PORTSMOUTH WATER

ECOLOGYSOLUTIONS

Part of the ES Group

LAND OFF SOLENT ROAD, HAVANT

Information specific to a Habitats Regulations Assessment pursuant to Regulation 63 of The Conservation of Habitats and Species Regulations 2017

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1. INTRODUCTION

1.1. Background

1.1.1. This report has been specifically prepared in relation to the undertaking of an assessment under The Conservation of Habitats and Species Regulations 2017 ("the Habitats Regulations"), pursuant to implications for the Chichester and Langstone Harbours Special Protection Area (SPA) and Ramsar site. Specifically, this report concerns Development Proposals associated with the site known as Land off Solent Road, Havant, hereinafter referred to as the "Application Site"). Potential implications for all other international level designated sites have been screened out of the assessment process given their separation from the Application Site.

1.1.2. The relevant Local Planning Authority is Havant Borough Council (HBC). The Development Proposals consist of a new offices for Portsmouth Water along with associated parking and soft landscaping. The Application Site location is shown at Plan ECO1.

1.1.3. In preparing this assessment report, due regard has been had *inter alia* to the following documents:

1. Position Statement and Mitigation Plan for Nutrient Neutral Development, April 2023, Havant Borough Council;
2. Advice on Achieving Nutrient Neutrality for New Development in the Solent Region, Version 5, June 2020, Natural England;
3. Letter from Natural England to Havant Borough Council re: Use of Natural England Solent Nutrients Guidance, September 2022, Natural England ;
4. Recreational Disturbance of Birds in Special Protection Areas (SPAs) – Guidance for planning in the Chichester Local Plan area (Apr 2023);
5. Solent Waders and Brent Goose Strategy 2020
6. The Conservation Objectives and associated Supplementary Advice for the relevant designated sites;
7. Information on SSSI Unit condition made available by Natural England.

1.1.4. Natural England have provided consultation (dated 26th August 2021 and 26th November 2021) on the planning application. Natural England requested further information in respect of surface water drainage and habitat loss associated with the Development Proposals, and potential effects this could have on the integrity of Solent Maritime SAC and Chichester and Langstone Harbours SPA / Ramsar. Natural England also requested a Habitat Regulations Assessment be completed to "determine whether the proposal is likely to have a significant effect on any European site". The November letter states that in this case, as mitigation measures are proposed to avoid a likely significant effect, an Appropriate Assessment under Regulation 63(1) of the Conservation of Habitats and Species Regulations 2017 (as amended) would be required within the authority's HRA.

1.1.5. The focus of the assessment presented in this report is on matters concerning habitat loss and functionality of Chichester and Langstone Harbours SPA and Ramsar site, and the potential increased nutrient nitrogen within the Chichester and Langstone Harbours SPA and Ramsar site, and the Solent Maritime SAC.

1.1.6. Given the nature of the Development Proposals, all other pathways other than those relating to habitat loss and water quality issues within the relevant designated sites have been screened out of requiring any detailed consideration, at the first stage of the assessment process. Specifically, on account of the type of development, being commercial with no overnight accommodation, potential effects from waste-water and nutrient enrichment can be screened out. This is supported by Natural England's Advice on Achieving Nutrient Neutrality for New Development in the Solent Region.

1.2. Application Site Context

1.2.1. The Application Site is described in the submitted Ecological Assessment[1]. To summarise, the Application Site is located adjacent to the north of the Solent Road, within the southwest of Havant. It is bounded to the south, east and west by existing industrial and residential development. Two large ponds and open green space associated with the Portsmouth Water buildings are present to the north, with residential development beyond. The Application Site comprises a modified grassland field. A disused tennis court is present in the northeast surrounded by scrub. Tree lines form the southern and western boundaries. Brockhampton Stream, a small watercourse, is present to the north and west of the Application Site.

1.2.2. The Application Site lies approximately 0.9km north of the Chichester and Langstone Harbours SPA and Ramsar, and Solent Maritime Special Area of Conservation (SAC). The Application Site is listed as area H11 and as having 'Low Use' within the Solent Waders and Brent Goose Strategy.

1.2.3. The Application Site is located approximately 0.9km from the closest part of the Langstone Harbour Site of Special Scientific Interest (SSSI). This is an underpinning SSSI of the Chichester and Langstone Harbours SPA / Ramsar site. Being the closest underpinning SSSI and that which could be affected by the Development Proposals, a primary focus of this assessment is on Langstone Harbour SSSI.

1.2.4. This report discusses the extent to which the Development Proposals associated with the Application Site may be considered to give rise to a likely significant adverse effect on the SPA/Ramsar sites, by way of habitat loss and water pollution when the project is considered in line with Regulation 63(1) of the Habitats Regulations. With reference to relevant jurisprudence (see Annex 1), this report also considers whether the Development Proposals would give rise to an adverse

[1] Ecology Solutions (June 2023) *Land off Solent Road, Havant - Ecological Assessment*. Ref. 11527.EcoAs.vf(complete)

effect on the integrity of the SPAs when the subject of an Appropriate Assessment.

1.2.5. In presenting this assessment information, reference has been made to relevant SPA/Ramsar habitat condition assessment information. This information is referenced wherever appropriate.

2. CONSIDERATION OF BASELINE INFORMATION

2.1. In undertaking this project level shadow HRA it is necessary to have a proper understanding of the relevant qualifying interest features of the SPA / SAC and the formal Conservation Objectives as defined in relation to those interest features. It is also necessary to understand the baseline situation in terms of the current condition (in nature conservation terms) of the interest features, any identified threats to their favourable condition and the extent to which those threats could be exacerbated by the development proposals.

2.2. In undertaking this assessment, regard has been had to the following key questions;

a) What are the qualifying interest features of the SPA/SAC/Ramsar site and what are the formal Conservation Objectives for the SPAs?;
b) Is there evidence to suggest that relevant qualifying interest features are currently being adversely affected by increases in nutrient nitrogen and what are the relevant pathways?
c) Would the Development Proposals exacerbate exceedances and if so, where, when considered both alone and in combination with other plans / projects?
d) Can it be ascertained, beyond reasonable scientific doubt, that the Development Proposals will not give rise to an adverse effect on the integrity of the SPAs when considered both alone and in combination with other plans / projects?

2.3. Matters “a” and “b” concerns the baseline situation and are discussed below, within this section of the assessment report. Matters “c” and “d” are discussed in detail within Section 3.

Chichester and Langstone Harbours SPA / Ramsar site

2.4. Chichester and Langstone Harbours SPA / Ramsar site comprises sheltered estuarine basins with extensive mud and sand flats which are exposed at low tide. Saltmarsh and improved grassland is also well represented within the boundary of the SPA / Ramsar site.

2.5. The SPA / Ramsar site is designated on account of its importance to a range of over-wintering and breeding wildfowl and waders.

2.6. The SPA / Ramsar covers an area of 5810.95 hectares.

2.7. Chichester and Langstone Harbours SPA / Ramsar site comprises two underpinning SSSIs, namely Chichester Harbour SSSI and Langstone Harbour SSSI. Of these Langstone Harbour SSSI is the closest to the Application Site, located approximately 0.9km to the north at its closest point. The citation for the SSSI is included at Annex 2.

SPA Qualification

2.8. Chichester and Langstone Harbours SPA is designated on account of the following qualifying interest features:

Bar-tailed Godwit (*Limosa lapponica*), Non-breeding
Common Tern (*Sterna hirundo*), Breeding
Curlew (*Numenius arquata*), Non-breeding
Dark-bellied Brent Goose (*Branta bernicla bernicla*), Non-breeding
Dunlin (*Calidris alpina alpina*), Non-breeding
Grey Plover (*Pluvialis squatarola*), Non-breeding
Little Tern (*Sternula albifrons*), Breeding
Pintail (*Anas acuta*), Non-breeding
Red-breasted Merganser (*Mergus serrator*), Non-breeding
Redshank (*Tringa totanus*), Non-breeding
Ringed Plover (*Charadrius hiaticula*), Non-breeding
Sanderling (*Calidris alba*), Non-breeding
Sandwich Tern (*Thalasseus sandvicensis*), Breeding
Shelduck (*Tadorna tadorna*), Non-breeding
Shoveler (*Spatula clypeata*), Non-breeding
Teal (*Anas crecca*), Non-breeding
Turnstone (*Arenaria interpres*), Non-breeding
Waterbird assemblage, Non-breeding
Wigeon (*Mareca penelope*), Non-breeding

2.9. The Natura 2000 Standard Data Form for the SPA is included at Annex 2.

Ramsar Qualification

2.10. Chichester and Langstone Harbours Ramsar site is listed as being 5810.03ha in size.

2.11. Chichester and Langstone Harbours qualifies under Ramsar criteria 1, 5 and 6. The site qualifies under Criterion 1 on account of the wetland habitat types present. The site qualifies under Criterion 5 on account of it supporting an internationally important assemblage of over-wintering waterfowl. The site qualifies under Criterion 6 on account of it supporting important populations of Ringed Plover, Black-tailed Godwit *Limosa limosa* and Common Redshank during the spring and autumn (numbers boosted by migration) and also important over-wintering populations of Dark-bellied Brent Goose, Common Shelduck, Grey Plover and Dunlin. Breeding Little Tern are cited on the Ramsar Information Sheet as being identified subsequent to designation for possible future consideration under Criterion 6.

2.12. A copy of the Ramsar Information Sheet is included at Annex 2.

<u>Solent Maritime SAC</u>

2.13. The Solent Maritime SAC covers an area of 11325.09 hectares. The Solent Maritime SAC comprises the following SSSIs:

Chichester Harbour SSSI
Langstone Harbour SSSI
Bouldnor and Hamstead Cliffs SSSI
Eling and Bury Marshes SSSI
Hurst Castle and Lymington River Estuary SSSI

Hythe to Calshot Marshes SSSI
King's Quay Shore SSSI
Lee-on-The Solent to Itchen Estuary SSSI
Lincegrove and Hackett's Marshes SSSI
Lower Test Valley SSSI
Medina Estuary SSSI
Newtown Harbour SSSI
North Solent SSSI
Thorness Bay SSSI
Upper Hamble Estuary and Woods SSSI
Yar Estuary SSSI

2.14. The Solent Maritime SAC comprises marine areas, sea inlets, tidal rivers estuaries, mud flats, sand flats, lagoons, salt marshes, salt pastures, coastal sand dunes, beaches, coastal grassland, shingle, sea cliffs and broadleaf woodland.

2.15. The SAC is designated on account of the following qualifying interest features:

Annual vegetation of drift lines
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
Coastal lagoons
Desmoulin's whorl snail (*Vertigo moulinsiana*)
Estuaries
Mudflats and sandflats not covered by seawater at low tide
Perennial vegetation of stony banks
Salicornia and other annuals colonising mud and sand
Sandbanks which are slightly covered by sea water all the time
Shifting dunes along the shoreline with *Ammophila arenaria* (“White dunes”)
Spartina swards (*Spartinion maritimae*)

2.16. The Natura 2000 Standard Data Form for the SAC is included at Annex 2.

<u>Conservation Objectives</u>

2.17. The Conservation Objectives for the Chichester and Langstone Harbours SPA / Ramsar and Solent Maritime is included at Annex 3.

2.18. In May 2023 Natural England published the current version of the Supplementary Advice regarding the conservation and restoration of the Chichester and Langstone Harbours SPA[2]. The current version of the Supplementary Advice for the Solent Maritime SAC[3] was published in May 2023.

[2] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9011011&SiteName=&SiteNameDisplay=Chichester+and+Langstone+Harbours+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=18

[3] Found at: https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030059&SiteName=solent&SiteNameDisplay=Solent+Maritime+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=0

2.19. The Supplementary Advice prescribes measurable condition targets for the respective site attributes, with associated explanatory notes and cited evidence sources.

2.20. By way of summary, for both the SPA and SAC, nutrient status in respect of water quality is a cited issue affecting qualifying features and targets have been set. It is stated that there is evidence from survey or monitoring work that shows nutrient status to be in a 'poor condition' and/or currently impacted by anthropogenic activities.

SSSI Condition Monitoring

2.21. In relation to the qualifying interest features of the SPA, SAC, Ramsar site and underpinning SSSI, relevant information is appended at Annex 2.

2.22. Habitat condition information for each of the management units of the Langstone Harbour SSSI (which underpins its further designation as an SPA / SAC / Ramsar site) is given within the condition assessment information published by Natural England and included at Annex 4. There are currently 14 SSSI management units. From the latest habitat condition assessment information, all units are documented as being in either "favourable condition', "unfavourable recovering" (i.e. favourable, or on a trajectory towards being in favourable condition and thereby meeting the sites conservation objectives), or "unfavourable no change" condition. For completeness 8.87% of the SSSI area is listed as being in favourable condition, 0.09% is listed as unfavourable no change, and 91.05% is listed as unfavourable recovering.

2.23. The SSSI management unit closest to the Application Site, approximately 0.9km south, is Unit 005, South Moor. This unit was classified in March 2022 as being in a favourable condition owing to the number of wintering bird species being within the acceptable target range.

2.24. Langstone Harbour East, Unit 006, is also 0.9km southwest of the Application Site. This was assessed in September 2018 as being in unfavourable – recovering condition. The next closest unit, Unit 013 North Binness Island, is approximately 1.2km southwest of the Application Site and is also in an unfavourable – recovering condition.

2.25. The condition of the water environment of Unit 006 and Unit 013 is assessed as unfavourable for the interest features on the weight of evidence on inorganic nitrogen and biological indication of eutrophication shown by the abundance of macroalgae, but recovering on the basis of a large reduction in nutrient inputs through diversion of wastewater. The condition assessment notes there remains a significant nitrogen load input carried by tidal flow from the Solent but less so by minor rivers into the head of the harbour (including from Brockhampton Stream).

2.26. The 2010 assessment comments on Unit 013, describe the concern about raised nutrient levels with this being tackled through improvements to sewage treatment works and better control of diffuse pollution. This area is also suffering adverse impacts due to rising sea levels, significantly reducing the intertidal habitat available for roosting wintering birds. This

concern is being addressed through the creation of compensatory habitat and managed coastal re-alignment at Medmerry.

Solent Site Improvement Plan

2.27. To assist the UK government in meeting its responsibilities under the Habitat and Birds Directives and to draw together an evidence base to enable the development of a strategic approach to achieve favourable condition at European sites, the Improvement Programme for England's Natura 2000 Sites (IPENS) was initiated. IPENS works with, government agencies, landowners, voluntary bodies, private companies, individuals and other stakeholders (e.g. who manage European sites) in reviewing the following:

- Risks and issues impacting on and/or threatening the condition of the site;
- Actions and measures which could be used to address them; and
- Relevant costs and funding sources.

2.28. This process provides Natural England and its partners with:

- An improved understanding of the issues affecting sites and means to address those issues;
- A clear plan of action for improving site condition and assistance in quantifying the associated costs;
- Recommendations to address gaps in evidence and funding.

2.29. One of the key outputs of IPENS are Site Improvement Plans (SIPs). These describe the priority measures needed to achieve and maintain the European species and habitats (qualifying interest features) within a site, in favourable condition. The aim of SIPs is to:

- Provide a high-level overview of the issues affecting the condition of the site;
- Identify priority actions to address the relevant issues; and
- Identify potential funding sources which may be available.

2.30. SIPs are based on Natural England's current evidence and knowledge. These are live documents which are to be updated as further meetings take place with partners, landowners and managers and recommended actions are prioritised and put into effect. They are not habitat management plans, or fully agreed / funded programmes, but they are a key source of information in helping to direct the actions of organisations involved in the management of a European site.

2.31. The Solent SIP, covers the Solent Maritime SAC, Solent and Southampton Water SPA, Portsmouth Harbour SPA and Chichester and Langstone Harbours SPA. The current version was published in 2014. A copy is included at Annex 5.

2.32. The SIP notes that water pollution is a "threat" to the site with the measure stated as being required to address this being:

"Implement actions in the Diffuse Water Pollution Plan, and investigate further pollution."

2.33. Section 4 of the SIP contains further detail in relation to identified required actions in relation to water pollution. In addition to actions centred on monitoring, review and investigation, several actions relate to reducing nitrogen inputs / load, with "new development", agricultural systems and "sewerage systems" specifically cited.

2.34. The reader is directed to Annex 5, for the full detail on the various actions contained in the SIP, however, it is noteworthy that in relation to new development it is stated:

"Offset additional nitrogen inputs from new development, through the adoption of a Local Planning Authority Implementation Plan."

