



GLADMAN DEVELOPMENTS LTD.

LAND OFF ST MARY'S ROAD, HAYLING ISLAND

ENVIRONMENTAL STATEMENT

DECEMBER 2021

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ENERGY AND CLIMATE CHANGE
ENVIRONMENT AND SUSTAINABILITY
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MINING AND MINERAL PROCESSING
MINERAL ESTATES
WASTE RESOURCE MANAGEMENT



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1 INTRODUCTION

- 1.1.1 This Environmental Statement (ES) has been prepared on behalf of Gladman Developments Ltd. (the Applicant) and is intended to support an outline planning application, with all matters reserved except for the principal points of access, for the development of up to 300 dwellings (hereafter referred to as the 'Proposed Development') on land off St Mary's Road, Hayling Island. The Site is located within the administrative area of Havant Borough Council (HBC).
- 1.1.2 The Site is centred at approximately National Grid Reference (NGR) SZ 71920 99784 and is located off St Mary's Road amongst existing residential development in the southern part of Hayling Island, Hampshire, as illustrated on the Site Location Plan included at Appendix 1.1. The land included within the application redline boundary, to which the planning application relates, is hereafter referred to as 'the Site'.
- 1.1.3 The Site is 11.77ha in size and is currently in agricultural use, comprising of two agricultural fields and an area of grassland containing a building and pond.
- 1.1.4 The Proposed Development is illustrated on the Development Framework Plan included at Appendix 1.2.
- 1.1.5 This ES reports the findings of an Environmental Impact Assessment (EIA) that has been undertaken in accordance with the criteria set out in the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations') in respect of the Proposed Development.



2 APPROACH AND SCOPE

2.1 Introduction

2.1.1 Wardell Armstrong LLP is committed to delivery of effective practice in EIA. As a registrant of the Institute of Environmental Management and Assessment's (IEMA) EIA Quality Mark, Wardell Armstrong's EIA practice is independently reviewed in accordance with best practice.

2.1.2 This ES has been prepared with regards to the requirements of the EIA regulations, which apply to the Proposed Development, as set out below.

2.2 Planning Policy

2.2.1 The main policy documents of relevance to this ES include the National Planning Policy Framework (NPPF) (2021) together with HBC's current development plan.

2.2.2 Policies relevant to the issues contained in this ES are summarised below, with further details set out within each of the discrete technical chapters. Further details of the relevant planning policies (to this application) are provided within the accompanying Planning Statement.

National Planning Policy Framework

2.2.3 The NPPF was originally published in March 2012 and replaced all Planning Policy Statements and Planning Policy Guidance Notes. The current version comprises the July 2021 NPPF. The National Planning Practice Guidance (NPPG) website was first published in March 2014 and updated regularly thereafter in order to assist local authorities with interpreting and applying the NPPF, locally. The NPPG should be read in conjunction with the 2021 NPPF.

2.2.4 Each technical chapter within the ES details the relevant aspects of the NPPF and NPPG in relation to the Proposed Development and topic area under consideration.

Local Planning Policy

2.2.5 Havant Borough Council (HBC) are currently in the process of preparing a new Local Plan which will set out how the borough should be developed into the late 2030s. HBC's current adopted Local Plan comprises the Core Strategy (2011) and the Site Allocations Plan (2014). Both are considered of relevance to this ES however it is noted that the Submission Local Plan (June 2021) has limited weight in determining planning applications.



- 2.2.6 The Havant Borough Core Strategy (HBCS) was adopted in March 2011 and is the principal document in the Havant Borough Local Development Framework (HBLDF), setting out the broad detail and direction of development in the borough until 2026.
- 2.2.7 As well as the HBCS, HBC's wider Development Plan also consist of a suite of supporting Supplementary Planning Documents.
- 2.2.8 HBC's emerging Local Plan looks to address the need for housing whilst safeguarding and improving the environment. Under Policy H27 (Rook Farm) the Site is allocated for residential development. The Policy outlines the information requirements that must accompany the planning application, which includes for an ES.
- 2.2.9 Each technical chapter within this ES details the relevant local planning policies in relation to the Proposed Development and topic area under consideration.

2.3 Requirement for an EIA

Statutory Requirement for an EIA

- 2.3.1 On the 22nd December 2016 the Applicant submitted an outline planning application for residential development (up to 210 dwellings and 0.6ha for apartments with care) on the Site to HBC, which was refused planning permission on the 13th April 2017.
- 2.3.2 Additionally, on the 17th March 2017 (during the determination period for the application), HBC provided the Applicant with an EIA Screening Opinion, which stated that the Proposed Development was considered to be 'EIA Development'.
- 2.3.3 The Proposed Development falls under Schedule 2, Part 10(b) Urban development projects (infrastructure projects). Under this category, the threshold criteria for which an EIA may be required is a project for which:
- The development includes more than 1 hectare of urban development which is not dwelling house development; or
 - the development includes more than 150 dwellings; or
 - the overall area of the development exceeds 5 hectares.
- 2.3.4 With regard to the selection criteria in Schedule 3 in the Regulations and the associated guidance including screening indicative criteria and thresholds; the development was judged to be EIA development by HBC for the following reasons:



'Characteristics of Development:

The size of the development - The site area of 11.81 hectares is significant in relation to the land take, this is linked to the sites capacity to provide a valuable habitat for protected species. The area is to change from primarily agricultural fields to residential development which would have the potential to impact on protected species using the site.

The cumulation with other development - This site is identified as part of the Havant Borough Local Plan Housing Statement as being of 'Uncertain Potential' together with another site on Hayling Island. In addition, the Housing Statement has identified other greenfield sites within the Borough for early release.

The cumulative impact of this site with these other sites needs to be assessed in relation to impacts on protected species.

Location of development:

The environmental sensitivity of the site has been recognised by its identification as an 'Important' Site for Brent Geese and Waders under the Solent Waders and Brent Goose Strategy. Evidence is required to demonstrate levels of impact alone and in combination with other proposals subject to the tests in the Habitat Regulations.

The site is in close proximity to the Chichester and Langstone Harbour Ramsar and Special Protection Areas (SPA) approximately 0.85km and 1km from the site respectively and Solent Maritime Special Area of Conservation (SAC).

The application is on a site that is identified in the 2017 updated data for the Brent Goose and Waders Strategy as an important habitat for Waders and Brent Geese of Chichester and Langstone Harbour SPA with up to 1,000 birds using the site.

The site is therefore considered to be an important supporting habitat for the Waders and Brent Geese of Chichester and Langstone Harbour SPA.

Characteristics of potential impact:

The proposal to introduce residential development within this 11.81 ha site would have a potentially significant impact on the habitat of protected birds linked to their use of internationally and nationally protected species.

The impact relates to a significant number of protected birds.

The impact would be permanent in nature and is clearly impacting on a site known to be in use by protected birds.'



2.3.5 Owing to this, an EIA has been undertaken for the Proposed Development.

Specific Requirements of the EIA

2.3.6 Schedule 4 of the EIA Regulations sets out specific requirements for the content of an ES. Whilst every ES should provide a full and factual description of the effect(s) of a given development, Schedule 4 places an emphasis upon identifying 'likely significant effects'. Other effects that are not significant need only a brief reference within the ES in order to indicate that their potential significance has been considered.

2.3.7 Schedule 4 states that an ES should provide a detailed description of the development, and an outline of the reasonable alternatives considered by the Applicant. The outline of alternatives should include an indication of the main reasons for the choices made, taking into account the environmental effects.

2.3.8 Schedule 4 also states that a non-technical summary (NTS) of the ES should be provided. To this end, this ES is accompanied by a separate stand-alone NTS produced using non-technical language.

2.3.9 In accordance with Schedule 4, likely significant effects of the development on the environment should be considered, in particular effects on: population, human health, biodiversity (e.g. fauna and flora), land, soil, water, air, climate, material assets, cultural heritage, landscape, and the interrelationship between the above factors.

2.4 Scope of the ES

2.4.1 The scope of this ES has been agreed in consultation with HBC and other statutory consultees. A formal request for a Scoping Opinion was submitted to HBC in August 2021 (Appendix 2.1) and HBC's Scoping Opinion was received in September 2021 (Appendix 2.2).

2.4.2 In accordance with the Scoping Report and HBC's Scoping Opinion, Table 2.1 below sets out the topics considered within this ES, and the authors of each technical chapter of this ES.

Table 2.1: Scope of the EIA		
ES Chapter No.	Topic	Author
6	Air Quality	Wardell Armstrong LLP
7	Ecology	CSA Environmental
8	Transport	Prime Transport Planning
9	Soils and Agricultural Land	Land Research Associates Limited
10	Water Environment	Enzygo Ltd



Table 2.1: Scope of the EIA

ES Chapter No.	Topic	Author
11	Rights of Way, Access & Recreation	FPCR Environment and Design Ltd
12	Vulnerability to Major Accidents and Disasters	Wardell Armstrong LLP

- 2.4.3 In accordance with the EIA Regulations the EIA has been undertaken, and the ES prepared, by 'competent experts'. The qualifications and experience of the team involved in the preparation of this ES is set out within the Statement of Expertise, included at the end of this ES.

Topics Outside the Scope of the EIA.

- 2.4.4 Specific chapters have not been included for the following topics, as it is considered that these will be addressed sufficiently elsewhere within the ES or planning application, and the Proposed Development is unlikely to result in significant environmental effects relevant to these topics.

Landscape and Visual Assessment

- 2.4.5 A Landscape and Visual Assessment (LVA) was undertaken in 2018 and subsequently appended to the Scoping Report (Appendix 2.1) and concluded that the Proposed Development would not give rise to any unacceptable landscape and visual harm. The LVA has subsequently been updated in line with the current proposals. The landscape of the Site has been identified as being of Medium landscape value, although the Site itself is not covered by any landscape designations. The Chichester Harbour Area of Outstanding Natural Beauty is located approximately 0.6km from the Site at its closest point.
- 2.4.6 Long term landscape effects are assessed as being Moderate/Minor Adverse for the Site and the immediate surrounding area due to the retention of existing features and overall enhancement mitigating any potential significant effects.
- 2.4.7 Long term visual effects are assessed as being Minor Adverse due to the associated substantial GI which will help to soften and screen views of the development and help it assimilate into the existing edge of settlement context.
- 2.4.8 It is therefore concluded that the Site's landscape character has the ability to absorb and change through the introduction of high-quality development as illustrated by the Development Framework Plan (Appendix 1.2), and so it can be determined that the Proposed Development is not likely to result in any significant landscape or visual effects and therefore the topic is not considered further within this ES.



Archaeology and Cultural Heritage

- 2.4.9 As part of a previous application for the Site, a Heritage and Archaeology Assessment was undertaken. A summary of the findings is included below, and further details can be found within the Scoping Report at Appendix 2.1.
- 2.4.10 The assessment considered that the Proposed Development would result in the loss of some views of the Church from the south-west, and thus cause minor harm to the significance of the Church of St Mary, through a change to its setting. This effect is however, considered not significant in EIA terms. Within this context, the limited harm caused to the overall heritage significance of the asset should be considered. The assessment also stated that *'the proposed development would result in negligible harm to the significance of the Grade II Listed Farm Cottage and Rook Farmhouse on the basis of a former historical functional relationship between the farm complex and the site'*.
- 2.4.11 The effect of the Proposed Development on all other assets will not result in any adverse impacts on the significance of designated heritage assets as a result of alteration to setting.
- 2.4.12 HBC's conservation officer considered in relation to the previous application that the impact on the setting of St Mary's Church to *"represent less than substantial harm"* and that *"this should be weighed against the public benefits of the proposal"*. There is no evidence of early medieval, medieval, or later settlement activity within the Site, and it is thought to have been comprised of farmland from the medieval period onwards. As a result, any unknown archaeological features dating to the medieval and post-medieval periods are likely to comprise agricultural features of low archaeological significance. The assessment did identify evidence of general prehistoric and Roman activity within the study area, and Hayling Island as a whole. Based upon this information it is considered that there is low to moderate potential for below ground remains of prehistoric and Roman dates to be present within the Site.
- 2.4.13 The assessment found no evidence to suggest that any archaeological remains present within the Site are of a significance as to preclude development. It is anticipated that further archaeological works will be secured through a condition attached to any permission granted. The assessment also identified no cumulative effects and stated that *'the proposed development will not adversely impact any identified archaeological remains which extend beyond the footprint of the proposed scheme.'*



The proposed development will not adversely impact designated heritage assets in the wider vicinity and as such no cumulative impacts are identified'.

2.4.14 It is considered that the Proposed Development is unlikely to have significant effects on the setting of heritage assets or on archaeological remains. Therefore, the assessment of effects of the Proposed Development on heritage assets and archaeological remains has been scoped out of the EIA.

2.4.15 An updated Heritage & Archaeology Desk Based Assessment will be submitted as a standalone report together with the planning application. The updated assessment (October 2021) has come to the same conclusions as the previous assessment in regards to archaeological potential and the setting of designated heritage assets.

Noise

2.4.16 A noise assessment has been undertaken to accompany the current planning application. The findings have been presented in a Noise Assessment Report (August 2021) which will be submitted with the application. A summary of the findings is included below, and further details can be found within the Scoping Report at Appendix 2.1.

2.4.17 The results of the noise survey and assessment indicate that should the recommended glazing together with appropriate acoustic ventilation be implemented this should ensure that the required internal daytime and night-time noise limits are achieved at those proposed dwellings closest to identified noise sources (road traffic on St Mary's Road and the surrounding road network and noise from the external plant at Smith & Austin Engineering Products Ltd).

2.4.18 The report further identified that a large majority of the proposed dwellings further into the Site will be able to open windows for ventilation at all times due to the screening effect of proposed residential properties.

2.4.19 Based on the findings of the Noise Assessment Report, it is considered that the Proposed Development will not result in significant noise effects, therefore Noise is scoped out of the ES.

Contamination

2.4.20 The Site is currently in agricultural use and therefore there is not likely to be any significant sources of contamination on Site. During both construction and operation standard protocols and best practice will be implemented to ensure there is no risk of contamination.



2.4.21 A Phase 1 Site Investigation will be submitted in support of the application. This includes for a desk study identifying the presence and significance of contamination of land. Further investigations and any mitigation and remediation that may be required would then be undertaken during detailed design.

Climate

2.4.22 The EIA Regulations state that an EIA should consider potential climate related effects. It is considered that these comprise the impact of the Proposed Development on the climate (i.e. greenhouse gas (GHG) emissions) and the impact of climate change on the Proposed Development.

2.4.23 As for any development, the Proposed Development will result in GHG emissions and these are unavoidable. It is not considered that the GHG emissions of the Proposed Development will be significantly different from other proposals of a similar nature and scale as the Proposed Development will be constructed, at a minimum, in accordance with relevant regulations, with betterment of Building Regulations being achieved where possible. In addition, the proposals will meet the requirements of policies that aim to reduce GHG emissions, through the use of sustainable design and other relevant measures.

2.4.24 The Proposed Development could potentially be affected by the impact of climate change, including increased risk of extreme weather events and flooding. However, resilience to extreme weather events will be incorporated within the design process, and the Proposed Development will be constructed in accordance with relevant regulations and guidance. In addition, a Flood Risk Assessment will be undertaken which will consider the risk of potential extreme flood events as a result of climate change.

2.4.25 In conclusion, it is not considered that the Proposed Development is likely to result in significant adverse effects on climate, and it is considered that the risk of the Proposed Development being affected by climate change is being addressed sufficiently elsewhere within the ES.

Human Health

2.4.26 The 2019 Health Profile for Havant (Public Health England) outlines that the health of people in the borough is better than the England average. The majority of health indicators for Havant are above or close to the England average, although there are several indicators which fall below the England national average. The categories in



which significantly worse indicators are seen are *Injuries and ill health* (one indicator out of six (Emergency hospital admissions for intentional self-harm)), *Behavioural risk factors* (one indicator out of six (Smoking prevalence in adults)), and *Wider determinants of health* (two indicators out of five (Children in low income families and average attainment 8 score)). However, given the nature of the Proposed Development it is not considered likely to exacerbate these indicators.

2.4.27 In November 2018 Havant Borough Council released the '*Havant Healthy Borough Assessment*' (HHBA), a strategy developed to improve the health and wellbeing of the borough's residents.

2.4.28 The HHBA covers the borough up to 2036 and their vision is to address health inequalities and improve both the physical and mental wellbeing of the population. The HHBA sets out several key areas which must be addressed during planning to ensure the goals of the HHBA are achieved. The goals of relevance to the Proposed Development are as follows:

- Health and Safety;
- Open Space & Recreation; and
- Healthier Food Environment.

2.4.29 The Proposed Development will accord with the relevant priorities of the HHBA, by ensuring the physical environment, housing and social networks can nurture and encourage health and wellbeing. Effects on population and human health as a result of the Proposed Development are anticipated to relate to the following:

- Increased provision of housing;
- Recreation;
- Noise; and
- Air Quality.

2.4.30 The increase in housing provision will have a beneficial effect on the local population and contribute to the 'Healthy Homes' Policy Recommendation made in the HHBA. The Proposed Development will also include a proportion of affordable housing which will be of benefit to the local population by increasing the availability of affordable housing in the area.



- 2.4.31 The construction of the Proposed Development will create employment opportunities in the short to medium term. It is considered that the increased employment opportunities will have a beneficial effect on the local population.
- 2.4.32 The HHBA recommends that green, blue and recreation spaces be included in new developments to encourage outdoor activity for all age groups. The Proposed Development has scope for the inclusion of open spaces which can be used for recreational activity, and therefore satisfies this aspect of the HHBA. Recreational areas will make it easier for people of all ages to become more active, teaching children the importance of being healthy, promoting good health and improving the overall wellbeing of residents. For more information, please refer to the Rights of Way, Access and Recreation ES Chapter (Chapter 11).
- 2.4.33 Noise and Air Quality effects will be assessed separately within the relevant chapters of the ES and standalone reports. As such it is not considered necessary to include a separate chapter for the consideration of these aspects of the development in relation to human health.
- 2.4.34 In conclusion, it is considered that the proposals will help people to live healthy lives in a healthy place. Therefore, the proposals are not likely to result in significant adverse effects on population and human health, beyond those already being considered elsewhere within the ES.

2.5 Assessment Methodology

- 2.5.1 The technical assessments provide a detailed examination of the key environmental impacts associated with the Proposed Development for each topic area included within the ES, as set out above.
- 2.5.2 Baseline data was obtained from published information sources, non-confidential data supplied by the various organisations consulted, previous site work undertaken by others and additional fieldwork. The methodologies for predicting the nature, extent, magnitude and significance of environmental effects vary according to the topic area being considered. As such, the methodology for predicting impacts is included within each assessment chapter.
- 2.5.3 Quantitative methods make reference to thresholds and indicative criteria set out within industry regulations and guidelines (where available). Where quantitative criteria are not available or not appropriate, qualitative methods have been adopted, relying on previous experience and professional judgement.



- 2.5.4 The objective of each assessment is to identify the 'magnitude of change' to the existing baseline environment arising as a result of the Proposed Development. The level of effect is a function of impact magnitude and the importance/sensitivity of the resources or receptors. Whilst the methods for determining the level of an effect can vary according to the environmental discipline, this underlying principle remains the same.
- 2.5.5 The assessment of the level of effect makes a judgement of the severity of the effect on a particular environmental receptor, taking into consideration all or a combination of the following factors:
- Geographical extent;
 - Rate of change;
 - Reversibility of the effect;
 - Probability of the effect;
 - Duration of the effect;
 - Size and magnitude of the effect; and
 - Sensitivity/importance/substitutability of the receptor.
- 2.5.6 Criteria is then used to determine whether an effect is 'significant' or 'not significant'. This criteria is set out within each chapter.
- 2.5.7 The criteria for the assessment of effects that has been adopted within each assessment chapter is in accordance with current published guidance specific to the discipline to which it relates. The published guidance documentation used is referenced within each chapter. Where published guidance or criteria is unavailable, the chosen method for assessing impacts and effect significance is explained in detail to ensure transparency.
- 2.5.8 Where likely significant adverse effects have been identified, mitigation measures have been proposed in order to avoid, reduce or remove such effects. The mitigation measures include refinements to the scheme design and/or the introduction of best practice methodology and specific safeguards. As an EIA is an iterative process, the assessment methodology was used to refine the mitigation measures and then adjusted to take them in to account during the assessment.



2.5.9 Via the incorporation of appropriate mitigation measures, identified adverse effects have been reduced to the lowest practicable level, consistent with the overall objectives of the Proposed Development. Any residual effects, during either construction and/or operation are identified and the significance of these residual effects assessed.

2.6 Cumulative Impact Assessment

2.6.1 Schedule 4 of the EIA Regulations states an ES must include a description of the likely significant effects of the Proposed Development, including reference to possible cumulative effects.

2.6.2 Within the assessment of cumulative impacts, there are two aspects to consider:

- Intra-cumulative effects (i.e. those occurring as a result of the Proposed Development in isolation); and
- Inter-cumulative effects (i.e. those occurring as a result of the Proposed Development in combination with other development).

2.6.3 Chapter 13 summarises both the significance of any residual effects detailed within the technical ES chapters and any likely significant cumulative effects.

Intra-cumulative Effects

2.6.4 The EIA has considered where a significant residual cumulative impact is expected to occur on a particular receptor as a consequence of collective actions, aspects or effects of the Proposed Development. Chapter 13 summarises the residual impacts likely to be experienced for each type of receptor and assesses the significance of these effects in cumulation.

Inter-cumulative Effects

2.6.5 Schedule 4 states that an ES should include a “*description of the likely significant effects of the development on the environment, resulting from... the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*”.

2.6.6 The schemes to be considered comprise committed developments in the area surrounding the Site and are set out below within Table 2.2. These schemes were agreed with HBC through scoping.



2.6.7 To ensure the scope of the technical assessment is proportionate the list of committed developments has been reviewed within each of the technical chapters.

Table 2.2: Schemes to be Considered Within Inter-Cumulative Assessment			
Application Ref	Application Reference	Description	Status
Land at Sinah Lane, Hayling Island	APP/20/01093	Erection of 195No. dwellings, associated open space, pumping station, sub-station and formation of new vehicular access off Sinah Lane. Change of use of land from agricultural to a Wader and Brent Geese Refuge Area (Resubmission of APP/18/00724) (30.6.21). Request to Discharge Condition Nos. 3, 4, 6, 7,11,12, 13, 14, 20, 22, and 23 (recd 5.7.21)	Decided 30 Jun 2021
380 Sea Front, Hayling Island, PO11 0BD	APP/17/00529	Erection of 13 residential apartments including parking and landscaping following demolition of existing building (Approved 29/11/2017). Request to Discharge Conditions 8 and 11 (Condition No 8 25/01/2018). Request to Discharge Conditions 4, 6, 13, 15, 16 and 18 (02.02.2018). Request to Discharge Condition No.s 14 and 17 (23.02.18). Request to Discharge Condition 3 (09.03.2018).	Decided 29 Nov 2017
108-110 Elm Grove, Hayling Island, PO11 9EN	APP/20/00015	Demolition of retail unit and associated outbuildings and construction of a 3 storey building consisting of 1No retail unit with 4No one bedroom flats fronting Elm Grove and a 3 storey, sheltered housing, building consisting of 19No one bedroom and 20No two bedroom assisted living accommodation	Decided 18 Mar 2021



Table 2.2: Schemes to be Considered Within Inter-Cumulative Assessment			
Application Ref	Application Reference	Description	Status
		with associated car parking and external works to the rear.	
5-7 Station Road, Hayling Island	APP/19/00324	Demolition of existing dwelling and business units and construction of a 2/3 storey building to provide 19 flats and 2 commercial units with vehicle and bicycle parking and a bin store (11.2.21). Request to discharge condition 4 (4.3.21). Request to discharge conditions 9,10,11,12,13,14 & 15 (27.04.21). Request to discharge condition No/s 5 and 7 (28.06.2021).	Decided 11 Feb 2021
Development Allocation: Hayling Island – Fathoms Reach	Policy H28 of Emerging Local Plan	Land is allocated for a Residential development of about 55 dwellings.	Draft allocation
Key Projects - Hayling island Regeneration	Policy KP3 of Emerging Local Plan	Southwood Road - Land is allocated for a Residential development of about 35 dwellings.	Draft allocation
		Eastoke Corner (north) - Land is allocated for development of about 20 dwellings, retail and food and drink uses.	
		Eastoke Corner (south) - Land is allocated for a mixed use development of leisure, food and drink uses, and public realm improvements.	
		Beachlands – Land is allocated for a mixed use development of about 100 dwellings, leisure, retail, food and drink and public space.	
		West Beach - Land is allocated for a Development of a mixed-use leisure facility, food and drink	



Table 2.2: Schemes to be Considered Within Inter-Cumulative Assessment			
Application Ref	Application Reference	Description	Status
		uses, and innovative holiday accommodation.	
		Northney Marina - Land is allocated for a Mixed use development of about 40 dwellings and 1,000 sqm of employment, commercial and service uses (Class E) which support the function and operation of the marina.	



3 SITE DESCRIPTION

3.1 Introduction

3.1.1 This Chapter of the ES provides an overview of the Site location and a description of the Site and the surrounding area. The technical assessments set out in Chapters 6 to 12 each contain a detailed description of the baseline environmental conditions of the Site and its surroundings, relevant to the scope and nature of the topic area under consideration.

3.2 Site Location

3.2.1 The Site is centred at approximately National Grid Reference SZ 71920 99784 and is located on fields situated amongst existing settlement areas in the southern part of Hayling Island. It falls within the administrative authority of Havant Borough Council (HBC). The location of the Site and application boundary is illustrated at Appendix 1.1.

3.3 Site Description

3.3.1 The Site is approximately 11.77ha in size and is comprised of two fields currently in agricultural use and an area of grassland containing a building and pond bound by:

- Residential properties located off St Mary's Road and Rook Farm Way, to the east and south-east;
- Residential properties located off St Mary's Road and Southleigh Grove to the south;
- Open green space to the south-west which has been identified within HBC's emerging Local Plan as an allocation (Policy H28 – Fathoms Reach) for residential development (of about 55 dwellings), beyond which are residential properties located off Fathoms Reach.
- An agricultural field to the west, beyond which are residential properties located on Manor Road;
- Hayling Island Holiday Park to the north-west;
- An agricultural field to the north; and
- The cemetery and grounds of the Church of St Mary to the north-east.



3.3.2 An agricultural building and a pond are located within the Site, to the east. A drain runs horizontally across the centre of the Site. Drains also run along the northern site boundary.

3.3.3 The Site itself is generally flat at an elevation of between c.6.5m and c.8.5m Above Ordnance Datum (AOD).

3.4 Wider Site Context

3.4.1 The Site is located to the northeast of the village of West Town and to the west of the village of Gable Head. As such, the majority of the land to the south is densely developed with a mixture of residential areas and commercial uses being present. Beyond this is Hayling Island Beach which runs along the entirety of the island's southern extent.

3.4.2 Further residential areas are located to the north-west, beyond Hayling Island Holiday Park, and north-east of the Site. Land further to the north consists mainly of agricultural fields and their associated farmhouses. Tournerbury Golf Course is located c. 550m to the northeast of the Site.

3.4.3 The mainland is accessible via a single road, Langstone Road, located on the northern extend of Hayling Island. This road is accessible from the Site via the A3023 which is located off Manor Road, west of the Site, and Church Road, east of the Site.

3.5 Environmental Designations

3.5.1 The Site and the surrounding area are located within a Nitrate Vulnerable Zone (NVZ) for eutrophic water (Chichester, Langstone and Portsmouth Harbours Eutrophic NVZ (TraC).

3.5.2 A network of public footpaths abuts the northern and western boundaries of the Site.

3.5.3 A number of Listed Buildings (Grades II and II*) are located within the wider area.

3.5.4 Whilst there are no statutory designated sites of nature conservation interest located within or immediately adjacent to the Site, there are a number located within the wider area. These include the Sinah Common Site of Special Scientific Interest (SSSI), and the Chichester & Langstone Harbours Special Protection Area (SPA).

4 THE PROPOSED DEVELOPMENT

4.1 Introduction

4.1.1 This chapter sets out a description of the Proposed Development, a summary of the design process and indicative details of the development timescales.

4.1.2 This ES is based on the following development description:

Development of up to 300 dwellings (including affordable housing). The proposal also includes provision for structural planting and landscaping; informal public open space; children's play areas; sustainable drainage system (SuDS); a new vehicular access from St Mary's Road; and associated ancillary works.

4.2 Development Parameters

4.2.1 As an outline application, full details are not submitted at this stage of planning and design. Rather, approval is sought for the principle of development and the primary means of access within a set of parameters. As such, the following parameters have been identified to ensure a robust assessment across the EIA:

- An application area of 11.77ha;
- Up to 300 dwellings (30% of which will be affordable housing);
- Vehicular access from St Mary's Road;
- Demolition of the existing farm building located in the centre of the Site;
- Approximately 7.53ha of residential development; and
- Approximately 4.24ha of Green Infrastructure (including open space).

4.2.2 The assessments within this ES are based upon the above parameters. However, the traffic data is based on a figure of up to 395 dwellings to align with the Council's emerging allocation for the Site. The traffic and air quality assessments therefore represent a worst-case scenario and actual effects will likely be reduced from those set out within this ES.

4.2.3 The indicative design is illustrated on the Development Framework Plan, included at Appendix 1.2.

4.2.4 As the application is being submitted in outline, at this stage the exact height of the dwellings is unknown, however it is expected that the dwellings will be either 2 or 2.5 storeys.



- 4.2.5 Vehicular and pedestrian access to the Site will be located off St Mary's Road. Further pedestrian access will be located off Southleigh Grove and via an existing footpath located to the west of the Site. Car parking provision will be based on HBC parking standards for C3 use.
- 4.2.6 Access to the proposed dwellings will be via a number of internal roads. The proposals include the provision of street tree planting across the Site. A number of recreational routes are also proposed to provide access across the Site.
- 4.2.7 It is proposed that the existing pond, located at the centre of the Site is retained. A section of existing trees and hedgerows, also located at the centre of the Site, will be removed to facilitate the development.
- 4.2.8 The Proposed Development will include approximately 4.24ha of Green Infrastructure. Tree and hedgerow planting is proposed across the Site. The Proposed Development will also include for usable Public Open Space which will comprise of teenage provision, equipped play provision, and multi-functional greenspaces.
- 4.2.9 Sustainable drainage systems (SuDS) will also be incorporated within the Site. These depressions will form part of the Site's Green Infrastructure and new tree and hedgerow planting will be included around the SuDS.

4.3 Mitigation and Design

- 4.3.1 The EIA process has served to shape and refine the design proposals by identifying any potential adverse effects, issues or constraints that could be effectively 'designed out' of the proposals at an early stage. The design parameters have evolved in response to external engagement and public consultation feedback and the results of technical assessments. The design proposals have undergone various iterations to either avoid or incorporate measures to mitigate for adverse environmental impacts, or (where possible) to enhance the environmental benefits of the Proposed Development.

4.4 Indicative Development Timescales

- 4.4.1 Subject to outline planning permission being granted in 2022 it is anticipated that construction of the Proposed Development could commence in 2023. It is estimated that, dependent upon market factors, the Proposed Development could be completed by 2030. However, it should be noted that the air quality and transport assessments have considered an opening/ future year of 2036 as per the Paramics model and local plan year end.



5 CONSIDERATION OF ALTERNATIVES

5.1 Introduction

5.1.1 Schedule 4 of the EIA Regulations state that an ES should include:

“A description of the reasonable alternatives (for example in terms of development design, technology, location, size, and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects”.

5.2 ‘Do Nothing’ Alternative

5.2.1 The first alternative considered is the ‘do nothing’ scenario. This scenario is to assume that the Proposed Development would not be built and considers how the Site would evolve without the Proposed Development in place.

5.2.2 The Site is currently comprised of agricultural fields, a grassland with a building and pond, and hedgerows. Without the Proposed Development it is considered likely that the Site would remain in its current state. Whilst this option would eliminate potential adverse environmental impacts as a result of the Proposed Development, it would not contribute to the housing and affordable housing targets that have been identified within Havant Borough.

5.2.3 The need for new residential housing in Havant is set out in detail in the ‘Regeneration Strategy for Havant Borough’ report produced in 2018. This report states that in Havant there is a need for affordable housing, with 1,800 people in the borough currently on a waiting list for this. The borough also requires 9,400 homes by 2036 which the Proposed Development will assist in satisfying. The ‘Rook Farm’ site is an emerging Development Allocation for residential development within Draft Policy H27 of the emerging Havant Borough Local Plan.

5.2.4 The Proposed Development includes up to 300 residential units and, by not developing the Site, this valuable contribution to the sustainable creation of housing and provision of affordable housing within the area would be lost. On the basis of the above, the ‘Do Nothing’ alternative has been discounted.

5.3 Alternative Site Design

5.3.1 The design proposals have been through an iterative design that has been influenced by key stakeholders (including HBC), planning policy and environmental constraints



identified through the EIA. Via this process, various design alternatives have evolved, been proposed, and considered.

- 5.3.2 The original proposals have been amended and improved through various iterations to reflect information pertaining to Site constraints that were identified during the EIA process. As far as possible, potential significant adverse environmental impacts have been 'designed out' of the Proposed Development.
- 5.3.3 For example, new looped footpath and cycleway routes have been proposed within the development linking the Proposed Development to the wider external network and routes through and around Hayling Island, increasing access to recreational areas for new and existing residents. In addition, SuDS basins will be included to accommodate surface water run-off. These will also create habitats, enhancing biodiversity within the Site.
- 5.3.4 In addition, mitigation measures have been identified and incorporated into the proposals in order to avoid, remove or reduce any adverse effects that cannot be adequately addressed through design.
- 5.3.5 Therefore, the proposals are considered to be the development alternative that will result in the fewest adverse environmental impacts whilst delivering benefits for the Site and local area.

5.4 Alternative Site Location

- 5.4.1 As set out above and within Chapter 2 of this Environment Statement, the Site is to become a Development Allocation for residential development within the new Havant Borough Local Plan once adopted. Therefore, the suitability of the Site's location has been considered at a strategic level through the Local Plan preparation process. The environmental constraints within the proposed Site are limited and the potential environmental impacts that could occur have been mitigated as far as possible as part of this EIA (see individual technical chapters for further details). On the basis of the above, it is considered that the Site is located in a sustainable and environmentally suitable location.

5.5 Conclusion

- 5.5.1 In summary, the Proposed Development has been through an iterative design process to reduce the potential environmental effects to the lowest practical level and enhance the potential benefits of the scheme.



- 5.5.2 The current proposals are therefore considered to represent the most suitable option for development of the Site, taking into consideration environmental effects.

6 AIR QUALITY

6.1 Introduction

6.1.1 This Chapter reports the likely significant effects of the Proposed Development in terms of Air Quality in the context of the Site and surrounding area. In particular it considers the likely significant effects of dust and fine particulate matter associated with the construction phase and road traffic emissions associated with the operational phase.

6.1.2 This Chapter (and its associated figures and appendices) is not intended to be read as a standalone assessment and reference should be made to the front end of this ES (Chapters 1 – 5), as well as the final chapter, 'Summary of Residual and Cumulative Effects' (Chapter 13).

6.2 Legislation, Policy and Guidance

6.2.1 The relevant legislation, policy and guidance are listed below, with details provided in Appendix 6.1.

Legislative Framework

6.2.2 The applicable legislative framework is summarised as follows, which are described in more detail in Appendix 6.1:

- *The Environment Act, 1995*
- *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2011*
- *Directive 2008/50/EC of the European Parliament and of the Council of 21st May 2008 on Ambient Air Quality and Cleaner Air for Europe.*
- *Air Quality (Standards) Regulations, 2010.*

Planning Policy

6.2.3 The applicable planning policy is summarised as follows:

- *National Planning Policy Framework, 2021*
- *Havant Borough Core Strategy, Adopted in 2011*
- *Havant Borough Council Emerging Local Plan, (submitted to the Secretary of State for Housing Communities and Local Government for examination on 12 February 2021).*

Guidance

6.2.4 The applicable guidance is summarised as follows:

- *Planning Practice Guidance: Air Quality, 2021*
- *Institute of Air Quality Management (IAQM), Guidance on the Assessment of Dust from Demolition and Construction, 2016*
- *Environmental Protection UK (EPUK) and IAQM, Land-Use Planning and Development Control: Planning for Air Quality, 2017*
- *Natural England's Approach to Advising Competent Authorities on the Assessment of Road Traffic Emissions under the Habitat Regulations, 2018*
- *Environment Agency, AQTAG06 Technical Guidance on Detailed Modelling Approach for an Appropriate Assessment for Emissions to Air, 2014*
- *Conservation of Habitats and Species Regulations No. 490, 2010*
- *Institute of Air Quality Management (IAQM), A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites, 2019*

6.3 Assessment Methodology and Significance Criteria

Scope of the Assessment

6.3.1 The scope of works to be considered in the air quality assessment, comprises the following:

- A qualitative assessment in order to consider the potential effects associated with the construction phase of the Proposed Development; and
- Air dispersion modelling in order to assess the potential effects associated with the operation of the Proposed Development.

Effects Not Considered within the Scope

6.3.2 According to the Multi Agency Geographic Information for the Countryside (MAGIC) resource, there are no potentially dust sensitive designated habitat sites within 50m of the Site and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the Site entrance(s). Therefore, in accordance with IAQM guidance, construction phase ecological effects do not need to be considered within this assessment.

Extent of the Study Area

- 6.3.3 A desk study has been undertaken to establish the air quality baseline and other relevant features up to 5km from the boundary of the Site.
- 6.3.4 For the construction phase assessment, existing sensitive human receptors located within 350m of the Site boundary and/or within 50m of the route that construction vehicles will take have been identified.
- 6.3.5 For the operational phase assessment, existing sensitive human receptors and relevant ecological receptors have been identified within 200m of the roads that will be affected by development generated vehicles.
- 6.3.6 These distances are taken from the relevant guidance detailed within Appendix 6.1 and have been applied using the methodologies detailed within Appendix 6.2.

Consultation Undertaken to Date

- 6.3.7 Table 6.1 provides a summary of the consultation activities undertaken in support of the preparation of this Chapter.

Table 6.1: Summary of Consultation Undertaken to Date			
Organisation	Individual(s)	Meeting Date and other forms of Consultation	Summary of Outcome of Discussion
Havant Borough Council (HBC)	Mr. Simon Jenkins (Director of Regeneration and Place of HBC)	A request for a Scoping Opinion was submitted to HBC on the 25 th August 2021. A formal Scoping Opinion was received on the 29 th September 2021	Air Quality should be scoped in to the Environmental Statement. AQ assessment to include a study area to include the A3023 up to the A27 junction, and associated links and junctions.

Assessment Methodology

- 6.3.8 The method of baseline data collection and assessment is in accordance with current guidance and industry best practice. Full details are provided in Appendix 6.2.

Construction Phase

- 6.3.9 The construction phase assessment has been undertaken in accordance with guidance from the *IAQM*. This guidance provides a methodology for the assessment of potential dust soiling and human health effects associated with the construction phase of the Proposed Development.

6.3.10 The assessment takes into account the risk of dust and PM₁₀ effects from construction phase activities, based on a number of factors including the scale and type of activities taking place, and the sensitivity of the local area. Based on the outcome of this, site-specific mitigation measures can be recommended.

Operational Phase

6.3.11 A detailed assessment of the effects on human receptors during the operational phase of the Proposed Development has been undertaken in accordance with guidance from *EPUK* and the *IAQM*. The assessment for neighbouring ecological receptors has been undertaken in accordance with guidance from *Natural England*.

6.3.12 Air dispersion modelling has been undertaken to consider the air quality effects associated with road traffic emissions at representative existing receptor locations. All predicted pollutant concentrations and deposition have been compared to the relevant air quality objectives, as detailed in the *Air Quality (Standards) Regulations 2010*, and critical loads respectively.

6.3.13 Air quality modelling has been carried out to predict pollutant concentrations, due to road traffic emissions, for three impact assessment scenarios:

- Scenario 1: 2017 Verification and Base Year;
- Scenario 2: 2036 Opening/Future Year + committed development;
- Scenario 3: 2036 Opening/Future Year + committed development + proposed development.

6.3.14 The Defra Emission Factor Toolkit (EFT) used in the assessment (Version 10.1) includes predictions of future vehicle composition and pollutant concentrations up to 2030. As the Opening/Future year scenario considered in the assessment is 2036, the emission factors and backgrounds for 2030 have been applied to the 2036 scenarios. This is considered an overly robust approach as future emissions beyond 2030 are likely to continue to improve as cleaner, less polluting vehicles enter the fleet and replace older, more polluting vehicles.

6.3.15 EFT version 10 also does not consider base years pre-2018. However, the base year considered within the assessment utilises 2017 data due to the transport assessment being based upon HBC's Hayling Island microsimulation model, which cannot accurately be factored to a more recent year (see Chapter 8 Transport for further details). The assessment has therefore used the previous version of EFT (version 9.1)

to model the 2017 base year scenario. This has enabled the assessment to apply 2017 background and emission factors to the base year scenario and accurately verify the model using 2017 diffusion tube data for HBC's monitoring locations. This approach has been recommended and agreed with the LAQM helpdesk as the most accurate way to conduct the modelling assessment.

Ecological Assessment

- 6.3.16 Guidance on assessing the potential effects of proposed developments on conservation sites is provided via the Centre for Hydrology and Ecology APIS resource.
- 6.3.17 The Environment Agency's (EA) "AQTAG06" document provides further useful technical guidance on carrying out an appropriate assessment of emissions to air in fulfilment of the requirements of The Conservation of Habitats and Species Regulations 2010 No. 490 (referred to as the "Habitats Regulations").
- 6.3.18 Guidance on the assessment of significance is provided by the IAQM. Further details of the methodology are given in Appendix 6.2.

Significance Criteria

- 6.3.19 Effects that are deemed to be significant for the purposes of this assessment are those that are described as being of a moderate or major beneficial or adverse level.
- 6.3.20 The construction phase assessment for Existing Sensitive Receptors (ESR) takes into account the significance criteria used in the IAQM guidance. The operational phase assessment for ESR takes into account the significance criteria detailed in (i) EPUK/IAQM guidance and (ii) Natural England guidance. Full details of the significance criteria used within the assessment are included in Appendix 6.2.
- 6.3.21 Impacts on air quality, whether adverse or beneficial, will have an effect that can be judged as either 'significant' or 'not significant'.

6.4 Baseline Conditions

Background Pollutant Concentrations

- 6.4.1 The Site is located within the administrative area of HBC, which is responsible for the management of air quality at the Site and in the local area. There are currently no existing Air Quality Management Areas (AQMAs) declared within the HBC administrative areas.

6.4.2 The latest Annual Status Report (ASR) for HBC (2019) indicates that HBC currently maintains a network of 37 NO₂ diffusion tubes across the administrative area. There are no representative background monitoring locations in the vicinity of the Proposed Development. Therefore, background concentrations have been obtained from the 2018-based Defra default concentration maps for the appropriate grid squares¹.

6.4.3 There are, however, several roadside diffusion tubes located near Havant Road and Langstone Road. Monitoring data for 2017, provided by HBC, shows that these measured annual mean NO₂ concentrations of between 28.97 and 48.10µg/m³.

6.4.4 Further details on the pollutant backgrounds used in the assessment are included in Appendix 6.3.

Evolution of Baseline without the Implementation of the Proposed Development

6.4.5 Following further review of the 2019 ASR, it is noted that majority of the monitoring locations measured annual mean NO₂ concentrations below the annual mean NO₂ objective (i.e. 40µg/m³), during the last few years. Therefore, air quality within HBC is considered generally good. From the data provided in the 2019 ASR, it is also noted that measured NO₂ concentrations are either broadly stable or reducing across the district.

Sensitive Receptors

6.4.6 A number of existing sensitive human receptors (referred to as ESR 1 to ESR 20) have been selected for consideration in the air quality assessment. These have been chosen based on their proximity to the Site.

6.4.7 Details of these receptors are provided in Table 6.2, and their locations are shown on drawing GM11062-001 (Appendix 6.7).

Table 6.2: Existing Sensitive Receptors Considered in Operational Phase Assessment				
Receptor	Address	Grid Reference		Receptor Type
		Easting	Northing	
ESR 1	Havant Road, Hayling Island	472194	102040	Residential
ESR 2	Church Road, Hayling Island	472278	100562	Residential
ESR 3		472233	99902	Residential

¹ Accessed through the Defra Local Air Quality Management webpages (<http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>)

Table 6.2: Existing Sensitive Receptors Considered in Operational Phase Assessment				
Receptor	Address	Grid Reference		Receptor Type
		Easting	Northing	
ESR 4		472206	99829	Residential
ESR 5	St Mary's Road, Hayling Island	472149	99823	Residential
ESR 6	Elm Grove, Hayling Island	472205	99535	Residential
ESR 7	Beach Road, Hayling Island	471449	99414	Residential
ESR 8	St Mary's Road, Hayling Island	471963	99532	Residential
ESR 9		471946	99544	Residential
ESR 10	A3023 Manor Road, Hayling Island	471456	99598	Residential
ESR 11	Havant Road, Hayling Island	471844	103105	Residential
ESR 12	A3202 Langstone Road, Langstone	471717	104923	Residential
ESR 13		471638	105718	Residential
ESR 14	Woodbury Avenue, Langstone	471651	105670	Residential
ESR 15	A3202 Langstone Road, Langstone	471599	105556	Residential
ESR 16	The Limes, Langstone	471695	105816	Residential
ESR 17	Havant Road, Hayling Island	472040	102303	Residential
ESR 18		472201	102048	Residential
ESR 19	West Lane, Hayling Island	471281	99602	Residential
ESR 20		471343	99819	Residential
PR 1	Within Proposed Development Site	472124	099847	Proposed Residential

6.4.8 ESR locations have been chosen to represent worst case scenarios, for example, close to busy roads or junctions. PR1 has been selected within the Development Site to represent the proposed residential area closest to St Mary's Road and the proposed Site access road.

6.4.9 In addition to this, the following ecological receptors have also been considered within the assessment:

- Langstone Harbour Site of Special Scientific Interest (SSSI);

- Chichester Harbour SSSI;
- Chichester and Langstone Harbours Special Protection Area (SPA);
- Chichester and Langstone Harbours Ramsar Site; and
- Solent Maritime Special Area of Conservation (SAC).

6.4.10 Receptor locations are illustrated on drawing GM11062-001 (Appendix 6.7), with further details provided within Appendix 6.2.

Modelled Baseline Concentrations at Receptors

6.4.11 The baseline assessment (i.e. scenarios 1 and 2) has been carried out for the existing sensitive receptors considered, in accordance with Defra guidance (i.e. using EFT v10.1). The adjusted NO₂ and unadjusted PM₁₀ and PM_{2.5} concentrations are detailed in Table 6.3.

Table 6.3: Predicted Adjusted NO₂ and Unadjusted PM₁₀ and PM_{2.5} Concentrations at Existing Sensitive Receptors for Scenarios 1 and 2						
Receptor	Calculated Annual Mean Concentrations (µg/m³)					
	Scenario 1: 2017 Base Year			Scenario 2: 2036 Opening/Future Year, Without Development		
	NO₂	PM₁₀	PM_{2.5}	NO₂	PM₁₀	PM_{2.5}
ESR 1	25.74	16.19	10.67	11.74	14.58	9.30
ESR 2	24.36	15.34	10.48	11.66	13.84	9.18
ESR 3	23.45	14.83	10.28	11.39	13.43	9.08
ESR 4	19.96	14.44	10.02	10.35	13.09	8.88
ESR 5	14.35	13.55	9.48	8.68	12.26	8.42
ESR 6	21.96	14.64	10.16	11.00	13.30	9.00
ESR 7	16.58	13.84	9.72	9.64	12.65	8.73
ESR 8	14.51	13.59	9.56	9.00	12.39	8.59
ESR 9	14.03	13.51	9.51	8.85	12.32	8.55
ESR 10	18.64	14.15	9.91	10.24	12.94	8.90
ESR 11	28.26	15.55	10.75	12.73	13.79	9.26
ESR 12	23.23	15.11	10.49	11.91	13.53	9.17
ESR 13	<u>41.17</u>	18.83	12.76	21.05	18.00	11.79
ESR 14	33.27	17.47	11.92	18.43	16.70	11.06



Table 6.3: Predicted Adjusted NO₂ and Unadjusted PM₁₀ and PM_{2.5} Concentrations at Existing Sensitive Receptors for Scenarios 1 and 2

Receptor	Calculated Annual Mean Concentrations (µg/m ³)					
	Scenario 1: 2017 Base Year			Scenario 2: 2036 Opening/Future Year, Without Development		
	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}
ESR 15	30.35	16.97	11.61	17.40	16.16	10.76
ESR 16	<u>40.94</u>	19.27	13.00	21.46	18.70	12.16
ESR 17	29.83	16.74	11.02	13.00	15.05	9.57
ESR 18	27.18	16.44	10.83	12.17	14.80	9.43
ESR 19	16.74	13.87	9.74	9.74	12.70	8.76
ESR 20	16.46	13.84	9.72	9.62	12.64	8.73
<i>NO₂ concentrations obtained by inputting predicted NO_x concentrations into the NO_x to NO₂ calculator² in accordance with LAQM.TG(16)</i> <i>Underlined values indicate an exceedance of the objective.</i>						

6.4.12 The results show that all predicted NO₂, PM₁₀ and PM_{2.5} concentrations are below the relevant objectives and limit values in both the 2017 and 2036 scenario, with the exception of ESR 13 and 16 which slightly exceed the NO₂ annual mean objective in the 2017 base year.

6.4.13 ESR 13 and 16 are both located close to the A27 Havant Bypass, and in close proximity to the Langstone Road & A27/A3023/B2149 Junction. Therefore, exceedances of the NO₂ annual mean objective would be expected at these locations.

Limitations

6.4.14 Air quality assessments make use of official sources of information (i.e. vehicle emission factors and background concentrations) which have historically been considered to be overly optimistic. Monitoring data collected by the UK Government and local authorities over the past few years has shown that annual mean NO₂ concentrations remained higher than previously expected (especially in roadside locations). This was widely thought to be due to the lower-than-expected decline in NO_x emissions from diesel vehicles (even though new Euro standards have been introduced), coupled with an overall increase in the number of diesel vehicles on the road.

