

ONE HORTON HEATH

Appendix 10.14 Information to Support Appropriate Assessment

Draft

Version 2.0

Eastleigh Borough Council

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DOCUMENT REVISIONS

Version	Details	Date
1.0 Draft	Information to Support Appropriate Assessment	December 2021
2.0 Draft	Updated Information to Support Appropriate Assessment to reflect further baseline information on recreational disturbance, revised waste water treatment works for foul effluent treatment, updated nitrate neutrality calculations and commitment from applicant to pay into Eastleigh Borough Council scheme to mitigate recreational pressure and nitrate emissions to water.	May 2021

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1 THE PROPOSAL

1.1 PERMISSION SOUGHT

Outline planning permission is being sought for development off Allington Lane, Horton Heath, Eastleigh, Hampshire, as shown at Section 1.2 of this document.

1.1.1 Outline Planning Application (OPA) Phase 1

Full planning application for the development of 380 dwellings with associated infrastructure, landscaping and amenities.

1.1.2 The wider OPA and Associated Link Road

Site preparation including demolition and phased mixed-use development comprising: up to 2,500 dwellings and residential units; a Local Centre comprising up to 3.1 ha of mixed-use residential/retail/leisure/community/ employment land; up to 3.3 ha of employment land; a 3 Form Entry Primary School, formal and informal publicly accessible open space including formal sports facilities and key infrastructure and utilities provision including new roads within the site and improvements to the existing road junction at Fir Tree Lane/Burnetts Lane (All Matters Reserved Except Access).

The maximum parameters of the Wider OPA for the purposes of the EIA assessment are:

- Circa 2,500 dwellings comprising a mix of market and affordable housing (Use Classes C2 and C3);
- A Mixed Use centre of 3.1 Ha comprising residential, retail, leisure, community, employment facilities (Use Classes C2/C3, E, F.1, F.2 and Sui Generis);
- 3.3 Ha of employment land (Use Classes E(g)(i) and (iii) and B2);
- A 3 FE primary school and early years education facilities (Use Class F1);
- Formal and informal publicly accessible open space, formal areas of play, youth provision and associated facilities, formal sports facilities, allotments and amenity space, including, landscaping, green infrastructure and sustainable drainage systems.
- The utilisation of existing and provision of new and/or amended highway access points along Allington Lane, Fir Tree Lane, Burnetts Lane and Bubb Lane;
- Any wider land outside the site boundary needed for development specific infrastructure.

Primary vehicular access to the Wider OPA is to be achieved through the use of the accesses onto Allington Lane, Burnetts Lane and Bubb Lane consented under planning permissions X/19/86303 and X/19/86475, and via Burnetts Lane with improvements to the existing junction with Fir Tree Lane.

A separate planning application for a new link road across the site will be submitted to Eastleigh Borough Council in 2021. This is also considered within the supporting EIA and ES for the OPA Phase 1 and Wider OPA, and in this Information to Support Appropriate Assessment document.

1.1.3 Open space provision

The Wider OPA will deliver 14.50 hectares (ha) of informal open space and 6.64 ha of amenity space. The amenity space breakdown is as follows:

- LEAPs (local equipped area for playing): 0.16 ha
- LAPs (local area for playing): 0.24 ha
- Natural play: 0.07 ha
- Destination play: 0.12 ha
- Formal sports area: 1.86 ha
- Other amenity space: 3.77 ha

The proposed amenity space provision meets or exceeds the minimum required quantity standards set by Eastleigh Borough Council.

1.1.4 Outline link road

The indicative alignment of the proposed link road is shown on the Wider OPA Access Parameter Plan. The indicative design parameters for the Link Road are as follows:

- Carriageway width – 7.3m width (6.5m could be acceptable in residential areas depending on HGV traffic, total traffic volumes and swept path analysis);
- Separation margin between footway and carriageway edge – 1.0m each on both sides of the carriageway;
- Shared footway/cycleway – 3.0m on both sides of the carriageway; and
- Landscaping verge for trees – 2.0m on both sides of the carriageway.

It is assumed, based on consultation with the Local Highway Authority, that the entire link road will be lit, with added controls on sensitive areas, such as ecological areas.

1.1.5 Outline phasing strategy

An indicative outline phasing strategy has been developed and will be submitted as part of the EIA.

In the first phases of the construction, necessary site-wide infrastructure, including the Link Road, Internal Distributor Road, Sustainable Drainage Systems and Strategic Green Infrastructure, will be implemented. OPA Phase 1 will be the first residential parcel to be delivered and six additional residential phases will be delivered over 15 years. The on-site primary school, phase 1 of the local centre, formal sports provision and allotments are anticipated to be delivered in the first five years of construction. The second phase of the local centre, including the commercial and retail uses, is anticipated to be delivered from Year 5 through to completion of the OPA development.

1.2 Related Documents And Plans

This appendix draws on material contained in the following reports, plans and drawings:

- One Horton Heath Environmental Statement (Chapter 3: The Proposed Development, Chapter 7: Air Quality, Chapter 10: Ecology, Chapter 11: Hydrology and Chapter 13: Landscape & Visual Impact)
- Appendices to Chapter 10 of the One Horton Heath Environmental Statement:
 - Appendix 10.1: Desk Study
 - Appendix 10.2: Phase 1 Habitat Survey
 - Appendix 10.3: Watercourses and Fish Habitat
 - Appendix 10.4: Bats
 - Appendix 10.5: Great Crested Newt
 - Appendix 10.6: Otter & Water Vole

- Appendix 10.7: Dormouse
- Appendix 10.8: Birds
- Appendix 10.9: Badger
- Appendix 10.10: Reptiles
- Appendix 10.11: Ecological Lighting Baseline
- Appendix 10.12: Landscape & Biodiversity Design Inherent Mitigation & Enhancement - updated
- Appendix 10.13: Biodiversity Net Gain Calculations - updated
- Appendix 10.14: Information to Support Appropriate Assessment - updated
- Access – Drawing No. EAST200403-PP01-P29 - updated
- Land use – Drawing No. EAST200403-PP02-P33 - updated
- Green infrastructure – Drawing No. EAST200403-PP03-P3 - updated

ES Addendum prepared by the project team and co-ordinated by Savills May 2021 including:

- Hilson Moran (13/05/21a) Nitrate Neutrality Study - First Residential Parcel. One Horton Heath. Issue 02.
- Hilson Moran (13/05/21b) Nitrate Neutrality Study - Outline Planning Application. One Horton Heath. Issue 02.

2 HRA PROCESS

Special Protection Areas (SPA) and Special Areas of Conservation (SAC) are internationally important nature conservation sites, designated respectively for birds and for habitats and species. They receive statutory protection under the Conservation and Species Regulations 2019 (EU exit) (as amended), which transpose the requirements of the European Directives on the Conservation of Wild Birds (2009/147/EC, the 'Birds Directive') and the Conservation of Natural Habitats and of Wild Fauna and Flora (42/43/EEC, the 'Habitats Directive') into English legislation. SPAs and SACs are jointly called 'European sites' or 'Natura 2000 sites'. Ramsar wetland sites are afforded similar legal protection to European sites.

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects affecting European sites. Article 6(3) establishes the requirement for appropriate assessment:

6(3) Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

Article 6(4) goes on to discuss alternative solutions, the test of 'imperative reasons of overriding public interest' (IROPI) and compensatory measures:

6(4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

In turn, these two articles are typically split into four stages, with the results of each stage influencing whether further stages are required:

1. Screening: determining whether the plan or project is likely to have an adverse effect on the integrity of a European site, with the concept of 'integrity' being related to the European site's conservation objectives. In turn, the conservation objectives relate to the European site's 'qualifying features', i.e. why it has been designated.
2. Appropriate Assessment: Determining whether, in view of the European site's conservation objectives, the plan or project 'in combination' with other plans and projects would have an adverse impact on the integrity of a European site.
3. Assessment of alternative solutions
4. Imperative reasons of overriding public interest (IROPI) and compensatory measures

Eastleigh Borough Council is the competent authority responsible for ensuring that development control decisions associated with the location of One Horton Heath do not

adversely affect the integrity of European sites.

It is considered that the type and location of development proposed for One Horton Heath could, without mitigation, have a significant effect on several European sites. This report discusses the relevant European sites (Section 3); explains what impacts can be screened out from further assessment (Section 4), and then presents the Appropriate Assessment for the remaining impacts at Section 5.

3 EUROPEAN SITES

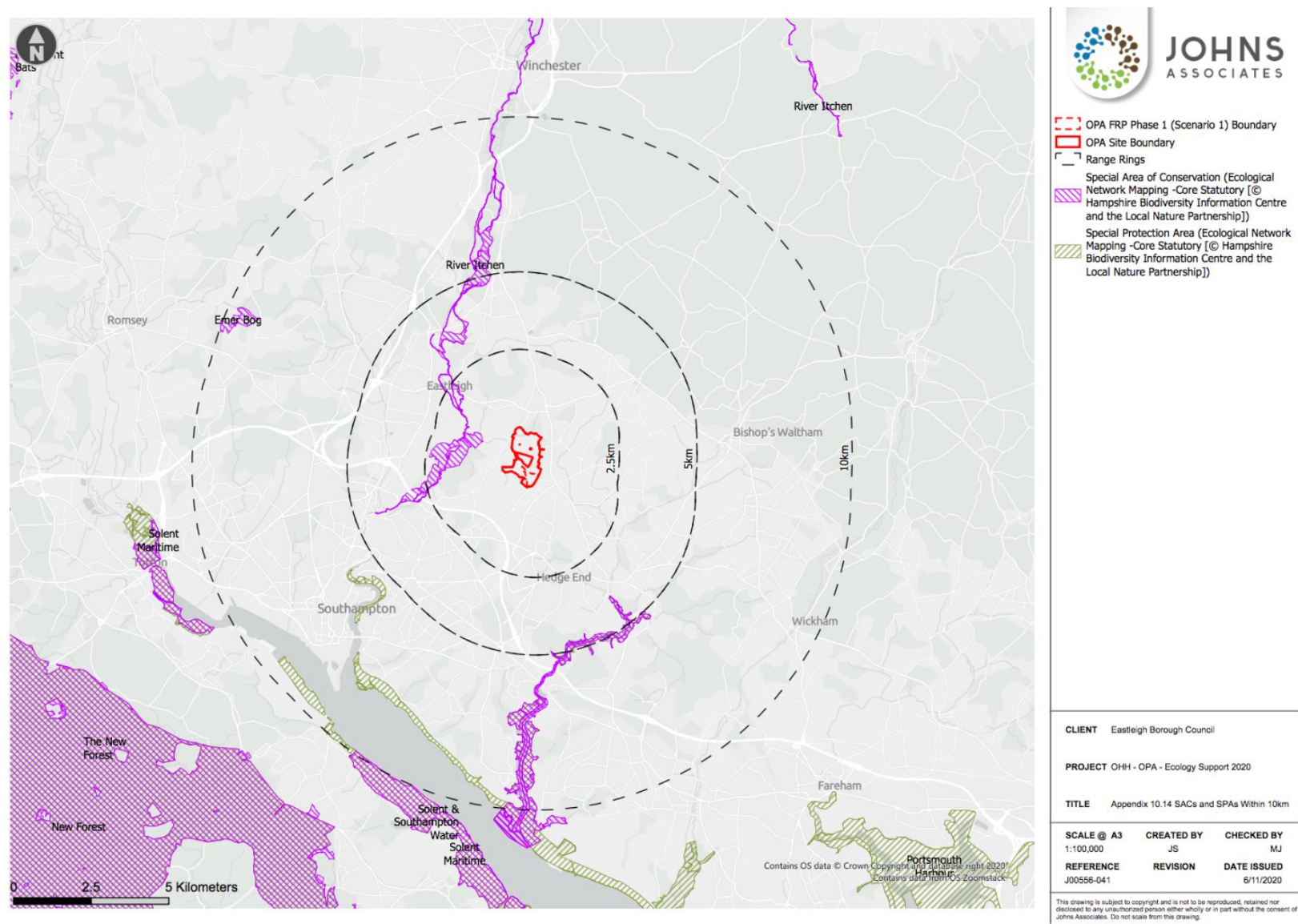
Figure 1 shows all European designated sites within 10 km of One Horton Heath: this is the standard distance used in Habitats Regulations Assessments. The sites are:

- River Itchen SAC - 950m to the west of the site, designated as a typical chalk river;
- Solent and Southampton Water Special Protection Area - 4 km to the south-east of the site, designated for its estuarine birds;
- Solent Maritime Special Area of Conservation – 3.6 km to the south-east of the site, designated for its estuarine habitat and associated vegetation;
- Solent and Southampton Water Ramsar site - 4 km to the south-east of the site, designated for its wetland habitats; and
- Emer Bog SAC – 9.4 km to the north-west of the site, designated for its transition mires and quaking bogs.

Additionally, at the request of Eastleigh Borough Council this report considers the European sites associated with the New Forest:

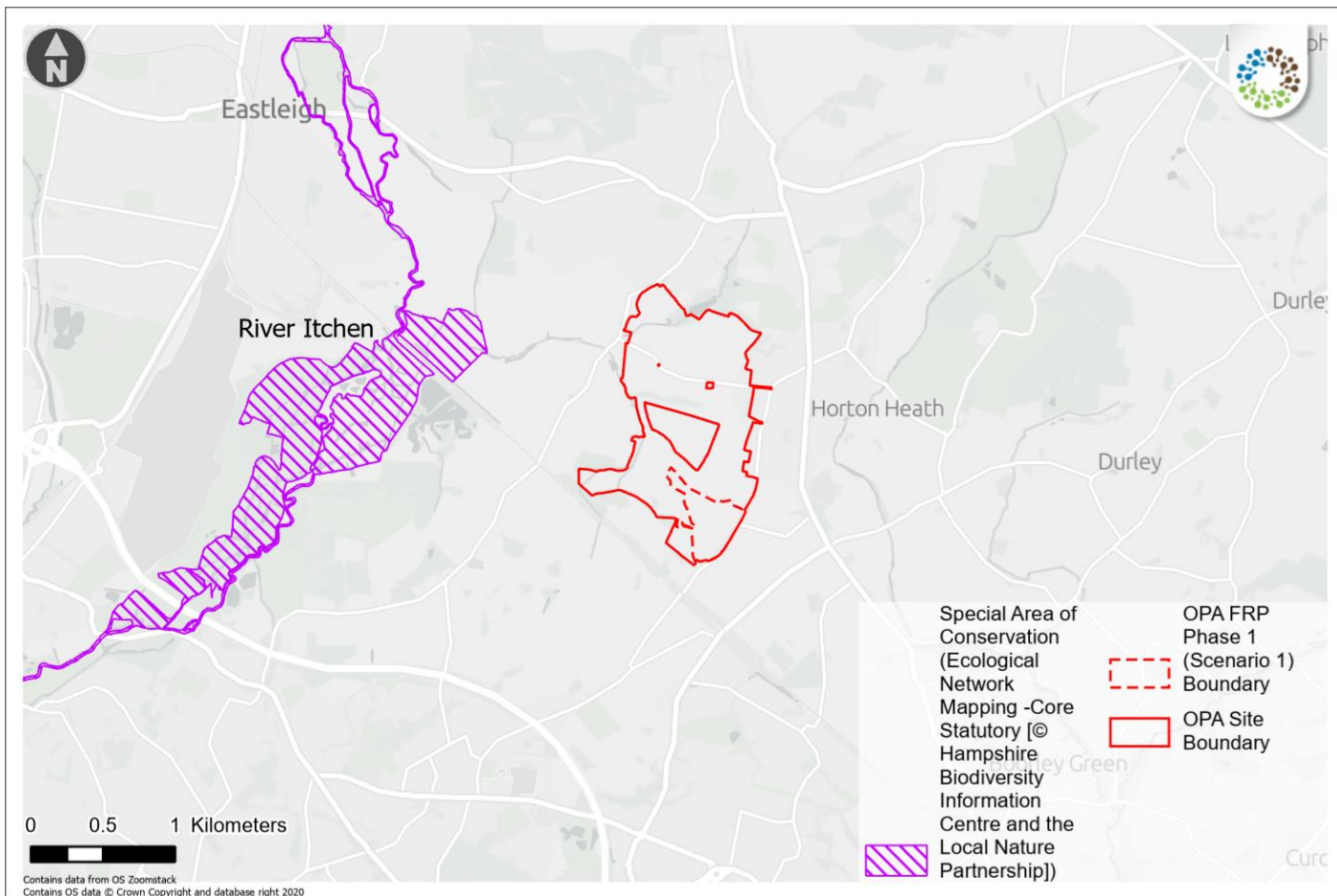
- New Forest SPA - 11 km to the south-west of the site across Southampton Water (22km via the M27), designated for five bird species;
- New Forest SAC - 11 km to the south-west of the site, designated for its water bodies, heathland, beech and oak woodland, depressions on peat substrates, damselflies and stag beetles; and
- New Forest Ramsar site - 11 km to the south-west of the site, designated for its wetland habitats.

