsar are provided below and are available from the JNCC (1998).

Ramsar Criterion 1

Two large estuarine basins linked by the channel which divides Hayling Island from the main

Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dune.

Ramsar Criterion 5

Assemblages of international importance:

- Species with peak counts in winter: 76480 waterfowl (5 year peak mean 1998/99-2002/2003).

Ramsar Criterion 6

Species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):

- Species with peak counts in spring/autumn:
 - Ringed plover, Europe/Northwest Africa, 853 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3);
 - Black-tailed godwit, Iceland/W Europe, 906 individuals, representing an average of 2.5% of the population (5 year peak mean 1998/9-2002/3); and
 - Redshank, 2577 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-2002/3).
- Species with peak counts in winter:
 - Dark-bellied brent goose, 12987 individuals, representing an average of 6% of the population (5 year peak mean 1998/9-2002/3);
 - Common shelduck, NW Europe, 1468 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3);
 - Grey plover, E Atlantic/W Africa -wintering, 3043 individuals, representing an average of 1.2% of the population (5 year peak mean 1998/9-2002/3); and
 - Dunlin, W Siberia/W Europe, 33436 individuals, representing an average of 2.5% of the population (5 year peak mean 1998/9-2002/3).

Species/populations identified subsequent to designation for possible future consideration.

Species regularly supported during the breeding season:

- Little tern, W Europe, 130 apparently occupied nests, representing an average of 1.1% of the breeding population (Seabird 2000 Census).

Portsmouth Harbour SPA

The qualifying features are provided below, as provided by the Joint Nature Conservation Committee (JNCC) (JNCC, 2001b).

This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

- Over winter;

- Dark-bellied brent goose, 2,847 individuals representing at least 0.9% of the wintering Western Siberia/Western Europe population (5 year peak mean 1991/2 - 1995/6).

Portsmouth Harbour Ramsar

The Ramsar Criteria for the Solent and Southampton Water Ramsar are provided below and are available from the JNCC (1998).

Ramsar Criterion 3

The intertidal mudflat areas possess extensive beds of eelgrass *Zostera angustifolia* and *Zostera noltei* which support the grazing dark-bellied brent geese populations. The mud-snail *Hydrobia ulvae* is found at extremely high densities, which helps to support the wading bird interest of the site. Common cord-grass *Spartina anglica* dominates large areas of the saltmarsh and there are also extensive areas of green algae *Enteromorpha* spp. and sea lettuce *Ulva lactuca*. More locally the saltmarsh is dominated by sea purslane *Halimione portulacoides* which gradates to more varied communities at the higher shore levels. The site also includes a number of saline lagoons hosting nationally important species.

Ramsar Criterion 6

Species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):

- Species with peak counts in winter:
 - Dark-bellied brent goose, 2105 individuals, representing an average of 2.1% of the GB population (5 year peak mean 1998/9-2002/3).

Solent Maritime SAC

The qualifying features are provided below, as provided by the Joint Nature Conservation Committee (JNCC) (JNCC, 2001c).

Annex I habitats that are a primary reason for site selection

- Estuaries;
- *Spartina* swards; and
- Atlantic salt meadows.

Annex I habitats that are present as a qualifying feature but not a primary reason for site selection

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

Annex II species that are present as a qualifying feature but not a primary reason for site selection

- Desmoulin's whorl snail *Vertigo moulinsiana*.

Butser Hill SAC

The qualifying features are provided below, as provided by the Joint Nature Conservation Committee (JNCC) (JNCC, 2001d).

Annex I habitats that are a primary reason for site selection

- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites); and
- *Taxus baccata* woods of the British Isles.

3.2.4 Conservation Objectives

There are no published conservation objectives available for the Chichester and Langstone Harbours and Portsmouth Harbour Ramsar sites. Based on the commonality of qualifying/designating ecological features it is considered that the objectives for the overlapping SPAs are applicable to the Ramsar site, and this is the approach adopted in this report.

Chichester and Langstone Harbours SPA

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.

Portsmouth Harbour SPA

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.

Solent Maritime SAC

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 qualifying species within the site.

Butser Hill SAC

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;
- The structure and function (including typical species) of qualifying natural habitats; and
- The supporting processes on which qualifying natural habitats rely.