² Defra Local Air Quality Management webpages (<http://laqm.defra.gov.uk/tools-monitoring-data/no-calculator.html>)



- 6.4.15 The vehicle emission factors used in this assessment are from Defra's latest Emission Factor Toolkit (EFT v10.1)³, which was released in August 2020 and is the most up-to-date version available. This version supersedes the previous version, EFT v9.0.1.
- 6.4.16 A position statement was produced by the IAQM in 2018 which dealt specifically with the use of EFT v8 and the consideration of uncertainties in predicting future air quality⁴. The statement concluded that the approaches for dealing with this uncertainty should be decided on a case-by-case basis but may include the use of a sensitivity test in which it is assumed that NO_x emissions will not reduce as quickly as within the EFT.
- 6.4.17 A later study provided evidence that EFT v9.0 may be relied upon to predict the 'most likely' future emissions reductions, as long as model verification has been undertaken using monitored data from 2016 or later⁵.
- 6.4.18 The IAQM has recently withdrawn their 2018 position statement on the consideration of uncertainties in predicting future air quality⁶. A growing body of evidence suggests that the latest COPERT vehicle emission factors used in EFT v9.0 (and later) reflect real-world NO_x emissions more accurately. As a result, the IAQM judges that "*an exclusively vehicle emissions-based sensitivity test is no longer necessary*". This is provided that the assessment has been verified using monitoring data from 2016 or later.
- 6.4.19 In accordance with Defra guidance, the air quality assessment has been carried out using EFT v10.1 and 9.1. As model verification has been undertaken, following the latest guidance from the IAQM, it is not considered necessary to carry out a sensitivity analysis. Further information on the model verification factor used in the assessment is provided in Appendix 6.6.
- 6.4.20 EFT v10.1 also does not consider base years pre-2018. The assessment has therefore used the previous version of EFT (version 9.1) to model the 2017 base year scenario. This has enabled the assessment to apply 2017 background and emission factors to the base year scenario and accurately verify the model using 2017 diffusion tube data for HBC's monitoring locations. This approach has been recommended and agreed

³ Defra Local Air Quality Management webpages (<https://iaqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>)

⁴ Institute of Air Quality Management, Dealing with Uncertainty in Vehicle NO_x Emissions within Air Quality Assessments v1.1, July 2018

⁵ Air Quality Consultants, Performance of Defra's Emission Factor Toolkit 2013 – 2019, February 2020

⁶ Available on the Institute of Air Quality Management website (https://iaqm.co.uk/wp-content/uploads/2013/02/iaqm_uncertainty_vehicle_NOx_emission_withdrawn-02.pdf)

with the LAQM helpdesk as the most accurate way to conduct the modelling assessment.

6.4.21 Several steps have been taken to ensure the model is as accurate and representative as possible. These comprise:

- Consultation has been undertaken with HBC to confirm their agreement with the methodology used within the assessment;
- Traffic data has been provided by Prime Transport Planning, who, at the request of HBC, have obtained data from a microsimulation model produced by Systra on behalf of HBC;
- The latest Defra LAQM tools have been incorporated into the assessment following their release in August 2020;
- Meteorological data, obtained from a representative meteorological recording station, has been incorporated into the assessment (Appendix 6.5);
- Road widths and the location of ESRs in relation to each road have been measured in detail to ensure greater accuracy within the model; and
- A number of HBC diffusion tubes have been included within the assessment to allow model verification to take place. Model verification factor(s) have been applied to NO_x concentrations, which are then input into the Defra NO_x to NO₂ calculator tool to predict total NO₂ concentrations at each receptor considered in the assessment (further detail is given in Appendix 6.6).

6.5 Assessment of Effects

Design Solutions and Assumptions

Construction Phase

6.5.1 In accordance with the methodology detailed in the *IAQM* guidance, the construction phase assessment assumes that no mitigation measures are applied, except those required by legislation. Further site-specific measures, such as a best practice dust mitigation plan, are recommended where the risk of dust impacts is not classed as negligible.

Operational Phase

6.5.2 The assessment of operational phase road traffic emissions assumes that no mitigation is applied. Further measures can be recommended based on the significance of the unmitigated effect.

Assessment of Effects – Construction Phase

- 6.5.3 In accordance with the IAQM guidance, the main activities to be considered during the construction phase of the Proposed Development are demolition, earthworks, construction and trackout.
- 6.5.4 Step 2A of the construction phase dust assessment defines the potential dust emission magnitude from demolition, earthworks, construction and trackout in the absence of site specific mitigation.
- 6.5.5 Step 2B of the construction phase dust assessment defines the sensitivity of the area, taking into account the significance criteria detailed in Tables 6.2 to 6.4 in Appendix 6.2, for demolition, earthworks, construction and trackout. The sensitivity of the area to each activity is assessed for potential dust soiling and human health effects.
- 6.5.6 For demolition there are fewer than 10 residential receptor locations within 50m of where these activities may take place.
- 6.5.7 For earthworks and construction, there are currently between 10 and 100 residential receptor locations within 20m of where these activities may take place, which is assumed to be the Site boundary for the purpose of this assessment.
- 6.5.8 The routing of construction vehicles is unknown at this stage. Therefore, for the purposes of this assessment, a worst case routing scenario has been assumed for assessment of potential trackout impacts at nearby receptor locations.
- 6.5.9 For trackout, there are between 10 and 100 residential receptor locations within 20m of where trackout may occur for a distance of up to 500m from the Site entrance (in either direction along Church Road/St Mary's Road).
- 6.5.10 Step 2C of the construction phase dust assessment has defined the risk of impacts from each activity. The dust emission magnitude is combined with the sensitivity of the surrounding area. The risk of dust impacts from each activity, with no mitigation in place, has been assessed in accordance with the criteria detailed in Tables 6.5 to 6.9 in Appendix 6.2.
- 6.5.11 Table 6.4 below details the results of Step 2 of the construction phase assessment for human receptors.

Table 6.4: Construction Phase Dust Assessment - Human Receptors				
	Activity			
	Demolition	Earthworks	Construction	Trackout
Step 2A				
Dust Emission Magnitude	Small ^a	Large ^b	Large ^c	Medium ^d
Step 2B				
Sensitivity of Closest Receptors	High	High	High	High
Sensitivity of Area to Dust Soiling Effects	Low	High	High	High
Sensitivity of Area to Human Health Effects	Low ^e	Low ^e	Low ^e	Low ^e
Step 2C				
Dust Risk: Dust Soiling	Negligible	High Risk	High Risk	Medium Risk
Dust Risk: Human Health	Negligible	Low Risk	Low Risk	Low Risk
a. Total building volume estimated to be less than 20,000m ³ . b. Total site area estimated to be more than 10,000m ² . c. Total building volume to be constructed estimated to be more than 100,000m ³ . d. Number of construction phase vehicles estimated to be between 10 and 50 movements per day. e. Background annual mean PM ₁₀ concentration is taken from the LAQM Defra default concentration maps, as detailed in Appendix 6.2.				

6.5.12 With regard to the significance of an effect, the *IAQM* guidance recommends that this should only be assigned after mitigation measures are implemented. This is because:

“EIA influences the design process and therefore significant adverse environmental effects are either avoided or reduced through design before the proposal is finalised, and thus the pre-mitigation impacts are not relevant”.

6.5.13 As a result, the significance of construction phase effects, with mitigation in place, are detailed in section 6.6 and 6.7.

Assessment of Effects – Operational Phase

Existing Sensitive Human Receptor Locations

6.5.14 The impact assessment has been carried out for the representative existing sensitive receptors considered (i.e. ESR 1 to ESR 20).

6.5.15 Table 6.5 details the predicted NO₂ concentrations for the 2036 Opening/Future Year, for both the ‘Without Development’ and ‘With Development’ scenarios, in accordance with Defra guidance (i.e. using EFT v10.1). The impact has been assessed in accordance with the descriptors included in Appendix 6.2.

Table 6.5: Predicted Adjusted NO₂ Concentrations at Existing Sensitive Receptors for Scenarios 2 and 3 – Using the Emission Factor Toolkit v10.1

Receptor	Calculated Annual Mean NO ₂ Concentrations (µg/m ³) ^a				
	Without Development	With Development		Concentration Change as Percentage of AQUAL	Impact ^b
		Concentration	Percentage in Relation to AQUAL		
ESR 1	11.74	11.84	<75%	<0.5%	Negligible
ESR 2	11.66	11.81	<75%	<0.5%	Negligible
ESR 3	11.39	11.60	<75%	1%	Negligible
ESR 4	10.35	10.65	<75%	1%	Negligible
ESR 5	8.68	8.93	<75%	1%	Negligible
ESR 6	11.00	11.10	<75%	<0.5%	Negligible
ESR 7	9.64	9.66	<75%	<0.5%	Negligible
ESR 8	9.00	9.09	<75%	<0.5%	Negligible
ESR 9	8.85	8.91	<75%	<0.5%	Negligible
ESR 10	10.24	10.27	<75%	<0.5%	Negligible
ESR 11	12.73	12.81	<75%	<0.5%	Negligible
ESR 12	11.91	11.95	<75%	<0.5%	Negligible
ESR 13	21.05	21.11	<75%	<0.5%	Negligible
ESR 14	18.43	18.46	<75%	<0.5%	Negligible
ESR 15	17.40	17.43	<75%	<0.5%	Negligible
ESR 16	21.46	21.48	<75%	<0.5%	Negligible
ESR 17	13.00	13.11	<75%	<0.5%	Negligible
ESR 18	12.17	12.28	<75%	<0.5%	Negligible
ESR 19	9.74	9.76	<75%	<0.5%	Negligible
ESR 20	9.62	9.65	<75%	<0.5%	Negligible
<i>a. NO₂ concentrations obtained by inputting predicted NO_x concentrations into the NO_x to NO₂ calculator, in accordance with LAQM.TG(16)</i> <i>b. Assessed using the Impact Descriptors from the EPUK/IAQM guidance, included in Appendix 6.2. Changes of less than 0.5% should be described as negligible</i>					

6.5.16 Table 6.6 details the PM₁₀ concentrations for the 2036 Opening/Future Year, for both the 'Without Development' and 'With Development' scenarios, in accordance with Defra guidance (i.e. using EFT v10.1). The impact has been assessed in accordance with the descriptors included in Appendix 6.2.

Table 6.6: Predicted Unadjusted PM₁₀ Concentrations at Existing Sensitive Receptors for Scenarios 2 and 3 – Using the Emission Factor Toolkit v10.1

Receptor	Calculated Annual Mean PM ₁₀ Concentrations (µg/m ³)				
	Without Development	With Development		Concentration Change as Percentage of AQAL	Impact ^a
		Concentration	Percentage in Relation to AQAL		
ESR 1	14.58	14.63	<75%	<0.5%	Negligible
ESR 2	13.84	13.92	<75%	<0.5%	Negligible
ESR 3	13.43	13.53	<75%	<0.5%	Negligible
ESR 4	13.09	13.23	<75%	<0.5%	Negligible
ESR 5	12.26	12.39	<75%	<0.5%	Negligible
ESR 6	13.30	13.34	<75%	<0.5%	Negligible
ESR 7	12.65	12.66	<75%	<0.5%	Negligible
ESR 8	12.39	12.44	<75%	<0.5%	Negligible
ESR 9	12.32	12.35	<75%	<0.5%	Negligible
ESR 10	12.94	12.95	<75%	<0.5%	Negligible
ESR 11	13.79	13.83	<75%	<0.5%	Negligible
ESR 12	13.53	13.55	<75%	<0.5%	Negligible
ESR 13	18.00	18.03	<75%	<0.5%	Negligible
ESR 14	16.70	16.72	<75%	<0.5%	Negligible
ESR 15	16.16	16.18	<75%	<0.5%	Negligible
ESR 16	18.70	18.71	<75%	<0.5%	Negligible
ESR 17	15.05	15.11	<75%	<0.5%	Negligible
ESR 18	14.80	14.86	<75%	<0.5%	Negligible
ESR 19	12.70	12.71	<75%	<0.5%	Negligible
ESR 20	12.64	12.66	<75%	<0.5%	Negligible
<i>a. Assessed using the Impact Descriptors from the EPUK/IAQM guidance, included in Appendix 6.2. Changes of less than 0.5% should be described as negligible</i>					

6.5.17 Table 6.7 details the PM_{2.5} concentrations for the 2036 Opening/Future Year, for both the 'Without Development' and 'With Development' scenarios, in accordance with Defra guidance (i.e. using EFT v10.1). The impact has been assessed in accordance with the descriptors included in Appendix 6.2.



Table 6.7: Predicted Unadjusted PM_{2.5} Concentrations at Existing Sensitive Receptors for Scenarios 2 and 3 – Using the Emission Factor Toolkit v10.1

Receptor	Calculated Annual Mean PM _{2.5} Concentrations (µg/m ³)				
	Without Development	With Development		Concentration Change as Percentage of AQAL	Impact ^a
		Concentration	Percentage in Relation to AQAL		
ESR 1	9.30	9.33	<75%	<0.5%	Negligible
ESR 2	9.18	9.22	<75%	<0.5%	Negligible
ESR 3	9.08	9.14	<75%	<0.5%	Negligible
ESR 4	8.88	8.97	<75%	<0.5%	Negligible
ESR 5	8.42	8.50	<75%	<0.5%	Negligible
ESR 6	9.00	9.03	<75%	<0.5%	Negligible
ESR 7	8.73	8.74	<75%	<0.5%	Negligible
ESR 8	8.59	8.62	<75%	<0.5%	Negligible
ESR 9	8.55	8.56	<75%	<0.5%	Negligible
ESR 10	8.90	8.90	<75%	<0.5%	Negligible
ESR 11	9.26	9.29	<75%	<0.5%	Negligible
ESR 12	9.17	9.19	<75%	<0.5%	Negligible
ESR 13	11.79	11.81	<75%	<0.5%	Negligible
ESR 14	11.06	11.07	<75%	<0.5%	Negligible
ESR 15	10.76	10.77	<75%	<0.5%	Negligible
ESR 16	12.16	12.16	<75%	<0.5%	Negligible
ESR 17	9.57	9.61	<75%	<0.5%	Negligible
ESR 18	9.43	9.46	<75%	<0.5%	Negligible
ESR 19	8.76	8.77	<75%	<0.5%	Negligible
ESR 20	8.73	8.74	<75%	<0.5%	Negligible
<i>b. Assessed using the Impact Descriptors from the EPUK/IAQM guidance, included in Appendix 6.2. Changes of less than 0.5% should be described as negligible</i>					

Proposed Sensitive Receptor Locations

6.5.18 One proposed sensitive receptor location (known as PR 1) has been selected within the Site. The location has been selected to represent the proposed residential area closest to St Mary's Road and the proposed Site access road and is, therefore,

positioned along the Site boundary.

6.5.19 Pollutant concentrations at the proposed receptor location have been predicted for scenario 3 only (as detailed in paragraph 6.3.13). It is only necessary to consider the 'with development' scenarios for the proposed receptor location as it will not experience any 'without development' conditions. It is not therefore necessary to consider the changes in pollutant concentrations at the proposed receptor location.

6.5.20 Details of the proposed sensitive receptor location are provided in Table 6.2, and its location is shown on drawing GM11062-001 (Appendix 6.7).

6.5.21 The predicted NO₂, PM₁₀ and PM_{2.5} concentrations at PR1 for the '2036 Opening/Future Year with development scenario' are detailed in Table 6.9.

Table 6.9: Predicted NO₂, PM₁₀ and PM_{2.5} concentrations at Proposed Receptor (PR) Location for the 2036 With Development Scenario (i.e. Scenario 3)			
Receptor	Calculated Annual Mean Concentrations (µg/m³)		
	NO₂ *(Adjusted)	PM₁₀ (Unadjusted)	PM_{2.5} (Unadjusted)
ESR 1	8.70	12.29	8.44
* NO ₂ concentrations obtained by inputting predicted NO _x concentrations into the NO _x to NO ₂ calculator in accordance with LAQM.TG(16). Predicted NO ₂ concentrations also adjusted using monitoring data from HBC.			

Assessment of Significance - Human Receptors

6.5.22 The significance of the overall effects of the Proposed Development has been assessed in accordance with the EPUK/IAQM guidance. This assessment is based on professional judgement and details of the assessor's experience is included within the Statement of Expertise at the end of this ES.

- The assessment of significance has taken into account a number of factors, including:
- Baseline pollutant concentrations in 2017 and 2036 are below the relevant annual mean objectives and limit values at all existing receptors considered, with the exception of ESR 13 and 16. ESR 13 and 16 are located in an area where elevated NO₂ concentrations would be expected;
- The assessment predicts a negligible impact on concentrations of NO₂, PM₁₀ and PM_{2.5} at all existing sensitive receptors considered, with the development in place; and

- NO₂, PM₁₀ and PM_{2.5} concentrations within the Site are predicted to be below the relevant objectives and limit values.

6.5.23 The impact of the Proposed Development on NO₂, PM₁₀ and PM_{2.5} concentrations is predicted to be negligible for all receptor locations. Therefore, the effect of the Proposed Development on concentrations of NO₂, PM₁₀ and PM_{2.5} is considered to be '**not significant**' for the purposes of the EIA. As a result, the overall effect of the Proposed Development on human health is considered to be '**not significant**' for the purpose of the EIA

Sensitive Ecological Receptor Locations

6.5.24 Currently, the deposition of nitrogen-containing pollutants (e.g. NO_x) is of most concern for sensitive vegetation communities and ecosystems. An assessment has, therefore, been undertaken to consider the potential effects on nitrogen pollution due to the increased traffic flow on roads within 200m of the Chichester and Langstone Harbours Ramsar and SPA, Solent Maritime SAC, Langstone Harbour SSSI and Chichester Harbour SSSI designated habitat complex.

6.5.25 The ADMS-Roads model has been set up to predict concentrations of released substances across two grids of points covering the extent of the Chichester and Langstone Harbours complex site within, at least, 200m of roads affected by the Proposed Development (i.e. roads which are anticipated to experience additional regular traffic as a result of the Proposed Development).

6.5.26 Nitrogen pollution associated with the Proposed Development has been assessed against critical levels and loads in accordance with Natural England standard practices and guidance.

6.5.27 Concentrations of NO₂ have been predicted by modelling atmospheric concentrations of NO_x, using ADMS-Roads, and converting to NO₂ using Defra's NO_x to NO₂ calculator. The modelled annual mean deposition rates include consideration of emissions from modelled road traffic sources only, and therefore exclude background deposition rates.

Assessment of Deposition

6.5.28 Natural England and IAQM guidance indicate that the risk of a potentially significant impact can be screened out if the contribution from a development, both in-isolation and in-combination with other relevant schemes, is less than 1% of the relevant critical level / load, even in circumstances where background deposition is close to, or above,

the critical level / load.

6.5.29 Should a process contribution of 1% or more of the critical level / load be predicted, it does not necessarily follow that there will be a consequent significant ecological effect; rather, it indicates the potential for such an effect to occur.

6.5.30 Site-relevant critical levels and loads have been obtained from the APIS website for the Chichester and Langstone Harbours complex site. These critical levels and loads are shown in Appendix 6.2 and within Table 6.10 below.

2036 Opening / Future Year: In-Isolation

6.5.31 The location within the Chichester and Langstone Harbours designated habitat complex at which the largest increase in pollutant nitrogen (NO_x concentration and nutrient nitrogen deposition rate and nitrogen-derived acid deposition rate) is forecast to occur, as a result of the Proposed Development in-isolation, is at grid reference point 472113, 104110.

6.5.32 The modelled NO_x concentration, NO₂ concentration, nutrient nitrogen deposition rate and nitrogen-derived acid deposition rate (based on modelled road traffic NO_x emissions only) at these locations are detailed in Table 6.10.

Table 6.10: Modelling Results for Point within the Chichester and Langstone Harbours designated habitat complex which is Predicted to Experience the Largest Increase for 2036 'Without Development' and 'With Development' Scenarios (In-Isolation)				
	Impact Assessment: 2030 Backgrounds and Emission Factors			
	Annual Mean NO_x Concentration (µg/m³)	Annual Mean NO₂ Concentration (µg/m³)	Annual Mean Nitrogen Deposition Rate (kg N/ha/year)	Annual Mean N-derived Acid Deposition Rate (kEq/ha/year)
Without Develop.	21.29	14.14	0.681	0.0496
With Develop.	21.48	14.23	0.695	0.0456
Process Contribution (PC)	0.19	0.09	0.013	0.0010
Critical Level / Load (CL)	30		8	1.308
PC as % of CL	0.619%		0.162%	0.071%
<i>Deposition rates calculated using the EA recommended deposition velocities for grassland</i>				

2036 Opening / Future Year: In-combination

6.5.33 The location within the Chichester and Langstone Harbours designated habitat complex at which the largest increase in pollutant nitrogen (NO_x concentration and nutrient nitrogen deposition rate and nitrogen-derived acid deposition rate) is forecast to occur, as a result of the Proposed Development in-combination with committed development (see Appendix 6.4 for information regarding the committed developments considered) is at grid reference point 472113, 104110.

6.5.34 The modelled NO_x concentration, NO_2 concentration, nutrient nitrogen deposition rate and nitrogen-derived acid deposition rate (based on road traffic NO_x emissions only) at these locations are detailed in Table 6.11.

Table 6.11: Modelling Results for Point within the Chichester and Langstone Harbours designated habitat complex which is Predicted to Experience the Largest Increase for 2036 'Without Development' and 'With Development' Scenarios (In-Combination)				
	Impact Assessment: 2030 Backgrounds and Emission Factors			
	Annual Mean NO_x Concentration ($\mu\text{g}/\text{m}^3$)	Annual Mean NO_2 Concentration ($\mu\text{g}/\text{m}^3$)	Annual Mean Nitrogen Deposition Rate (kg N/ha/year)	Annual Mean N-derived Acid Deposition Rate (kEq/ha/year)
Without Develop.	21.14	14.05	0.669	0.0478
With Develop.	21.48	14.23	0.695	0.0497
Process Contribution (PC)	0.34	0.18	0.026	0.0019
Critical Level / Load (CL)	30		8	1.308
PC as % of CL	1.125%		0.324%	0.142%
<i>Deposition rates calculated using the EA recommended deposition velocities for grassland</i>				

Assessment of Significance - Ecological Receptors

6.5.35 Natural England and IAQM guidance states that a contribution of less than 1% of the relevant critical level or load can be screened out of requiring further assessment.

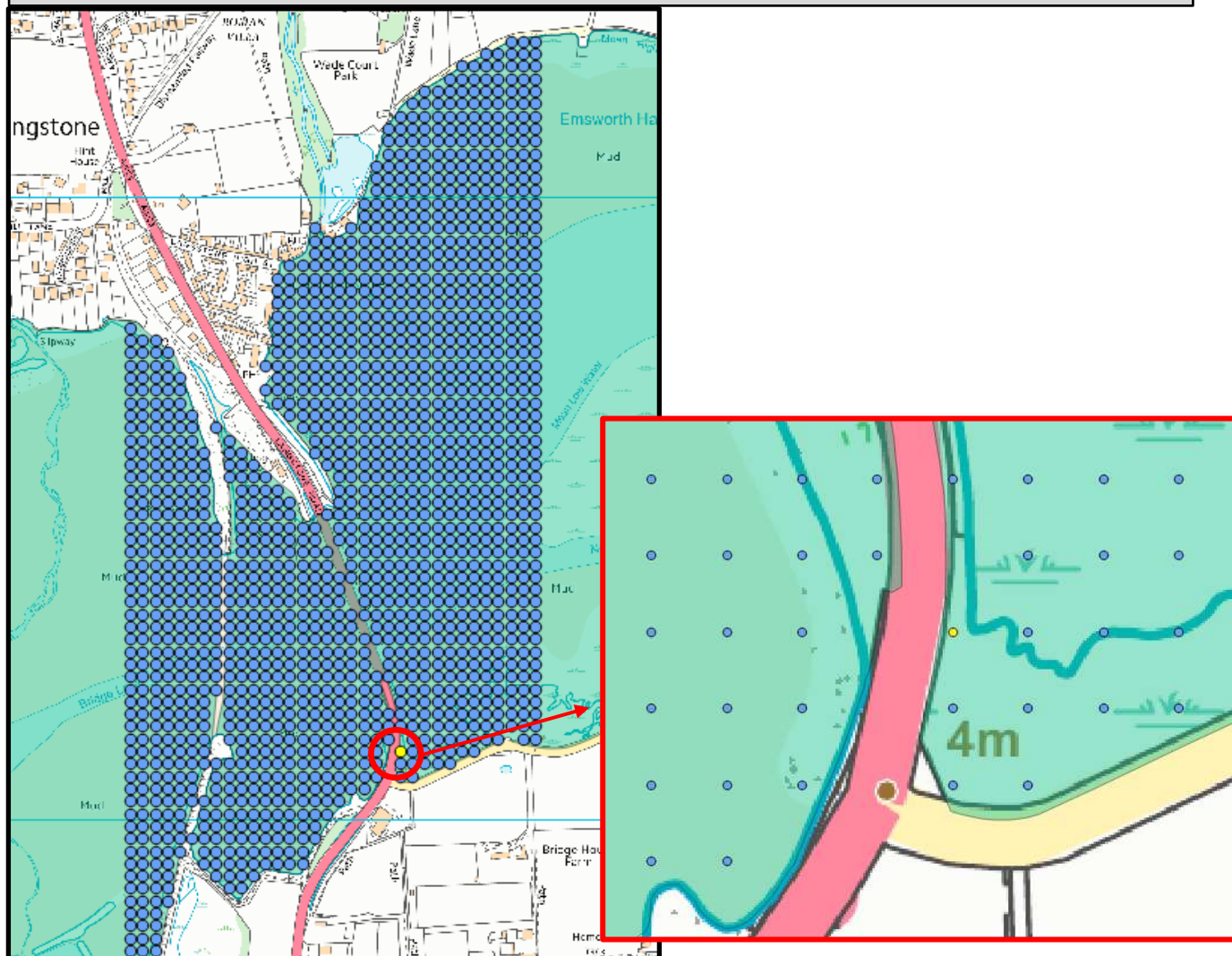
6.5.36 Should a process contribution of 1% or more of the critical level or load be predicted, it does not necessarily follow that there will be a consequent significant ecological effect; rather it indicates the potential for such an effect to occur.

6.5.37 Table 6.10 shows that significant contributions from the Proposed Development in-isolation (without committed development) can be screened out within the Chichester and Langstone Harbours designated habitat complex for nutrient nitrogen

deposition, nitrogen-derived acid deposition and NO_x concentration.

6.5.38 Table 6.11 shows that significant contributions from the Proposed Development in combination (with committed development) can be screened out within the Chichester and Langstone Harbours designated habitat complex for nutrient nitrogen deposition, nitrogen-derived acid deposition. However, the assessment predicts a slight exceedance of the 1% screening criteria for NO_x concentration at a location within 3m of Langstone Road as it crosses over the habitat site (see Figure 6.1).

Figure 6.1: Map showing the modelled points within the Designated Habitat Complex. Blue points represent locations where the predicted increases in both nutrient nitrogen and nitrogen-derived acid deposition, expressed as a proportion of the relevant minimum critical loads, are less than 1% and significant contributions can be screened out according to Natural England guidance (i.e. all modelled points). The yellow point represents the location within the designated habitat complex where the maximum increases in both nutrient nitrogen and nitrogen-derived acid deposition are predicted.



6.5.39 Significant contributions to pollutant nitrogen (nutrient nitrogen deposition and nitrogen derived acid deposition) within most of the Chichester and Langstone Harbours Ramsar and SPA, Solent Maritime SAC, Langstone Harbour SSSI and Chichester Harbour SSSI designated habitat complex conservation site can be screened out for the Proposed Development both in-isolation and in-combination with committed development. Effects are therefore considered to be not significant.

6.5.40 A slight exceedance of the 1% screening criteria is predicted to occur for the annual mean NO_x process contribution as part of the In-Combination assessment at a location within 3m of Langstone Road as it crosses over the habitat site.

6.5.41 It should be noted that it does not necessarily mean that there will be a consequent significant ecological effect; rather it indicates the potential for such an effect to occur at this point. The potential ecological effects have been considered within the Ecology chapter (Chapter 7).

6.6 Mitigation

Construction Phase Mitigation

6.6.1 During the construction phase the implementation of effective mitigation measures will substantially reduce the potential for nuisance dust and PM₁₀ to be generated.

6.6.2 Step 2C of the construction phase assessment identified that:

- The risk of dust soiling effects is classed as negligible for demolition, high for earthworks and construction, and medium for trackout; and
- The risk of human health effects is classed as negligible for demolition, and low for earthworks, construction and trackout.

6.6.3 This assumes that no mitigation measures are applied, except those required by legislation. Site specific mitigation measures do not need to be recommended if the risk category is negligible.

6.6.4 Owing to the risk of dust soiling and human health effects being greater than negligible for the majority of activities, site specific mitigation will need to be implemented to ensure dust effects from these activities will be not significant.

6.6.5 A best practice dust mitigation plan will be written and implemented for the Site. This will set out the practical measures that could be incorporated as part of a best working practice scheme. This will take into account the recommendations included within the *IAQM* guidance, which may include but are not limited to:

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Protection of surfaces and exposed material from winds until disturbed areas are sealed and stable;
- Dampening down of exposed stored materials, which will be stored as far from sensitive receptors as possible;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;
- Avoidance of activities that generate large amounts of dust during windy conditions;
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
- Avoid dry sweeping of large areas;
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the Site. This may require the sweeper being continuously in use;
- Ensure that all vehicles will be sheeted when loaded;
- Ensure vehicles entering and leaving the Site are covered to prevent escape of materials during transport;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the Site where reasonably practicable);
- Confine vehicles to areas of the site where appropriate dust control measures can be in operation;
- Minimisation of vehicle movements and limitation of vehicle speeds – the slower the vehicle speeds, the lower the dust generation;
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the Site exit, wherever the site size and layout permits; and

- Access gates to be located at least 10m from receptors, where possible.

6.6.6 All dust and air quality complaints should be recorded and appropriate measures be taken to identify causes and reduce emissions in a timely manner. Exceptional incidents which cause dust and/or emissions, and the action taken to resolve the situation, should be recorded in a log book and made available to HBC on request.

6.6.7 It is recognised that the final design solutions will be developed with the input of the contractor to maximise construction efficiencies, to use modern construction techniques and sustainable materials, and to incorporate the particular skills and experience offered by the successful contractor.

Operational Phase Mitigation

Sensitive Human Receptor Locations

6.6.8 An air quality assessment has been undertaken to consider the potential effect of development-generated vehicles on air quality at twenty sensitive human receptor locations.

6.6.9 Exceedance of the NO₂, PM₁₀ and PM_{2.5} annual mean air quality objectives/target levels is not predicted to occur in 2036, for any of the twenty existing sensitive receptors considered, for both the 'without development' and 'with development' scenarios.

6.6.10 The assessment predicts that there will be a negligible impact and not significant effect on concentrations of NO₂, PM₁₀ and PM_{2.5} at all twenty existing sensitive receptors considered in 2036, with the development in place.

6.6.11 It should be noted that the assessment is considered to be overly robust, as the latest version of EFT only considers pollutant concentrations up to 2030. Therefore, 2030 background and emission factors have been applied to the 2036 scenario. It is considered likely that background pollutant concentrations and vehicle emission factors will continue to improve beyond 2030 as older, more polluting vehicles leave the fleet and are replaced with greener, less polluting vehicles.

6.6.12 The effect of the Proposed Development at the sensitive human receptor locations is considered to be not significant. However, it is good practice to incorporate mitigation measures, which will assist in reducing any potential impact resulting from the development. Mitigation measures could include:

- The implementation of a Green Travel Plan;

- Installation of Electric Vehicle charging points; and
- All gas fired boilers to meet a minimum standard of <40mg NO_x/kWh.

6.7 Residual Effects

Construction Phase Residual Effect

- 6.7.1 Step 4 of the construction phase dust assessment has been undertaken to determine the significance of the dust effects arising from earthworks, construction and trackout associated with the Proposed Development.
- 6.7.2 The implementation of effective mitigation measures during the construction phase, such as those detailed in Step 3, will reduce the potential for nuisance dust and particulate matter to be generated and any residual effect is considered likely to be **'not significant'**.

Operational Phase Residual Effect

- 6.7.3 The operational phase assessment has taken an overly robust approach, and therefore, actual emissions in 2036 are likely to be less than those predicted within the assessment.
- 6.7.4 The effect of the Proposed Development at existing sensitive receptor locations (human) is considered to be not significant and, with the implementation of mitigation strategies, the residual effect will remain **'not significant'** for the purposes of the EIA.
- 6.7.5 The effect of the Proposed Development at the Chichester and Langstone Harbours Ramsar and SPA, Solent Maritime SAC, Langstone Harbour SSSI and Chichester Harbour SSSI designated habitat complex conservation site does not exceed the 1% screening criteria within guidance for nutrient nitrogen deposition and nitrogen derived acid deposition, both In-isolation and In-combination. Therefore, the residual effect for nutrient nitrogen deposition and nitrogen derived acid deposition will be **'not significant'** for the purposes of the EIA.

6.8 Assessment of Cumulative Effects

- 6.8.1 As regards inter-cumulative effects, the presented results incorporate committed developments within the baseline traffic for the Opening and Future Year Scenarios, such that the cumulative impact of the Proposed Development scheme along with other developments has been assessed.

6.8.2 A slight exceedance of the 1% screening criteria is predicted to occur for the annual mean NO_x process contribution as part of the in-combination assessment at a location within 3m of Langstone Road as it crosses over the habitat site.

6.8.3 It should be noted that it does not necessarily follow that there will be a consequent significant ecological effect; rather it indicates the potential for such an effect to occur. The potential ecological effects have been considered within the Ecology chapter (Chapter 7).

6.9 Summary

Construction Phase

6.9.1 The effect of the construction phase of the Proposed Development has been assessed with mitigation in place, in accordance with the guidance. During the construction phase, site specific mitigation (such as a best practice dust mitigation plan) will be implemented at the Site. With mitigation measures in place the residual effect is considered to be **'not significant'** at nearby sensitive receptor locations. The implementation of mitigation will ensure that the Proposed Development maintains compliance with relevant guidance including the NPPF.

Operational Phase

6.9.2 The overall effect of the Proposed Development on human receptors is considered to be **'not significant'**, for the purposes of the EIA. This effect could be reduced further through the implementation of various mitigation strategies. Taking into account potential mitigation strategies, the residual effect is unchanged. The implementation of strategies such as these will ensure that compliance is maintained with NPPF and LAQM legislation (including the Air Quality Objectives).

6.9.3 The effect of the Proposed Development at the Chichester and Langstone Harbours Ramsar and SPA, Solent Maritime SAC, Langstone Harbour SSSI and Chichester Harbour SSSI designated habitat complex conservation site does not exceed the 1% screening criteria within guidance for nutrient nitrogen deposition and nitrogen derived acid deposition, both In-isolation and In-combination across most of the site. Therefore, with the implementation of mitigation strategies, the residual effect for nutrient nitrogen deposition and nitrogen derived acid deposition will be **'not significant'** for the purposes of the EIA.



- 6.9.4 A slight exceedance of the 1% screening criteria is predicted to occur for the annual mean NO_x process contribution as part of the in-combination assessment at a location within 3m of Langstone Road as it crosses over the habitat site.
- 6.9.5 It should be noted that it does not necessarily follow that there will be a consequent significant ecological effect; rather it indicates the potential for such an effect to occur. The potential ecological effects have been considered within the Ecology chapter (Chapter 7).

7 ECOLOGY

7.1 Introduction

7.1.1 This Chapter reports the likely significant effects of the Proposed Development in terms of ecology in the context of the Site and surrounding area. In particular it considers the likely significant effects of construction and operation of the Proposed Development on statutory designated wildlife sites, semi-natural habitats and protected/notable species.

7.1.2 This Chapter (and its associated figures and appendices) is not intended to be read as a standalone assessment and reference should be made to the front end of this ES (Chapters 1 – 5), as well as the final chapter, 'Summary of Residual and Cumulative Effects' (Chapter 13).

7.2 Legislation, Policy and Guidance

7.2.1 The relevant legislation, policy and guidance are listed below, with details provided in Appendices 7.1 (Ecological Impact Assessment) and 7.2 (Information to Inform Habitats Regulations Assessment).

Legislative Framework

7.2.2 The applicable legislative framework is summarised as follows:

- Conservation of Habitats and Species Regulations 2017 (as amended);
- Wildlife and Countryside Act 1981 (as amended);
- Natural Environment and Rural Communities (NERC) Act 2006; and
- Protection of Badgers Act 1992.

Planning Policy

7.2.3 The applicable planning policy is summarised as follows:

- Ministry of Housing, Communities and Local Government, 2021. National Planning Policy Framework (NPPF);
- Office of the Deputy Prime Minister, 2005. Government Circular 06/2005: Biodiversity and geological conservation – statutory obligations and their impact within the planning system;
- Havant Borough Local Plan (Core Strategy) March 2011;

- Policy DM8: Conservation, Protection and Enhancement of Existing Natural Features.
- Havant Borough Local Plan (Allocations) July 2014; and
 - Policy DM23: Sites for Brent Geese and Waders; and
 - Policy DM24: Recreational Disturbance to Special Protected Areas (SPAs) from Residential Development.
- Havant Borough Council Emerging (Submission version) Local Plan 2036.
 - Policy E14: The Local Ecological Network;
 - Policy E15: Protected Species;
 - Policy E16: Recreation impact on the Solent European Sites;
 - Policy EX1: Water Quality impact on Solent European Sites;
 - Policy E17: Solent Wader and Brent Goose feeding and roosting Sites; and
 - Policy E18: Trees, hedgerows and woodland.

Guidance

7.2.4 The applicable guidance is summarised as follows:

- Baker, J., 2016. Biodiversity Net Gain: Good practice principles for development. CIEEM, CIRIA & IEMA;
- Chartered Institute of Ecology and Environmental Management, 2016. Guidelines for Assessing and Using Biodiversity Data. Winchester: CIEEM;
- Chartered Institute of Ecology and Environmental Management, 2018. Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Winchester: CIEEM; and
- Collins, J., ed., 2016. Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd ed. London: The Bat Conservation Trust.

7.3 Assessment Methodology and Significance Criteria

Scope of the Assessment

- 7.3.1 Ecological receptors are assessed within this chapter where they are determined to be important and where they may be significantly affected by the Proposed Development in the absence of appropriate mitigation.
- 7.3.2 A feature may be considered to be of importance for a variety of reasons, such as quality and size (in the case of habitats) or rarity and population trends (in the case of species). Aside from these factors, some species are afforded legal protection under European Directives and/or national legislation. Where such protected species are present, and there is potential for the Proposed Development to result in a breach of legislation, these species are taken to be important features.
- 7.3.3 The scope of important ecological features upon which the likely significant effects of development are assessed are statutory designated wildlife sites, semi-natural habitats and protected/notable species. These include the Chichester and Langstone Harbours Special Protection Area (SPA), Ramsar and SSSIs, Solent Maritime Special Area of Conservation (SAC), Solent and Isle of Wight Lagoons SAC, Portsmouth Harbour SPA and Ramsar, South Wight Maritime SAC, Solent and Southampton Water SPA and Ramsar site, Sinah Common SSSI, hedgerows, pond habitat, bat species and common reptiles.
- 7.3.4 Consistent with the Scoping Opinion, particular regard is given to the Site's recognised importance as a Core Area used by Solent waders and Brent Geese as defined by Policy E17 in the emerging Local Plan.

Effects Not Considered within the Scope

- 7.3.5 The following ecological receptors were initially considered during baseline ecological surveys and assessments but are scoped-out of this assessment. In the case of designated sites this is generally on the basis of their spatial separation from the Site and the lack of identified potential impact pathways. In the case of habitats and species it is on the basis of their being considered likely absent from the Site, or occurring in insufficient assemblages to constitute an important feature. Further detail is provided in Appendix 7.1.
- Sites of Importance for Nature Conservation;
 - Common habitats occurring at the Site (e.g. arable cultivation);

- Badgers;
- Dormice;
- Riparian mammals;
- Other priority mammals;
- Breeding birds;
- Great crested newts; and
- Invertebrates.

Extent of the Study Area

7.3.6 The zone of influence, i.e. the area of which the Proposed Development may give rise to significant effects, varies markedly between the different ecological features. The zone of influence with respect to many ecological features extends well beyond the boundaries of the Site. The study area for a given ecological feature is made clear within the corresponding survey report or assessment (see Appendices 7.1 and 7.2).

Consultation Undertaken to Date

7.3.7 To date no external consultation has been undertaken. It is intended that, consistent with the Scoping Opinion, consultation be undertaken with Natural England and the Council's Ecologist in respect of off-site land identified for the provision of brent goose mitigation. However, for reasons of commercial confidentiality it has not been possible to proceed with this at the time of writing, therefore it is intended that consultation will be undertaken during determination.

Assessment Methodology

7.3.8 The assessment presented in this chapter is informed by comprehensive ecological data, used to establish the baseline ecological conditions at the Site. Methods of baseline data collection are detailed within the various species-specific survey reports consolidated within Appendix 7.1. The methods of baseline data collection and assessment were in accordance with current guidance and industry best practice.

7.3.9 The assessment method used for predicting and characterising likely ecological impacts and effects is that set out by the Chartered Institute of Ecology and Environmental Management's (CIEEM) 2018 Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. These

guidelines form the current, widely acknowledged industry best practice guidance. Full details are provided in Appendix 7.1.

Significance Criteria

7.3.10 Impacts and their effects are taken to be significant where they support or undermine biodiversity conservation objectives, with the scale of significance defined according to the geographic context detailed below. The geographic significance scale reflects best practice in ecological impact assessment as set out in the relevant guidance. However, to aid consistency with other disciplines presented within this ES, guidance is taken from Box et al (2017) on the translation of this scale from one of geographic context to 'Minor', through 'Moderate' to 'Major'.

- International (taken to be Major)
- National (taken to be Major)
- Regional (taken to be Major)
- County (taken to be Moderate)
- District (taken to be Moderate)
- Local (taken to be Minor)

7.3.11 Effects that are deemed to be significant for the purposes of this assessment are those that are described as being of a minor, moderate or major beneficial or adverse level. Where an impact or effect is unlikely to be perceptible at a Local scale, this is taken to be not significant.

7.3.12 It should be noted that in EIA, a 'significant effect' does not necessarily equate to one so severe that planning permission should be refused. Projects with significant adverse ecological effects may be lawfully permitted following EIA procedures, provided that the mitigation hierarchy has been correctly applied during the decision-making process.

7.4 Baseline Conditions

Statutory designated wildlife sites

7.4.1 There are no statutory designations covering any part of the Site.

7.4.2 Eight international statutory designations were identified within 10km of the Site. These were the Chichester and Langstone Harbours Ramsar & SPA (c. 750m east of the Site), Solent Maritime SAC (c. 860m south-east of the Site), Solent and Dorset

Coast SPA (c. 880m south of the Site), Solent and Isle of Wight Lagoons SAC (c. 5.38km north-west of the Site), Portsmouth Harbour Ramsar & SPA (c. 8km north-west of the Site), and South Wight Maritime SAC (c. 8.89km south-west of the Site). Given the legislative frameworks underpinning international designations, these are considered to be important at the **International level**. Potential impact pathways identified in relation to these international designations include increased visitor pressure/disturbance, loss of functionally linked land, changes in air quality and increases in nitrogen deposition which could result in habitat degradation.

- 7.4.3 Three national statutory designations were identified within 3km of the Site. These were the Sinah Common SSSI (c. 710m south of the Site), Chichester Harbour SSSI (c. 750m east of the Site), and Langstone Harbour SSSI (c. 800m west of the Site). As SSSIs are administered and designated under national legislation, these sites are considered to be important at the **National level**.
- 7.4.4 The Chichester Harbour and Langstone Harbour SSSIs both form part of the Chichester and Langstone Harbour SPA and Ramsar designations, and share special interests/qualifying features. Sinah Common SSSI is a stretch of varying coastal habitats which comprises the western side of south Hayling Beach, Hayling Golf Course and Sinah Common. It is primarily designated for botanical interest and includes a primary support area for the Solent Waders and Brent Geese Strategy (SWBGS). The designation contains public footpaths and road access to the beach and car parks along the south Hayling Island coast.

Habitats

- 7.4.5 The Site currently comprises two arable fields with areas of semi-improved grassland with parcels of dense scrub, an on-site pond, a single steel agricultural building and small stretches of native species hedgerows. These habitats are mapped on the graphical Habitats Plan included with Appendix 7.1. Hedgerow and field reference numbers used here-in correspond to those shown in the Habitats Plan.
- 7.4.6 The hedgerows and pond habitat are described further below, with other habitats present being common and widespread, and consequently scoped out of further assessment.

Hedgerows

- 7.4.7 Hedgerow H1 which bounds the Site to the south is a fragmented, non-native hedgerow which divides the Site from residential gardens. It contains discreet sections

of cherry laurel *Prunus laurocerasus*, leylandii *Cupressus x leylandii* and non-native privet *Ligustrum* sp., with occasional bramble *Rubus fruticosus*, hedge bindweed *Calystegia sepium* and honeysuckle *Lonicera periclymenum* present. Hedgerow H3 is a short section of non-native hedgerow along the north-eastern edge of the Site. It contains buddleia *Buddleja davidii*, cotoneaster *Cotoneaster* sp., cherry laurel and hawthorn *Crataegus monogyna*. These hedgerows are considered to be of negligible importance in a Local context and have been scoped out of further assessment.

7.4.8 Hedgerow H2 partially encircles a large area of semi-improved grassland at its northern edge, and is dominated by blackthorn. At the time of survey it had not been recently cut but signs of management were present and it was not outgrown. There are no gaps along its course and the vegetation has a dense composition.

7.4.9 Hedgerow H4 is a native species hedgerow which runs along the northern boundary, dividing the Site from the St Mary's Churchyard to the north. It predominantly contains hawthorn, with standard Scot's pine *Pinus sylvestris* and beech *Fagus sylvatica* trees occasionally present along its length. The hedgerow contains frequent gaps and has patches of sparse vegetation.

7.4.10 Hedgerows are a Habitat of Principal Importance for the Conservation of Biodiversity in England in respect of Section 41 of the NERC Act 2006 (a 'Section 41 Habitat') and a Local Biodiversity Action Plan (LBAP) priority habitat in Hampshire. While Hedgerows H2 and H4 are short stretches, when viewed in a local landscape context where hedgerows and natural linear features appear to be infrequent, they provide a connectivity and refuge for wildlife in an otherwise open and built-up locality. The two native species hedgerows are, therefore, considered to be important at a **Local level**.

Pond

7.4.11 The single pond present within the Site is located at the north-eastern corner of Field F1, centrally along the southern edge of Field F2 and to the west of the large parcel of semi-improved grassland, giving it a relatively central location within the Site. It is approximately 150m² and is surrounded on all aspects by dense scrub and ruderal vegetation. Bulrush *Typha latifolia* dominated large areas of the pond at the time of survey, however, due to the dense vegetation surrounding the pond, it was unclear what other aquatic vegetation may be present.

7.4.12 This pond provides foraging, breeding and sheltering opportunities for a variety of species and is one of very few ponds present in the local landscape. It is, therefore,

considered to be important at the **Local level** and has been scoped in for further assessment.

Species

Bats

- 7.4.13 A total of 221 records relating to bats were identified in the local area within data held by the Hampshire Biodiversity Information Centre (HBIC). These comprised common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus*, Nathusius's pipistrelle *Pipistrellus nathusii*, noctule *Nyctalus noctule*, Natterer's bat *Myotis nattereri*, whiskered/Brandt's bat *Myotis mystacinus/brandtii*, Daubenton's bat *Myotis daubentonii*, Bechstein's bat *Myotis bechsteinii* and serotine *Eptesicus serotinus*. All records are widely and evenly distributed around the Site, with notably more records located around residential areas, likely reflecting survey effort rather than true distribution.
- 7.4.14 Notable records include a small cluster c. 40m north of the Site from within the grounds of St Mary's Churchyard. This cluster contains roost records for brown long-eared, serotine and unconfirmed pipistrelle bats, as well as common pipistrelle passes. Further roost records are present across the search area, including a common pipistrelle roost c. 420m south-west of the Site with a peak count of 330 individuals.
- 7.4.15 The habitat on-site is generally open with parcels of dense scrub, hedgerows and boundary treelines providing corridors of connectivity. The on-site pond, as well as the aforementioned habitats, support foraging opportunities for bats due to associated higher invertebrate densities.
- 7.4.16 The single on-site building comprises a metal frame, roof and sides, with negligible roosting opportunities.
- 7.4.17 Walked transect and static monitoring surveys were undertaken in May, July and September 2021. The results of the activity surveys concluded that the Site was regularly utilised by foraging common pipistrelle and soprano pipistrelle, with these species accounting for 92% of passes during the transect surveys and over 95% during the static monitoring. Less common species, such as brown long-eared, potential Nathusius' pipistrelle and *Myotis* sp., were occasionally present. The species infrequently recorded are likely to be utilising the connective features within the Site, such as boundary vegetation, for occasional foraging and general dispersal. Activity hotspots within the Site occur along the western and southern boundary vegetation

of Field F1, around the on-site pond and in the north-east corner of Field F2. These areas all present greater foraging opportunities as they are likely to support higher invertebrate densities than the remainder of the Site which is generally open and unsuitable for bats. Full methods and results are provided in Appendix 7.1.

- 7.4.18 The species which regularly utilise the Site are common and widespread, and those which are less common are infrequently present. The populations of bats present are collectively considered to be important at the **Local level**.