2.35. The timescale for delivery is stated as being 2014-2016 and the cited *"funding option*" is a *"Developer Contributions Scheme (DCS)".*

2.36. To date no such funding scheme is understood to be in place.

2.37. Regarding the action concerning wastewater treatment, it is stated:

"Reduce the Nitrogen load from sewerage systems within the catchment, to secure compliance with the Urban Waste Water Treatment Directive."

2.38. This matter is considered further below where relevant.

Summary of current baseline situation

2.39. In June 2020 Natural England published the document titled "Advice on Achieving Nutrient Neutrality for New Development in the Solent Region[4]. This advice summaries the results of those investigations relevant to perceived effects on the relevant designated sites, through water quality impacts. A copy of this advice is included at Annex 6 and key points are discussed below. In early 2022 Natural England released a national rollout of updated guidance and catchment calculators. The relevance of the 2020 advice in the Solent Region was discussed in a letter from Natural England to Havant Borough Council in September 2022. A copy of this letter is included in Annex 7.

2.40. An Integrated Water Management Study (IWMS) for South Hampshire was commissioned, in 2016, by the Partnership for Urban South Hampshire (PUSH) Authorities, alongside the Environment Agency and Natural England. This study examined the projected delivery of development growth with regard to legislative and government policy requirements for designated sites and wider biodiversity issues. This updated an earlier study undertaken in 2008. Broadly comparable studies for Chichester

[4] Advice on Achieving Nutrient Neutrality for New Development in the Solent Region, Version 5, June 2020, Natural England

Harbour and Sussex were undertaken in 2018, although this work was largely on Water Framework Directive assessments.

2.41. The IWMS for South Hampshire, which was completed in March 2018, identified uncertainty as to whether new housing growth can be accommodated without having a detrimental effect upon the water environment. It identified uncertainty as to the efficacy of catchment measures to deliver the required reductions in nitrogen levels, and uncertainty as to whether upgrades to wastewater treatment works will be sufficient to accommodate the quantity of new housing proposed.

2.42. In order to examine the issue further, relevant local planning authorities, together with the Environment Agency, Natural England and water companies, set up a Water Quality Working Group in South Hampshire to compliment that already in existence for Chichester. The objectives of these groups include identifying and analysing any existing gaps in evidence and evaluating the need for strategic level mitigation measures. The primary focus of the work is to address the aforementioned uncertainty associated with strategic local plan growth.

2.43. Following from the above, in 2018, Natural England specifically assessed the condition of relevant ‘Solent harbours’ designated sites. The aim was to evaluate the levels of nitrogen within the water environment and the associated impact on the designated sites.

2.44. This assessment revised and updated the condition assessment information for water quality pursuant to the qualifying interest features of the designated sites. Recorded levels of nitrogen in the harbours were analysed and then compared with evidence of phytoplankton and macroalgae (percentage cover of dense opportunistic green macroalgae). It is this revised condition assessment information which is discussed above in relation to relevant SSSI management unit condition.

2.45. Condition assessment for the SPAs and Ramsar sites have yet to be undertaken, but a number of bird features are declining as highlighted by recent Wetland Bird Survey alerts. A comparison with regional and national trends indicates that several of the declines are likely to be due to site specific reasons rather than reflecting wider national or regional population trends. While the cause of these site specific declines in the Solent area are largely unknown there are possible links to the elevated nutrient loading.

2.46. As discussed above, the SSSI management units associated with the Langstone Harbour (most relevant part of the SPA/SAC/Ramsar site) are in the main, listed as being in “unfavourable recovering” condition. For Chichester Harbour, located further east and also a constituent of the Chichester and Langstone Harbours SPA/Ramsar site, the condition can broadly be described as “unfavourable no change”. It is noted that whilst SSSI units associated with Langstone Harbour are “recovering” these units are considered 'at risk' of not recovering to a favourable situation as it is unclear whether the nutrient status will become adequate to substantially prevent the growth of dense macroalgae mats.

3. ASSESSMENT OF THE IMPLICATIONS OF THE DEVELOPMENT PROPOSALS ON THE SPA CONSERVATION OBJECTIVES

3.1. This section of the assessment considers whether the Development Proposals will exacerbate perceived adverse effects, from habitat loss and functionality of SPA / Ramsar, together with water quality entering the designations. It also presents evidence regarding whether it can be ascertained, beyond reasonable scientific doubt, that the Development Proposals will not give rise to an adverse effect on the integrity of the SPA/Ramsar sites when considered both alone and in combination with other plans / projects.

3.2. Annex 1 of this document sets out the legislation, guidance and case law of relevance to an assessment of the implications of the plan / project on the European sites. Having regard to this legislation and supporting guidance it is clear that the assessment is a two-stage process, the first being the 'likely significant effect' stage, the second being the 'integrity test'.

3.3. The Conservation Objectives of the European sites (see Section 2 above and Annex 3) are the most important consideration in determining whether the plan / project will have an adverse effect on the site, including any effects on its integrity.

3.4. It is evident that there is a clear hierarchical approach to assessing effects on European sites in line with the Habitats Directive / Regulations. The primary test is that against the Conservation Objectives with any other considerations following these.

3.5. In line with the above, whilst the qualifying interest features of the site and other baseline information have informed this assessment, the greatest weight has been placed upon the formal conservation objectives for the designated sites, as set out by Natural England.

3.6. This section includes a description of the potentially significant effects arising from the Development Proposals at the Application Site on the SPA/Ramsar sites. The potential effects are assessed within this section in order to address the test under Regulation 63(1) in the first instance.

3.7. In undertaking this assessment, consideration has been given to the best available scientific knowledge. Whilst other scientific (or other) information may come forward and be of assistance in undertaking an assessment under Regulation 63 of the Habitats Regulations.

3.8. An Appropriate Assessment (if required) could therefore be undertaken consistent with the Waddenzee Judgement, which requires the use of the best scientific knowledge to inform a decision where no reasonable scientific doubt remains as to the presence and / or absence of effects that would adversely affect the integrity of the designated site (see Annex 1).

<u>Habitat Loss</u>

3.9. The Application Site is identified in the Solent Waders and Brent Goose Strategy as a Low Use site. Whilst the loss of any individual Low Use site is not of significance, in combination loss of the sites are considered to

have the potential effect on continued ecological function of the wader and brent goose network. It is noted that Low Use site are at the bottom of the scale of sites of identified interest in the SWBGS.

3.10. The SWBGS seeks to minimise losses and advocates ***"consideration should be given to on-site mitigation, off-setting and/or enhancement. Where this has been demonstrated to not be practical or feasible and impacts cannot be avoided or adequately mitigated on-site, off-site options and / or*** compensation ***funding should be considered. Compensation funding may include payment towards the management and enhancement of the wider waders and brent geese ecology".***

3.11. The cost of compensating for the loss of a Low Use site is set at £35,610 per hectare. The rate, lower than other classified sites, is applied to reflect that while Low Use sites have records of birds, noting none were recorded during the completed Ecology Solutions' wintering bird surveys, the numbers involved are sufficiently low to ensure there is only a negligible / nugatory risk of not successfully offsetting the loss of a Low Use site through enhancements of the wider network. Nevertheless, as cited in the SWBGS all Low Use sites have the potential to be used by waders and Brent Geese and the unmitigated loss of these sites would in combination negatively affect the long-term resilience of the network.

3.12. The Application Site is 1.55ha in area, supporting 1.35ha of grassland. In line with the Development Proposals there are not any substantial options for on-site mitigation. As such, the Development Proposals would be looking to provide a financial contribution of £48,073.50 toward wider off-site mitigation.

Water Quality

3.13. On account of the proximity of the Development Proposals to Brockhampton Stream which flows into Langstone Harbour, regard to run-off to the watercourse is required to ascertain if this pathway could potentially lead to advise effects on the integrity of Solent Maritime SSAC and SPA / Ramsar. The principal risk being contributing to nitrogen loading to Langstone Harbour and increasing growth of dense macroalgae mats to the detriment of the areas interest and conservation objectives.

3.14. A Flood Risk Assessment (FRA) was completed for the previously consented development by I&L Consulting[5]; this report advised the drainage strategy for the Development Proposal would drain by gravity and discharge at a greenfield restricted rate using a flow control into either the existing private surface water sewer crossing the Application Site or direct to the adjoining Brockhampton Stream.

3.15. The Strategic Flood Risk Assessment (SFRA) (Local Plan Sites) completed in November 2018 for the Application Site (Land North of Solent Road – Site Ref: HB36), has shown this site is suitable for commercial use and hence the Development Proposal.

[5] I&L Consulting Limited (April 2021) *Land North of Solent Road, Havant – Flood Risk Assessment*. Ref. 21-012_Land North of Solent Road, Havant

3.16. Portsmouth Water along with their consultant Ardent have completed flood alleviation works to the adjoining watercourse. This work was undertaken under Environmental Permit licence number EPR/PB3294JJ and has addressed the current flood risks on the Application Site. Following the completion of the works the Application Site will remain flood free during the 1 in 100 year plus climate change scenario, and provide necessary flood alleviation to address concerns raised in the SFRA.

3.17. The Application Site has a high-water table thus limits the use of infiltration systems as part of the Development Proposals. The drainage strategy includes SuDS measure in the form of attenuation tanks and porous paving for parking areas. These measures will ensure appropriate screening (including of hydrocarbons, chemicals and oils) is completed prior to any discharge. The controlled discharge will be to either the existing private on-site surface water drainage crossing the Application Site or via a new headwall to Brockhampton Stream.

3.18. During construction appropriate measures to address any surface run-off shall be completed and tied to the Construction Environmental Management Plan (CEMP). The CEMP includes measures to reduce the risk of any surface run-off entering Brookhampton Stream and thus heightening a risk of nutrient loading (or pollution) to Langstone Harbour SPA / Ramsar. The CEMP secured through the planning consent shall be adhered to as part of the construction phase.

3.19. The retained and created areas of landscape planting are not to be subject to any nitrogen-rich fertilisers to reduce the risk of increased nitrogen being released from the Development Proposals during the operation phase and carried in any surface run-off.

3.20. Overall, the Development Proposals and proposed drainage strategy has been developed to restrict discharge rates to the greenfield runoff rate (5.3 L/s), providing attenuation and water quality benefits. There shall be no adverse effects on the integrity of local designations from the proposed strategy.

Mitigation Measures

3.21. In line with the SWBGS due to the loss of 1.35 ha of Low Use site, despite no evidence of use or considered suitability to be present, a financial contribution of £48,073.50 shall be provided to ensure compliance with the strategy.

3.22. A CEMP shall be adopted to this address potential effects from construction pollution. This shall focus on restricting to nugatory levels surface run-off and potential for pollution to enter Brockhampton Stream.

Overall Conclusions

3.23. In the light of the best available scientific evidence, it can be concluded that the Development Proposals associated with the Application Site could safely come forward. The Development Proposals will not result in an adverse effect on the integrity of the Chichester and Langstone Harbours

SPA / Ramsar site, Solent Maritime SAC or any other European / international designated site, as a result of habitat loss when the project is considered both alone and in combination with other plans or projects. Furthermore, following the adoption of measures as part the CEMP and drainage strategy no advise effects are expected from a water quality perspective. It is considered that such a conclusion can safely be reached in the light of the mitigation / avoidance strategy put forward within this document (and on the basis of appropriate payments towards the Solent Waders and Brent Goose Strategy).

3.24. It is considered that security as to the delivery of any required mitigation / avoidance package of measures can be achieved through the application of appropriate planning conditions and through a legal obligation. It is proposed that any planning condition and legal obligation should be worded to allow flexibility in terms of the mitigation package, such that changes can be made at a future date, where agreed with HBC (and Natural England if required).

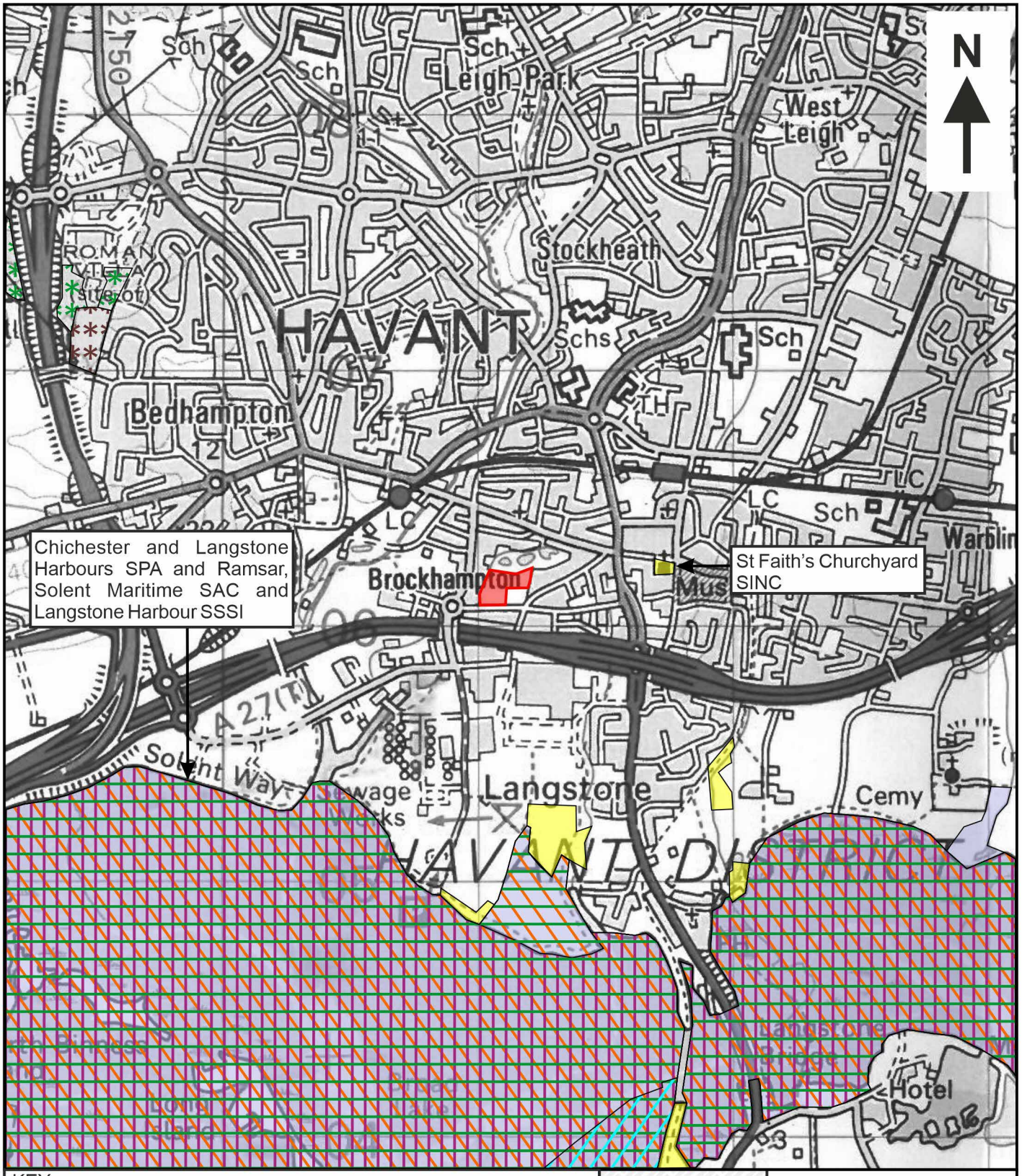
3.25. With reference to paragraph 182 the NPPF (see Annex 1 of this assessment report) and matters concerning the presumption in favour of sustainable development; in this instance a project level HRA (including an Appropriate Assessment) is required to be undertaken by the Competent Authority in relation to the Development Proposals. Thus paragraph 182 of the NPPF 2021 is engaged. This (shadow HRA) assessment report provides information which allows the Competent Authority to complete the project specific Appropriate Assessment in line with its statutory obligations. The clear conclusion reached in this assessment report is that the Development Proposals will not adversely affect the integrity of the Chichester and Langstone Harbours SPA / Ramsar site, or any other European / international designated site ("habitats site") when the plan / project is considered both alone and in combination with other plans / projects. It follows therefore, that the planning test at paragraph 182 of the NPPF is passed and the presumption in favour of sustainable development remains engaged.

3.26. The Development Proposals are considered to be fully compliant with the relevant legislative and planning policy framework.