Figure 1 Distribution of European Designated Sites within 10km of One Horton Heath



3.1 RIVER ITCHEN SAC¹

Figure 2 River Itchen SAC



The River Itchen SAC covers 304ha (Figure 2). It is a chalk river. It is mainly spring-fed, so the water is of high quality, with high dissolved oxygen level and a relatively constant temperature. Overall its flora is also healthy. At its nearest point (in a straight line), it is about 950m from the border of One Horton Heath.

The River Itchen SAC is designated for:

- Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitriche-Batrachion* vegetation
- Southern damselfly
- Bullhead

The water courses feature of the River Itchen SAC is in excellent condition in terms of representativity, conservation and global overview. The Southern damselfly feature is in excellent condition, and the bullhead is in good global grade.

The main threats to the SAC's qualifying features are:

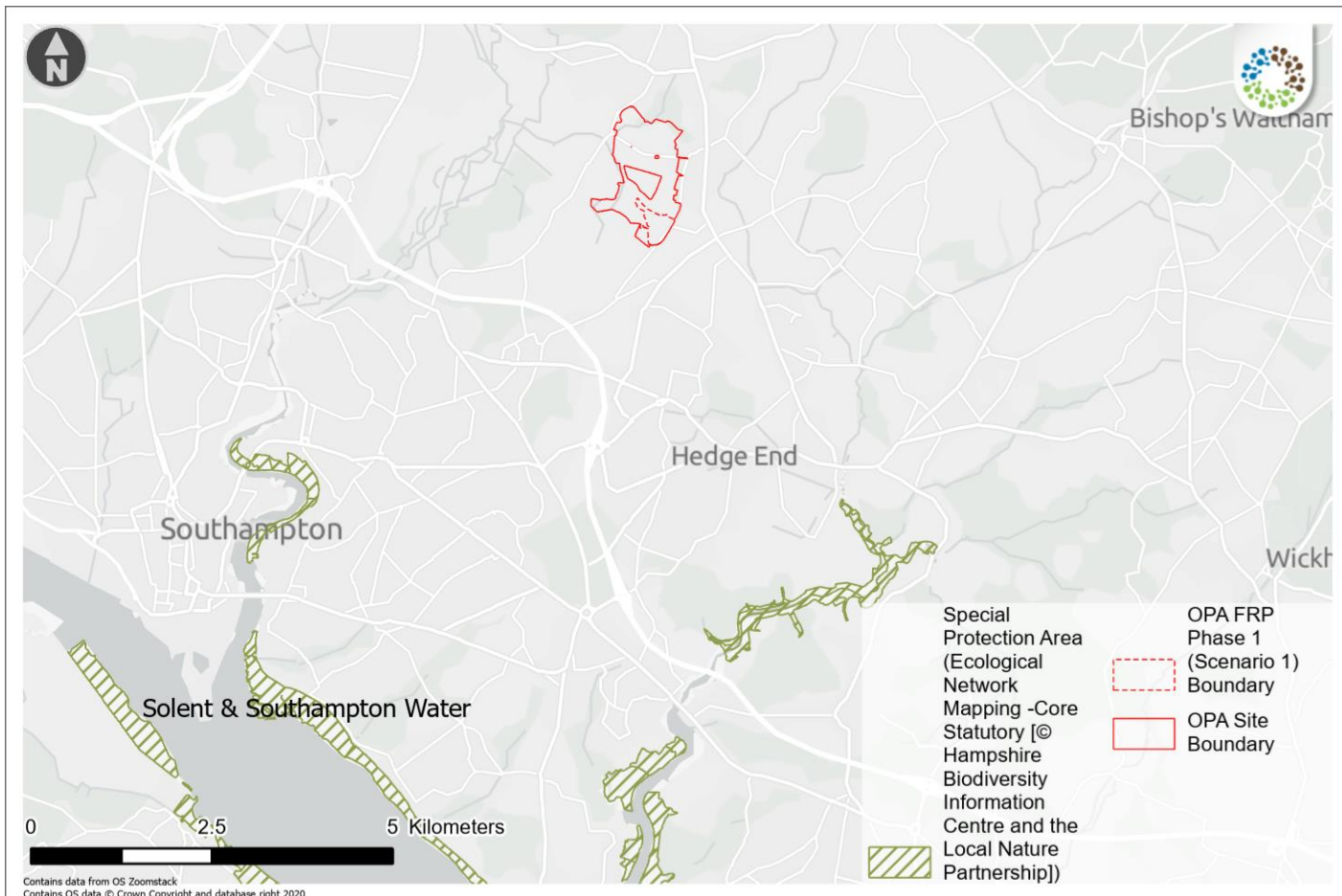
¹ <https://sac.jncc.gov.uk/site/UK0012599>

- Human induced changes in hydraulic conditions
- Grazing
- Pollution to groundwater from point and diffuse sources.

Most of the SSSI units that comprise the River Itchen SAC near One Horton Heath are in unfavourable recovering condition. The main reasons for this are historic channel modification and a predominantly un-natural physical structure.² There is evidence of pressure from nutrient enrichment and localised sedimentation. None of the survey sites achieved high ecological status, although most were recorded as good status³.

3.2 SOLENT AND SOUTHAMPTON WATER SPA⁴

Figure 3 Solent and Southampton Water SPA



The Solent and Southampton Water SPA covers 5401ha (Figure 3). At its nearest point (in a straight line), it is about 4km from One Horton Heath. The SPA is composed of extensive intertidal mudflats and sandbanks, inter- and subtidal rock, areas of saltmarsh, coastal lagoons, coastal reed beds, shingle banks, and grazing marsh. Estuarine sediments within the site support rich populations of invertebrates that provide an important food source for

² JNCC River Itchen (2020) <https://sac.jncc.gov.uk/site/UK0012599>

³ Grieve, N. (2014) River Itchen SSSI Channel Unit Condition Assessment, <http://www.hwa.uk.com/site/wp-content/uploads/2017/12/1.-Grieve-2014-River-Itchen-SSSI-Condition-Assessment-UCL.pdf>

⁴ <http://www.jncc.gov.uk/pdf/SPA/UK9011061.pdf>

wintering birds. More than 90,000 wading birds use the Solent annually to feed and roost. Besides using the mudflats and grazing marshes to feed, they also rely on farmland with cereals and pasture, and amenity grasslands outside the SPA boundary.

The Solent and Southampton Water SPA is designated for:

- Black-tailed godwit (non-breeding)
- Common tern (breeding)
- Dark-bellied Brent goose (non-breeding)
- Little tern (breeding)
- Mediterranean gull (breeding)
- Roseate tern (breeding)
- Sandwich tern (breeding)
- Teal (non-breeding)
- Waterbird assemblage (non-breeding)

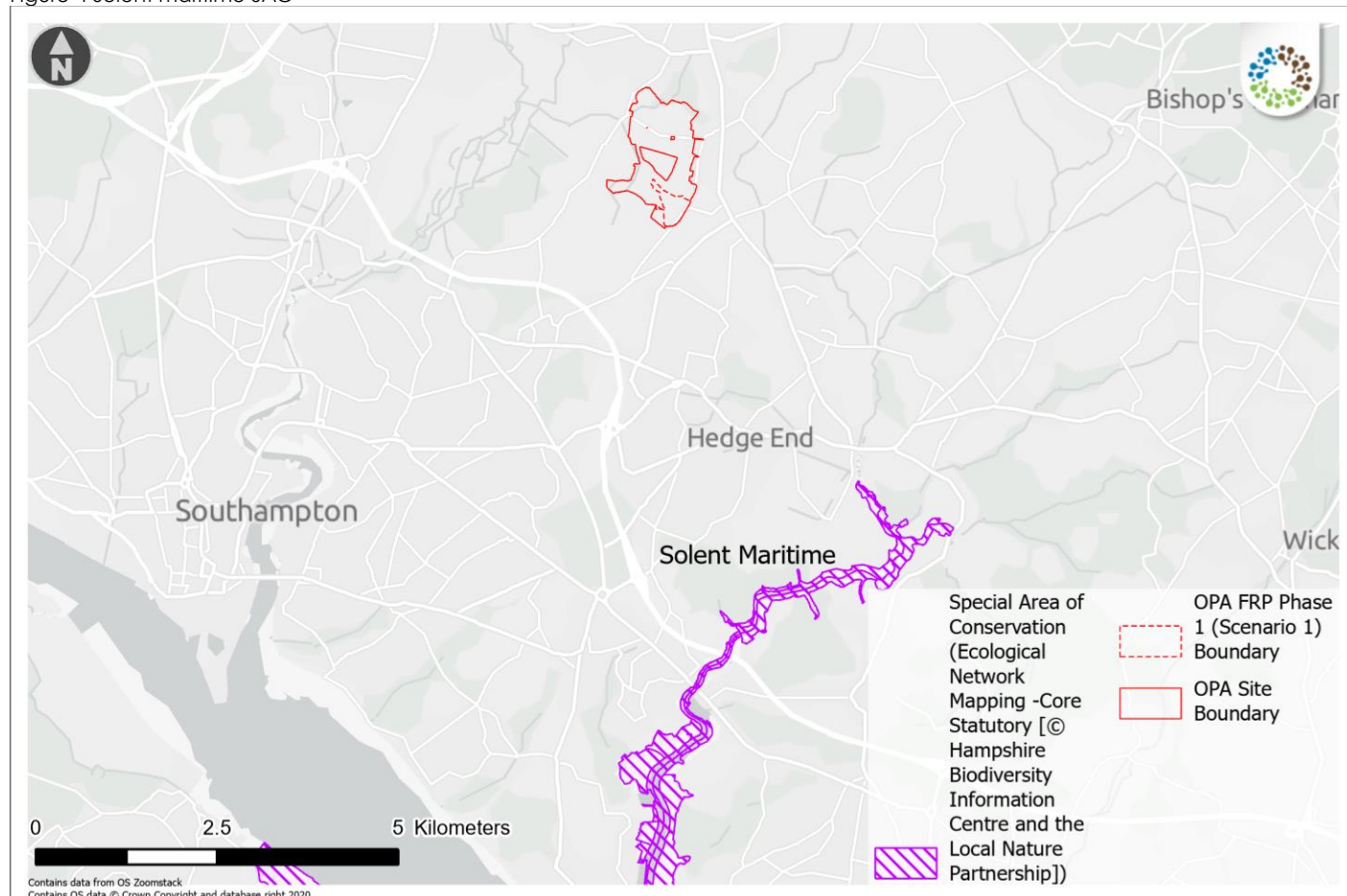
There is no global assessment of the bird populations of the SPA. All but the roseate tern are part of a larger regional population; the roseate terns are isolated. The birds' population size ranges from good (Mediterranean gull, black-tailed godwit) to poor (ringed plover, sandwich tern).

The main threats to the SPA's qualifying features are:

- Pollution to groundwater from point and diffuse sources
- Changes in abiotic conditions
- Fishing and harvesting aquatic resources
- Changes in biotic conditions
- Outdoor sports and leisure activities, recreational activities

3.3 SOLENT MARITIME SAC⁵

Figure 4 Solent maritime SAC



The Solent Maritime SAC covers 11,243 ha (Figure 4), and overlaps with the Solent and Southampton Water SPA and Ramsar. At its nearest point (in a straight line), it is about 4.3km from One Horton Heath.

The Solent Maritime SAC is a complex site encompassing a major estuarine system, with extensive areas of intertidal mudflats and sandflats often supporting eelgrass, subtidal sandbanks, saltmarsh and natural shoreline transitions such as drift line vegetation. The Solent and its inlets are unique in Britain and Europe for their unusual tidal regime, including double tides and long periods of tidal stand at high and low tide. As a result, the SAC is a unique suite of functionally linked estuaries and dynamic marine and estuarine habitats. The SAC has the largest number of small estuaries in the tightest cluster anywhere in Great Britain. It is located in one of the only major sheltered channels in Europe, between the Isle of Wight and the mainland.

The Solent Maritime SAC is the only site to support all four species of cordgrass (*Spartina*) found in the UK, including the rare native small cordgrass (*Spartina maritima*). It also includes a number of coastal lagoons, sand dunes at East Head and at the time of designation supported a population of the rare Desmoulin's whorl snail.

⁵ <https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030059.pdf>

The Solent Maritime SAC is designated for its:

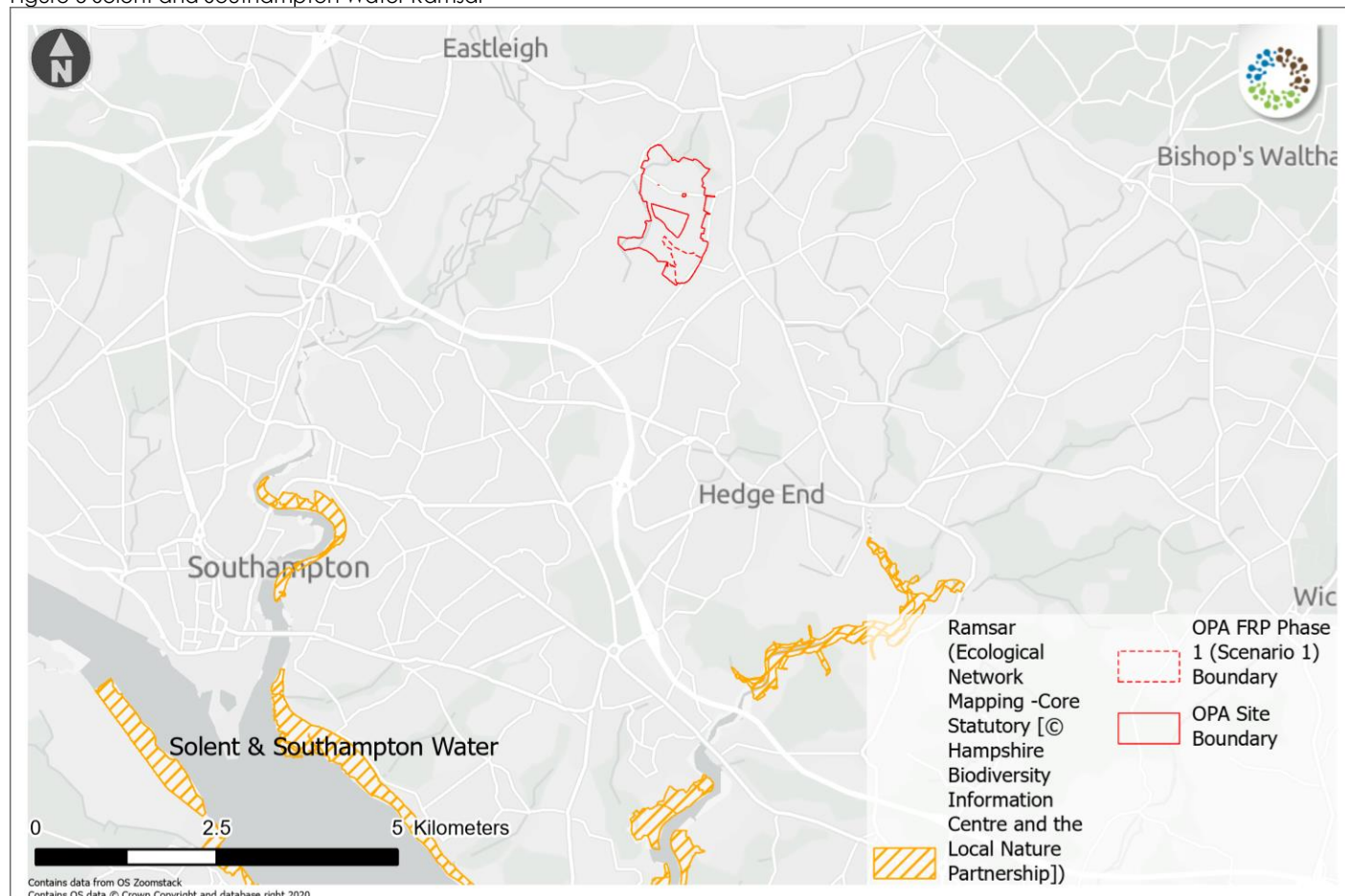
- Estuaries
- Spartina swards
- Atlantic salt meadows

The estuary feature of the SAC has a global grade of 'good', comprising excellent habitat representativity, and good surface and conservation status. The Spartina swards have a global grade of 'excellent', comprising excellent representativity and surface, but average/reduced conservation status. The Atlantic salt meadows have 'good' status throughout.

The main threats to the SAC's qualifying features are the same as those of the Solent and Southampton Water SPA.

3.4 SOLENT AND SOUTHAMPTON WATER RAMSAR⁶

Figure 5 Solent and Southampton Water Ramsar



The Solent and Southampton Water Ramsar site covers 5346 hectares (Figure 5). Its boundary overlaps with the Solent Maritime SAC and the Solent and Southampton Water SPA. At its nearest point (in a straight line), it is about 4.3 km from One Horton Heath.