3.3 Step 3 – Identifying the Potential Effects on Internationally Designated site(s)

Based on the conservation objectives for these sites, and the proposed development, no additional pathways for likely significant effects have been identified above those set out in Table 1.

3.4 Step 4 – Assessing the significance of any effects on the Natura 2000 site(s)

The pathways assessed are either screened out as not having the potential to result in LSE, or are screened in and they will need to be assessed at Stage 2. There are no other pathways for LSE identified with the potential to affect Natura 2000 sites identified, and therefore no others have been assessed.

3.4.1 Atmospheric pollution

Air quality changes can also occur as a result of deposition of nitrogen and acid in the form of oxides of nitrogen and sulphur respectively. These gases are principally released by exhausts from internal combustion engines. During construction, workers vehicles, plant machinery and generators are all potential sources of exhaust gases. During operation / occupation of a site, it is principally vehicles belonging to workers / residents / visitors that cause acid and nitrogen deposition.

These changes can result in an increase in nutrient levels developing in soils that can change species compositions. Most frequently, this results in habitats becoming dominated by eutrophilic (nutrient-loving) plants that are much faster growing and can out-compete other species. These species would include bramble *Rubus fruticosus* and common nettles *Urtica dioica* that are of limited ecological value. Deposition of acid can cause changes in soil pH, which can also alter the plant species present over time.

Nitrogen deposition already exceeds site relevant critical loads at the designated sites in the Solent (Solent SIP, Natural England, 2014), and Butser Hill (European Site Conservation Objectives: Supplementary advice on conserving and restoring site features, Butser Hill SAC, Natural England, 2019).

As such, air quality changes are considered to have the potential to result in LSE and require Appropriate Assessment at Stage 2.

3.4.2 Disturbance from recreation

Indirect impacts could potentially occur through increased visitor disturbance from an increased recreational pressure on the qualifying species of breeding and / or wintering birds within the Chichester and Langstone Harbours SPA and Ramsar and Portsmouth Harbour SPA and Ramsar. Sites that are already threatened by public access / disturbance.

The Solent Recreation Mitigation Strategy (Bird Aware Solent, 2017) identifies a buffer of 5.6km where it considered that recreational users travel from their homes to visit the designated site, as such potentially increasing the recreational impact in the Solent designated sites. Due to the distance from the SPA and pSPA, it is anticipated that any future proposals, which include residential units, are likely to result in increased recreational use from the development.

Disturbance of qualifying features could include affecting nesting bird behaviour at the nest, foraging or predator avoidance. Walking dogs on habitats within habitats used by mobile qualifying species can also have the impact of increasing predator numbers. For example, corvids that can rob bird nests also feed on dog faeces and litter that has not been disposed of, meaning that they may be attracted to the area.

Taken together, it is considered that public access / disturbance during construction and operation could result in LSE, and therefore these would require Appropriate Assessment within Stage 2 of an HRA.

3.4.3 Loss / degradation of supporting habitats

The site has been monitored as part of the Solent Waders and Brent Goose Strategy and is identified as Fields H04B and H04C for the purposes of the study. Using the latest data from winter bird surveys across the Solent (which incorporates spatial considerations such as movements rather than just numbers), H04B has been listed as 'low use' and H04C as a 'secondary support site'.

Wintering bird surveys were undertaken at the site by Havant Borough Council between the years 2012-2015. The survey time was three hours around high tide for three days every month from November to March and consisted of 11 visits to Forty Acre Farm.

No brent geese were recorded utilising the survey area during this period. Two lapwing were observed in the western extent of Forty Acre Farm. These were observed in January so this does not confirm breeding at the site.

A total of 35 species were recorded within the survey area during the WYG wintering bird surveys undertaken between October 2015 and March 2016. Brent geese were noted feeding on the southern extent of the site, west of the industrial area. Red listed curlew were noted along the south eastern extent of the site in the clover ley field, as well as two noted west of the industrial area in the clover ley. Red listed herring gulls were noted flying low over the site. Amber listed oystercatcher were noted on two occasions feeding along the southern boundary of the site, west of the industrial area, as well as seen feeding east of the industrial area in the clover ley field. Amber listed black-headed gull were noted feeding along the southern boundary west of the industrial area.