PLANS

PLAN ECO1

Application Site & Statutory Ecological Designations



KEY:

- APPLICATION SITE LOCATION
- SPECIAL PROTECTION AREA (SPA)
- SPECIAL AREA OF CONSERVATION (SAC)
- RAMSAR SITE
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)
- LOCAL NATURE RESERVE (LNR)
- SITE OF IMPORTANCE FOR NATURE CONSERVATION (SINC)
- *** ANCIENT & SEMI-NATURAL WOODLAND
- *** ANCIENT REPLANTED WOODLAND

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11527: LAND OFF SOLENT ROAD, HAVANT

PLAN ECO1: APPLICATION SITE & STATUTORY ECOLOGICAL DESIGNATIONS

Rev: A

June 2023

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ANNEXES

ANNEX 1

Relevant Legislation, Planning Policy, Case Law and Guidance

ANNEX 1

1. RELEVANT LEGISLATION, PLANNING POLICY, CASE LAW AND GUIDANCE

Legislation

1.1. The proximity of the Application Site to the nearby designated sites of European importance; Chichester and Langstone Harbours SPA / Ramsar site and Pagham Harbour SPA / Ramsar Site, means that the EC Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (Habitats Directive) and the EC Directive on Wild Birds (the Birds Directive) are relevant in this instance. These two Directives are transposed in UK legislation through the Habitats Regulations (2017).

1.2. The relevant Directives and UK legislation are discussed below.

Habitats and Birds Directives

1.3. Under the EC Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna, commonly referred to as the Habitats Directive (Council Directive 92/43/EEC), Member States are required to take special measures to maintain the distribution and abundance of certain priority habitats and species (listed in Annexes I and II of the Directive). In particular each Member State is required to designate the most suitable sites as SACs. All such SACs will form part of the Natura 2000 network under article 3(1) of the Habitats Directive.

1.4. Article 2(3) sets out that member states have a duty, in exercising their obligations under the Habitats Directive to:

> *".. take account of economic, social and cultural requirements and local characteristics."*

1.5. Under the EC Directive on Wild Birds (the Birds Directive) (Council Directive 2009/147/EEC, previously 79/409/EEC), Member States are required to take special measures to conserve the habitats of certain rare species of birds (listed in Annex I of the Directive) and regularly occurring migratory birds. In particular each Member State is required to classify the most suitable areas of such habitats as SPAs. This is designed to protect wild birds, and to provide sufficient diversity of habitats for all species so as to maintain populations at an ecologically sound level. All Bird Directive SPAs will also be part of the Natura 2000 network under article 3(1) of the Habitats Directive.

1.6. Thus there is an obligation under the Habitats Directive and the Birds Directive for member states to designate sites before turning to measures for their protection.

1.7. The protection afforded to SPAs is delivered through Article 6 of the Habitats Directive. Article 6(2) requires member states to take appropriate steps to avoid the deterioration of natural habitats and disturbance of species for which the sites have been designated, in so far as the disturbance could be significant in relation to the objectives of the Directive. Article 6(3) and Article 6(4) require that a plan or project not directly connected with the management of the site, but likely to have a significant effect upon it, either individually or in combination with other plans or projects, must be subject to an appropriate assessment of its implications on the site, in view of the sites conservation objectives.

1.8. Having undertaken an appropriate assessment, the competent authority may agree to a plan or project where it can be concluded that it will not adversely affect the integrity of the site. In light of a negative assessment on the implications for the integrity of the site, Article 6(4) provides that the plan or project may still proceed where it can be demonstrated that there are no alternatives and there are imperative reasons of over-riding public interest as to why it must proceed. In the event that a plan or project is to proceed on the basis of imperative reasons of over-riding public interest, by direction of Article 6(4), compensatory measures must be put in place to ensure that the overall coherence of the Natura 2000 network is protected.

The Conservation of Habitats and Species Regulations 2017 (as amended)

1.9. The Conservation of Habitats and Species Regulations 2017, commonly referred to as the Habitats Regulations, transpose the requirements of the Habitats Directive and Birds Directive into UK legislation. The Habitats Regulations aim to protect a network of sites in the UK that have rare or important habitats and species in order to safeguard biodiversity.

1.10. Under the Habitats Regulations, Competent Authorities have a duty to ensure that all the activities they regulate have no adverse effect on the integrity of any of the Natura 2000 sites. Regulation 63 of the Habitats Regulations requires that:

> *"63(1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for a plan or project, which:-*
>
> *(a) is likely to have a significant effect on a European site or a European offshore marine site in Great Britain (either alone or in combination with other plans or projects) and*
> *(b) is not directly connected with or necessary for the management of the site,*
>
> *shall make an appropriate assessment of the implications for the site in view of that site's conservation objectives.*
>
> *63(3) The competent authority must for the purposes of the assessment consult the appropriate nature conservation body and have regard to any representations made by that body within such reasonable time as the authority may specify.*
>
> *63(5) In the light of the conclusions of the assessment, and subject to regulation 62, the authority shall agree to a plan or project only after having ascertained that it will not adversely affect the integrity of the European site.*
>
> *63(6) In considering whether a plan or project will adversely affect the integrity of the site, the authority shall have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which they propose that the consent, permission or other authorisation should be given."*

1.11. Regulation 63 of the Habitats Regulations therefore sets out a two-stage process. The first test is to determine whether the plan / project is likely to have a significant effect on the European site, the second test (if applicable) is to determine whether the plan / project will affect the integrity of the European site.

1.12. Some key concepts of the Habitats Directive and Habitats Regulations have been clarified through case law. The most pertinent cases in relation to Development Proposals are the "Waddenzee Judgment", the "Dilley Lane Decision" and the Sweetman Case. These are discussed below.

Key Case Law

Waddenzee Judgement

1.13. In the 'Waddenzee' case the European Court of Justice considered the trigger for 'Appropriate Assessment'. It decided that an appropriate assessment is required for a plan or project where there is a probability or a risk that it will have a significant effect on the SPA. The Judgement states [at paragraph 3(a)] that:

> *"…any plan or project not directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects."*

1.14. Hence the need for an appropriate assessment should be determined on a precautionary basis.

1.15. The Judgement gives clarity that the test of 'likely significant effect' should also be undertaken in view of the European site's conservation objectives. It is stated at paragraph 3(b)] that:

> *"where a plan or project not directly connected with or necessary to the management of a site is likely to undermine the site's conservation objectives, it must be considered likely to have a significant effect on that site."*

1.16. Paragraph 4 of the Judgement emphasises the requirement for the appropriate assessment to rely on objective scientific information:

> *"…an appropriate assessment…implies that, prior to its approval, all the aspects of the plan or project which can, by themselves or in combination with other plans or projects, affect the site's conservation objectives must be identified in the light of the best scientific knowledge in the field. The competent national authorities, taking account of the appropriate assessment of the implications…for the site concerned in the light of the site's conservation objectives, are to authorise such an activity only if they have made certain that it will not adversely affect the integrity of that site. That is the case where no reasonable scientific doubt remains as to the absence of such effects."*

Dilly Lane Decision

1.17. The Secretary of State's decision to allow an appeal in relation to applications for a total of 170 new homes on a greenfield site off Dilly Lane, Hartley Witney was challenged in High Court by Hart District Council. The legal challenge was made on the grounds that the Secretary of State had errored in departing from her Inspector's conclusions as to the effects on the Thames Basin Heaths SPA.

A key issue for the case was whether mitigation measures should be disregarded when assessing whether the project would have a significant effect on the SPA. Mr Justice Sullivan ruled in favour of the Secretary of State after concluding that there was no absolute legal rule that mitigation measures should be disregarded in assessing whether the new homes would have significant effect on the SPA. Mr Justice Sullivan states at paragraph 55 of his judgement:

> *"The competent authority is not considering the likely effect of some hypothetical project in the abstract. The exercise is a practical one which requires the competent authority to consider the likely effect of the particular project for which permission is being sought. If certain features (to use a neutral term) have been incorporated into that project, there is no sensible reason why those features should be ignored at the initial, screening, stage merely because they have been incorporated into the project in order to avoid, or mitigate, any likely effect on the SPA."*

1.18. As such, it was judged right and proper that mitigation or avoidance measures, which form a feature of a plan / project should be viewed as integral to the plan / project and not excluded when considering the likely significance test at Regulation 61(1).

1.19. It should be noted that more recent case law provides different guidance on the application of the test at Regulation 63(1). Relevant case law is discussed below within this section.

Sweetman Case

1.20. Further guidance in relation to the consideration of impacts in the light of the Habitats Regulations is provided in the Sweetman case. The case as set out by the Advocate General considered in detail the test for likely significant effect in paragraphs 50 and 51:

> *"50. The test which that expert assessment must determine is whether the plan or project in question has 'an adverse effect on the integrity of the site', since that is the basis on which the competent national authorities must reach their decision. The threshold at this (the second) stage is noticeably higher than that laid down at the first stage. That is because the question (to use more simple terminology) is not 'should we bother to check' (the question at the first stage) but rather 'what will happen to the site if this plan or project goes ahead; and is that consistent with "maintaining or restoring the favourable conservation status" of the habitat or species concerned…*
>
> *It is plan, however, that the threshold laid down at this stage of Article 6(3) may not be set too high, since the assessment must be undertaken having rigorous regard to the precautionary principle. That principle applies where there is uncertainty as to the existence or extent of risks. The competent national authorities may grant authorisation to a plan or project only if they are convinced that it will not adversely affect the integrity of the site concerned. If doubt remains as to the absence of adverse effects, they must refuse authorisation."*

1.21. The Court of Justice of the European Union (CJEU) agreed with the Advocate General's conclusions, and held:

"40. Authorisation for a plan or project, as referred to in Article 6(3) of the Habitats Directive, may therefore be given only on condition that the competent authorities – once all aspects of the plan or project have been identified which can, by themselves or in combination with other plans or projects, affect the conservation objectives of the site concerned, and in the light of the best scientific knowledge in the field – are certain that the plan or project will not have lasting adverse effects on the integrity of that site. That is so where no reasonable scientific doubt remains as to the absence of such effects."

1.22. Hence a plan or project may be authorised only if no reasonable scientific doubt remains as to the absence of effects. Reasonable scientific doubt will exist if the evidence is not sufficiently conclusive, or if there are gaps in the information.

People over Wind (Sweetman II) [C323/17]

1.23. This CJEU judgment concerned a Preliminary Ruling in Case C-323/17. A request for a preliminary ruling was made to the CJEU concerning the interpretation of Article 6(3) of Council Directive 92/43/EEC (the Habitats Directive). The request was made in relation to proceedings brought by 'People Over Wind', and Mr Peter Sweetman against Coillte Teoranta. The ruling is as follows:

"Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site."

1.24. The ruling from the CJEU, departs from previous domestic jurisprudence (in particular the Dilly Lane Decision), where it was deemed acceptable to include consideration of any mitigation / avoidance measures, which formed an integral part of the plan or project, in considering the first stage of assessment and screening for likely significant effects on a European site (or Ramsar site). In that case, where it could be concluded that no likely significant effect arises there was no recourse to move to Appropriate Assessment and address the Integrity test.

1.25. In view of this ruling from the CJEU, in addressing the test at Regulation 63(1) of the Habitats Regulations, it is necessary to undertake the screening assessment in the absence of any consideration of avoidance or mitigation measures.

ESB Wind Developments (Sweetman III) [Case C-164/17]

1.26. In this case a request for a preliminary ruling was made to the CJEU concerning the interpretation of Articles 6(3) and 6(4) of Council Directive 92/43/EEC (the Habitats Directive). The request was made in relation to proceedings brought by Mr Peter Sweetman and Edel Grace against the decision of An Bord Pleanála (National Planning Appeals Board, Ireland) concerning the latter's decision to grant ESB Wind Developments Ltd and Coillte permission for a wind farm project within an SPA. The ruling was handed down on 25th July 2018.

1.27. This ruling distinguishes between, for the purpose of the application of Articles 6(3) and 6(4) of the Directive, 'mitigation' that consists of measures intended to avoid or reduce harm to the protected site, and measures intended to compensate for any harm (Compensatory measures). It is stated:

> *"Article 6 of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, where it is intended to carry out a project on a site designated for the protection and conservation of certain species, of which the area suitable for providing for the needs of a protected species fluctuates over time, and the temporary or permanent effect of that project will be that some parts of the site will no longer be able to provide a suitable habitat for the species in question, the fact that the project includes measures to ensure that, after an appropriate assessment of the implications of the project has been carried out and throughout the lifetime of the project, the part of the site that is in fact likely to provide a suitable habitat will not be reduced and indeed may be enhanced may not be taken into account for the purpose of the assessment that must be carried out in accordance with Article 6(3) of the directive to ensure that the project in question will not adversely affect the integrity of the site concerned; that fact falls to be considered, if need be, under Article 6(4) of the directive."*

1.28. The ruling clarifies (in the context of the specifics of that project) what constitutes mitigation and what should correctly be termed compensation. It confirms that mitigation should be subject to Appropriate Assessment under article 6(3) but that measures designed to compensate for any harm rather than prevent it, cannot be considered under article 6(3) (Appropriate Assessment). In such instances, the proposal must be considered under article 6(4) and thus it cannot be permitted unless there are, "Imperative Reasons of Overriding Public Interest".

Holohan Judgment

1.29. In the case of Holohan v. An Bord Pleanála the CJEU considered the appropriate assessment procedure to be adopted when considering potential impacts on a European Site. In considering this case, the CJEU ruled, amongst other matters:

a) *An appropriate assessment (AA) must catalogue the entirety of the habitat types and species for which a site is protected.*

b) *It must also identify and examine the implications of the proposed project for the species present on that site and for which that site has not been listed. Additionally, it must examine the implications for habitat types and species outside the boundaries of the protected site, insofar as those implications are liable to affect the site's Conservation Objectives.*

c) *Where the competent authority rejects findings of an expert that additional information must be obtained, the Appropriate Assessment must include a detailed statement dispelling all reasonable scientific doubt concerning effects on the protected site.*

1.30. This assessment document is fully compliant with the relevant parts of the Holohan Judgment. The qualifying interest features are referred to wherever

appropriate. The relevant information, as submitted to Europe relating to such matters, is included at Annex 2 and referenced where appropriate in the main body of the IHRA. Consideration has been given to implications for habitats and species located outside of the SPA / SAC, with reference to the site's Conservation Objectives and the possibility that an adverse effect on the integrity of the site could arise.

The Dutch Nitrogen Cases

1.31. On 7th November 2018 the Judgment of the CJEU was handed down pursuant to a reference for a Preliminary Ruling relating to the application of Article 6 of Directive 92/43/EEC (the Habitats Directive) in joined cases C-293/17 and C-294/17.

1.32. The cases concerned authorisation schemes for agricultural activities which cause nitrogen deposition on Natura 2000 (European) sites in the Netherlands.

1.33. Key parts of the ruling (insofar as they are relevant to this assessment) are discussed below.

1.34. In line with preceding case law (Waddenzee and Sweetman, discussed above) the need for scientific rigour and firm conclusions as to the absence of effects are a pre-requisite for authorisation of a plan / project. Ruling 3 in the case states:

> *"Article 6(3) of Directive 92/43 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. That is so, however, only in so far as <u>a thorough and in-depth examination of the scientific soundness of that assessment makes it possible to ensure that there is no reasonable scientific doubt as to the absence of adverse effects of each plan or project on the integrity of the site concerned</u>, which it is for the national court to ascertain."*
>
> [*emphasis added*]

1.35. Ruling 4 in the case states:

> *"Article 6(3) of Directive 92/43 must be interpreted as not precluding national programmatic legislation, such as that at issue in the main proceedings, exempting certain projects which do not exceed a certain threshold value or a certain limit value in terms of nitrogen deposition from the requirement for individual approval, if the national court is satisfied that the 'appropriate assessment' within the meaning of that provision, carried out in advance, <u>meets the criterion that there is no reasonable scientific doubt as to the lack of adverse effects of those plans or projects on the integrity of the sites concerned</u>."*
>
> [*emphasis added*]

1.36. Ruling 5 in the case states:

> *"Article 6(3) of Directive 92/43 must be interpreted as precluding national programmatic legislation, such as that at issue in the main proceedings, which allows a certain category of projects, in the present case the*

application of fertilisers on the surface of land or below its surface and the grazing of cattle, to be implemented without being subject to a permit requirement and, accordingly, to an individualised appropriate assessment of its implications for the sites concerned, unless the objective circumstances make it possible to rule out with certainty any possibility that those projects, individually or in combination with other projects, may significantly affect those sites, which it is for the referring court to ascertain."

[*emphasis added*]

1.37. Ruling 6 in the case confirms that any measures which are relied upon to mitigate or avoid adverse effects on the integrity of the European site in question, must be certain at the time of assessment. It is stated:

"Article 6(3) of Directive 92/43 must be interpreted as meaning that an 'appropriate assessment' within the meaning of that provision may not take into account the existence of 'conservation measures' within the meaning of paragraph 1 of that article, 'preventive measures' within the meaning of paragraph 2 of that article, measures specifically adopted for a programme such as that at issue in the main proceedings or 'autonomous' measures, in so far as those measures are not part of that programme, if the expected benefits of those measures are not certain at the time of that assessment."