The Ramsar site was designated because:

⁶ <https://jncc.gov.uk/jncc-assets/RIS/UK11063.pdf>

- It is one of the few major sheltered channels between a substantial island and mainland in European waters, exhibiting an unusual strong double tidal flow, with long periods of slack water at high and low tides.
- It includes many wetland habitats characteristic of the biogeographical region: saline lagoons, saltmarshes, estuaries, intertidal flats, shallow coastal waters, grazing marshes, reedbeds, coastal woodland and rocky boulder reefs
- It supports an important assemblage of rare plants and invertebrates.
- It supports many waterfowl, including ringed plover, dark-bellied Brent goose, Eurasian teal, and black-tailed godwit

The only factor listed as adversely affecting the site's ecological character is erosion.

3.5 EMER BOG SAC⁷

Figure 6 Emer Bog SAC



Emer Bog SAC covers 37 hectares (Figure 6). At its nearest point (in a straight line), it is about 9 km from One Horton Heath.

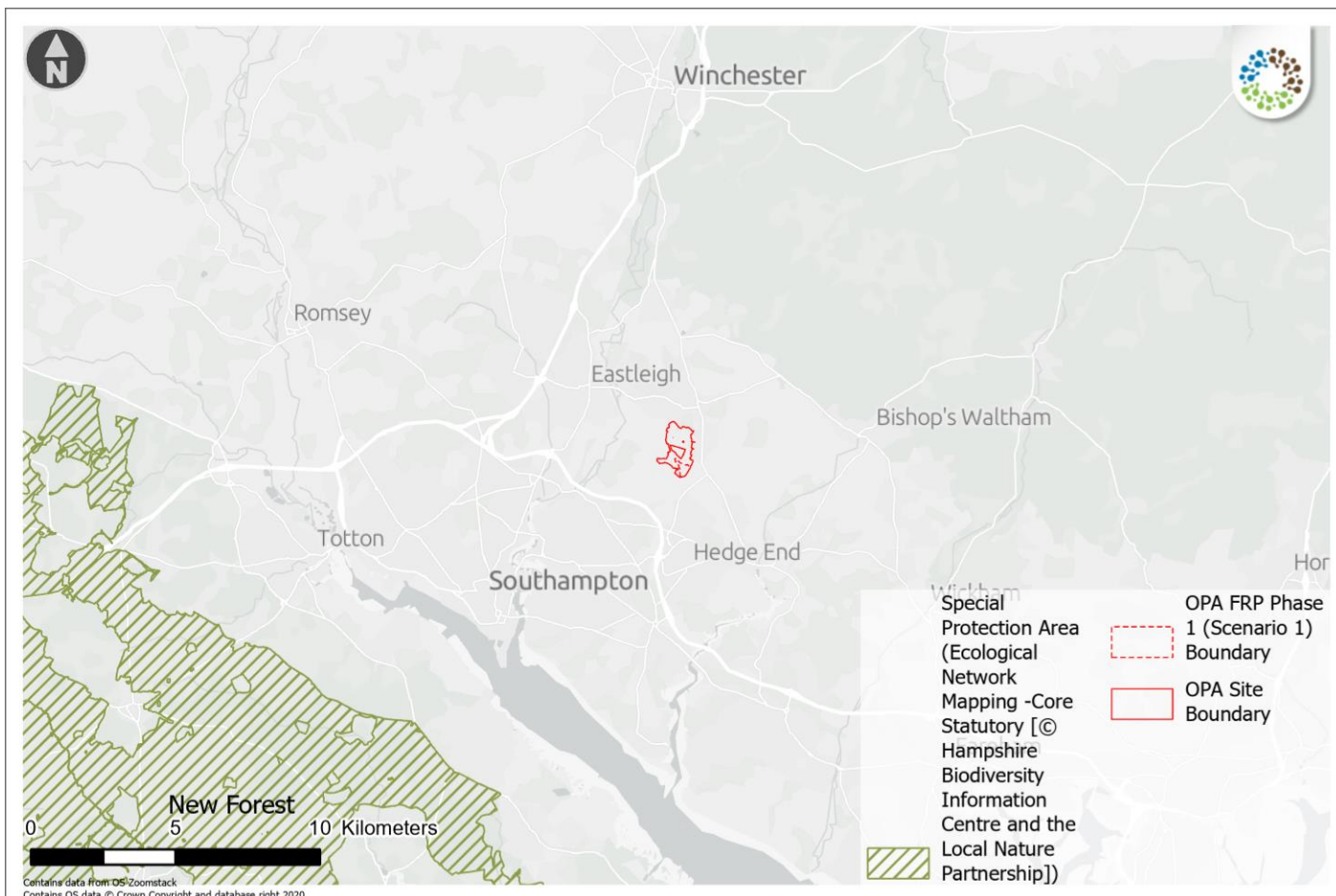
Emer Bog SAC is designated for its transition mires and quaking bogs. Its quality is excellent in terms of representativity and conservation. Its conservation status is 'average or reduced', and it has a global 'good' status.

⁷ <https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030147.pdf>

The main threats to the SPA's qualifying features are:

- human-induced changes in hydraulic conditions
- air pollution, air-borne pollutants
- outdoor sports and leisure activities, recreational activities

3.6 NEW FOREST SPA⁸



The New Forest SPA covers 27,998 hectares. Its boundary overlaps with the New Forest SAC, New Forest Ramsar site, and the River Avon SAC. It is located approximately 11 km from the One Horton Heath site at its closest point (in a straight line), but it takes about 22 km to drive there, as Southampton Water is between OHH and the SPA.

The New Forest SPA comprises the largest area of 'unsown' vegetation in lowland England and includes the representation on a large scale of habitats formerly common but now fragmented and rare in lowland western Europe. The intimate mosaic of habitats owes much to the local geology and traditional commoning grazing system. The New Forest habitats include lowland heath, valley and seepage step mire, or fen, ancient pasture woodland, including riparian and bog woodland and a range of acid to neutral grasslands. Nowhere else do these habitats occur in combination and on so large a scale.

The site supports an exceptionally rich bird fauna including internationally important breeding

⁸ <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9011031.pdf>

and wintering populations. The New Forest SPA is designated for its:

- European nightjar
- Hen harrier
- Eurasian hobby
- Woodlark
- European honey-buzzard
- Wood warbler
- Dartford warbler

Table 3.1 summarises the site assessment for each species.

Table 3.1 Site assessment for New Forest SPA species

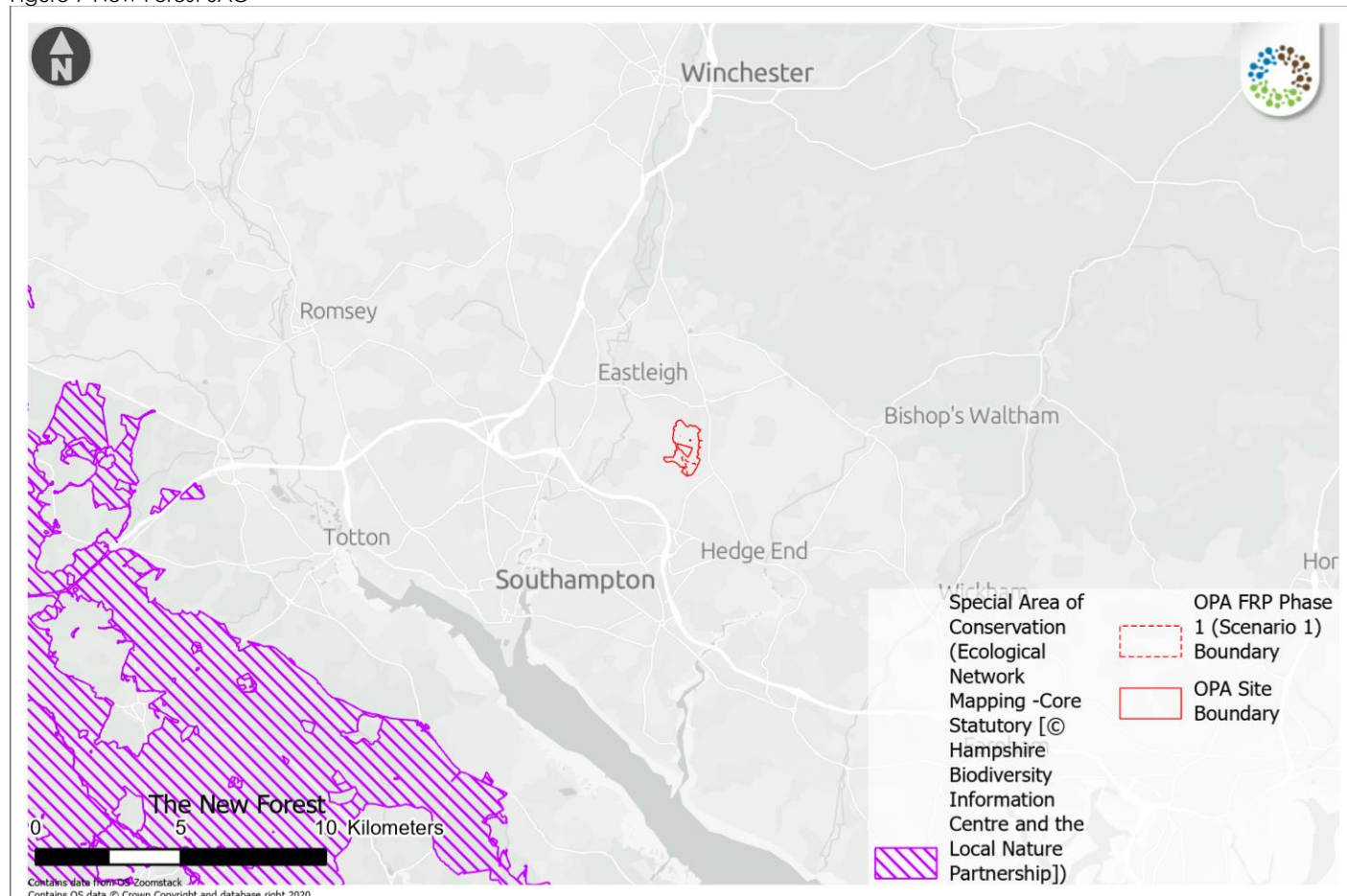
Name	Breeding status	Population	Isolation
European nightjar	Breeding	B	C
Hen harrier	Non-breeding	C	C
Eurasian hobby	Breeding	B	C
Woodlark	Breeding	A	B
European honey buzzard	Breeding	B	B
Wood warbler	Breeding	B	C
Dartford warbler	Breeding	A	B

The main threats to the New Forest SPA are:

- Air pollution, air-borne pollutants
- Fishing and harvesting of aquatic resources
- Biocenotic evolution, succession
- Human induced changes in hydraulic conditions

3.7 NEW FOREST SAC⁹

Figure 7 New Forest SAC



The New Forest SAC covers 29,214 hectares (Figure 7). Its boundary overlaps with the New Forest SPA and Ramsar site. It is located approximately 11 km from the One Horton Heath site at its closest point (in a straight line), but it takes about 22 km to drive there, as Southampton Water is between OHH and the SAC.

The SAC comprises a matrix of habitats including pasture woodland and scrub dominated by oak, beech and holly; heathland and associated grassland; wet heath, valley mire-fen and plantations dating from various periods since the early 18th century, and a range of acid to neutral grasslands. The SAC contains the most extensive areas of active wood-pasture in north west Europe; the most extensive stands of lowland northern Atlantic wet heaths in southern England; the largest area of lowland dry heathland in the UK; and many streams, small rivers and ponds.

The New Forest SAC is designated for its:

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*
- Northern Atlantic wet heaths with *Erica tetralix*

⁹ <https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0012557.pdf>

- European dry heaths
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)
- Depressions on peat substrates of the Rhynchosporion
- Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)
- Asperulo-Fagetum beech forests
- Old acidophilous oak woods with Quercus robur on sandy plains
- Bog woodland*
- Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion Incanae, Salicion albae)*
- Southern damselfly
- Stag beetle

* are priority features

All of the qualifying habitats in the SAC have a global grade of 'excellent', except Northern Atlantic wet heaths, Asperulo-Fagetum beech forests and bog woodland whose global grade is 'good'.

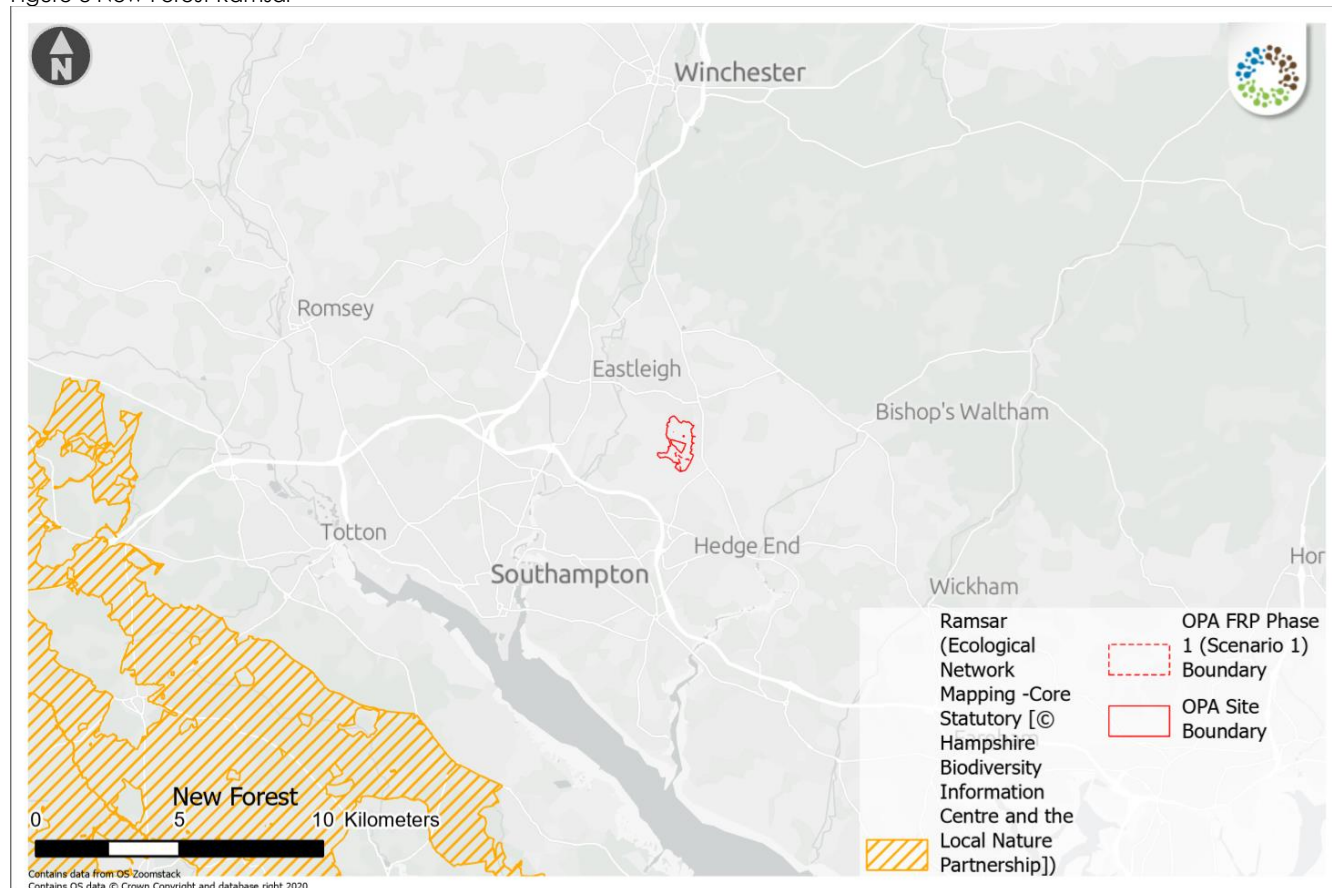
The main threats to the SAC are

- Outdoor sports and leisure activities, recreational activities
- Pollution to groundwater from point and diffuse sources
- Human induced changes in hydraulic conditions
- Problematic native species
- Forest and plantation management and use

The New Forest National Park receives over 15 million day visits per year. It is located within easy reach of two major urban areas. The New Forest has permissive public access, and landowners permit a wide range of activities including traditional countryside pursuits, sports events, golf and camping (ten campsites provide 3,300 pitches).

3.8 NEW FOREST RAMSAR¹⁰

Figure 8 New Forest Ramsar



The New Forest Ramsar site covers 28,003 hectares (Figure 8). Its boundary overlaps with the New Forest SPA and SAC. It is located approximately 11 km from the One Horton Heath site at its closest point (in a straight line), but it takes about 22 km to drive there, as Southampton Water is between the site and the SAC.

The New Forest Ramsar site was designated because of its:

- Valley mires and wet heaths
- Diverse assemblage of wetland plants. Seven species of nationally rare plants are found on the site
- Mire habitats with associated invertebrate fauna

Factors affecting the Ramsar site's ecological character are:

- Commercial-scale forest exploitation
- Drainage/land-claim
- Introduction/invasion of non-native plant species
- Recreational/tourism disturbance

¹⁰ <https://jncc.gov.uk/jncc-assets/RIS/UK11047.pdf>

4 SCREENING

Table 4.1 summarises the factors that threaten the European sites discussed at Section 3.