Reptiles

- 7.4.19 A total of seven records of three reptile species are held by HBIC within the desktop search area, dating from 1999-2015. These included slow-worm *Anguis fragilis*, grass snake *Natrix natrix* (syn. *N. helvetica*) and adder *Vipera berus*. The closest records are of slow-worm c. 470m south-east of the Site from a residential garden. Suitable reptile habitat on-site is limited to the narrow arable field margins and hedgerow bases, as well as the areas of semi-improved grassland and scrub.
- 7.4.20 Previous reptile surveys undertaken at the Site by Baker Consultants in 2016 identified a low population of slow worm, with a total of two individuals found under refugia placed along the eastern boundary.
- 7.4.21 Updated reptile surveys were undertaken at the Site by CSA Environmental between May and August 2021. Following the surveys, a moderate population of slow-worm were found to be present, with a peak count of 69 adults found during the final survey. While slow-worm were present in all areas where refugia were placed, the northern boundary which adjoins the St Mary's Churchyard was a particular hotspot; with a peak count of 64 slow-worm (all age classes) found along this boundary during the seventh survey. No other species of reptile were identified during the surveys, suggesting likely absence within the Site. Full details of the reptile surveys are provided in Appendix 7.1.
- 7.4.22 Slow-worm are a Section 41 Species of Principal Importance, and are afforded protection against killing and injury under the Wildlife and Countryside Act 1981. The population of slow-worm present at the Site is considered to be important at the **Local level**.

Sensitive Receptors

7.4.23 The baseline ecological conditions are fully described in the Appendix 7.1 (Ecological Impact Assessment). The importance of each ecological feature potentially exposed to adverse effects, akin to their sensitivity in EIA terms, is summarised as follows:

- Chichester and Langstone Harbours SPA and Ramsar are important at the **International level**;
- Solent Maritime SAC is important at the **International level**;
- Solent and Isle of Wight Lagoons SAC is important at the **International level**;
- Portsmouth Harbour SPA and Ramsar are important at the **International level**;
- South Wight Maritime SAC is important at the **International level**;
- Solent and Southampton Water SPA and Ramsar are important at the **International level**;
- Sinah Common SSSI is important at the **National level**;
- Chichester Harbour SSSI is important at the **National level**;
- Langstone Harbour SSSI is important at the **National level**;
- On-site hedgerows are important at the **Local level**;
- The on-site pond is important at the **Local level**;
- Bat populations using the Site are important at the **Local level**; and
- The slow worm population using the Site is important at the **Local level**.

Limitations

7.4.24 Methodological limitations to baseline ecological data collection are set out in Appendix 7.1. For example, the extent of bankside scrub vegetation prevented water sample collection from large parts of the on-site pond during testing to determine the presence or likely absence of great crested newts. However, in each case the stated limitations are not considered to materially undermine the validity or reliability of conclusions set out here-in.

7.5 Assessment of Effects

Design Solutions and Assumptions

- 7.5.1 It is an established principle (CIEEM, 2018) that, wherever possible, potential negative effects should be avoided through 'Mitigation by Design', as this gives greater certainty over deliverability, demonstrates a well-designed scheme and ensures the correct application of the 'Mitigation Hierarchy' (as advocated by BS42020:2013, Defra 2019 and CIEEM, CIRIA & IEMA 2016).
- 7.5.2 As shown on the conceptual Development Framework Plan (DFP) (Appendix 1.2), the Proposed Development will retain both existing native species hedgerows and will incorporate planting of an additional c. 393m of new hedgerows, to enhance connectivity within the Site and to the surrounding landscape. Strategic Green Infrastructure will be created, which will incorporate varying habitats including grassland and scrub, as well as new planted trees. These features will provide habitats for a variety of species, as well as providing areas of connectivity for wildlife through the Site to the surrounding landscape.
- 7.5.3 In relation to reptile habitat, while much of the existing on-site suitable reptile habitat will be removed to accommodate construction, the DFP (Appendix 1.2) represents an overall increase in suitable reptile habitat. New structural landscape planting in the north-west of the Site will address the present lack of connective features, which are likely the cause of the reduced baseline bat activity in this part of the Site, while existing features of value such as the hedgerows and pond will be retained, as set out above.
- 7.5.4 The following assumptions have been made during the assessment of potential effects of the Proposed Development on important ecological features. Although 'assumed' and therefore taken as part of the pre-mitigation scenario, these measures may be referenced in the proceeding sections where integral to the mitigation strategy.
- 7.5.5 In accordance with BS42020:2013, it is assumed that a Construction Environmental Management Plan (CEMP) will be secured by planning condition and prepared at the detailed design stage for each phase (where relevant) of development. The CEMP will detail standard environmental control measures, including though not limited to the following:
- Implementation of strict protection measures for the root protection areas of retained hedgerows and trees, in accordance with BS5837:2012;

- Standard best practice construction phase pollution prevention and control measures, including measures for dust suppression;
- Sensitive working methods and timing to avoid direct impacts to nesting birds (generally vegetation removal outside nesting season of March through August); and
- Updated ecological surveys, where necessary, to identify shifts in the baseline ecological condition so that revised impact avoidance and mitigation measures can be adopted as required (e.g. creation of new badger setts).

7.5.6 In accordance with BS42020:2013, it is assumed that a Landscape and Ecology Management Plan (LEMP) will be secured by planning condition and prepared at the detailed design stage for each phase (where relevant) of development. The LEMP will set out measures for the establishment and long-term management of newly created and retained habitats to maximise benefits for biodiversity while also providing amenity for new residents.

Assessment of Effects

European sites

- 7.5.7 An assessment of potential effects of the Proposed Development, both alone and in combination with other plans and projects, is presented separately as Information to Inform Habitats Regulations Assessment (Appendix 7.2). The assessment is not repeated here, however the identified potential impact pathways in the absence of mitigation are summarised.
- 7.5.8 The Site's importance for feeding waterfowl associated with the SPA and Ramsar designations of Chichester and Langstone Harbours, Portsmouth Harbour and the Solent and Southampton Water is recognised through its adoption as a Core Area under the Solent Wader and Brent Goose Strategy. Even beyond the spatial extent of a designation, any damage, deterioration or loss of supporting habitat has the potential to undermine conservation objectives.
- 7.5.9 Dark-bellied brent geese have previously been recorded at the Site, with a peak count of 1100 individuals feeding during the winter of 2017. Previous winter bird surveys carried out at the Site by Ecology Solutions Ltd in 2017/18 found that, at the time of the surveys, the overall habitat was unsuitable for brent geese as the arable fields had been recently ploughed leaving expansive bare ground, and no brent geese were recorded during the surveys. The presence of brent geese is dependent upon the

management of the Site, particularly the state of the arable fields over the course of the season, with stubble or short improved grassland habitat being preferable.

7.5.10 Updated winter bird surveys are to be undertaken over the winter of 2021/22 by CSA Environmental, however it is clear that given the right conditions the Site is capable of fulfilling an important role as supporting habitat for the SPA and Ramsar (and SSSI) birds, and that its loss to accommodate development has the potential to undermine the conservation objectives of the corresponding designations. In the absence of mitigation the Proposed Development may result in a **moderate adverse effect** on the Chichester and Langstone Harbours SPA and Ramsar site (and overlapping SSSIs), Portsmouth Harbour SPA and Ramsar site and the Solent and Southampton Water SPA and Ramsar site. This effect would be **significant**, prior to the implementation of mitigation measures.

7.5.11 In respect of the remaining European sites of the East Solent system scoped into assessment (Solent Maritime SAC, Solent and Isle of Wight Lagoons SAC and South Wight Maritime SAC) **no significant adverse effects** of the Proposed Development are anticipated. The potential for significant effects on European sites arising as a result of recreational pressure, eutrophication of the water environment linked to foul water discharges and vehicle emission-derived air quality impacts, none of which are anticipated to be significant as a result of the Proposed Development in isolation, are considered further in section 7.8.

Sinah Common SSSI

7.5.12 The Sinah Common SSSI comprises a large stretch of the west side of Hayling Beach and neighbouring leisure grounds, including Hayling Golf Club and Hayling Ferry Sailing Club. One potential impact pathway has been identified in the form of recreational pressure.

7.5.13 The SSSI is made up of two units. Unit 2 supports the Hayling Golf Club in the west of the SSSI, and the East Winner Sandbank to its south. Unit 1 to the east includes Hayling Island Beach, a popular tourist location which is likely to face the greatest recreational pressure.

7.5.14 Both Units were most recently assessed by Natural England, in 2010, as being in unfavourable but recovering condition. In respect of Unit 2 it is remarked that the, *“shingle bank in the southern part of the unit is remarkably species-rich despite the high visitor pressure.”* Concern is raised over heavy trampling in Unit 1, however this

is limited to a discrete area where visitor pressure is channelled by fencing. Overall, there is no indication that visitor pressure is having a limiting effect on the special interests of the designation, and a minor increase in the local population brought about by the Proposed Development is therefore **unlikely to result in a significant adverse effect** via this pathway.

Hedgerows

- 7.5.15 The native species hedgerows on-site provide connectivity for wildlife both within the Site and the wider landscape. The DFP (Appendix 1.2) provides for the retention of these features alongside development, with their incorporation within strategic Green Infrastructure. With good construction management practises (see 'Assumptions' above), **no significant adverse effects** upon the existing hedgerows are anticipated to result from the Proposed Development.

Pond

- 7.5.16 The on-site pond is to be retained as an integrated component of the Green Infrastructure of the Proposed Development, as illustrated within the DFP. **No significant adverse effect** on the local pond habitat resource will result from the Proposed Development; rather an opportunity is created to increase the biodiversity value of the feature through introduction of appropriate management.

Bats

- 7.5.17 The Site supports a moderate assemblage of common and widespread species which utilise the area for foraging and general dispersal. The majority of bat activity is concentrated to features of connectivity, such as boundary vegetation, and to areas of increased foraging opportunities, including the on-site pond, which are all to be retained within strategic Green Infrastructure as shown on the DFP. The creation of new areas of habitat suitable for bats is proposed, including tree lines extending through the centre of the Site, connecting the off-site woodland west of the Site to the central retained pond and the area of proposed greenspace to the north of the Site, where more favourable bat habitat will be created. The two proposed attenuation basins, if appropriately landscaped and managed, will provide an increase in aquatic invertebrate habitat, which will, in turn, deliver greater foraging opportunities to bats within the Site. It is considered that the loss of the existing agricultural building presents a negligible risk of impacts on roosting bats.

7.5.18 Adverse effects on bats could in principle be encountered as a result of the increase in artificial lighting within the residential area, which is situated near the Site's main hotspots of bat activity encountered during surveys, toward the southern and western boundaries of Field F1. However, on balance of the fact that baseline activity at the Site is heavily dominated by species which adapt readily to the suburban environment (exemplified here by the concentrations of their activity at the residential interfaces in the south of the Site), the cessation of arable cultivation and new habitat creation shown in the DFP, **no significant adverse effects** on local bat populations are anticipated to result from the Proposed Development.

Reptiles

7.5.19 The majority of the Site is unsuitable for reptiles, supporting homogenous arable cultivation. The narrow field margins and area of grassland and scrub in the east however provides foraging, basking and refuge opportunities for these species, which surveys have confirmed to support a concentrated population of slow worms.

7.5.20 Much of these habitats will be lost to accommodate the Proposed Development. However, the DFP allocates 4.24ha of the 11.77ha site for Green Infrastructure which, subject to suitable habitat creation and management and in combination with the new residential gardens, has the potential to result in a significant increase in suitable slow worm habitat at the Site level. New habitat creation within public open space and its future management will be determined at the detailed design stage.

7.5.21 Notwithstanding this, site preparation works will directly impact upon slow worm habitats and could, in the absence of mitigation, result in the killing and injury of individual slow worms. While such an impact would be unlikely to undermine local population viability, and the Proposed Development is anticipated to have **no significant adverse effect** on local reptile populations, it would constitute an offence under the Wildlife and Countryside Act 1981.

7.6 Mitigation

7.6.1 The following mitigation is in addition to the mitigation by design as set out in section 7.5.

European sites

7.6.2 It has been ascertained within the accompanying Information to Inform Habitats Regulations Assessment (Appendix 7.2) that, in the absence of mitigation, the Proposed Development has the potential to result in significant adverse effects on

European site designations (as well as two overlapping SSSIs) as a result of the loss of supporting habitat used by dark bellied brent geese.

- 7.6.3 Subject, however, to the proposed creation of a permeant bird refuge in accordance with Policy E17 of the emerging Local Plan, and its management funded by the applicant for the specific purpose of supporting wintering brent geese, it is considered that the Proposed Development will have **no significant residual adverse effect** on the Chichester and Langstone Harbours SPA and Ramsar site and SSSIs, Portsmouth Harbour SPA and Ramsar site and Solent or Southampton Water SPA and Ramsar site as a result of impacts associated with loss of supporting habitat. Full details are provided in Appendix 7.2. At the present time, for reasons of commercial confidentiality, it has been necessary to redact details of the precise location of the off-site mitigation land from the submission materials.

Reptiles

- 7.6.4 A large portion of existing suitable slow worm habitat within the Site will be lost to the Proposed Development during the construction phase; primarily the large area of semi-improved grassland to the east. It is illegal to recklessly kill or injure a reptile under the Wildlife and Countryside Act 1981, therefore a Reptile Mitigation Strategy will be required.
- 7.6.5 The Reptile Mitigation Strategy will be prepared at the detailed design stage, however, broadly, it is envisaged that this will entail a capture, exclusion and translocation exercise to an on-site receptor area. The receptor area will need to be created in advance, and enhanced to suitable condition such that its carrying capacity will not be exceeded by the donor population. It is envisaged that the receptor area will be located within informal open space in the north-west of the Site, which shares connectivity with suitable off-site habitats. Exclusion fencing will be maintained in-situ for the duration of construction activities for each phase of development (where relevant).
- 7.6.6 The Reptile Mitigation Strategy will need to operate in tandem with the LEMP, to ensure that high quality habitat is maintained on-site such that reptiles are not displaced, and the carrying capacity of adjacent land exceeded.



7.7 Residual Effects

- 7.7.1 Subject to the implementation of the above mitigation, **no significant residual effects** on any important ecological features are anticipated to result from the construction or operation of the Proposed Development.

7.8 Assessment of Cumulative Effects

- 7.8.1 Cumulative effects arise when collectively significant impacts (even when considered individually insignificant) occur over time or are concentrated at a given location. The assessment of potential cumulative effects is based on the post-mitigation scenario (i.e. residual effects) of the Proposed Development. Effects may be inter-cumulative (in combination with other developments) or intra-cumulative (in combination with other environmental effects on a common receptor), and may be additive or synergistic.
- 7.8.2 Assessment of the Proposed Development when considered in isolation has identified no likely significant residual adverse effects on important ecological features, following the consideration of both mitigation by design and additional mitigation that may be secured by planning condition. Table 7.1 below summarises the plans/projects identified during Scoping, and considers the potential for cumulative effects on the ecological features assessed above.
- 7.8.3 A detailed assessment of potential effects of the Proposed Development in combination with other plans and projects on European sites is presented separately as Information to Inform Habitats Regulations Assessment (Appendix 7.2). The assessment is not repeated here, however the identified potential effects and proposed mitigation are summarised.
- 7.8.4 The qualifying habitats and species of the Chichester and Langstone Harbours SPA and Ramsar site (which are shared with the special interests of the overlapping SSSI designations) are known to be vulnerable to recreation pressure. The Proposed Development will contribute to an increase in the local population, and therefore has the potential to act in combination with the projected increase in housing within Havant and adjacent districts to increase recreation pressure at these sites. However, subject to payment of the applicable financial contribution to the Solent Recreation Mitigation Strategy prior to occupation of the Proposed Development, which will be used to fund strategic measures, it can be concluded that the Proposed Development will have **no significant cumulative adverse effect** on the Chichester and Langstone

Harbours SPA, Ramsar site or SSSIs as a result of impacts associated with recreation pressure.

7.8.5 Foul water discharges from the Site will be treated at the Budds Farm Waste Water Treatment Works (WWTW), which itself returns treated effluent to the water environment of the East Solent system and its associated European site designations. The qualifying features of these designations are known to be sensitive to and already suffering from eutrophication. Nutrient (principally nitrogen) loading within treated foul effluent resulting directly from the Proposed Development is unlikely to have a significant effect on the qualifying habitats and species in isolation, however may act in combination with wider projected housing growth to undermine conservation objectives. A full Nitrogen Budget for the Proposed Development is provided in Appendix 7.2. Establishment of the proposed bird refuge site (see above in respect of mitigating the loss of brent goose supporting habitat) and its management in perpetuity, which will involve land take from present arable cultivation, will additionally ensure that the proposal as a whole is 'nitrogen-negative' (i.e. a betterment on neutrality), and will therefore have **no significant cumulative adverse effect** on the European sites of the East Solent system (Chichester and Langstone Harbours SPA and Ramsar site, Portsmouth Harbour SPA and Ramsar site, Solent Maritime SAC, Solent and Dorset Coast SPA, Solent and Southampton Water SPA and Ramsar site or Solent and Isle of Wight Lagoons SAC) as a result of eutrophication linked to foul drainage impacts to water quality.

7.8.6 The assessment presented in full within the Information to Inform Habitats Regulations Assessment (Appendix 7.2) determined that no significant adverse effect on the designated sites would likely result from traffic-derived air quality impacts or hydrological changes brought about by increased water abstraction. Increased traffic flows resulting from the scale and location of the Proposed Development and wider projected housing growth are capable of giving rise to localised air quality impacts. Areas of each of the Chichester and Langstone Harbours SPA and Ramsar site (and SSSIs), Solent Maritime SAC and Portsmouth Harbour SPA and Ramsar site exist within 200m of a major road (A-road or motorway), and could therefore experience localised increases in atmospheric and deposited pollutants. However, the effects of increased traffic resulting from the Proposed Development in isolation are unlikely to be appreciable, given the intervening distances and diffusion of traffic. Furthermore, findings of air quality dispersion modelling (see Chapter 6 of this ES) found that potentially significant increases in pollutant nitrogen resulting from the Proposed

Development, in combination with other committed development, would be limited to a single modelled location within Emsworth Harbour, adjacent to Langstone Road. At this location, however, the habitat is intertidal and regularly inundated with tidal water, with the result that air pollutants are unlikely to be capable of adversely affecting the habitats present, and will therefore result in **no significant cumulative adverse effect**.

7.8.7 Residential growth drives increases in water consumption and waste water production, which are associated with adverse environmental effects. Increased abstraction could, in principle, impact fresh water inputs to European sites, with corresponding effects on salinity gradients, water circulation, vegetation communities and the waterfowl they support. However, in their 2017 Draft Water Resources Management Plan, Portsmouth Water confirm that there is currently a surplus of supply for the period to 2044, therefore impacts on site features arising from increases in water abstraction will have **no significant cumulative adverse effect**.

7.8.8 Beyond European sites, nearby housing developments have the potential to impact upon the same species populations of bats and slow worms as those present at the Site. However, with the implementation of site-specific mitigation measures it is considered that there will be **no significant residual cumulative adverse effects**.

Table 7.1: Summary of potential cumulative effects			
Project/Plan Reference	Materials reviewed	Potential impact of plan or project in isolation	Significant cumulative effect anticipated?
APP/20/01093 c. 800m west	Phase 1 Habitat Survey. WYG, November 2020	<i>Winter birds</i> – the site is designated as a Core Area within the SWBGS, the southern part of which will be lost as a result of development	No - adverse effects of both developments will be fully mitigated
	Winter Bird Mitigation Strategy. WYG, February 2021	<i>Reptiles</i> – the site supports a low population of slow-worm which would be impacted upon in the absence of mitigation	No - adverse effects of both developments will be fully mitigated
	Reptile Survey Report. WYG, November 2021	<i>Bats</i> – site considered important at the local level for foraging and dispersing bats. Disruption via lighting may have adverse effects upon local populations	No - adverse effects of both developments will be fully mitigated



Table 7.1: Summary of potential cumulative effects			
Project/Plan Reference	Materials reviewed	Potential impact of plan or project in isolation	Significant cumulative effect anticipated?
	Bat Survey Report. WYG, November 2020		
APP/17/00529 c. 1.21km south-west	Ecological Appraisal. Hampshire County Council, January 2015	<i>Solent European Sites</i> – likely increases in recreational pressure and eutrophication	No - adverse effects of both developments will be fully mitigated
APP/20/00015 c. 180m west	Extended Phase 1 Ecological Assessment and Phase 2 Bat Survey Report. ECOSA, 2015 Ecological Impact Assessment, ECOSA, 2019	<i>Solent European Sites</i> – likely increases in recreational pressure and eutrophication	No - adverse effects of both developments will be fully mitigated
APP/19/00324 c. 340m south-west	No technical ecology information available	<i>Solent European Sites</i> – likely increases in recreational pressure and eutrophication	No - adverse effects of both developments will be fully mitigated
KP3 – Beachlands	Havant Borough Council emerging Local Plan 2036 (submission version) key policy	<i>Designated Sites (Solent Maritime SAC, Sinah Common SSSI, Beachlands East SINIC)</i> – Regeneration of the funfair, leisure and retail uses could exacerbate recreation pressures resulting from increased population linked to development	No - adverse effects of both developments will be fully mitigated
H28 – Fathoms Reach	Havant Borough Council emerging Local Plan 2036 (submission version) housing allocation policy	<i>Solent European Sites</i> – likely increases in recreational pressure and eutrophication	No - adverse effects of both developments will be fully mitigated
		<i>Reptiles</i> – the allocation is contiguous with the Site and is likely to support the same slow worm population	No - adverse effects of both developments will be fully mitigated
		<i>Bats</i> – the allocation is contiguous with the Site and is likely to	No - adverse effects of both



Table 7.1: Summary of potential cumulative effects			
Project/Plan Reference	Materials reviewed	Potential impact of plan or project in isolation	Significant cumulative effect anticipated?
		support foraging and dispersal (and potentially roosting) of the same bat populations	developments will be fully mitigated

7.9 Enhancement

7.9.1 The DFP demonstrates that the Proposed Development can incorporate landscape planting enhancements which will make positive contributions to on-site biodiversity. New habitat creation will provide opportunities for species confirmed to be present on-site at baseline, such as nesting birds, bats and reptiles.

7.9.2 In addition to the above enhancements which are embedded into development proposals, a range of additional ecological enhancement measures will be delivered as part of the proposed development, as identified below. Further details will be set out in a LEMP at the detailed design stage, however as an indicative guide:

- Inclusion of plant species of known wildlife value within the landscaping scheme, including night-scented varieties to benefit bats;
- Provision of new bat roosting opportunities: Bat boxes will be erected on retained mature trees. These will be a purpose-built, durable and long-lasting variety such as available from Schwegler or Habibat;
- Provision of new bird nesting opportunities: Swift bricks will be built into new dwellings at a ratio of one box for every new dwelling, to benefit a variety of bird species, particularly swifts;
- Creation of log piles: Timber generated from tree/vegetation clearance works at the Site will be used to make at least four log piles for wildlife benefit. These will be sited within boundary vegetation where they will be least disturbed. New material can be added as required following any future management works; and
- Provision of hedgehog gaps: Hedgehogs have been scoped out of detailed assessment and no specific mitigation is proposed, however it is important that opportunities for hedgehogs to move through the landscape are preserved. Although not strictly an 'enhancement' measure, provision of hedgehog-friendly gravel boards or equivalent, providing a minimum 5 x 5 inch gap, will

be used to maintain permeability for hedgehogs across the development and associated gardens. The number and location of hedgehog gaps will be determined at the detailed design stage and set out within the LEMP.

- 7.9.3 A quantitative calculation using Natural England's Biodiversity Metric (3.0) of the projected change in habitat and hedgerow units at the Site, presented at Appendix 7.3, confirms that the Proposed Development will achieve a biodiversity net gain. Given the conceptual/outline nature of the proposals, the calculation relies on various assumptions, which are made explicit within the 'Assessor Comments' set out in the Metric.

7.10 Summary

- 7.10.1 In the absence of any mitigation measures, the Proposed Development would have the potential to result in significant adverse effects on the European site designations of the East Solent system, including but not limited to the Chichester and Langstone and Portsmouth Harbours SPAs and Ramsar sites, and the Solent Maritime SAC. Potential impact pathways include the loss of functionally linked supporting habitats for wintering birds, increased recreational pressure at coastal sites and eutrophication of the water environment.
- 7.10.2 The Site is, however, dominated by arable cultivation and other common and widespread habitats of limited ecological value. Baseline ecological surveys have indicated that populations of bats and slow worms using the Site are restricted in their spatial distribution owing to the limited availability of suitable habitats.
- 7.10.3 Mitigation for the potential effects on European sites are addressed in the accompanying Information to Inform Habitats Regulations Assessment, and will include the establishment of a permanent off-site brent goose refuge and financial contributions toward the Solent Recreation Mitigation Strategy (Appendix 7.2).
- 7.10.4 The Proposed Development is not anticipated to result in any significant adverse effects on local species populations, however construction phase measures will be required to avoid the killing and injury of reptiles. The Development Framework Plan (DFP) demonstrates the potential to deliver net benefits for wildlife in the form of additional habitats, with the opportunity to provide additional biodiversity enhancement measures alongside the new housing.
- 7.10.5 The measures set out herein can be secured through appropriate conditions attached to any planning consent, and the development can therefore be delivered without

harm to nature conservation interests. Specifically, it is anticipated that planning conditions would be used to secure:

- Construction Environmental Management Plan (CEMP): In addition to wider environmental controls and best practice construction management, the CEMP will set out construction-phase impact avoidance measures with respect to nesting birds and reptiles.
- Landscape and Ecology Management Plan (LEMP): The LEMP will detail the establishment and long-term management of retained and newly created habitats to maximise benefits for wildlife. It will include a graphical Ecological Enhancement Plan, setting out the number, type and position of enhancement features.
- Reptile Mitigation Strategy: A mitigation strategy will be prepared at the detailed design stage, which is anticipated to be centred around a capture, exclusion and translocation exercise to an on-site receptor area(s).

7.10.6 Based on the successful implementation of avoidance, mitigation and enhancement measures set out herein, the scheme is considered to accord with all relevant nature conservation legislation, as well as with all relevant policy provisions of the adopted and emerging Havant Borough Local Plans.

8 TRANSPORT

8.1 Introduction

- 8.1.1 This Chapter reports the likely significant effects of the Proposed Development in terms of transport in the context of the Site and surrounding area. In particular it considers the likely significant effects of traffic related to: severance; driver delay; pedestrian delay and amenity; fear and intimidation; collisions and road safety; and public transport users.
- 8.1.2 This assessment needs to consider the impact on sensitive receptors with the most sensitive locally being: schools and colleges; retirement apartments; roads without footways used by pedestrians, and at the request of HBC, residential properties close to the A3023 carriageway.
- 8.1.3 This Chapter (and its associated figures and appendices) is not intended to be read as a standalone assessment and reference should be made to the front end of this ES (Chapters 1 – 5), as well as the final chapter, ‘Summary of Residual and Cumulative Effects’ (Chapter 13).
- 8.1.4 This Chapter should also be read in conjunction with the Transport Assessment (TA) included as Appendix 8.1 and the Travel Plan (TP) included as Appendix 8.2.

8.2 Legislation, Policy and Guidance

- 8.2.1 The relevant legislation, policy and guidance are listed below, with details provided in the TA (Appendix 8.1) and TP (Appendix 8.2).

Legislative Framework

- 8.2.2 There is no applicable legislative framework in regard to transport.

Planning Policy

- 8.2.3 The applicable planning policy is summarised as follows:

- National Planning Policy Framework (NPPF) (2021);
- Planning Practice Guidance: Transport evidence bases in plan making (2014);
- Hampshire Local Transport Plan (2011-2031);
- Havant Borough Council Core Strategy (2011-2026); and
- Emerging Havant Local Plan.

Guidance

8.2.4 The applicable guidance is summarised as follows:

- Planning Practice Guidance (PPG);
- Manual for Streets (2007) (MfS) and Manual for Streets 2 (2010) (MfS2);
- Havant Borough Parking Supplementary Planning Document (2016);
- Hampshire County Council Technical Guidance Notes;
- WebTAG Unit M1.2 Data Sources and Surveys (2013);
- Guidelines for the Environmental Assessment of Road Traffic by IEMA (1994) (detailed below); and
- DMRB LA 104 Environmental Assessment and Monitoring Revision 1 (2020) (detailed below).

8.3 Assessment Methodology and Significance Criteria

Scope of the Assessment

8.3.1 The scope of this ES chapter follows the methodology presented in the Scoping Report and includes additional elements requested by HBC in the Scoping Opinion, specifically the consideration of the environmental impact on properties 68, 80 and 85 Havant Road given their proximity to the road and on the West Lane/Havant Road junction.

8.3.2 A key input to this assessment is HBC's Hayling Island microsimulation model constructed as part of the Hayling Island Transport Assessment (HITA) and subsequent HITA Addendum produced as part of the evidence base for the emerging Local Plan. The Applicant paid HBC for their own run of this model with access from St Mary's Road rather than Manor Road which was the access arrangement originally modelled, this being the only change to the model used to support the Local Plan.

8.3.3 The microsimulation model has also been used as a key input to the TA (Appendix 8.1). The scope of the TA follows that agreed with Hampshire County Council (HCC) as part of the previous planning application for the development (APP/17/00007). An updated scoping exercise took place with HCC in 2018 with further discussions taking place during 2019 and 2020 as the Local Plan was evolving.

8.3.4 The microsimulation model is an accurate representation of traffic conditions in 2017, the base year in which it was created, following a calibration and validation exercise in line with Department for Transport (DfT) WebTAG guidelines. It has been used

primarily to assess the traffic impact of the emerging Local Plan allocations, of which the Site forms one of (policy reference H27), and to devise an appropriate package of mitigation measures that will allow the Local Plan to be delivered without having an unacceptable impact on highway safety or a severe cumulative impact on the road network in line with paragraph 111 of NPPF.

- 8.3.5 The extent of the model includes the majority of roads on Hayling Island and a section on the mainland which includes parts of Havant town. Further details of this are provided in the HITA.
- 8.3.6 The model is able to consider the complex interaction of traffic on the highway network, including along links and at junctions. It considers link and junction capacity, link speeds, journey times and side friction such as on-street parked vehicles and loading/servicing.

Effects Not Considered within the Scope

- 8.3.7 With reference to the IEMA Guidelines, noise, vibration, visual impact, air pollution, dust and dirt, ecological impact and heritage and conservation areas are considered to be outside the scope of this Transport Chapter, and as such are considered in specialist chapters of this ES or separate standalone reports, as appropriate.
- 8.3.8 The Guidelines note that many of the above potential impacts will not be relevant to many kinds of development. As such, 'hazardous loads' has not been subject to assessment as such loads are not anticipated during the construction or operational phase of the Proposed Development.

Extent of the Study Area

- 8.3.9 The study area extent includes the highway links shown in Table 8.1. Compass directions have been abbreviated to N, S, E, W with B abbreviating 'bound' e.g. NB = northbound.

Table 8.1: Extent of Study Area			
Site	Description	Site	Description
1	St Mary's Rd W of Elm Grove	21	Langstone Tech Park Access E of A3023
2	Church Rd N of St Mary's Rd	22	A3023 S of A27
3	Tournurbury Ln E of Elm Grove	23	A27 WB on-slip
		24	A27 EB off-slip
4	Elm Grove S of St Mary's Rd	25	Park Rd South N of A27
5	Elm Grove N of Cherrywood Gardens	26	A27 EB on-slip

Table 8.1: Extent of Study Area			
Site	Description	Site	Description
		27	A27 WB off-slip
6	Elm Grove S of Cherrywood Gardens	28	Langstone Bridge
7	Cherrywood Gardens W of Elm Grove	29	A27 EB west of Langstone Rd slips
		30	A27 WB west of Langstone Rd slips
8	Cherrywood Gardens E of St Mary's Rd	31	A27 EB east of Langstone Rd slips
		32	A27 WB east of Langstone Rd slips
9	St Mary's Rd W of Cherrywood Gardens	33	Proposed Site Access
10	St Mary's Rd N of Cherrywood Gardens	34	St Mary's Rd S of Proposed Site Access
11	St Mary's Rd E of A3023	35	A3023 Havant Rd S of Castlemans Ln
12	A3023 S of St Mary's Rd	36	A3023 Havant Rd S of West Ln
13	Station Rd W of A3023	37	West Ln W of A3023 Havant Rd
14	A3023 N of St Mary's Rd	38	A3023 Havant Rd N of West Ln
15	A3023 W of Church Rd	39	Newtown Ln E of West Ln
16	A3023 E of Church Rd	40	West Ln N of Newtown Ln
17	Church Rd S of A3023	41	West Ln W of Newtown Ln
18	A3023 N of Langstone Tech Park	42	Station Rd E of West Ln
19	Woodbury Av E of A3023	43	West Ln NE of Station Rd
20	A3023 S of Langstone Tech Park	44	Station Rd W of West Ln

Consultation Undertaken to Date

8.3.10 Table 8.2 provides a summary of the consultation activities undertaken in support of the preparation of this Chapter. Note that discussions with HCC focussed on the access arrangement and the TA rather than this Chapter directly, however these form important aspects of this Chapter. Copies of relevant correspondence are provided in Appendix A of the TA (Appendix 8.1).

Table 8.2: Summary of Consultation Undertaken to Date			
Organisation	Individual(s)	Meeting Date and other forms of Consultation	Summary of Outcome of Discussion
Hampshire County Council (HCC)	Holly Drury, Chris Hirst, Graham Redman et al.	Various meetings & email based discussions between 2019 and 2020	Evolvement of proposed access design
Havant Borough Council (HBC)	Simon Jenkins	Scoping Opinion 29 th September 2021	ES scope clearly defined

Assessment Methodology

8.3.11 The baseline data used in this assessment is from HBC's own microsimulation model which is detailed further in the TA (Appendix 8.1). The model was calibrated and validated to adhere with the criteria in the DfT's WebTAG guidance which also represents industry best practice. Full details are provided in the HITA. The data for the various links and junctions was originally acquired by HBC's modelling consultants using a variety of traffic survey methods and approved data sources.

8.3.12 The assessment will be undertaken using a combination of the guidelines presented in both LA 104 and the Guidelines for the Environmental Assessment of Road Traffic, hereon referred to as the 'IEMA Guidelines'. Whilst the former is more recent, the latter provides a greater detail on transportation and traffic considerations.

8.3.13 The IEMA Guidelines set out two alternative rules to identify locations at which consideration of transport impacts should be considered. As such, the assessment should:

'Include road links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and

Include any other specifically sensitive areas where traffic flows have increased by 10% or more.'

8.3.14 The 30% threshold relates to a level at which people may perceive change and there may therefore be an effect, although increases above this level do not necessarily mean that there is a significant impact, only that further consideration is required.

8.3.15 Increases in traffic flows of less than 10% are accepted within the IEMA Guidance as having negligible impact as daily variance in traffic flows can be of equal magnitude, unless there is a 'specially sensitive area' within the study area. Such specially sensitive areas will be identified later in this Chapter.

8.3.16 The Guidance also notes that it would not normally be appropriate to consider links where flows have changed by less than 10%, unless there are 'significant changes in the composition of traffic', such as a significant increase in the number of heavy vehicles.

Environmental Value and Receptor Sensitivity

8.3.17 DMRB LA 104 presents the recognised methodology for EIA. The five values, or sensitivity, of receptors is outlined in Table 3.2N of the document which is reproduced below as Table 8.3.

Table 8.3: LA104 Environmental value (sensitivity) and descriptions	
Value (sensitivity) of receptor / resource	Typical description
Very High	Very high importance and rarity, international scale and very limited potential for substitution.
High	High importance and rarity, national scale, and limited potential for substitution.
Medium	Medium or high importance and rarity, regional scale, limited potential for substitution.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

8.3.18 The 'very high' value refers to importance on an international scale and 'high' refers to a national scale, however given the local or subregional scale of the proposed development from a traffic perspective, there is virtually no scope for impacts of such value. Furthermore, LA 104 offers little detail in the typical receptor descriptions. As such, the LA 104 values/sensitivity will be substituted with the IEMA receptor sensitivity guidelines but the LA 104 wording used.

8.3.19 As the IEMA Guidelines have four levels/values compared to the five in LA 104, no equivalent for 'very high' is provided, therefore its highest receptor level 'substantial' has been aligned with 'high'. Following this, 'moderate' has been aligned with medium and 'minor' with 'low'. This substitution and receptor type examples are shown in Table 8.4.

Table 8.4: Receptor sensitivity		
IEMA	LA 104	Receptor Type
Substantial	High	Receptors of greatest sensitivity to traffic flows: schools, colleges, playgrounds, accident black spots, retirement homes, roads without footways that are used by pedestrians
Moderate	Medium	Traffic flow sensitivity receptors: congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, recreation facilities
Minor	Low	Receptors with some sensitivity to traffic flow: places of worship, public open space, listed buildings, tourist attractions and residential areas with adequate footway provision
Negligible	Negligible	Receptors with low sensitivity to traffic flows

Significance Criteria

8.3.20 Effects that are deemed to be significant for the purposes of this assessment are those that are described as being of a moderate or major beneficial or adverse level.

Significance is determined through a combination of sensitivity (as set out above) and magnitude. Descriptions of these magnitudes of impact are provided in Table 3.4N of LA 104 which is reproduced as Table 8.5.

Table 8.5: LA104 Magnitude of impact and typical descriptions		
Magnitude of impact (change)		Typical description
Major	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Moderate	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.

8.3.21 Similar to receptor sensitivity, LA 104 provides limited criteria on which to assess the magnitude of impact. We have therefore applied the magnitudes of impact from the IEMA Guidelines, with its 'substantial' magnitude treated as being comparable to the LA 104 'major' magnitude and reworded as such. A summary of the criteria used to determine magnitude of impacts in this Chapter is provided in Table 8.6.

Table 8.6: Magnitudes of impact				
Impact	Negligible	Minor	Moderate	Major
Severance	Change in total traffic or HGV flows of less than 30%	Change in total traffic or HGV flows of 30-60%	Change in total traffic or HGV flows of 60-90%	Change in total traffic or HGV flows over 90%
Driver Delay	Change in journey time of less than 30 secs	Change in journey time of 30secs-1min	Change in journey time of 1min-2mins	Change in journey time of more than 2mins
Pedestrian Delay	Change in total traffic or HGV flows of less than 30%	Change in total traffic or HGV flows of 30-60%	Change in total traffic or HGV flows of 60-90%	Change in total traffic or HGV flows over 90%
Pedestrian & Amenity	Change in total traffic or HGV flows of less than 30%	Change in total traffic or HGV flows of 30-60%	Change in total traffic or HGV flows of 60-90%	Change in total traffic or HGV flows over 90%
Fear & Intimidation	Change in total traffic or HGV flows of less than 30%	Change in total traffic or HGV flows of 30-60%	Change in total traffic or HGV flows of 60-90%	Change in total traffic or HGV flows over 90%
Accidents & Safety	Change in total traffic or HGV flows of less than 30%	Change in total traffic or HGV flows of 30-60%	Change in total traffic or HGV flows of 60-90%	Change in total traffic or HGV flows over 90%

8.3.22 The level of significance is assigned based on the categories and description shown in Table 8.7 which is a reproduction of Table 3.7 of LA 104.

Table 8.7: LA104 Significance categories and typical descriptions	
Significance category	Typical description

Very large	Effects at this level are material in the decision-making process.
Large	Effects at this level are likely to be material in the decision-making process.
Moderate	Effects at this level can be considered to be material decision-making factors.
Slight	Effects at this level are not material in the decision-making process.
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

8.3.23 In line with the methodology LA 104, which is based on the EIA Directive 2014/52/EU, the significance from receptor value and magnitude of impacts can be derived from combining the two in the significance matrix which is Table 3.8.1 of LA 104 reproduced as Table 8.8.

Table 8.8: Significance matrix						
	Magnitude of impact (degree of change)					
		No change	Negligible	Minor	Moderate	Major
Environmental value (sensitivity)	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

8.3.24 Potential effects are therefore concluded to be neutral, slight, moderate, large or very large. Moderate, large and very large effects are considered to be significant in terms of ES guidance with highlighting added to Table 8.8 to shown which combinations of environmental value and magnitude of impact would constitute this. Given that only minor, moderate or major magnitudes of impact would constitute a moderate or greater level of effect, the focus of this assessment has been on them.

8.3.25 The application of the criteria has been based on professional judgement, both in terms of the extent of the impact, which has been quantified where possible, and the sensitivity of the receptor.

8.4 Baseline Conditions

Local Highway Network

8.4.1 St Mary's Road is the Site's only frontage with the local highway network. It is a residential local access collector road effectively connecting Church Road to Manor Road as well as providing access to a number of side roads, along with many properties which have driveway frontage with it. The road is best described in two sections, with the north-eastern section running diagonally from a priority-controlled junction with ghost island right turn with Church Road in the north-east, to Cherrywood Gardens

where it forms a split priority junction. The western section then continues west from this junction to a priority-controlled junction with minor arm flare with Manor Road.

- 8.4.2 St Mary's Road is two-way with a single lane in each direction. It is subject to a 30mph speed limit. The road also provides access to Mengham Infant School, a public car park and a retirement home. A central reserve is present in the vicinity of the school access which includes an uncontrolled crossing. A school bus stop with layby is also present at this location. Double yellow lines restrict parking between the Church Road junction and the school while some on-street parking is permitted between the school and Cherrywood Gardens. Parking restrictions are largely not present along the western section. Continuous footway is present along the southern side of the western section while the footways along the eastern section are somewhat intermittent but safe contiguous walking routes are available by crossing over the road. Traffic calming features are not present on St Mary's Road.
- 8.4.3 Church Road runs south from the A3023 roundabout becoming Elm Grove south of St Mary's Road then Sea Grove as it approaches Sea Front, the coast road. The road is one of the two distributor roads in the southern half of the island. It collects traffic from numerous side roads with many residential and commercial properties also taking access from it. Several bus stops can be found along Church Road within a reasonable walking distance of St Mary's Road. Between Gable Head and South Hayling it acts as the local high street with shops and other businesses forming the majority of the frontage and wide footways being present. It is subject to a 30mph speed limit.
- 8.4.4 The A3023 is the primary distributor road that connects the island with the mainland. It runs south from a grade separated traffic signal-controlled roundabout with the A27 and Park Road South to the south of Havant where it is named Langstone Road. It then bridges over Chichester and Langstone Harbours with the structure commonly known as Langstone Bridge. The bridge itself has a single lane in each direction and shared cycleways on each side of the carriageway. Continuing onto the island, the A3023 is named Havant Road and passes through the Stoke area where the speed limit reduces from 40mph to 30mph and provides access to side roads and driveway access to residential and commercial properties. This characteristic continues further south although driveway frontage becomes more prevalent as the surrounding areas become more urban. To the west of the roundabout with Church Road, the A3023

continues west then south running parallel to Church Road/Elm Grove/Sea Grove Avenue to Sea Front passing through a district centre in the vicinity of St Mary's Road.

Highway Safety

- 8.4.5 Personal injury accident data has been purchased from Hampshire Constabulary to cover the five-year period of 1st May 2016 30th April 2021 i.e. 60 months. The accident study area includes the A3023 from its junction with the A27 and Park Road South in Havant to the north, to its junction with Sea Front (Beachlands roundabout) to the south. Also included is Church Road from its junction with the A3023 and Sea Front to the north and south respectively, as well as St Mary's Road and Cherrywood Gardens. The total length of the roads included in the accident study area is circa 12.5km.
- 8.4.6 In total there were 114 accidents within the study area, comprising of 25 serious and 89 slight injury accidents. No fatal accidents occurred. The annual number of accidents varied between 18 and 26 per year.
- 8.4.7 The 114 accidents resulted in 134 casualties, with 60.1% being vehicle drivers of passengers, 20.3% being motorcycle riders, 13.2% cyclists and 7.2% pedestrians. The highest proportion of serious injuries occurred to pedestrians and motorcyclists, with 40% and 39.3% of injuries to these road users respectively resulting in serious injury.
- 8.4.8 A number of key statistics from the accident reports are as follows:
- 52.6% of accidents occurred at or within 20m of a junction;
 - Vehicle types: 87.7% of accidents involved cars, 7.9% involved vans, 2.6% involved lorries or other goods vehicles and 3.5% involved buses;
 - Vulnerable road users: 25.4% of accidents involved a motorcyclist, 14.9% involved cyclists and 8.8% involved pedestrians;
 - 20.2% of accidents occurred on a wet carriageway surface;
 - 7.9% occurring when it was raining;
 - 47.4% involved elderly or inexperienced drivers;
 - 3.5% involved alcohol or drugs;
 - Main causation factors: Driver error was listed at the first factor in 86.4% of accidents, illness or disability in 4.9%, alcohol or drugs in 4.9%, road condition (surface deposit/slippery surface) in 1.9% and isolated incidents of sun dazzle, animal on road and cyclist error.

8.4.9 The accidents were generally dispersed across the study area with only small clusters at a number of junctions. The frequency and severity of accidents is not to an extent that we would consider there to be any accident blackspots.

8.4.10 Further analysis is provided in the TA (Appendix 8.1).

Site Visit Observations

8.4.11 Numerous site visits have been undertaken during different times of the year and at different times of the day between 2016 and 2021. During the site visits, it was observed that traffic flowed freely on Hayling Island itself and over the bridge with traffic travelling at typical free flow speeds. Some queues have been observed on the A3023 approach to the junction with the A27 and at the merge point travelling southbound from the junction, but these queues tended to clear fairly quickly, particularly at the merge point with drivers showing courtesy to others to allow the merge to happen smoothly. From more recent site visits, several changes to kerb lines, foot/cycleways, side roads and bus stops appear to have improved the merge arrangement.

8.4.12 Some slight delays have been observed on the minor arms of junctions with the A3023 when traffic was gap-seeking but again, many drivers drove with courtesy and often allowed traffic out of the side roads. Traffic was also able to turn in between platoons. No notable queues were observed on the island itself.

8.4.13 It was noted that bus services appeared to be frequent and popular. Many pedestrians and cyclists were also observed, particularly in the district centres. Many parents/guardians appear to travel on foot to/from Mengham Infant School, and those that choose to drive appear to park with a reasonable degree of courtesy, with school peak times tending to last for around 20-30 minutes in the morning and late afternoon.

Base Traffic Data

8.4.14 Traffic data from HBC's Hayling Island microsimulation model has been obtained from their modelling consultant. This was taken from model runs which the Applicant commissioned, with the only change to the model used to assess the impact of the emerging Local Plan being the relocation of the Site's vehicular access from Manor Road to St Mary's Road. Further details of the data sources used in the traffic model and the calibration/validation process are provided in the HITA.

8.4.15 The base year of the microsimulation model is 2017. 12-hour (7am to 7pm) traffic data was provided by HBC's modelling consultant. This data has been factored to 24 hour annual average daily traffic (AADT) using the flow profiles recorded via automatic traffic counter on Langstone Bridge in 2018. The associated AADT values and heavy goods vehicle (HGV) proportions for the links in the study area is provided in Table 8.9.

Table 8.9: 2017 Base Flows			
Link	Description	AADT	HGV%
1	St Mary's Rd W of Elm Grove	1440	0.8%
2	Church Rd N of St Mary's Rd	14426	1.7%
3	Tournerbury Ln E of Elm Grove	1081	0.3%
4	Elm Grove S of St Mary's Rd	13324	1.8%
5	Elm Grove N of Cherrywood Gardens	13335	1.7%
6	Elm Grove S of Cherrywood Gardens	13299	1.7%
7	Cherrywood Gardens W of Elm Grove	1127	1.2%
8	Cherrywood Gardens E of St Mary's Rd	1023	0.9%
9	St Mary's Rd W of Cherrywood Gardens	1522	0.6%
10	St Mary's Rd N of Cherrywood Gardens	1104	0.2%
11	St Mary's Rd E of A3023	1742	0.7%
12	A3023 S of St Mary's Rd	7131	1.2%
13	Station Rd W of A3023	3454	2.8%
14	A3023 N of St Mary's Rd	6776	2.5%
15	A3023 W of Church Rd	7175	3.2%
16	A3023 E of Church Rd	20942	2.3%
17	Church Rd S of A3023	14269	1.8%
18	A3023 N of Langstone Tech Park	29381	2.2%
19	Woodbury Av E of A3023	503	0.4%
20	A3023 S of Langstone Tech Park	26642	2.3%
21	Langstone Tech Park Access E of A3023	3606	0.6%
22	A3023 S of A27	29384	2.2%
23	A27 WB on-slip	12152	3.3%
24	A27 EB off-slip	15177	2.9%
25	Park Rd South N of A27	27622	3.5%
26	A27 EB on-slip	5666	2.8%
27	A27 WB off-slip	5243	3.3%
28	Langstone Bridge	25497	2.2%
29	A27 EB west of Langstone Rd slips	44081	6.7%
30	A27 WB west of Langstone Rd slips	42200	5.3%
31	A27 EB east of Langstone Rd slips	34475	7.7%
32	A27 WB east of Langstone Rd slips	35408	5.7%
33	Proposed Site Access	-	-
34	St Mary's Rd S of Proposed Site Access	-	-
35	A3023 Havant Rd S of Castlemans Ln	19903	2.5%
36	A3023 Havant Rd S of West Ln	19722	2.5%
37	West Ln W of A3023 Havant Rd	2878	0.5%
38	A3023 Havant Rd N of West Ln	22600	2.3%
39	Newtown Ln E of West Ln	2015	1.5%
40	West Ln N of Newtown Ln	3354	0.5%
41	West Ln W of Newtown Ln	3301	1.0%

Table 8.9: 2017 Base Flows			
Link	Description	AADT	HGV%
42	Station Rd E of West Ln	3124	3.0%
43	West Ln NE of Station Rd	3175	0.8%
44	Station Rd W of West Ln	5324	2.2%

Forecast Traffic Data

8.4.16 Forecast traffic flows were provided by HBC's modelling consultant for the following three scenarios:

- 2036 Baseline – 2017 base + committed developments;
- 2036 Rook Farm Removed – 2036 Baseline + allocations + windfall sites excluding Rook Farm (2036 Without Development); and
- 2036 Rook Farm – 2036 Baseline + allocations + windfall sites + Rook Farm (2036 With Development).

8.4.17 Image 8.1 below is a list of the committed developments included in the microsimulation model. Further details can be found in the HITA.