[*emphasis added*]

Key Guidance and other Relevant Documents

1.38. Guidance on the interpretation of key terms and concepts contained within the European and UK legislation of relevance to European designated sites is provided through several documents issued by the European Commission and national organisations such as the Joint Nature Conservation Committee (JNCC) and Natural England. This guidance is discussed below.

Natura Standard Data Forms

1.39. A standard reporting format has been developed for Natura 2000 sites (SPAs and SACs) to ensure that the relevant site selection information is reported and stored in a consistent manner which can be easily made available.

1.40. A standard reporting form for SPAs and SACs was developed by the European Commission and published in 1996. The form is used for all sites designated, or proposed to be designated as SPAs and SACs under the relevant Directives, with the information to be stored on a central database.

1.41. Article 4 of the Habitats Directive provides the legal basis for providing the data. Article 4 states that information shall include a map of the site, its name, location, extent and the data resulting from application of the criteria specified in Annex III and that this shall be provided in a format established by the Commission. Under Article 4 (paragraph 3) of the Birds Directive Member States are required to provide the Commission with all relevant information to enable it to take any appropriate steps in order to protect relevant species in areas where the Directive applies.

1.42. Whilst it is the relevant country agency (i.e. Natural England) that is responsible for designating a site, it is the JNCC who are responsible for collating the lists of European and international designated sites, together with relevant supporting

information. The Nature 2000 Data Forms for SPAs and SACs are therefore made available by the JNCC.

1.43. Within the explanatory notes for Natura Standard Data Forms (European Commission 1996) the following "main objectives" of the Natura data form / database are given:

1. *"to provide the necessary information to enable the Commission, in partnership with the Member States, to co-ordinate measures to create a coherent NATURA 2000 network and to evaluate its effectiveness for the conservation of Annex I habitats and for the habitats of species listed in Annex II of Council Directive 92/43/EEC as well as the habitats of Annex I bird species and other migratory bird species covered by Council Directive 79/409/EEC."*

2. *"to provide information which will assist the Commission in other decision making capacities to ensure that the NATURA 2000 network is fully considered in other policy areas and sectors of the Commission's activities in particular regional, agricultural, energy, transport and tourism policies."*

3. *"to assist the Commission and the relevant committees in choosing actions for funding under LIFE and other financial instruments where data relevant to the conservation of sites, such as ownership and management practice, are likely to facilitate the decision making process."*

4. *"to provide a useful forum for the exchange and sharing of information on habitats and species of Community interest to the benefit of all Member States."*

Managing Natura 2000 Sites (European Communities 2000)

1.44. The document entitled "Managing Natura 2000 Sites the provisions of article 6 of the Habitats Directive 92/43/CEE", published by the European Commission in 2000, provides guidelines to the Member States on the interpretation of certain key concepts used in Article 6 of the Habitats Directive. It should be noted that the section relating to Article 6(4) has subsequently been replaced through the publication of a further guidance document by the European Commission in 2007 entitled "Guidance document on Article 6(4) of the 'Habitats Directive', which is considered below under the relevant heading.

1.45. This document states at Section 2.3.3 that conservation measures must correspond to the ecological requirements of the habitats and species present for which the site is designated and that these requirements "involve all the ecological needs necessary to ensure their favourable conservation status".

1.46. At section 3.5 the guidance states, in relation to deterioration and disturbance of habitats or species:

"Deterioration or disturbance is assessed against the conservation status of species and habitats concerned. At a site level, the maintenance of the favourable conservation status has to be evaluated against the initial conditions provided in the Natura 2000 standard data forms when the site was proposed for selection or designation, according to the contribution of

the site to the ecological coherence of the network. This notion should be interpreted in a dynamic way according to the evolution of the conservation status of the habitat or the species."

1.47. Section 4.4.1 sets out that in determining what may constitute a likely 'significant' effect one should take into account the conservation objectives for the site and other relevant baseline information. In the second paragraph of this section of the document it is stated:

"In this regard, the conservation objectives of a site as well as prior or baseline information about it can be very important in more precisely identifying conservation sensitivities."

1.48. Section 4.5.3 of the document sets out the duty of member states to provide certain specific information in support of the inclusion of a site within the Natura 2000 network. This information is to be provided in a format specified by the European Commission (the Natura 2000 Standard Data Form).

1.49. A link is drawn between the Standard Data Form and the formation of the sites conservation objectives within the text box at the end of section 4.5.3 of the guidance where it is stated:

"The information provided according to the standard data form established by the Commission forms the basis for a Member State's establishment of the site's conservation objectives."

1.50. With regard to an assessment of the effects of a plan / project on the integrity of a site, the 'integrity of the site' is defined at Section 4.6.3 as:

"… the coherence of the site's ecological structure and function, across the whole area, or the habitats, complex of habitats and / or populations of species for which the site is or will be classified."

1.51. The guidance is clear, within the text box at the foot of page 39, that an assessment as to the implications of the plan / project on the integrity of the site should be limited to an assessment against the site's conservation objectives:

"The integrity of the site involves its ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the site's conservation objectives."

1.52. Section 5 of the document deals with Article 6(4) of the Habitats Directive. Note that this section has been expanded upon, and replaced by further guidance issued by the European Commission entitled "Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC" (2007). This document is dealt with below at paragraphs 2.57 – 2.61.

Assessment of Plans and Projects Significantly Affecting Natura 2000 sites- Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission 2001)

1.53. This document, published by the European Commission in 2001, gives guidance on carrying out and reviewing those assessments required under Article 6(3) and (4) of the Habitats Directive. It is provided as supplementary guidance and does not over-ride or replace any of that set out within Managing Natura 2000

(European Commission 2000) which as stated at page 6 of the document, “is the starting point for the interpretation of the key terms and phrases contained in the Habitats Directive”. The guidance provided is not mandatory and it is clearly set out that its use is “optional and flexible” and that it is for “Member States to determine the procedural requirements deriving from the directive”.

1.54. The guidance sets out the key stages in following the tests contained within the Habitats Directive. Pertinent to this application, stages one and two are relevant. Stage one is the screening stage assessing the likelihood of a plan / project resulting in a significant effect upon the European site. The second comprises the appropriate assessment.

1.55. Section 3.2.4 is concerned with Appropriate Assessment and specifically, the assessment against the conservation objectives of the European Site. Box 9 provides a list of five example conservation objectives for differing broad habitat types. One such example, that for a coastal site, taken from Box 9 is provided below:

> *“to maintain the status of the European features of this coastal site in favourable condition, allowing for natural change. Features include coastal shingle vegetation and lagoons (within a candidate special area of conservation (SAC), which is also an SPA).”*

Internal Guidance to decisions on ‘Site Integrity’: A framework for provision of advice to competent authorities (English Nature 2004)

1.56. Natural England (formerly English Nature) has produced an internal guidance document on the provision of advice to competent authorities regarding the concept of “site integrity” in undertaking an appropriate assessment.

1.57. This guidance sets out a definition for integrity. It states that integrity is considered at the site level and gives the following definition, as taken from PPG9:

> *“The coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and / or levels of populations of the species for which it was classified”.*

1.58. Integrity is further defined within section 3.0 where it is stated that:

> *“In a dynamic context ‘integrity’ can be considered as a site having a sense of resilience and ability to evolve in ways that are favourable to conservation.”*

1.59. The need to maintain, or restore the site to, favourable conservation status is dealt with in the final paragraph of section 3.0. Natural England quotes guidance issued jointly by the Environment Agency, English Nature and Countryside Council for Wales.

1.60. The guidance provides a checklist within section 4.1, for assessing the likelihood of an adverse effect on integrity occurring as a result of the proposed plan / project. It is stated that if the answer to all of the questions posed within the checklist is “yes” then it is reasonable to conclude that there will be no adverse effect upon integrity. In the event that one or more of the answers is no, then the

guidance suggests that a series of further site specific factors, listed at 4.2 – 4.7 of the guidance must be considered in detail.

Common Standards Monitoring (JNCC February 2004)

1.61. Common Standards Monitoring is a means by which condition objectives for habitats, species, or other features of designated sites (e.g. Sites of Special Scientific Interest – SSSIs, and SPAs) are set based on key attributes of the features.

1.62. The Joint Nature Conservation Committee (JNCC) and the country Conservation Agencies (e.g. Natural England) developed guidance on the setting and assessing of condition objectives, as required under the Birds and Habitats Directives and set out a framework for this in 1999. This framework is provided in the form of Common Standards Monitoring (CSM) guidance which comprises a suite of documents including an “Introduction to the Guidance Manual on Common Standards Monitoring” and several species / habitat specific documents, including those for lowland heathland, birds, reptiles and invertebrates. The Introduction to the Guidance Manual covers various relevant concepts and terms. It also provides a background to the setting of conservation objectives and sets out the desired approach to setting targets, monitoring, management and reporting on conservation measures in designated sites.

1.63. The Introduction to CSM Guidance and CSM guidance for individual site attributes (e.g. its bird interest) set out specific criteria regarding the identification of interest features, targets and methods of assessment. There is in-built flexibility and allowances for 'judgements to be made' when assessing, for example, favourable condition.

1.64. It is understood that Natural England applies the Common Standards Monitoring approach to European designated sites through an assessment of the SSSI unit condition. This is undertaken on a cycle of approximately 6 years. The assessment does not relate to the Conservation Objectives of the European site, but provides a tool for tailoring future management of the SSSI such that favourable condition of the interest features can be maintained or restored as appropriate.

National Planning Policy Framework (July 2021) and ODPM / Defra Circular (ODPM & Defra, 2005)

1.65. Paragraphs 174, 179, 180, 181 and 182 of the National Planning Policy Framework (2019) are of direct relevance. Paragraph 179 is concerned with the hierarchy of international, national and locally designated sites and paragraph 174 states such sites should be protected in “a manner commensurate with their statutory status or identified quality”. Paragraph 180 describes four over-riding principles which should be applied by planning authorities in determining planning applications. Broadly, these four principles are concerned with avoiding (where possible) adverse impacts on biodiversity including more sensitive (e.g. designated) habitats, delivering appropriate mitigation or compensatory measures where required and encouraging biodiversity improvements. Paragraph 181 asserts that Ramsar sites, proposed SPAs, SACs and sites providing compensatory measures for adverse effects on “habitats” sites should be afforded the same level of protection as classified SPAs and designated SACs.

1.66. Paragraph 182 of the NPPF is concerned with the “presumption in favour of sustainable development”. The 2019 revision to the NPPF provides clarity in relation to matters concerning the presumption in favour of sustainable development insofar as "Habitats Sites " are concerned (removing the ambiguity of previous versions). It states:

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

1.67. Thus, where an Appropriate Assessment undertaken in relation to a plan or project can safely conclude that no adverse effect on the integrity of any “Habitats Site” arises, the presumption in favour of sustainable development remains engaged.

1.68. Guidance on the determination of whether an effect on a European designated site is likely to be significant, together with the scope of appropriate assessments and ascertaining the effect on the integrity are provided within the DEFRA Circular (ODPM & DEFRA, 2005). This DEFRA Circular was published in relation to Planning Policy Statement 9 (PPS 9), which was superseded by the National Planning Policy Framework (2012, 2018,2019 and 2021). However, the National Planning Policy Framework retained reference to the DEFRA Circular (2005).

1.69. With respect to the significance test, the DEFRA Circular states at paragraph 13 that:

> *“The decision as to whether an appropriate assessment is necessary should be made on a precautionary basis”.*

1.70. The Waddenzee Judgement is specifically referred to at paragraph 13 of the Circular. With regards to the need to undertake an appropriate assessment; this is only required where it is not possible to conclude, on the basis of objective information, that the plan / project will not have a significant effect on the European site, either individually or in combination with other plans / projects.

1.71. Paragraph 14 of the Circular clarifies that in considering the likely significance of an effect, the decision taker should assess whether the effect would be significant in terms of the site’s conservation objectives.

1.72. Paragraph 15 of the Circular clarifies the importance of assessing the likely significant effect on each of the interest features for which the site is designated.

1.73. Guidance on the scope of an Appropriate Assessment is provided at paragraph 17 of the Circular:

> *“If the decision-taker concludes that a proposed development (not directly connected with or necessary to the management of a site) is likely to significantly affect a European site, they must make an appropriate assessment of the implications of the proposal for the site in view of the site’s conservation objectives. These relate to each of the interest features for which the site was classified…The scope and content of an appropriate assessment will depend on the nature, location, duration and scale of the proposed project and the interest features of the relevant site. It is important*

that an appropriate assessment is made in respect of each interest feature for which the site is classified; and for each designation where a site is classified under more than one international obligation…"

1.74. At paragraph 20 of the Circular, the definition of "integrity" for the purpose of interpreting the tests contained within the Habitats Regulations is given as:

"The integrity of a site is the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified."

1.75. The Circular includes a flow diagram setting out the series of steps competent authorities are required to take in considering proposals affecting internationally designated Nature Conservation Sites. This is based on the information and flow charts given in guidance issued by the European Commission (European Commission Environment DG, 2001).

1.76. The information contained within this report follows the steps outlined in the flow diagram and takes account of the EC guidance on the basis of information currently available on the nature of the development in relation to those Internationally Designated Nature Conservation Sites identified within this assessment. Professional judgement has been applied to interpret this information within the context of the sites' conservation objectives and the criteria under which they are designated.

Guidance document on Article 6(4) of the 'Habitats Directive' (European Commission 2007)

1.77. This document, published by the European Commission in 2007, is intended to provide clarification on key terms / concepts as referred to within "Managing Natura 2000 Sites" and replaces the section on Article 6(4) within that earlier document.

1.78. The Guidance document covers, in particular, the concepts of Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensation Measures, Overall coherence and the Opinion of the Commission.

1.79. With regard to ensuring the quality of an appropriate assessment, and to define exactly what needs to be compensated, it is stated at Section 1.3 that:

"Assessment procedures of plans or projects likely to affect Natura 2000 sites should guarantee full consideration of all elements contributing to the site integrity and to the overall coherence of the network, both in the definition of the baseline conditions and in the stages leading to identification of potential impacts, mitigation measures and residual impacts. These determine what has to be compensated, both in quality and quantity."

1.80. The need to use information contained within the Natura Standard Data Form, in tandem with the sites conservation objectives when undertaking an appropriate assessment is specifically referred to (under the second hyphenated point at Section 1.3 on page 5).

1.81. Section 1.3.2 gives guidance on the application of Article 6(4) in respect of reasons of overriding public importance and Section 1.4.1 gives guidance on the application of Article 6(4) in respect of compensatory measures.

Managing Natura 2000 Sites – The provisions of Article 6 of the habitats Directive 92/43/EEC

1.82. In January 2019 the European Commission published updated guidance in relation to managing Natura 2000 sites, following initial guidance published in 2000 (see above).

1.83. The primary purpose of the revision was to incorporate relevant rulings of the Court of Justice of the European Union (EU) which have been issued since the initial guidance was published in 2000. It also integrates, into a single document, other relevant European Commission notes / guidance documents. Those key rulings (of the Court of Justice of the EU) and other relevant European Commission notes / guidance are discussed above in this report. The revised guidance provides clarifications of key concepts to Member State, authorities and stakeholders involved in the management of Natura 2000 sites (e.g. SPAs and SACs).

Guidance on the application of the precautionary principle

1.84. As discussed above, relevant case law makes it clear that in applying the relevant tests of the Habitats Regulations, there is a need for certainty, both regarding the nature and extent of predicted effects on integrity and in relation to the effectiveness of any preventative measures relied upon. Furthermore, enshrined within the Habitats Directive and Regulations (though not explicitly set out in either), based upon article 191 of the Treaty on the Functioning of the European Union, is the need to apply the Precautionary Principle when assessing the risks posed to the integrity of the site/s. If a risk of significant effect to the integrity of a site cannot be excluded on the basis of objective information, then application of the precautionary principle requires no consent to be given for such a project. The Precautionary Principle is not however without limits. It cannot be based on a purely hypothetical approach founded simply on conjecture. A preventive measure may be taken only if the risk appears nevertheless to be adequately backed up by scientific data available at the time the measure is taken.