Table 4.1 European sites and factors that threaten them

European site	Itchen River SAC	Solent and Southampton Water SPA	Solent Maritime SAC	Solent and Southampton Water Ramsar	Emer Bog SAC	New Forest SPA	New Forest SAC	New Forest Ramsar
Approximate distance from the edge of One Horton Heath	650m	4km	4.3km	4.3km	9km	11km	11km	11km
Human induced changes in hydraulic conditions	A				O	R	V	
Grazing	B							
Pollution to groundwater	C	D	I				W	
Changes in abiotic conditions		E	J					
Changes in biotic conditions		F	K					
Fishing and harvesting of aquatic resources		G	L			S		
Outdoor sports and leisure activities		H	M		P		X	AA
Erosion				N				
Air pollution					Q	T		
Biocenotic evolution, succession						U		
Problematic native species							Y	
Forest and plantation management and use							Z	BB
Drainage / land claim								CC
Introduction / invasion of non-native plant species								DD

Key:

Identified by JNCC as a threat to the European site

XX Reference for discussion below

Table 4.2 shows threats/impacts to European sites that can be screened out for One Horton Heath (OHH).

Table 4.2 Impacts screened out for One Horton Heath

Impact screened out	Reason for screening out
B – grazing at Itchen River SAC	OHH has no control over grazing at the SAC
E, F, J, K – changes and biotic and abiotic conditions at Solent and Southampton Water SPA and Solent Maritime SAC	These changes are phenomena (e.g. climate change) that are not affected by, or within the control of, OHH
G, L, S – fishing and harvesting of aquatic resources at Solent and Southampton Water SPA, Solent Maritime SAC and New Forest SPA	These are commercial activities not affected by housing and employment land at OHH
N – erosion at Solent and Southampton Water Ramsar	This erosion is primarily due to sea level rise. It is being dealt with through coastal defence strategies. It is not affected by, or within the control of, OHH
O – hydraulic conditions at Emer Bog SAC	Emer Bog SAC is located 9km (in a straight line) from One Horton Heath, in an altogether different catchment area. The surface water catchment of Emer Bog is restricted to a zone of about 500m around the SAC ¹¹ . The Waste Water Treatment Works (WWTS) associated with the proposals for OHH do not discharge near this SAC.
P - recreational impacts at Emer Bog SAC	The SAC is at minimum 14.4km from OHH by road, and requires passing through the centre of Eastleigh. A visitor survey of 2011 found that the SAC has few (albeit well-used) parking spaces, which controls the number of visitors; and that it is only used by visitors from a local catchment, with no visitors from Eastleigh Borough ¹² . Anyway, the SAC is small (37ha) compared with other nearer recreational areas (e.g. Itchen Country Park at 178ha). It is much more likely that residents of OHH will go to other, nearer, larger recreational facilities than to the SAC.
Q – air pollution impacts at Emer Bog SAC	Emer Bog SAC is located more than 400m from an A road, and so unlikely to be significantly affected by anything other than very significant increases in traffic. The SAC is at a minimum 14.4km from OHH by road, and requires passing through the centre of Eastleigh. As such, it is unlikely that additional traffic movements from OHH will affect air quality at Emer Bog SAC.
R, V – human induced changes in hydraulic conditions at New Forest SAC and Ramsar	The New Forest lies across Southampton Water from OHH, and its hydraulic conditions are unaffected by OHH
W – pollution to groundwater at New Forest SAC	For the same reasons as R and V, pollution to groundwater at New Forest SAC is unaffected by OHH
U, Y, Z, BB, CC, DD – biocenic evolution, problematic native species, forestry management, land claim and non-native species at New Forest SAC and Ramsar	These are all processes and activities which originate in or very near the New Forest, and are unaffected by OHH

The remaining issues 'screened in' are:

- Changes in hydraulic conditions at River Itchen SAC;

¹¹ Eastleigh Borough Council (2015) Issues and Options Eastleigh Borough Local Plan, Habitat Regulations Assessment Screening Report, <https://www.eastleigh.gov.uk/media/1715/habitats-regulation-assessment.pdf>

¹² Nutburn Road, North Baddesley: Visitor questionnaire survey of Emer Bog and Baddesley Common, EPR; cited in Eastleigh Borough Council (2015) Issues and Options Eastleigh Borough Local Plan: Habitat Regulations Assessment Screening Report, <https://www.eastleigh.gov.uk/media/1715/habitats-regulation-assessment.pdf>

- C., D. and I. pollution to groundwater at River Itchen SAC, Solent and Southampton Water SPA, and Solent Maritime SAC – this has been extended to water pollution generally, in response to more recent legal cases¹³;
- H., M. outdoor sports and leisure activities at Solent and Southampton Water SPA and Solent Maritime SAC;
- X., AA., T. outdoor sports and leisure activities, and associated air pollution at New Forest SAC and Ramsar.

These are discussed further at Section 5 on appropriate assessment.

¹³ Cases C-293-294/17 Coöperatie Mobilisation

5 APPROPRIATE ASSESSMENT

5.1 CHANGES IN HYDRAULIC CONDITION (RIVER ITCHEN SAC)

5.1.1 Background

Changes to water levels - hydraulic condition - can come from:

- Water abstraction from the river or from aquifers that act as a source for the river
- Surface water flow to the river
- Flow of wastewater to the river

Water abstraction in the Hampshire area is problematic. Water to One Horton Heath will be provided by Southern Water, which is in an area of severe water stress¹⁴. In the Southern Water area to the east of Southampton, all of the water currently comes from aquifers. If too much water is abstracted from the aquifer, river levels can fall to the point where water quality goes down. This is already the case with the Rivers Itchen and Test¹⁵. This problem will be exacerbated as more water is required for new homes and businesses. By 2025, Southern Water will need to receive a transfer of 9 million additional litres of water per day from Portsmouth Water. It is also planning for a desalination plant on the Solent or a water recycling scheme on the River Itchen¹⁶.

In March 2019, an inspector authorised an amendment to an Environment Agency abstraction license, allowing Southern Water to abstract more water during drought times, pending the implementation of new reliable water supplies¹⁷. These supplies are expected to be in place by 2030. Although parts of One Horton Heath may be operational before the new water provision is in place, Southern Water's Water Resource Management Plan takes future housing growth into account, and so covers developments such as One Horton Heath.

5.1.2 Impact of One Horton Heath

Surface water from One Horton Heath will be collected in, and discharged from an extensive Sustainable Urban Drainage Systems (SUDS) at the site, as well as water being intercepted by and infiltrating through vegetated habitats and also other permeable surfaces (please refer to Chapter 11 of this ES). This is discussed further at Section 5.2. The SUDS will discharge to local ditches and small watercourses (e.g. those associated with the western boundary of the Site, flowing to the north and those flowing from east to west, forming confluences with the western boundary watercourse) which in turn discharges to the River Itchen. Although the SUDS may retain and slow down the flow of water to the Itchen - which may be beneficial after heavy rains in reducing water flow to the Itchen (and by design, flood risk to downstream receptors) - they will not significantly affect the overall amount of water flowing from the site to the River Itchen. The site wide drainage design maintains the current greenfield runoff rate

¹⁴ Environment Agency and Natural Resources Wales (2013) Water stressed areas - final classification, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/244333/water-stressed-classification-2013.pdf.

¹⁵ Environment Agency (2013) Test & Itchen River Restoration Strategy, https://s3-eu-west-2.amazonaws.com/wp-cainbio/wp-content/uploads/2018/02/18074217/T_I_RR_Strategy_Management_report_Issue_5_FINAL.pdf

¹⁶ Southern Water (2019) Securing a resilient future for water in the South: Our Water Resources Management Plan for 2020 – 70, https://www.southernwater.co.uk/media/3656/5025_wrmp_v11.pdf

¹⁷ Southern Water (2019) Water Resources Management Plan 2019: Technical Overview, <https://www.southernwater.co.uk/media/3657/wrmp19-technical-overview.pdf>

as set out in the Flood Risk Assessment. Full details can be found in Chapter 11 of the ES.

Wastewater from One Horton Heath will go to the **Chickenhall** wastewater treatment works (WWTW). The **Chickenhall** WWTW is located 1.7km to the west of One Horton Heath, and discharges to the **River Itchen**.

5.1.3 In combination impacts

Southern Water's Water Resource Management Plan uses local authorities' housing projections as a basis for its water demand forecasts. As such, it caters for 'in combination' impacts of the current and likely future population over its entire area, i.e. 'in combination' impacts.

5.1.4 Mitigation measures

One Horton Heath does not need to provide mitigation measures beyond the site drainage strategy/Flood Risk Assessment and SUDS discussed at Section 5.2, as Southern Water is providing mitigation measures for water abstraction over its entire area.

5.1.5 Conclusion of appropriate assessment re. changes in hydraulic conditions at River Itchen SAC

In conclusion, water abstraction from the River Itchen is controlled by the Environment Agency through abstraction consents. These have been agreed until 2030, and incorporate the growth expected in Eastleigh Borough Council. Only part of One Horton Heath will be operational by then. After 2030, Southern Water is expected to have new water facilities in place. There will be no significant changes to surface water entering the River Itchen.

5.2 WATER POLLUTION AND SILTATION (RIVER ITCHEN SAC)

5.2.1 Background: water pollution

The Itchen faces many pressures from water abstraction, flow diversions, discharges, agricultural runoff channel modifications, fisheries management and human impacts associated with the urbanisation alongside much of the river's valley"¹⁸.

Elevated nutrients - notably nitrogen and phosphorus - in water interfere with the balance between plant species, favouring algae and leading to a loss of characteristic plant species. In classic chalk streams like the River Itchen, the keystone species is *Ranunculus Penicillatus*. Over time, low river flows, combined with nutrient inputs from point sources (e.g. WWTW outflows) have increased the proportion of filamentous algae and nutrient-tolerant plants in the River Itchen, at the expense of *Ranunculus*¹⁹. In turn, the changes to plant community composition and structure, and the periodic reductions in dissolved oxygen due to large swards of algae, can affect the wider food web.

A 2013 study found that the water quality of the lower reaches of the River Itchen, which includes those parts of the river closest to One Horton Heath, was 'unfavourable' due to inappropriate water levels; inappropriate weirs, dams and other structures; invasive freshwater species; water pollution / agricultural run-off; and water pollution discharge²⁰.

The Wider OPA lies within a catchment that drains to Southern Water's wastewater treatment works. The Chickenhall Wastewater Treatment Works is located 1.7km to the west of the site and discharges to the River Itchen. There are no significant constraints to prevent future housing growth related to Chickenhall, although it will require upgrades to its sewer networks. One Horton Heath will discharge to **Chickenhall** Wastewater Treatment Works.

5.2.2 Background: Siltation

The River Itchen has been designated because of its riverine habitat, its Southern damselfly and its Bullhead fish; but it also has as qualifying features the white-clawed crayfish, brook lamprey, Atlantic salmon and otter. Salmon in particular are very sensitive to siltation. An expert literature review²¹ found that:

- Excessive fine sediments are lethal to spawning fish species such as salmon; and exposure to fine sediment during incubation lowers the fitness of those salmon alevins that survive hatching
- Chalk streams are very sensitive to even minor increases in fine sediment concentrations because their riverbeds are unable to flush fines from gravels – hence the long tradition of cleaning gravel beds in these rivers
- The rate and amount of fine sediments that accumulate in spawning fish nests in riverbed gravels are directly related to the concentration and total load of fine sediment in the river

¹⁸ Natural England (2014) Site improvement plan – River Itchen

¹⁹ Eastleigh Borough Council (2015) Issues and Options Eastleigh Borough Local Plan, Habitat Regulations Assessment Screening Report, <https://www.eastleigh.gov.uk/media/1715/habitats-regulation-assessment.pdf>; Poynter, A.J.W. (2013) Impacts of environmental stressors on the River Itchen *Ranunculus* community, PhD thesis, University of Birmingham, <https://etheses.bham.ac.uk/id/eprint/5112/1/Poynter14PhD.pdf>.

²⁰ Environment Agency (2013) Test & Itchen River Restoration Strategy, https://s3-eu-west-2.amazonaws.com/wp-cainbio/wp-content/uploads/2018/02/18074217/T_I_RR_Strategy_Management_report_Issue_5_FINAL.pdf

²¹ Sear, D. (2019a) Impacts of fine sediments on river ecology, <https://www.eastleigh.gov.uk/media/6200/add-appendices-hs.pdf>

- Fine organic matter is more lethal than inorganic fine sediment for incubating salmonid embryos, and the finest sediments (clays) are much more lethal than larger particles

Sear (2019a)²² found that much of the sediment load for the River Itchen is generated in winter, when the catchment surface is wet and there is a higher proportion of overland runoff; and during intense summer storms.

5.2.3 Impact of One Horton Heath

The watercourse on the western boundary of the site is classified as a 'main river' and flows south to north under Allington Lane and into the River Itchen to the south of Chickenhall Lane Wastewater Treatment Works. All other onsite watercourses discharge into this unnamed 'Main River'. In 2019 the overall status of this unnamed 'main river' was moderate, comprising high quality for fish and invertebrates, but lower status for other criteria, notably priority hazardous substances (see Table 11.3). Most of the Wider OPA Site is undeveloped greenfield land on slowly permeable, seasonally waterlogged soils over impermeable clay substrates with no storage capacity: this area will have a high standard percentage runoff and respond rapidly to rainfall. In its undeveloped state, the surface water runoff from the Wider OPA Site drains into the onsite watercourses, and from there into the 'main river' (see Sec. 11.4).

Current land use on the site includes cattle grazed fields, and arable fields that present a bare soil surface at certain times of the year, all draining to the watercourses discharging into the Itchen. Future land uses will be partly built-up and partly green infrastructure, including wetlands/SUDS.

Table 5.1 lists assumed impact avoidance measures inherent in the design of One Horton Heath.

²² Fine sediment, pollutants and microplastic impacts on the River Itchen SAC from the proposed Development Application B and C (Sear, 2019)

Table 5.1 Assumed impact avoidance measures for the River Itchen SAC (from ES Chapter 10, Table 10.10)

Construction	Production of a detailed Construction Environmental Management Plan, to include (but not limited to): ▪ Clear construction site demarcation to ensure minimal footprint of temporary/permanent development. ▪ General best practice pollution prevention and response measures ▪ Access and construction routing ▪ Phasing and timings schedule ▪ A comprehensive suite of measures to avoid sediment transport and deposition at source (e.g. locations of stockpiles away from watercourses, grassing/sheeting of longer term spoil heaps, methodologies for materials transportation and the cleaning of machinery and control measures for the suppression of construction dust and the installation temporary SuDS features as appropriate) combined with additional interception measures (e.g. erection of slit barrier fencing, settlement lagoons) and provision of other control measures e.g. Siltbuster or equivalent to prevent sediment discharge in extreme weather. ▪ Suppression of construction dust and litter ▪ Limit to the duration and timing of construction activities to avoid crepuscular activity periods and other sensitive periods (e.g. to local residents) ▪ Restrictions to lighting during sensitive periods ▪ Chemical handling and storage control measures ▪ Regular inspection of measures and habitats to ensure effectiveness and to identify remedial actions. ▪ Tree and hedgerow protection and provision of other barrier fencing where needed; ▪ Measure to protect wildlife (e.g. those needed under any protected species method statements/licences), detailed method statements, Ecological Clerk of Works, monitoring and management intervention; ▪ Avoidance of open excavations and entrapment risk for wildlife ▪ Measures to control and prevent the spread of invasive species ▪ CEMP management responsibilities, duties, monitoring, reporting, improvement plan ▪ Communications and complaints reporting system
Construction and	▪ The provision of surfaced urban areas and permanently vegetated green infrastructure will permanently minimise the extent of exposed surfaces that will cause erosion and transport of sediment. This will

operation	reduce the potential for soil/sediment erosion and transportation from the existing agricultural land use. All watercourses will be protected by a 10m ecological buffer (excluding SUDS connections and ecological improvements) with an associated 10-50m green infrastructure corridor (measured from the bank edge of water limit when watercourse is full). Watercourse severance has been minimised through the development.
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Table 5.2 lists remaining potential Impacts of One Horton Heath on water quality In the River Itchen SAC post avoidance measures.