Image 8.1: Committed Development Included in Model

Committed Developments sites:		
Development Name	Type	Dwellings or Area
117 Elm Grove	Retirement	33
11 Bound Lane	Residential	8
36, 38 & 40 & 1 West Lane Station Road	Residential	18
3 Elm Grove	Residential	6
31 Elm Grove	Residential	3
Newtown House Hotel, Manor Road	Residential	3
19 - 23 & 29 - 31 Creek Road	Residential	3
151-153 Southwood Road	Residential	3
	Total Residential	77
Lidl: Land South of Manor Road	Commercial	1,340m ²

8.4.18 Image 8.2 below is a list of the emerging site allocations included in the microsimulation model. Further details can be found in the HITA.

Image 8.2: Emerging Local Plan Allocations Included in Model

LDP sites:		Dwellings
Development Name	Type	or Area
Land to rear 108-110 Elm Grove	Residential	15
Land at Fathoms Reach	Residential	55
Station Road (North of Sinah Lane / West of Furniss Way)	Residential	195
Land West of Tournurbury Golf Course	Residential	40
Northney Marina	Residential	40
41 Station Road	Residential	13
Manor Nurseries	Residential	15
Beachlands, Hayling Island Seafront	Residential	125
Eastoke Corner	Residential	20
The Nab Car Park Southwood Road	Residential	30
Windfall	Residential	144
Rook Farm	Residential	395
Total Residential		1087

8.4.19 The AADT flows and HGV proportions for each scenario are shown in Tables 8.10, 8.11 and 8.12.

8.4.20 Note that link 33 only exists in the 2036 Rook Farm scenario and link 34 only exists in the 2036 Rook Farm Removed and 2036 Rook Farm scenarios.

Table 8.10: 2036 Baseline Flows			
Link	Description	AADT	HGV%
1	St Mary's Rd W of Elm Grove	1451	0.8%
2	Church Rd N of St Mary's Rd	14546	1.7%
3	Tournurbury Ln E of Elm Grove	1088	0.2%
4	Elm Grove S of St Mary's Rd	13465	1.8%
5	Elm Grove N of Cherrywood Gardens	13475	1.7%
6	Elm Grove S of Cherrywood Gardens	13429	1.7%
7	Cherrywood Gardens W of Elm Grove	1136	1.1%
8	Cherrywood Gardens E of St Mary's Rd	1022	1.0%
9	St Mary's Rd W of Cherrywood Gardens	1533	0.7%
10	St Mary's Rd N of Cherrywood Gardens	1090	0.3%
11	St Mary's Rd E of A3023	1756	0.7%
12	A3023 S of St Mary's Rd	7305	1.1%
13	Station Rd W of A3023	3519	2.9%
14	A3023 N of St Mary's Rd	6961	2.5%
15	A3023 W of Church Rd	7828	2.9%
16	A3023 E of Church Rd	20382	2.4%
17	Church Rd S of A3023	14396	1.8%
18	A3023 N of Langstone Tech Park	30395	2.2%
19	Woodbury Av E of A3023	624	0.3%
20	A3023 S of Langstone Tech Park	26927	2.3%
21	Langstone Tech Park Access E of A3023	4219	0.6%
22	A3023 S of A27	30404	2.2%



Table 8.10: 2036 Baseline Flows			
Link	Description	AADT	HGV%
23	A27 WB on-slip	13685	3.2%
24	A27 EB off-slip	17609	2.8%
25	Park Rd South N of A27	31785	3.5%
26	A27 EB on-slip	6756	2.6%
27	A27 WB off-slip	6228	3.2%
28	Langstone Bridge	24667	2.3%
29	A27 EB west of Langstone Rd slips	53792	6.4%
30	A27 WB west of Langstone Rd slips	51177	5.1%
31	A27 EB east of Langstone Rd slips	42824	7.3%
32	A27 WB east of Langstone Rd slips	44005	5.4%
33	Proposed Site Access	-	-
34	St Mary's Rd S of Proposed Site Access	-	-
35	A3023 Havant Rd S of Castlemans Ln	19237	2.6%
36	A3023 Havant Rd S of West Ln	19054	2.6%
37	West Ln W of A3023 Havant Rd	2756	0.5%
38	A3023 Havant Rd N of West Ln	21806	2.4%
39	Newtown Ln E of West Ln	2101	1.4%
40	West Ln N of Newtown Ln	3281	0.5%
41	West Ln W of Newtown Ln	3276	1.0%
42	Station Rd E of West Ln	3172	3.0%
43	West Ln NE of Station Rd	3154	0.8%
44	Station Rd W of West Ln	5304	2.2%

Table 8.11: 2036 Rook Farm Removed (Without Development) Flows			
Link	Description	AADT	HGV%
1	St Mary's Rd W of Elm Grove	1179	0.8%
2	Church Rd N of St Mary's Rd	15151	1.7%
3	Tournerbury Ln E of Elm Grove	1353	0.2%
4	Elm Grove S of St Mary's Rd	14301	1.7%
5	Elm Grove N of Cherrywood Gardens	14351	1.6%
6	Elm Grove S of Cherrywood Gardens	14041	1.6%
7	Cherrywood Gardens W of Elm Grove	1539	0.8%
8	Cherrywood Gardens E of St Mary's Rd	1202	0.8%
9	St Mary's Rd W of Cherrywood Gardens	1652	0.6%
10	St Mary's Rd N of Cherrywood Gardens	862	0.2%
11	St Mary's Rd E of A3023	1943	0.7%
12	A3023 S of St Mary's Rd	8082	1.1%
13	Station Rd W of A3023	4196	2.4%
14	A3023 N of St Mary's Rd	7594	2.3%
15	A3023 W of Church Rd	8379	2.8%
16	A3023 E of Church Rd	21404	2.3%
17	Church Rd S of A3023	15081	1.7%
18	A3023 N of Langstone Tech Park	31491	2.1%
19	Woodbury Av E of A3023	625	0.3%
20	A3023 S of Langstone Tech Park	28058	2.2%
21	Langstone Tech Park Access E of A3023	4256	0.6%



Table 8.11: 2036 Rook Farm Removed (Without Development) Flows			
Link	Description	AADT	HGV%
22	A3023 S of A27	31495	2.1%
23	A27 WB on-slip	13964	3.1%
24	A27 EB off-slip	17873	2.7%
25	Park Rd South N of A27	32132	3.4%
26	A27 EB on-slip	6829	2.6%
27	A27 WB off-slip	6277	3.1%
28	Langstone Bridge	25909	2.2%
29	A27 EB west of Langstone Rd slips	54055	6.4%
30	A27 WB west of Langstone Rd slips	51341	5.0%
31	A27 EB east of Langstone Rd slips	42896	7.3%
32	A27 WB east of Langstone Rd slips	43971	5.4%
33	Proposed Site Access	-	-
34	St Mary's Rd S of Proposed Site Access	1179	0.8%
35	A3023 Havant Rd S of Castlemans Ln	20198	2.5%
36	A3023 Havant Rd S of West Ln	20011	2.5%
37	West Ln W of A3023 Havant Rd	3072	0.4%
38	A3023 Havant Rd N of West Ln	23080	2.2%
39	Newtown Ln E of West Ln	2368	1.5%
40	West Ln N of Newtown Ln	3693	0.5%
41	West Ln W of Newtown Ln	3742	0.9%
42	Station Rd E of West Ln	3838	2.5%
43	West Ln NE of Station Rd	3620	0.7%
44	Station Rd W of West Ln	6348	1.9%

Table 8.12: 2036 Rook Farm (With Development) Flows			
Link	Description	AADT	HGV%
1	St Mary's Rd W of Elm Grove	2903	0.4%
2	Church Rd N of St Mary's Rd	16179	1.5%
3	Tournerbury Ln E of Elm Grove	1380	0.2%
4	Elm Grove S of St Mary's Rd	14853	1.6%
5	Elm Grove N of Cherrywood Gardens	14868	1.6%
6	Elm Grove S of Cherrywood Gardens	14529	1.6%
7	Cherrywood Gardens W of Elm Grove	1625	0.9%
8	Cherrywood Gardens E of St Mary's Rd	1279	0.7%
9	St Mary's Rd W of Cherrywood Gardens	2041	0.5%
10	St Mary's Rd N of Cherrywood Gardens	1230	0.1%
11	St Mary's Rd E of A3023	2320	0.6%
12	A3023 S of St Mary's Rd	8239	1.0%
13	Station Rd W of A3023	4372	2.2%
14	A3023 N of St Mary's Rd	7705	2.2%
15	A3023 W of Church Rd	8381	2.7%
16	A3023 E of Church Rd	22138	2.2%
17	Church Rd S of A3023	15976	1.6%
18	A3023 N of Langstone Tech Park	31997	2.0%
19	Woodbury Av E of A3023	626	0.3%
20	A3023 S of Langstone Tech Park	28605	2.2%



Table 8.12: 2036 Rook Farm (With Development) Flows			
Link	Description	AADT	HGV%
21	Langstone Tech Park Access E of A3023	4271	0.6%
22	A3023 S of A27	32002	2.0%
23	A27 WB on-slip	14067	3.0%
24	A27 EB off-slip	17906	2.7%
25	Park Rd South N of A27	32350	3.4%
26	A27 EB on-slip	6847	2.5%
27	A27 WB off-slip	6297	3.1%
28	Langstone Bridge	26526	2.1%
29	A27 EB west of Langstone Rd slips	53994	6.4%
30	A27 WB west of Langstone Rd slips	51464	5.0%
31	A27 EB east of Langstone Rd slips	42815	7.3%
32	A27 WB east of Langstone Rd slips	43987	5.4%
33	Proposed Site Access	2082	0.0%
34	St Mary's Rd S of Proposed Site Access	1525	0.7%
35	A3023 Havant Rd S of Castlemans Ln	20855	2.4%
36	A3023 Havant Rd S of West Ln	20670	2.4%
37	West Ln W of A3023 Havant Rd	3114	0.4%
38	A3023 Havant Rd N of West Ln	23779	2.1%
39	Newtown Ln E of West Ln	2431	1.4%
40	West Ln N of Newtown Ln	3807	0.4%
41	West Ln W of Newtown Ln	3765	0.9%
42	Station Rd E of West Ln	3999	2.3%
43	West Ln NE of Station Rd	3641	0.7%
44	Station Rd W of West Ln	6472	1.8%

Sensitive Receptors

8.4.21 We have classified the 44 links in the study area based on the receptor sensitivity descriptions provided in Table 8.4. This link sensitivity classification is provided in Table 8.13 with a plan provided as Appendix 8.3.

Table 8.13: Study Area Link Sensitivity			
Site	Description	Sensitivity	Reason
1	St Mary's Rd W of Elm Grove	Low	Residential
2	Church Rd N of St Mary's Rd	High	The Hayling College
3	Tournerbury Ln E of Elm Grove	Medium	Shops & scoping opinion
4	Elm Grove S of St Mary's Rd	Medium	Takeaway & property c. 3m from road: scoping opinion
5	Elm Grove N of Cherrywood Gardens	Low	Residential
6	Elm Grove S of Cherrywood Gardens	Medium	Shops with roadside frontage
7	Cherrywood Gardens W of Elm Grove	Low	Residential
8	Cherrywood Gardens E of St Mary's Rd	Low	Residential
9	St Mary's Rd W of Cherrywood Gardens	Low	Residential
10	St Mary's Rd N of Cherrywood Gardens	High	Mengham Infant School & Nursery
11	St Mary's Rd E of A3023	Low	Residential
12	A3023 S of St Mary's Rd	Low	Residential
13	Station Rd W of A3023	Medium	Shops with roadside frontage
14	A3023 N of St Mary's Rd	Low	Residential



Table 8.13: Study Area Link Sensitivity			
Site	Description	Sensitivity	Reason
15	A3023 W of Church Rd	Negligible	Low sensitivity
16	A3023 E of Church Rd	High	Mill Rythe schools
17	Church Rd S of A3023	Low	Residential
18	A3023 N of Langstone Tech Park	Low	Adjacent restaurant & hotel
19	Woodbury Av E of A3023	Low	Residential
20	A3023 S of Langstone Tech Park	Low	Residential
21	Langstone Tech Park Access E of A3023	Low	Adjacent restaurant, hotel & technology park
22	A3023 S of A27	Low	Adjacent restaurant & hotel
23	A27 WB on-slip	Negligible	No frontage
24	A27 EB off-slip	Negligible	No frontage
25	Park Rd South N of A27	Negligible	No frontage
26	A27 EB on-slip	Negligible	No frontage
27	A27 WB off-slip	Negligible	No frontage
28	Langstone Bridge	Negligible	No frontage
29	A27 EB west of Langstone Rd slips	Negligible	No frontage
30	A27 WB west of Langstone Rd slips	Negligible	No frontage
31	A27 EB east of Langstone Rd slips	Negligible	No frontage
32	A27 WB east of Langstone Rd slips	Negligible	No frontage
33	Proposed Site Access	N/A	Not existing
34	St Mary's Rd S of Proposed Site Access	High	Mengham Infant School & Nursery & retirement home
35	A3023 Havant Rd S of Castlemans Ln	Medium	Properties c. 2m from road: scoping opinion
36	A3023 Havant Rd S of West Ln	Low	Residential
37	West Ln W of A3023 Havant Rd	Low	Residential
38	A3023 Havant Rd N of West Ln	Medium	Property c. 3m from road: scoping opinion
39	Newtown Ln E of West Ln	Low	Residential
40	West Ln N of Newtown Ln	High	Residential with no footways
41	West Ln W of Newtown Ln	Low	Residential
42	Station Rd E of West Ln	Medium	Shops with roadside frontage
43	West Ln NE of Station Rd	Low	Residential
44	Station Rd W of West Ln	Medium	Shops with roadside frontage

8.4.22 The majority of links have been identified as having negligible or low sensitivity. The five links that have been classed as having high sensitivity are as follows:

- Link 2 – passes The Hayling College;
- Links 10 and 34 – passes Mengham Infant School and Cherryharbour Nursery;
- Link 16 – passes Mill Rythe Infant and Junior Schools; and
- Link 40 – has residential frontage but no footways.

8.4.23 There are 8 links which have medium sensitivity for reasons including shops with roadside frontage, notable congestion and residential properties identified as being close to the A3023 carriageway/back of footway by HBC in the Scoping Opinion.

8.4.24 Specially sensitive areas, such as Areas of Outstanding Natural Beauty, Sites of Special Scientific Interest, World Heritage sites etc. are located away from the study area.

Limitations

8.4.25 Limitations of the assessment relate to the use of the Hayling Island microsimulation model as set out below. However, HCC has accepted the model for use and we believe that it is an appropriate tool to assess the impact of the Local Plan and to derive suitable mitigation measures.

8.4.26 The main limitation is that this assessment uses traffic data from the microsimulation model. Whilst it is agreed that the model is a suitable tool to assess the impact of the Local Plan, full control of the model is not available and as such only data available from it in the public domain and traffic flow data provided to the Applicant by the modelling consultant can be used. The data provided is limited to traffic flows only, while the data in the public domain is for the main Local Plan assessments rather than bespoke assessments that would be required to fully consider the impact of the development in isolation.

8.4.27 A second limitation of the assessment is that traffic flows from the Hayling Island microsimulation model are based on data recorded in 2017 and do not take into account the short or long term effects of the Covid-19 pandemic, Brexit or the 2020 recession.

8.4.28 A third limitation is that several assumptions regarding the trip generation and distribution of the emerging allocations have been made by HBC's consultant, as bespoke data or assessments for each site are not available. The assumptions made however are considered to be robust.

8.4.29 A package of sustainable transport measures has been developed as part of the Local Plan, however the model does not fully take into account potential levels of uptake of sustainable modes and potential modal shift, this does however mean that the assessment is particularly robust.

8.5 Assessment of Effects

Design Solutions and Assumptions

8.5.1 The development proposals include embedded mitigation which refers to the immediate measures required to make the Site accessible for all modes of transportation.



- 8.5.2 The main vehicular access will be provided from St Mary's Road via a simple priority controlled junction. The geometry used is appropriate to accommodate the limited number of large vehicles, such as refuse collection and bulky goods deliveries, that will access the Site per day during the operational phase. The access will also be able to safely accommodate construction traffic. This has been demonstrated in the swept path analysis included in Appendix D of the TA.
- 8.5.3 An appropriate level of visibility is achievable from the access based on recorded 85th percentile speeds as detailed further in Section 4 of the TA (Appendix 8.1).
- 8.5.4 Footways will be provided at the Site access to connect with the existing provision on the northern side of St Mary's Road.
- 8.5.5 All possible pedestrian connections to the local public right of way network, where the footpaths abut the Site, will be made, maximising pedestrian connectivity for the residents of the Site. This includes pedestrian connection to Fathom's Reach (emerging allocation H28) as per the policy requirement.
- 8.5.6 Emergency access only can be provided from Rook Farm Way which the landowner has access rights to.
- 8.5.7 A number of pedestrian improvements will be made which will not only be of benefit to residents of the Site, but also offer benefit to existing residents and road users. These improvements include:
- Uncontrolled pedestrian crossing over St Mary's Road south-west of Site access;
 - No-dig footway to minimise impact on tree roots provided on southern side of St Mary's Road outside Limewood retirement apartments;
 - Uncontrolled crossings on St Mary's Road over Limewood and public car park accesses;
 - Uncontrolled crossing with pedestrian refuge island over St Mary's Road at Elm Grove junction;
 - Uncontrolled crossings with pedestrian refuge islands over Elm Grove and Church Road at junction with St Mary's Road and Tournerbury Lane; and
 - Potential white lined footway/safety zone through public car park off St Mary's Road which provides a pedestrian connection to Elm Grove.
- 8.5.8 A further improvement which the applicant is willing to fund would be a reduction in the speed limit of St Mary's Road to 20mph along with a traffic calming scheme in the vicinity of Mengham Infant School subject to further discussions with HCC.

8.5.9 The above improvements are localised in nature and were not included in the microsimulation model.

8.5.10 It has also been assumed, as will be considered later in this Chapter, that all of the construction traffic will travel from/to the north of the Site via the A3023 and Church Road from the mainland. There may however be scope to use more local materials and workers based on the island.

Assessment of Effects

Construction Phase

8.5.11 The TRICS *Construction Traffic Research Report* (2008) notes how, in recent years, the UK construction industry has been reducing the costs and increasing the efficiency associated with construction traffic as it has moved toward competitive tendering procurement creating pressure to optimise the supply chain. There has been further acceleration in efficiency more recently, with many construction companies and developers adopting initiatives to reduce carbon emissions, with many such initiatives further increasing efficiency.

8.5.12 Efficiencies have been created by developing and enhancing techniques and working practices including:

- Supply chain optimisation;
- Load optimisation;
- Consolidation centres;
- Just in Time deliveries;
- 4th party logistics (outsourcing); and
- Delivery booking (deliveries by pre-arranged time slots).

8.5.13 In addition to the above, modern methods of sustainable construction will mean that as much of the existing material on the Site will be reused where possible which will minimise the need for additional fill materials to be brought to Site by HGVs.

8.5.14 These efficiencies reduce the number of vehicles generated during the construction phase, and to some extent, the distance travelled by them. Nevertheless, the construction phase of the Site will result in a temporary increase of HGVs, light goods vehicles (LGV) and cars carrying construction workers, materials and equipment on roads surrounding the Site.

8.5.15 The TRICS report groups the typical vehicle types associated with construction, these being:

- Car/pick up/3.5 ton van;
- 7.5 ton box van/panel van;
- Low loader and articulated Heavy Goods Vehicle (HGV);
- Ready mix concrete truck;
- Mobile crane;
- Skip lorry; and
- Tipper truck (up to 32 ton).

8.5.16 It is difficult to predict the precise number of construction vehicles at this outline application stage due to the varying work practices of different housebuilders/construction companies, with the end builder not likely to be known until post-determination. Similarly, the volume of earth moving equipment, particularly tipper trucks removing or delivering material from/to the Site, will be dependent on the existing and builder's desired levels on the Site. This is reflected in the TRICS report which states that:

'...at outline application stage, the degree of certainty required for such calculations (related to the variables of materials, speed and type of construction and site logistics) is frequently not available as the construction methods and programme may not be finalised and contractors not appointed.'

8.5.17 Construction traffic will vary per phase with the initial stages generally requiring greater use of HGVs for excavation, site clearance and ground level remodelling, such as tipper trucks and excavators with the latter generally transported on low loader articulated vehicles. Later stages will generate more HGVs used to transport construction materials, such as low loaders carrying bricks, prefabricated timber structures (roof supports) etc. and a greater number of site staff. Excavating equipment tends to remain on sites until the need for it ceases. It is useful to note that undeveloped sites such as this tend to require less remedial works and less material to be removed from site, limiting the need for high numbers of HGVs during the initial stages of construction.

8.5.18 It is anticipated that construction will commence in 2023 and the Site will be fully built-out by 2030 with circa 40 dwellings built per year. The typical hours of construction

operation are expected to be between 0700-1900 Monday to Friday and 0700-1300 on Saturdays although the precise hours will be determined in the Construction Traffic Management Plan (CTMP) to be submitted at the reserved matters stage.

8.5.19 Construction traffic will be spread across these time periods which start and end outside of the local network peak hours minimising the impact in terms of traffic flow volume and highway network capacity. The TRICS report notes:

'...in general, construction traffic will have minimal impact on traffic, except where temporary road closures or re-routing is required. Construction traffic normally generates less vehicle movements than the agreed use of a new development.'

8.5.20 The strategic nature of the access to Hayling Island, specifically from the A27, then along the A3023 for much of the journey length, will be conducive to the safe movement of construction traffic minimising the impact on local settlements, with Church Road leading to St Mary's Road which will provide direct access to the Site.

8.5.21 The development is forecast to generate 2,082 AADT trips when fully constructed and occupied with the number of construction trips likely to be less than this based on the above TRICS statement.

8.5.22 The likely number of trips associated with construction traffic can be forecast based on the project value using a calculation provided in the Building Research Establishment (BRE) report 'Construction Site Traffic, The Next Big Thing' (2003). The anticipated project value provided by the Applicant is £39,222,580. Using this figure, it is predicted that the Site will generate 13 two-way vehicle trips per day, or 26 single one-way trips, excluding weekends as a worst-case (it is likely that some construction traffic will be present on Saturdays), which is equivalent to less than 3 one-way trips per hour across a 12-hour working day. It is acknowledged that there may be some peaks in construction traffic activity but this will be balanced by troughs.

8.5.23 Note that no adjustment has been made for inflation (i.e. reduce the 2021 project value to 2003 values) as this would reduce the estimated number of construction vehicles, so applying the relationship from the 2003 report provides a more robust forecast.

8.5.24 The TRICS report indicates that approximately 20% of construction trips are made by cars or light goods vehicles and 80% by heavy good vehicles (HGVs). Applying these

percentages to the above construction trips results in a daily one-way forecast of 5 light vehicles and 21 heavy vehicles.

8.5.25 The expected routing will be agreed in the CTMP.

Severance

8.5.26 The IEMA Guidelines advise that severance occurs when there is difficulty experienced in crossing a heavily trafficked road. As set out previously, construction traffic flows including HGVs represent a small proportion of the total traffic, less than 2 trips per hour.

8.5.27 The increase in construction traffic is therefore considered to have a negligible impact on severance and therefore a negligible adverse effect on severance.

Driver Delay

8.5.28 Construction traffic is likely to represent a small increase, but a considerable volume of traffic would be required to increase journey times by more than 30 seconds. This has been assessed as a negligible impact.

8.5.29 Therefore a negligible adverse effect on driver delay is determined.

Pedestrian Delay

8.5.30 As above, an increase in traffic of less than 3 construction trips per hour represents a very small proportionate increase in total traffic which is likely to represent a negligible impact.

8.5.31 Therefore a negligible adverse effect on pedestrian delay is determined.

Pedestrian Amenity

8.5.32 The IEMA Guidelines suggest that a tentative threshold for judging the significance of changes in pedestrian and cyclist amenity would be where the traffic flow (or its lorry component) is doubled.

8.5.33 As stated above HGV traffic flows as a result of the construction of the proposed development will be negligible, resulting in a negligible adverse effect on pedestrian amenity.

Fear and Intimidation

8.5.34 The pedestrian's level of fear and intimidation can be established by volume of traffic as shown in Table 8.6.

8.5.35 As stated in the paragraphs above, less than 3 construction traffic trips per hour represents a very small proportion of the total traffic, much less than the 30% minor impact threshold, and any increase in HGV traffic, as a result of the construction traffic, is likely to represent a negligible impact.

8.5.36 When considering the sensitivity of the receptors there is negligible effect significance for fear and intimidation.

Accidents and Safety

8.5.37 Whilst we understand that HBC has concerns with the frequency of accidents on Hayling Island, from our review of accidents in the study area over the recent 5-year period presented in Section 7 of the TA (Appendix 8.1), there does not appear to be a pattern or common cause to the accidents that have taken place both locally to the Site and in the study area as a whole.

8.5.38 Multiple causation factors have been noted with driver/rider error being the main factor in the vast majority of accidents. The number of accidents is not unusually high given the extent of this study area and the volume of traffic.

8.5.39 Analysis of the overall accident data indicates that the design and layout of the local highway network would not in itself appear to be an overriding factor in the cause of the accidents. The development proposals are unlikely, therefore, to have a detrimental impact on the accident rate in the area.

8.5.40 Therefore a negligible adverse effect on accidents and safety is determined.

Public Transport Users

8.5.41 It is not expected that construction traffic will prevent bus users from accessing bus services, nor is it expected that construction traffic will affect the routing or journey time reliability of bus services given the volumes presented above.

8.5.42 A negligible adverse effect on public transport users is therefore determined.

Operational Phase

Severance; pedestrian delay; pedestrian amenity, fear and intimidation; accidents and safety.

8.5.43 Table 8.14 below shows the percentage increase as a result of the proposed development when comparing the 2036 Rook Farm (With Development) to the 2036 Rook Farm Removed (Without Development) flows.

8.5.44 We believe that the negative increases (decreases) are as a result of modelling characteristics such as a very slight reassignment of traffic (rerouting) or potentially suppressed demand (traffic queuing on other links or zones) and potentially some rounding. These decreases however are associated with very small numbers and are insignificant, for example, the -50% value for HGV percentage increase on link 10 is as a result of the loss of just one HGV on the link (2 minus 1).

Link	Description	AADT %	HGV %	Sensitivity
1	St Mary's Rd W of Elm Grove	146.2%	10.0%	Low
2	Church Rd N of St Mary's Rd	6.8%	0.0%	High
3	Tournerbury Ln E of Elm Grove	2.0%	0.0%	Medium
4	Elm Grove S of St Mary's Rd	3.9%	-0.4%	Medium
5	Elm Grove N of Cherrywood Gardens	3.6%	-0.4%	Low
6	Elm Grove S of Cherrywood Gardens	3.5%	-0.9%	Medium
7	Cherrywood Gardens W of Elm Grove	5.6%	7.7%	Low
8	Cherrywood Gardens E of St Mary's Rd	6.4%	-10.0%	Low
9	St Mary's Rd W of Cherrywood Gardens	23.5%	0.0%	Low
10	St Mary's Rd N of Cherrywood Gardens	42.7%	-50.0%	High
11	St Mary's Rd E of A3023	19.4%	-7.1%	Low
12	A3023 S of St Mary's Rd	1.9%	-2.4%	Low
13	Station Rd W of A3023	4.2%	-4.0%	Medium
14	A3023 N of St Mary's Rd	1.5%	-1.7%	Low
15	A3023 W of Church Rd	0.0%	-3.0%	Negligible
16	A3023 E of Church Rd	3.4%	-1.8%	High
17	Church Rd S of A3023	5.9%	0.4%	Low
18	A3023 N of Langstone Tech Park	1.6%	-0.6%	Low
19	Woodbury Av E of A3023	0.2%	0.0%	Low
20	A3023 S of Langstone Tech Park	1.9%	-0.5%	Low
21	Langstone Tech Park Access E of A3023	0.4%	0.0%	Low
22	A3023 S of A27	1.6%	-0.5%	Low
23	A27 WB on-slip	0.7%	-0.2%	Negligible
24	A27 EB off-slip	0.2%	0.0%	Negligible
25	Park Rd South N of A27	0.7%	0.0%	Medium
26	A27 EB on-slip	0.3%	-2.2%	Negligible
27	A27 WB off-slip	0.3%	0.0%	Negligible
28	Langstone Bridge	2.4%	-0.9%	Negligible
29	A27 EB west of Langstone Rd slips	-0.1%	-0.3%	Negligible
30	A27 WB west of Langstone Rd slips	0.2%	0.0%	Negligible
31	A27 EB east of Langstone Rd slips	-0.2%	-0.4%	Negligible
32	A27 WB east of Langstone Rd slips	0.0%	-0.1%	Negligible
33	Proposed Site Access	N/A	N/A	N/A
34	St Mary's Rd S of Proposed Site Access	29.3%	10.0%	High
35	A3023 Havant Rd S of Castlemans Ln	3.3%	-1.6%	Medium
36	A3023 Havant Rd S of West Ln	3.3%	-1.4%	Low
37	West Ln W of A3023 Havant Rd	1.4%	16.7%	Low
38	A3023 Havant Rd N of West Ln	3.0%	-1.2%	Medium
39	Newtown Ln E of West Ln	2.7%	-5.7%	Low

Table 8.14: 2036 Rook Farm in Isolation % Increase				
Link	Description	AADT %	HGV %	Sensitivity
40	West Ln N of Newtown Ln	3.1%	-5.9%	High
41	West Ln W of Newtown Ln	0.6%	2.9%	Low
42	Station Rd E of West Ln	4.2%	-4.2%	Medium
43	West Ln NE of Station Rd	0.6%	4.0%	Low
44	Station Rd W of West Ln	2.0%	-2.5%	Medium

8.5.45 With reference to Table 8.6, there is only one link where the increase in traffic flow exceeds the threshold that would constitute a moderate or major magnitude of impact, this being link 1: St Mary's Road west of Elm Grove which is to the immediate east of the proposed Site access and therefore is naturally the link that will be subject to the greatest increase in traffic. As the percentage increase in AADT flow is 146.2%, this constitutes a major magnitude in all aspects other than driver delay which is measured in minutes and will be discussed separately. The sensitivity of the receptors on this link were judged to be low.

8.5.46 Link 10: St Mary's Road north of Cherrywood Gardens is forecast to experience a 42.7% increase in AADT which would constitute a minor magnitude, although the sensitivity of the receptors on this link, Mengham Infant School and nursery, are high.

8.5.47 The cumulative impact of the development with the other emerging Local Plan allocations can be quantified as shown in Table 8.15 below.

Table 8.15: 2036 Rook Farm Cumulative Local Plan % Increase				
Link	Description	AADT %	HGV %	Sensitivity
1	St Mary's Rd W of Elm Grove	100.1%	-8.3%	Low
2	Church Rd N of St Mary's Rd	11.2%	-0.4%	High
3	Tournurbury Ln E of Elm Grove	26.8%	50.0%	Medium
4	Elm Grove S of St Mary's Rd	10.3%	0.0%	Medium
5	Elm Grove N of Cherrywood Gardens	10.3%	-0.4%	Low
6	Elm Grove S of Cherrywood Gardens	8.2%	-0.9%	Medium
7	Cherrywood Gardens W of Elm Grove	43.0%	7.7%	Low
8	Cherrywood Gardens E of St Mary's Rd	25.1%	-10.0%	Low
9	St Mary's Rd W of Cherrywood Gardens	33.1%	0.0%	Low
10	St Mary's Rd N of Cherrywood Gardens	12.8%	-66.7%	High
11	St Mary's Rd E of A3023	32.1%	0.0%	Low
12	A3023 S of St Mary's Rd	12.8%	-1.2%	Low
13	Station Rd W of A3023	24.2%	-4.9%	Medium
14	A3023 N of St Mary's Rd	10.7%	-2.3%	Low
15	A3023 W of Church Rd	7.1%	-1.7%	Negligible
16	A3023 E of Church Rd	8.6%	-1.4%	High
17	Church Rd S of A3023	11.0%	-0.8%	Low
18	A3023 N of Langstone Tech Park	5.3%	-0.6%	Low
19	Woodbury Av E of A3023	0.3%	0.0%	Low
20	A3023 S of Langstone Tech Park	6.2%	-0.6%	Low
21	Langstone Tech Park Access E of A3023	1.2%	4.0%	Low

Table 8.15: 2036 Rook Farm Cumulative Local Plan % Increase				
Link	Description	AADT %	HGV %	Sensitivity
22	A3023 S of A27	5.3%	-0.8%	Low
23	A27 WB on-slip	2.8%	-0.9%	Negligible
24	A27 EB off-slip	1.7%	0.0%	Negligible
25	Park Rd South N of A27	1.8%	-0.5%	Medium
26	A27 EB on-slip	1.3%	-2.2%	Negligible
27	A27 WB off-slip	1.1%	-1.5%	Negligible
28	Langstone Bridge	7.5%	-0.9%	Negligible
29	A27 EB west of Langstone Rd slips	0.4%	-0.3%	Negligible
30	A27 WB west of Langstone Rd slips	0.6%	-0.3%	Negligible
31	A27 EB east of Langstone Rd slips	0.0%	-0.4%	Negligible
32	A27 WB east of Langstone Rd slips	0.0%	-0.3%	Negligible
33	Proposed Site Access	N/A	N/A	N/A
34	St Mary's Rd S of Proposed Site Access	N/A	N/A	High
35	A3023 Havant Rd S of Castlemans Ln	8.4%	-1.6%	Medium
36	A3023 Havant Rd S of West Ln	8.5%	-1.0%	Low
37	West Ln W of A3023 Havant Rd	13.0%	0.0%	Low
38	A3023 Havant Rd N of West Ln	9.0%	-0.8%	Medium
39	Newtown Ln E of West Ln	15.7%	10.0%	Low
40	West Ln N of Newtown Ln	16.0%	0.0%	High
41	West Ln W of Newtown Ln	14.9%	9.4%	Low
42	Station Rd E of West Ln	26.1%	-4.2%	Medium
43	West Ln NE of Station Rd	15.4%	8.3%	Low
44	Station Rd W of West Ln	22.0%	-1.7%	Medium

8.5.48 When considered cumulatively, the impact on link 1 reduces to 100.1% but this still constitutes a major magnitude. The impact on link 10 reduces to a negligible magnitude.

8.5.49 Links 7, 9 and 11 are forecast to experience 43.0%, 33.1% and 32.1% AADT increases respectively which would constitute a minor magnitude of impact. All three links have receptors of low sensitivity. The 50.0% increase in HGVs on link 3 is a result of an increase from 2 HGVs to 3 HGVs which we do not deem to be significant.

8.5.50 The embedded mitigation, to be delivered by the Applicant, includes a new section of footway on St Mary's Road, uncontrolled crossing over St Mary's Road near the public car park, uncontrolled crossings with pedestrian refuge island over the St Mary's Road, Elm Grove and Church Road junction with Tournurbury Lane, connection to the local PRow network from inside the Site and a possible speed limit reduction with traffic calming on St Mary's Road in the vicinity of Mengham Infant School. These measures will reduce the impact on the links local to the embedded mitigation, particularly links 1, 10 and 34, by one degree of magnitude.

8.5.51 In addition to this, there are a number of measures in the Travel Plan (Appendix 8.2) which will further encourage walking trips.

8.5.52 The Site access has been designed in accordance with current national design standards so there is no reason to suggest that accidents will increase or safety will be compromised as a result of the development proposals. It has also been subject to an independent Stage 1 Road Safety Audit (see Appendix F of the TA).

8.5.53 Table 8.16 presents the link-by-link effect on severance; pedestrian delay; pedestrian amenity, fear and intimidation; accidents and safety.

Table 8.16: Effect on severance; pedestrian delay; pedestrian amenity, fear & intimidation; accidents & safety				
Link	Sensitivity	Impact	Scenario	Effect
1	Low	Moderate	Cumulative	Slight
7	Low	Minor	Cumulative	Neutral/ slight
9	Low	Minor	Cumulative	Neutral/ slight
10	High	Minor	Isolation	Slight/ moderate
11	Low	Minor	Cumulative	Neutral/ slight

8.5.54 The above table suggests that the development could have a slight or moderate adverse effect on link 10, which would be **significant** in EIA terms prior to the implementation of mitigation measures

Driver Delay

8.5.55 As the Local Plan HITA work has progressed, it would appear that a mitigation package known as M1A has become the accepted starting point for mitigation, with a series of individual junction improvements sequentially added to this. For assessment purposes, we have taken the most advanced scenario which includes all of the individual junction improvements, which we believe is the current preferred option by HBC. For simplicity, we have referred to this as the 'Do Something' scenario.

8.5.56 HBC's modelling consultant undertook a series of journey time comparisons. Of importance to this assessment are the following scenarios:

- 2036 Baseline (background traffic growth with committed development applied to the existing road network);
- 2036 Do Minimum (background traffic growth with committed development and Local Plan 2036 sites applied to the existing road network); and
- 2036 Do Something (as per Do Minimum + M1A + West Lane + Folded + Langstone).

8.5.57 As mentioned in the Limitations section, journey time runs for the 2036 Rook Farm Removed (Without Development) scenario are not available so the impact on journey times is considered cumulatively only.

8.5.58 The journey time runs were undertaken along the following 7 routes:

- Route 1: Beachlands Roundabout to Mill Rythe Roundabout via A3023 Manor Road
- Route 2: Sea Front/Sea Grove Avenue to Mill Rythe Roundabout via Church Road/Elm Grove
- Route 3: A3023 Woodbury Avenue to A3023/West Lane
- Route 4: Church Road Kings Road to A3023 West Lane
- Route 5: Manor Road Brights Lane to A3023 West Lane
- Route 6: West Lane Brights Lane to A3023 West Lane
- Route X: Technology Park to New Road roundabout

8.5.59 Further details of these runs are provided in the HITA Addendum. Summaries of the Baseline vs Do Minimum journey time comparisons, taken from Appendix A of the HITA are shown in Table 8.17 below for the AM (0800-0900), Inter (1200-1300) and PM peak (1700-1800) hours.

8.5.60 We acknowledge that the data presented below is from the Local Plan evidence base which includes access to the Site from Manor Road, unlike the traffic flows presented previously which were from a version of the model commissioned by the applicant with access from St Mary's Road, this being the only difference. The different access location naturally has an effect on journey times, however a note produced by HBC's modelling consultant, included in Appendix E of the TA (Appendix 8.1) on behalf of the Applicant, shows that the difference in journey times in the peak hour assessments was no greater than +3 seconds and -5 seconds, which was described by the consultant as being 'negligible'. Given that such differences are insignificant, the journey time results from the Local Plan evidence base are deemed accurate and appropriate for use in this assessment.

Table 8.17 Baseline vs Do Minimum Journey Times				
Description	Route #	Baseline	Do Minimum	Difference
AM Peak 0800 - 0900				
Beechlands Rbt - Brights Lane	Route 1 NB	03:07	05:07	02:00
Brights Lane - Beechlands Rbt	Route 1 SB	02:26	02:26	00:00
Sea Front - St Mary's Road	Route 2 NB	02:05	02:07	00:02
St Mary's Road - Sea Front	Route 2 SB	02:16	02:19	00:03
West Lane/A3023 - Tech Park	Route 3 NB	05:59	08:34	02:35
Tech Park - West Lane/A3023	Route 3 SB	04:38	05:09	00:31
Church Road - West Lane/A3023	Route 4 NB	03:48	04:16	00:28
West Lane - Church Road/A3023	Route 4 SB	03:34	03:42	00:08
Manor Road - West Lane/A3023	Route 5 NB	04:38	07:02	02:24
West Lane/A3023 - Manor Road	Route 5 SB	03:49	03:56	00:07
West Lane Northbound	Route 6 NB	04:38	04:01	-00:37



Table 8.17 Baseline vs Do Minimum Journey Times				
Description	Route #	Baseline	Do Minimum	Difference
West Lane Southbound	Route 6 SB	03:49	03:01	-00:48
Tech Park - New Rd RBT	Route X NB	02:52	03:39	00:47
New Rd RBT - Tech Park	Route X SB	02:45	06:59	04:14
Inter Peak 1200 - 1300				
Beechlands Rbt - Brights Lane	Route 1 NB	02:31	02:34	00:03
Brights Lane - Beechlands Rbt	Route 1 SB	02:33	02:36	00:03
Sea Front - St Mary's Road	Route 2 NB	02:01	02:02	00:01
St Mary's Road - Sea Front	Route 2 SB	02:14	02:15	00:01
West Lane/A3023 - Tech Park	Route 3 NB	04:47	04:58	00:11
Tech Park - West Lane/A3023	Route 3 SB	05:15	04:44	-00:31
Church Road - West Lane/A3023	Route 4 NB	03:37	03:44	00:07
West Lane - Church Road/A3023	Route 4 SB	03:38	03:41	00:03
Manor Road - West Lane/A3023	Route 5 NB	03:54	04:00	00:06
West Lane/A3023 - Manor Road	Route 5 SB	03:52	03:58	00:06
West Lane Northbound	Route 6 NB	02:35	02:37	00:02
West Lane Southbound	Route 6 SB	02:33	02:36	00:03
Tech Park - New Rd RBT	Route X NB	04:12	03:10	-01:02
New Rd RBT - Tech Park	Route X SB	02:58	02:39	-00:19
PM Peak 1700 - 1800				
Beechlands Rbt - Brights Lane	Route 1 NB	02:29	02:30	00:01
Brights Lane - Beechlands Rbt	Route 1 SB	02:33	02:35	00:02
Sea Front - St Mary's Road	Route 2 NB	02:01	02:04	00:03
St Mary's Road - Sea Front	Route 2 SB	02:14	02:13	-00:01
West Lane/A3023 - Tech Park	Route 3 NB	04:47	05:23	00:36
Tech Park - West Lane/A3023	Route 3 SB	05:15	07:59	02:44
Church Road - West Lane/A3023	Route 4 NB	03:37	03:47	00:10
West Lane - Church Road/A3023	Route 4 SB	03:38	03:40	00:02
Manor Road - West Lane/A3023	Route 5 NB	03:54	04:01	00:07
West Lane/A3023 - Manor Road	Route 5 SB	03:52	03:55	00:03
West Lane Northbound	Route 6 NB	02:35	02:36	00:01
West Lane Southbound	Route 6 SB	02:33	02:34	00:01
Tech Park - New Rd RBT	Route X NB	04:16	04:13	-00:03
New Rd RBT - Tech Park	Route X SB	02:50	03:00	00:10

8.5.61 Consideration of the change in journey time magnitudes of impact shown in Table 8.6 compared to the above results, suggests the following magnitudes of impact on Driver Delay:

- Route 1 NB AM minor;
- Route 3 NB AM major, PM minor;
- Route 3 SB AM minor, PM major;
- Route 5 NB AM major;
- Route X NB AM minor; and
- Route X SB AM major.

8.5.62 Route 1 includes links 12 and 14 which include low sensitivity receptors.

8.5.63 Route 3 includes link 38 which includes a medium sensitivity receptor with the rest being low.

8.5.64 Routes 4 and 5 are very similar with the exception of the former including a section of Church Road and the latter including a section of Manor Road. Given the notable difference between the journey times for the two routes and our knowledge of the issue of modelled delays on the Manor Road arm of the roundabout with the A3023 and Church Road, we have assumed that the delays on Route 5 area associated with link 15, therefore link 16 is assumed to be better associated with Route 4. Link 15 includes receptors of negligible sensitivity.

8.5.65 Route X includes links 18 and 22 which contains receptors of low sensitivity (restaurant and hotel).

8.5.66 Several links (negative values in Table 8.17) show slight improvements in journey times, but this is likely as a result of traffic being delayed on feeder routes.

8.5.67 Table 8.18 presents the link-by-link effect on driver delay for the cumulative scenario (all Local Plan developments).

Table 8.18: Effect on Driver Delay			
Link	Sensitivity	Impact	Effect
12	Low	Minor	Neutral/ slight
14	Low	Minor	Neutral/ slight
15	Negligible	Major	Slight
18	Low	Major	Slight/ moderate
22	Low	Major	Slight/ moderate
35	Medium	Major	Moderate/ large
38	Medium	Major	Moderate/ large

8.5.68 The above suggests that the Local Plan development could have a moderate or large adverse effect on links 35 and 38, which would be **significant** in EIA terms prior to the implementation of the packages of mitigation measures (Do Something scenario). The effects on the other links would be lower and **not significant**.

Public Transport Users

8.5.69 The Site's Travel Plan (Appendix 8.2) includes a number of measures to help encourage use, and the Travel Plans to be prepared in support of the other Local Plan emerging allocations will be expected to provide the same. It is anticipated that free bus passes will be expected to be provided as part of the Travel Plans.

8.5.70 There is however scope for increased journey times on the island's bus routes to affect timetables, which may also affect bus connectivity with rail services at Havant and

Bedhampton train stations. In our opinion, delays to journey times of 5 minutes or more would have the scope to affect bus timetables. Given that the cumulative delay to AM peak journey times presented in Table 8.17 would be greater than 5-minutes, we believe that there is scope for there to be a slight or moderate adverse impact to public transport users, which would be **significant** in EIA terms prior to the implementation of mitigation measures. Hayling ferry users are unlikely to be affected.

8.5.71 A series of measures will help to mitigate the cumulative impact of the Local Plan as detailed in the following section.

8.6 Mitigation

Construction Phase

8.6.1 As mentioned above, a construction Traffic Management Plan (CTMP) will be required at the reserved matters stage following a planning condition to be expected as part of this outline application. The CTMP will be prepared by the housebuilder/contractor who will have a greater degree of certainty over the likely number of construction trips and phasing of the build-out and will include measures to reduce the impact of such traffic on the local highway network. These measures are likely to include, but not limited to, hours of Site operation/access, provision of wheel washing facilities and parking strategies for construction workers.

8.6.2 It is important to consider the working hours, routing, noise, vibration, dust, odour and debris or mud on the highway. The ways these will be monitored and mitigated by the housebuilder/contractor are, but not limited to, the following:

Working Hours and Routing

- Ensuring that traffic to/from the Site adheres to the agreed routes to ensure traffic nuisance is not inadvertently caused;
- HGV traffic to be scheduled to reduce the number of vehicles waiting to gain access to the Site at any one time, while reasonable space will be provided on Site to minimise the queuing or waiting of HGVs outside the Site boundary; and
- All deliveries will be undertaken within approved hours with no deliveries or Site operations to occur on a Sunday, public or Bank Holiday without the prior written consent of the planning authority.

Noise and Vibration

- Use of well-maintained vehicles and equipment; and
- Enforcement of the designated Site access point(s) and travel routes.

Dust, Odour, Debris and Mud

- Loading and unloading of materials to be undertaken within the enclosed Site boundary;
- Wheel-washing of all vehicles egressing the Site;
- Cleaning of the highway local to the Site; and
- Minimise mud, litter and debris in general.

Monitoring

- 8.6.3 The CTMP will be updated and reviewed at appropriate intervals. Should any issues occur, the document will be amended as necessary

Operational Phase

- 8.6.4 In addition to the above site-specific mitigation and improvements, a mitigation package has been devised by HBC to accommodate the emerging Local Plan allocations which includes the Site. At the time of writing, we understand that the approved mitigation package, which has been devised following an iterative detailed testing and modelling exercise using the microsimulation model, includes the following highway measures, which are a combination of friction reduction measures (known as package M1A) and a series of individual junction improvements:

- Northney Road unhooked left turn;
- Langstone Road southbound two-lane extension;
- Langstone roundabout and Langstone Road southbound: Provide a bus lane on the east side of the circulatory area;
- Park Road South: Northbound widening to increase capacity and resilience for traffic leaving the roundabout;
- Park Road South: Southbound widening to increase capacity and resilience for traffic entering the roundabout;
- Package of 'friction reduction' schemes aimed at improving flow at specific junctions and bus stops north of Mill Rytte;

- Package of 'friction reduction' schemes aimed at improving flow at specific junctions and bus stops south of Mill Rythe;
- Realignment of the north end of West Lane to create a new priority junction: addresses safety and severance issues;
- Northney Road folded right turns;
- West Lane/Havant Road signalised junction;
- Mill Rythe (Manor Road / Church Road / Havant Road) junction signalisation; and
- Right turn bans with signalisation at Technology Park Access.

8.6.5 The highway mitigation package proposes a number of pedestrian crossing improvements particularly as part of the Mill Rythe (A3023/Church Road/Manor Road junction) improvement which includes signal controlled pedestrian crossing improvements where there are only uncontrolled facilities at the moment; at the West Lane upgrade which includes the same; an uncontrolled crossing with pedestrian island at the Havant Road/Northney Road junction; toucan crossing over Havant Road close to the Technology Park access; and speed limit reductions on the A3023. The non-highway mitigation package also includes a number of footpath upgrades.

8.6.6 In addition to the highway measures above, a package of non-highway improvements has been devised by HBC which include:

- Cycling: East-west routes at Saltmarsh Lane, Higworth Lane – Church Road and in Hayling Park;
- Variable Message Signs at key access points to network;
- Billy Trail phase 1: Creation of emergency access route
- Parking and loading restrictions: Parking, waiting and loading restrictions on A3023;
- Bus stop infrastructure: Upgrades of bus stops with more information, RTI if appropriate, new shelters etc.;
- Bus fare subsidy: Long-term reduction in commuter fare;
- Bus vehicles: Bring forward fleet replacement at current service frequency;
- Bus vehicle electrification: Fleet replacement using electric vehicles with uplift in service frequency;
- Ferry: Growing use and connectivity;
- Walking: Upgrade of footpaths for inclusive mobility;
- Cycling Ongoing Island route development; and
- Billy Trail phase 2: Bound surface and route reinforcement.

8.6.7 Many of the pedestrian improvements also offer benefit to bus users as they have to walk between their origin/destination and the bus stops. However, in addition to this, several of the friction reduction measures in the highway mitigation package propose changes to bus stops and laybys to improve their locations and aid the manoeuvring of buses into and out of the main stream of traffic. The non-highway mitigation package also includes a number of bus improvement measures such as fare subsidies and fleet modernisation. Improvements to bus services can have knock-on benefits for rail use, encouraging multimodal travel. The package also includes funding for ferry improvements.