1.85. Moreover, the document titled “Communication from the Commission on the Precautionary Principle” (2000) provides useful guidance in relation to the application of the Precautionary Principle in relation to European sites issues. Paragraph 6, sets out the six key matters for consideration when applying the Precautionary Principle. Paragraph 6 states:

> “Where action is deemed necessary [emphasis added], measures based on the precautionary principle should be, inter alia:
>
> - proportional to the chosen level of protection,
> - non-discriminatory in their application,
> - consistent with similar measures already taken,
> - based on an examination of the potential benefits and costs of action or lack of action (including, where appropriate and feasible, an economic cost/benefit analysis),
> - subject to review, in the light of new scientific data, and
> - capable of assigning responsibility for producing the scientific evidence

necessary for a more comprehensive risk assessment."

1.86. Under these bulleted points, the guidance gives specific definitions in relation to each of the above at pages 4 and 5, with further detail provided within section 6.

1.87. In accordance with the Communication from the Commission it is clear that when they are deemed necessary, risk reduction measures should be proportionate and must not aim at zero risk. It is stated at section 6.3.1 of the Communication from the Commission that:

> *"The measures envisaged must make it possible to achieve the appropriate level of protection. Measures based on the precautionary principle must not be disproportionate to the desired level of protection and must not aim at zero risk, something which rarely exists. However, in certain cases, an incomplete assessment of the risk may considerably limit the number of options available to the risk managers."*

1.88. With reference to not aiming "at zero risk" the judgement of the Appeal Court in the case of Morge vs Hampshire County Council [2010] EWCA Civ 608 is relevant[1]. Lord Justice Ward considered what the level of disturbance was required in the Article 12(1)(b) and at paragraph 35 he described the level or risk of threatened habitat and species stating that:

> *"… It must be certain, that is to say, identifiable. It must be real, not fanciful."*

1.89. This is understood to mean that for the level of risk to be real and identifiable, it must be based upon objective evidence to substantiate the risk.

1.90. It is acknowledged that this case went before the Supreme Court [2011] UKSC 2 where Lord Brown was not in agreement with all parts of Lord Justice Wards' judgement, but nevertheless did not expressly disagree with paragraph 35.

1.91. As discussed further below in subsequent sections of this report, it is considered that real risks to the Integrity of the SPA / SAC have not in fact been identified and it is considered that Wealden District Council are adopting an unwarranted overly precautious approach to the assessment process, indeed it is aiming at 'zero risk'.

Conservation Objectives

1.92. The Conservation Objectives for SPAs and SACs are published by Natural England. Those for the relevant designated sites are included at Annex 3. Also included at Annex 3 is a copy of the "Supplementary advice on conserving and restoring site features", specific to the Solent SPA and SAC and published by Natural England.

[1] Reference: paragraph 35, Judgement of the Appeal Court, Morge vs Hampshire County Council [2010] EWCA Civ 608

ANNEX 2

Copy of relevant Natura 2000 Data Forms, Ramsar Information Sheet and SSSI citation

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	Solent Maritime
Unitary Authority/County:	City of Portsmouth, City of Southampton, Hampshire, Isle of Wight, West Sussex
SAC status:	Designated on 1 April 2005
Grid reference:	SU756003
SAC EU code:	UK0030059
Area (ha):	11325.09
Component SSSI:	Bouldnor and Hamstead Cliffs SSSI, Chichester Harbour SSSI, Eling and Bury Marshes SSSI, Hurst Castle and Lymington River Estuary SSSI, Hythe to Calshot Marshes SSSI, King's Quay Shore SSSI, Langstone Harbour SSSI, Lee-on-the-Solent to Itchen Estuary SSSI, Lincegrove and Hackett's Marshes SSSI, Lower Test Marshes SSSI, Medina Estuary SSSI, Newtown Harbour SSSI, North Solent SSSI, Thorness Bay SSSI, Upper Hamble Estuary and Woods SSSI, Yar Estuary SSSI

Site description:

The Solent encompasses a major estuarine system on the south coast of England with four coastal plain estuaries (Yar, Medina, King's Quay Shore, Hamble) and four bar-built estuaries (Newtown Harbour, Beaulieu, Langstone Harbour, Chichester Harbour). The Solent and its inlets are unique in Britain and Europe for their hydrographic regime with its double tides, as well as for the complexity of the marine and estuarine habitats present within the area. Sediment habitats within the estuaries include extensive estuarine flats, intertidal areas that support eelgrass *Zostera* spp., sand and shingle spits, and natural shoreline transitions. The mudflats range from low and variable salinity in the upper reaches of the estuaries to very sheltered almost fully marine muds in Chichester and Langstone Harbours. As well as occurring within the estuaries, mudflats and sandflats are found throughout the Solent and form the predominant intertidal substrates. Unusual features include the presence of very rare sponges in the Yar estuary and a sandy 'reef' of the polychaete *Sabellaria spinulosa* on the steep eastern side of the entrance to Chichester Harbour.

Shallow sediment communities (comprising the subtidal sandbanks feature) occur around the Solent, particularly in the large harbours. They are typically colonised by a burrowing fauna of worms, crustaceans, bivalve molluscs and echinoderms. Where coarse stable material is present, species attached to the surface may include foliose algae, hydroids, bryozoans and ascidians. Mixtures of sand and associated hard substrate can lead to the presence of very rich communities. Mobile fauna at the surface of the sandbanks may include shrimps, prosobranch molluscs, crabs and fish. Shallow sandy sediments may be important nursery areas for fish and feeding grounds for seabirds.

Pioneer saltmarsh vegetation colonises intertidal mud and sandflats in areas protected from strong wave action. This habitat is dominated by open stands of glasswort *Salicornia* spp. or annual sea-blite *Suaeda maritima*. It occurs within pioneer marsh communities along the lower marsh and at the lower limits of tidal inundation, as well as in small depressions or saltpans in the upper and middle saltmarsh, or in narrow strips running along the margins of

rivulets and creeks within the saltmarsh. This is one of only two sites where significant amounts of the native cordgrass species, small cord-grass *S. maritima* are found. It is also the only site for the naturalised North American species, smooth cord-grass *Spartina alterniflora* in the UK, and one of the few remaining sites for Townsend's cord-grass *S.* x *townsendii*. There are also extensive areas of common cord-grass *Spartina anglica* throughout the site. Thus all four cord-grass taxa occur here in close proximity.

The Solent contains the second-largest aggregation of Atlantic salt meadows in south and south-west England. The salt meadows are representative of the ungrazed type and support a range of communities dominated by sea-purslane *Atriplex portulacoides*, common sea-lavender *Limonium vulgare* and thrift *Armeria maritima*. In general, the salt meadow is somewhat less truncated by man-made features in the Solent than other parts of the south coast. In places such as Chichester Harbour it shows rare and unusual transitions to freshwater reedswamp and alluvial woodland as well as coastal grassland. Typical Atlantic salt meadow is still widespread in this site, despite a long history of colonisation by cord-grass *Spartina* spp.

Driftline habitats support a number of specialist plant species and can be found on a variety of coarse substrates across the Solent, including shingle beaches, shingle spits, shingle islands and chenier banks (formed by the deposition of broken shells by wave action on the saltmarsh edge). A transition is found in many areas from vegetated shingle to saltmarsh. Two important driftline communities can be identified. The first is dominated by spear-leaved orache *Atriplex prostrata* or grass-leaved orache *A. littoralis* on the seaward edge of the shingle. The second are sea sandwort *Honkenya peploides* – sea rocket *Cakile maritima* strandline communities with perennial associations of sea mayweed *Tripleurospermum maritimum*, curled dock *Rumex crispus*, sea beet *Beta vulgaris* ssp. *maritima*, sea campion *Silene uniflora* and yellow-horned poppy *Glaucium flavum*.

On more stable (typically landward) shingle or stony substrates, additional perennial species are found (these communities comprise the perennial vegetation of stony banks feature). There are at least four distinct community types present within the Solent including a specialised community characterised by hare's-foot clover *Trifolium arvense* occurring with lichens and mosses. Sites such as Calshot Spit and Chichester Harbour are important locations for this feature.

The site supports a number of coastal lagoons both on the Isle of Wight and along the Hampshire coast. This suite of lagoons provides examples of a variety of successional stages and salinity regimes including quite brackish conditions. Some of the lagoons support specialised invertebrates such as the nationally rare insensible shrimp *Gammarus insensibilis* occurring at Yar Bridge lagoon on the Isle of Wight.

The extensive sand dunes at East Head at the mouth of Chichester Harbour are dominated by marram grass *Ammophila arenaria*. There are also accreting sand dunes found at Pilsey Island in Chichester Harbour.

Desmoulin's whorl snail *Vertigo moulinsiana*, which is rare in Great Britain and usually occurs within base-rich wetlands where there are long established swamps, fens and marshes, is found in the reedbeds at the top of Fishbourne channel in Chichester Harbour.

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Annual vegetation of drift lines
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- Coastal lagoons*
- *Spartina* swards (*Spartinion maritimae*). (Cord-grass swards)
- Estuaries
- Mudflats and sandflats not covered by seawater at low tide. (Intertidal mudflats and sandflats)
- Perennial vegetation of stony banks. (Coastal shingle vegetation outside the reach of waves)
- *Salicornia* and other annuals colonising mud and sand. (Glasswort and other annuals colonising mud and sand)
- Sandbanks which are slightly covered by sea water all the time. (Subtidal sandbanks)
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes). (Shifting dunes with marram)

Qualifying species: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Desmoulin's whorl snail *Vertigo moulinsiana*

Annex I priority habitats are denoted by an asterisk (*).

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0030059
Date of registration: 14 June 2005
Signe[redacted]
On behalf of the Secretary of State for Environment, Food and Rural Affairs

STANDARD DATA FORM for sites within the 'UK national site network of European sites'

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

> the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
> the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
> the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
> the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE	**UK0030059**
SITENAME	**Solent Maritime**

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- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
B	UK0030059

1.3 Site name

Solent Maritime

1.4 First Compilation date	1.5 Update date
1998-10	2015-12

1.6 Respondent:

Name/Organisation:	Joint Nature Conservation Committee
Address:	Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY
Email:	

Date site proposed as SCI:	1998-10
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-04
National legal reference of SAC designation:	Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/490/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-0.927777778	50.79638889

2.2 Area [ha]:

11243.12

2.3 Marine area [%]

91.9

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKJ3	Hampshire and Isle of Wight
UKZZ	Extra-Regio
UKJ2	Surrey, East and West Sussex

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
1110			3597.8	0	M	C	C	C	C
1130			6633.44	0	G	A	B	B	B
1140			5059.4	0	G	A	C	B	C
1150	X		146.16	0	P	C	B	B	C
1210			112.43	0	P	C	A	B	C
1220			112.43	0	M	C	B	B	C
1310			123.67	0	P	B	B	B	C
1320									

			94.44	0	P	A	A	C	A
1330			2023.76	0	M	B	B	B	B
2120			112.43	0	M	C	B	B	C
2130	X		112.43	0	M	D			

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
M	1355	Lutra lutra			p				P	DD	D			
M	1365	Phoca vitulina			p				P	DD	D			
I	1016	Vertigo moulinsiana			p				R	DD	B	B	B	C

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N16	0.5
N03	23.0
N05	3.0

N04	0.5
N01	14.0
N02	59.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: shingle,sedimentary,sand,alluvium,mud,neutral,nutrient-rich,clay 2 Terrestrial: Geomorphology and landscape: island,lowland,coastal 3 Marine: Geology: sand,clay,sedimentary,gravel,mud,limestone/chalk,shingle,sandstone/mudstone 4 Marine: Geomorphology: open coast (including bay),estuary,enclosed coast (including embayment),shingle bar,subtidal sediments (including sandbank/mudbank),intertidal sediments (including sandflat/mudflat),islands,lagoon

4.2 Quality and importance

Sandbanks which are slightly covered by sea water all the time for which the area is considered to support a significant presence. Estuaries for which this is considered to be one of the best areas in the United Kingdom. Mudflats and sandflats not covered by seawater at low tide for which the area is considered to support a significant presence. Coastal lagoons for which the area is considered to support a significant presence. Annual vegetation of drift lines for which the area is considered to support a significant presence. which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 100 hectares. Perennial vegetation of stony banks for which the area is considered to support a significant presence. Salicornia and other annuals colonising mud and sand for which the area is considered to support a significant presence. Spartina swards (Spartinion maritimae) for which this is one of only two known outstanding localities in the United Kingdom. which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 100 hectares. Atlantic salt meadows (Glauco-Puccinellietalia maritimae) for which this is considered to be one of the best areas in the United Kingdom. Shifting dunes along the shoreline with Ammophila arenaria (?white dunes?) for which the area is considered to support a significant presence. Vertigo moulinsiana for which the area is considered to support a significant presence.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	H02		B
H	G01		I
H	M02		B
H	F02		I
H	M01		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A03		I
H	A02		I
H	A04		I
H	D05		I
H	D05		I
H	B02		I

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324

http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK00	28.6	UK01	4.5	UK04	71.4

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [x] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

NATURA 2000 – STANDARD DATA FORM

Special Protection Areas under the EC Birds Directive.

Each Natura 2000 site in the United Kingdom has its own Standard Data Form containing site-specific information. The data form for this site has been generated from the Natura 2000 Database submitted to the European Commission on the following date:

22/12/2015

The information provided here, follows the officially agreed site information format for Natura 2000 sites, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

The Standard Data Forms are generated automatically for all of the UK's Natura 2000 sites using the European Environment Agency's Natura 2000 software. The structure and format of these forms is exactly as produced by the EEA's Natura 2000 software (except for the addition of this coversheet and the end notes). The content matches exactly the data submitted to the European Commission.

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

Further technical documentation may be found here
http://bd.eionet.europa.eu/activities/Natura_2000/reference_portal

As part of the December 2015 submission, several sections of the UK's previously published Standard Data Forms have been updated. For details of the approach taken by the UK in this submission please refer to the following document:
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

More general information on Special Protection Areas (SPAs) in the United Kingdom is available from the SPA home page on the JNCC website. This webpage also provides links to Standard Data Forms for all SPAs in the UK.

Date form generated by the Joint Nature Conservation Committee
25 January 2016.

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE	**UK9011011**
SITENAME	**Chichester and Langstone Harbours**

TABLE OF CONTENTS

- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
A	UK9011011

1.3 Site name

Chichester and Langstone Harbours

1.4 First Compilation date	1.5 Update date
1987-10	2015-12

1.6 Respondent:

Name/Organisation:	Joint Nature Conservation Committee
Address:	Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY
Email:	

1.7 Site indication and designation / classification dates

Date site classified as SPA:	1987-10
National legal reference of SPA designation	Regulations 12A and 13-15 of the Conservation Habitats and Species Regulations 2010, (http://www.legislation.gov.uk/uksi/2010/490/contents/made) as amended by The Conservation of Habitats and Species (Amendment) Regulations 2011 (http://www.legislation.gov.uk/uksi/2011/625/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-0.92	50.80638889

2.2 Area [ha]:

5810.95

2.3 Marine area [%]

87.8

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKJ3	Hampshire and Isle of Wight
UKJ2	Surrey, East and West Sussex

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A054	Anas acuta			w	330	330	i		G	C		C	
B	A056	Anas clypeata			w	100	100	i		G	C		C	
B	A052	Anas crecca			w	1824	1824	i		G	C		C	
B	A050	Anas penelope			w	2055	2055	i		G	C		C	
B	A169	Arenaria interpres			w	430	430	i		G	C		C	
B	A675	Branta bernicla bernicla			w	17119	17119	i		G	A		C	
B	A144	Calidris alba			w	236	236	i		G	C		C	
B	A672	Calidris alpina alpina			w	44294	44294	i		G	B		C	
B	A137	Charadrius hiaticula			w	846	846	i		G	B		C	

B	A157	Limosa lapponica			w	1692	1692	i		G	B		C	
B	A069	Mergus serrator			w	297	297	i		G	B		C	
B	A160	Numenius arquata			w	1861	1861	i		G	C		C	
B	A141	Pluvialis squatarola			w	3825	3825	i		G	B		C	
B	A195	Sterna albifrons			r	100	100	p		G	B		C	
B	A193	Sterna hirundo			r	33	33	p		G	C		C	
B	A191	Sterna sandvicensis			r	31	31	p		G	C		C	
B	A048	Tadorna tadorna			w	2410	2410	i		G	B		C	
B	A162	Tringa totanus			w	1788	1788	i		G	C		C	

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site				Motivation					
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C|R|V|P	IV	V	A	B	C	D
B	WATR	Waterfowl assemblage			93230	93230	i						X	

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Unit:** i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see reference portal)
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present
- **Motivation categories: IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N02	63.0
N23	0.2
N16	0.8
N10	1.7
N07	0.5
N14	11.7
N03	21.5
N06	0.4
N04	0.3
N08	0.1
Total Habitat Cover	100.2