Table 5.2 Potential impacts of One Horton Heath, post avoidance measures, on water quality in the River Itchen SAC (from ES Chapter 10, Table 10.11)

Potential impact	Construction stage	Operation stage
Discharge of soil/sediment into on site/receiving watercourses and into the River Itchen at the confluence located at SU 46198 16665, upstream of Itchen Valley Country Park, deposition of the sediment may affect designated features including macrophytes (in particular <i>Rununculus fluitantis</i> and <i>Callitriche-Batrachio</i> vegetation), macroinvertebrates (in particular Southern damselfly <i>Coenagrion mercurial</i>), fish (notably Bullhead <i>Cottus gobio</i> , Brook lamprey <i>Lampetra planeri</i> and Atlantic salmon <i>Salmo salar</i>) and otter (<i>Lutra lutra</i>), notably condition of salmon spawning habitat (redds) through smothering vegetation, blocking voids within the coarse bedload used by fish and invertebrates, introducing nutrients, metals and other deleterious substances bound on the sediment particles and influencing other aspects of water quality including nutrient enrichment and water transparency.	√	√
Accidental pollution (e.g. hydrocarbons, paints, solvents and other materials used) and discharge into on site/receiving watercourses and into the River Itchen at the confluence located at SU 46198 16665, upstream of Itchen Valley Country Park, affecting designated features including macrophytes, macroinvertebrates, fish, birds through reduction in water quality including exposure to substances with chronic/acute consequential effects.	√	√
Change (likely overall reduction during the course of the construction phasing) of agricultural sourced nutrients (in particular nitrates and phosphates) entering the soil and discharged through onsite/receiving watercourses into the Itchen at the confluence located at SU 46198 16665, upstream of Itchen Valley Country Park, through the conversion to urban land use and low nutrient managed open spaces and habitats with potential effects on eutrophication levels in the River Itchen and associated features of interest.	√	

Modification of onsite hydrological regime including small scale 0/1 st stage headwater catchments through change in soil drainage character, introduction of formal drainage, severance of drainage systems, blockage of natural drainage systems with reduction in extent of wetland habitats (including marshy grassland/wet woodland) or supply of water to standing or running water bodies, or change in flood regime resulting in an increase on volume/rate and transport of sediment/erosion etc and change in flow characteristics and quality entering the Itchen at SU 46198 16665.	√	
Change in nutrient (nitrate and phosphate) emissions from the operation/occupation of the site largely associated with domestic and business generation, with agricultural contributions ceasing and application of fertilisers in open spaces minimised or avoided, but with generation of nutrients from urban operations including discharge of treated sewage arising from the development and urban sediment discharge, with potential effects on siltation and eutrophication levels in the receiving watercourses and associated features of interest.		√
Change in riverine flow in the River Itchen associated with increased abstraction by Southern Water to provide potable supply to the new population at One Horton Heath and effects on and associated features of interest from a change in flow regime		√

5.2.4 Mitigation measures

Additional mitigation measures are proposed to deal with any residual, post-avoidance impacts on the integrity of the River Itchen SAC. These measures are detailed at ES Chapter 10, Table 10.11, and ES Chapter 11, Section 11.5. They include:

- Retention, protection and restoration of watercourses and associated riparian corridors including bankside and in-channel enhancement measures;
- Construction measures to minimise the likelihood of silt and pollutants reaching the 'main river', e.g. locations of stockpiles away from watercourses, grassing/sheeting of longer-term spoil heaps;
- Professionally designed and extensive SuDS system including permeable surfaces, vegetated swales, and basins to include sediment forebays at the inlets and outlets, and functional wetland vegetation to promote the deposition of fine sediment, and promote settling and binding of sediment in vegetated areas.
- Site-wide nitrate neutrality and balancing (see below).
- Rigorous programme of water quality monitoring (e.g. turbidity, suspended solids, conductivity, pH, nitrates, phosphates) during construction and operation, at each SuDS and leaving the site, to confirm the efficacy of the system in capturing fine sediment and capturing nitrates in particular. A management intervention mechanism will enable removal of sediment from settlement areas and improvement in the system if required, to ensure no net emissions of fine sediment in accordance with the measures set out in Chapter 10 of this ES and the ES Addendum. Monitoring and management intervention to ensure no net emissions of nitrates (in particular) in accordance with nitrate neutrality measures as set out in Chapter 11 of this ES.

In particular, a 'management train' of SuDS is proposed in Chapter 11 of the ES (Figure 9) and the ES Addendum comprising:

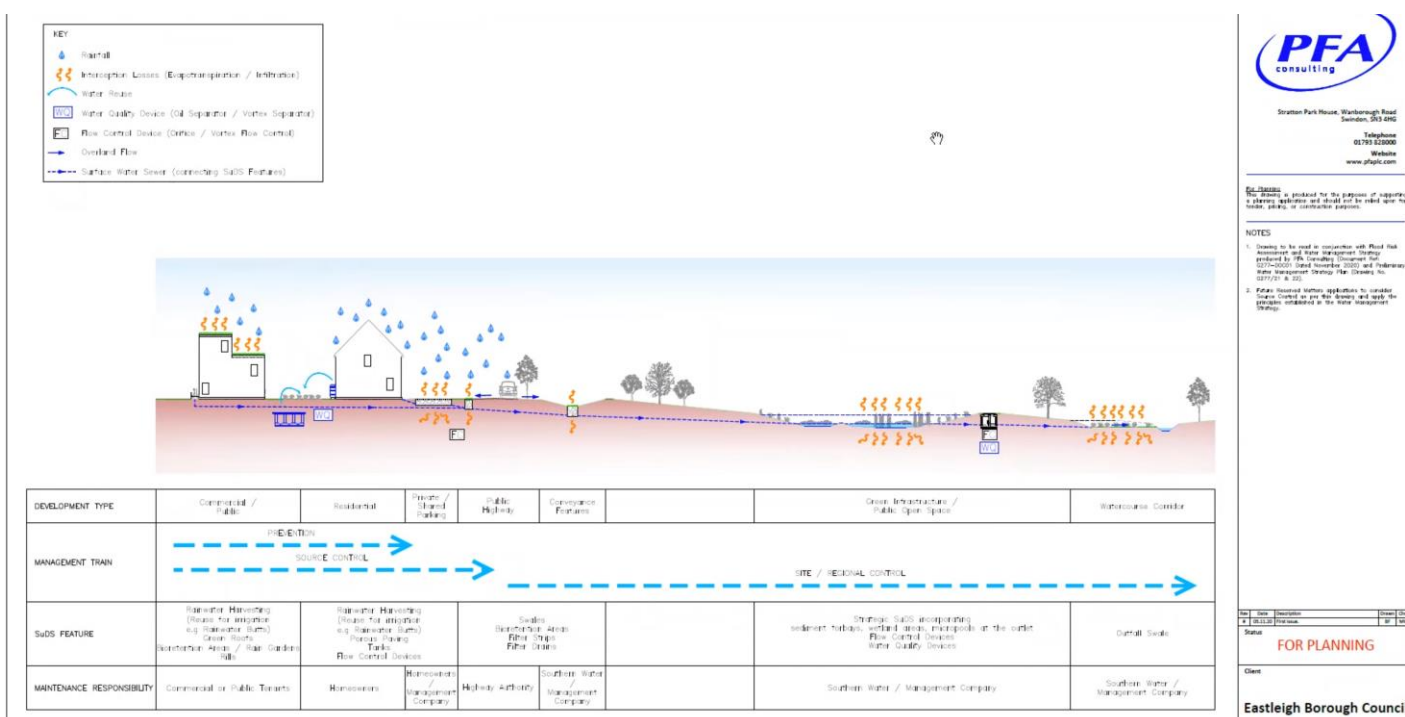
Prevention: the use of good site design and housekeeping measures to prevent pollution, including:

- Minimising the impermeable areas created on the site by providing soft landscaping and planting wherever possible.
- Good site wide housekeeping and maintenance to minimise blockages and prevent pollution arising.
- Provision of water butts for rear gardens.
- The use of green roofs for public / commercial buildings where appropriate.
- The use of rainwater harvesting / reuse systems for public / commercial buildings and sports pitches where appropriate.
- Installation of separators and other proprietary pollution control systems where land use requires or specific risks necessitate their use.
- Silt traps and trapped gullies to retain sediment.
- Planting within landscaped areas to encourage nutrient / pollutant uptake and evapotranspiration.
- The implementation of a SuDS Maintenance Strategy. This should become a living document that is continuously reviewed following the detailed design of the upstream, on parcel SuDS elements.

Source Control, i.e. control of runoff at or near its source, so that it does not enter the drainage system or is delayed and attenuated before it enters the drainage system, including:

- Pervious Paving: This intercepts rainfall that lands on its surface before it can run overland into the downstream drainage system. This provides a degree of interception, particularly in the most polluted first-flush events, as well as filtration through the various layers of construction and through the stone sub-base. Pervious paving would typically be used for parking areas such as driveways, parking courts and car parks. Through the inclusion of a suitable flow control device, the stone sub-base in the pervious paving structure can be utilised to provide additional attenuation storage.
- Bioretention Areas / Rain Gardens: Bioretention areas utilise planting and constructed soils to intercept rainfall from their catchment areas, and contribute to interception storage, evapotranspiration and pollution removal. They can be placed around downpipes to intercept roof runoff, particularly from larger commercial buildings where they can form part of the landscape design. They can also be incorporated into traffic calming infrastructure such as build outs and into roadside planting and tree pits. Bioretention swales can be installed adjacent to larger areas of highway to provide water quality treatment and attenuation storage along their length.
- Other filtration techniques: Filter Trenches and French Drains can be used to intercept runoff from larger parking areas and highway areas. These will provide interception storage and filtration through the stone fill within the trenches.
- Site Control, i.e. the management of water from several sub-catchments within a development parcel (e.g. the Phase 1 OPA). Through close consultation with the layout designers, flow conveyance measures such as swales and filter trenches can be incorporated into the development parcels to provide additional attenuation, treatment, amenity and opportunities for habitat creation.
- Regional Control, which is the strategic management of runoff across the wider OHH site. The Strategic SuDS Features will provide the attenuation volume and flow control required to reduce post-development flow rates to below greenfield runoff rates. Strategic SuDS Features will incorporate erosion control and sediment forebays, designed in accordance with the guidance given in The SuDS Manual, to enhance water quality. The creation of wetland areas and the use of wetland planting within the Strategic SuDS Features will further contribute to the sediment and nutrient removal capacity of the site wide sustainable drainage systems.

Figure 9 SuDS Train Cross Section



Nutrient Neutrality

The impact avoidance measures listed at Table 5.1 and the mitigation measures listed in 5.2.4 above will already reduce the impacts of One Horton Heath with respect to runoff to drains. However, there is remaining uncertainty as to whether new 'in combination' developments, including One Horton Heath, will further deteriorate water quality at the SPA/SAC.

Since March 2018, Natural England has been advising that one means of addressing this uncertainty for larger developments such as One Horton Heath, that have the potential to result in increases of nitrogen entering a European site, is to calculate a nutrient budget and achieve nutrient neutrality^{23,24}. Chapter 10 of this ES presents the detailed nitrate neutrality study for One Horton Heath. In brief, following Natural England's methodology:

1. Will the proposed development connect to the mains drainage / sewerage system? Yes
2. Will the proposed development generate wastewater from overnight use? Yes
3. Is wastewater before or after treatment to be discharged into the Solent catchment? Yes. One Horton Heath's treated effluent will be discharged to the Chickenhall Lane wastewater treatment works (WwTW). The WwTW does not have a permit concentration limit for Total Nitrogen and thus, as per Natural England guidance, a discharge concentration of 27.0 mg/l TN is assumed (a typical value derived by Southern Water from nitrogen effluent concentrations at other non-consented WwTWs in the Solent area).

²³ <https://www.push.gov.uk/wp-content/uploads/2020/06/Natural-England%E2%80%99s-latest-guidance-on-achieving-nutrient-neutrality-for-new-housing-development-June-2020.pdf>

²⁴ Parcel 51, in the south-eastern corner of the masterplan, is covered by a separate planning application (Ref. X/19/86475) and so has not been included in the nitrate neutrality calculations.

Stage 1. Calculate total nitrogen (TN₂₅) per annum derived from the development that would exit the WwTW into the Solent catchment after treatment.

As reported in the Hilson Moran (HM) report "Nitrate Neutrality Study – Outline Planning Application: One Horton Heath" (Report ref. 25709-RP-SU-02, dated 13/05/21), a modified Natural England Methodology has been developed in order to increase the accuracy of the end result, ensuring the incorporation of an appropriate precautionary buffer, which includes:

- a bespoke calculation for the assessment of wastewater N from pre-existing dwellings (as none of them are connected to the adopted foul water sewer system or discharge through a WwTW);
- Eastleigh Borough occupancy rates based on house size supplied by Census Customer Services, and
- A Southern Water supplied "return-to-sewer" rate of 92.5 %.

The HM OPA report determines that 4,814.5 Kg/TN/yr would exit the WwTW into the Solent catchment after treatment, with the development in place.

4. Is there a change to the land use? Yes

5. Does any part of the existing land use drain to the Solent catchment? Yes

Stage 2. Calculate existing (pre-development) nitrogen from the current land use of the development site:

3,289.3 Kg/TN/yr, as per the HM OPA report.

Stage 3. Calculate nitrogen for the future land uses proposed for the development site:

1,157.1 Kg/TN/yr, as per the HM OPA report.

Stage 4. Calculate change in total nitrogen as a result of the proposed development:

Table 5.3 Stage 4. Calculate change in total nitrogen as a result of the proposed development

	Current use	One Horton Heath	Change from current use to One Horton Heath
Wastewater	30.2 kg TN/yr	4,844.7 kg TN/yr	+ 4,814.5 kg TN/yr
Land use	3,289.3 kg TN/yr	1,157.1 kg TN/yr (post SuDS = 0 kg TN/yr)	- 2132.2 kg TN/yr (post SuDS = - 3,289.3 kg TN/yr)

²⁵ This is a 'worse case' reference as it covers all forms of nitrogen. In aquatic systems, the terms TN and nitrate are often interchangeable as in aerobic environments the tendency is for all N to gravitate to nitrate (NO₃⁻), unless otherwise persuaded to transform to N₂ (or gaseous nitrous oxide (N₂O) which is another step along the denitrification pathway), either by anoxic microbial processes or by treatment.

	Current use	One Horton Heath	Change from current use to One Horton Heath
Wastewater	30.2 kg TN/yr	4,844.7 kg TN/yr	+ 4,814.5 kg TN/yr
Total	3,319.5 kg N/yr	6,001.8 kg TN/yr (post SuDS = 4,844.7 kg TN/yr)	+ 2,682.3 kg TN/yr (post SuDS = - 1525.2 kg TN/yr)

As a worst case, if the concentration of TN in OHH wastewater and runoff was 20% higher than assumed (i.e. a 20 % buffer as recommended by Natural England), water usage per new household was similar to current water usage rates for the area and there were no SuDS (or they completely failed), then this would lead to **Error! Reference source not found.:**

Table 5.4 Worst case scenario values

	Current use	One Horton Heath	Change from current use to One Horton Heath
Wastewater	36.2 kg N/yr	5,813.6 kg TN/yr	5,777.4 kg TN/yr
Land use	3,947.2 kg N/yr	1,388.4 kg TN/yr	2,558.8 kg TN/yr
Total	3,983.4 kg N/yr	7,202.0 kg TN/yr	+ 3218.8 kg TN/yr

Does the development result in a net increase of nitrogen to the Solent catchment? Yes. The results identify that a total of 3,218.8 Kg/TN /yr will need to be neutralised in order to mitigate against the proposed development.

5.2.5 In combination impacts

'In combination' impacts on the River Itchen SAC arising from the One Horton Heath development are not predicted because of the robust design of the drainage and sediment attenuation systems set out in Chapter 10 and 11 of the ES. In addition, should it be required as a result of future discussions or monitoring, further wetland treatment systems could be introduced and/or nutrient credits could be purchased.

5.2.6 Conclusion of appropriate assessment re. water pollution to River Itchen SAC

As part of the proposals, it is intended to construct a network of SuDS features across the site comprising basins, swales, ponds and wetlands to sustainably manage runoff from the scheme. All proposed SuDS features will be planted and incorporate permanently wet areas around inlets, outlets and wetland areas within the base of the features.

Wetlands have been shown to remove N from runoff through processes such as denitrification and sedimentation. Assuming a mean removal rate of 181 g N/m²/yr can be achieved in the permanently wet areas of the proposed SuDS features, at least c. 41.1 % of the base of each SuDS feature will be provided as a permanently wetted area in order to treat all N in the runoff from the scheme, which equates to 1,284.1 kg TN/yr.

Consequently, the implementation of a 'management train' of suitable SuDS measures, with the design informed by a compliant nutrient neutrality assessment and supported by monitoring and management to manage sediments within the site, will minimise runoff-derived nutrients and sediment being discharged to watercourses draining to the Itchen.

The provision of the SuDS network, will also be supported by the measures put forward in Chapter 11 of the ES, including:

- The adoption of robust measures to manage any construction effects, managed through a CEMP supported by monitoring and management intervention, that could result in water pollution including that associated with nitrogen during the construction phase;
- the provision of ecologically rich buffers between the urban components of the site and the adjacent watercourses; and
- monitoring and management (and if necessary, intervention) set out in Chapter 11 of the ES (the removal of bare soil surfaces from the current agricultural land use and conversion to non-eroding urban surfaces and permanently vegetated surfaces).

In addition, EBC are currently putting in place a land assembly project that will provide a permanent Borough wide nitrate mitigation approach. In March 2020 Cabinet approved an interim charging schedule so developers could pay EBC to meet their nitrate offset requirement.