The proposed development will result in a loss of foraging habitat in the form of H04B (approximately 12.6ha) and the loss of a small part of H04C (approximately 2.4ha). This loss of supporting habitat could result in LSE, and therefore these would require Appropriate Assessment within Stage 2 of an HRA.

3.4.4 Water resources & abstraction

Surface water drainage

For any residential development of a greenfield site, there is the potential for an increase in impermeable surfaces to result in changes hydrology. These can cause localised changes to primary receiver waterbodies in terms of water quantity and quality. These can then lead to impacts to secondary and tertiary receivers.

For this development, surface water from the site will eventually discharge into Chichester and Langstone SPA and Ramsar. The development therefore has the potential to result in LSE due to water pollution, and this pathway is taken forward to Stage 2: Appropriate Assessment.

Foul water drainage

In June 2018, an Integrated Water Management Study for South Hampshire was published by the Partnership for Urban South Hampshire (PUSH) has identified that there is uncertainty in some locations as to whether there will be sufficient capacity to accommodate new housing growth, and the potential for adverse effects upon coastal SPAs (including Solent and Southampton Water SPA) as a result of nitrogen discharge. Wastewater from the development will be treated at Budds Farm which discharges to sea and may contribute to background nitrogen levels within the SPA. The development therefore has the potential to result in LSE due to water pollution from Budds Farm, and this pathway is taken forward to Stage 2: Appropriate Assessment.

Abstraction

There is no requirement for additional water abstraction above existing permitted levels for the development proposals and so this pathway does not have the potential to results in LSE.

3.4.5 Construction noise / activity / pollution

Fugitive dust

During construction activity, there is the potential for releases of fugitive dust to result in deleterious impacts on plant growth in habitats up to 50m from the source. This distance is based on guidance from the Institute of Air Quality Management (IAQM, 2014). Given the distance from the designated sites, there is considered to be no potential for construction to result in LSEs, and as such, air pollution during construction will not be carried forward to Appropriate Assessment.

Construction noise /activity

There is potential for construction noise and activity to cause disturbance of SPA qualifying bird species present on site, either using existing habitats or those created as mitigation and this pathway is taken forward to Stage 2: Appropriate Assessment.



3.4.6 In-combination effects

Atmospheric pollution

Air quality changes due to atmospheric nitrogen deposition are considered to have the potential to result in LSE, and to require Appropriate Assessment at Stage 2. This will also be considered in combination.

Disturbance from recreation

In-combination effects from disturbance from recreation are a possible pathways for LSE. This will be assessed in Stage 2: Appropriate Assessment.

Loss / degradation of supporting habitats

Loss of supporting habitats associated with the development proposals is a possible pathway for LSE. This will also be considered in combination.

Water resources & abstraction

There is potential for surface water drainage and foul drainage to result in LSE, and this pathway will also be considered in combination.

The proposed development will not result in a requirement for additional abstraction licences. It is therefore concluded that potential impact of hydrological changes arising from this development proposal does not have the potential to result in LSE in-combination with other projects within the Local Plan.

Construction noise /activity

Construction noise /activity is a possible pathway for LSE. This will also be considered in combination.

3.4.7 Summary of LSEs

This Stage 1 Screening Assessment finds that there are five pathways with the potential to result in LSE to Natura 2000 sites in the wider area. The following pathways have been screened in (to be assessed both alone and in combination):

- Atmospheric pollution: Impact of atmospheric nitrogen deposition – with regards to Portsmouth Harbour, Chichester and Langstone Harbours and Butser Hill;
- Disturbance from recreation – with regards to Portsmouth Harbour and Chichester and Langstone Harbours;
- Loss / degradation of supporting habitats – with regards to Portsmouth Harbour and Chichester and Langstone Harbours;
- Water resources & abstraction: surface and foul water drainage – with regards to Chichester and Langstone Harbours; and
- Construction noise /activity – with regards to Portsmouth Harbour and Chichester and Langstone Harbours.

4.0 Stage 2: Appropriate Assessment

The following sections present the proposed mitigation for pathways identified during Stage 1: Screening, that could result in LSE on the SPA and Ramsar. In each case the residual significance of the effect is provided.