Other Site Characteristics

1 Terrestrial: Soil & Geology: nutrient-rich,shingle,alluvium,sand,sedimentary,neutral,mud 2 Terrestrial: Geomorphology and landscape: coastal,lowland,floodplain 3 Marine: Geology: sand,clay,shingle,mud,sedimentary,gravel 4 Marine: Geomorphology: pools,lagoon,estuary,subtida sediments (including sandbank/mudbank),enclosed coast (including embayment),islands,shingle bar,intertidal sediments (including sandflat/mudflat)

4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC) During the breeding season the area regularly supports: Sterna albifrons (Eastern Atlantic - breeding) 4.2% of the GB breeding population 5 year mean, 1992-1996 Sterna hirundo (Northern/Eastern Europe - breeding) 0.3% of the GB breeding population 5 year mean, 1992-1996 Sterna sandvicensis (Western Europe/Western Africa) 0.2% of the GB breeding population 5 yea mean, 1993-1997 Over winter the area regularly supports: Limosa lapponica (Western Palearctic - wintering) 3.2% of the GB population 5 year peak mean 1991/92-1995/96 ARTICLE 4.2 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: Anas acuta (North-western Europe) 1.2% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Anas clypeata (North-western/Central Europe) 1% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Anas crecca (North-weste Europe) 0.5% of the population 5 year peak mean 1991/92-1995/96 Anas penelope (Western Siberia/North-western/North-eastern Europe) 0.7% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Arenaria interpres (Western Palearctic - wintering) 0.7% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Branta bernicla bernicla (Western Siberia/Western Europe) 5.7% of the population 5 year peak mean 1991/92-1995/96 Calidris alba (Eastern Atlantic/Western & Southern Africa - wintering) 0.2% of the population 5 year peak mean 1991/92-1995/96 Calidris alpina alpina (Northern Siberia/Europe/Western Africa) 3.2% of the population 5 year peak mean 1991/92-1995/96 Charadrius hiaticula (Europe/Northern Africa - wintering) 3% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Mergus serrator (North-western/Central Europe) 3% of the population in Great Britain 5 yea peak mean 1991/92-1995/96 Numenius arquata (Europe - breeding) 1.6% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Pluvialis squatarola (Eastern Atlantic - wintering) 2.3% of the population 5 year peak mean 1991/92-1995/96 Tadorna tadorna (North-western Europe) 3.3% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Tringa totanus (Eastern Atlantic - wintering) 1% of the populatior year peak mean 1991/92-1995/96 ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS Over winter the area regularly supports: 93230 waterfowl (5 year peak mean 1991/92-1995/96) Including: Branta bernicla bernicla , Tadorna tadorna , Anas penelope , Anas crecca , Anas acuta , Anas clypeata , Mergus serrator , Charadrius hiaticula , Pluvialis squatarola , Calidris alba , Calidris alpina alpina , Limosa lapponica , Numenius arquata , Tringa totanus , Arenaria interpres

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	H02		B
H	M01		B
H	M02		B
H	F02		I
H	G01		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	B02		I
H	D05		I
H	A02		I
H	A04		I

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

http://publications.naturalengland.org.uk/category/3212324
http://publications.naturalengland.org.uk/category/6490068894089216

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS

The codes in the table below are also explained in the official European Union guidelines for the Standard Data Form. The relevant page is shown in the table below.

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	Designated Special Protection Area	53
B	SAC (includes candidates Special Areas of Conservation, Sites of Community Importance and designated SAC)	53
C	SAC area the same as SPA. Note in the UK Natura 2000 submission this is only used for Gibraltar	53

3.1 Habitat representativity

CODE	DESCRIPTION	PAGE NO
A	Excellent	57
B	Good	57
C	Significant	57
D	Non-significant presence	57

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	15%-100%	58
B	2%-15%	58
C	< 2%	58

3.1 Conservation status habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global grade habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	15%-100%	62
B	2%-15%	62
C	< 2%	62
D	Non-significant population	62

3.2 Conservation status species (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' Or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Assemblages types

CODE	DESCRIPTION	PAGE NO
WATR	Non breeding waterfowl assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK02	Marine Nature Reserve	67
UK04	Site of Special Scientific Interest (UK)	67

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.

2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.

3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

FOR OFFICE USE ONLY.

DD MM YY	
Designation date	Site Reference Number

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
Cambridgeshire PE1 1JY
UK
Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948
Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated:

Designated: 28 October 1987

3. Country:

UK (England)

4. Name of the Ramsar site:

Chichester and Langstone Harbours

5. Designation of new Ramsar site or update of existing site:

This RIS is for: Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area:

** Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site included:

Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

i) **hard copy** (required for inclusion of site in the Ramsar List): *yes* 9 -or- *no* ;
ii**) an electronic format** (e.g. a JPEG or ArcView image) Yes
iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** *yes* 9 -or- *no* ;

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

8. Geographical coordinates (latitude/longitude)**:**
50 48 23 N 00 55 12 W

9. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: Portsmouth

The site lies on the central south coast of mainland England, approximately 1 km east of Portsmouth.

Administrative region: Hampshire; West Sussex

10. Elevation (average and/or max. & min.) (metres)**:**

Min. -2
Max. 4
Mean 0

11. Area (hectares)**:** 5810.03

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive mud and sand flats exposed at low tide. The site is of particular significance for over-wintering wildfowl and waders and also a wide range of coastal and transitional habitats supporting important plant and animal communities.

13. Ramsar Criteria:

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1, 5, 6

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1

Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes.

Ramsar criterion 5

Assemblages of international importance:

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

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):
Species with peak counts in spring/autumn:

Ringed plover , *Charadrius hiaticula*, Europe/Northwest Africa	853 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3)
Black-tailed godwit , *Limosa limosa islandica*, Iceland/W Europe	906 individuals, representing an average of 2.5% of the population (5 year peak mean 1998/9-2002/3)
Common redshank , *Tringa totanus totanus*,	2577 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Dark-bellied brent goose, *Branta bernicla bernicla*,	12987 individuals, representing an average of 6% of the population (5 year peak mean 1998/9-2002/3)
Common shelduck , *Tadorna tadorna*, NW Europe	1468 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3)
Grey plover , *Pluvialis squatarola*, E Atlantic/W Africa -wintering	3043 individuals, representing an average of 1.2% of the population (5 year peak mean 1998/9-2002/3)
Dunlin , *Calidris alpina alpina*, W Siberia/W Europe	33436 individuals, representing an average of 2.5% of the population (5 year peak mean 1998/9-2002/3)

Species/populations identified subsequent to designation for possible future consideration under criterion 6.
Species regularly supported during the breeding season:

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

Contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey report, which is updated annually. See www.bto.org/survey/webs/webs-alerts-index.htm.
Details of bird species occuring at levels of National importance are given in Section 22

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

Atlantic

b) biogeographic regionalisation scheme (include reference citation):

Council Directive 92/43/EEC

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	neutral, shingle, sand, mud, alluvium, nutrient-rich, sedimentary, clay, gravel
Geomorphology and landscape	lowland, coastal, floodplain, shingle bar, subtidal sediments (including sandbank/mudbank), intertidal sediments (including sandflat/mudflat), enclosed coast (including embayment), estuary, islands, lagoon, pools
Nutrient status	eutrophic, mesotrophic
pH	circumneutral
Salinity	brackish / mixosaline, saline / euhaline
Soil	mainly mineral
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Bognor Regis, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/bognor_regis.html) Max. daily temperature: 13.7° C Min. daily temperature: 7.7° C Days of air frost: 24.0 Rainfall: 717.4 mm Hrs. of sunshine: 1902.9

General description of the Physical Features:

Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive sand- and mud-flats exposed at low tide. The two harbours are joined by a stretch of water that separates Hayling Island from the mainland. Tidal channels drain the basin and penetrate far inland. The basin contains a wide range of coastal habitats.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive sand- and mud-flats exposed at low tide. The two harbours are joined by a stretch of water that separates Hayling Island from the mainland. Tidal channels drain the basin and penetrate far inland.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Shoreline stabilisation and dissipation of erosive forces, Sediment trapping, Maintenance of water quality (removal of nutrients)

19. Wetland types:

Marine/coastal wetland

Code	Name	% Area
G	Tidal flats	46
H	Salt marshes	21.4
Other	Other	14.3
F	Estuarine waters	14.1
B	Marine beds (e.g. sea grass beds)	1.7
Ts	Freshwater marshes / pools: seasonal / intermittent	0.9
E	Sand / shingle shores (including dune systems)	0.8
Tp	Freshwater marshes / pools: permanent	0.4
Sp	Saline / brackish marshes: permanent	0.3
W	Shrub-dominated wetlands	0.07
M	Rivers / streams / creeks: permanent	0.02
J	Coastal brackish / saline lagoons	0.01

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The site comprises two large, interconnected sheltered estuarine basins providing extensive intertidal mud and sand flats with eelgrass *Zostera* spp. beds, large areas of mixed saltmarsh and extensive cord-grass *Spartina* spp. swards in an advanced state of degeneration. Fringing habitats include shingle spits, saline, brackish and freshwater lagoons, coastal grazing marsh and deciduous woodland. The site supports important overwintering populations of migratory waterfowl.

Ecosystem services

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Nationally important species occurring on the site.

Higher plants.

Polypogon monspeliensis, Zostera angustifolia, Zostera marina, Zostera noltei

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds

Species currently occurring at levels of national importance:

Species regularly supported during the breeding season:

Mediterranean gull , *Larus melanocephalus*, Europe	47 apparently occupied nests, representing an average of 43.5% of the GB population (Seabird 2000 Census)
Black-headed gull , *Larus ridibundus*, N & C Europe	3180 apparently occupied nests, representing an average of 2.4% of the GB population (Seabird 2000 Census)

Common tern , *Sterna hirundo hirundo*, N & E Europe	127 apparently occupied nests, representing an average of 1.2% of the GB population (Seabird 2000 Census)
Species with peak counts in spring/autumn:	
Little egret , *Egretta garzetta*, West Mediterranean	224 individuals, representing an average of 13.5% of the GB population (5 year peak mean 1998/9-2002/3)
Eurasian oystercatcher , *Haematopus ostralegus ostralegus*, Europe & NW Africa -wintering	3403 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)
Whimbrel , *Numenius phaeopus*, Europe/Western Africa	192 individuals, representing an average of 6.4% of the GB population (5 year peak mean 1998/9-2002/3 - spring peak)
Eurasian curlew , *Numenius arquata arquata*, N. a. arquata Europe (breeding)	3108 individuals, representing an average of 2.1% of the GB population (5 year peak mean 1998/9-2002/3)
Spotted redshank , *Tringa erythropus*, Europe/W Africa	6 individuals, representing an average of 4.4% of the GB population (5 year peak mean 1998/9-2002/3)
Common greenshank , *Tringa nebularia*, Europe/W Africa	215 individuals, representing an average of 36% of the GB population (5 year peak mean 1998/9-2002/3)
Ruddy turnstone , *Arenaria interpres interpres*, NE Canada, Greenland/W Europe & NW Africa	569 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Species with peak counts in winter:	
Little grebe , *Tachybaptus ruficollis ruficollis*, Europe to E Urals, NW Africa	131 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3)
Black-necked grebe , *Podiceps nigricollis nigricollis*, Europe, N Africa	14 individuals, representing an average of 11.6% of the GB population (5 year peak mean 1998/9-2002/3)
Great bittern , *Botaurus stellaris stellaris*, W Europe, NW Africa	1 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)
Eurasian teal , *Anas crecca*, NW Europe	2226 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Red-breasted merganser , *Mergus serrator*, NW & C Europe	306 individuals, representing an average of 3.1% of the GB population (5 year peak mean 1998/9-2002/3)
Water rail , *Rallus aquaticus*, Europe	12 individuals, representing an average of 2.6% of the GB population (5 year peak mean 1998/9-2002/3)
Bar-tailed godwit , *Limosa lapponica lapponica*, W Palearctic	1189 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9-2002/3)

Species Information

17 British Red Data Book species and 84 nationally scarce species have been recorded from Chichester and Langstone Harbours Ramsar site.

23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Aesthetic
Aquatic vegetation (e.g. reeds, willows, seaweed)
Archaeological/historical site
Environmental education/ interpretation
Fisheries production
Livestock grazing
Non-consumptive recreation
Scientific research
Sport fishing
Sport hunting
Subsistence fishing
Tourism
Traditional cultural
Transportation/navigation

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

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24. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	+
Local authority, municipality etc.	+	+
National/Crown Estate	+	+
Private	+	+
Public/communal	+	+

---

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	+
Tourism	+	+
Recreation	+	+
Current scientific research	+	

Cutting of vegetation (small-scale/subsistence)		+
Fishing: commercial	+	+
Fishing: recreational/sport	+	+
Marine/saltwater aquaculture	+	
Gathering of shellfish	+	
Bait collection	+	
Arable agriculture (unspecified)		+
Permanent arable agriculture		+
Livestock watering hole/pond	+	
Permanent pastoral agriculture	+	
Hay meadows	+	+
Hunting: recreational/sport	+	+
Industry	+	+
Sewage treatment/disposal	+	+
Harbour/port	+	+
Flood control	+	+
Irrigation (incl. agricultural water supply)		+
Mineral exploration (excl. hydrocarbons)		+
Transport route	+	+
Domestic water supply		+
Urban development		+
Non-urbanised settlements	+	+
Military activities	+	+
Horticulture (incl. market gardening)		+

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Erosion	2		+		+
Eutrophication	1		+		+
Pollution – domestic sewage	1			+	

For category 2 factors only. What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors? Erosion - Coastal Defence Strategies, regulation of private coastal defences, shoreline management plans are in place or are being developed. Some larger-scale saltmarsh re-creation projects, beneficial usage of maintenance dredgings and managed realignment scheme to offset losses to coastal squeeze have been proposed. CHaMPs identify potential areas suitable for managed realignment.
Is the site subject to adverse ecological change? YES

27. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	+
Special Protection Area (SPA)	+	
Land owned by a non-governmental organisation for nature conservation	+	
Management agreement	+	+
Site management statement/plan implemented	+	
Area of Outstanding National Beauty (AONB)	+	+
Special Area of Conservation (SAC)	+	

b) Describe any other current management practices:
The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Contemporary.

Fauna.
Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.
Bird Ringing by Solent Shorebirds Study Group.

Environment.
Coastal Sediment (SCOPAC)
Water Quality/Eutrophication (EA/Southern Water).
Various research and educational establishments carry out ongoing research into a number of different aspects of the environment.

Flora.
Spartina survey (EN project).

Completed.

Environment.
Extensive research and survey into:
Tidal regimes.
Proposed:
Intertidal Habitat Monitoring (EN/EA project).
Sediment movement.

Flora and Fauna.
The distribution of all major plant and animal groups/communities.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Interpretation facilities and interpretative panels exist at strategic locations on the Harbour footpaths; all nature reserve areas are covered by warden and ranger services with an educational remit. An Education Officer is employed by the Chichester Harbour Conservancy to instruct both school parties and adults in the cultural and nature conservation aspects of the harbour.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities, Facilities provided and Seasonality.
Walking, including dog walking: all year.
Birdwatching: all year.
Angling and bait-digging: all year.
Swimming (in restricted areas) - mostly summer.
Sailing, windsurfing, canoeing, waterskiing.
Sept-Feb wildfowling.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs, European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see **15** above), list full reference citation for the scheme.

Site-relevant references

Barne, JH, Robson, CF, Kaznowska, SS, Doody, JP & Davidson, NC (eds.) (1998) *Coasts and seas of the United Kingdom. Region 9 Southern England: Hayling Island to Lyme Regis.* Joint Nature Conservation Committee, Peterborough. (Coastal Directories Series.)