The Councils offset scheme is now offered to developers on a voluntary basis and is monitored through the planning application process. As of March 2021, EBC had completed purchase of 7 parcels of land totalling 194 acres, which has been calculated to generate 3,388 nitrate credits (kg N/yr). It is anticipated that these Strategic Land Parcels will be used to wholly offset the remaining 1,934.7 kg TN/yr increase in N-loss to the Solent associated with the OHH scheme.

Consequently, the impacts of the proposals will be fully mitigated and will ensure that they do not detrimentally affect local biodiversity or the conservation status of the River Itchen SAC or downstream European Designated Sites.

5.3 WATER POLLUTION (SOLENT AND SOUTHAMPTON WATER SPA, SOLENT MARITIME SAC)

5.3.1 Background

The Solent Maritime SAC / Solent and Southampton Water SPA also suffer from nitrogen and phosphorus pollution. This has caused excessive growth of green weed, which can form dense mats in the intertidal areas, inhibiting the natural functioning of these habitats. The Environment Agency has observed evidence of toxic contamination and thermal pollution in some areas of the SPA/SAC: both of these affect the fauna which are the qualifying features of the SAC/SPA²⁶.

Research by Natural England found the condition of the Solent Maritime SAC features - estuary, mudflat & sandflats, sandbanks – to be unfavourable. Figure 2 also shows that the condition of the SSSIs that make up the terrestrial portion of the SAC are in mixed condition. The unfavourable assessment is based in part on poor water quality. Other attributes were also found to be failing, such as, for seagrasses, their extent, distribution, rhizome structure and reproduction as well as biomass, and for the intertidal mud and sand features their faunal quality. These failures are considered to be in part due to impacts from elevated nutrients²⁷.

The HRA for the Eastleigh Local Plan²⁸ notes that major sources of nitrogen to the Solent European marine sites are from:

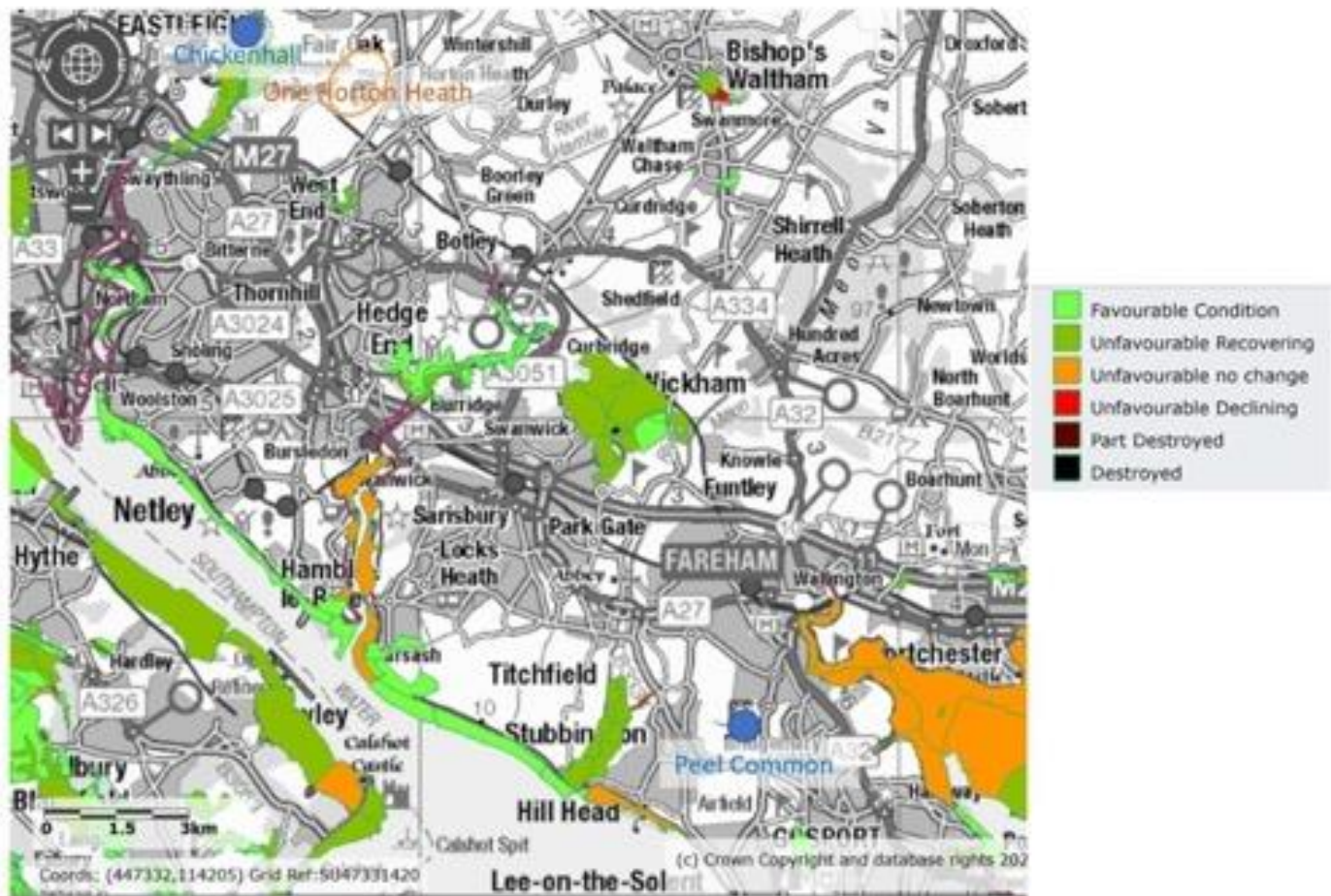
- Coastal background seawater from the English Channel;
- Direct rivers and streams discharging into the sites;
- Indirect rivers and streams discharging elsewhere in the Solent; and
- Effluent discharges permitted by the Environment Agency.

²⁶ Eastleigh Borough Council *ibid*.

²⁷ Natural England (June 2020) Advice on achieving nutrient neutrality for new development in the Solent region, <https://www.push.gov.uk/wp-content/uploads/2020/06/Natural-England%E2%80%99s-latest-guidance-on-achieving-nutrient-neutrality-for-new-housing-development-June-2020.pdf>

²⁸ Urban Edge (2019) Habitats Regulations Assessment: Eastleigh Borough Local Plan, <https://www.eastleigh.gov.uk/media/5477/ed12a-41-hra-main-report.pdf>

Figure 10 . Condition of SSSIs that make up the terrestrial component of the Solent Maritime SAC



5.3.2 Impact of One Horton Heath

Table 5.2 lists the potential impacts of One Horton Heath, after the avoidance measures listed at Table 5.1, on water quality in the Solent and Southampton Water SPA and Solent Maritime SAC.

5.3.3 In combination impacts

As is explained in 5.2.5, it is not necessary to consider 'in combination' impacts for this issue because One Horton Heath is following a wider approach to the issue which means that it will essentially be nitrate neutral, and is managing sediment and other contaminant releases from the site from both construction and operational stages, and so does not require consideration of in combination impacts:

"Article 6(3) of the Habitats Directive must be interpreted as not precluding national programmatic legislation which allows the competent authorities to authorise projects on the basis of an 'appropriate assessment' within the meaning of that provision, carried out in advance and in which a specific overall amount of nitrogen deposition has been deemed

compatible with that legislation's objectives of protection."²⁹

Table 5.5 Potential impacts of One Horton Heath, post avoidance measures, on the Solent and Southampton Water SPA and Solent Maritime SAC (from ES Chapter 10, Table 10.11)

Potential Impact	Construction stage	Operation stage
Discharge of soil/sediment into on site/receiving watercourses and transport into the Solent, introducing nutrients, metals and other deleterious substances bound on the sediment particles and influencing other aspects of water quality including nutrient enrichment and water transparency.	√	√
Accidental pollution of contaminants (e.g. hydrocarbons, paints, solvents and other materials used) and discharge into on site/receiving watercourses and transported into the Solent resulting in a reduction in water quality including exposure to substances with chronic or acute consequential effects.	√	√
Change of agricultural sourced nutrients (in particular nitrates and phosphates) entering the soil and discharged through onsite/receiving watercourses and transported to the Solent with potential effects on eutrophication levels and associated features of interest.	√	√
Recreational disturbance from human and dog walking in areas associated with sensitive bird species, notably with effects on breeding viability. Species associated with this site are: • Black-tailed godwit (<i>Limosa limosa islandica</i>), Non-breeding • Common tern (<i>Sterna hirundo</i>), Breeding • Dark-bellied brent goose (<i>Branta bernicla bernicla</i>), Non-breeding • Little tern (<i>Sternula albifrons</i>), Breeding • Mediterranean gull (<i>Ichthyaeetus melanocephalus</i>), Breeding • Ringed plover (<i>Charadrius hiaticula</i>), Non-breeding • Roseate tern (<i>Sterna dougallii</i>), Breeding • Sandwich tern (<i>Thalasseus sandvicensis</i>), Breeding • Teal (<i>Anas crecca</i>), Non-breeding • Waterbird assemblage, Non-breeding		√

5.3.4 Mitigation measures

Additional mitigation measures are proposed to deal with any residual, post-avoidance impacts on the integrity of the River Itchen SAC. These measures are detailed at ES Chapter 10, Table 10.11, and ES Chapter 11, Section 11.5. They include:

- Retention, protection and restoration of watercourses and associated riparian corridors including bankside and in-channel enhancement measures;
- Construction measures to minimise the likelihood of silt and pollutants reaching the 'main river', e.g. locations of stockpiles away from watercourses, grassing/sheeting of longer-term spoil heaps;
- Professionally designed and extensive SuDS system including permeable surfaces, vegetated swales, and basins to include sediment forebays at the inlets and outlets, and functional wetland vegetation to promote the deposition of fine sediment, and promote settling and binding of sediment in vegetated areas.
- Site-wide nitrate neutrality and balancing (see below).
- Rigorous programme of water quality monitoring (e.g. turbidity, suspended solids, conductivity, pH, nitrates, phosphates) during construction and operation, at each

²⁹ Case C-293/17 Coöperatie Mobilisation, <http://curia.europa.eu/juris/document/document.jsf?jsessionid=F082FC3EE493E8545C32C9F456EEB3AA?text=&docid=207424&pageIndex=0&doclang=en&mode=lst&dir=&occ=first&part=1&cid=9614661>

SuDS and leaving the site, to confirm the efficacy of the system in capturing fine sediment and capturing nitrates in particular. A management intervention mechanism will enable removal of sediment from settlement areas and improvement in the system if required, to ensure no net emissions of fine sediment in accordance with the measures set out in Chapter 10 of this ES and the ES Addendum. Monitoring and management intervention to ensure no net emissions of nitrates (in particular) in accordance with nitrate neutrality measures as set out in Chapter 11 of this ES.

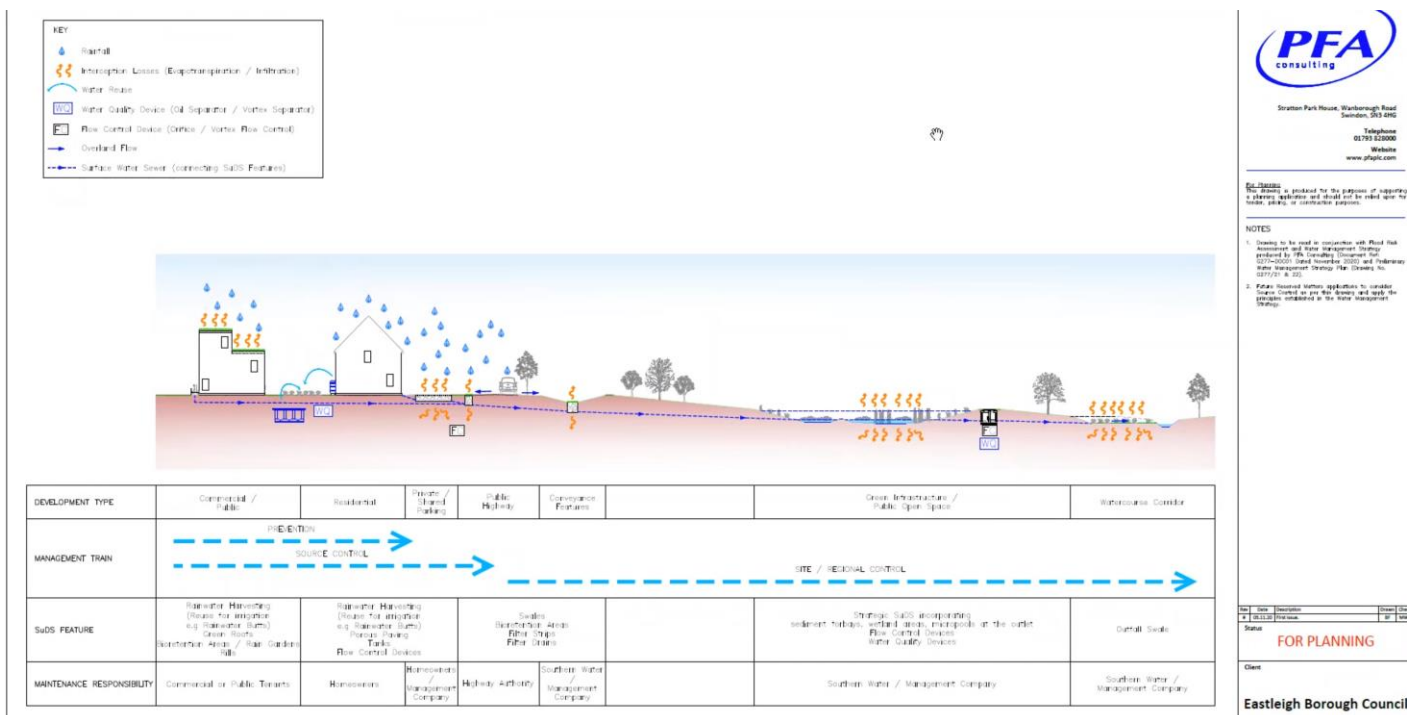
In particular, a 'management train' of SuDS is proposed in Chapter 11 of the ES (Figure 9) and the ES Addendum comprising:

- Prevention: the use of good site design and housekeeping measures to prevent pollution, including:
 - Minimising the impermeable areas created on the site by providing soft landscaping and planting wherever possible.
 - Good site wide housekeeping and maintenance to minimise blockages and prevent pollution arising.
 - Provision of water butts for rear gardens.
 - The use of green roofs for public / commercial buildings where appropriate.
 - The use of rainwater harvesting / reuse systems for public / commercial buildings and sports pitches where appropriate.
 - Installation of separators and other proprietary pollution control systems where land use requires or specific risks necessitate their use.
 - Silt traps and trapped gullies to retain sediment.
 - Planting within landscaped areas to encourage nutrient / pollutant uptake and evapotranspiration.
 - The implementation of a SuDS Maintenance Strategy. This should become a living document that is continuously reviewed following the detailed design of the upstream, on parcel SuDS elements.
- Source Control, i.e. control of runoff at or near its source, so that it does not enter the drainage system or is delayed and attenuated before it enters the drainage system, including:
 - Pervious Paving: This intercepts rainfall that lands on its surface before it can run overland into the downstream drainage system. This provides a degree of interception, particularly in the most polluted first-flush events, as well as filtration through the various layers of construction and through the stone sub-base. Pervious paving would typically be used for parking areas such as driveways, parking courts and car parks. Through the inclusion of a suitable flow control device, the stone sub-base in the pervious paving structure can be utilised to provide additional attenuation storage.
 - Bioretention Areas / Rain Gardens: Bioretention areas utilise planting and constructed soils to intercept rainfall from their catchment areas, and contribute to

interception storage, evapotranspiration and pollution removal. They can be placed around downpipes to intercept roof runoff, particularly from larger commercial buildings where they can form part of the landscape design. They can also be incorporated into traffic calming infrastructure such as build outs and into roadside planting and tree pits. Bioretention swales can be installed adjacent to larger areas of highway to provide water quality treatment and attenuation storage along their length.

- Other filtration techniques: Filter Trenches and French Drains can be used to intercept runoff from larger parking areas and highway areas. These will provide interception storage and filtration through the stone fill within the trenches.
- Site Control, i.e. the management of water from several sub-catchments within a development parcel (e.g. the Phase 1 OPA). Through close consultation with the layout designers, flow conveyance measures such as swales and filter trenches can be incorporated into the development parcels to provide additional attenuation, treatment, amenity and opportunities for habitat creation.
- Regional Control, which is the strategic management of runoff across the wider OHH site. The Strategic SuDS Features will provide the attenuation volume and flow control required to reduce post-development flow rates to below greenfield runoff rates. Strategic SuDS Features will incorporate erosion control and sediment forebays, designed in accordance with the guidance given in The SuDS Manual, to enhance water quality. The creation of wetland areas and the use of wetland planting within the Strategic SuDS Features will further contribute to the sediment and nutrient removal capacity of the site wide sustainable drainage systems.