4.1 Atmospheric pollution

An air quality assessment (WYG, 2018b) was submitted as part of the application. This modelled the following levels of nitrogen deposition at nearby sensitive sites.

Table 2 Predicted Annual Average Concentrations of NO₂ at Ecological Receptors

Receptor		NO ₂ (µg/m ³)			
		No development 2028	With development 2028	Development Contribution	% increase of CL
ER1	Farlington Marshes LNR	28.14	28.22	0.08	0.27
ER2	Langstone Harbour SSSI	21.18	21.23	0.05	0.17
ER3	Chichester and Langstone Harbours SPA	26.03	26.09	0.06	0.20
Critical Load		30 µg/m ³			

This demonstrates that there is no increase in the critical load for these sites of above 1%. Natural England's consultation response on this application confirmed that unless an increase of above 1% was to occur, no further assessment was required.

Additionally, an Air Quality Habitat Regulations Assessment has since been produced for the Havant Borough Local Plan 2036 by Ricardo Energy and Environment (Ricardo Energy and Environment, 2019).

This concludes that for Butser Hill SAC there are no LSE from atmospheric pollution on the basis of the spatial distribution of qualifying features within the designated site. For Chichester and Langstone Harbours SPA and Ramsar, and Portsmouth Harbour SPA and Ramsar, there are no adverse effects from atmospheric pollution alone or in combination on the basis of the spatial distribution of qualifying features within the designated site (all pollutants), the existing background pollutant levels (nitrogen deposition, NH₃) and forecast pollutant levels (NO_x). For the Solent Maritime SAC there are no adverse effects alone or in combination for acid deposition, NO_x and NH₃. This is on the basis of the spatial distribution of qualifying features within the designated site (all pollutants), the existing background pollutant levels (NH₃) and forecast pollutant levels (NO_x). For nitrogen deposition, there are no adverse effects alone or in combination on the basis that a Nitrogen Action Plan will be implemented by Havant and neighbouring local authorities.

4.1.1 Residual Impact

On the basis of the process contribution from the development above, and the findings of the Air Quality Habitat Regulations Assessment it is concluded that the proposals will have no significant adverse effects on the integrity of the European sites, either alone, or in combination.

4.2 Disturbance from recreation

The Solent Recreation Mitigation Strategy (Bird Aware Solent, 2017) identifies a buffer of 5.6km where it considered that recreational users travel from their homes to visit the designated site, as such potentially increasing the recreational impact in the Solent designated sites. Due to the distance from the SPA and pSPA, it is anticipated that the proposals, which include residential units, are likely to result in increased recreational use from the development.

In line with the requirements for mitigation of impacts, a contribution will be made to the Solent Recreation Mitigation Strategy (Bird Aware Solent, 2017) to mitigate for potential alone and in-combination recreational impacts upon Portsmouth Harbour SPA and Chichester and Langstone Harbour SPA. This Strategy is also assessed in this report as providing mitigation for the impacts on the Portsmouth Harbour Ramsar and Chichester and Langstone Harbour Ramsar as the qualifying features are similar.

4.2.1 Residual Impact

Once the above developer contributions have been provided, it is considered that mitigation is secured for all internationally designated sites, and that the proposals will have no significant adverse effects on the integrity of the European sites, either alone, or in combination.

4.3 Loss / degradation of supporting habitats

In order to maintain and improve the quality of foraging habitat within the mitigation area it is proposed that a suitable improved grassland is established to provide an optimal food source for brent geese. This will comprise a mix of predominately perennial rye grass and clover and will be sown as part of the preparation of the site. This has been chosen to provide suitable habitat every year.

In order to further improve the suitability of the site for brent geese, the existing tree line within the site will be removed to improve visibility (brent geese prefer larger field compartments).

In order to improve the habitat suitability for other wading birds (either qualifying species for the SPA or part of the qualifying assemblage) it is proposed that wader scrapes are created within the open space area south of the development site. These will be of irregular shape and depth (up to 0.5m) in order to create a range of conditions and support different species. The primary objective is to hold water during the winter, but it is anticipated that deeper areas will also hold water for part of the summer and provide an enhancement for breeding birds.