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Bratton, JH (ed.) (1991) *British Red Data Books: 3. Invertebrates other than insects*. Joint Nature Conservation Committee, Peterborough

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Chichester Harbour Conservancy www.conservancy.co.uk

Clark, M & Gurnell, A (1987) *The Solent estuary: environmental background*. Southampton University, GeoData Unit, Southampton

Covey, R (1998) Chapter 7. Eastern Channel (Folkestone to Durlston Head) (MNCR Sector 7). In: *Benthic marine ecosystems of Great Britain and the north-east Atlantic*, ed. by K. Hiscock, 199-218. Joint Nature Conservation Committee, Peterborough. (Coasts and Seas of the United Kingdom. MNCR series)

Cranswick, PA, Waters, RJ, Musgrove, AJ & Pollitt, MS (1997) *The Wetland Bird Survey 1995–96: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge

Doody, JP, Johnston, C & Smith, B (1993) *Directory of the North Sea coastal margin*. Joint Nature Conservation Committee, Peterborough

Fowler, SL (1995) *Review of nature conservation features and information within the Solent & Isle of Wight Sensitive Marine Area*. Report to the Solent Forum Strategic Guidance Subgroup [Includes extensive bibliography]

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Musgrove, AJ, Langston, RHW, Baker, H & Ward, RM (eds.) (2003) *Estuarine waterbirds at low tide. The WeBS Low Tide Counts 1992–93 to 1998–99*. WSG/BTO/WWT/RSPB/JNCC, Thetford (International Wader Studies, No. 16)

Musgrove, AJ, Pollitt, MS, Hall, C, Hearn, RD, Holloway, SJ, Marshall, PE, Robinson, JA & Cranswick, PA (2001) *The Wetland Bird Survey 1999–2000: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge. www.wwt.org.uk/publications/default.asp?PubID=14

Ratcliffe, DA (ed.) (1977) *A Nature Conservation Review. The selection of biological sites of national importance to nature conservation in Britain*. Cambridge University Press (for the Natural Environment Research Council and the Nature Conservancy Council), Cambridge (2 vols.)

Sneddon, P & Randall, RE (1994) *Coastal vegetated shingle structures of Great Britain: Appendix 3. Shingle sites in England*. Joint Nature Conservation Committee, Peterborough

Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H & Whitehead, S (eds.) (2001) *The UK SPA network: its scope and content*. Joint Nature Conservation Committee, Peterborough (3 vols.) www.jncc.gov.uk/UKSPA/default.htm

Tubbs, C (1991) The Solent: a changing wildlife heritage. Hampshire and Isle of Wight Wildlife Trust, RomseyTubbs, CR & Tubbs, JM (1980) Wader and shelduck feeding distribution in Langstone Harbour, Hampshire. *Bird Study*, **27**, 239-248

Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**

Telephone**: +41 22 999 0170** • Fax: **+41 22 999 0169** • email: **ramsar@ramsar.org**

NATURA 2000 – STANDARD DATA FORM

Special Areas of Conservation under the EC Habitats Directive (includes candidate SACs, Sites of Community Importance and designated SACs).

Each Natura 2000 site in the United Kingdom has its own Standard Data Form containing site-specific information. The data form for this site has been generated from the Natura 2000 Database submitted to the European Commission on the following date:

22/12/2015

The information provided here, follows the officially agreed site information format for Natura 2000 sites, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

The Standard Data Forms are generated automatically for all of the UK's Natura 2000 sites using the European Environment Agency's Natura 2000 software. The structure and format of these forms is exactly as produced by the EEA's Natura 2000 software (except for the addition of this coversheet and the end notes). The content matches exactly the data submitted to the European Commission.

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

Further technical documentation may be found here
http://bd.eionet.europa.eu/activities/Natura_2000/reference_portal

As part of the December 2015 submission, several sections of the UK's previously published Standard Data Forms have been updated. For details of the approach taken by the UK in this submission please refer to the following document:
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

More general information on Special Areas of Conservation (SACs) in the United Kingdom is available from the SAC home page on the JNCC website. This webpage also provides links to Standard Data Forms for all SACs in the UK.

Date form generated by the Joint Nature Conservation Committee
25 January 2016.

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE	**UK0030059**
SITENAME	**Solent Maritime**

TABLE OF CONTENTS

- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
B	UK0030059

1.3 Site name

Solent Maritime

1.4 First Compilation date	1.5 Update date
1998-10	2015-12

1.6 Respondent:

Name/Organisation:	Joint Nature Conservation Committee
Address:	Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY
Email:	

Date site proposed as SCI:	1998-10
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-04
National legal reference of SAC designation:	Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/490/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-0.927777778	50.79638889

2.2 Area [ha]:

11243.12

2.3 Marine area [%]

91.9

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKJ3	Hampshire and Isle of Wight
UKJ2	Surrey, East and West Sussex
UKZZ	Extra-Regio

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
1110			3597.8		M	C	C	C	C
1130			6633.44		G	A	B	B	B
1140			5059.4		G	A	C	B	C
1150	X		146.16		P	C	B	B	C
1210			112.43		P	C	A	B	C
1220			112.43		M	C	B	B	C
1310			123.67		P	B	B	B	C
1320									

			94.44		P	A	A	C	A
1330			2023.76		M	B	B	B	B
2120			112.43		M	C	B	B	C
2130	X		112.43		M	D			

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
M	1355	Lutra lutra			p				P	DD	D			
M	1365	Phoca vitulina			p				P	DD	D			
I	1016	Vertigo moulinsiana			p				R	DD	B	B	B	C

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N02	59.0
N03	23.0
N16	0.5

N01	14.0
N05	3.0
N04	0.5
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: shingle,sedimentary,sand,alluvium,mud,neutral,nutrient-rich,clay 2 Terrestrial: Geomorphology and landscape: island,lowland,coastal 3 Marine: Geology: sand,clay,sedimentary,gravel,mud,limestone/chalk,shingle,sandstone/mudstone 4 Marine: Geomorphology: open coast (including bay),estuary,enclosed coast (including embayment),shingle bar,subtidal sediments (including sandbank/mudbank),intertidal sediments (including sandflat/mudflat),islands,lagoon

4.2 Quality and importance

Sandbanks which are slightly covered by sea water all the time for which the area is considered to support a significant presence. Estuaries for which this is considered to be one of the best areas in the United Kingdom. Mudflats and sandflats not covered by seawater at low tide for which the area is considered to support a significant presence. Coastal lagoons for which the area is considered to support a significant presence. Annual vegetation of drift lines for which the area is considered to support a significant presence. which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 100 hectares. Perennial vegetation of stony banks for which the area is considered to support a significant presence. Salicornia and other annuals colonising mud and sand for which the area is considered to support a significant presence. Spartina swards (Spartinion maritimae) for which this is one of only two known outstanding localities in the United Kingdom. which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 100 hectares. Atlantic salt meadows (Glauco-Puccinellietalia maritimae) for which this is considered to be one of the best areas in the United Kingdom. Shifting dunes along the shoreline with Ammophila arenaria (?white dunes?) for which the area is considered to support a significant presence. Vertigo moulinsiana for which the area is considered to support a significant presence.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	H02		B
H	M01		B
H	F02		I
H	M02		B
H	G01		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A04		I
H	A02		I
H	D05		I
H	A03		I
H	B02		I
H	D05		I

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324

http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	71.4	UK00	28.6	UK01	4.5

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [x] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS

The codes in the table below are also explained in the official European Union guidelines for the Standard Data Form. The relevant page is shown in the table below.

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	Designated Special Protection Area	53
B	SAC (includes candidates Special Areas of Conservation, Sites of Community Importance and designated SAC)	53
C	SAC area the same as SPA. Note in the UK Natura 2000 submission this is only used for Gibraltar	53

3.1 Habitat representativity

CODE	DESCRIPTION	PAGE NO
A	Excellent	57
B	Good	57
C	Significant	57
D	Non-significant presence	57

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	15%-100%	58
B	2%-15%	58
C	< 2%	58

3.1 Conservation status habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global grade habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	15%-100%	62
B	2%-15%	62
C	< 2%	62
D	Non-significant population	62

3.2 Conservation status species (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' Or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Assemblages types

CODE	DESCRIPTION	PAGE NO
WATR	Non breeding waterfowl assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK02	Marine Nature Reserve	67
UK04	Site of Special Scientific Interest (UK)	67

COUNTY: WEST SUSSEX/HAMPSHIRE SITE NAME: CHICHESTER HARBOUR

DISTRICT: CHICHESTER/HAVANT

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981.

Local Planning Authority: CHICHESTER DISTRICT COUNCIL; HAVANT BOROUGH COUNCIL

National Grid Ref: SU 760 000 Area: 2657 ha 6566.7 acres W Sussex
3695 ha 9130.3 acres Total

Ordnance Survey Sheet 1:50,000:197 1:10,000: SU 70 NW,NE,SW,SE, SU 80 NW, SW,SE, SZ 79 NW,NE, SZ 89 NW

Date Notified (Under 1949 Act): 1970 Date of Last Revision: 1980

Date Notified (Under 1981 Act): 1984 (Hants) 1985 (W Sussex)

Other Information: This site lies within the South Coast Plain. It includes Nutbourne Marshes Local Nature Reserve. The site is listed in 'A Nature Conservation Review' and is a Geological Conservation Review site.

Reasons for Notification:

Chichester Harbour is a large estuarine basin in which at low water extensive mud and sandflats are exposed, drained by channels which unite to make a common exit to the sea. The site is of particular significance for wintering wildfowl and waders and also breeding birds both within the Harbour and in the surrounding permanent pasture fields and woodlands. There is a wide range of habitats which have important plant communities.

The intertidal area is fragmented in the upper reaches of the harbour by intruding tongues of land giving a very long and varied coastline. The harbour exhibits a wide range of intertidal and associated terrestrial habitats and with the neighbouring Langstone and Portsmouth Harbours is unusual in providing a large volume of sheltered saline water fed by a few streams of only low volume. The extensive intertidal mudflats are the feeding grounds, at the relevant times of year for internationally important numbers of ringed plover, grey plover, redshank, black-tailed godwit, dunlin, sanderling, curlew and greenshank (the latter two in autumn particularly). Bar-tailed godwit numbers are of European importance. Amongst the wildfowl, shelduck, teal and dark-bellied brent goose numbers are of international importance with 5% of the world population of the latter. The unimproved permanent pasture behind the sea wall provides alternative feeding sites for the geese and major high tide wader roosts. Some of this pasture is floristically rich being a red fescue *Festuca rubra* sward with scarce species such as green-winged orchid *Orchis morio* and adder's tongue fern *Ophioglossum vulgatum*.

The lower saltmarsh habitat fringing the mud flats is dominated by cord grass *Spartina anglica* and in most places the upper saltmarsh is rather restricted by the sea wall but there are some pure stands of sea purslane *Halimione portulacoides* while in some areas there is also sea lavender *Limonium vulgare*, sea aster *Aster tripolium* and other saltmarsh species.

Shingle occurs as spits and islands and most are rather unstable permitting little vegetation to become established. This habitat forms the main breeding grounds in the harbour for ringed plover, blackheaded gull and three species of terns. The extensive sand dunes at East Head are dominated by marram grass *Ammophila arenaria* although the degree of ground cover varies from 90% to 10% on the more recently established dunes.

At the head of Fishbourne Channel saltmarsh grades through a reed *Phragmites australis* bed into fresh marsh

influenced by a chalk spring. Most of the other fresh marshes behind the sea wall are small but at Thorney Deeps reclaimed saltmarsh has given way to extensive fresh water marsh vegetation influenced by salt water intrusion; here the reed is fringed by extensive areas of rushes *Juncus* species and invasive willow *Salix* scrub. A number of small ponds occur one of which contains the rare annual beard grass *Polypogon monspeliensis*. Significant blocks of scrub, mainly hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa* occur which are important for breeding and roosting birds. Hedgerows of oak *Quercus robur* are common and in some places the oak roots are strongly influenced by salt water. Semi-natural broadleaved woodland associated with the Harbour is important for breeding birds and supports two heronries. Oak is the major tree species usually with hazel *Corylus avellana* coppice, as at Old Park Wood, although Tournerbury Wood has well spaced oaks with the occasional beech *Fagus sylvatica*, holly *Ilex aquifolium* and yew *Taxus baccata* with a fairly dense ground flora of bramble *Rubus fruticosus* and bracken *Pteridium aquilinum*.

Notable invertebrates include the long-winged conehead *Conocephalus discolor* and the moths, starwort shark *Cucullia asteris*, the sand dart *Agrotis ripae*, shore wainscot *Mythimna litoralis* and lunar hornet *Sphecia bemeciformis*.

Geology and Physiography

East of Langstone, at SU 725053, a low cliff line at high water mark exhibits a complex of Brickearth and Coombe Rock deposits and at East Head, SZ 769991 there is a sizeable sand dune and shingle system both of which are of geomorphological importance.

File ref:

County: Hampshire **Site Name: Langstone Harbour SSSI**

Local Planning Authority: Hampshire County Council, Havant Borough Council, Portsmouth City Council

National Grid Reference: SU 700030

Ordnance Survey Sheet 1:50,000: 197 **1:25,000:** SU 60, 70; SZ 69, 79

Area: 2,069.4 (ha) 5.113.4 (ac)

Date Notified (Under 1949 Act): 1958 **Date of Last Revision:** 1979

Date Notified (Under 1981 Act): 1985 **Date of Last Revision:** –

Other Information:

Farlington Marshes (118.9 ha) is a Local Nature Reserve owned by Portsmouth City Council and managed by the Hampshire and Isle of Wight Naturalists' Trust under a long lease; 550 ha including a series of saltmarsh islands and extensive mud flats are owned by the Royal Society for the Protection of Birds.

Reasons for Notification:

Langstone Harbour is a tidal basin which at high water resembles an almost land-locked lake. At low water extensive mud flats are exposed, drained by three main channels which unite to make a common and narrow exit to the sea. The harbour includes one of the largest areas of mixed saltmarsh on the south coast, and extensive cord-grass *Spartina anglica* marsh in an advanced state of degeneration. The Site of Special Scientific Interest including Farlington Marshes, a peninsula of grassland and marsh on reclaimed tidal silt protected by a sea wall; and a similar but much smaller area at Southmoor in the north-east of the harbour. The harbour is of international importance as a rich intertidal system supporting high densities of intertidal invertebrates and large populations of migrant and overwintering waders and wildfowl, dependent upon them and upon the extensive beds of eelgrass *Zostera* species. The *Zostera angustifolia* and *Z. noltii* beds are among the largest in Britain. The harbour is among the twenty most important intertidal areas in Britain as a summer and autumn assembly ground for waders during the moult (when they require abundant high protein food) and as a post-moult wintering ground. Dunlin *Calidris alpina* often exceed 30,000 individuals, or 6% of the British winter population, or 3% of the European and North African wintering population. Grey plover *Pluvialis squatarola* and black-tailed godwit *Limosa limosa* achieve numbers which represent 1–2% of the European and North African migration flyway population; and redshank *Tringa totanus* and ringed plover *Charadrius hiaticula* do so periodically. At times as many as 20% of the black-tailed godwit, 8% of the ringed plover and 8-10% of the grey plover wintering in Britain are present in the harbour. The total numbers of waders present sometimes exceeds 40,000. Langstone Harbour and the adjoining and connected Portsmouth and Chichester Harbours form a single, coherent ecosystem which is among the ten most important intertidal areas for waders in Britain. In the 1970s and 1980s Langstone Harbour alone has consistently supported in excess of 5,000 wintering dark-bellied geese *Branta bernicla*, or 5-10% of the world population depending on fluctuating population levels. It has supported up to 2.5% of the European winter population of shelduck *Tadorna tadorna* and regularly supports substantial numbers of other ducks in autumn and winter.

Farlington Marshes intrudes into the north-west sector of the harbour. Its vegetation is strongly influenced by drainage water from the chalk and by

brackish water infiltration. The marshes embrace a variety of habitats – brackish marsh, fresh marsh, a large lagoon with associated reed *Phragmites* beds, *Agrostis stolonifera* grassland and scrub. It is a vital high water wader roost for the Harbour and a major feeding ground for Brent geese after the *Zostera* beds in the Harbour have been consumed. Few comparable sites have survived agricultural improvement on the south and east coasts of England, where the habitat was formerly common: the grassland flora is especially rich for reclaimed silt, and includes over 50 species of grasses. Southmoor shares these characteristics but is much smaller.

Langstone Harbour has been the forum for important ecological research on estuarine eutrophication and the relationship with algal blanketing of the muds, changes in invertebrate communities and changes in the composition of vertebrate predator communities.

ANNEX 3

Conservation Objectives and associated Supplementary Advice

European Site Conservation Objectives for Solent Maritime Special Area of Conservation Site Code: UK0030059

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- **The extent and distribution of qualifying natural habitats and habitats of qualifying species**
- **The structure and function (including typical species) of qualifying natural habitats**
- **The structure and function of the habitats of qualifying species**
- **The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely**
- **The populations of qualifying species, and,**
- **The distribution of qualifying species within the site.**

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

Qualifying Features:

H1110. Sandbanks which are slightly covered by sea water all the time

H1130. Estuaries

H1140. Mudflats and sandflats not covered by seawater at low tide; Intertidal mudflats and sandflats

H1150. Coastal lagoons*

H1210. Annual vegetation of drift lines

H1220. Perennial vegetation of stony banks; Coastal shingle vegetation outside the reach of waves

H1310. *Salicornia* and other annuals colonising mud and sand; Glasswort and other annuals colonising mud and sand

H1320. *Spartina* swards (*Spartinion maritimae*); Cord-grass swards

H1330. Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

H2120. Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes"); Shifting dunes with marram

S1016. *Vertigo moulinsiana*; Desmoulin`s whorl snail

* denotes a priority natural habitat or species (supporting explanatory text on following page)

This is a European Marine Site

This site is a part of the Solent Maritime European Marine Site. These Conservation Objectives should be used in conjunction with the Conservation Advice document for the EMS. Natural England's formal Conservation Advice for European Marine Sites can be found via GOV.UK.