Figure 11 SuDS Train Cross Section



Nutrient Neutrality

The impact avoidance measures listed at Table 5.1 and the mitigation measures listed in 5.2.4 above will already reduce the impacts of One Horton Heath with respect to runoff to drains. However, there is remaining uncertainty as to whether new 'in combination' developments, including One Horton Heath, will further deteriorate water quality at the SPA/SAC.

Since March 2018, Natural England has been advising that one means of addressing this uncertainty for larger developments such as One Horton Heath, that have the potential to result in increases of nitrogen entering a European site, is to calculate a nutrient budget and achieve nutrient neutrality^{30,31}. Chapter 10 of this ES presents the detailed nitrate neutrality study for One Horton Heath. In brief, following Natural England's methodology:

1. Will the proposed development connect to the mains drainage / sewerage system? Yes
2. Will the proposed development generate wastewater from overnight use? Yes
3. Is wastewater before or after treatment to be discharged into the Solent catchment? Yes. One Horton Heath's treated effluent will be discharged to the Chickenhall Lane wastewater treatment works (WwTW). The WwTW does not have a permit concentration limit for Total Nitrogen and thus, as per Natural England guidance, a discharge concentration of 27.0 mg/l TN is assumed (a typical value derived by Southern Water from nitrogen effluent concentrations at other non-consented WwTWs in the Solent area).

³⁰ <https://www.push.gov.uk/wp-content/uploads/2020/06/Natural-England%E2%80%99s-latest-guidance-on-achieving-nutrient-neutrality-for-new-housing-development-June-2020.pdf>

³¹ Parcel 51, in the south-eastern corner of the masterplan, is covered by a separate planning application (Ref. X/19/86475) and so has not been included in the nitrate neutrality calculations.

Stage 1. Calculate total nitrogen (TN³²) per annum derived from the development that would exit the WwTW into the Solent catchment after treatment.

As reported in the Hilson Moran (HM) report "Nitrate Neutrality Study – Outline Planning Application: One Horton Heath" (Report ref. 25709-RP-SU-02, dated 13/05/21), a modified Natural England Methodology has been developed in order to increase the accuracy of the end result, ensuring the incorporation of an appropriate precautionary buffer, which includes:

- a bespoke calculation for the assessment of wastewater N from pre-existing dwellings (as none of them are connected to the adopted foul water sewer system or discharge through a WwTW);
- Eastleigh Borough occupancy rates based on house size supplied by Census Customer Services, and
- A Southern Water supplied "return-to-sewer" rate of 92.5 %.

The HM OPA report determines that 4,814.5 Kg/TN/yr would exit the WwTW into the Solent catchment after treatment, with the development in place.

- 4. Is there a change to the land use? Yes
- 5. Does any part of the existing land use drain to the Solent catchment? Yes

Stage 2. Calculate existing (pre-development) nitrogen from the current land use of the development site:

- 3,289.3 Kg/TN/yr, as per the HM OPA report.

Stage 3. Calculate nitrogen for the future land uses proposed for the development site:

- 1,157.1 Kg/TN/yr, as per the HM OPA report.

Stage 4. Calculate change in total nitrogen as a result of the proposed development:

Table 5.6 Stage 4. Calculate change in total nitrogen as a result of the proposed development

	Current use	One Horton Heath	Change from current use to One Horton Heath
Wastewater	30.2 kg TN/yr	4,844.7 kg TN/yr	+ 4,814.5 kg TN/yr
Land use	3,289.3 kg TN/yr	1,157.1 kg TN/yr (post SuDS = 0 kg TN/yr)	- 2132.2 kg TN/yr (post SuDS = - 3,289.3 kg TN/yr)

³² This is a 'worse case' reference as it covers all forms of nitrogen. In aquatic systems, the terms TN and nitrate are often interchangeable as in aerobic environments the tendency is for all N to gravitate to nitrate (NO₃⁻), unless otherwise persuaded to transform to N₂ (or gaseous nitrous oxide (N₂O) which is another step along the denitrification pathway), either by anoxic microbial processes or by treatment.

	Current use	One Horton Heath	Change from current use to One Horton Heath
Wastewater	30.2 kg TN/yr	4,844.7 kg TN/yr	+ 4,814.5 kg TN/yr
Total	3,319.5 kg N/yr	6,001.8 kg TN/yr (post SuDS = 4,844.7 kg TN/yr)	+ 2,682.3 kg TN/yr (post SuDS = - 1525.2 kg TN/yr)

As a worst case, if the concentration of TN in OHH wastewater and runoff was 20% higher than assumed (i.e. a 20 % buffer as recommended by Natural England), water usage per new household was similar to current water usage rates for the area and there were no SuDS (or they completely failed), then this would lead to **Error! Reference source not found.:**

Table 5.7 Worst case scenario values

	Current use	One Horton Heath	Change from current use to One Horton Heath
Wastewater	36.2 kg N/yr	5,813.6 kg TN/yr	5,777.4 kg TN/yr
Land use	3,947.2 kg N/yr	1,388.4 kg TN/yr	2,558.8 kg TN/yr
Total	3,983.4 kg N/yr	7,202.0 kg TN/yr	+ 3218.8 kg TN/yr

Does the development result in a net increase of nitrogen to the Solent catchment? Yes. The results identify that a total of 3,218.8 Kg/TN /yr will need to be neutralised in order to mitigate against the proposed development.

5.3.5 In combination impacts

'In combination' impacts on the River Itchen SAC arising from the One Horton Heath development are not predicted because of the robust design of the drainage and sediment attenuation systems set out in Chapter 10 and 11 of the ES. In addition, should it be required as a result of future discussions or monitoring, further wetland treatment systems could be introduced and/or nutrient credits could be purchased.

5.3.6 Conclusion of appropriate assessment for water pollution to Solent Maritime SAC / Solent and Southampton Water SPA

As part of the proposals, it is intended to construct a network of SuDS features across the site comprising basins, swales, ponds and wetlands to sustainably manage runoff from the scheme. All proposed SuDS features will be planted and incorporate permanently wet areas around inlets, outlets and wetland areas within the base of the features.

Wetlands have been shown to remove N from runoff through processes such as denitrification and sedimentation. Assuming a mean removal rate of 181 g N/m²/yr can be achieved in the permanently wet areas of the proposed SuDS features, at least c. 41.1 % of the base of each SuDS feature will be provided as a permanently wetted area in order to treat all N in the runoff from the scheme, which equates to 1,284.1 kg TN/yr.

Consequently, the implementation of a 'management train' of suitable SuDS measures, with the design informed by a compliant nutrient neutrality assessment and supported by monitoring and management to manage sediments within the site, will minimise runoff-derived nutrients and sediment being discharged to watercourses draining to the Itchen.

The provision of the SuDS network, will also be supported by the measures put forward in Chapter 11 of the ES, including:

- The adoption of robust measures to manage any construction effects, managed through a CEMP supported by monitoring and management intervention, that could result in water pollution including that associated with nitrogen during the construction phase;
- the provision of ecologically rich buffers between the urban components of the site and the adjacent watercourses; and
- monitoring and management (and if necessary, intervention) set out in Chapter 11 of the ES (the removal of bare soil surfaces from the current agricultural land use and conversion to non-eroding urban surfaces and permanently vegetated surfaces;

In addition, EBC are currently putting in place a land assembly project that will provide a permanent Borough wide nitrate mitigation approach. In March 2020 Cabinet approved an interim charging schedule so developers could pay EBC to meet their nitrate offset requirement.

The Councils offset scheme is now offered to developers on a voluntary basis and is monitored through the planning application process. As of March 2021, EBC had completed purchase of 7 parcels of land totalling 194 acres, which has been calculated to generate 3,388 nitrate credits (kg N/yr). It is anticipated that these Strategic Land Parcels will be used to wholly offset the remaining 1,934.7 kg TN/yr increase in N-loss to the Solent associated with the OHH scheme.

Consequently, the impacts of the proposals will be fully mitigated and will ensure that they do not detrimentally affect local biodiversity or the conservation status of the Solent and Southampton Water SPA and Solent Maritime SAC.

It is concluded that no likely significant effects associated with water quality in the Solent Maritime SAC / Solent and Southampton Water SPA will occur.

5.4 RECREATIONAL IMPACTS (SOLENT AND SOUTHAMPTON WATER SPA, SOLENT MARITIME SAC)

5.4.1 Background

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

However, a wide range of recreational activities which take place on the Solent coast can disturb birds. Birds may need to be more alert, reducing the amount of food that they eat. They may move away from the disturbance, reducing their feeding time and using energy to fly. Substantial disturbance may cause food-rich areas to be little used by the birds or avoided altogether, leading to other areas hosting a higher density of birds and intensifying the competition for the available food. Cumulatively this can lead to increased bird mortality, or to a bird having less energy available at the end of the winter period to fly back to its breeding grounds. If birds cannot complete their migratory journey or are not in sufficiently good condition to breed when they arrive, then the bird population can drop³³.

Research carried out in 2009-2013 found that by far the most popular activity taking place at the Solent coast is walking. Along with jogging and cycling, this accounted for 91% of all recreational activity. Other types of recreational use included surfing, horse riding and rowing. Dogs off lead accounted for 47% of all incidents where birds flew more than 50m to escape disturbance. The research predicted a 13% increase in visitor numbers to the Solent coast as a result of planned new housing³⁴.

Suitable alternative natural greenspace (SANGs) located away from the European site can draw users away from the European sites by providing comparable alternative facilities, especially for dog walkers. However, SANGs need to be tailored to provide a viable and attractive alternative destination, matching the draw of the relevant designated European site or providing a near-equivalent recreational experience in a more convenient location. This may be difficult to do for an estuarine site like the Solent and Southampton SPA / Solent Maritime SAC. This is because many people who visit the Solent coast do so for the sea views and the feeling of 'being beside the sea'. In a survey of visitors to the Solent, one-third of respondents stated that nothing could be done to make an alternative site more attractive to them³⁵.

5.4.2 Impact of One Horton Heath

One Horton Heath will include an extensive network of footpaths and play/sports facilities as part of the scheme, both within the developed areas and as green infrastructure corridors across the site to provide easy local access to outdoor recreational facilities and to deliver on site recreational capacity for 5775 residents. This includes a 5km of greenspace, of which at least 2.5km allows informal access and dog walking. Figure 11 shows this network. This

³³ Bird Aware Solent (2017) Solent Recreation Mitigation Strategy, https://solent.birdaware.org/media/29372/Bird-Aware-Solent-Strategy/pdf/Solent_Recreation_Mitigation_Strategy.pdf

³⁴ Ibid.

³⁵ Ibid.

should cater for most day-to-day walking, dog walking and cycling journeys of One Horton Heath residents, although some will still want to visit the Solent and Southampton SPA, Solent Maritime SAC, and other nearby European sites. The new recreational provision at One Horton Heath may also draw some nearby residents of e.g. Horton Heath or Fair Oak who currently visit the SPA/SAC, thus further lessening the recreational impact of the new development on European sites.

Figure 11 Open space and footpath network at One Horton Heath. SANGS network is on the north of the site

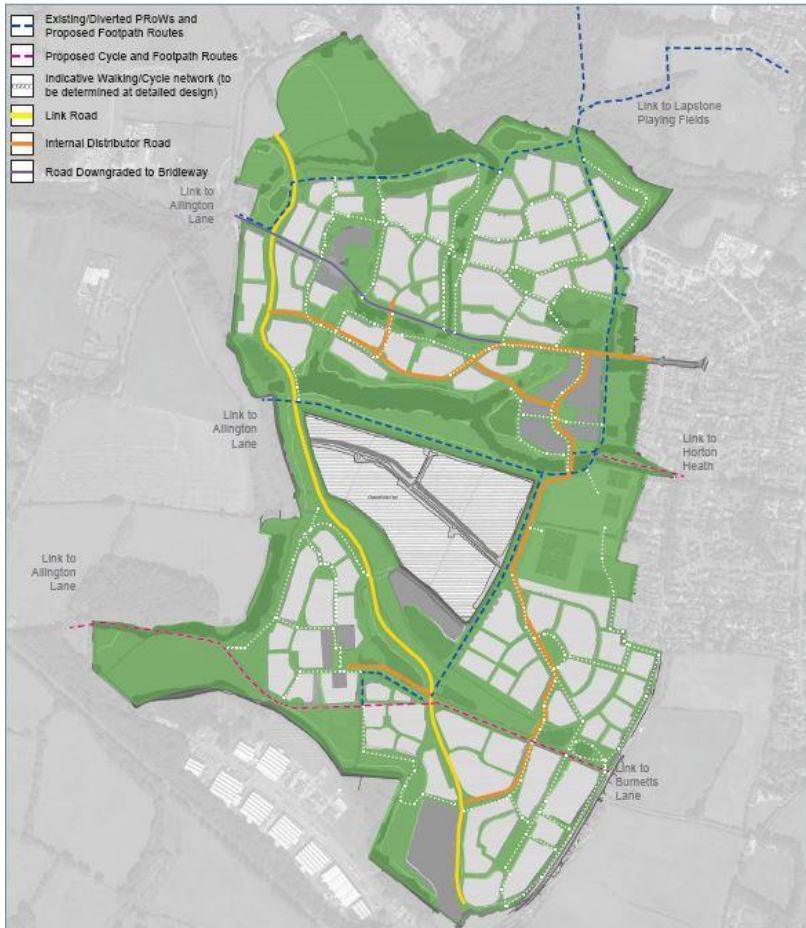


Table 5.8 summarises how the recreational facilities planned for One Horton Heath **contribute towards meeting** the SANGs locational criteria set out in Appendix B of the Solent Recreational Mitigation Strategy (Bird Aware Solent, 2017)³⁶. Chapter 13 of the ES provides more detailed information on this, and on how criteria for design and facilities can be accommodated.

The design of the on-site recreational provision aims, as far as possible, **to reduce** the whole site's recreational impacts on the Solent SPA/SAC/Ramsar and New Forest SPA/Ramsar/SAC recreational impacts. The applicant has committed to making a proportional financial contribution to an EBC project to provide Suitable Alternative Natural Greenspace (SANG). Through the provision of SANGs within the Borough both existing and future residents will be

³⁶ [https://solent.birdaware.org/media/29372/Bird-Aware-Solent-Strategy/pdf/Solent Recreation Mitigation Strategy.pdf](https://solent.birdaware.org/media/29372/Bird-Aware-Solent-Strategy/pdf/Solent%20Recreation%20Mitigation%20Strategy.pdf)

encouraged away from the New Forest and Solent sites thereby reducing and mitigating impacts associated with recreational disturbance.

Subject to on-going negotiations with Natural England, should the on-site provision or the EBC scheme not be suitable to fully off-set recreational impacts to the Solent, then a payment to the Bird Aware scheme would be provided.

Table 5.8 SANGs Location Criteria

Criterion	Site information
A wholly new site or an enhancement of existing public open space if the site is currently underused and has substantial capacity to accommodate additional recreational activity or could be expanded, considering the availability of land and its potential for improvement;	The proposed OHH greenspace routes will be located on a site which is currently not accessible to the public, except for the existing PRow located within the site.
Be in a location where it will divert visitors especially dog walkers away from sections of SPA coast which are sensitive to additional human disturbance and where a significant increase in visitors is predicted;	The routes will provide an accessible, convenient option for residents for dog walking and recreational use, in close proximity to residential properties.
Be located where it will attract visitors who would otherwise have gone to those sections of coast	
Be large enough to include a variety of paths which enable at least one circular walk of at least 5 km (approx. a 60 min walk);	The Proposed Development will include a network of foot and cycle routes making full use of the large amount of public open space proposed across the Site. These routes include a specific 5km OHH greenspace route.
Be in a location where a SANG would be acceptable in terms of planning policy and traffic generation, and would not have an unacceptable impact on biodiversity e.g. A nature conservation site protected under a local or national designation;	The site has planning consent for residential led mixed use development, including public open space and walking routes. It is also the subject of a draft allocation for mixed-use development in the emerging Eastleigh Local Plan. The site does not contain any statutorily designated nature conservation sites.