The scrapes will be located to the south of the development site, adjacent to the proposed SuDS for the Site. This location provides a number of advantages, primarily the possibility of allowing treated surface water from the SuDS basin to top up the water level in the scrapes. Secondly, it is recommended that the scrapes are irregular in shape to maximise the length of edge habitat (more valuable than the central area). They will also collect coastal flood water in this area of the site.



It is proposed that access to the mitigation area is provided via a new farm gate at the north west corner of the site.

Management of the main mitigation area will predominately comprise grass cutting. The key objective is to provide forage for brent geese and other waders during the winter, therefore the following timings are recommended:

- Summer cut – July/August leaving arisings to allow nutrients to re-enter soil
- Autumn cut – Late September removing arisings to leave a short sward for foraging geese

Any additional sowing if required should take place in August – September (Spring if including clovers).

Other management activities to be completed will include:

- Hedgerows – to be cut in early October (to avoid nesting birds) on three year rotation (each year to be one side or the top)
- Fences and footpaths – management anticipated to be minimal however fence integrity should be monitored annually and repaired as necessary.
- Interpretation boards – no management anticipated however boards should be replaced if necessary
- Scrapes – management to prevent dense vegetation from establishing in margins to comprise of strimming to ground level every two years in late September – early October.

Monitoring will be required to make sure that the management activities are proceeding and to identify any necessary changes to management to continue achieving the management objective (maintain the mitigation area as a 'Primary Support Area' for brent geese). It is anticipated that three years of winter bird monitoring will take place followed by annual site visits to monitor management actions.

With the above embedded mitigation included it is considered that there will be no significant effect on the conservation objectives of Chichester and Langstone Harbours SPA and Ramsar, or Portsmouth Harbour SPA and Ramsar alone as a result of the development of supporting habitat outside the SPA.

4.3.1 Residual Impact

The Havant Local Plan 2016 includes Policy E17 Solent Wader and Brent Goose feeding and roosting sites. This policy sets out a framework for mitigation for any loss or degradation of supporting habitat within the Solent Wader and Brent Goose network. Taking into account the mitigation described above, and the requirements of Policy E17, it is considered that mitigation is secured for all internationally designated sites, and that the proposals will have no significant adverse effects on the integrity of the European sites, either alone, or in combination.

4.4 Water resources & abstraction

4.4.1 Surface water drainage

As discussed in Section 2.3, the proposals for the site include a SuDS strategy to manage surface water treatment and discharge. The design for the development proposals will firstly be designed to reduce the surface water run off to the agreed greenfield run off rate and secondly be designed for water quality.

As the surface water runoff from the site will eventually be discharged into the SPA and Ramsar, it is essential to avoid increasing flood risk downstream from the site. This objective will be achieved by restricting the flows to the greenfield rates which will also account for 40% climate change variation. This will provide a betterment in large storm events, and mitigate the risk of flooding downstream of the site.

It is proposed that the excess water, above the agreed restricted flow rate, will be attenuated in open ponds to the west of the site. The attenuation ponds will also provide a water treatment stage with the use of reed beds and other SuDS methods to filter pollutants and sediments. Trapped road gullies will provide the first stage of treatment before surface water is carried in piped systems prior to discharging into the attenuation ponds. Swales are also proposed giving two naturalised stages of filtration with additional mechanical means (such as petrol/oil interceptors) included if necessary. The outline drainage proposals are detailed in the Flood Risk Assessment and Drainage Strategy (WYG, 2017). This strategy acknowledges the sensitive nature of the SPA (although it refers to the SSSI designation) and includes draft calculations in Appendix C to demonstrate that the proposed strategy will be effective in filtering sediment, hydrocarbons and metals prior to discharge.

In summary, it is proposed to provide suitable and recognised SuDS techniques, set out in The SuDS Manual (Construction Industry Research and Information Association (CIRIA), 2007), to prevent pollutants and excess sediment from migrating downstream from the development site, and to prevent any changes in hydrology or increase risk of downstream flooding.

With the above mitigation it is considered that the potential impact of water pollution on the qualifying features of the SPA will not be significant and the integrity of the site will not be affected.