8.6.8 It should be noted that the Do Something scenario assessed using microsimulation model only includes the highway measures and not the non-highway measures nor the sustainable transport measures included in the Site's Travel Plan (Appendix 8.2) and the Travel Plans that will be prepared to support the other development sites. It should therefore be noted that the results presented later in this Chapter are likely to be somewhat pessimistic, with the unmodelled non-highway sustainable transport measures likely to improve the results further.

8.7 Residual Effects

8.7.1 The level of effects has been reassessed following the packages of highway and non-highway mitigation measures devised by HBC discussed above, which the Applicant will be expected to contribute to.

Construction Phase

8.7.2 Whilst the construction period is likely to be circa 7-years, this should be considered to be in the short-term considering that each dwelling will exist for many years to come.

8.7.3 The environmental effects of construction traffic on the A3023 and the surrounding area will result in a short-term negligible adverse impact and a CTMP will be implemented to minimise the residual environmental impact to a negligible residual effect. The impact is therefore **not significant**.

Operational Phase

Driver Delay

8.7.4 The forecast traffic flows presented earlier in this assessment are from the version of the model with access to the Site from St Mary's Road rather than Manor Road. The

TA (Appendix 8.1) provides further details on why access from St Mary's Road is the only viable option. As acknowledged in the HITA Addendum, there is limited opportunity for route choice in the model and little modal shift, therefore the flows do not change significantly between the Do Minimum and Do Something networks, the latter containing the full mitigation package (M1A + individual junction improvements). The flows presented in Tables 8.11 and 8.12 are therefore effectively fixed, so it is not possible to reclassify the magnitude of impact based on traffic flow alone.

8.7.5 Something that does change between the Do Minimum and Do Something networks is journey times. A comparison of the journey times for the 7 routes previously presented, but between the Do Minimum and Do Something networks for the 2036 Rook Farm (With Development) scenario is presented in Table 8.19. The inter peak has not been included given that no significant adverse impacts pre-mitigation were identified. Note that the embedded mitigation included as part of the development proposals is not included in the model, but such improvements will unlikely have any significant influence on driver journey times. The green highlighted cells with negative values represent a faster journey time in the Do Something (DS) compared to the Baseline (BI) or Do Minimum (DM).

Table 8.19 Do Minimum vs Do Something Journey Times						
Description	Route #	BI	DM	DS	Diff. DS vs DM	Diff. DS vs BI
AM Peak 0800 - 0900						
Beechlands Rbt - Brights Lane	Route 1 NB	03:07	05:07	04:14	-00:53	01:07
Brights Lane - Beechlands Rbt	Route 1 SB	02:26	02:26	02:29	00:03	00:03
Sea Front - St Mary's Road	Route 2 NB	02:05	02:07	02:07	00:00	00:02
St Mary's Road - Sea Front	Route 2 SB	02:16	02:19	02:20	00:01	00:04
West Lane/A3023 - Tech Park	Route 3 NB	05:59	08:34	07:18	-01:16	01:19
Tech Park - West Lane/A3023	Route 3 SB	04:38	05:09	04:26	-00:43	-00:12
Church Road - West Lane/A3023	Route 4 NB	03:48	04:16	04:37	00:21	00:49
West Lane - Church Road/A3023	Route 4 SB	03:34	03:42	03:35	-00:07	00:01
Manor Road - West Lane/A3023	Route 5 NB	04:38	07:02	06:32	-00:30	01:54
West Lane/A3023 - Manor Road	Route 5 SB	03:49	03:56	03:51	-00:05	00:02
West Lane Northbound	Route 6 NB	04:38	04:01	03:34	-00:27	-01:04
West Lane Southbound	Route 6 SB	03:49	03:01	02:54	-00:07	-00:55
Tech Park - New Rd RBT	Route X NB	02:52	03:39	03:33	-00:06	00:41
New Rd RBT - Tech Park	Route X SB	02:45	06:59	05:30	-01:29	02:45
PM Peak 1700 - 1800						
Beechlands Rbt - Brights Lane	Route 1 NB	02:29	02:30	02:31	00:01	00:02
Brights Lane - Beechlands Rbt	Route 1 SB	02:33	02:35	02:35	00:00	00:02
Sea Front - St Mary's Road	Route 2 NB	02:01	02:04	02:03	-00:01	00:02
St Mary's Road - Sea Front	Route 2 SB	02:14	02:13	02:14	00:01	00:00
West Lane/A3023 - Tech Park	Route 3 NB	04:47	05:23	05:16	-00:07	00:29

Table 8.19 Do Minimum vs Do Something Journey Times						
Description	Route #	BI	DM	DS	Diff. DS vs DM	Diff. DS vs BI
Tech Park - West Lane/A3023	Route 3 SB	05:15	07:59	07:59	00:00	02:44
Church Road - West Lane/A3023	Route 4 NB	03:37	03:47	03:59	00:12	00:22
West Lane - Church Road/A3023	Route 4 SB	03:38	03:40	03:42	00:02	00:04
Manor Road - West Lane/A3023	Route 5 NB	03:54	04:01	04:08	00:07	00:14
West Lane/A3023 - Manor Road	Route 5 SB	03:52	03:55	03:59	00:04	00:07
West Lane Northbound	Route 6 NB	02:35	02:36	03:09	00:33	00:34
West Lane Southbound	Route 6 SB	02:33	02:34	03:26	00:52	00:53
Tech Park - New Rd RBT	Route X NB	04:16	04:13	04:14	00:01	-00:02
New Rd RBT - Tech Park	Route X SB	02:50	03:00	02:56	-00:04	00:06

- 8.7.6 The Do Something largely offers a benefit to journey times compared to the Do Minimum, particularly in the AM peak with improvements of up to 1 minute 29 seconds southbound on Route X and 1 minute 16 seconds northbound on Route 3.
- 8.7.7 When compared to the Baseline, the Do Something reduces the AM peak impacts on Route 1 northbound, Route 3 northbound and Route 5 northbound from major to moderate. It also reduces the impact on Route 3 southbound in the AM peak from minor to no impact, and on Route 3 northbound in the PM peak from minor to negligible. The major impact on Route X southbound in the AM peak remains, but the journey time is reduced by 1 minute 29 seconds compared to the Do Minimum. The impact on Route X northbound in the AM peak remains minor but reduces by 6 seconds. The major impact on Route 3 southbound in the PM peak remains unaffected. The mitigation package therefore offers a betterment to the Do Minimum scenario with the residual effects on the 7 links identified reducing to between a slight residual effect on links 12, 14 and 15, which are **not significant**. The residual effect on links 18 and 22 remains at slight/moderate, link 35 reduces to moderate while on link 38 it remains moderate/large however the residual effect on these four links is considered further in the Assessment of Cumulative Effects section below.
- 8.7.8 As mentioned earlier, the traffic flows remain largely unchanged between the Do Minimum and Do Something scenarios, therefore a quantifiable reduction in traffic in relation to the magnitudes of impact for severance; pedestrian delay; pedestrian amenity, fear and intimidation; accidents and safety; and public transport users is not applicable. Therefore the more qualitative benefits of the mitigation are considered below, with several impact categories grouped given the cumulative benefits.

Severance, pedestrian delay, pedestrian amenity, fear & intimidation

8.7.9 We believe that the highway and non-highway mitigation packages, particularly the elements that include pedestrian crossing improvements, will help to reduce the magnitudes of impact by at least one degree on all relevant links. The effects should therefore reduce to neutral/slight and slight which are **not significant**.

Accidents and Safety

8.7.10 Analysis of the overall accident data indicates that the design and layout of the local highway network would not in itself appear to be an overriding factor in the cause of the accidents. The development proposals are unlikely, therefore, to have a detrimental impact on the accident rate in the area.

8.7.11 The highway mitigation package includes a number of junction upgrades which should in turn improve safety at them for all users, as should the friction reduction measures, speed limit reduction on the A3023 and pedestrian crossing improvements.

8.7.12 The impacts on the links in the study area can be considered negligible, though the highway mitigation package will help to further reduce accident frequency and severity, therefore there is likely to be a negligible adverse effect on the majority of links in the study area.

Public Transport Users

8.7.13 Given the scale of the improvements and incentives offered towards public transport, it is considered that the proposals will achieve a slight/moderate beneficial magnitude residual effect.

Summary

8.7.14 A summary of the residual effects is provided in Table 8.20.

Table 8.20: Summary of Effects			
Link	Significance	Mitigation	Residual Effect
<i>Construction Phase - Temporary</i>			
All	Negligible	CTMP	Negligible
<i>Completed Development - Permanent</i>			
<i>Severance; pedestrian delay; pedestrian amenity, fear & intimidation; accidents & safety</i>			
1	Slight/ moderate	Highway package: Junction upgrades, signalised crossings, uncontrolled crossings, A3023 speed limit reduction, friction reduction. Non-highway package: Footpath upgrades. Embedded: pedestrian crossing improvements, footway improvements, St	Slight
7	Neutral/ slight		Neutral/ slight
9	Neutral/ slight		Neutral/ slight
10	Slight/ moderate		Slight
11	Neutral/ slight		Neutral/ slight



Table 8.20: Summary of Effects			
Link	Significance	Mitigation	Residual Effect
		Mary's Road speed limit reduction & traffic calming. Travel Plan	
Driver Delay			
12	Slight/ moderate	Highway package: Junction upgrades, A3023 speed limit reduction, friction reduction. Non-highway package: Modal shift incentives	Slight
14	Slight/ moderate		Slight
15	Slight		Slight
18	Slight/ moderate		Slight/ moderate
22	Slight/ moderate		Slight/ moderate
35	Moderate/ large		Moderate
38	Moderate/ large		Moderate/ large
Public Transport Users			
All	Slight/ moderate	Highway package: Bus stop upgrades. Non-highway package: Fare incentives, fleet modernisation. Travel Plan. Free bus passes	Slight/moderate beneficial

8.7.15 The effect on links 18 and 22 is slight/moderate by virtue of a combination of low receptor sensitivity and major magnitude. Whilst low receptor sensitivity has been assigned to be robust given the proximity to a restaurant and hotel, both take access from the Technology Park access (link 21) which is not included in the journey time routes, rather than directly from the A3023. Links 18 and 22 could be considered to have negligible receptor sensitivity given the limited frontage which would reduce the effect to slight which is **not significant**. It should also be noted that the mitigation package reduces journey times on Route X which includes these two links by 1 minutes 29 seconds in the AM peak hour and the magnitude of impact in the other two peaks is negligible.

8.7.16 The sensitivity of the receptors on links 35 and 38, was deemed to be medium as they were highlighted by HBC during the Scoping Opinion, given that they contain houses which are 2m and 3m respectively from the carriageway. Given that these receptors are quite limited in terms of the numbers of people that they will affect (i.e. three houses compared to other medium receptors such as hospitals, shopping areas etc), they could be treated as being of low sensitivity which would reduce their residual effects from moderate/large, to slight and slight/moderate respectively. It would therefore seem reasonable to consider the impact to be no greater than slight/moderate which is **not significant**. Furthermore, in our opinion, driver delay should be given lesser importance than the other aspects of the operational phase which consider the impact on more sustainable methods of travel which Manual for Streets places above car drivers in the hierarchy of road users.

8.8 Assessment of Cumulative Effects

Construction Phase

- 8.8.1 The environmental significance of construction traffic on the local highway network, as set out in Table 8.20, has been identified to be negligible and a CTMP will be implemented to minimise the residual environmental impact.

Completed Development

- 8.8.2 The cumulative impact has been considered in the previous section given the availability of the data for the various modelled scenarios which limited assessment of the development in isolation.
- 8.8.3 As can be seen from Table 8.20 above a slight or moderate beneficial impact is forecast for public transport users following mitigation. The cumulative impact following mitigation on severance; pedestrian delay; pedestrian amenity, fear & intimidation; accidents & safety is anticipated to be no greater than slight.
- 8.8.4 It is only driver delay where the cumulative impact post-mitigation is forecast to be greater than slight. This is however as a result of the traffic modelling which does not take into account the sustainable travel/non-highways mitigation measures, so is somewhat worst-case. Further still, it is only 4 links out of 44 in the study area where the impact is predicted to be greater than slight.
- 8.8.5 As set out above, it is considered that Links 18 and 22 could be considered to have negligible receptor sensitivity given the limited frontage which would reduce the effect to slight; and given that Links 35 and 38 are quite limited in terms of the numbers of people that they will affect, they could be treated as being of low sensitivity which would reduce their residual effects to slight and slight/moderate.
- 8.8.6 As such cumulative impacts will be no greater than slight/moderate adverse and **not significant**.

8.9 Summary

- 8.9.1 A detailed environmental impact assessment on transport has been undertaken in this Chapter considering the impact on a study area consisting of 44 highway links. HBC's microsimulation model prepared as part of the evidence base for the emerging Local Plan has been used as a key tool to quantify the cumulative impact of the proposals along with highway and non-highway mitigation packages devised through the evolution of the emerging Local Plan.



- 8.9.2 The embedded mitigation designed specifically to facilitate the development at Rook Farm will help to minimise the environmental impact of the development in the vicinity of the Site whilst offering benefit to existing road users. The applicant will be expected to contribute to the highways and non-highways mitigation packages carefully devised by HBC. The modelling of the highways package has shown that the Local Plan proposals, which the Site forms part of, can be accommodated on the local highway network without a severe cumulative impact or an unacceptable impact on highway safety.
- 8.9.3 Through our quantitative and qualitative analysis presented in this Chapter, we believe that the impact of the proposed development during the construction stage will be of a temporary negligible adverse impact which is **not significant**, while the impact during the operational phase, will range from a slight or moderate beneficial impact to a negligible to slight/moderate adverse impact which is **not significant**.



9 SOILS AND AGRICULTURE

9.1 Introduction

9.1.1 This Chapter reports the likely significant effects of the Proposed Development in terms of soil resources and agricultural land in the context of the Site and surrounding area. In particular it considers the likely significant effects of the Proposed Development on the land and soil resources during construction, and the need to provide '*community food growing provisions*'.

9.1.2 This Chapter (and its associated figures and appendices) is not intended to be read as a standalone assessment and reference should be made to the front end of this ES (Chapters 1 – 5), as well as the final chapter, 'Summary of Residual and Cumulative Effects' (Chapter 13).

9.2 Legislation, Policy and Guidance

9.2.1 The relevant legislation, policy and guidance are listed below.

Legislative Framework

9.2.2 The applicable legislative framework is summarised as follows:

- National Planning Policy Framework (2021):
 - paragraph 174 a) need to protect and enhance '*valued landscapes sites of biodiversity or geological value and **soils** (in a manner commensurate with their statutory status or identified quality in the development plan)*'
 - Paragraph 174 b) contribute to and enhance the local landscape '*by recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – **including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland***'

Planning Policy

9.2.3 The applicable planning policy is summarised as follows:

- The emerging Havant Local Plan (submission version February 2021) sets out Policy E6:

'Development proposals on greenfield sites outside of the settlement boundary defined in Policy E3 will need to be supported by an appropriate soil survey to

demonstrate whether the site is (in whole or part) BMV agricultural land. In the absence of such a survey, or if it is confirmed that the site is (in whole or part) BMV agricultural land, the development is unlikely to be supported’.

- The emerging Havant Local Plan (submission version February 2021) sets out Policy E9:

9.2.4 Proposals for residential development of 50 dwellings or more will be permitted where:

- a. High quality on-site public open space is provided to a standard of 1.5 ha per 1,000 population; and
- b. On development where the open space requirement exceeds 0.5ha, an element of play space is provided; and
- c. On greenfield sites, part of this requirement is provided in the form of community food growing space, to a standard of at least 0.2ha per 1,000 population.

Guidance

9.2.5 The applicable guidance is summarised as follows:

- Planning Practice Policy Guidance for the Natural Environment 2019 (PPGNE): sets out the need to protect soils as an ‘*essential natural capital asset*’ highlighting the use of Defra’s *Code of practice for the sustainable use of soils on construction sites*.
- Natural England (2012). *Technical Information Note 049 (TIN049), ‘Agricultural Land Classification: protecting the Best and Most Versatile agricultural land’*

9.3 Assessment Methodology and Significance Criteria

Scope of the Assessment

9.3.1 The scoping opinion (September 2021) highlights that mitigation should be considered for adverse impacts on soils, specifically those which may affect the provision of community food growing provisions (in line with Policy E9 of the Local Plan).

9.3.2 The method of baseline data collection and assessment has been undertaken in accordance with current guidance and industry best practice, as provided by Natural England TIN 049. Full details are provided within the technical site report included as Appendix 9.1 to this chapter.

Effects Not Considered within the Scope

- 9.3.3 Development of the Site would result in the loss of all agricultural land within the Site, either through built development or a change from agricultural to non-agricultural use. As there would be no potential for further loss of agricultural land after the development has been completed, the assessment of impacts during the operational phase is scoped out.

Extent of the Study Area

- 9.3.4 The study area is limited to the confines of the Site development area (i.e. the redline shown at Appendix 1.1).

Consultation Undertaken to Date

- 9.3.5 The assessment methodology followed in the chapter is as described in the Scoping Report (Appendix 2.1); and the associated survey followed the standard ALC methodology set out in Natural England TIN049. No additional consultation has been carried out.

Assessment Methodology

- 9.3.6 There is no nationally agreed scheme for classifying the impacts of development on agriculture or soils and the approach used in this Chapter has been developed by Land Research Associates Ltd. over a number of years.

Magnitude of Impacts

- 9.3.7 The magnitude of impact on best and most versatile land will depend on the amount to be taken by the development. Article 18, Schedule 4 of the Town and Country Planning (Development Management Procedure) (England) Order 2015 only requires Natural England to be consulted on development that involves the loss of not less than 20 hectares (ha) of grades 1, 2 or 3a agricultural land. Consequently, the magnitude of losses smaller than this threshold is considered to have a small impact on the national stock of best and most versatile land. Losses of over 80 ha of best and most versatile land are equivalent to the size of a medium to large farm and consequently the magnitude of impact is considered to be large. The judgment-based classification is given in Table 9.1.
- 9.3.8 The magnitude of impact on topsoil resources makes the assumption that, as a valuable finite resource, the requirement should be to protect topsoils from damage. However, since built developments often generate large surpluses of topsoil, the

primary requirement is considered to be that sufficient topsoil should be protected to complete all on-site landscaping/greenspace requirements (provided the baseline resource is suitable for the proposed uses). Failure to do so is regarded as a large magnitude impact. If all topsoil is protected from damage, the impact is regarded as negligible. As few built developments are likely to require more than 50% of topsoil for reuse, losses below this figure are regarded as minor.

- 9.3.9 Subsoil compaction under greenspace areas increases flood risk (and is not typically accounted for in SUDS design). Severe compaction is also likely to adversely affect the success of landscaping/ecological planting schemes. Magnitude is considered as a percentage of the development scheme. Compaction of greater than 10% of the Site is considered as high magnitude as it is likely to result in tangible increases in runoff volumes, of a magnitude which could affect the efficacy of SUDS design capacity.

Table 9.1: Magnitude of Impacts on the Two Receptors		
Magnitude	Agricultural Land	Soil Resource
Large	Irreversible loss of >80 ha of best and most versatile land	Loss of >80% of topsoil resources and insufficient topsoil protected for on-site uses. Subsoil compaction of >10% of Site.
Moderate	Irreversible loss of 20-80 ha of best and most versatile land	Loss or irreversible damage to 50-80% of topsoil resources. Compaction of 5-10% of subsoils.
Small	Irreversible loss of 5-20 ha of best and most versatile land	Loss or irreversible damage to <50% of topsoil resources. Compaction of <5% of subsoils.
Negligible	Irreversible loss of <5 ha of best and most versatile land	Only minor disturbance of soils within the Site.

Sensitivity of Receptors

- 9.3.10 Best and most versatile agricultural land (i.e. Grades 1, 2 and 3a on Ministry of Agriculture, Fisheries and Food's (MAFF) 1988 Agricultural Land Classification (ALC) system) is considered to be a finite national resource, is given special consideration in national policy, and can be considered to be of higher sensitivity than land in Grades 3b, 4 and 5. In areas of the country where best and most versatile land is common, such as the Havant area, the best land (Grades 1 and 2) is considered of higher sensitivity than Subgrade 3a. The loss of lower quality land is considered of lower importance under the planning system of England and Wales.
- 9.3.11 All natural soils are finite resources, but where sites are to be developed, their quality as a resource for reuse varies. Medium and coarse loamy soils are regarded as of

higher value for reuse and so of the highest sensitivity, since these soils are most effective at mitigating the effects of flooding and are of highest quality for reuse in gardens and planting schemes (the most likely to meet British Standards criteria for use at other sites). Lower quality soils such as sandy or clayey topsoils are susceptible to damage and less valuable if lost.

9.3.12 Permeable coarse or medium textured subsoils are reusable for planting schemes (e.g. to support tree growth) and have a greater function in mitigating the effects of flooding than heavy and slowly permeable subsoils. In some instances, soils have important properties which make them able to support rare habitats (e.g. species diverse calcareous grassland or lowland heath habitats).

9.3.13 The sensitivity criteria used in the assessment of effects on the two receptors are summarised in Table 9.2.

Table 9.2: Sensitivity of Receptors		
Sensitivity	Agricultural Land (Havant)	Soil Resource
High	Grades 1, 2	Permeable coarse loamy and medium loamy soils, or other soils capable of supporting valuable habitats.
Medium	Subgrade 3a	Fine textured or sandy topsoils not capable of supporting valuable habitats. Mixed permeable and slowly permeable subsoils.
Low	Subgrade 3b and grades 4 and 5	Damaged or contaminated soils. Slowly permeable subsoils.

Significance of Effects

9.3.14 The significance of any beneficial or adverse impact can be assessed as either 'major' or 'moderate' (i.e. significant), 'minor' or 'negligible' according to the magnitude of the impact of the Proposed Development and the sensitivity of the receptor, as set out in Table 9.3 below.

Table 9.3: Significance of Effects			
Magnitude	Sensitivity		
	High	Medium	Low
Large	Major	Major	Moderate
Moderate	Major	Moderate	Minor
Small	Moderate	Minor	Minor
Negligible	Minor	Negligible	Negligible

Significance Criteria

- 9.3.15 Effects that are deemed to be significant for the purposes of this assessment are those that are described as being of a moderate or major beneficial or adverse level.

9.4 Baseline Conditions

- 9.4.1 A detailed report on the baseline soil and agricultural land quality data for the Site is provided in Appendix 9.1. The baseline conditions are summarised below.

Soils

- 9.4.2 The soils of the Site comprise medium loamy topsoils and upper subsoils, over slowly permeable lower subsoil layers.

Agricultural land

- 9.4.3 Land quality varies between grade 2 (7.2 ha) in the north and subgrade 3a (4.3 ha) in the south, both limited for agriculture by wetness.

Sensitive Receptors

Soils

- 9.4.4 The loamy topsoils are a high quality resource for reuse, and therefore, in reference to Table 9.2, are considered to be of **high sensitivity** to potential loss or damage.

Agricultural land

- 9.4.5 All of the agricultural land within the Site (11.5 ha) is of Best and Most Versatile quality and therefore considered sensitive receptors. The remaining land within the Site (0.4 ha) comprises an area of scrub in the centre of the site (the former site of farm buildings), a second area of scrub in the north-east comprising the access track from St Marys Road, and a mature hedgerow in the south-west; and is therefore considered non-agricultural.

- 9.4.6 Land of subgrade 3a is relatively common in Havant District, and is therefore considered to be of **medium sensitivity**; grade 2 land is considered to be of **high sensitivity**.

Limitations

- 9.4.7 There are not regarded to be any limitations to the data collection.

9.5 Assessment of Effects

Design Solutions and Assumptions

- 9.5.1 The assumption is that no changes have been made to the Site since the previous application which would affect the soils or land quality since the assessment was undertaken (January 2017).
- 9.5.2 There are not considered to be any further relevant solutions or assumptions.

Assessment of Effects

Soils

- 9.5.3 Without mitigation, construction could result in the permanent loss of or damage to the soil resource, resulting in a shortfall for the proposed final development with regard to landscaping and '*community food growing provisions*'. In accordance with the assessment criteria set out in this chapter, this is considered a large magnitude impact on a high sensitivity resource, which would result in a **major adverse effect (significant)**.

Loss of Agricultural land

- 9.5.4 Without mitigation, construction would result in the irreversible loss of 7.2 ha of grade 2 land and 4.3 ha of subgrade 3a land. In accordance with the assessment criteria set out in this chapter, this is considered a small magnitude impact on a high sensitivity resource, and a negligible impact on a medium sensitivity resource. This is considered a potential moderate adverse effect.

9.6 Mitigation

Soils

- 9.6.1 Mitigation for loss or damage of soil resources requires the adoption of a site-specific Soil Management Plan, undertaken by a suitably qualified practitioner in accordance with the principals outlined in the Construction Code of Practice for Sustainable Use of Soils on Construction Sites, which will detail:
- Depth and method of topsoil stripping and stockpiling;
 - Identification of landscaping soil requirements and assessment of suitability and availability of on-site resources; and
 - Means of subsoil protection from compaction damage and remedial measures (such as ripping/subsoiling) to remove damage.



9.6.2 Adoption of these measures should be fully effective in protecting soil resources for reuse.

Agricultural land

9.6.3 Built development involves the permanent loss of commercial agricultural land. However, in accordance with local policy, the conservation of parts of the Site for community food production is regarded as partial mitigation. Accordance with the mitigation measures described in paragraph 9.6.1 will ensure soils and land are maintained in condition conducive to production of foodstuffs.

9.7 Residual Effects

Soils

9.7.1 Following the adoption of the mitigation measures described above, the residual effects on soils are regarded as **negligible** and **not significant**.

Agricultural land

9.7.2 Following the adoption of the mitigation measures described above, the residual effect on the loss of agricultural land is regarded as remaining moderate adverse.

9.8 Assessment of Cumulative Effects

9.8.1 There are not considered to be any relevant cumulative effects on soil resources as the effects of soil loss are contained within the specific site. There may be considered to be relevant effects on agricultural land, which are considered below.

9.8.2 The two development sites considered relevant for cumulative assessment are:

- Land at Sinah Lane, Hayling Island (APP/20/01093) This is an agricultural site containing 4.6 ha of grade 2 quality land and 2.6 ha of subgrade 3a quality land.
- 380 Seafront, Hayling Island (APP/17/00529) This is a redevelopment site and does not contain agricultural land.

9.8.3 Other sites on the cumulative list (as set out in Chapter 2) are not agricultural.

9.8.4 The cumulative total agricultural land losses are as follows:

- 11.8 ha of grade 2 land
- 6.9 ha of subgrade 3a agricultural land

9.8.5 In accordance with the assessment criteria, were all three developments to proceed, the cumulative effect on agricultural land is considered to be moderate adverse.



9.9 Conclusion

- 9.9.1 The Site contains high quality soil resources for reuse and best and most versatile agricultural land. Following adoption of mitigation there would be negligible adverse effect on soils.
- 9.9.2 The small magnitude of loss of grade 2 agricultural land means there are considered to be moderate adverse effects.

10 WATER ENVIRONMENT

10.1 Introduction

10.1.1 This Chapter of the Environmental Statement (ES) presents the findings of Environmental Impact Assessment (EIA) work carried out on the potential impacts of the proposed residential development off St Mary's Road, Hayling Island, Hampshire PO11 9BY (the 'Proposed Development') on the Water Environment of the Site and the surrounding area. It assesses the effects on the quality of controlled waters (surface water and groundwater) and on flood risk and drainage during construction and operation. It has been written by Enzygo Ltd. It is intended that the ES will provide statutory and non-statutory consultees with sufficient technical information to complete the examination of the Proposed Development.

10.1.2 This Chapter:

- Presents the existing environmental baseline established from desk studies, surveys, and consultation to date.
- Presents the potential direct and indirect environmental effects arising from the development on both on-site and off-site water quality, flood risk, and drainage; the mitigation measures required to prevent, reduce, or offset the resulting potential impacts; the residual impacts following mitigation; and the potential cumulative impacts with other developments.
- Identifies any assumptions and limitations encountered in compiling the environmental information; and
- highlights any necessary monitoring and/or mitigation measures that could prevent, minimise, reduce, or offset the possible environmental effects identified in the EIA process.

10.1.3 This Chapter (and its associated figures and appendices) is not intended to be read as a standalone assessment, and reference should be made to the front end of this ES (Chapters 1 – 5), as well as the final chapter, 'Summary of Residual and Cumulative Effects' (Chapter 13).

10.1.4 This chapter describes the policy context, input data and methods used to assess the Development in terms of the baseline water quality, hydrology and flood risk at the Site, and the potential impacts of the Development; accounting for the measures which will be adopted to prevent, reduce, mitigate, or offset the identified impacts.

Potential impacts relate primarily to flood risk and management of surface water, which in turn requires consideration of water quality.

10.1.5 The Water Environment assessment interrelates with the soils and agricultural land quality assessment (Chapter 9); and with ecology (Chapter 7) due to potential effects on receiving surface water quality and on any associated water dependent terrestrial ecosystems (WDTE).

10.1.6 This assessment covers the construction and ongoing operation of the Proposed Development and identifies those aspects of the proposals which have the potential to affect the existing baseline situation. It addresses the following:

1. Changes to natural drainage patterns
2. Effects on runoff rates and volumes
3. Effects on erosion and sedimentation
4. Effects on surface water quality and groundwater quality
5. Effects on water resources (both private and public water supplies)
6. Effects on flooding and impediments to flow
7. Pollution risk

10.1.7 This Chapter is supported by the following Appendices:

- Appendix 2.2: Scoping Opinion
- Appendix 10.1: Copies of Relevant Correspondence
- Appendix 10.2: Legislation, Policy and Guidance
- Appendix 10.3: Assessment Methodology
- Appendix 10.4: Flood Risk Assessment Drawings
- Appendix 10.5: CIRIA Report C753 Extracts
- Appendix 10.6: Flood Risk Assessment

10.2 Legislation, Policy and Guidance

10.2.1 The appropriate legislation, policy and guidance are listed below, with details provided in Appendix 10.2.

10.3 Assessment Methodology and Significance Criteria

Scope of the Assessment

10.3.1 In the scoping opinion document [Havant Borough Council 29 September 2021 (Appendix 2.2; Section 7)] Natural England provided the following comments on the Water Environment in relation to the previous Scoping opinion:

The EIA should also consider the impacts of the development on the water environment. There is existing evidence of high levels of nitrogen and phosphorus in the water environment with evidence of eutrophication at some designated sites.

An Integrated Water Management Study for South Hampshire has been commissioned by the Partnership for Urban South Hampshire (PUSH) Authorities to examine the delivery of development growth in relation to legislative and government policy requirements for designated sites and wider biodiversity. Further details will be provided in due course. However, it is likely that measures will be required to mitigate the adverse water quality impacts arising from the new development on a significant number of designated sites in the Solent.

Natural England therefore recommends that this issue is examined in the EIA. For confidence that the development will be deliverable, Natural England recommends that the proposals achieve nutrient neutrality.

10.3.2 The assessment comprised:

- Consultation with statutory bodies on the existing hydrological conditions of the Site and surrounding areas;
- Detailed desk study and site visits to establish the existing baseline conditions;
- Evaluation of the potential effects of the proposals;
- Evaluation of the significance of these effects by consideration of the Site, the potential magnitude of these effects, the probability of these effects occurring; and,
- Identification of possible measures to avoid and mitigate any potential adverse and beneficial impacts resulting from the Proposed Development.

Effects Not Considered within the Scope

10.3.3 The assessment does not consider decommissioning/ demolition since for most developments some more localised redevelopment and rebuilding within the Site is likely beyond the 75-year life of a typical residential development.

10.3.4 Demolition of the existing farm buildings is included as part of the construction phase.

Extent of the Study Area

10.3.5 The study area comprises two agricultural fields and an area of grassland with an agricultural building located at land east of St Mary's Road, Hayling Island. Rook Farm is located within the south-east extent of the study area. The study area is bounded by residential dwellings to the south and east, and grassed fields to the north and west.

Consultation Undertaken to Date

10.3.6 Table 10.1 summarises the consultation undertaken during preparation of this Chapter. Copies of the correspondence are provided in Appendix 10.1.

Table 10.1: Summary of Consultation Undertaken to Date (Documentation in Appendix 10.1)			
Organisation	Team(s)	Meeting Date and other forms of Consultation	Summary of Outcome of Discussion
Hampshire County Council – Lead Local Flood Authority (LLFA)	Flood Water and Management	Pre-App FRA – 20 th March 2018	The LLFA hold two records of flooding in 500m of the Site: a pluvial flood event in 2011-12 due to a lack of ditch capacity; and surface water flooding from a neighbouring campsite due to a blocked culvert an unmaintained watercourse. It was recommended that the Environment Agency should be contacted regarding fluvial flooding records for the Site. The LLFA noted that the Site lies west of a Site of Interest for Nature Conservation (SINC) and therefore flood risk from the Site should be managed accordingly. Reference should be made to the LLFAs Drainage and Planning Policy Statement for information on requirements on the management of surface water.
Havant Borough Council		Consultation response 29	Section 7 Water Environment



Table 10.1: Summary of Consultation Undertaken to Date (Documentation in Appendix 10.1)			
Organisation	Team(s)	Meeting Date and other forms of Consultation	Summary of Outcome of Discussion
		September 2021 to Scoping Report August 2021	At the time of writing a consultation response from the Lead Local Flood Authority has yet to be received. Natural England provided the following comments on the Water Environment in relation to the previous Scoping opinion: <i>'The EIA should also consider the impacts of the development on the water environment. There is existing evidence of high levels of nitrogen and phosphorus in the water environment with evidence of eutrophication at some designated sites.</i> <i>An Integrated Water Management Study for South Hampshire has been commissioned by the Partnership for Urban South Hampshire (PUSH) Authorities to examine the delivery of development growth in relation to legislative and government policy requirements for designated sites and wider biodiversity. Further details will be provided in due course. However, it is likely that measures will be required to mitigate the adverse water quality impacts arising from the new development on a significant number of designated sites in the Solent.</i> <i>Natural England therefore recommends that this issue is examined in the EIA. For confidence that the development will be deliverable, Natural England recommends that the proposals achieve nutrient neutrality. We would be happy to advise further as part of our Discretionary Advice Service. The EIA should also include a consideration of the availability and source of water resources for the development and set out the water supply provider for the development'.</i>
Environment Agency	Partnership and Strategic Overview	FRA Consultation Email; Sent –	The Environment Agency has no record of flooding of this property / area. Provided EA flood risk data.



Table 10.1: Summary of Consultation Undertaken to Date (Documentation in Appendix 10.1)			
Organisation	Team(s)	Meeting Date and other forms of Consultation	Summary of Outcome of Discussion
	team, South East Hampshire and Isle of Wight.	29th January 2018, Received Response – 8 th March 2018 FRA Consultation Email Sent- 19 July 2021, Response- 10 August 2021	No change since first consultation and provision of previous data
Southern Water		Drainage and water enquiry (Commercial) – Received April 2016	A public surface water sewer network runs in Rook Farm Way, Church Road, St Mary's Way and Manor Road, surrounding the Site. A public foul sewer conveys flow along the same roads as mentioned above. A public foul sewer conveys flow in a north easterly direction cutting through the northwest corner of the Site.
		Wastewater pre-planning Enquiry 19 July 2021.	Response received 24/11/21 and is included in Appendix 10.1
Natural England	Developer Advice Service		LPA Issued a consultation request 15 June 2018 no response received. NE provided comments in relation to the previous Scoping Opinion dated 15th November 2017. These are detailed in HBC's most recent Scoping Opinion (Appendix 2.2). No comments have been received, from NE, in relation to the 2021 Scoping Report (Appendix 2.1).



Obtained Data

10.3.7 Flood risk and drainage infrastructure data was obtained from the organisations listed in Table 10.2.

Table 10.2: Environmental Data Sources		
Organisation	Data Source	Summary of Data or Discussion
Gov.UK	South West River Basin Map	Climate change allowances
Environment Agency (Hampshire and Isle of Wight)	Product 4 flooding data	- Flood map for planning - Risk of flooding from surface water map
Hampshire County Council	Partnership for Urban South Hampshire (PUSH) Strategic Flood Risk Assessment (SFRA)	SFRA Flood Mapping
	Preliminary Flood Risk Assessment (PFRA)	PFRA flood mapping
	LLFA Correspondence	Pre-App response (Appendix 10.1)
Southern Water	Drainage & Water Enquiry	- Sewer Asset Plans - Sewer flooding history
Ordnance Survey	1:25,000 mapping	Explorer 197: Chichester & the South Downs (Bognor Regis & Arundel)).
Landmark's Promap	Flood Data package	- BGS Groundwater Susceptibility - JBA Surface Water Flooding - Environment Agency Flood Zones - BGS Geological Indicators of Flooding - Environment Agency Complex Surface Water Flood Mapping
Geosmart	Groundwater flood mapping	1 in 100-year groundwater flood risk map
DEFRA	Magic Map – online mapping	Land based designations
BGS	Geology of Britain online map	Superficial and bedrock geology
Cranfield University	Soilscape online mapping	Soils mapping
Gladman Developments Ltd	Survey Data	Detailed topographic survey

Assessment Methodology

Methodology for Assessment of Effects

10.3.8 At the impact assessment stage, the potential beneficial and adverse impacts of the development on the baseline environment were identified and assessed. This required consideration of:

- Sensitivity and/or value of the receptor;
- Magnitude of the impact;
- Impact duration (long, medium or short term); impact nature (direct and indirect; permanent or temporary);
- Whether the impact occurs in isolation, or is cumulative or interactive; and
- Performance against environmental quality standards or other relevant thresholds.

Assessment Criteria and Impact Assessment Methodology

10.3.9 In a worst-case scenario, the baseline characterisation enables the identification of the nature of likely significant effects.

10.3.10 The significance of predicted effects likely to occur during the construction phase and operational phase of the development is determined by consideration of the value and sensitivity of the key attributes that may be affected and of the magnitude of the predicted impact.

Sensitivity of the Receptor

10.3.11 The value or sensitivity of a receptor is largely determined by its quality, rarity and the scale at which the attribute is deemed important. This can be at a local level (e.g., on the Site or immediately adjacent); district level (beyond the Site boundary but in the district); county level; regional/national level; or international level.

10.3.12 The sensitivity of a receptor depends on its capacity to accommodate the potential form of change and to recover if it is affected.

10.3.13 The sensitivity of the receiving water environment is defined in Appendix 10.3 and is based on guidance provided in Table 3.2N LA104 Rev 1 August 2020 of the Design

Manual for Roads and Bridges (DMRB) (Highways Agency, 2020¹) and on the authors' professional judgement and previous experience.

Magnitude of Impact

- 10.3.14 The magnitude of any predicted impact is dependent on its size, duration, timing (e.g., seasonality) and frequency (permanent, seasonal etc.). A qualitative appraisal of the likely magnitude of the predicted impact is provided within this assessment, considering the measures proposed to be adopted to control such impacts.
- 10.3.15 Several potential impacts could have a direct or indirect effect on flood risk and water quality. These effects may be transitional but could also be more permanent.
- 10.3.16 In the context of the Proposed Development, short to medium-term impacts are normally associated with the construction phase of a development, whereas long-term impacts are normally associated with the operational phase of a development.
- 10.3.17 The magnitude of the predicted impact has been described using the criteria outlined in Appendix 10.3 Table 2. The appraisal is undertaken considering guidance provided in Table 3.4N of DMRB (LA104 Rev 1 August 2020) and using the author's professional judgement.

Significance Criteria

- 10.3.18 The significance of predicted effects was determined from publicly available environmental data to consider the sensitivity of the receptor and the magnitude of each impact. Appendix 10.3, Table 3 was used to evaluate the significance of effects and is based on guidance in Table 3.4N LA104 Rev 1 August 2020 of the Design Manual for Roads and Bridges (DMRB) and on professional judgement.
- 10.3.19 The sensitivity of the receiving environment together with the magnitude of the impact defines the significance of the effect before application of mitigation measures, as outlined in Appendix 10.3, Tables 3 and 4.
- 10.3.20 As outlined in Appendix 10.3 Table 4 an effect that is assessed as Very Large or Large Adverse or Beneficial, is material in the decision-making process. An effect assessed as Moderate can be considered to be a material decision making factor subject to professional assessment, and Slight or Neutral effects are not material in the decision-making process.

¹ Design Manual for Roads and Bridges LA 104 Environmental assessment and monitoring (Revision 1 August 2020) www.standardsforhighways.co.uk.

10.3.21 Effects that are deemed to be significant for the purposes of this assessment are those that are described as being of large or very large beneficial or adverse level.

Impact Mitigation

10.3.22 The significance of the effect defines whether mitigation is required and whether, with mitigation, impacts can be reduced to acceptable levels. Effects assessed as neutral or slight significance are assessed as not requiring mitigation measures.

10.3.23 The mitigation hierarchy is:

- Prevention: avoid, relocate, modify the design or do not carry out the development or activity.
- Reduction: modify the design, change technology, reduce size/scale of the development.
- Compensation/Remediation: Compensation to provide like for like replacement for lost environmental elements.

10.3.24 The assessment concludes whether, after mitigation, the residual significance of the mitigated impacts of the operation of the Site will be Very Large, Large, Moderate, Slight; or Neutral (no change). This relies on professional judgement. Note impacts can be adverse or beneficial in nature.

10.4 Baseline Conditions

Introduction

10.4.1 Baseline conditions describe the state of the environment, including the Proposed Development Site and potential receptors, and are the basis on which impacts arising from the Proposed Development are compared and assessed.

General Site Description

10.4.2 This section describes the current physical parameters of the Proposed Development Site that influence its hydrology and response to rainfall.

Topography

10.4.3 A copy of the topographic survey is included as Appendix 1 of the Flood Risk Assessment (FRA) (Appendix 10.6).

10.4.4 The Site slopes southward from 8.64metres Above Ordnance Datum (mAOD) on the central northern boundary to 6.43mAOD on the central southern boundary. The fall is 2.2 m over approximately 490m (1:222).

Rainfall

10.4.5 HR Wallingford's 'Greenfield Runoff Rate Estimation Tool' indicates that the Standard Average Annual Rainfall (SAAR) for the Development Site is 686mm/year.

Soils and Geology

10.4.6 The soils comprise medium loamy topsoil and upper subsoil, over slowly permeable lower subsoil layers.

10.4.7 The Site is underlain by soils with naturally high groundwater, underlain by superficial River Terrace sands, silts and clays, underlain by London Clay Bedrock.

10.4.8 The permeability of the soils and superficial geology is likely to be variable. The London Clay bedrock permeability is likely to be low.

10.4.9 Trial pitting for soakaway testing undertaken by LK Consult (Ref: FRA 16 1021) showed the superficial geology is variable, with clay, clay with gravel, and sand and gravel across the extent of the Site. The geology below the superficial deposits is London Clay formation of varying proven depth depending upon the location of the soakaway. Groundwater was struck in 2 of the 3 pits at 2.56m and 2.70m below ground level (mbgl). The soakaway at the topographic high point did not encounter groundwater.

Surface Water, Groundwater, Drainage and Abstractions

Watercourses

10.4.10 Environment Agency online mapping and OS Mapping identifies Mill Rithe a 'main river' (where flood risk work is managed by the Environment Agency) conveying flow eastward, passing 350m to the north of the Site at its nearest point.

10.4.11 There are several unnamed ordinary watercourses in the immediate vicinity of the Site. There are land drains located along the Site's eastern boundary, western boundary and bisecting the centre of the Site east-west.

10.4.12 On the southeast boundary, a land drain outfalls from a Ø225mm culvert and conveys flow south into a partly-collapsed Ø225mm culvert, which conveys flows into the public surface water sewer in St Mary's Road. The land drain in the centre of the Site conveys flows from east to west into a pond in the centre of the Site. The drain

continues to convey flow west from the pond to outside the western Site boundary and enters a Ø450mm culvert which is assumed to convey flow to a surface water sewer in Manor Road. The land drain along the Site northern boundary was observed to be dry and with no apparent wider connectivity.

10.4.13 A non-impounded pond is located in the centre of the Site.

Surface Water

10.4.14 The overland (surface water) flow routes are important in defining natural, overland drainage paths and 'non-fluvial' hydraulic links as well as mechanisms for introducing surface water to and through the Site.

10.4.15 Two areas of isolated ponding are located in the Site, one is associated with the pond in the centre of the Site. The other is located along the southeast boundary.

10.4.16 Surface water flooding is also discussed further in the flood risk section below.

Sewerage

10.4.17 Southern Water asset plans show a Ø525mm public foul sewer running through the far north-western extent of the Site ([Appendix 3] of Appendix 10.4).

10.4.18 There is a Ø225mm public surface water sewer conveying flow east in Rook Farm Way 15m to the east of the Site. The surface water sewer joins a Ø225mm surface water sewer in St Mary's Road and conveys flow southwest. The surface water sewers converge on a point to the south of the Site. This is considered to be incorrectly shown, and Southern Water confirmed verbally that their plans are not always accurate. A CCTC survey found the network drains to the east to Church Road before conveying flow south to an outfall into the Solent.

10.4.19 The Site is not in a groundwater Source Protection Zone.

10.4.20 Environment Agency mapping shows that the Site overlies a Secondary A aquifer (superficial deposits). A Secondary A aquifer is defined by the Environment Agency as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

10.4.21 The London Clay should be classified as a non-aquifer.

Flood Risk

Fluvial / Tidal Flooding

- 10.4.22 The FRA and accompanying drawings (SHF.1132.142.HY.R.001.A) is included in Appendix 10.4.
- 10.4.23 The Environment Agency flood map shows the Site is located in Flood Zone 1; outside the 1 in 1000-year annual probability of fluvial (river) or tidal (sea) flooding (0.1% Annual Exceedance Probability [AEP]). Flood Zone 1 is land considered to be at 'low' risk of fluvial / tidal flooding (Drawing 005, in Appendix 10.4).

Surface Water Flooding

- 10.4.24 The Environment Agency Complex Surface Water Flooding maps (Drawings 008.1 to 008.4, in Appendix 10.4) show a more extensive surface water flooding outline than the JBA surface water flood map. The Complex Surface Water Flooding map shows two areas of surface water ponding in the Site, one associated with the pre-existing pond in the centre of the Site and another along the southeast boundary.
- 10.4.25 The Complex Surface Water Flood map indicates that the flood outline is associated with the 1 in 30-year, 100-year and 1000-year events. When considering the extreme 1 in 1000-year event, the flood depth for both areas is up to 0.3m, the flood velocity is less than 0.25m/s and the flood hazard is moderate (0.75-1.25) in the central pond and low in the eastern area (0.5 -0.75).
- 10.4.26 The FRA assessed surface water flood risk at the Site as negligible to low.

Residual Flooding from Ditches

- 10.4.27 Ditches were identified in the Site boundary. There is residual risk of fluvial flooding from the ditches.

Groundwater Flooding

- 10.4.28 The Geosmart 1 in 100-year groundwater flood risk map (Drawing 006 in Appendix 10.4) shows that most of the Site is at 'negligible' risk of groundwater flooding. A small area in the centre of the Site has been identified as being at 'low' risk associated with the on-site pond.
- 10.4.29 Soakaway testing struck groundwater in two of the three pits across the Site between 2.6m below ground level (bgl) and 2.7mbgl.
- 10.4.30 The FRA assessed groundwater flood risk as negligible to low.

Other Sources of Flooding

Sewer

10.4.31 There is a Ø525mm public foul sewer conveying flow in a north easterly direction through the far north-western extent of the Site.

10.4.32 As such, the risk of flooding from sewers is low.

Reservoir

10.4.33 The Environment Agency online flood mapping shows the Site is located outside the extent of flooding sourced from reservoir failure.

10.4.34 As such, the risk of flooding from reservoirs is assessed as negligible.

Pond

10.4.35 A pond is located on in the centre of the Site. As the pond is not impounded, it is unlikely to present a flood risk to the Site. The risk of flooding from pond failure is assessed as low.

10.4.36 The FRA assessed flood risk from all other sources (tidal, sewer and infrastructure failure) is determined as low.

Water Quality – Water Framework Directive

10.4.37 The South East River Basin District (South East RBD) in the 'South East river basin management plan (RBMP)' is subdivided into 12 management catchments. The Site is located in the South East TraC management Catchment. The Site lies in the East Hampshire Rivers Operational Catchment an operational catchment but ultimately discharges to the Solent waterbody. Waterbody objectives consist of two pieces of information: the status and the date by which the status is to be achieved. This is for both chemical and ecological status. The status of the Solent waterbody has been considered in the baseline conditions, hydrological receptor sensitivity and impact assessment.

10.4.38 The Environment Agency Catchment Data Explorer website² outlines show that the Site is in the East Hampshire Rivers Operational Catchment.

10.4.39 The proposed discharge route from the developed Site is via discharge into the onsite land drain which in turn discharges to contained surface water sewer which discharges

² <http://environment.data.gov.uk/catchment-planning/>

into the Solent, bypassing the East Hampshire Rivers Operational Catchment and effectively negating any impacts.

10.4.40 Therefore, the Site has two receptors. During the construction phase the receptor will be the East Hampshire Rivers Operational Catchment i.e., the immediate surrounding area. During the operational phase, and therefore the receptor considered below, is the Solent.

10.4.41 The Solent is a coastal water and covers an area of 25,958ha.

10.4.42 Good ecological status of a water body will be achieved when a series of criteria, including good chemical status, is achieved. The achievement of good chemical status is dependent on meeting agreed Environmental Quality Standards (EQS), including EQS for Priority Substances defined by the Water Framework Directive (WFD).

10.4.43 The Environment Agency classifies water bodies in accordance with the WFD ecological status classification scheme under the South East River Basin Management Plan (RBMP).