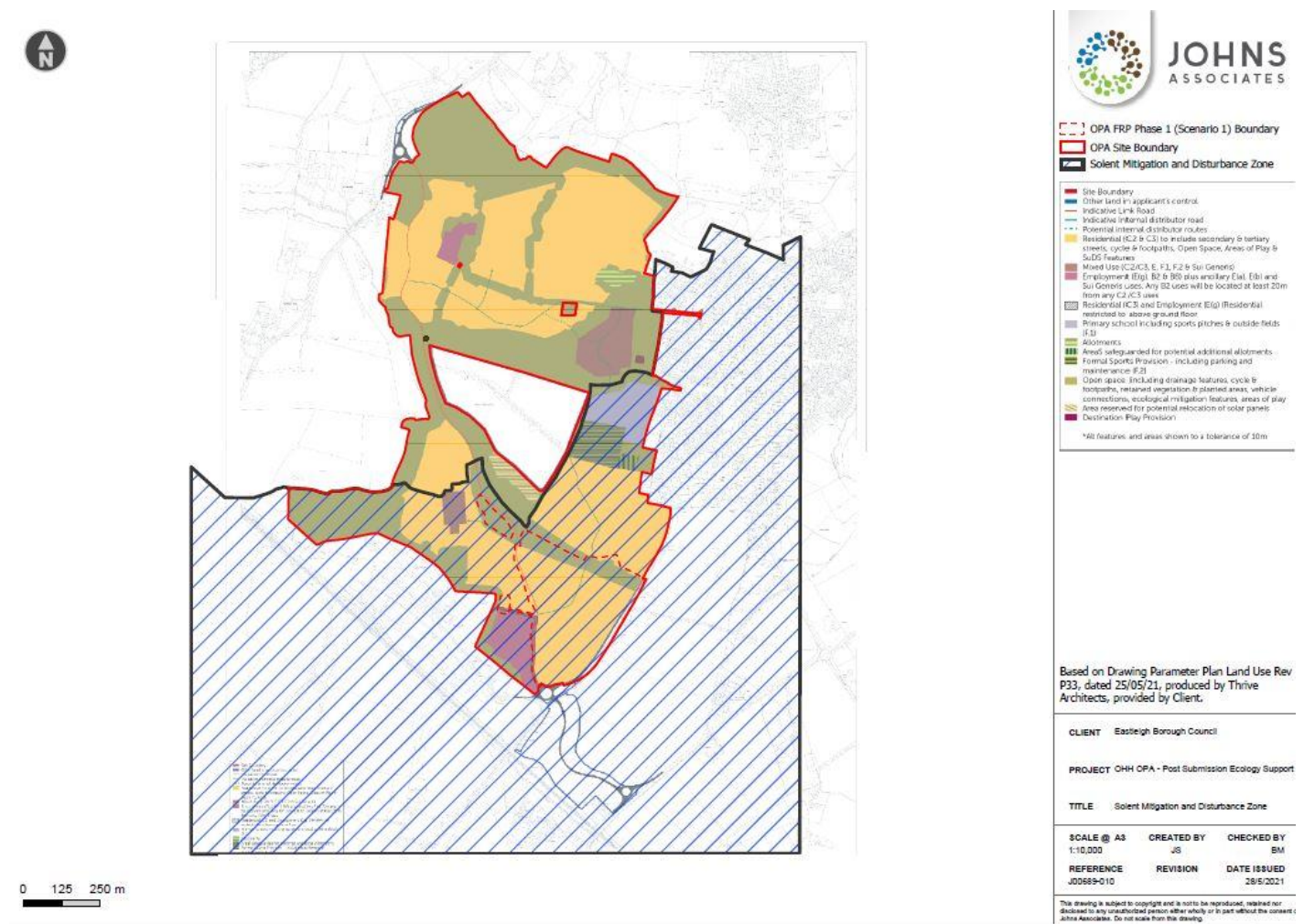
Be sufficiently large to be perceived as a cohesive semi-natural space, offering tranquillity, with little intrusion of artificial structures (except in the immediate vicinity of car parks) and with no unpleasant intrusions of other kinds e.g. wastewater treatment odours	The Proposed Development includes 21.4 ha of public open space that will be connected through a network of formal and informal walking and cycling routes. The proposed OHV greenspace route will not necessarily have a sense of tranquillity, but a network of interconnected routes will be provided through areas of semi-natural green corridors which are tranquil. Green corridors will be managed as semi-natural landscapes.
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Only the southern part of the site, shown at Figure 12, is within the Solent Mitigation and Disturbance Zone. If payment is required, then the cost would be up to £614,497. Estimated figures are shown in Table 5.9 Estimated Contribution:

Table 5.9 Estimated Contribution

		No.	Bedroom £	Total
Flat	1 Bed	99	£356	£35,244
	2 Bed	302	£356	£107,512
House	2 Bed	303	£514	£155,742
	3 Bed	351	£671	£235,521
	4 Bed	102	£789	£80,478

Figure 12 One Horton Heath and the Solent Mitigation and Disturbance Zone



5.4.3 In combination impacts

It is not necessary to consider 'in combination' impacts for this issue because One Horton Heath is following a wider approach to the issue, namely on-site provision of recreational facilities ~~designed to meet SANG criteria~~ plus, the applicant has committed to making a proportional financial contribution to an EBC project to provide Suitable Alternative Natural Greenspace (SANG). Through the provision of SANGs within the Borough both existing and future residents will be encouraged away from the New Forest and Solent sites thereby reducing and mitigating impacts associated with recreational disturbance.

Furthermore, where necessary and subject to negotiation with Natural England, a payment in relation to the Solent Bird Aware strategy³⁷ (see Section 5.4.2). As was discussed at Section 5.2.5, this overall approach obviates the need for individual Appropriate Assessments to consider 'in combination' effects.

³⁷ <https://solent.birdaware.org/strategy>

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

The high quality green infrastructure at One Horton Heath, characterised by woodland, grassland and wetlands, together with the connected wider Public Right of Way Network provides an extensive resource for walking, exercising dogs and other recreational activities that will be both immediately available and of value to the new residents of One Horton Heath (see Chapter 13 of this ES for full details). These on-site facilities will help **contribute to limiting** the number and frequency of visits to the Solent and Southampton Water SPA and Solent Maritime SAC, reducing the magnitude of any disturbance to features of interest that are sensitive to recreational disturbance. **The applicant has committed to making a proportional financial contribution to an EBC project to provide Suitable Alternative Natural Greenspace (SANG). Through the provision of SANGs within the Borough both existing and future residents will be encouraged away from the New Forest and Solent sites thereby reducing and mitigating impacts associated with recreational disturbance.**

Subject to the outcome of final negotiations with Natural England, any residual recreational pressure will be fully mitigated through the provision of an appropriate payment to the Solent Bird Aware scheme.

5.5 RECREATIONAL IMPACTS (NEW FOREST SPA, SAC AND RAMSAR)

5.5.1 Background

Like the Solent and Southampton Water SPA, the New Forest SAC/SPA/Ramsar hosts a range of birds that are sensitive to disturbance. Of these, ground and near-ground nesting birds such as the Dartford warbler, nightjar and woodlark are particularly sensitive. The breeding success of nightjar is significantly lower close to paths, and nightjar populations decrease with proximity of housing. Dartford warblers in heavily disturbed areas delay the start of their breeding, preventing multiple breeds. Most of this disturbance is from dogs running through vegetation. Removal of human disturbance results in an increase of 13 – 48% in the breeding population of woodlark. Other impacts from visitor pressure include arson, litter and fly-tipping, trampling and soil compaction, localised nutrient and predation by people and pets.³⁸ In addition, consideration needs to be given to localised nutrient increased from dog urine/faeces and emissions to air and associated deposition from road traffic.

The New Forest National Park received 15.2 million recreation and leisure visitor-days (one person coming for at least part of one day) in 2017³⁹. A telephone survey of 2000 people – including 138 from Eastleigh Borough Council – was carried out in late 2018 to investigate factors that lead to tourism visits to the New Forest. It found that 75% of visitors live within 13.8km of the New Forest. Of the 138 interviewees from Eastleigh:

- About two-thirds (64%) had visited the New Forest heaths and woods in the past year
- The proportion of people visiting the New Forest, and the number of visits, declined the further people lived from the New Forest, as did the proportion of visits to the New Forest compared with other green space locations

³⁸ Urban Edge (2019) Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036, <https://www.eastleigh.gov.uk/media/5477/ed12a-41-hra-main-report.pdf>.

³⁹ <https://www.newforestnpa.gov.uk/conservation/managing-recreation/future-forest/recent-changes-affecting-forest/>

- The most common frequency of visits from people living 10-25km away was less than once a month, followed by once a month
- The most common activity carried out by interviewees in the New Forest was walking and dog walking. The proportion of dog walking generally declined with distance, but dog walkers tended to visit more frequently than other users.⁴⁰

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

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

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

Research conducted by Footprint Ecology (published in 2020⁴¹), identified that increasing levels of access can have negative impacts on wildlife. Visits to the natural environment have shown a significant increase in England as a result of the increase in population and a trend to visit more. The issues are particularly acute in southern England, where population density is highest. Issues are varied and include disturbance, increased fire risk, contamination and damage

5.5.2 Impact of One Horton Heath

One Horton Heath lies approximately 11 km from the New Forest at as the crow flies, but it takes about 22km to drive there, as Southampton Water is between the Site the New Forest. One Horton Heath will have about 2500 dwellings (5775 residents) when completed. Some of these residents are likely to visit the New Forest SPA/SAC/Ramsar site and could cause effects through:

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

Change in nutrient status in localised areas and change in associated habitat condition from dog urine/faeces and emissions to air and deposition from road traffic (Table 10.11).

5.5.3 In combination impacts

By 2037, the New Forest is expected to receive over 17 million recreational visitor days, up from 15.2 million currently⁴². Eastleigh Borough Council calculates that, over the lifetime of the Local Plan 2016 – 2036, there will be an additional 27,994 recreational visits from new council residents to the New Forest every year⁴³. Some of these will be from the One Horton

⁴⁰ Eastleigh Borough Council (2019) Eastleigh Borough Local Plan 2016-2036, Interim New Forest Recreation Mitigation, <https://www.eastleigh.gov.uk/media/5479/ed12c-update-44-new-forest-interim-mitigation.pdf>

⁴¹ Footprint Ecology. 2020. Recreation use of the New Forest SAC/SPA/Ramsar: Impacts of recreation and potential mitigation approaches

⁴² <https://www.newforestnpa.gov.uk/conservation/managing-recreation/future-forest/recent-changes-affecting-forest/>

⁴³ Ibid.

Heath Development and as such in-combination effects may occur.

5.5.4 Mitigation measures

As discussed in Section 5.4.2, One Horton Heath will provide significant on-site recreational resources, designed using approved SANGs criteria. These will reduce the need for most day-to-day recreational journeys. The recreational provision at One Horton Heath may also attract some residents from e.g. Horton Heath and Fair Oak who might otherwise have visited the New Forest. The number of new journeys to the New Forest sites as a result of One Horton Heath will be very limited but cannot be completely discounted due to the inherent attraction of the area and for secondary activities such as visiting pubs and cafes.

The Eastleigh Borough Council's Interim New Forest recreation mitigation strategy⁴⁴ takes 20km as the distance within which recreational disturbance could occur but does not specify how the impacts on the New Forest can be resolved. It notes that:

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

- New open space within or adjoining development including within the west of Horton Heath and SGO developments... (SANGS)
- Improvements to routes and existing open spaces in Eastleigh borough – linking up areas to create longer routes, physical and access improvements to routes, improved facilities within open spaces such as dog waste bins, dog exercise areas and seating, signage, information boards, providing facilities for dog walkers; and
- Where appropriate, contributions to measures within the New Forest with funding sought from national sources – to fund access management, rangers, education and awareness projects." (our underlining)

The interim mitigation strategy is being updated and fine-tuned in discussion with the Ecological Steering Group. Footprint Ecology has been commissioned to investigate several issues⁴⁵, and concluded that new development up to 25km can cause a recreational effect on the New Forest, which has influenced the mitigation measures required for One Horton Heath:

Is it appropriate to use the data for all visits (rather than day trips from home) when considering the approach to mitigation for development in Eastleigh Borough Council? For Eastleigh, fewer than 3% of visitors surveyed were staying away from home (as opposed to visiting on a day trip), compared to 17% of all interviewees. Is it appropriate to use the data reflecting the distance that 75% of the visitors of the survey travelled to the New Forest as the basis for the catchment area for contributions? The survey picked up a few people who had travelled long distances (hundreds of miles) on a day visit. The Bird Aware Solent Mitigation Strategy and other strategic mitigation schemes use the 75% distance to determine the catchment area. The strategic approach needs a cut off and this appears an appropriate catchment in line with other strategies. However, this will be skewed by the small number of people travelling long distances.

⁴⁴ Ibid., consistent with the New Forest National Park Recreation Management Strategy 2010 -2030, <https://www.newforestnpa.gov.uk/app/uploads/2019/12/RMS-TOWEB.pdf>

⁴⁵ Footprint Ecology. 2020. Recreation use of the New Forest SAC/SPA/Ramsar: Impacts of recreation and potential mitigation approaches

Is it appropriate to use a straight-line distance ('as the crow flies') as used by the research, or whether to take into consideration the barrier to travel posed by Southampton Water? Some parts of Eastleigh Borough are treated as being within 5km from the New Forest protected areas to the west of Hythe and Fawley, and all areas except the north of the borough are treated as being within 13.8km, whereas a travel time would significantly reduce this⁴⁶.

Notwithstanding this, the applicant has committed to making a proportional financial contribution to an EBC project to provide Suitable Alternative Natural Greenspace (SANG). Through the provision of SANGs within the Borough both existing and future residents will be encouraged away from the New Forest and Solent sites thereby reducing and mitigating impacts associated with recreational disturbance.

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

The provision of significant on-site recreational resources, designed to provide high quality local greenspace, within the high quality green infrastructure at One Horton Heath, characterised by woodland, grassland and wetlands, together with the connected wider Public Right of Way Network provides an extensive resource for walking, exercising dogs and other recreational activities that will be both immediately available and of value to the new residents of One Horton Heath. These on-site facilities will help contain short daily walks. However, the commitment by the applicant to make a proportional financial contribution to an EBC project to provide Suitable Alternative Natural Greenspace (SANG) within the Borough will be encouraged both existing and future residents away from the New Forest and Solent sites thereby reducing and fully mitigating impacts associated with recreational disturbance.

5.6 AIR QUALITY IMPACTS (NEW FOREST SAC AND RAMSAR)

5.6.1 The air quality modelling carried out for Chapter 7 of this EIS concluded that One Horton Heath will have negligible air pollution impacts at all receptors except Knowle Lane/Botley Road where the NO_x impact is expected to be slight. In particular, para. 7.1.1 notes that:

"EBC requested that air quality impacts were also considered on the New Forest SSSI/SPA/SAC, however, further assessment of this receptor has been scoped out due to the distance of the receptor from the site. The transport model did not extend to this location and as such, the development vehicle flows at this location will not exceed the threshold criteria for assessment as discussed in section 7.2.23. It can, therefore, be concluded that any impacts on the New Forest SSSI/SPA/SAC will be negligible and will be Not Significant."

⁴⁶ Natural England is currently not doing this. For instance, it argues that development at GE Aviation, Hamble-le-Rice (which is located a similar distance to the New Forest from One Horton Heath) would result in a proportion of regular visits to the New Forest protected sites, resulting in , which would have an in-combination impact in terms of recreational disturbance (email from Rebecca Aziz, Natural England to Kitty Budden, Eastleigh Borough Council, 13 November 2020).

6 CONCLUSION

- 6.1.1 In conclusion, this report has shown that One Horton Heath is unlikely to have significant 'in combination' impacts on the integrity of any European site, in isolation or 'in-combination' particularly following the commitment from the client to make a proportional financial contribution to an EBC project to provide Suitable Alternative Natural Greenspace (SANG) that will take agricultural land out of production, thereby reducing net nutrient runoff and reducing offsite effects associated with recreation and disturbance. Final discussions concerning the need to financially contribute further towards visitor management at the Solent and New Forest sites are to be concluded.

Table 6.1 summarises these points.

Table 6.1 Conclusions

What is needed	What is proposed in the HRA
1. Proof that water levels in the River Itchen will not change	Southern Water's Water Resource Management Plan deals with water levels in the River Itchen
2. Proof that water quality (nitrogen, phosphorus, siltation) in the River Itchen will not deteriorate	SuDS 'management train' will trap pollutants on site Wastewater to be treated at Chickenhall WwTW Updated nitrogen neutrality study shows that One Horton Heath will result in net neutrality nitrogen input to River Itchen and Solent
3. Proof that water quality (nitrogen, phosphorus) in the Solent will not deteriorate	Monitoring regime to demonstrate no emissions and feedback to enable management intervention if necessary
4. Proof that recreational impacts at Solent sites will not increase	On-site recreational provision, including greenspace The applicant has committed to making a proportional financial contribution to an EBC project to provide Suitable Alternative Natural Greenspace (SANG). Through the provision of SANGs within the Borough both existing and future residents will be encouraged away from the New Forest and Solent sites thereby reducing and mitigating impacts associated with recreational disturbance. The applicant has committed to making a proportional financial contribution (purchase of credits) to an EBC project to provide Suitable Alternative Natural Greenspace (SANG). The EBC project will take land out of agricultural use to result in a net reduction in nutrient runoff. The OHH contribution will be calculated to ensure that the OHH project achieves a neutral position with regard to nutrients. Final negotiations with Natural England ongoing re. whether residual provision of payment is needed to the Solent Bird Aware Scheme to mitigate any residual recreational pressure
5. Proof that recreational impacts at New Forest sites will not increase	On-site recreational provision, designed using SANG criteria
6. Proof that air quality at the New Forest will not deteriorate	Air quality modelling of Chapter 7 shows no significant impact.