4.4.2 Foul Drainage

Natural England have recommended that a Nitrogen Budget for new development is calculated for new development to either demonstrate that there is no potential for likely significant effects, or inform suitable mitigation. The following calculation is made using Natural England's June 2019 methodology.

Table 2 Calculating Total Nitrogen (TN) Load From Development Wastewater

Step	Measurement	Value	Unit	Explanation
Step 1	Additional Population	834.000	Persons	Uses an average household size of 2.4 x 320 dwellings + 66 bed care home

Step 2	Wastewater volume generated by development	91740.000	l/day	345 persons x 110 litres/day
Step 3	Receiving WWTW environmental permit limit for TN	9.700	mg/l TN	Budds Farm
Step 4	TN discharged after WWTW treatment	800890.200	mg/TN/day	90% of the consent limit = 8.73 mg/l TN. 37950 x 8.73
Step 5	Convert mg/TN to kg/TN per day	0.801	kg/TN/day	Divide by 1,000,000
	Convert kg/TN per day to kg/TN per year	292.325	kg/TN/yr	X 365 days
TN Load - wastewater	292.325 kg/TN/yr			

Table 3 Calculating TN Load From Current Land use

Step	Measurement	Value	Unit	Explanation
Step 1	Total area of existing agricultural land	22.9 (Average for catchment)	ha	Area of land lost to development (mix of cereal crops and horticulture)
Step 2	Identify farm type and confirm nitrate loss.	26.9	kg/ha/yr	Average catchment value
Step 3	Multiply area by nitrate loss	616.01	kg/yr	22.9 ha x 26.9 kg/TN/yr
TN Load – current land uses	616.01 kg/TN/yr			

Table 4 Calculating TN Load From Future Land Uses

Step	Measurement	Value	Unit	Explanation
Step 1	New urban area	10.1	ha	Area of development that will change from agricultural land to urban land use
Step 2	Total Nitrogen Load from future urban area	144.43	kg/TN/yr	10.1ha x 14.3kg/TN/yr

Step 3	New open space	12.8	ha	Area of development that will change from agricultural land to open space
Step 4	Total Nitrogen Load from future open space	64.000	kg/TN/yr	12.8ha x 5.0kg/TN/yr
Step 5	Combine Total Nitrogen load from future land uses	208.430	kg/TN/yr	144.43kg/TN/yr + 64.0kg/TN/yr
TN Load – future land uses	208.43 kg/TN/yr			

Table 5 Calculating Net Change in TN From The Development

Step	Measurement	Value	Unit	Explanation
Step 1	Identify Total Nitrogen load from wastewater (stage 1)	292.325	kg/TN/yr	See Table 2
Step 2	Calculate Total Nitrogen from land use - subtract Total Nitrogen load from future land uses (stage 3) from existing land uses (stage 2)	407.580	kg/ha/yr	616.01 kg/TN/yr - 208.430 kg/TN/yr
Step 3	Determine Nitrogen Budget – the difference between the Total Nitrogen load for the proposed development and the existing uses	-115.255	kg/TN/yr	281.109 kg/TN/yr (Step 1) - 305.180 kg/TN/yr (Step 2)
Step 4	Calculate and include 20% buffer	-92.204	Kg/TN/yr	-115.255 (Step 3) + (-115.255/5)
TN Load – current land uses	-92.204 kg/TN/yr			

This demonstrates that there will be a net reduction in Total Nitrogen post-development. Therefore there is no potential for an adverse effect on the integrity of the SPA from wastewater discharge, alone or in combination.



4.4.3 Residual Impact

Once the above mitigation been provided, it is considered that the proposals will have no significant adverse effects on the integrity of the European sites, through surface water or foul drainage alone, and as there is no potential for adverse impacts alone, there is no potential for in combination effects either.

4.5 Construction noise / activity

4.5.1 Fugitive dust

The Stage 1: Screening identified that releases of fugitive dust has the potential to result in LSE on qualifying features of Chichester and Langstone Harbour SPA (and selection criteria of the Ramsar) and qualifying features of the Solent Maritime SAC. This is via impacts to habitats from smothering of photosynthetic surfaces that could inhibit plant growth. This could lead to changes in vegetation structure used by species from the SPA and Ramsar.