10.4.44 The WFD status of the Solent catchment is shown in Table 10.3 below:

Table 10.3: EU WFD status (2009, 2016 and 2027)					
Solent Coastal Water					
EU Water Framework Directive Status (2009)		EU Water Framework Directive Status (2016)		Objectives	
Parameter	WFD Status	Parameter	WFD Status	Status (2021)	Status (2027)
Overall Water Body	Moderate	Overall Water Body	Moderate	Overall Water Body	Moderate by 2015
Ecological	Moderate	Ecological	Moderate	Ecological	Moderate by 2015
Chemical	Fail	Chemical	Good	Chemical	Good by 2027

Water Quality Sampling

10.4.45 The Environment Agency were contacted for their water quality data. Water quality data was sent through for the Solent near Horse Sand Buoy.

10.4.46 The data was collated (period 2000-2018) and the mean values for the main parameters are summarised below:

- Ammonia (mgN/l) – 0.019
- Dissolved Oxygen (% saturation) – 101.2



- Nitrates (mg/l) – 0.109
- Phosphates (mg/l) – 0.012
- Nitrites (mg/l) - 0.004

Sensitive Receptors

Public Surface Water Sewer (Primary)

10.4.47 Runoff from the developed Site will discharge to the onsite land drains which in turn discharge into the public surface water sewer which is therefore the primary receptor.

10.4.48 When assessed against sensitivity criteria in Table 1 (Appendix 10.3), the surface water sewer is of low sensitivity as it is heavily engineered or artificially modified.

Sensitive Receptors – Solent (Secondary)

10.4.49 The sewer outfalls into the Solent, which is therefore considered a secondary receptor.

10.4.50 When assessed against sensitivity criteria in Table 1 (Appendix 10.3), the Solent is of moderate sensitivity as it:

- Has a WFD current overall status of Moderate;
- Is designated as a Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), and is a RAMSAR site;
- Is a waterbody used for recreation, potentially affected by water quality (e.g., swimming) within 2km downstream.

10.4.51 The DEFRA Magic Map (England and Wales) shows several designated sites in or close to the Site including downstream (from a flood risk and drainage perspective).

Table 10.4 – Designated Sites			
Designated Site Category	Name	Distance / Orientation from Site	Reason for Designation
SSSI	Sinah Common	c. 0.71km south of the Site	Coastal habitats including endangered plants
	Chichester Harbour	c. 0.75km east of the Site	Wintering wildfowl, waders and breeding birds



Table 10.4 – Designated Sites

Designated Site Category	Name	Distance / Orientation from Site	Reason for Designation
	Langstone Harbour	c. 0.8km west of the Site	Intertidal invertebrates and large populations of migrant and overwintering waders and wildfowl
RAMSAR	Chichester and Langstone Harbour	North, east, and west of the Site, nearest point c. 0.75km east of Site.	Over-wintering wildfowl and waders and a wide range of coastal and transitional habitat
SAC	Solent Maritime	North, south, east and west of the Site, nearest point c. 0.86km south-east of Site	Estuaries, Spartina Swards (cord-grass), Atlantic salt meadows

10.4.52 The Proposed Development would outfall 300m east of the Sinah Common SSSI in the Solent. The potential impacts on the receiving waterbody (Solent) is discussed further below.

Sensitive Receptors – Sinah Common SSSI (Secondary)

10.4.53 The Proposed Development may potentially impact on the Sinah Common SSSI in the Solent. The onsite land drain discharges into the surface water sewer which conveys south and outfalls into the Sinah Common SSSI.

10.4.54 When assessed against sensitivity criteria in Table 1 (Appendix 10.3), Sinah Common is of Very High sensitivity as it is a Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) and, RAMSAR.

10.4.55 When considering abstractions in the vicinity of the development Site, the public surface water sewer (the Site's outfall) will be discharging into the Solent at an unrestricted rate, therefore any groundwater abstractions would have a negligible impact.

10.4.56 Table 10.5 lists the identified receptors and their importance as assessed using Appendix 10.3, Table 1 sensitivity.



Table 10.5: Identified Development Receptors	
Receptors	Receptor Sensitivity
Sinah Common SSSI	Very High
Public Surface Water Sewer	Minor
Solent (Water Quality, Hydrology (Flood Risk), Hydrogeomorphology)	Moderate
Aquifer/Groundwater (Water Quality, Flood Risk)	Minor
Surface Water (Water Quality, Hydrology (Flood Risk))	Minor

Limitations

10.4.57 Third party reports and data consulted for the application are assumed to be factually correct, unless otherwise identified and corrected in this Chapter.

10.5 Assessment of Effects

10.5.1 This section outlines the parameters on hydrology, surface water drainage and surface and groundwater that have been assessed and summarises the likely significant effects of the Proposed Development during the construction and operational phase.

10.5.2 The assessment scenarios in Table 10.6 are those selected as having the potential to result in the greatest impact on the identified receptor. It must be noted that the impacts described are pre-implementation of any mitigation measures.



Table 10.6: Water Environment and Quality Assessment Scenarios					
Potential Impacts	Description of Potential Impacts	Receptor	Receptor Sensitivity	Magnitude of Impact	Significance of Unmitigated Effect
Construction Phase					
The impacts of construction – including demolition of the existing farm buildings may affect surface water quality and the WFD status of surface waters may be affected	- Ground disturbance and or demolition materials may indirectly affect surface waters by sediment in any runoff entering a drain or watercourse. - Incidents because of spillage of pollutants to the ground surface. - Release of chemicals and fuels stored on Site. Incidents that result in the loss of pollutants to surface water from vehicles transporting construction materials or products or waste materials to and from the Site.	Public Sewer - Direct	Negligible	Minor	Neutral – not significant
		Solent - Indirect	Medium	Moderate	Moderate-significant
		Sinah Common SSSI - Indirect	Very High	Moderate	Large-significant
		Superficial Aquifer/ground water	Low	Minor	Neutral- not significant
Impacts of construction may affect erosion and sedimentation	The removal or creation of new flow paths could alter in-channel velocities with resultant scour and deposition.	Public Sewer - Direct	Low	Negligible	Neutral- not significant
		Solent - Indirect	Moderate	Negligible	Neutral- not Significant

Table 10.6: Water Environment and Quality Assessment Scenarios

Potential Impacts	Description of Potential Impacts	Receptor	Receptor Sensitivity	Magnitude of Impact	Significance of Unmitigated Effect
	Increased overland surface water velocity could scour riverbanks at discharge points leading to bank instability, increased sedimentation, scour and deposition.	Sinah Common SSSI - Indirect	Very High	Negligible	Neutral- not significant
Impacts of construction may affect flooding and impediments to flow	- The creation of temporary structures and construction of permanent structures introduces impermeable areas and increases run off volumes. Permeability may also be decreased due to soil compaction. - Regrading of the ground/topography could remove/introduce flow paths and direct flood water to areas previously not at risk of flooding.	Public Sewer - Direct	Low	Major	Neutral- not significant
		Solent - Indirect	Medium	Negligible	Neutral- not significant
		Sinah Common SSSI - Indirect	Very High	Negligible	Neutral- not significant
Impacts of construction may affect pollution risk	Ground disturbance may erode and indirectly affect surface waters through sediment mobilisation and increased sediment concentration in any runoff entering a drain or watercourse. Sediment mobilisation will be more prevalent during	Public Sewer - Direct	Low	Minor	Neutral- not significant



Table 10.6: Water Environment and Quality Assessment Scenarios

Potential Impacts	Description of Potential Impacts	Receptor	Receptor Sensitivity	Magnitude of Impact	Significance of Unmitigated Effect
	periods of heavy rain and during dry periods where windblown sediment could enter watercourses. - Incidents through spillage of pollutants to the ground surface. - Loss of chemicals and fuels stored on Site. Incidents that result in the loss of pollutants to surface water / groundwater from vehicles transporting construction materials or products or waste materials to and from the Site. - Regrading of the ground profile/ topography could remove/introduce pollutant pathways to watercourse or groundwater.	Solent - Indirect	Medium	Moderate	Moderate-significant
		Sinah Common SSSI - Indirect	Very High	Moderate	Large-significant
	Release of contaminants into groundwater, surface water and watercourses	Superficial Aquifer/ground water	Low	Moderate	Slight- not significant
Operation Phase					
Impacts of the proposed development may	Low permeability areas such as roads, car parks and roof structures reduce the ability of the Site to accept rainfall volumes.	Public Sewer - Direct	Low	Major	Neutral- not significant



Table 10.6: Water Environment and Quality Assessment Scenarios

Potential Impacts	Description of Potential Impacts	Receptor	Receptor Sensitivity	Magnitude of Impact	Significance of Unmitigated Effect
affect natural drainage patterns/ Impacts of the proposed development may affect watercourse flood risk	- Hard surfaces and site drainage such as guttering, and highway drainage increase the Site sensitivity to rainfall and reduce response time to rainwater reaching the receptor. - The Site layout removes/introduces flow paths and directs floodwater to areas not previously at risk of flooding.	Solent - Indirect	Medium	Negligible	Neutral – not significant
		Sinah Common SSSI - Indirect	Very High	Negligible	Neutral – not significant
Impacts of the Proposed Development may affect surface water quality	- Incidents because of spillage of pollutants to the ground surface. - Loss of chemicals and fuels stored in the development. Incidents that result in the loss of pollutants to surface water from vehicles, in the form of oil/fuel and household chemicals such as detergents. - Removal of agricultural practices from the Site may affect surface waters by reducing sediment runoff entering a drain or watercourse thereby affecting surface water quality. - Removal of agricultural practices may affect surface waters by reducing nitrate or agrichemical runoff and so contribute to the objectives of the Nitrate Directive. - The development will emit nitrogen (foul water and surface-water runoff) but this is offset by the reduction in fertiliser applications	Public Sewer - Direct	Low	Minor	Neutral – not significant
		Solent - Indirect	Medium	Moderate	Moderate-significant
		Sinah Common SSSI - Indirect	Very High	Moderate	Large-significant



Table 10.6: Water Environment and Quality Assessment Scenarios

Potential Impacts	Description of Potential Impacts	Receptor	Receptor Sensitivity	Magnitude of Impact	Significance of Unmitigated Effect
Impacts of the development may affect pollution risk	- Incidents because of spillage of pollutants to the ground surface. - Loss of chemicals and fuels stored in the development. Incidents that result in the loss of pollutants from vehicles, in the form of oil/fuel and household chemicals such as detergents.	Public Sewer - Direct	Low	Minor	Neutral
		Solent - Indirect	Medium	Moderate	Moderate- not significant
		Sinah Common SSSI - Indirect	Very High	Minor	Moderate- not significant
		Superficial Aquifer/ground water	Low	Minor	Neutral- not significant

- 10.5.3 The catchment area ultimately discharges into the Solent which is part of the English Channel. Therefore, impacts to downstream floodwater volumes are likely to be negligible at a catchment scale. The public surface water sewer capacity and impacts of the Proposed Development on flood risk are limited to a 'local' scale.
- 10.5.4 Runoff volumes will receive a slight benefit from the proposed drainage system as all flows will be restricted to the QBAR discharge rate of 12.73l/s for all events up the 1 in 100-year +40% climate change rainfall event. Therefore, the contributing runoff from the Proposed Development will not adversely impact the risk of flooding to the surface water sewer network assessed in Table 10.6.
- 10.5.5 Changes in sediment/chemical/pollutant run off from the Proposed Development will not impact on the pre-existing public sewer network and is similarly limited to a 'local' scale for the reasons stated above when the development is considered in relation to the Site contribution to the Solent waterbody.

10.6 Mitigation

- 10.6.1 Mitigation measures are designed to reduce the potential for impacts on, Flood Risk, Hydrology and Water quality. These measures are considered standard industry practice for this type of development and are listed below.

Flood Risk

Surface Water Flooding

- Adoption of a surface water management strategy.
- Levelling of topographic low points.
- Set finished floor levels +150mm above external levels.

Residual Flooding from Land Drains

- Provide a 4m easement free from development from the bank-top of bounding ditches. This easement would provide access for inspection and maintenance purposes, including vehicle access.
- Undertake maintenance activities to keep the ditches clear from debris and overgrown vegetation to maintain the conveyance of the channels.
- It is recommended that the number of highway crossings along the route of the land drain is kept to a minimum. Culvert crossings would need to be sized to convey the 100-year plus climate change event, with a freeboard allowance.

- Set the surface water outfall from the Proposed Development at an appropriate height (i.e., +300mm) above the bed level of the receiving land drain.
- Set finished floor levels as per above.

Residual Flooding from Groundwater Flooding

- No below ground construction (e.g., basements).
- Lined pond to prevent groundwater ingress.
- Adoption of a surface water management strategy.
- Set finished floor levels as per above.

Residual Flooding from Sewers

- Provide a 3m easement free from development along the centre line of the onsite sewers.
- Set finished floor levels as per above.

Hydrology

10.6.2 The Proposed Development will result in the construction of low permeability surfacing, increasing the rate of surface water run-off from the Site. A surface water drainage scheme is required to ensure the existing runoff rates to the surrounding water environment are maintained at pre-development greenfield rates accounting for the effects of +40% climate change.

Water Quality

Construction

- Good environmental practice based on legal responsibilities and guidance in accordance with the general overarching guidance on good environmental management in PPG1 (Environment Agency, 2013) and more specific guidance including:
 - CIRIA C650 (2005) Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors;
 - CIRIA C648 (2006) Control of Water Pollution from Linear Construction Projects; and PPG21.

- Minimise where practicable production of silt and contaminated water by minimising for example:
 - Dewatering and pumping of excavations and subsequent disposal of water; runoff from exposed ground and stockpiles; plant and wheel washing;
 - Site roads; fuel spillages; and water storage and disposal. Mitigation in accordance with PPG5 guidance on works and maintenance in or near water (Environment Agency, 2014) and CIRIA C650 and as set out in the project Code of Construction Practice (CoCP).

10.6.3 The maintenance and management of the Site during the construction phase will be essential in preventing surface water flooding of the Proposed Development Site. It is also key in ensuring the prevention of sediment and pollutants entering the onsite watercourses.

10.6.4 To control environmental issues during the construction process, a Construction Environmental Management Plan (CEMP) will be developed. The CEMP will form part of the project management plan, which will integrate the core arrangements for health and safety, quality, and environmental management for the construction phase. This integrated approach ensures that environmental aspects are considered at all stages of the design and construction process.

10.6.5 The construction phase will be undertaken in accordance with the following good practice guidelines:

- CIRIA Environmental Good Practice on Site (C502) (1999);
- CIRIA Control of Water Pollution from Construction Sites (C532) (2001); and
- Environment Agency Pollution Prevention Guidelines.

10.6.6 These provide guidance on hydrology, flood risk and water quality for consultants and contractors.

10.6.7 An assessment of the residual effects (i.e., once mitigation measures have been put in place) are shown in Table 10.6.

Operation

10.6.8 During operation of the Proposed Development, there is the potential for the following impacts without mitigation:

- Sediment/material spillages as the result of accidents and deposits from site vehicular traffic being washed into the onsite watercourses from access roadways during rainfall events.
- Contaminants from oil/fuel spillage/leaks mobilised in entrained sediment and material becoming waterborne as outlined above.

10.6.9 The main SuDS feature present on the Site will be an online attenuation pond (Drawing 101 in Appendix 10.4) in the south of the Site. The pond will discharge to the onsite land drain (Drawing 002). Attenuation ponds provide a 0.7 pollution mitigation value for total suspended solids (TSS) and metals and 0.5 mitigation value for hydrocarbons (from CIRIA report C753 (Appendix 10.5)) for the receiving waterbody. Filter strips are also recommended for the Proposed Development.

10.6.10 CIRIA report C753 indicates pollution indices for various land use types and provides mitigation indices for various SuDS drainage features to deal with pollution. Using the indices provided in the CIRIA guidance the 'Site Pollution Index' (SPI) for the development has been calculated together with mitigation indices for the recommended SuDS management on the Site.

10.6.11 A mitigated SPI value for the operational residential development area is calculated at 0.08 Total Suspended Solids (TSS), 0.06 Metals and 0.06 Hydrocarbon. The SPI is equivalent to a 'Negligible' impact level.

10.6.12 Therefore, surface water leaving the Site either via groundwater or the surface water drainage systems of the Proposed Development will have a mostly negligible impact and minimal impact on downstream receptors

10.6.13 Nitrogen emissions also occur during operation of the development As set out in Appendix B of the CSA Environmental Mitigation Land Briefing Note (Appendix 10.6) The Proposed Development will reduce nitrogen emissions by 416.7 kg/year in perpetuity compared to this continuing in perpetuity under the existing agricultural land use.

Monitoring

10.6.14 As the Site is for a residential development, a limited amount of monitoring will be recommended. Surface water run-off at the Site may be affected by the construction and residency process. This can be controlled through the implementation of a suitable CEMP (see paragraph 10.6.4).

Residual Effects

- 10.6.15 The residual effects associated with the hydrology, flood risk and drainage represent those that occur following mitigation, as detailed above and are set out in Table 10.7 below. The impacts deemed to be negligible have been omitted from Table 10.7. Furthermore, the negligible impacts will still get some residual benefit from the mitigation measures implemented for impacts of higher magnitude.
- 10.6.16 Given the nature of the Proposed Development and the surface water management strategy in addition to the appropriate design and management of the construction phase, development of the Site poses no significant risk to surface water resources in the area or the Solent / SSSI.
- 10.6.17 It is concluded that there will be no significant residual effects following mitigation of the identified risks.



Table 10.7: Summary of potential residual environmental effects following mitigation of effects of moderate significance or higher							
Potential Impact	Mitigation measures adopted as part of the project	Direct/ Indirect	Short term/ long term	Continuous/ Intermittent	Sensitivity of receptor	Magnitude of mitigated impact	Significance of residual effect
Construction Phase ³⁴							
Surface Water Quality/ Pollution risk	Implement CEMP	Indirect (Solent)	Short	Intermittent	Medium	Negligible	Neutral (Not Significant)
Surface Water Quality/ Pollution risk		Indirect (Sinah Common)	Short	Intermittent	Very High	Negligible	Neutral (Not Significant)
Operation Phase							
Surface water quality	Implemented operational SuDS and associated maintenance and management strategy	Indirect	Long	Intermittent	Low	Negligible	Neutral (Not Significant)
Nitrogen emissions surface runoff and foul	Implemented mitigation land for offsetting (Field F1 14.6ha currently under cereal (wheat crop); Field F2 7.6ha currently under bean crop	Indirect (Solent)	Long	Intermittent	Medium	Negligible	Neutral (Not Significant)
		Indirect (Sinah Common)	Long	Intermittent	Very High	Negligible	Neutral (Not Significant)

³ CIRIA C648 (2006) Control of Water Pollution from Linear Construction Projects; and PPG21

⁴ CIRIA C650 (2005) Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors;

10.7 Assessment of Cumulative Effects

10.7.1 There are four developments in the area and two allocated sites within Havant Borough's Emerging Local Plan which have been considered in the cumulative assessment, these are as follows:

- APP/20/01093 – Land at Sinah Lane, Hayling Island – planning permission for 195 dwellings ·
- APP/17/00529 – 380 Sea Front, Hayling Island – planning permission for 13 dwellings
- APP/20/00015 – Pullingers, 108-110 Elm Grove – planning permission for 43 dwellings
- APP/19/00324 – 5-7 Station Road – planning permission for 19 dwellings
- H28 – Fathoms Reach – residential allocation for 55 dwellings
- KP3 – Beachlands – residential allocation for 100 dwellings ·

10.7.2 All the above developments do or will comply with DEFRA non-statutory SuDS guidance, PPG:7 and CIRIA C753 guidance on flooding, surface water discharge rates, volume control and water quality control to minimise individual impacts on the aquatic environment.

10.7.3 With an adequate CEMP for the Site, the Proposed Development will not have a cumulative impact on the catchment should the above listed developments be constructed concurrently.

10.8 Summary

10.8.1 The impacts on hydrology and flood risk for the Proposed Development have been assessed in line with the NPPF, UKCP09 and all other relevant legislation, guidance, planning policy and technical documentation.

10.8.2 The assessment has shown that there are no significant effects arising from the Proposed Development following the implementation of the proposed mitigation measures. A summary of the findings of the EIA which relate to hydrology and flood risk is presented in Table 10.7.

11 RIGHTS OF WAY, ACCESS & RECREATION

11.1 Introduction

11.1.1 The purpose of this Chapter is to provide an assessment of the likely effects of the Proposed Development on Rights of Way, Access and Recreation in and around the Site, for example, access to and enjoyment of the countryside and effects on local amenities. This Chapter sets out the baseline conditions, assesses the likely significant effects and outlines the mitigation measures to be incorporated as part of the Proposed Development. This assessment has formed an integral part of the Site's overall layout and design.

11.1.2 The Rights of Way, Access and Recreation has been considered in relation to the proposals detailed in the Design and Access Statement (DAS) along with the following planning application drawings:

- Site Location Plan (Appendix 1.1)
- Development Framework Plan (Appendix 1.2)

11.1.3 This Chapter (and its associated figures and appendices) is not intended to be read as a standalone assessment and reference should be made to the front end of this ES (Chapters 1 – 5), as well as the final chapter, 'Summary of Residual and Cumulative Effects' (Chapter 13).

11.2 Legislation, Planning and Guidance

11.2.1 The relevant legislation, policy and guidance are detailed below.

Legislative Framework

11.2.2 There is no Legislative Framework relevant to Rights of Way, Access and Recreation matters.

Planning Policy

11.2.3 The applicable planning policy is summarised as follows:

National Planning Policy Framework (NPPF, July 2021)

11.2.4 The NPPF sets out the Government's economic, environmental and social planning policy and in combination these policies give the Government's vision of sustainable development. The NPPF emphasises the need for well-designed places, promoting

healthy and safe communities and conserving and enhancing the natural environment.

11.2.5 Regarding rights of way, access and recreation the Promoting Healthy and Safe Communities section of the NPPF provides planning policies to achieve healthy, inclusive and safe places. The key objectives include: promoting social interaction, supporting healthy lifestyles and creating safe and accessible places. This can be achieved through the provision of safe and accessible green infrastructure, sports facilities, local shops, access to healthier food, allotments and layouts that encourage walking and cycling.

11.2.6 Paragraph 98 states: *'Access to a network of high-quality open spaces and opportunities for sport and physical activity is important for the health and well-being of communities, and can deliver wider benefits for nature and support efforts to address climate change. Planning policies should be based on robust and up-to-date assessments of the need for open space, sport and recreation facilities (including quantitative or qualitative deficits or surpluses) and opportunities for new provision. Information gained from the assessments should be used to determine what open space, sport and recreational provision is needed, which plans should then seek to accommodate'.*

11.2.7 Paragraph 100 goes on to state: *'Planning policies and decisions should protect and enhance public rights of way and access, including taking opportunities to provide better facilities for users, for example by adding links to existing rights of way networks including National Trails'.*

Havant Borough Core Strategy, Local Development Framework

11.2.8 The following Policies within the Havant Borough Core Strategy provide guidance for development within the borough. The Policies will eventually be replaced when the emerging Local Plan is formally adopted. The following Policies apply to the Site, which are relevant to rights of way, access and recreation:

POLICY CS1: HEALTH & WELLBEING

11.2.9 The Council will grant planning permission to proposals that:

- *Retain open spaces that are valued by the local community but if retention is not possible, a superior alternative should be provided. It lists Hayling Park and Hayling Beach as strategic open spaces.*



- *To improve existing open space by introducing high quality features and enhancing accessibility, highlighting the preference given to proposals that achieve national standards.*
- *Contribute to the Borough's green infrastructure by providing new areas of open space that are safe and easily accessible to housing developments.*
- *To improve the connectivity of walking and cycling routes within the borough by increasing the opportunities for cycling in line with the Council's Walking and Cycling Strategy.*
- *To protect and enhance the availability of community facilities through refurbishment or provision.*
- *Hayling Island is singled out as a location where there is a strong desire to see an increase and improvement of allotment space. This could include new plots or community gardens in housing developments.*

POLICY CS5: TOURISM

11.2.10 The Council will grant planning permission to proposals that:

- *Provide small scale, sustainable recreational opportunities.*

POLICY CS8: COMMUNITY SAFETY

11.2.11 The Council will grant planning permission to proposals that:

- *Provide well-lit footpaths, cycle ways and roads as long as this does not adversely affect the landscape or habitat.*

POLICY DM1: RECREATION & OPEN SPACE

11.2.12 The Council will grant planning permission to proposals that:

- *Demonstrate that proposals adhere to the standards of provision set out in the Council's Open Spaces Plan*
- *Where there is no surplus of a type of open space, contribution to new provision to the equivalent or improved standard must be followed.*

Havant Borough Council Emerging Local Plan

11.2.13 The Council are currently in the process of preparing a new Local Plan for the Havant borough area. Once adopted the new Local Plan will supersede the existing policies

contained within the Havant Borough Core Strategy and Allocations Plan documents, in providing an up-to-date strategy for meeting the authority's development needs up to 2037. The Havant Borough Local Plan was submitted for examination to the Secretary of State for Housing Communities and Local Government on 12 February 2021.

11.2.14 The Site has been identified as an emerging allocation by the LPA and is covered under policy H27 – Rook Farm in the emerging Local Plan for up to 390 dwellings.

H27: ROOK FARM

11.2.15 The Council will grant planning permission to proposals that:

- *Secure access to the site from the A3023 (Manor Road) with only an emergency access (including pedestrian and cycle permeability) from St Mary's Road.*
- *Provide a high degree of permeability through an extensive network of walking and cycling routes across the site which connect with the existing rights of way network and the adjacent Fathoms Reach (H28) allocation.*
- *Protect and where possible, enhance the existing rights of way.*
- *Provide onsite public open space, including community food growing provisions, in line with Policy E9.*
- *Provide play space for children and young people to address the deficit highlighted in Policy E11.*

Guidance

11.2.16 The applicable guidance is summarised as follows:

National Planning Policy

Planning Practice Guidance (PPG)

11.2.17 The PPG was first published on the 6th of March 2014 and is a regularly updated online planning resource which provides guidance on the NPPF and the planning system. Specific guidance relevant to this Chapter is given under the heading of *Open space, sports and recreation facilities, public rights of way and local green space*. However, this guidance is more relevant to Local Authorities to enable them to write Local Plans and to record Public Rights of Ways.

11.2.18 The NPPF continues to be the primary document for decision making.

Havant Borough Council Design Guide - Supplementary Planning Document

11.2.19 The Havant Borough Council Design Guide was adopted on the 14th of December 2011 as a technical guide for development proposals. It sets out the key principles of good design and provides specific guidance for residential development to ensure high quality development in the Borough of Havant. It is a consideration in determining the success of planning applications.

11.2.20 The documents and policies relevant to the landscape and green infrastructure of the Site are summarised below:

PUBLIC AMENITY: OPEN SPACE & PLAY

Paragraph 5.11

'New developments should address parks and open spaces and integrate them into the design to make them focal spaces'.

Other Relevant Strategies, Guidelines or Documents

Havant Open Spaces Plan and PPG17 Assessment

11.2.21 This document reviews the current provision of open space throughout the borough and identifies any shortfalls and how developers can help to address these in provision of open space. The plan identifies that, as a borough, many open space typologies are already over-provided whilst there are a number of typologies that require boosting to increase accessibility and enhance recreational opportunities.

Havant Borough Council Developer Contributions Guide

11.2.22 This document provides detailed information following on from the Core Strategy on the expectations of developer contributions in Havant Borough.

11.2.23 The documents and policies relevant to the landscape and green infrastructure of the Site are summarised below:

11.2.24 GREEN INFRASTRUCTURE & PUBLIC OPEN SPACE

Paragraph 5.17

11.2.25 This details that where there is a deficiency in a type of open space for a proposed development which is deemed to be suitable, then on-site contributions will be sought.



Local Green Spaces and Destination Open Spaces in Havant Borough

11.2.26 This supplementary planning document provides justification for the Local Green Space and Destination Green Space designations set out in the Local Plan. A number of designated green spaces are identified on Hayling Island, although none within the Site or immediate context. These include: Hayling Beach, Hayling Billy Trail and Hayling Park.

Havant Borough Open Space Strategy

11.2.27 This strategy sets out the qualitative and quantitative requirements of open space within the borough and forms part of the evidence base for the emerging Local Plan. It covers different types of formal and informal greenspace and sets out how much should be provided depending on the scale of the development.

Hampshire Walking & Cycling Strategy

11.2.28 At a county level, the respective walking and cycling strategies were produced to complement the wider policies within the Local Transport Plan, and to help support and promote walking and cycling within the county in the short, medium and long term by defining a walking network.

11.3 Assessment Methodology and Significance Criteria

Scope of the Assessment

11.3.1 This chapter describes the existing rights of way, access and recreational use of the proposed Site and surrounding area, and the likely effects of the Proposed Development and associated infrastructure on these activities, assets and broader access rights. It will look in detail at the Site's potential for access and recreation and where there are possible links to rights of way, other green networks and where appropriate, urban fringe area, to help promote the creation of wider green infrastructure.

11.3.2 The following assessment seeks to address a series of aims set out in Natural England's (NE) response to scoping, which sets out the detailed requirements for the chapters listed in the Havant Borough Council Scoping Opinion. At the time of writing Natural England have not responded to the 2021 Scoping Report. HBC have instead quoted their previous scoping response to scoping (2017) which stated:

"The EIA should consider potential impacts on public open land and rights of way in the vicinity of the development. Appropriate mitigation measures should be



incorporated for any adverse impacts. We also recommend reference to the relevant Right of Way Improvement Plans (ROWIP) to identify public rights of way within or adjacent to the proposed site that should be maintained or enhanced.

Natural England encourages any proposal to incorporate measures to help encourage people to access the countryside for quiet enjoyment. Measures such as reinstating existing footpaths together with the creation of new footpaths and bridleways are to be encouraged. Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation of wider green infrastructure. Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate.”

Definition of Rights of Way

11.3.3 For the purpose of this report, rights of way will include any routes indicated on the definitive rights of way interactive map on the Hampshire County Council website which give members of the public the right to pass over land. This will include public footpaths, bridleways, national trails and byways.

11.3.4 Appendix 11.1 shows the Public Rights of Way and recreational opportunities within 3km of the Site.

Definition of Access

11.3.5 For the purpose of this report, access will include footpaths, cycleways and common land that form part of the existing Site context and those proposed as part of the development. The broad aims for the site access will adhere to Natural England's scoping response, as detailed above, which states, '*Natural England encourages any proposal to incorporate measures to help encourage people to access the countryside for quiet enjoyment. Measures such as reinstating existing footpaths together with the creation of new footpaths and bridleways are to be encouraged.*'

Definition of Recreation

11.3.6 For the purpose of this report, outdoor recreation can be broadly defined to include both formal recreation and informal recreation. Formal recreation includes provision of sports facilities, such as football pitches, artificial turf pitches, sports pavilions and allotments and also Local Equipped Area for Play (LEAP) and Neighbourhood Equipped Area for Play (NEAP) for children. Informal recreation has a broader meaning and can include open space for games and play as well as informal footpaths and cycleways.

Effects Not Considered with the Scope

11.3.7 Although this chapter covers access, it will not discuss transport or road access as this is covered in the Transport chapter (Chapter 8).

11.3.8 Potential effects on ecological sites as a result of increased recreational pressure have been considered within Chapter 7 Ecology and Appendix 7.2 Information to Inform Habitats Regulations Assessment. The ecological assessment concluded no likely significant effects on designated sites and as such this topic is not considered further within this Chapter.

11.3.9 This Chapter does not consider effects on the visibility from Public Rights of Way towards the Site, but instead looks at the potential higher demand of use. Visible effects are covered in the accompanying Landscape & Visual Appraisal.

Extent of the Study Area

11.3.10 The Study Area includes publicly accessible open space, formal and informal sports facilities and Public Rights of Way within 3km of the Site.

Consultation Undertaken to Date

11.3.11 Table 11.1 provides a summary of the consultation activities undertaken in support of the preparation of this Chapter.

Table 11.1: Summary of Consultation Undertaken to Date			
Organisation	Individual(s)	Meeting Date and other forms of Consultation	Summary of Outcome of Discussion
Havant Borough Council	Simon Jenkins	29 th September 2021 – Scoping Opinion	The Scoping Opinion provided by HBC referred to the advice of the previous Scoping Opinion from Natural England which stated that Rights of Way, Access and Recreation should be scoped into the ES.
Natural England	Unknown	2017 – Scoping Opinion	In the previous Scoping Opinion Natural England stated that Rights of Way, Access and Recreation should be scoped into the ES.

Assessment Methodology

11.3.12 The assessment methodology involves establishing the baseline through desktop analysis of aerial mapping and review of available documentation. This is then supported through a site visit to review the receptors as identified through the desk study.

11.3.13 Receptors are categorised in different levels of sensitivity and the magnitude of change as a result of the Proposed Development is also categorised.

11.3.14 The anticipated effects are assessed before the potential mitigation is considered. The resulting residual effects will then be assessed should any additional mitigation, beyond those embedded, be identified.

11.3.15 Sensitivity of receptors are classified as follows:

- **High** – Receptors of high importance based upon factors of condition, proximity, recreational value, regularity of use and functional aspects.
- **Medium** – Receptors of medium importance based upon factors of condition, proximity, recreational value, regularity of use and functional aspects.
- **Low** - Receptors of low importance based upon factors of condition, proximity, recreational value, regularity of use and functional aspects.

11.3.16 Magnitude of impacts are classified as follows:

- **High** – Total loss of or major alteration to key characteristics / features. Overall receptor will be fundamentally changed.
- **Medium** – Partial loss of or alteration to one or more key characteristics / features. Overall receptor will be obviously changed.
- **Low** – Limited loss of, or alteration to one or more key characteristics/ features. Overall receptor will be perceptibly changed.
- **Negligible** – Very minor alteration to one or more key characteristics/ features. Overall receptor will be minimally changed.
- **None** - No loss or alteration to the key characteristics/ features, representing 'no change'.

11.3.17 Level of effects are classified as follows:



11.3.18 The final conclusions on effects, whether adverse or beneficial, are drawn from the separate judgements on the sensitivity of the receptors and the magnitude of the impacts. This overall judgement is formed from a reasoned professional overview of the individual judgements against the assessment criteria. The following descriptive thresholds have been used for this appraisal:

- **Major**
- **Moderate**
- **Minor**
- **Negligible**

11.3.19 Where it is determined that the assessment falls between or encompasses two of the defined criteria terms, then the judgement may be described as, for example, Major/Moderate or Moderate/Minor. This indicates that the effect is assessed to lie between the respective definitions or to encompass aspects of both.

Significance Criteria

11.3.20 Effects which are deemed to be significant for the purposes of this assessment are those that are described as being of a **Moderate** or **Major Beneficial** or **Adverse** level.

11.4 Baseline Conditions

Rights of Way Baseline

11.4.1 Below is a list of the footpaths located within the surrounding site area:

Long Distance Footpaths

11.4.2 Shipwrights Way is a long-distance route that passes along the western side of Hayling Island, passing through Havant to the north, across the island and then west to Portsmouth. At the nearest point, this footpath is situated approximately 0.7km to the west of the Site and is accessible on foot from the Site via footpaths and roads.

Off Road Cycle Routes

11.4.3 A traffic-free cycle route passes along the Hayling Billy Coastal Path which follows a short section of the Shipwrights Way long-distance footpath. This is also a permissive footpath and recreational route and is located approximately 0.7km to the west of the Site at the nearest point.

Bridleways & Byways

11.4.4 There are no bridleways or byways within the Site itself or within close proximity.

Public Rights of Way

11.4.5 There are currently no public rights of way that cross the Site. However, three public footpaths run along the Site boundaries, 108/93/1 passes along the Site's northern boundary whilst 108/94/1 and 108/92/2 run down the Site's western boundary. These two footpaths merge into footpath referenced 108/92/1 which passes west to Manor Road. Public footpath reference 108/89/1 passes north-west through the adjacent holiday park, also connecting in with Manor Road. Other footpaths in the area include 108/101/1 which is located approximately 100m east of the Site on Legion Road and 108/96/1 which is situated approximately 0.3km to the south-west.

Access Baseline

11.4.6 The Site is located adjacent to the northern settlement edge of the suburb of Gable Head, to the south of Hayling Island. Hayling Island is accessed from the mainland by a single crossing point on the A3023 and lies between Portsmouth and Chichester. To the south, the context is predominantly residential but local shops and facilities can be found off Elm Grove and amenities increase closer to the seafront on the south coast. North of the Site the land opens up and gives way to agricultural fields, holiday parks and small settlements. St Mary's Road and Church Road pass close by to the Site's eastern boundary, separated by a line of residential dwellings.

11.4.7 The Site itself is not currently accessible to the public and is in current use as arable farmland. Much of the surrounding area is used by the public for leisure and recreation via the network of public footpaths and fields associated with Hayling Island Holiday Park.

Recreation Baseline

11.4.8 Being a popular tourist destination, Hayling Island is well provisioned when it comes to recreational opportunities. The Havant Borough Open Space Strategy uses Fields in Trust categories and standards as a benchmark for their study. According to the strategy, there are two public parks on the island, a large amount of natural and semi-natural greenspace which is largely located around Hayling Beach, six areas of amenity greenspace distributed across the island and twelve separate equipped play areas that cater for a range of ages and abilities. Many of these are located within walking

distance of the Site as the majority of the residential area on Hayling Island is concentrated towards the southern half.

11.4.9 The Site is currently used for arable farming and so has no direct recreational use. In the wider area, the land north and west of the Site is popular with users of the network of public footpaths, visitors to St Mary's Church and the sports fields associated with Hayling Island Holiday Park. This is not a designated green space but there are two goals and a mown pitch which indicate the area is for use by the adjacent holiday park. Further east of the Site are allotments, a swimming pool and an equipped play area which are located off Elm Grove and Palmerston Road.

Existing Formal Recreation

11.4.10 Hayling Park is situated approximately 0.3km to the south-west of the Site and offers sports pitches including football, cricket, tennis and a bowling green. There is an equipped play area at Hayling Park and another to the east of the Site near Mengham Junior School. An un-designated sports pitch is located immediately north of the Site, but appears to be for use of visitors to Hayling Island Holiday Park.

Existing Informal Recreation

11.4.11 There are a number of informal recreational opportunities in the area, the nearest of which are the playing fields to the east of Elm Grove and the allotments which are directly south of the fields. St Mary's Church would also fall under the informal recreational heading and is situated north-east of the Site. Hayling Beach is located approximately 0.8km to the south.

Sensitive Receptors

11.4.12 Sensitive receptors have been identified within this assessment as those Public Rights of Way, recreational facilities and publicly accessible open spaces that could be susceptible to the effects of the Proposed Development and include the following:

- Existing footpaths surrounding the Site which would be of **High** sensitivity due to the close proximity to the Site and the regularity of use.
- Visitors to Chichester Harbour Area of Outstanding Natural Beauty would be of **High** sensitivity due to the high importance of AONB's and the recreational value they offer.

- Users of the Shipwrights Way long-distance footpath would be of **Medium** sensitivity due to the distance from the Site which is balanced by the popularity of the route.
- Sports facilities at Hayling Park would be of **Medium** sensitivity due to the formality of the sports provision which is balanced by the distance from the Site.
- Users of the land associated with Hayling Island Holiday Park which would be of **Low** sensitivity due to the informality of the space and the low number of users.

Limitations

11.4.13 This chapter does not consider effects on the visibility from the identified footpaths towards the Site but instead looks at the potential higher demand of use. Visible effects are covered in the separate Landscape & Visual Appraisal submitted as part of the planning application.

11.5 Assessment of Effects

Design Solutions and Assumptions

11.5.1 Potential effects arising from the Proposed Development with respect to Rights of Way, Access and Recreation have been identified as part of the design process. Identifying such effects early on has assisted the development of the proposals, resulting in a considered and cohesive design approach overall. Without this, the following potential adverse impacts in relation to rights of way, access and recreation could include:

- Impacts on the local communities existing facilities and access to open space being strained by a development that offers little in the way of additional access routes or opportunities for recreation and doesn't take into account the surrounding green infrastructure or existing footpath network.
- An impact upon the Site itself, whereby the agricultural fields and landscape features of value; trees, hedgerows and ditches are completely lost or removed and no compensatory landscape habitats, mitigation measures nor additional landscape enhancements are incorporated.

- The potential for these effects has formed part of the design iteration process with particular regard to the potential effects upon the sensitive receptors set out above.

Embedded Mitigation

11.5.2 The development proposals are fully described in the Design and Access Statement and other information accompanying the planning application. The existing landscape resource and the visual receptors and amenity of the Site have been considered by the planning and design process and have informed the resultant scheme. This approach has entailed collaboration between landscape, arboricultural, ecological, heritage and other professionals. The landscape components of the scheme are an important integral part of the proposals and will assist with mitigating for the potential adverse effects of the Proposed Development on the landscape and visual amenity of the Site as well as the local recreation resource.

Rights of Way Objectives

11.5.3 The objectives for the existing public footpaths have been designed to protect the surrounding PRow network and to enhance them through new connections. Specific objectives are as follows:

- Protect the existing network of Public Rights of Way (PRow) that pass through the immediate context of the Site.
- Create new connections into the surrounding PRow network to enhance permeability and improve connectivity with the wider area.

Access Objectives

11.5.4 The objectives in regard to access seek to open up new areas to the public through green space provision and public footpaths. Specific objectives are as follows:

- Create new pedestrian and cycle routes through the Site, to link with the existing infrastructure and the wider footpath network where possible.
- Create a permeable Site, linking up proposed areas of open space to encourage informal recreation.
- Open up access to the Site which was previously in private use as farmland.

Recreation Objectives

11.5.5 The objectives for recreation aim to protect the amenity of the existing recreational spaces around the Site and to provide new areas for recreational purposes within the Site boundary for public use. Specific objectives are as follows:

- Provide a substantial area of open green space to include a range of habitats for both informal recreation and biodiversity value.
- Provide youth facilities that are accessible and overlooked by adjacent properties for natural surveillance.
- Provide a children's play area that is easily accessible for all residents.

11.5.6 The proposals for Rights of Way, Access and Recreation have been informed by the objectives set out above. They set out specific measures that could be taken to mitigate any adverse effects of the Proposed Development.

Rights of Way Proposals

- The existing PRoW network has been retained and protected, separated from the Proposed Development by a substantial green buffer including new tree planting.
- Two new connections into the PRoW network have been proposed, one into the public footpath referenced 108/92/2 to the west and the other into 108/94/1 to the south-west. This will allow new residents to access the wider landscape and will offer existing residents another option for a recreational route.

Access Proposals

- Provision of new looped footpath and cycleway routes through the development to link to the wider external network and routes through and around Hayling Island.
- Proposed highways works to St Mary's Road to create an access point with sensitive landscape treatment to provide a high quality, attractive green gateway.
- The gateway will be designed to create a distinctive entrance into the Proposed Development for safe convenient use.

Recreation Proposals

- A large expanse of green space has been retained to the north-west of the Site around the formal play areas, providing space for informal sports, leisure, recreation and amenity.
- Provision of a formal Local Area of Equipped Play and Teenage Provision.
- A vista from the south-western corner of the Site to St Mary's Church to the north-east has been incorporated into the development proposals, highlighting the heritage of the Grade II* church. This will hopefully encourage visitors to the church and protect an important viewpoint as detailed in the accompanying Landscape and Visual Appraisal.
- Several other pockets of green space have been provided throughout the Proposed Development which will enable all residents to have access to green space and will promote outdoor activities and engagement with nature.

Landscape and Green Infrastructure (GI) Proposals

11.5.7 The landscape and GI proposals for the scheme are detailed in the Design and Access Statement accompanying the planning application. In summary these proposals include:

- The provision of 4.24 hectares of land dedicated to landscape, GI, public open space, play and habitat related proposals – representing approximately 36% of the total Site area. This is considered to be appropriate in landscape character terms and would maximise the biodiversity resources of the Site, as well as delivering recreational benefits.
- To retain and enhance existing boundary and internal trees and hedgerows with any missing sections infilled with native planting.
- To protect the on-site water bodies by maintaining easements around the ditches and enhancement planting around the pond.
- The creation of a new green corridor to connect the pocket of green space around the existing pond to the surrounding area. Tree planting along the corridor will create green link for local wildlife and enhance the retained heritage views through the Site and increase biodiversity connections and habitat opportunities.



- A small section of category C trees will be removed from alongside St Mary's Road to construct the vehicle access. New high quality, replacement planting is proposed towards the north of the Site and will comprise parkland style tree planting, grassland and new, native hedgerow planting.
- The detailed landscape design will be based upon a palette of species which are principally native, indigenous, salt tolerant and appropriate to the landscape character of the wider area and would offer valuable ecological benefits.
- The creation of an informal perimeter path that creates a loop around the Site to improve connectivity to adjacent residential areas and to allow circulation, linking areas of green space with areas of play and development.
- The creation of two SuDS basins, one of which is to be located in the in the southernmost point of the Site and the other adjacent to the existing watercourse to accommodate surface water run-off. This will also enhance biodiversity habitats within the Site.

Nature Nearby' Accessible Natural Greenspace Guidance

11.5.8 In accordance with Natural England's Accessible Natural Greenspace Standard (ANGSt), the GI will be multifunctional in its design and management, capable of delivering a variety of open uses from active sport through to 'quiet' wildlife areas. Moreover, the GI will be publicly accessible and within suitable reach, so that the new community, for example, is no more than a 5-minute walk from an area of greenspace.

11.6 Assessment of Effects

Open Space Requirements

11.6.1 The Havant Open Spaces Plan and PPG17 Assessment sets out the existing provision of open space and the standards developers are expected to provide in order to address any shortfalls. According to the above plan, there is adequate provision for the following recreation types across the borough: athletics facilities, ice rinks, indoor bowls halls, indoor tennis halls and sports halls.

11.6.2 The standards set for required open space is as follows:

- Allotments: 1.0 sq m site area per person
- Artificial turf pitches: 0.25 sq m carpet area per person per person



- Bowling greens: 0.16 sq m site area per person
- Equipped play provision: 0.5 sq m equipped area per person
- Grass pitches and playing fields/recreation grounds: 5.4 sq m site area per person
- Indoor swimming pools: 0.01 sq m water area per person
- Multi-functional greenspaces (amenity greenspaces, parks and gardens and natural greenspaces): 26 sq m per person
- Teenage facilities: 0.4 sq m facility area per person
- Tennis and other courts: 0.26 sq m court area per person

11.6.3 The provision of open space in regard to the Proposed Development is set out on the Development Framework Plan (Appendix 1.2) and is based on a population of 720 residents from 300 dwellings. The total amount of open space required for the Proposed Development is 1.87 Ha, which includes teenage provision, equipped play, grass pitches and playing fields and multi-functional greenspace. The proposed Green Infrastructure is 4.24 Ha and includes multi-functional greenspace and the proposed children's and teenage areas, and on this basis the requirements are fulfilled.

Rights of Way Impacts

11.6.4 The two furthest footpaths will see little changes in usage with the Proposed Development because of their distance and lack of connectivity to the Site. The closest footpaths, 108/93/1, 108/94/1 and 108/89/1 will offer a quicker route to the surrounding shops, schools and residential areas.

11.6.5 As part of the Proposed Development new footpath connections will be made into 108/94/1 and 108/92/2, helping to improve permeability within the area considerably.

11.6.6 The sensitivity of this receptor is judged to be **High** due to its close proximity to the site and potential for increase of users. However, the magnitude of impact is considered to be **Negligible** due to the minor scale of change to the receptor. The impact on the public footpath network that surround the Site is considered to be **Negligible** during the construction and demolition phase as the only additional users of the area would be the occasional site worker. During operation it is considered that the effect on the public footpath network that surrounds the Site would also be



Negligible. Two new links are proposed into the PRoW network which will allow users of the footpaths to take new routes through the Site, providing more direct routes to the surrounding area. This will balance any adverse effects of a slight increase in users of the footpaths as a result of the Proposed Development.

11.6.7 The sensitivity of the Shipwrights Way long-distance route receptor is determined to be **Medium** due to the distance from the Site balanced by the popularity of the route. The magnitude of impact is determined to be **Negligible** due to the minor scale of change to the receptor. Overall effects on the receptor are considered to be **Negligible** throughout construction and demolition and completion. There will, inevitably be an increase in users of this route, but the distance from the Site combined with the size and good surface of the footpath / cycleway will mean that the footpaths can accommodate the additional usage.

Access Impacts

11.6.8 Effects on the access of the area are assessed as **Minor Beneficial** in the long-term as the Proposed Development will open up access to a parcel of land that was previously inaccessible to the public.

Recreation Impacts

11.6.9 There is currently no direct recreational use on the Site as it is not publicly accessible.

11.6.10 In the immediate context, the sports pitch associated with the adjacent holiday park provides recreational opportunities for visitors. The sensitivity of this receptor is considered to be **Low** due to the low number of users and the informality of the space. The magnitude of impact is considered to be **None** as there are no direct changes identified to the receptor as a result of the Proposed Development. Effects for users of the land associated with the holiday park are deemed to be **Negligible** upon completion as the land is primarily for use by guests at the holiday park. In addition to this the Proposed Development will be providing additional play and recreation opportunities which will relieve pressure on local facilities and increase opportunities for both formal and informal recreation for the local population.

11.6.11 Visitors to Chichester Harbour AONB will not be impacted by the Proposed Development throughout construction and demolition and completion in regard to recreation. Although the sensitivity is considered to be **High**, the magnitude of impact is determined to be **Negligible** due to the distance between the Site and the AONB and large scale of the AONB.



11.6.12 The sports facilities located at Hayling Park are considered to be of **Medium** sensitivity and the magnitude of impact is determined to be **Negligible** due to the distance from the site which would result in a minor alteration to the receptor. The usage of this receptor is likely to see a rise with the Proposed Development. Effects however are considered to be **Negligible** at construction and demolition and **Negligible / Minor Beneficial** upon completion. This is due to the additional business and revenue which will be created by more visitors and users of the sports facilities which will boost the local economy and help to keep the facilities running.

11.7 Mitigation

11.7.1 No significant adverse effects have been identified and therefore no additional mitigation measures beyond those already embedded in the scheme are required.

11.8 Residual Effects

11.8.1 Residual effects are those effects remaining after the embedded mitigation (risk reduction) measures have been implemented. No significant effects have been identified, therefore there will be no significant residual effects. Effects are summarised in the table below.