These effects would be temporary as releases of fugitive dust would only occur during the construction phase. These releases would also be controlled by measures secured within a CEMP. These measures would include but not be limited to:

- Damping of haul roads;
- Avoidance of storage of friable material in close proximity to the boundary of the SPA and Ramsar;
- Covering of friable materials whenever possible;
- Seeding of bunds, if storage is required for longer periods;
- Covering of lorries transporting friable materials when moving around the site; and
- Wheel washing facilities will be provided to prevent build-up of soil that could lead of dust on surrounding roads used by construction vehicles.

It is assessed that with these measures in place, the impacts of releases of fugitive dust do not have the potential to result in LSE, and the integrity of the SPA and Ramsar would not be affected.

4.5.2 Construction noise / activity

During the construction phase, a worst-case scenario of 67.5dB has been modelled at the boundary of the SPA and Ramsar (see Appendix B). This falls to 45.2dB during occupation, and would be comparable to occasional impulse events such as car doors slamming. Both levels fall below the 69dB level which is typically considered to cause disturbance to wintering bird species (Cutts and Spencer, 2013). However, control measures will be included in the CEMP e.g. minimising idling by machinery, locating construction compounds and maintaining machinery to further reduce these noise levels (see Appendix B). These measures will include:

- An on-site speed limit of 10mph will be enforced for all traffic. Drivers of vehicles will be advised of the speed limits through the erection of signs;
- Mechanical plant used on site will be fitted with effective exhaust silencers. White noise' type reversing warnings should be used on mobile plant in preference to 'bleepers', in order to minimise intrusion;
- All plant will be maintained in good working order and will be shut down when not in use;



- Generators and compressors will be of the "noise reduced" variety and fitted with properly lined and sealed acoustic covers;
- In all cases, engine and/or machinery covers will be closed whenever the machines or engines are in use; and
- All pneumatic percussive tools will be fitted with mufflers or silencers as recommended by the equipment manufactures. All mechanical static plant will be enclosed by acoustic sheds or screens.

This assessment considers that with the implementation of the measures in the CEMP, there is no potential for noise to result in significant impacts on the qualifying features or selection criteria of the SPA or Ramsar. It is therefore considered that their integrity would not be affected by noise during either the construction or the operational phase.

4.5.3 Residual Impact

Once the above mitigation been provided, it is considered that the proposals will have no significant adverse effects on the integrity of the European sites, through construction noise/activity alone, and as there is no potential for adverse impacts alone, there is no potential for in combination effects either.



5.0 Summary

A summary of the findings of the Stage 1: Screening and Stage 2: Appropriate Assessment is provided in Table 6. Using a precautionary approach, this assessment has concluded that there are no likely significant effects on qualifying interest features within the Chichester and Langstone Harbours SPA and Ramsar, Portsmouth Harbour SPA and Ramsar, Solent Maritime SAC or Butser Hill SAC resulting from the proposals, either alone or cumulatively with other known local development projects. This conclusion is based on the incorporation of mitigation as summarised in Section 4.

As such, the 'Competent Authority', in consultation with Natural England is considered unlikely to require any further assessment under the Habitats Regulations, and the proposed development should be able to proceed without any adverse effects on the integrity of the internationally designated sites within the Solent.



Table 6

Effect pathway	LSE screened out at Stage 1	Mitigation	Effect on integrity identified at Stage 2
Atmospheric pollution	No	N/A	None
Disturbance from recreation	No	Financial contribution via Solent Recreation Mitigation Strategy.	None
Loss / degradation of supporting habitats	No	Creation of wader and brent goose refuge.	None
Water resources & abstraction	No	Use of SuDS during occupation.	-
Construction noise / activity / pollution	No	Adherence to PPGs secured within CEMP during construction. Measures secured within CEMP e.g. damping of haul roads, storage of friable material, seeding of bunds used for longer-term material storage, covering of lorries transporting friable material and use for wheel washing facilities	-



6.0 References

- Bird Aware Solent, (2017), *Solent Recreation Mitigation Strategy*, [online] Available at <https://www.portsmouth.gov.uk/ext/documents-external/pln-solent-recreation-mitigation-strategy-dec-17.pdf>, Accessed September 2018.
- CIRIA, (2007), *The SuDS Manual (C753)*, [online] Available at <https://ciria.sharefile.com/d-s7227335a22e40b6a>, Accessed September 2018.
- Cutts, N. and Spencer, J., (2013), *Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning & Construction Projects*, [online] Available at <http://bailey.persona-pi.com/Public-Inquiries/M4%20-%20Revised/11.3.67.pdf>, Accessed October 2018.
- EC, (2001), *Assessment of Plans and Projects significantly affecting Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. [online]
http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf. Accessed September 2018.
- EUR-Lex, (1991), *Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment*, [online] Available at
- Freeths, (2018), *Environmental Bulletin – Spring 2018: HABITAT REGULATIONS ASSESSMENTS: NO MORE SCREENING OUT WITH MITIGATION MEASURES? A SUMMARY OF THE RECENT CASE OF PEOPLE OVER WIND AND SWEETMAN (C-323/17)*, [online] Available at <http://www.freeths.co.uk/2018/04/19/environmental-bulletin-spring-2018/>, Accessed September 2018.
- Havant Borough Council, (2017), *Habitats Regulations Assessment Draft Screening Statement Prepared to support the Draft Havant Borough Local Plan 2036*.
- JNCC, (1998), *Information Sheet on Ramsar Wetlands (RIS): Solent and Southampton Water*, [online] Available at <http://jncc.defra.gov.uk/pdf/RIS/UK11063.pdf>, Accessed September 2018.
- IAQM, (2009), *Significance in air quality*, [Online] Available at http://www.iaqm.co.uk/text/guidance/iaqm_significance_nov09.pdf, Accessed October 2018.
- JNCC, (2001a), *SPA description: Chichester and Langstone Harbours*, [online] Available at <http://jncc.defra.gov.uk/default.aspx?page=2034>, Accessed September 2018.
- JNCC, (2001b), *SPA description: Portsmouth Harbour*, [online] Available at <http://jncc.defra.gov.uk/default.aspx?page=2036>, Accessed October 2018.
- JNCC, (2001c), *SAC description: Solent Maritime*, [online] Available at <http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030059>, Accessed October 2018.
- JNCC, (2001d), *SAC description: Butser Hill*, [online] Available at <http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030103>, Accessed October 2018.
- Natural England, (2014a), *European Site Conservation Objectives for Solent and Southampton Water Special Protection Area Site Code: UK9011061*, [online] Available at <http://publications.naturalengland.org.uk/file/5503559168688128>, Accessed September 2018.
- Natural England, (2014b), *European Site Conservation Objectives for Portsmouth Harbour Special Protection Area Site Code: UK9011051*, [online] Available at <http://publications.naturalengland.org.uk/file/5531885551747072>, Accessed September 2018.
- Natural England, (2014c), *Site Improvement Plan: Solent*, [online] Available at <http://publications.naturalengland.org.uk/file/5319610920337408>, Accessed September 2018.



- Natural England, (2015), *Diffuse water pollution theme plan: Development a strategic approach to diffuse water pollution for England's Natura 2000 sites – Improvement Programme for England's Natura 2000 Sites – Planning for the Future*, [online] Available at <http://publications.naturalengland.org.uk/file/5645420019580928>, Accessed October 2018.
- Natural England, (2017), *Natural England Standard: Habitats Regulations Assessment (HRA) Standard*, [online] Available at <http://publications.naturalengland.org.uk/publication/8740045>, Accessed September 2018.
- Natural England, (2019), *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features Butser Hill Special Area of Conservation (SAC)*.
- Ricardo Energy and Environment, (2019), *Air Quality Habitat Regulations Assessment for Havant Borough Local Plan 2036*.
- The National Archives, (2014), *Pollution prevention advice and guidance (PPG)*, [online] Available at <http://webarchive.nationalarchives.gov.uk/20140328090931/http://www.environment-agency.gov.uk/business/topics/pollution/39083.aspx>, Accessed September 2018.
- WYG, (2018), *Forty Acre Farm Winter Bird Mitigation Strategy*.
- WYG, (2018b), *Forty Acre Farm Air Quality Assessment*.