Table 11.2 Summary of Effects

Identified Impact	Embedded Mitigation Measures	Identified Effect Significance (construction and demolition phase)	Identified Effect Significance (following completion)	Residual Effect Significance	Mitigation	Is the effect significant?
Footpaths within the immediate context of the Site - 108/94/1 - 108/92/1 - 108/92/2 - 108/93/1 - 108/89/1	The slight increase in use of the footpaths will be balanced out by new links into the PRow network which will provide more direct routes into the surrounding area.	Negligible	Negligible	Negligible	No additional mitigation is required	No
Users of the land associated with Hayling Island Holiday Park	This land is affiliated with the holiday park and should therefore not be used by the public.	Negligible	Negligible	Negligible	No additional mitigation is required	No



Table 11.2 Summary of Effects

Identified Impact	Embedded Mitigation Measures	Identified Effect Significance (construction and demolition phase)	Identified Effect Significance (following completion)	Residual Effect Significance	Mitigation	Is the effect significant?
Users of the Shipwrights Way long-distance footpath	This is a well-surfaced and broad footpath / cycleway that can cope with additional footfall.	Negligible	Negligible	Negligible	No additional mitigation is required	No
Visitors to Chichester Harbour Area of Outstanding Natural Beauty	None required.	Negligible	Negligible	Negligible	No additional mitigation is required	No
Sports facilities at Hayling Park	None required. New residents will generate additional income and encourage outdoor recreation.	Negligible	Negligible / Minor Beneficial effects due to increased business	Minor Beneficial effects due to increased business	No additional mitigation is required	No



11.9 Assessment of Cumulative Effects

11.9.1 Cumulative environmental effects arising from the Proposed Development and other projects within the locality are assessed where appropriate using the methodology as outlined in section 11.3.

11.9.2 The first stage of the cumulative effects assessment is to determine which of the identified schemes are to be scoped in or out of the assessment. The following sites are not considered relevant to the assessment due to the distance between them and the Site:

- APP/20/01093 – Land at Sinah Lane, Hayling Island – planning permission for 195 dwellings.
- APP/17/00529 – 380 Sea Front, Hayling Island – planning permission for 13 dwellings.
- Local Plan Policy KP3 – Beachlands – residential allocation for 100 dwellings.
- APP/20/00015 – Pullingers, 108-110 Elm Grove – planning permission for 43 dwellings.
- APP/19/00324 – 5-7 Station Road – planning permission for 19 dwellings.

11.9.3 The only receptors that are likely to receive any cumulative effects are the local footpaths. This is due to the fact that recreational facilities are able to accommodate increased usage, indeed that would be seen as a benefit as it generates additional income. However increased usage of public footpaths associated with cumulative effects have the potential to degrade the surface of a footpath or increased busyness. Out of all the above sites, only Fathoms Reach (Policy H28 of Emerging Local Plan) is considered relevant due to it being located directly adjacent to the site, on the far side of the PRow which passes between the Site and Fathoms Reach.

Local Footpath Network

11.9.4 The emerging allocated site to the west of the Site (Fathoms Reach) will increase the use of footpaths 108/94/1, 108/92/1, 108/92/2, 108/93/1 and 108/89/1 but this must be weighed up against the benefits that the Site's new footpath network will bring to the area and its existing infrastructure and so effects are considered to be **Negligible**.



11.10 Summary

- 11.10.1 It is considered that the Proposed Development would benefit the existing infrastructure of Hayling Island by introducing a network of footpaths and cycleways that would link open spaces, improving people's access to green space and the wider countryside on land that was otherwise inaccessible to the public. Amenity greenspace and equipped play facilities and youth provision would relieve pressure on local facilities and increase opportunities for both formal and informal recreation for the local population.
- 11.10.2 Of the identified receptors that could be impacted by the rights of way, access and recreation proposals, the effects on the PRow network around the Site would be **Negligible** throughout as the increased use of the footpaths would be balanced out by the benefits of a wider network which will be established once new connections are made. The other receptors are expected to experience **Negligible** or no effects during and following construction and demolition with the exception of users of the sports facilities at Hayling Park which will have a **Minor Beneficial** effect due to the increased business as a result of the Proposed Development.
- 11.10.3 In summary, it is considered that the Proposed Development could be accommodated within the existing infrastructure with no adverse impacts upon the wider rights of way, access and recreational resources. Over time, the introduction of new footpath connections will improve permeability throughout the area and as the proposed green infrastructure matures, the development will assimilate into the existing settlement edge context and will result in the creation of landscape, biodiversity and recreational benefits which would outweigh any adverse effects.



12 VULNERABILITY TO MAJOR ACCIDENTS AND DISASTERS

12.1 Introduction

- 12.1.1 This Chapter reports the likely significant effects of the Proposed Development in terms of its vulnerability to major accidents and disasters in the context of the Site and surrounding area. In particular it considers the likely significant effects of the scope for the Proposed Development to be at risk from major accidents and disasters, and whether the consequences of any such events would result in a significant effect on the environment.
- 12.1.2 This Chapter (and its associated figures and appendices) is not intended to be read as a standalone assessment and reference should be made to Chapters 1 – 5 and 13 of this ES.
- 12.1.3 Preceding chapters of this ES have assessed construction and operational effects of the Proposed Development on the environment and local population (i.e. Air Quality, and Water Environment) and mitigation measures are proposed to reduce any identified effects, including the risk of major accidents or disasters. Where relevant the findings of these assessments and identification of mitigation measures have informed this assessment.

12.2 Legislation, Policy and Guidance

- 12.2.1 The relevant legislation, policy and guidance are listed below.

Legislative Framework

- 12.2.2 This chapter has been undertaken in accordance with Schedule 4 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (hereafter referred to as the EIA Regulations) which requests the inclusion of '*A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned*'.
- 12.2.3 Whilst no definition of a major accident or disaster is provided within the *EIA Regulations* they do recognise the potential for significant effects due to such events. As such the underlying objective of this assessment is to ensure that appropriate precautionary actions are taken for those developments which: '*...because of their vulnerability to major accidents and/or natural disasters (such as flooding, sea level rise, or earthquakes), are likely to have significant adverse effects on the environment*'. (Paragraph 15 of Directive 2014/52/EU).

Planning Policy

- 12.2.4 The topic of accidents and disasters is not specifically mentioned within the emerging Havant Borough Council (HBC) Local Plan (June 2021) nor HBC's adopted Local Plan (Core Strategy) (2011). The Plans do however have specific policies relating to individual events such as flood risk and traffic safety. Where relevant these policies have been considered within the corresponding technical chapter.
- 12.2.5 It is noted that the adopted and emerging Local Plans place an emphasis on highway safety and crime. Local Plan Policies of particular relevance to this chapter are:
- Emerging HBC Local Plan
 - IN1: Effective provision of infrastructure
 - IN2: Improving transport infrastructure
 - E1: High quality design
 - E2: Health and wellbeing
 - H1: High quality new homes
 - Adopted HBC Local Plan (Core Strategy)
 - CS8: Community Safety
 - CS16: High Quality Design
 - DM10: Pollution
 - DM12: Mitigating the Impacts of Travel

Guidance

- 12.2.6 Owing to the fact major accidents and/or disasters is a relatively new and emerging topic within EIA there is no set guidance. It is acknowledged that the methodology for such assessment is evolving as practice in the field emerges. Current methodologies are based on current best practice, European Guidance (The EU Directive (2014/52/EU) and other UK regulatory processes and sources of information, particularly the Control of Major Accident Hazard Regulations 2015 (COMAH), and the UK's current National Risk Register 2020 Edition.
- 12.2.7 The EU Directive (2014/52/EU) states that two key considerations are required within the assessment of major accidents and/or disasters; the Proposed Development's potential to cause accidents and/or disasters; and the vulnerability of the Proposed Development to a potential disaster/accident.
- 12.2.8 The COMAH Regulations aim to ensure that businesses '*take all necessary measures to prevent major accidents involving dangerous substances limit the consequences to*



people and the environment of any major accidents which do occur'. 'COMAH treats risks to the environment as seriously as those to people'.

- 12.2.9 This chapter has also been developed taking account of IEMA's *Major Accidents and Disasters in EIA: A Primer* (September 2020). The *Primer* looks to increase awareness of the major accidents and/or disasters EIA topic whilst offering an assessment methodology based on known current practice within the UK to date. The methodology is structured around a typical assessment approach and offers a proportionate method for considering major accidents and/or disasters through screening, scoping and assessment.
- 12.2.10 The Civil Contingencies Act 2004 requires emergency responders in England and Wales to co-operate in maintaining a public Community Risk Register. Community Risk Registers provide a brief overview of significant risks reflecting as far as possible, the unique characteristics (local conditions, infrastructure and geography) of an area. These are published by Local Resilience Forums and look to inform individuals about the highest risks in the area and their consequences; detail steps that can be taken to become better prepared and more resilient; and provide links to organisations and websites to find out more information. The Hampshire and Isle of White Community Risk Register is therefore of relevance to this chapter.
- 12.2.11 Also of relevance is the Hayling Island Emergency Planning Framework 2021. The Framework notes that the only fixed means of gaining vehicular access to the Island is via a two-lane metalled highway carried by a bridge from Langstone on the mainland to Northney on Hayling Island. As such the impact of any highway incident that could lead to delays to local transport systems, including to any emergency service, is considered to be a key issue for the Island.

12.3 Assessment Methodology and Significance Criteria

Scope of the Assessment

- 12.3.1 HBC adopted a Scoping Opinion in September 2021 which stated that *'Given the potential vulnerability of Hayling Island as a whole to flood risk and/or accidents impacting access to the island and potential impact on emergency services it is considered appropriate to address the proposed development's vulnerability to such risks as part of the ES'.*
- 12.3.2 In accordance with HBC's Scoping Opinion, this chapter considers the potential impact upon emergency services should the Proposed Development cause/make

worse a major accident or disaster which in turn has an impact upon infrastructure, including the single access road onto the island.

12.3.3 Appendix 12.1 Risk Table details the findings of the desktop scoping study, setting out the potential accidents and disasters which will be considered within this assessment. The following risk groups will be considered:

- Flooding
- Severe Weather
- Space Weather
- Poor Air Quality
- Human Disease
- Widespread Electricity Failure and Systems Failures
- Major Transport Accidents
- Industrial and Urban Accidents

Effects Not Considered within the Scope

12.3.4 Risk groups and topics not considered within the scope of this assessment are discussed and justified in the Risk Table at Appendix 12.1.

Extent of the Study Area

12.3.5 The Study Area for the assessment has been based on professional judgement, owing to the fact that there is no specific regulatory guidance nor set standardised methodology.

12.3.6 The Study Area encompasses each of the individual study areas defined within the technical chapters of this ES (Chapters 6 to 11).

Assessment Methodology

12.3.7 There is currently no published guidance or methodology for the assessment of the vulnerability of a Proposed Development to major accidents and disasters. The methodology utilised in this assessment has therefore been devised with reference to the IEMA's Major Accidents and Disasters in EIA: A Primer and has taken account of evolving EIA best practice.



12.3.8 The assessment adopts a three-stage approach which looks to identify, screen and scope the major events of relevance to the Proposed Development. The stages are as follows:

Stage 1: Screening

12.3.9 This stage identifies if the Proposed Development has a vulnerability to major accidents and/or disasters and considers whether a development could lead to a significant effect.

Stage 2: Scoping

12.3.10 The purpose of this stage is to define the scope of the assessment. This stage determines in more detail whether there is potential for significant effects as a result of major accidents and/or disasters associated with the Proposed Development.

12.3.11 A desktop study, comprising a review of the UK's current National Risk Register 2020 Edition has been undertaken. This identified an initial list of major accidents and disasters for consideration.

12.3.12 Appendix 12.1 Risk Table details the findings of the desktop study. It is noted that not all potential events will fall into the scope of a major accidents and/or disasters assessment. The Risk Table therefore also defines the risk attributed to an event in order to inform what types of events are within the scope of the major accidents and/or disasters assessment.

12.3.13 As set out within IEMA's *Major Accidents and Disasters in EIA: A Primer* (September 2020) events that have a high likelihood of occurring and would be of high consequence are a high risk and would be unacceptable for any development. Such events may include an element of highway design that did not comply with standards leading to a major road traffic collision and it is assumed that these should already be managed or designed-out by a development. These are therefore considered to be outside the scope of the assessment in accordance with IEMA's *Major Accidents and Disasters in EIA: A Primer* (September 2020)

12.3.14 At the other end of the scale, low-impact events whatever the likelihood, such as minor spills, are low risk and are unlikely to be considered a major accidents and/or disasters risk. These events would not threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment that require the use of resources beyond those of the client or its appointed



representatives to manage. These are also therefore considered to be outside the scope of the assessment.

12.3.15 Owing to the above the assessment will focus on low likelihood but potentially high consequence events in accordance with IEMA's *Major Accidents and Disasters in EIA: A Primer* (September 2020). This approach allows for the assessment to remain proportionate.

12.3.16 Any hazards for which there is no credible source-pathway-receptor linkage have also been scoped out from further assessment.

Stage 3: Assessment

12.3.17 Where the scoping exercise (Stage 2) could not adequately justify the scoping out of a particular major event further assessment has been undertaken.

12.3.18 The assessment approach comprises the following stages:

- 1 Characterisation of baseline conditions.
- 2 Assessment of each of the identified events to determine the significance of effects, in the absence of mitigation, on sensitive receptors (people and the environment), during both the construction and operation (occupation) of the Proposed Development.
- 3 Determination of mitigation measures for any identified significant adverse effects.
- 4 Assessment of residual and cumulative effects.

12.3.19 The assessment has considered a reasonable worst-case approach for each scoped in event, assessed qualitatively, using professional judgement. The approach to assess effects has considered the potential for the Proposed Development to, where relevant:

- cause/make worse a major accident or disaster; and
- be affected by the major accident or disaster.

Significance Criteria

12.3.20 For the purpose of this Chapter, a risk-based approach has been utilised following typical methods employed within EIA to define significance. The overall effect on each potential receptor has been evaluated as a function of receptor sensitivity with the potential magnitude of change (impact).

12.3.21 In this case the potential magnitude of change is considered to be that of a 'major' event. By definition a '*major accident is an event which threatens immediate or delayed serious environmental effects to human health, welfare and/or the environment, and requires the use of resources beyond those of the client or its appointed representatives (i.e. contractors) to manage*' ^[1]. This would therefore imply that any accident or disaster defined as 'major' would result in a high magnitude of change and would therefore result in a significant effect on the environment.

12.3.22 Owing to the above should a typical EIA methodology where significance of effect is determined as a function of the magnitude and sensitivity be utilised all effects would be assessed as substantial which would be considered to be 'Significant' in EIA terms (Table 12.1).

Table 12.1: Significance of Effect		
		Magnitude of Change (Impact)
		High
Receptor Sensitivity	High	Substantial
	Moderate	Substantial
	Low	Substantial
	Very Low	Substantial

12.3.23 However, it is noted that should suitable mitigation, management or regulatory controls be in place the effects can be reduced to one that is 'Not Significant'. This is where the 'risk-based approach' assists in providing a proportionate assessment. Output from Table 12.1 will be adjusted to reflect the risk of the event occurring using Table 12.2, to provide an overall assessment of significance. The risk assessment will be based on professional judgment and consideration of the specific local circumstances relevant to the effect.

Table 12.2: Level of Effect (Significance of Effect) Adjusted for Risk of Event Occurring					
Significance of Effect (From Table 16.1)	Risk				
	High	Medium	Low	Very Low	Negligible
Substantial	Substantial	Substantial	Moderate	Minor	Negligible

12.3.24 Note effects can be adverse or beneficial in nature. Those effects assessed as being substantial (as set out in Table 13.2) are considered to be 'Significant' in EIA terms.

^[1] Major Accidents and Disasters in EIA: A Primer (September 2020)



Limitations

12.3.25 Baseline conditions have been informed by the technical chapters of this ES. As such relevant limitations detailed in Chapters 6 to 11 are relevant to this chapter.

12.3.26 In addition to the Legislation and Guidance detailed above there are numerous other safety related UK Regulations and guidance documents for specific aspects. This assessment relies on the operator undertaking the relevant aspect of works to comply with all relevant regulations.

12.4 Baseline

12.4.1 The Site currently comprises land at Rook Farm (two arable fields, an area of grassland, an agricultural building and a pond). In accordance with the scope, the baseline environment of the project area is detailed below.

Flooding

12.4.2 Under the risk group of 'Flooding', Coastal, Fluvial, Groundwater Surface Water and Sewer flooding have all been scoped in. A summary of the baseline conditions can be found below with further details found in the Water Environment chapter (Chapter 10) and Flood Risk Assessment (Appendix 10.6).

12.4.3 Severe flooding events from persistent heavy rain and flash-flooding events are increasingly affecting parts of the UK. The State of the UK Climate 2020 report indicates that the most recent decade (2010 – 2020) has been on average 1% wetter than 1981-2010 and 5% wetter than 1961-1990 for the UK overall. UK summers during this decade (2010-2019) have been on average 11% wetter than 1981-2010 and 13% wetter than 1961-1990. UK winters have been 4% wetter than 1981-2010 and 12% wetter than 1961-1990.

12.4.4 Partnership for Urban South Hampshire Strategic Flood Risk Assessment (SFRA) mapping (Appendix 10.1) and the Lead Local Flood Authority (LLFA) consultation response show that there have been no historical fluvial, tidal, surface water, groundwater or infrastructure flooding events within the Site boundary.

Coastal Flooding

12.4.5 The Environment Agency flood map shows the Site is located in Flood Zone 1; outside the 1 in 1000-year annual probability tidal (sea) flooding (0.1% Annual Exceedance Probability [AEP]). Flood Zone 1 is land considered to be at 'low' risk of fluvial / tidal flooding (see Drawing 005, in Appendix 10.4).



- 12.4.6 Access to Hayling Island from the mainland is served by the A3023. The Environment Agency online flood map and SFRA mapping shows areas of the A3023, are within Flood Zones 2 and 3, at medium to high risk respectively.

Fluvial Flooding

- 12.4.7 Mill Rithe a 'main river' (where flood risk work is managed by the Environment Agency), passes the Site 350m to the north at its nearest point. In addition, several unnamed ordinary watercourses are located in the immediate vicinity of the Site.
- 12.4.8 The Site is located wholly within Flood Zone 1 and is classified as being at a low risk of flooding from rivers (see Drawing 005, in Appendix 10.4). The National Planning Policy Framework (NPPF) Planning Practice Guidance states that all types of development within Flood Zone 1 are appropriate.
- 12.4.9 Correspondence with the Environmental Agency (Appendix 4 of the FRA (Appendix 10.6) confirms they hold no recorded of historical flooding in the immediate vicinity of the Site. As set out within the Flood Risk Assessment (FRA) (Appendix 10.6) fluvial flood risk at the Site is considered to be negligible.

Groundwater Flooding

- 12.4.10 The Geosmart 1 in 100-year groundwater flood risk map (Drawing 006 in Appendix 10.4) shows that most of the Site is at negligible risk of groundwater flooding. As set out within the Flood Risk Assessment (FRA) (Appendix 10.6) groundwater flood risk at the Site is considered to be low for below ground and negligible for above ground.

Surface Water

- 12.4.11 There are two areas of surface water ponding in the centre of the Site.
- 12.4.12 As set out within the Flood Risk Assessment (FRA) (Appendix 10.6) surface water flood risk at the Site is considered to be negligible for most of the Site, but low for the areas where surface water ponding occurs.

Sewer Flooding

- 12.4.13 There is a Ø525mm public foul sewer conveying flow in a north easterly direction through the northwest corner of the Site. From a review of SFRA and COMMERCIALDW Drainage and Water Enquiry (Appendix 4 of the FRA (Appendix 10.6)), there are no recorded sewer flooding incidents located within the Site. As set out within the Flood Risk Assessment (FRA) (Appendix 10.6) the risk of flooding from



sewers at the Site is considered to be negligible for most of the Site, with an area of low risk along the reach of the onsite sewer.

Severe Weather

12.4.14 The Risk Group 'Severe Weather' includes for storms and gales; low (sub-zero) temperatures and heavy snow; heatwaves; and drought.

Storms and Gales

12.4.15 Hurricanes do not occur in the UK due to our latitudes and sea temperatures. However, the UK can sometimes be affected by deep depressions that were originally hurricanes which have moved to higher latitudes, such as ex-Hurricane Ophelia in 2017.

12.4.16 The latest UK State of the Climate Report states that 'there are no compelling trends in storminess as determined by maximum gust speeds from the UK wind network over the last five decades'^[2]. A total of ten named storms affected the UK in 2020, which was judged to be a fairly typical year for storminess compared to recent decades. However, as reported within the 2019 UK State of the Climate Report, six named storms affected the UK in the year 2019 and this was not a stormy year compared to recent decades. It has also been found that near surface wind speeds have increased over the UK for the second half of the 21st century for the winter season when more significant impacts of the wind are experienced. However, the increase in wind speeds is modest compared to natural variability from month to month and season to season^[3].

12.4.17 Hayling Island's West Beach sea defences suffered damage as a result of Storms Ciara and Dennis in 2020. In addition, a 'tornado' damaged around 100 homes along Blackthorn Road and Ilex Walk, located on the southeastern extent of the island, in October 2013^[4]. No injuries were reported in either instance.

Low (Sub-zero) Temperatures and Heavy Snow

12.4.18 It has been observed that spring snow cover has been continuing to decrease in extent in the Northern Hemisphere and that cold temperature extremes are projected to decrease along with the number of frost days. Widespread and

² State of the UK Climate 2020.

³ UKCP18 Factsheet: Wind

⁴ BBC News Report - [Hayling Island properties hit by 'tornado' - BBC News](#)



substantial snow events have occurred in 2018, 2013, 2010 and 2009, but their number and severity have generally declined since the 1960's.

12.4.19 The latest State of the UK Climate report shows that there have been 16% fewer days of air frost (when daily minimum temperature falls below 0°C) in the most recent decade (2011–2020); 14% fewer days of ground frost compared to the 1981–2010 average; and 25% and 20% fewer respectively compared to 1961–1990. During the decade (2008–2017) a substantial area of the UK has had less than one icing day per year on average, compared to the long-term average of about five.

12.4.20 There were no major snow events affecting the UK during 2020 and snow impacts were mostly limited and unremarkable. Accidents, road closures and transport disruption occurred across many parts of the UK during winter 2019 as a result of widespread frost and snow, although depths were typically only 1 or 2 cm.

Heat Waves

12.4.21 The Intergovernmental Panel on Climate Change (IPCC) predict that temperature extremes will increase more rapidly than global mean surface temperature, with the number of hot days projected to increase in most land regions. In the 1.5°C warming scenario heat waves in mid latitudes could warm by up to 3°C. The Central England Temperature (CET) series provided by the Met Office provides evidence that the 21st century so far has overall been warmer than the previous three centuries.

12.4.22 As reported in the past UK State of the Climate reports, the UK is experiencing higher maximum temperatures and longer warm spells. The most recent decade (2011–2020) has been on average 0.5°C warmer than the 1981–2010 average and 1.1°C warmer than 1961–1990. The 2020 Report states that *'The UK mean temperature (Tmean) for 2020 was 9.6°C, which is 0.8°C above the 1981–2010 long-term average, making it the third warmest year in the UK series from 1884. [...] The annual mean temperature was around 0.5–1.0°C above average across most of the UK, but more than 1.0°C across south-east England'*. The 2020 report also notes that the UK's third hottest day (37.8°C) on record was recorded on the 31st of July 2020 during a brief heatwave.

12.4.23 The Independent Assessment of UK Climate Risks published by the Climate Change Committee (CCC) in 2021 identifies overheating as one on the top eight high priority climate risks in the UK, with a growing number of summer days reaching 40°C on any given day across parts of the UK.



12.4.24 A review of Meteorological Office climate data⁵ shows that average annual temperatures within the southeast of England have remained relatively similar over the past decade. However, average temperatures during the summer months have increased during the latter half of the decade.

Drought

12.4.25 The Independent Assessment of UK Climate Risks published by CCC in 2021 identifies water availability as one on the top eight high priority climate risks in the UK. Determining whether droughts are becoming more common or more prolonged in certain regions due to climate change is challenging because of the many meteorological, hydrological, and societal drivers that combine to cause them. The latest UK Climate Projections (UKCP18) does, however, predict a trend towards drier summers on average and that the drying trend is stronger under a high greenhouse gas emission scenario compared to a low one.

Space Weather

12.4.26 The Risk Group 'Space Weather' includes for solar flares; and Coronal Mass Ejections (CME).

12.4.27 As noted within the National Risk Register 2020 edition the UK aviation sector lost some GPS functions for a day, in 2003, due to a space weather event storm. Records also show that solar storms experienced in 1921, 1960 and 1967 led to widespread radio disruption and impacts on railway signalling and switching systems.

Poor Air Quality

12.4.28 As identified within the Air Quality Chapter (Chapter 6) there are currently no existing Air Quality Management Areas (AQMAs) declared within the HBC administrative areas. HBC have a network of NO₂ diffusion tubes across their administrative area. Results indicate that air quality within HBC is considered generally good and it is also noted that measured NO₂ concentrations are either broadly stable or reducing across the district.

12.4.29 Monitoring undertaken as part of the air quality assessment has shown that all predicted NO₂, PM₁₀ and PM_{2.5} concentrations, at existing sensitive receptors (residential) within proximity to the Site, are below the relevant objectives and limit values in both an opening year and future year scenario, with the exception two

⁵ Monthly, seasonal and annual mean air temperature for England SE and Central S
https://www.metoffice.gov.uk/pub/data/weather/uk/climate/datasets/Tmean/date/England_SE_and_Central_S.txt



receptors. The two receptors have been shown to slightly exceed the NO₂ annual mean objective in the 2017 base year however this is expected due to their location close to the A27 Havant Bypass, and in close proximity to the Langstone Road & A27/A3023/B2149 Junction.

Human Disease

12.4.30 The topic of Human Disease has been scoped in in light of the ongoing COVID-19 Coronavirus pandemic.

12.4.31 The pandemic has resulted in a global loss of life. At the time of writing, worldwide there has been a recorded 257 million cases and 5.16 million deaths since 31st December 2019⁶. In the UK there has been a reported 10.02 million cases and 167,927 deaths with COVID-19 on the death certificate⁷.

12.4.32 The UK is currently in the process of issuing a vaccination for COVID-19. At the time of writing 88.4% of the UK have received their first dose, 80.4% have received the second dose and 28.5% have received the third dose (booster)⁷.

Widespread Electricity Failure and Systems Failures

12.4.33 The National Risk Register 2020 edition notes that an electricity failure across entire regions or the UK as a whole has not happened before. As such no national blackout has ever happened however an incident did occur between 22 and 28 December 2013 when, as a result of two severe winter storms and consequent damage to the distribution overhead line network, around 900,000 UK customers suffered a loss of electricity.

Utilities Failures

12.4.34 Existing Utilities on Site were identified within the Applicant's Utilities Statement (2016).

12.4.35 Plans provided by Scottish & Southern Electric (SSE) indicate there are two high voltage (HV) 33kV overhead lines crossing the north eastern corner of the site and an 11kV HV underground cable crossing the middle of the site.

⁶ COVID-19 situation update worldwide, as of week 46, update 25 November 2021.

<https://www.ecdc.europa.eu/en/geographical-distribution-2019-ncov-cases>

⁷ Data up to and including the 24 November 2021 via <https://coronavirus.data.gov.uk/>



12.4.36 Information from Southern Gas Networks (SGN) indicates that there are no existing gas mains within the site boundary. There is a low pressure (LP) main in St Mary's Road.

12.4.37 Plans supplied by Portsmouth Water indicate there are no water mains within the site boundary. There is an existing 4" water main running along St Mary's Road.

Telecommunications error

12.4.38 BT records indicate there is no existing plant within the site boundary.

Major Transport Accidents

12.4.39 Personal injury accident data sourced from Hampshire Constabulary has been reviewed in Chapter 8 (Transport).

12.4.40 Across the defined study area (see section 8.4.5 of Chapter 8), there has been a total of 114 accidents recorded during the five-year period of 1st May 2016 to 30th April 2021. These accidents comprised of 25 serious and 89 slight injury accidents. No fatal accidents occurred however 134 casualties were recorded.

Industrial and Urban Accidents

12.4.41 The Risk Group 'Industrial and Urban Accidents' includes for fire and explosions.

Fire and Explosions

12.4.42 No known fires have occurred at the Site.

12.4.43 In September 2021 a house fire at Bacon Lane, Hayling Island resulted in one casualty. Firefighters from Hayling Island, Cosham, Emsworth and Southsea attended the scene.

Sensitive Receptors

12.4.44 Sensitive receptors considered to be at risk should the Proposed Development cause/make worse a major accident or disaster (Assessment of Effects Part 1) are:

- Emergency services;
- members of the public and local communities; and
- the natural environment, including ecosystems, climatic systems, land and soil quality, air quality, surface and groundwater resources and landscape, and the historic environment, including archaeology and built heritage.



12.4.45 For Part 2 of the Assessment of Effects the sensitive receptor is considered to be the future residents of the Site.

12.5 Assessment of Effects

Design Solutions and Assumptions

12.5.1 It is acknowledged that at the Proposed Development's current stage of planning, details of construction, such as a Construction Environmental Management Plan (CEMP), have not yet been fully defined. However, a presumption of standard practice and regulatory compliance has been assumed.

Stage 1: Screening

12.5.2 As per IEMA's Primer where there is any uncertainty as to an event's potential to cause a significant environmental effect, a major accident and/or disasters assessment should be scoped in.

12.5.3 HBC have requested the inclusion of a Vulnerability to Major Accidents and Disasters chapter within the ES and therefore the topic has been scoped in.

Stage 2: Identification of Scope / Associated Risk

12.5.4 The baseline conditions at the Site are as set out within section 12.5 of this chapter.

12.5.5 The Risk Table included at Appendix 12.1 identifies the risks that are and are not applicable to the Proposed Development.

Stage 3: Assessment of Effects

12.5.6 The assessment has followed a two-part approach considering the potential for the Proposed Development to, where relevant:

- Part 1: cause/make worse a major accident or disaster; and
- Part 2: be affected by the major accident or disaster.

Part 1: cause/make worse a major accident or disaster

12.5.7 Due to the nature and location of the Proposed Development, there will be no increased risks to the following major events:

- Severe Weather (storms and gales, low (sub-zero) temperatures and heavy snow, heatwaves and drought); and
- Space Weather.



12.5.8 Where there is potential for the Proposed Development to cause/make worse a major accident or disaster this has been assessed below.

Flooding

12.5.9 In relation to the assessment below reference should be made to Chapter 10 (Water Environment) and to the Flood Risk Assessment (FRA) (Appendix 10.6).

12.5.10 During construction of the Proposed Development the creation of temporary structures and construction of permanent structures will introduce impermeable areas. The increase in impermeable ground will reduce the ability for rainfall to infiltrate into the underlying strata, increasing run off volumes. Permeability may also be decreased due to soil compaction.

12.5.11 During operation the amount of hardstanding will increase as a consequence of the Proposed Development. The increase in impermeable ground across the Site will reduce the ability of the Site to accept rainfall volumes. Site drainage implemented on Site such as guttering, and highway drainage has the potential to increase the Site's sensitivity to rainfall and reduce response time to rainwater reaching the receptor. There is also potential for the Site layout to remove/introduce flow paths and directs floodwater to areas not previously at risk of flooding.

12.5.12 The FRA concludes that the Proposed Development would not increase flood risk elsewhere and is compliant with the requirements of national policy and guidance.

12.5.13 The risk of flooding is therefore considered to be **low** which results in a **Moderate adverse** level of effect on the local population and natural environment. **No significant adverse effects** are therefore expected in relation to flooding during both the construction and operation phases of the Proposed Development.

12.5.14 It is acknowledged that access to Hayling Island from the mainland is served by a single road, the A3023. The FRA assesses the risk of tidal flooding to Hayling Island access/egress (Langstone Bridge) as medium to high. As reported within the FRA:

- *'The areas north and south of the Hayling Bridge are covered by flood warnings, which have long lead up times (up to days in advance), which enable temporary bridge closure.*
- *Tidal flooding events are often short-lived (a matter of hours for spring tides and for storm surges), so any bridge closure would only be a short-lived event.*
- *The Hayling Emergency Planning Framework provides details of an emergency plan if the 'highly unlikely' scenario where a flood event were to*



prevent access on and off the Island were to unfold. Full details of the Emergency Planning Framework can be found in Appendix 3.

- *The Island and Site provides a safe place of refuge and as such no access/egress to the island would not pose a risk to life'.*

12.5.15 Owing to factors such as distance and nature the Proposed Development will not exacerbate the flood risk at the Langstone Bridge. The risk of causing/ making worse a major flood event, at Langstone Bridge, is therefore considered to be **negligible** which results in a **negligible level of effect** on emergency services, local population and the environment. As above **no significant effects** are considered.

Poor Air Quality

12.5.16 Demolition, earthworks, construction and trackout associated with the construction of the Proposed Development have the potential to cause significant dust effects.

12.5.17 Chapter 6 (Air Quality) identified that assuming that no mitigation measures are applied, except those required by legislation;

- The risk of dust soiling effects is classed as negligible for demolition, high for earthworks and construction, and medium for trackout; and
- The risk of human health effects is classed as negligible for demolition, and low for earthworks, construction and trackout.

12.5.18 Site mitigation measures do not need to be recommended if the risk category is negligible. Owing to the fact a number of the above risk categories are above negligible it is considered that without the implementation of effective mitigation measures there is potential for the Proposed Development to cause or make worse a major event associated with air quality. The risk of such is considered to be **high to medium**. A **substantial adverse** effect (**significant**) on local population is therefore considered prior to the implementation of mitigation measures in relation to poor air quality.

12.5.19 However, it should be noted that the above assessment relates to Step 2C of the construction phase dust assessment (see Chapter 6). The *IAQM* guidance recommends that a significance of an effect should only be assigned after mitigation measures are implemented. This is because:

“EIA influences the design process and therefore significant adverse environmental effects are either avoided or reduced through design before

the proposal is finalised, and thus the pre-mitigation impacts are not relevant”.

12.5.20 As a result, the significance of construction phase effects, with mitigation in place, are detailed in section 12.7 and 12.8.

12.5.21 As part of Chapter 6 (Air Quality) an assessment has been undertaken to consider the potential effects on nitrogen pollution due to the increased traffic flow on roads, during operation of the Proposed Development, within 200m of the Chichester and Langstone Harbours Ramsar and SPA, Solent Maritime SAC, Langstone Harbour SSSI and Chichester Harbour SSSI designated habitat complex. Air dispersion modelling has shown that no potentially significant increases in pollutant nitrogen resulting from the Proposed Development in isolation will occur within the Chichester and Langstone Harbours designated habitat complex. The modelling did however find that potentially significant increases in pollutant nitrogen resulting from the Proposed Development, in combination with other committed development, could occur at a single modelled location within Emsworth Harbour, adjacent to Langstone Road. A review of this data within Chapter 7 (Ecology) identified that the habitat is intertidal and regularly inundated with tidal water, with the result that air pollutants are unlikely to be capable of adversely affecting the habitats present. The risk to ecological designations is therefore considered to be **very low**. This results in a **Minor adverse level** of effect. **No significant effects** as a result of poor air quality are therefore expected on ecological designations. Further details can be found in Chapter 6 (Air Quality) and Chapter 7 (Ecology).

12.5.22 It is not considered that the risk group of poor air quality is relevant to the sensitive receptors of emergency services.

Human Disease

12.5.23 During construction there is potential for the Proposed Development to exacerbate the spread of infectious illnesses. In work environments where many people work closely together infection can be spread through indirect contact with a person with an illness.

12.5.24 During construction of the Proposed Development employees will follow Government guidance for working safely during the coronavirus (COVID-19) pandemic. It is acknowledged that GOV.UK have published specific guidance for ‘Working safely during coronavirus (COVID-19)’. The guidance is aimed at people



who work in or run outdoor working environments and will be incorporated into a site-specific risk assessment where deemed relevant. The risk assessments will be tailored to the phase of work.

- 12.5.25 With suitable social distancing and health and safety measures in place, including the use of suitable Personal Protective Equipment (PPE), the risk of spreading disease is considered to be **low** during construction. This results in a **Moderate adverse level** of effect. **No significant adverse effects** on local population are therefore expected in relation to human disease.
- 12.5.26 During operation there is potential for the spread of disease as a result of introduction of a new population on the Site. It is assumed that future residents will abide by standard COVID-19 guidance and any future guidance regarding human disease thereby limiting the risk of the spread of disease. The risk is therefore considered to be **very low** during operation. This results in a **Minor adverse level** of effect. **No significant adverse effects** on local population are therefore expected in relation to human disease.
- 12.5.27 It is not considered that the risk group of human disease is relevant to the sensitive receptors of emergency services or the natural environment.

Widespread Electricity Failure and Systems Failures

Utilities Failure and Telecommunications Failure

- 12.5.28 Construction of the Proposed Development has the potential to disrupt telecommunications and utilities including gas, electricity, water resource and sewage system. This in turn could impact upon human health and emergency services through damage to property or infrastructure; physical and psychological casualties or fatalities due to the loss of essential services, such as gas for heating; and/or disruption to or loss of essential services, particularly transport, fuel, and communications.
- 12.5.29 During the construction phase suitable precautions will be considered in the locations of planned work. Such considerations include not building directly over utility mains; establishing exclusion zones either side of a main, not piling or drilling within a suitable radius without approval; use of goalpost barriers; and retracing heavy plant from crossing existing mains. Should a utility main be compromised in any way a contingency plan will be produced.



12.5.30 A suitable routing plan will also be in place during the construction phase of the Proposed Development. This will ensure all overhead and underground mains/lines will not be impacted upon by the additional HGV movements brought about by the Proposed Development.

12.5.31 The risk that construction activities will cause/make worse a utilities or telecommunication failure is therefore considered to be **low**. The resulting level of effect on local population and emergency services is considered to be **Moderate adverse**. **No significant adverse effects** are therefore expected in relation to utilities failures or telecommunication failures.

12.5.32 It is not considered that the risk group of widespread electricity failure and systems failures is relevant to the sensitive receptor, the natural environment.

Major Transport Accidents

12.5.33 There is a potential for effects on highway safety caused by the increase in traffic flow as a result of the Proposed Development.

12.5.34 As reported in Chapter 8 (Transport) there has been a total of 114 accidents, across the study area. A review of this data (as presented in Chapter 8) has shown that there does not appear to be a pattern or common cause to the accidents that have taken place both locally to the Site and in the study area as a whole. Multiple causation factors have been noted with driver/rider error being the main factor in the vast majority of accidents. The number of accidents is not unusually high given the extent of this study area and the volume of traffic

12.5.35 Analysis of the overall accident data indicates that the design and layout of the local highway network would not in itself appear to be an overriding factor in the cause of the accidents. The development proposals are unlikely, therefore, to have a detrimental impact on the accident rate in the area.

12.5.36 A construction Traffic Management Plan (CTMP) will be prepared for the Proposed Development. This will include measures to reduce the impact of traffic on the local highway network such as ensuring that traffic to/from the Site adheres to the agreed routes to ensure traffic nuisance is not inadvertently caused. In addition, a mitigation package has been devised by HBC to accommodate the emerging Local Plan allocations which includes the Site. The highway mitigation package includes a number of junction upgrades which should in turn improve safety at them for all



users, as should the friction reduction measures, speed limit reduction on the A3023 and pedestrian crossing improvements.

12.5.37 It is considered that the risk from transport accidents as a result of the Proposed Development is **negligible** which results in a **negligible** level of effect on the local population and emergency services. **No significant adverse effects** are therefore expected in relation to transport accidents.

12.5.38 It is not considered that the risk group of major transport accidents is relevant to the sensitive receptor, the natural environment.

Industrial and Urban Accidents

Fire and Explosions

12.5.39 Construction of the Proposed Development will include sources of ignition, such as plant and equipment (e.g. fuel and vehicle exhausts), and sources of fuel, such as stored/in-use building products (e.g. composite panels, timber and rubbish). There is potential for sources of heat and fuel to ignite during construction which in turn could lead to a whole structure being involved in a fire. It is assumed that construction of the Proposed Development will follow standard good practice and a suitable fire risk assessment and fire precautions will be adhered to. The risk assessment will take account of relevant guidance, such as HSE's 'Fire safety in construction' which details measures aimed at reducing the risk of a fire occurring.

12.5.40 Due to its nature heat sources, such as gas, electric, cooking equipment, microwaves, will be present within the Proposed Development. There is potential for this equipment to catch fire or explode affecting human health and built structures. There is also potential for an increased risk of fire from overheating due to increased fabric efficiency and incorrect implementation. In turn these impacts would place pressure on emergency services.

12.5.41 The Proposed Development will be built to national fire regulations and to have the standards of fire protection required by Building Regulations. The Proposed Development will include the use of linings, materials and finishes that limit the release of heat. Good design will reduce the risk of fire significantly.

12.5.42 Owing to the above the risk of a fire occurring is considered to be **low**. This results in a **Moderate adverse** level of effect for local population and emergency services. **No significant adverse effects** are therefore expected in relation to fires and explosions.



12.5.43 It is not considered that the risk group of industrial and urban is relevant to the sensitive receptor, natural environment.

Part 2: be affected by the major accident or disaster

Topics not included within the Scope of Part 2

12.5.44 It should be noted that for Part 2 the sensitive receptor is considered to be the future residents of the Site. All levels of effect have been considered in this context.

Flooding

12.5.45 In relation to the assessment below reference should be made to Chapter 10 (Water Environment) and to the Flood Risk assessment (FRA) (Appendix 10.6).

Coastal Flooding

12.5.46 The FRA assesses the risk of tidal flooding to the Site as low. With reference to Table 12.2 this would result in a **Moderate adverse** level of effect which is **not significant**.

Fluvial Flooding

12.5.47 The FRA assesses the risk of fluvial flooding to the Site as negligible. For the purpose of this assessment this level of risk considered within the FRA is considered to be **very low**. With reference to Table 12.2 this would result in a **Minor adverse** level of effect which is **not significant**.

Groundwater Flooding

12.5.48 The FRA assesses the risk of groundwater flooding as negligible for most of the Site, but low for a small area associated with a pond. With reference to Table 12.2 this would result in a **Minor level of effect** for the majority of the Site and a **Moderate adverse** level of effect for the small area associated with the pond. **Both of which are considered not significant**.

Surface Water

12.5.49 The FRA assesses the risk of surface water flooding as negligible for most of the Site, but low for two small areas where ponding occurs. With reference to Table 12.2 this would result in a **Minor adverse** level of effect for the majority of the Site and a **Moderate adverse** level of effect for the two small areas where ponding occurs. **Both of which are considered not significant**.



Sewer Flooding

- 12.5.50 The FRA assesses the risk of sewer flooding as negligible for most of the Site, but low for the reach of the sewer which passes through the Site boundary. With reference to Table 12.2 this would result in a **Minor adverse** level of effect for the majority of the Site and a **Moderate adverse** level of effect for the reach of the sewer which passes through the Site boundary. **Both of which are considered not significant.**

Severe Weather

Storms and Gales

- 12.5.51 The Proposed Development will incorporate good design and suitable construction methods to minimise the impact from storm damage. It is also assumed that standard health and safety practices will be incorporated during both the construction and operational phases of the Proposed Development to minimise the potential for impacts upon human health.
- 12.5.52 Through implementation of the measures detailed it is considered that the risk from storm damage on sensitive receptors will be **low**, resulting in a **Moderate adverse** level of effect which is considered to be **not significant**.

Low (Sub-zero) Temperatures and Heavy Snow

- 12.5.53 The Proposed Development will incorporate good design and suitable construction methods to minimise the impact from low (sub-zero) temperatures and heavy snow. It is also assumed that standard health and safety practices will be incorporated during both the construction and operational phases of the Proposed Development to minimise the potential for impacts upon human health.
- 12.5.54 Through implementation of the measures detailed it is considered that the risk from low (sub-zero) temperatures and heavy snow on sensitive receptors will be **very low**, resulting in a **Minor adverse** level of effect which is considered to be **not significant**.

Heatwaves

- 12.5.55 Heatwaves can impact upon human health, safety issues and infrastructure. Such impacts include air conditioning/ heating/ cooling systems being impacted due to increased cooling/ decreased heating requirements; overheating of mechanical and electrical equipment affecting lifespan; increased discomfort or overheating in summer; decreased labour productivity; and structure/ cladding/ roofing membranes, sealants, pavements, and roads having increased risk of cracking.



12.5.56 To reduce the risks of impacts from heatwaves the Proposed Development will be carefully designed to reduce solar gain during summer and maximise the effectiveness of natural ventilation.

12.5.57 Overall, the risk from heatwaves is considered to be very low which results in a **Minor adverse** level of effect. **No significant adverse effects** are therefore expected in relation to heatwaves.

Drought

12.5.58 Projections show that summer precipitation rates are reducing. Although periods of drought are few and far between in the UK these projections could increase the likelihood of drought.

12.5.59 The Water Act (2003) has made it a statutory requirement for all water companies to produce and maintain a drought plan. Portsmouth Water published their Drought Plan in 2019 however are currently in the process of updating the Plan. Their draft Drought Plan was produced in the summer of 2021, and is now subject to review. Both the 2019 and 2021 plans set out how Portsmouth Water will manage resources and supply system during drought periods, whilst balancing the interests of customers, the environment and wildlife.

12.5.60 Prior to a drought Portsmouth Water will ensure that customers are aware of any limited availability of water resource through the promotion of water efficiency. Effective communication can help reduce demand in a drought. However, should a drought event occur construction staff and residents will follow the actions as set out by Portsmouth Water within their relevant published Drought Plan. Should the relevant actions be taken, this will reduce the risk of significant adverse effects on human receptors in relation to drought.

12.5.61 In conclusion the risk from drought is considered to be **very low** which results in a **Minor adverse** level of effect. **No significant adverse effects** are therefore expected in relation to droughts.

Space Weather

12.5.62 Impacts as a result of space weather include electricity blackouts, potentially causing fatalities and physical / psychological casualties; loss / disruption of Global Navigation Satellite Systems; disruption to essential services, particularly air travel, energy and communications; and increases in background radiation.



12.5.63 As a response to the potential impacts space weather can cause, the Government and local responders have produced the UK Severe Space Weather Preparedness Strategy. It outlines a series of commitments by government to work with industry, academia, and international partners to increase the country's understanding of and preparedness for severe space weather. The Strategy is underpinned by three 'pillars': 'Assess Pillar' focusing on enhancing our understanding of severe space weather, its impacts, and our ability to forecast events; 'Prepare Pillar' focusing on increasing the resilience of essential infrastructure and services; and 'Respond & Recover Pillar' focusing on ensuring the UK can respond to events effectively and recover from them quickly. Under the 'Prepare Pillar' the Strategy looks to develop and test response plans and develop mitigation options. In the event of extreme space weather suitable management steps will be adhered to following instruction by Public Health England and local responders.

12.5.64 Whilst it is acknowledged that there is the potential for space weather to lead to a loss of life this is considered very unlikely. Exposure to UVB and UVA from solar radiation can cause adverse health effects, including increased incidence of skin cancers, cataracts, and immune suppression. The Proposed Development will incorporate good design and technologies to reduce the risk of solar radiation exposure.

12.5.65 As such the risk from space weather is considered to be **negligible**. This results in a **negligible** level of effect which is considered to be **not significant**.

Poor Air Quality

12.5.66 Demolition, earthworks, construction and trackout associated with the construction of the Proposed Development have the potential to cause significant dust effects.

12.5.67 Chapter 6 (Air Quality) identified that (assuming that no mitigation measures are applied, except those required by legislation);

- The risk of dust soiling effects is classed as negligible for demolition, high for earthworks and construction, and medium for trackout; and
- The risk of human health effects is classed as negligible for demolition, and low for earthworks, construction and trackout.

12.5.68 Site mitigation measures do not need to be recommended if the risk category is negligible. Owing to the fact a number of the above risk categories are above negligible it is considered that without the implementation of effective mitigation



measures there is potential for the Proposed Development to be affected by a major air quality event.

12.5.69 As identified within Chapter 6 the risk to human health is considered to be **low**. For the purpose of this assessment this results in a **Moderate adverse** level of effect. **No significant effects** are therefore considered in relation to human health. However, the risk of dust soiling effects is considered to be **high** during earthworks and construction and **medium** for trackout. These risk levels would result in **Substantial adverse** levels of effect. **A significant effect** is therefore considered prior to the implementation of mitigation measures during construction in relation to dust soiling effects.

12.5.70 As reported in Chapter 6 (Air Quality) NO₂, PM₁₀ and PM_{2.5} concentrations within the Site are predicted to be below the relevant objectives and limit values. The risk of a major air quality event occurring is considered to be **low** and therefore the level of effect during operation has been assessed as **Moderate adverse** which is considered **not significant**.

Human Disease

12.5.71 The topic of human disease has been scoped in in light of the ongoing COVID-19 Pandemic.

12.5.72 The spread of illness has the potential to cause significant effects upon human health should suitable planning and measures not be adhered to.

12.5.73 During construction of the Proposed Development employees will follow Government guidance for working safely during coronavirus (COVID-19). It is acknowledged that specific individual guidance has been produced for 'construction and outdoor work'. The guidance will be incorporated into a site-specific risk assessment where deemed relevant. The risk assessments will be tailored to the phase of work.

12.5.74 During operation it is assumed that future residents will abide by standard COVID-19 guidance and any future guidance regarding human disease.

12.5.75 The above measures will significantly reduce the risk of the spread of disease and adverse effects on human health receptors. The risk of impacts as a result of human diseases is therefore considered to be **very low**. This results in a **Minor adverse** level of effect which is considered to be **not significant**.



Widespread Electricity Failure and Systems Failures

Utilities Failure

- 12.5.76 A utility failure, whether it be gas, electrical, water resource or sewage related, could lead to a significant adverse effect on human health and/or built structures.
- 12.5.77 Construction activities and the design of the Proposed Development will ensure that the location of existing and future utility mains and lines are accounted for. A health and safety pack will be prepared for the Site detailing measures and actions to be taken in the event of an emergency.
- 12.5.78 The risk with the above measures in place is considered to be **very low**, resulting in a **Minor adverse** level of effect. **No significant adverse** effects are therefore expected in relation to utilities failures.

Telecommunications Failure

- 12.5.79 Unlike a utilities failure a telecommunications error is more likely to disrupt construction and operation rather than impact human health or built structures.
- 12.5.80 Should an emergency event occur the health and safety pack for the Site will detail measures and actions to be taken to reduce the impact experienced.
- 12.5.81 The risk with the above measures in place is considered to be **very low**, resulting in a **Minor adverse** level of effect. **No significant adverse effects** are therefore expected in relation to telecommunications errors.

Major Transport Accidents

- 12.5.82 There is a potential for major transport accidents to affect the accessibility of the Proposed Development, or affect vehicular routes within the Site.
- 12.5.83 As reported in Chapter 8 (Transport) there has been a total of 114 accidents, across the study area. A review of this data (as presented in Chapter 8) has shown that there does not appear to be a pattern or common cause to the accidents that have taken place both locally to the Site and in the study area as a whole. Multiple causation factors have been noted with driver/rider error being the main factor in the vast majority of accidents. The number of accidents is not unusually high given the extent of this study area and the volume of traffic
- 12.5.84 Analysis of the overall accident data indicates that the design and layout of the local highway network would not in itself appear to be an overriding factor in the cause of



the accidents. The design of the Proposed Development has considered safety and therefore it is unlikely that there would be a major transport accident within the Site.

12.5.85 A construction Traffic Management Plan (CTMP) will be prepared for the Proposed Development. This will include measures to reduce the impact of traffic on the local highway network such as ensuring that traffic to/from the Site adheres to the agreed routes to ensure traffic nuisance is not inadvertently caused. In addition, a mitigation package has been devised by HBC to accommodate the emerging Local Plan allocations which includes the Site. The highway mitigation package includes a number of junction upgrades which should in turn improve safety at them for all users, as should the friction reduction measures, speed limit reduction on the A3023 and pedestrian crossing improvements.

12.5.86 It is considered that the risk from transport accidents to the Proposed Development is **negligible** which results in a **negligible** level of effect. **No significant adverse effects** are therefore expected in relation to transport accidents.

Industrial and Urban Accidents

Fire and Explosions

12.5.87 Should a building fire or explosions occur onsite there is potential for significant effects on human health and structural integrity. The severity of the effect will depend on the severity of the incident. In a worst-case scenario, an event would lead to a loss of life and structural damage.

12.5.88 It is assumed that construction of the Proposed Development will follow standard good practice and a suitable fire risk assessment and fire precautions will be adhered to. The risk assessment will take account of relevant guidance, such as HSE's 'Fire safety in construction' which details measures aimed at reducing the risk of a fire occurring in the first instance.

12.5.89 The Proposed Development will be built to Building Standards which will include for fire safety measures. All materials used in the linings, materials and finishes of buildings will limit the heat release through strict compliance with national fire regulations. In addition, the use of fire and smoke alarms in all buildings is mandatory and the implementation of basic fire preparation and response plans will significantly reduce the risks to human life.



12.5.90 In conclusion the risk from fires and explosions is considered to be **low**, resulting in a **Moderate adverse** level of effect. **No significant adverse effects** are therefore expected in relation to fires and explosions.

12.6 Mitigation

12.6.1 Beyond those detailed below no further mitigation measures are considered to be required.

Flood Risk

12.6.2 Whilst the flood risk at the Site is considered to be no higher than low the FRA identifies standard industry practice mitigation measures, for this type of development, which would reduce the flood risk from identified sources further. The approach is as follows:

- Provide a 4m easement free from development along either side of the onsite land drains.
- This easement would provide access for inspection and maintenance purposes, including vehicle access.
- Highway crossings along land drains should be kept to a minimum. Culvert crossings would need to be sized to convey flows.
- Undertake maintenance activities to keep the land drain clear from debris and overgrown vegetation.
- Set the surface water outfall from the proposed development at an appropriate height above the bed level of the receiving land drain.
- Set finished floor levels above external levels.
- Provide a development free easement along the length of the onsite sewer.
- Levelling of topographic low points.
- Adoption of a surface water management strategy.
- Lined pond to prevent groundwater ingress.
- No below surface buildings (i.e. basements).

Air Quality

12.6.3 To reduce the potential for nuisance dust and particulate matter to be generated during construction a best practice dust mitigation plan will be written and implemented for the Site. This will set out the practical measures to be incorporated as part of a best working practice scheme.



- 12.6.4 Should exceptional incidents occur that cause dust and/or emissions these will be recorded, and appropriate measures be taken to identify causes and reduce emissions in a timely manner.
- 12.6.5 It is recognised that the final design solutions will be developed with the input of the contractor to maximise construction efficiencies, to use modern construction techniques and sustainable materials, and to incorporate the particular skills and experience offered by the successful contractor.

12.7 Residual Effects

Part 1: cause/make worse a major accident or disaster

Flood Risk

- 12.7.1 Following the implementation of measures (see Chapter 5 of FRA (Appendix 10.6)), considered standard industry practice for this type of development, the residual flood risk from all sources of flooding is considered to be **very low resulting in a Minor adverse** level of effect on local population and the natural environment. **No significant adverse effects** are therefore expected in relation to flood risk.
- 12.7.2 Given the findings outlined above the residual effect upon emergency services will remain as detailed in Part 1 above.

Air Quality

- 12.7.3 The Air Quality Chapter (Chapter 6) reports that the implementation of effective mitigation measures during the construction phase will reduce the potential for nuisance dust and particulate matter to be generated and any residual impact should be 'not significant'.
- 12.7.4 Taking into account the air quality assessment results and the proposed and suggested mitigation measures the risk of the Proposed Development causing or making worse a major event associated with air quality is considered to be **low**. This risk results in a **Moderate adverse** level of effect on the local population. Effects on the natural environment will remain as above (not significant). **No significant adverse effects** are therefore expected in relation to poor air quality.



Part 2: be affected by the major accident or disaster

Flood Risk

12.7.5 Following the implementation of measures (see Chapter 5 of FRA (Appendix 10.6)), considered standard industry practice for this type of development, the residual flood risk from all sources of flooding is considered to be **very low** resulting in a **Minor adverse** level of effect. **No significant adverse effects** are therefore expected in relation to flood risk.

12.7.6 All further effects will remain as assessed above. Therefore, there will be **no significant residual effects**.

Air Quality

12.7.7 The Air Quality Chapter (Chapter 6) reports that the implementation of effective mitigation measures during the construction phase will reduce the potential for nuisance dust and particulate matter to be generated and any residual impact should be 'not significant'.

12.7.8 Taking into account the air quality assessment results and the proposed and suggested mitigation measures the risk of a major event affecting the Proposed Development is considered to be **low** which results in a **Moderate adverse** level of effect. **No significant adverse effects** are therefore expected in relation to poor air quality.

12.7.9 A summary of all effects can be found below (Table 12.3).

Table 12.3 Summary of Effects				
Risk Group	Relevant Receptors	Pre-mitigation Effect	Mitigation	Residual Effect
Part 1: cause/make worse a major accident or disaster				
Flooding	Emergency Services	Negligible (Not Significant)	Standard industry practice mitigation measures including easements and a surface water management strategy (See Chapter 10 (Water Environment) and Appendix 10.6 (FRA) for further details)	Minor adverse (Not Significant)
	Local Population	Moderate Adverse (Not Significant)		
	Natural Environment	Moderate Adverse (Not Significant)		



Table 12.3 Summary of Effects

Risk Group	Relevant Receptors	Pre-mitigation Effect	Mitigation	Residual Effect
Poor Quality Air	Local Population	Substantial Adverse (Significant)	- Best practice dust mitigation plan - Exceptional incidents will be recorded and dealt appropriately. - final design solutions will be developed with the input of the contractor to maximise construction efficiencies (See Chapter 6 for further details)	Moderate Adverse (Not Significant)
	Natural Environment	Minor Adverse (Not Significant)		Minor Adverse (Not Significant)
Human Disease	Local Population	Moderate Adverse (Not Significant)	No mitigation required.	Moderate Adverse (Not Significant)
Widespread Electricity Failure and System Failures	Emergency Services	Moderate Adverse (Not Significant)	No mitigation required.	Moderate Adverse (Not Significant)
	Local Population	Moderate Adverse (Not Significant)	No mitigation required.	Moderate Adverse (Not Significant)
Major Transport Accidents	Emergency Services	Negligible (Not Significant)	No mitigation required.	Negligible (Not Significant)
	Local Population	Negligible (Not Significant)		Negligible (Not Significant)
Industrial and Urban Accidents	Emergency Services	Moderate Adverse (Not Significant)	No mitigation required.	Moderate Adverse (Not Significant)
	Local Population	Moderate Adverse (Not Significant)	No mitigation required.	Moderate Adverse (Not Significant)
Part 2: be affected by the major accident or disaster				
Flooding	Site Residents	Moderate Adverse (Not Significant)	Standard industry practice mitigation measures including easements and a surface water management strategy (See Chapter 10 (Water Environment) and Appendix 10.6 (FRA) for	Minor adverse (Not Significant)



Table 12.3 Summary of Effects

Risk Group	Relevant Receptors	Pre-mitigation Effect	Mitigation	Residual Effect
			further details)	
Severe Weather		Moderate Adverse (Not Significant)	No mitigation required.	Moderate Adverse (Not Significant)
Space Weather		Negligible (Not Significant)	No mitigation required.	Negligible (Not Significant)
Poor Air Quality		Substantial Adverse (Significant) (Dust soiling effects) Moderate Adverse (Not Significant) (Human health effects)	- Best practice dust mitigation plan - Exceptional incidents will be recorded and dealt appropriately. - final design solutions will be developed with the input of the contractor to maximise construction efficiencies (See Chapter 6 for further details)	Moderate Adverse (Not Significant)
Human Disease		Minor Adverse (Not Significant)	No mitigation required.	Minor Adverse (Not Significant)
Widespread Electricity Failure and Systems Failures		Minor Adverse (Not Significant)	No mitigation required.	Minor Adverse (Not Significant)
Major Transport Accidents		Negligible (Not Significant)	No mitigation required.	Negligible (Not Significant)



Table 12.3 Summary of Effects				
Risk Group	Relevant Receptors	Pre-mitigation Effect	Mitigation	Residual Effect
Industrial and Urban Accidents		Moderate Adverse (Not Significant)	No mitigation required.	Moderate Adverse (Not Significant)

12.8 Assessment of Cumulative Effects

Intra-cumulative effects.

- 12.8.1 The assessment is holistic in nature and therefore has already considered the inter-relationships between individual topics covered within the ES. No further assessment is therefore required.

Inter-cumulative effects

- 12.8.2 There is a possibility that two or more developments could cause/make worse a major accident or disaster or exacerbate effects on the Proposed Development as a result of a major accident or disaster.
- 12.8.3 However, owing to strict planning guidance and regulation it is assumed that all committed development, as outlined in Chapter 2, will have to demonstrate that appropriate prevention measures, in relation to major accidents and disasters, have been incorporated into their site design and will be in place during the construction and operational periods. This assessment assumes that the mitigation measures of the other developments would be implemented.
- 12.8.4 Each technical chapter of relevance to this assessment has considered the potential for cumulative effects. No significant cumulative effects of relevance were identified within the relevant chapters. A summary of inter-cumulative effects can be found in Chapter 13 of this ES.
- 12.8.5 Owing to the fact no significant residual effects have been identified the above potential cumulative effects arising as a result of other major developments in combination with the Proposed Development are considered to be **Negligible** and **not significant**.



12.9 Summary

- 12.9.1 This chapter has sought to identify whether there is potential for significant effects as a result of major accidents and/or disasters associated with the Proposed Development.
- 12.9.2 Utilising a scoping process, a list of major accidents and disasters of relevance to the Proposed Development was devised. This focussed on events of low likelihood but potentially high consequence, in accordance with IEMA's *Major Accidents and Disasters in EIA: A Primer*.
- 12.9.3 An assessment of the scoped in events was then undertaken considering the potential for the Proposed Development to, where relevant:
- cause/make worse a major accident or disaster; and
 - be affected by the major accident or disaster.
- 12.9.4 With the implementation of the embedded design measures and additional mitigation proposed, and assuming standard practice and regulatory compliance is followed, it is not anticipated that the Proposed Development will cause/make worse, or be affected by, a major accident and/or disaster that will result in significant effects on human health or the natural environment.



13 SUMMARY OF RESIDUAL AND CUMULATIVE EFFECTS

13.1 Residual Effects

13.1.1 A description of the measures envisaged to avoid, reduce or, if possible, offset any identified significant adverse effects, i.e. the mitigation measures, has been set out within each technical chapter. These measures have been used to reduce impacts to the lowest practicable level consistent with the overall objectives of the scheme.

13.1.2 Each technical chapter has assessed the effectiveness of these measures in order to identify the residual effects.

13.1.3 Following the implementation of the mitigation measures outlined within each technical chapter, the majority of residual environmental effects has been assessed as being not significant, as summarised within Table 13.1 below. Further details are provided within the relevant technical chapters.

Table 13.1: Summary of Significant Residual Effects	
Technical Chapter	Significant Residual Effects?
Air Quality	No
Ecology	No
Transport	No
Soils and Agricultural Land	Yes (<i>adverse</i>)
Water Environment	No
Rights of Way, Access and Recreation	No
Vulnerability to Accidents and Disasters	No

13.1.4 As stated above within Table 13.1, the Proposed Development will result in residual significant effects in relation to agricultural land.

13.1.5 Construction of the Proposed Development will result in the irreversible loss of 7.2 ha of grade 2 land and 4.3 ha of subgrade 3a land. The change in land use is considered to be a permanent significant effect that cannot be mitigated. However, in accordance with local policy, the conservation of parts of the Site for community food production is regarded as partial mitigation. To ensure the soils and land are maintained in condition conducive to production of foodstuffs a site-specific Soil Management Plan will be adopted.



13.2 Cumulative Effects

13.2.1 Schedule 4 of the EIA Regulations states that an ES must include a description of the likely significant effects of the development, including reference to possible cumulative effects.

13.2.2 When considering potential significant cumulative impacts, the assessments have (where appropriate) considered:

- Intra-cumulative effects; and
- Inter-cumulative effects.

13.2.3 An assessment of the potential cumulative effects was undertaken within each of the technical chapters.

13.2.4 A summary of the cumulative effects of the scheme are provided below and within Table 13.2, with further details provided within each technical chapter.

Intra-cumulative effects

13.2.5 The EIA has taken into consideration where a significant residual impact is expected to occur on a particular receptor as a consequence of collective actions, aspects or effects of the Proposed Development. These inter-relationships have been considered within each technical chapter as relevant and no significant intra-cumulative effects were identified.

Inter-cumulative effects

13.2.6 In relation to inter-cumulative effects, the EIA has considered committed developments in the area surrounding the Site which, in conjunction with the proposed development, could collectively impose a significant impact on the environment.

13.2.7 Further details on the schemes considered are set out within Chapter 2.

Table 13.2 Summary of Cumulative Effects	
Technical Chapter	Summary of Cumulative Effects
Air Quality	The traffic flows used for the air quality assessment includes vehicle movements associated with identified committed developments. The main air quality assessment did not identify any significant effects. As such, it is not considered likely that there will be any significant cumulative effects on air quality.



Table 13.2 Summary of Cumulative Effects	
Technical Chapter	Summary of Cumulative Effects
Ecology	The primary potential impact pathways to the designated European sites named only have the potential for significance when considered in combination with other plans or projects. These include increased recreational pressure and eutrophication on the water environment. The implementation of site-specific mitigation measures means there is no likelihood of significant residual cumulative negative effects.
Transport	The cumulative impact of construction traffic on the local highway network is considered to be negligible and a CTMP will be implemented to minimise the residual environmental impact. During operation a slight or moderate beneficial impact is forecast for public transport users following mitigation. The cumulative impact following mitigation on severance; pedestrian delay; pedestrian amenity, fear & intimidation; accidents & safety is anticipated to be no greater than slight. The cumulative impact upon driver delay will be no greater than slight/moderate adverse when considering the limited number of people that will be affected. This is considered to be a worst-case scenario which hasn't taken into account sustainable travel/non-highways mitigation measures.
Soils and Agricultural Land	There are not considered to be any relevant cumulative effects on soil resources as the effects of soil loss are contained within the specific site. The total agricultural land loss of the Proposed Development in combination with the Land at Sinah Lane and 380 Seafront developments would be 11.8ha of grade 2 land and 6.9ha of subgrade 3a agricultural land. The cumulative effect upon agricultural land is therefore considered to be moderate adverse.
Water Environment	All four developments and the two allocated sites within Havant Borough's Emerging Local Plan do/will comply with DEFRA non-statutory SuDS guidance, PPG:7 and CIRIA C753 guidance on flooding, surface water discharge rates, volume control and water quality control to minimise individual impacts on the water environment. With the provision of an adequate CEMP for the Site, the Proposed Development will not have a cumulative impact on the catchment should the other nearby Proposed Developments proceed.
Rights of Way, Recreation and Access	Local footpaths are identified as the only receptors that are likely to receive any cumulative effects. This is as recreational facilities are able to accommodate increased usage.



Table 13.2 Summary of Cumulative Effects	
Technical Chapter	Summary of Cumulative Effects
	The increased usage of footpaths has the potential to degrade the surface of a footpath. Only the emerging allocated site of Fathoms Reach (Policy H28 of Emerging Local Plan) will increase the use of footpaths (namely footpaths 108/94/1, 108/92/1, 108/92/2, and 108/89/1) as a result of its proximity to the Proposed Development. However, the cumulative increase in usage must be weighed up against the benefits that the Site's new footpath network will bring to the area and its existing infrastructure and so effects are considered to be Negligible.
Vulnerability to Major Accidents and Disasters	It is reasonable to assume that the cumulative developments will adhere to strict planning guidance and regulations demonstrating that appropriate prevention measures, in relation to major accidents and disasters, have been incorporated into their site design and will be in place during the construction and post-construction periods. Therefore, it is considered that there will be no significant cumulative effects in relation to the Vulnerability to Major Accidents and Disasters.



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GLOSSARY

Terminology	Explanation
A	
AADT	Annual Average Daily Traffic. The total volume of traffic using a road averaged across a year. A standard measurement of traffic volume.
Above Ordnance Datum (aOD)	Ordnance Datum is the vertical datum used by ordnance survey as the basis for deriving altitudes on maps. Topography may be described using the level in comparison or 'above' ordnance datum.
Access	For the purpose of this report, access will include footpaths, cycleways and common land that form part of the existing Site context and those proposed as part of the development.
Agricultural Land Classification	Agricultural Land Classification is a standardised method for classifying the quality of agricultural land in England and Wales into one of five grades: Grade 1 (excellent), Grade 2 (very good), Grade 3 (good to moderate), divided into Subgrades 3a (good) and 3b (moderate), Grade 4 (poor), and Grade 5 (very poor).
Air Quality Management Areas	Areas designated by local authorities because they are not likely to achieve national air quality objectives by the relevant deadlines.
Air Quality Objectives	Pollutant objectives that local authorities have a duty to meet, as set out in the Air Quality Standards Regulation (2010).
Ambient	Background levels.
Analysis (Landscape)	The process of breaking the landscape down into its component parts to understand how it is made up.
aOD	Above Ordnance Datum
AONB	Areas of Outstanding Natural Beauty
Aquifer	A body of permeable rock which can contain or transmit groundwater.
Assemblage (ecology)	A group of species found in the same location.
Assessment (Landscape)	An umbrella term for description, classification and analysis of landscape.
Avoidance	Prevention of impacts occurring, having regard to predictions about potentially negative environmental effects (e.g. project decisions about site location or design).
B	
Baseline conditions	The conditions that would pertain in the absence of the proposed project at the time that the project would be constructed / operated / decommissioned. The definition of these baseline conditions should be informed by changes arising from other causes (e.g. other consented developments).
Baseline (traffic scenario)	The existing highway network at the current year or in a future year without any interventions other than previously consented physical changes.
Bedrock	Bedrock more than 2.6 million years old, and generally underlying superficial deposits.
Best and most versatile agricultural land	Land in grades 1, 2 and 3a of the Agricultural Land Classification; agricultural land that it is important to retain free from development.
Biodiversity	The variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems.
BGS	British Geological Survey
C	
Carrying capacity (ecology)	The maximum number of organisms or amount of biomass that can be supported in a given area or by an ecosystem.



Terminology	Explanation
CEMP	Construction Environmental Management Plan
CFCs	Chlorofluorocarbons (greenhouse gas). The collective term used to describe chemicals made up of atoms containing Carbon and Fluorine.
Classification	A process of sorting the landscape into different types using selected criteria but without attaching relative values to different sorts of landscape.
CME	Coronal Mass Ejection
COMAH	Control of Major Accident Hazard
Committed Development	Development that benefits from planning consent.
Compensation	The measures taken to offset or compensate for residual adverse effects which cannot be mitigated or for which mitigation cannot entirely eliminate adverse effects.
Competent person (to prepare site investigation information)	A person with a recognised relevant qualification, sufficient experience in dealing with the type(s) of pollution or land instability, and membership of a relevant professional organisation.
Completed Development	Within the ES this phase refers to the Proposed Development when fully built and operational.
Confluence	The meeting of two or more waterbodies.
Connectivity (ecology)	A measure of the functional availability of the habitats needed for a particular species to move through a given area. Examples include the flight lines used by bats to travel between roosts and foraging areas or the corridors of appropriate habitat needed by some slow colonising species if they are to spread.
Conservation (for heritage policy)	The process of maintaining and managing change to a heritage asset in a way that sustains and, where appropriate, enhances its significance.
Conservation Area	An area of special environmental or historical importance that is protected from changes by law.
Conservation objective (ecology)	Objective for the conservation of biodiversity (e.g. specific objective within a management plan or broad objectives of policy).
Constraints Map	Map showing the location of important resources and receptors.
CTMP	Construction Traffic Management Plan. A formal document devised to minimise the impact of construction traffic on the highway network.
Countryside	The rural environment and its associated communities (including the coast).
Cumulative effects	The summation of effects that result from changes caused by a development in conjunction with other past, present or reasonably foreseeable actions.
D	
Design Manual for Roads and Bridges	A comprehensive series of documents, including standards, specifications and standard details, for the design of new road infrastructure.
Designated heritage asset	A World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.
Development plan	This includes adopted Local Plans, neighbourhood plans and the London Plan, as defined in section 38 of the Planning and Compulsory Purchase Act 2004 (regional strategies have all been abolished by Order using powers taken in the Localism Act 2011).
Distribution (ecology)	The geographical presence of a feature. This can depend on factors such as climate and altitude.
Diversity	Where a variety of qualities or characteristics occurs.



Terminology	Explanation
Do Minimum (traffic scenario)	The existing highway network in the future with Local Plan based growth and committed development based growth.
"Do-nothing" scenario	The predicted future environmental conditions which would exist in the absence of the development.
"Do Nothing" Situation	Continued change/evolution of landscape or of the environment in the absence of the proposed development.
Do Something (traffic)	As per the Do Minimum (traffic) but with mitigation measures added to the highway network.
Drainage Board (DB)	Drainage boards are an integral part of water level management in the UK. Each DB is a local public authority established in areas of special drainage need in England and Wales. They have permissive powers to manage water levels within their respective drainage districts. They undertake works to reduce flood risk to people and property and manage water levels to meet local needs.
DTM	Digital Terrain Model
E	
EIA Planning Regulations	In England and Wales these are The Town and Country Planning (Environmental Impact Assessment) Regulations 2017, plus amendments.
EIA Directive	Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment. Reproduced in the Guide to Procedures.
Ecological feature	Habitats, species or ecosystems.
Ecological networks	These link sites of biodiversity importance.
Ecosystem	A community of interdependent plants and animals together with the environment which they inhabit and with which they interact.
Ecosystem services	The benefits people obtain from ecosystems such as, food, water, flood and disease control and recreation.
Effect	A physical or measurable change to the environment attributable to the project.
Effect (ecology)	Outcome to an ecological feature from an impact. For example, the effects on a dormouse population from loss of a hedgerow.
Element	A component part of the landscape (e.g. roads, hedges, woods).
Enhancement	Landscape improvement through restoration, reconstruction or creation.
Enhancement (ecology)	Improved management of ecological features or provision of new ecological features, resulting in a net benefit to biodiversity, which is unrelated to a negative impact or is 'over and above' that required to mitigate/compensate for an impact.
Environment	Our physical surroundings including air, water and land.
Environmental Assessment	A process by which information about the environmental effects of a project is collected, both by the developer and from other sources, and taken into account by the relevant decision making body before a decision is given and whether the development should go ahead.
Environmental Effects	The consequences for human being in terms of health and well-being, including the well-being of ecosystems and natural systems on which human survival depends, which stem from environmental impacts.
Environmental Impact	The process whereby a change, which may be adverse, beneficial, or both, is brought about in the existing environment as a result of development activities.
Environmental impact assessment (EIA)	The evaluation of the effects of particular development proposals on the environment.



Terminology	Explanation
Environmental Statement (ES)	A document which sets out the developer's assessment of the likely effects of the project on the environment and which is submitted in conjunction with an application for planning permission.
Environment Agency	The EA is a non-departmental public body of the Department for Environment Food and Rural Affairs. Its purpose is, "to protect or enhance the environment, taken as a whole" (section 4, Environment Act 1995) to promote the objective of achieving sustainable development.
European site	This includes candidate Special Areas of Conservation, sites of national importance, Special Areas of Conservation and Special Protection Areas, and is defined in regulation 12 of the Conservation of Habitats and Species Regulations 2017 (as amended). Consistent with their treatment in national policy, Ramsar sites are taken to be European sites.
Exceptions Test	The Exceptions Test ensures that development is permitted in flood risk areas only in exceptional circumstances and when strict qualifying conditions have been met. It is carried out if the Sequential Test demonstrates that a development cannot be located in areas of low flood risk.
Existing Sensitive Receptors (Air Quality)	Existing residential dwellings, school or care homes, located in areas that could be impacted by the air quality effects of the proposed development.
EV	Electric Vehicle
F	
Fauna	All members of the animal kingdom: vertebrates (e.g. birds, mammals and fish) and invertebrates (e.g. insects).
Field Capacity Days	The number of days at which soil is saturated with water and any water from rainfall would infiltrate quickly under the force of gravity or create waterlogging.
Flood Zone 1	This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding.
Flora	All members of the plant kingdom: higher ferns, ferns and fern allies, mosses and liverworts, algae and phytoplankton, fungi and lichens.
Forecast traffic	The level of traffic anticipated in a given future year.
Friction	A number of highway conditions, both physical and behavioural, that can lead to speeds slower than the normal free flow of traffic. Such friction can include parked vehicles, loading/unloading, flooding, turning movements, poor used behaviour/ill-discipline.
G	
Geology	The scientific study of the origin, history and structure of the earth.
GLVIA	Guidelines for Landscape and Visual Impact Assessment
Grade Separated Junction	A junction constructed across two or more levels. In this instance the A27/A3023 roundabout.
Green infrastructure (GI)	A planned network of high-quality green spaces and environmental features, designed as a multi-functional resource to deliver biodiversity and quality of life benefits while having regard to and enhancing landscape character and wildlife habitats.
Greenhouse Gas (GHG)	Gases such as carbon dioxide, methane and nitrous oxide, that trap heat in the atmosphere.
Groundwater	All water which is below the surface of the ground in the saturated zone and in direct contact with the ground or subsoil.



Terminology	Explanation
Groundwater Directive	Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration. Transposed into law in England and Wales via the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003.
H	
ha	hectares
Habitat	The place or type of site where an organism or population naturally occurs. Often used in the wider sense referring to major assemblages of plants and animals found together.
Habitats Regulations Assessment	An assessment of projects (or plans) potentially affecting European sites in the UK, required under the Habitats Regulations.
HITA	Hayling Island Transport Assessment. A study undertaken by experienced consultants on behalf of HBC to consider the highways, transportation and traffic issues associated with the Local Plan.
Heritage	Historic or cultural associations.
Heritage asset	A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing).
HGV	Heavy Goods Vehicle
Historic environment	All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.
Hydrology	The study of the movement, distribution, and quality of water.
Hydrogeology	The branch of geology dealing with the waters below the earth's surface and with the geological aspects of surface waters.
I	
ICE	Internal Combustion Engine.
Impact (ecology)	Actions resulting in changes to an ecological feature. For example, the construction activities of a development removing a hedgerow.
Important ecological features	Ecological features requiring specific assessment within EcIA. Ecological features can be important for a variety of reasons (e.g. quality and extent of designated sites or habitats, habitat / species rarity).
Indirect Impacts	Impacts on the environment, which are not a direct result of the development but are often produced away from it or as a result of a complex pathway. Sometimes referred to as secondary impacts.
Infiltration	The passage of water into soil.
J	
Journey Time	The time taken in minutes from one point to another.
K	
kWh	kilowatt-hour
L	
Land Use	What land is used for, based on broad categories of functional land cover, such as urban and industrial use and the different types of agriculture and forestry.
Landscape	Human perception of the land conditioned by knowledge and identity with a place.



Terminology	Explanation
Landscape Character	The distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement. It creates the particular sense of place of different areas of the landscape.
Landscape Effects	Change in the elements, characteristics, character and qualities of the landscape as a result of development. These effects can be positive or negative.
Landscape Resource	The combination of elements that contribute to landscape context, character and value.
Landscape Value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.
Lead Local Flood Authority	Lead Local Flood Authorities have responsibility for developing a Local Flood Risk Management Strategy for their area covering local sources of flooding. The local strategy produced must be consistent with the national strategy. It will set out the local organisations with responsibility for flood risk in the area, partnership arrangements to ensure co - ordination between these, an assessment of the flood risk and plans and actions for managing the risk.
LEAP	Locally Equipped Area for Play
Listed Building	A building, object or structure that has been judged to be of national importance in terms of architectural or historic interest and included on a special register.
Local Plan	The plan for the future development of the local area, drawn up by the local planning authority in consultation with the community. In law this is described as the development plan documents adopted under the Planning and Compulsory Purchase Act 2004. Current core strategies or other planning policies, which under the regulations would be considered to be development plan documents, form part of the Local Plan. The term includes old policies which have been saved under the 2004 Act.
Local planning authority	The public authority whose duty it is to carry out specific planning functions for a particular area.
Local Transport Plan	A document that sets out the long-term strategy for travel and transport within an area for a defined plan period.
M	
Magnitude	A combination of the scale, extent and duration of an effect.
Main River	Used to describe a water course in respect of which the Environment Agency has permissive powers in relation to its management.
Methodology	The specific approach and techniques used for a given study.
Microsimulation	An advanced method of traffic modelling which considers the operation of highway networks in a high level of detail, considering aspects such as delays, queues, capacity and journey time.
Minor Drain	Used to describe a water course owned and operated by a local Drainage Board, a Lead Local Flood Authority, or a private landowner.
Mitigation	Measures, including any process, activity or thing designed to avoid, reduce or remedy adverse environmental impacts likely to be caused by a development project.
N	
National Trails	Long distance routes for walking, cycling and horse riding.
NEAP	Neighbourhood Equipped Area for Play
NGR	National Grid Reference



Terminology	Explanation
Nitrate Vulnerable Zone (NVZ)	An area designated as being at risk from agricultural nitrate pollution.
Non Technical Summary	A report which briefly describes the main points discussed in the Environmental Statement in a clear manner, without the use of technical jargon and phraseology.
NOx	Nitrogen Oxides (greenhouse gas). The collective term used to describe various oxides of Nitrogen.
NPPF	National Planning Policy Framework
O	
Open space	All open space of public value, including not just land, but also areas of water (such as rivers, canals, lakes and reservoirs) which offer important opportunities for sport and recreation and can act as a visual amenity.
OS	Ordnance Survey
P	
Pathways	The routes by which impacts are transmitted through air, water, soils or plants and organisms to their receptors.
Ped	Soil particle.
Perception (of landscape)	The psychology of seeing and possibly attaching value and/or meaning (to landscape).
Percolation	The downwards vertical movement of water within soil.
Permeability	The measure of the ability of a porous material (often, a rock or unconsolidated material) to allow fluids to pass through it.
Phase 1 Habitat Survey	An ecological survey technique that provides a standardised system to record vegetation and wildlife habitats. It enables a basic assessment of habitat type and its potential importance for nature conservation. Each habitat type or feature is identified and presented on a map.
Planning condition	A condition imposed on a grant of planning permission (in accordance with the Town and Country Planning Act 1990) or a condition included in a Local Development Order or Neighbourhood Development Order.
Platoon	A number of vehicles following a lead vehicle.
Pollution	Anything that affects the quality of land, air, water or soils, which might lead to an adverse impact on human health, the natural environment or general amenity. Pollution can arise from a range of emissions, including smoke, fumes, gases, dust, steam, odour, noise and light.
Population (ecology)	A collection of individuals (plants or animals), all of the same species and in a defined geographical area.
POS	Public Open Space.
Potential impacts	Impacts, which could occur in the absence of appropriate design modifications or preventative measures.
Precautionary Principle	Principle applied, to err on the side of caution where significant environmental damage may occur, but knowledge on the matter is incomplete, or when the prediction of environmental effects is uncertain.
Predicted impacts	Those impacts which are predicted as a consequence of the development although the nature and severity of their effect will be conditioned by the scope for mitigation.
Preference	The liking by people for one particular landscape element, characteristic or feature over another.



Terminology	Explanation
Priority habitats and species	Species and Habitats of Principle Importance included in the England Biodiversity List published by the Secretary of State under section 41 of the Natural Environment and Rural Communities Act 2006.
Priority junction	A junction such as a T junction or crossroads that is not traffic signal or roundabout controlled.
PRoW	Public Right(s) of Way.
Public Right(s) of Way (PRoW)	Footpaths (for walking, running, mobility scooters or powered wheelchairs); Bridleways (for walking, horse riding, bicycles, mobility scooters or powered wheelchairs); Restricted byways (for any transport without a motor and mobility scooters or powered wheelchairs); Byways open to all traffic (for any kind of transport, including cars, but mainly used by walkers, cyclists and horse riders).
Q	
Quality	(See landscape quality)
R	
Ramsar sites	Wetlands of international importance, designated under the 1971 Ramsar Convention.
Rarity	A measure of relative abundance.
Receptor	Physical landscape resource, special interest or viewer group that will experience an effect.
Receptors	A component of the natural or man-made environment such as water, air, a building, or a plant that is affected by an impact.
Recreation	For the purpose of this report, outdoor recreation can be broadly defined to include both formal recreation and informal recreation. Formal recreation includes provision of sports facilities, such as football pitches, artificial turf pitches, sports pavilions and allotments and also equipped play areas for children. Informal recreation has a broader meaning and can include open space for games and play as well as informal footpaths and cycleways.
Regulatory Authority	The planning or other authority responsible for planning consents or project authorisation (synonymous with Determining or Competent Authority).
Residual Effects	Those effects of a development that cannot be mitigated following implementation of mitigation proposals.
RSA	Road Safety Audit. A formal audit of a proposed highway design by qualified professionals.
S	
Safeguarding zone	An area defined in Circular 01/03: Safeguarding aerodromes, technical sites and military explosives storage areas, to safeguard such sites.
Scenario	A picture of a possible future.
Scoping	An initial stage in determining the nature and potential scale of the environmental impacts arising from the proposed development, and assessing what further studies are required to establish their significance.
Sensitivity	(See landscape sensitivity)
SFRA	Strategic Flood Risk Assessment.
Significant effect (ecology)	An effect that either supports or undermines biodiversity conservation objectives for 'important ecological features'.
Significant environmental effect (in relation to a major accidents and/or disasters assessment)	Could include the loss of life, permanent injury and temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration.



Terminology	Explanation
Site investigation information	Includes a risk assessment of land potentially affected by contamination, or ground stability and slope stability reports, as appropriate. All investigations of land potentially affected by contamination should be carried out in accordance with established procedures (such as BS10175 (2001) Code of Practice for the Investigation of Potentially Contaminated Sites). The minimum information that should be provided by an applicant is the report of a desk study and site reconnaissance.
Site of Special Scientific Interest (SSSI)	Sites designated by Natural England under the Wildlife and Countryside Act 1981.
Soil	The surface layer of the Earth's crust composed of weathered rock, alive and dead organic matter (plant roots, soil fauna and microorganisms), water and air. Soil has important functions such as providing habitat for plant growth, transformation of mineral and organic compounds, carbon storage (in soil organic matter, or humus), water and air filtration, support for buildings, protection of archaeological artefacts. Soil is typically divided into horizontal layers, the main ones are: topsoil and subsoil. Topsoil is the most biologically active and fertile surface layer rich in organic matter. Typical topsoil depth is 25 to 35 cm (plough layer in arable farming). Subsoil is typically characterised by low content of organic matter (except peat or organic soils) and is less biologically active and fertile, it typically extends to 1.20m or bedrock, if the soil is shallower.
Soil series	Soil series is the lower categorical level of the soil classification used in England and Wales. Soils series are defined using a combination of three main properties, the broad type of parent material present (substrate type), the texture of the soil material (textural grouping) and the presence or absence of material with a distinctive mineralogy.
Special Areas of Conservation	Areas given special protection under the European Union's Habitats Directive, which is transposed into UK law by the Habitats and Conservation of Species Regulations 2010.
Special Protection Areas (SPA)	Areas which have been identified as being of international importance for the breeding, feeding, wintering or the migration of rare and vulnerable species of birds found within European Union countries. They are European designated sites, classified under the Birds Directive.
Sustainable Drainage System (SuDS)	Sustainable Drainage Systems are drainage solutions that provide an alternative to the direct channelling of surface water through networks of pipes and sewers to nearby watercourses.
Superficial geology	Typically refers to geological deposits that are less than 2.6 million years old. These recent unconsolidated sediments may include stream channel and floodplain deposits, beach sands, talus gravels and glacial drift and moraine. All pre-quaternary deposits are referred to as bedrock.
Supplementary planning documents	Documents, which add, further detail to the policies in the Local Plan. They can be used to provide further guidance for development on specific sites, or on particular issues, such as design. Supplementary planning documents are capable of being a material consideration in planning decisions but are not part of the development plan.
Sustainability	The principle that the environment should be protected in such a condition and to such a degree that ensures new development meets the needs of the present without compromising the ability of future generations to meet their own needs.
Sustainable transport modes	Any efficient, safe and accessible means of transport with overall low impact on the environment, including walking and cycling, low and ultra low emission vehicles, car sharing and public transport.



Terminology	Explanation
Synergistic effect	Occurs when the sum of two effects together is greater than the sum of the effects separately.
T	
t	Tonne
Technique	Specific working process.
Threshold	A specified level in grading effects e g of magnitude, sensitivity or significance.
Topography	The natural or artificial features, level and surface form of the ground surface.
Toucan crossing	A signal-controlled crossing usable by both cyclists and pedestrians.
Traffic calming	A number of measures which can help to reduce vehicle speeds or improve driver behaviour.
Transport Assessment	A comprehensive and systematic process that sets out transport issues relating to a proposed development. It identifies what measures will be required to improve accessibility and safety for all modes of travel, particularly for alternatives to the car such as walking, cycling and public transport and what measures will need to be taken to deal with the anticipated transport impacts of the development.
Travel plan	A long-term management strategy for an organisation or site that seeks to deliver sustainable transport objectives through action and is articulated in a document that is regularly reviewed.
Transport Assessment	A comprehensive and systematic process that sets out transport issues relating to a proposed development. It identifies what measures will be required to improve accessibility and safety for all modes of travel, particularly for alternatives to the car such as walking, cycling and public transport and what measures will need to be taken to deal with the anticipated transport impacts of the development.
Travel Plan	A long-term management strategy for an organisation or site that seeks to deliver sustainable transport objectives through action and is articulated in a document that is regularly reviewed.
Treated Effluent	Water that has received primary, secondary, or advanced treatment to reduce its pollution or health hazards and is subsequently released from a wastewater facility after treatment.
TRICS Database	TRICS (Trip Rate Information Computer System) is a database of trip rates for developments for transport planning purposes, specifically to quantify the trip generation of new developments.
Trip Generation	Quantification of travel patterns arising from a development proposal.
U	
UKCP	United Kingdom Climate Projections
Undefended Flood Zone	Environmental Agency mapped river and sea flood water extents ignoring the presence of flood defences.
V	
Visual Amenity	The value of a particular area or view in terms of what is seen.
Visual Effect	Effects on specific views and on the general visual amenity experienced by people.
Visual Envelope	Extent of potential visibility to or from a specific area or feature.
W	



Terminology	Explanation
Water Framework Directive (WFD)	The WFD (more formally Directive 2000/60/EC) is designed to improve and integrate the way water bodies are managed throughout Europe. In the UK, it came into force on 22 December 2000, and was transposed into UK law (transposed) in 2003. Member States must aim to reach good chemical and ecological status in inland and coastal waters by 2015 subject to certain limited exceptions. The WFD is designed to enhance the status and prevent further deterioration of aquatic ecosystems and associated wetlands; promote the sustainable use of water; reduce pollution of water especially by 'priority' and 'priority hazardous' substances; and ensure progressive reduction of groundwater pollution. The WFD establishes a strategic framework for managing the water environment. It requires a management plan for each river basin to be developed every 6 years. The plans are based on a detailed analysis of the impacts of human activity on the water environment and incorporate a programme of measures to improve water bodies where required.



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STATEMENT OF EXPERTISE

This Environmental Statement has been prepared by competent experts, and the following statement outlines this relevant expertise and qualifications of the EIA Co-ordinator and the lead author of each technical chapter.

EIA Coordination

The ES has been prepared and co-ordinated by Thomas Hackett, BSc (Hons), PIEMA, EIA Co-ordinator at Wardell Armstrong LLP, with assistance from Susan Raine, BSc (Hons) MSc PIEMA, Associate Director (EIA) at Wardell Armstrong LLP.

Thomas holds a BSc in Geography from the University of Derby. Thomas has over three and a half years' professional experience working within the Environmental Planning sector, which includes the co-ordination of EIAs and the preparation of ESs for a range of developments.

Susan has an MSc in Environmental Impact Assessment & Management from the University of Manchester and is a Practitioner member of the Institute of Environmental Management and Assessment (IEMA). Susan has over eight years' professional experience working within the Environmental Planning sector and has extensive experience of the co-ordination of EIAs and the preparation of ESs for a range of developments.

Wardell Armstrong LLP is a registrant of the IEMA EIA Quality Mark, demonstrating its commitment to excellence in their EIA activities. Susan manages Wardell Armstrong's registration to the EIA Quality Mark, ensuring the high standard of the scheme is adhered to.

Air Quality

The air quality chapter has been prepared by Paul Threlfall, Principal Environmental Scientist at Wardell Armstrong. Paul joined Wardell Armstrong in October 2017 as an Air Quality Scientist, after completing his MSc Water, Energy and the Environment at Liverpool John Moores University. The majority of his work is carried out in support of planning applications and, therefore, he has experience of undertaking air quality assessments for a wide range of projects including residential developments, commercial developments and mixed-use developments. Paul has a good range of skills and knowledge of air quality modelling and monitoring through his involvement in air quality projects, both as individual commissions and as part of Environmental Impact Assessments (EIAs). Paul also has extensive knowledge and experience of undertaking odour assessments, ranging from qualitative desk-based assessments to more detailed odour dispersion modelling assessments using AERMOD.

The air quality chapter has been technically reviewed by Malcolm Walton, Technical Director at Wardell Armstrong. Malcolm holds a Bachelor of Science degree in Environmental Health and the Diploma in Acoustics and Noise Control. Malcolm is a Member of the Chartered Institute of Environmental Health and an Associate Member of the Institute of Acoustics. Malcolm joined Wardell Armstrong in September 2001 following 12 years working as an Environmental Health Officer in



several local authorities, responsible for the enforcement of environmental legislation and, in particular, air pollution and noise nuisance. Malcolm has experience in the technical co-ordination of environmental appraisal of large schemes to UK and international standards. Malcolm regularly carries out and co-ordinates noise and air quality assessment work associated with planning applications including EIA work and PPC permit application/compliance. He also regularly acts as expert witness in planning inquiries in respect of noise, air quality and odour.

Ecology

The ecology chapter has been prepared by Mark Rose at CSA Environmental. Mark is an experienced practitioner with over 10 years' full time experience in ecological consultancy, research and education. He is proficient in Ecological Impact Assessment (EcIA) and mitigation planning in both statutory EIA and non-EIA projects. Mark is skilled in issues surrounding Habitat Regulations Assessment (HRA) and Biodiversity Net Gain (BNG), and securing European Protected Species (EPS) mitigation licences. He holds personal survey licences for bats, great crested newts, rare reptiles and dormice.

Transport

The transport chapter has been prepared by David Stoddart, Associate Director at Prime Transport Planning. David has over 16 years' experience in transport planning consultancy, is a chartered member of the Chartered Institute of Logistics and Transportation (CILT) and a member of the Chartered Institution of Highways and Transportation (CIHT) and holds a BA (Hons) degree in Geography. David has experience of undertaking numerous Environmental Statements, Transport Assessments and Travel Plans for developments of varying land uses across the UK. This has included designing and deriving mitigation measures to address traffic impact and enhance the accessibility by sustainable modes of transportation.

Soils and Agricultural Land

This chapter has been prepared by Mike Palmer, Director of Land Research Associates, a company specialising in soils and agricultural land assessment for over thirty years. Mike is a chartered soil scientist, holds a PhD in agricultural land management and is current chair of the Professional Practice Committee of the British Society of Soil Science.

Water Environment

The Water Environment chapter has been prepared by Dr Paul Hardwick at Enzygo Ltd. Paul has over 30 years' experience in hydrological and hydrogeological consultancy, is a Fellow of the Geological Society (FGS) and holds a BSc (Hons) degree in Geographical Sciences. He has extensive experience in controlled waters surveys and assessments and making recommendations for hydrological/hydrogeological mitigation across a range of UK sites and development projects in the residential, energy and minerals /waste sectors.



Rights of Way, Access and Recreation

The Rights of Way, Access and Recreation chapter has been prepared by Sam Daly and Gary Holliday of FPCR Environment and Design Ltd (FPCR).

The Rights of Way, Access and Recreation ES chapter has been carried out by competent experts, comprising Chartered Members of the Landscape Institute.

FPCR is a multi-disciplinary environmental and design consultancy established over 60 years, with expertise in architecture, landscape, ecology, arboriculture, urban design, masterplanning and environmental impact assessment. The practice is a member of the Landscape Institute and Institute of Environmental Management and Assessment and are frequently called upon to provide expert evidence on landscape and visual issues at Public and Local Plan Inquiries.

Vulnerability to Major Accidents and Disasters

The Vulnerability to Major Accidents and Disasters chapter has been prepared by Thomas Hackett BSc PIEMA of Wardell Armstrong LLP.

Thomas has a BSc in Geography and is also a Practitioner member of the Institute of Environmental Management and Assessment (IEMA). Tom is experienced in the co-ordination of EIAs and the preparation of ESs for a range of developments, including the collation of assessment information across a range of disciplines and consideration of interrelationships between effects.



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NEXT STEPS

Correspondence

This ES has been submitted to HBC for the respective Planning Officers to consider in consultation with the relevant stakeholders in the context of planning policy, prior to making a recommendation to the planning committee on the planning application.

During the period of determination, HBC will contact the relevant government bodies and agencies, and other consultees regarding the Proposed Development. Members of the public are also invited to make comments on the planning application.

Comments can be sent to:

Havant Borough Council

Public Service Plaza

Civic Centre Road

Havant

PO9 2AX

Telephone: 02392 446019

Email: planning.development@havant.gov.uk

Feedback from these discussions will be taken into account by the HBC in reaching the decision on the planning application.

Copies of the Environmental Statement

The ES, including a copy of the planning application documents and NTS, will be available to view online on the HBC planning website <https://www.havant.gov.uk/planning-services>

Hard copies of the ES and NTS are also available and are charged at £450 + VAT per hard copy plus P+P. Hard copies can be obtained by contacting Thomas Hackett at Wardell Armstrong on 01782 276700.

Coronavirus Amendments

The Town and Country Planning (Local Planning, Development Management Procedure, Listed Buildings etc. (England) (Coronavirus) (Amendment) Regulations 2020/1398 allows for the publicity and inspection of documents (including an ES) to be undertaken electronically.

As set out above, the application documents can be accessed on HBC's planning website.



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Appendix 1.1
Site Location Plan



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Appendix 1.2
Development Framework Plan



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Appendix 2.1

Scoping Opinion Request



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Appendix 2.2
Scoping Opinion



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Appendix 6.1

Air Quality Legislation, Policy and Guidance



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Appendix 6.2

Air Quality Methodology



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Appendix 6.3

Background Pollutant Concentrations



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Appendix 6.4

Traffic Data Used in Air Quality Assessment



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Appendix 6.5

2017 Wind Rose for Thorney Island Meteorological Station



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Appendix 6.6

Model Verification Procedure



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Appendix 6.7

Rev A Existing and Proposed Sensitive Receptor Locations



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Appendix 7.1

Ecological Impact Assessment (*redacted*)



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Appendix 7.2

Information to Inform Habitats Regulations Assessment (*redacted*)



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Appendix 7.3

Biodiversity Net Gain Calculations (*redacted*)



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Appendix 8.1
Transport Assessment



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Appendix 8.2

Travel Plan



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Appendix 8.3
Sensitivity Classification Plan



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Appendix 9.1

Maps and Details of Observations

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Appendix 10.1

Copies of Relevant Correspondence (Water Environment)

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Appendix 10.2

Water Environment Legislation, Policy and Guidance

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Appendix 10.3

Water Environment Assessment Methodology



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Appendix 10.4
Flood Risk Assessment Drawings



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Appendix 10.5

CIRIA Report C753 Drawings



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Appendix 10.6
Flood Risk Assessment



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Appendix 11.1

Rights of Way, Access and Recreation



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Appendix 12.1

Risk Table



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