* Priority natural habitats or species

Some of the natural habitats and species for which UK SACs have been selected are considered to be particular priorities for conservation at a European scale and are subject to special provisions in the Habitats Regulations. These priority natural habitats and species are denoted by an asterisk (*) in Annex I and II of the Habitats Directive. The term 'priority' is also used in other contexts, for example with reference to particular habitats or species that are prioritised in UK Biodiversity Action Plans. It is important to note however that these are not necessarily the priority natural habitats or species within the meaning of the Habitats Regulations.

Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2017 as amended from time to time (the "Habitats Regulations"). They must be considered when a competent authority is required to make a 'Habitats Regulations Assessment', including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives and the accompanying Supplementary Advice (where available) will also provide a framework to inform the measures needed to conserve or restore the European Site and the prevention of deterioration or significant disturbance of its qualifying features.

These Conservation Objectives are set for each habitat or species of a Special Area of Conservation (SAC). Where the objectives are met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving Favourable Conservation Status for that species or habitat type at a UK level. The term 'favourable conservation status' is defined in regulation 3 of the Habitats Regulations.

Publication date: 27 November 2018 (version 3). This document updates and replaces an earlier version dated 30 June 2014 to reflect the consolidation of the Habitats Regulations in 2017.

European Site Conservation Objectives for Chichester and Langstone Harbours Special Protection Area
Site Code: UK9011011

With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- **The extent and distribution of the habitats of the qualifying features**
- **The structure and function of the habitats of the qualifying features**
- **The supporting processes on which the habitats of the qualifying features rely**
- **The population of each of the qualifying features, and,**
- **The distribution of the qualifying features within the site.**

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

Qualifying Features:

A046a *Branta bernicla bernicla*; Dark-bellied brent goose (Non-breeding)
A048 *Tadorna tadorna*; Common shelduck (Non-breeding)
A050 *Anas penelope*; Eurasian wigeon (Non-breeding)
A052 *Anas crecca*; Eurasian teal (Non-breeding)
A054 *Anas acuta*; Northern pintail (Non-breeding)
A056 *Anas clypeata*; Northern shoveler (Non-breeding)
A069 *Mergus serrator*; Red-breasted merganser (Non-breeding)
A137 *Charadrius hiaticula*; Ringed plover (Non-breeding)
A141 *Pluvialis squatarola*; Grey plover (Non-breeding)
A144 *Calidris alba*; Sanderling (Non-breeding)
A149 *Calidris alpina alpina*; Dunlin (Non-breeding)
A157 *Limosa lapponica*; Bar-tailed godwit (Non-breeding)
A160 *Numenius arquata*; Eurasian curlew (Non-breeding)
A162 *Tringa totanus*; Common redshank (Non-breeding)
A169 *Arenaria interpres*; Ruddy turnstone (Non-breeding)
A191 *Sterna sandvicensis*; Sandwich tern (Breeding)
A193 *Sterna hirundo*; Common tern (Breeding)
A195 *Sterna albifrons*; Little tern (Breeding)
Waterbird assemblage

This is a European Marine Site

This SPA is a part of the Solent Maritime European Marine Site (EMS). These Conservation Objectives should be used in conjunction with the Conservation Advice document for the EMS. Natural England's formal Conservation Advice for European Marine Sites can be found via GOV.UK.

Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2017 (as amended) ('the Habitats Regulations'). They must be considered when a competent authority is required to make a 'Habitats Regulations Assessment' including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives, and the accompanying Supplementary Advice (where this is available), will also provide a framework to inform the management of the European Site and the prevention of deterioration of habitats and significant disturbance of its qualifying features

These Conservation Objectives are set for each bird feature for a Special Protection Area (SPA).

Where these objectives are being met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving the aims of the Wild Birds Directive.

Publication date: 21 February 2019 (version 3). This document updates and replaces an earlier version dated 30 June 2014 to reflect the consolidation of the Habitats Regulations in 2017.

ANNEX 4

SSSI Unit Condition Assessment information

Langstone Harbour SSSI

Condition of Features

Feature name	Condition date	Condition status	Comment
Aggregations of breeding birds - Common tern, Sterna hirundo	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of breeding birds - Little tern, Sterna albifrons	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of breeding birds - Sandwich tern, Sterna sandvicensis	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Bar-tailed godwit, Limosa lapponica	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Brent goose (dark-bellied), Branta bernicla bernicla	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Curlew, Numenius arquata	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Dunlin, Calidris alpina alpina	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Grey plover, Pluvialis squatarola	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Pintail, Anas acuta	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Red-breasted merganser, Mergus serrator	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Redshank, Tringa totanus	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Ringed plover, Charadrius hiaticula	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Sanderling, Calidris alba	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Shelduck, Tadorna tadorna	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Shoveler, Anas clypeata	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Teal, Anas crecca	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.

Aggregations of non-breeding birds - Turnstone, Arenaria interpres	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Aggregations of non-breeding birds - Wigeon, Anas penelope	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Invert. assemblage M311 saltmarsh and transitional brackish marsh	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Lowland neutral grassland (MG5)	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Saline coastal lagoons	01/01/1900	Not Recorded	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
SM4-28 - Saltmarsh	01/01/1900	Not Recorded	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.
Vascular plant assemblage	29/03/2022	Favourable	This baseline feature condition has been calculated from the historic unit-specific conditions. The condition assigned to the feature is the least favourable of the unit-specific conditions previously recorded for the feature. The status date is the assessment date of the lowest ranking assessment.

Condition of Units

Habitat name	Responsible officer	Feature name	Unit Id	Area (ha)	NNR overlapping area (ha)	Assessment date	Assessment description	Comment	Adverse condition reasons
NEUTRAL GRASSLAND - Lowland	DAVID ANDREWS	002	1007454	8.3077	0.00	02/10/2009	Favourable	The units includes a range of habitats including a freshwater pond, reed bed, Alder and Willow carr habitat, as well as drier Oak and Field Maple woodland on higher ground to the east. There is some saline influence shown by the presence of a saltmarsh grass, orache and greater sea spurrey community in a damp hollow. The field has been topped to control rushes and weeds, specifically thistles which are frequent (10-20% cover), and the field has been cattle-grazed. There is evidence of recent Willow pollarding and some scrub clearance. The high frequency of thistle is of concern but otherwise the habitats are considered to be in suitable condition to support the key bird species.	

LITTORAL SEDIMENT	DAVID ANDREWS	003	1007445	497.9643	0.00		19/09/2018	Unfavourable - Recovering	This assessment revises and updates the condition assessment of 2010 for estuarine water quality in relation to the interest features of the designated sites and should be read in conjunction with this earlier assessment on other aspects of site condition. Assessed in combination with other Langstone Harbour units, this part of the harbour achieves WFD Good (borderline) status on mean winter inorganic nitrogen, WFD High status on phytoplankton and WFD Good (borderline) status on opportunistic green macroalgae. However, in this unit there can be areas with a dense cover of opportunistic green macroalgae (>75% cover density), more so than in some parts of the harbour. The water environment of the unit is assessed as unfavourable for the interest features on the weight of evidence on inorganic nitrogen and biological indication of eutrophication shown by the abundance of macroalgae, but recovering on the basis of a large reduction in nutrient inputs through diversion of wastewater.There remains a significant nitrogen load input carried by tidal flow from the Solent and less so by minor rivers into the head of the harbour. The unit is considered 'at risk' of not recovering to a favourable situation on the water environment as it is unclear whether the nutrient status will become adequate to substantially prevent the growth of dense macroalgae mats in this part of the harbour. 2010 Assessment comments: This is a large area of mainly intertidal mud with small areas of pioneer salt marsh. The habitats are affected significantly by sea level rise and 'coastal squeeze' as much of the unit is backed by hard sea defences so that the habitats are unable to retreat landward as levels rise. This means that the extent of habitat exposed at low tide will be declining and the area of salt marsh is likely to be diminishing. Changes in water level may also be having adverse impacts on the distribution and extent of biotopes associated with the intertidal sediments. The issue is being addressed through the creation of compensatory habitat and coastal re-alignment at Medmerry. Birds numbers, as with elsewhere in the wider Solent, are declining for reasons which are unclear. Langstone Harbour has relatively poor availability of roosting sites for wintering birds which restricts its ability to support waders and wildfowl interests in relation to other parts of the estuary. Disturbance to feeding and roosting birds is being addressed through the Solent Bird Disturbance Project.
NEUTRAL GRASSLAND - Lowland	DAVID ANDREWS	005	1007455	11.7560	0.00		24/03/2022	Favourable	This unit support wintering curlew. WeBS data shows that the number of wintering bird species is within an acceptable range of the target for the site therefore this feature is in favourable condition.

LITTORAL SEDIMENT	DAVID ANDREWS	006	1007446	430.0120	0.00		19/09/2018	Unfavourable - Recovering	This assessment revises and updates the condition assessment of 2008 for estuarine water quality in relation to the interest features of the designated sites and should be read in conjunction with this earlier assessment on other aspects of site condition. Assessed in combination with other Langstone Harbour units, this part of the harbour achieves WFD Good (borderline) status on mean winter inorganic nitrogen, WFD High status on phytoplankton and WFD Good (borderline) status on opportunistic green macroalgae. However, in this unit there can be areas with a dense cover of opportunistic green macroalgae (>75% cover density), more so than in some parts of the harbour. The water environment of the unit is assessed as unfavourable for the interest features on the weight of evidence on inorganic nitrogen and biological indication of eutrophication shown by the abundance of macroalgae, but recovering on the basis of a large reduction in nutrient inputs through diversion of wastewater.There remains a significant nitrogen load input carried by tidal flow from the Solent and less so by minor rivers into the head of the harbour. The unit is considered 'at risk' of not recovering to a favourable situation on the water environment as it is unclear whether the nutrient status will become adequate to substantially prevent the growth of dense macroalgae mats in this part of the harbour. 2008 Assessment comments: This is a large area of mainly intertidal mud with small areas of pioneer salt marsh. The habitats are affected significantly by sea level rise and 'coastal squeeze' as much of the unit is backed by hard sea defences so that the habitats are unable to retreat landward as levels rise. This means that the extent of habitat exposed at low tide will be declining and the area of salt marsh is likely to be diminishing. Changes in water level may also be having adverse impacts on the distribution and extent of biotopes associated with the intertidal sediments. The issue is being addressed through the creation of compensatory habitat and coastal re-alignment at Medmerry. Birds numbers, as with elsewhere in the wider Solent, are declining for reasons which are unclear. Langstone Harbour has relatively poor availability of roosting sites for wintering birds which restricts its ability to support waders and wildfowl interests in relation to other parts of the estuary. Disturbance to feeding and roosting birds is being addressed through the Solent Bird Disturbance Project.

LITTORAL SEDIMENT	DAVID ANDREWS	007	1007467	28.4431	0.00		21/09/2018	Unfavourable - Recovering	This assessment revises and updates the condition assessment of year for estuarine water quality in relation to the interest features of the designated sites and should be read in conjunction with this earlier assessment on other aspects of site condition.Assessed in combination with other Langstone Harbour units, this part of the harbour achieves WFD Good (borderline) status on inorganic nitrogen, WFD High status on phytoplankton and WFD Good (borderline) status on opportunistic green macroalgae. There is not generally a dense cover of opportunistic green macroalgae (>75% cover density) in this unit.The water environment of the unit is assessed as borderline favourable for the interest features on the on the weight of evidence on inorganic nitrogen and no strong biological indication of eutrophication shown in this part of the harbour by phytoplankton and macroalgae.There is a significant nitrogen load input carried by tidal flow from the Solent and less so by minor rivers into the head of the harbour.The unit is considered at future risk of failing a favourable situation on the water environment as it is unclear whether the nutrient status is adequate to substantially prevent the growth of dense macroalgae mats with a wet weight biomass exceeding WFD Good status if there is change in environmental conditions. 2010 Assessment comments: This is an area of intertidal habitat including several artificial lagoons created as oyster beds. The lagoons are an important breeding site for terns, managed by the Wildlife Trust. Investigations are currently taking place to look at options to re-configure the artificial structures to reduce their impact on tidal processes and to seek opportunities to improve their potential to provide good quality habitat. The saltmarsh fronting the oyster beds is subject to coastal squeeze due to their presence, ie their extent is inevitably declining as a result of sea level rise and the range of habitat types will also be declining. This aspect is being addressed through the creation of compensatory habitat and managed coastal re-alignment at Medmerry. There is also concern about high nutrient levels throughout Langstone Harbour, resulting in excessive algal growth in places. This is being addressed through improvements to sewage treatment works and better control of diffuse sources of pollution.
NEUTRAL GRASSLAND - Lowland	DAVID ANDREWS	008	1007456	1.4799	0.00		18/10/2010	Favourable	This is a small area of brackish marsh which appears to have changed in character over time but now provides an additional area of high level salt marsh to the SSSI. The condition of the habitat appears to be good with a range of species characteristic of high level marsh. There are no indications of water quality problems or disturbance.

LITTORAL SEDIMENT	DAVID ANDREWS	009	1007447	371.4060	0.00		19/09/2018	Unfavourable - Recovering	This assessment revises and updates the condition assessment of 2010 for estuarine water quality in relation to the interest features of the designated sites and should be read in conjunction with this earlier assessment on other aspects of site condition. Assessed in combination with other Langstone Harbour units, this part of the harbour achieves WFD Good (borderline) status on mean winter inorganic nitrogen, WFD High status on phytoplankton and WFD Good (borderline) status on opportunistic green macroalgae. However, in this unit there can be areas with a dense cover of opportunistic green macroalgae (>75% cover density), more so than in some parts of the harbour. The water environment of the unit is assessed as unfavourable for the interest features on the weight of evidence on inorganic nitrogen and biological indication of eutrophication shown by the abundance of macroalgae, but recovering on the basis of a large reduction in nutrient inputs through diversion of wastewater.There remains a significant nitrogen load input carried by tidal flow from the Solent and less so by minor rivers into the head of the harbour. The unit is considered 'at risk' of not recovering to a favourable situation on the water environment as it is unclear whether the nutrient status will become adequate to substantially prevent the growth of dense macroalgae mats in this part of the harbour. 2010 Assessment comments: This is a large area of mainly intertidal mud with some areas of pioneer salt marsh. The habitats are affected significantly by sea level rise and 'coastal squeeze' as much of the unit is backed by hard sea defences so that the habitats are unable to retreat landward as levels rise. This means that the extent of habitat exposed at low tide will be declining and the area of salt marsh is likely to be diminishing. Changes in water level may also be having adverse impacts on the distribution and extent of biotopes associated with the intertidal sediments. The issue is being addressed through the creation of compensatory habitat and coastal re-alignment at Medmerry. Birds numbers, as with elsewhere in the wider Solent, are declining for reasons which are unclear. Disturbance to feeding and roosting birds is being addressed through the Solent Bird Disturbance Project.

LITTORAL SEDIMENT	DAVID ANDREWS	010	1007448	10.1710	0.00	21/09/2018	Favourable	This assessment revises and updates the condition assessment of 2008 for estuarine water quality in relation to the interest features of the designated sites and should be read in conjunction with this earlier assessment on other aspects of site condition.Assessed in combination with other Langstone Harbour units, this part of the harbour achieves WFD Good (borderline) status on inorganic nitrogen, WFD High status on phytoplankton and WFD Good (borderline) status on opportunistic green macroalgae. There is not generally a dense cover of opportunistic green macroalgae (>75% cover density) in this unit.The water environment of the unit is assessed as borderline favourable for the interest features on the on the weight of evidence on inorganic nitrogen and no strong biological indication of eutrophication shown in this part of the harbour by phytoplankton and macroalgae.There is a significant nitrogen load input carried by tidal flow from the Solent and less so by minor rivers into the head of the harbour.The unit is considered at future risk of failing a favourable situation on the water environment as it is unclear whether the nutrient status is adequate to substantially prevent the growth of dense macroalgae mats with a wet weight biomass exceeding WFD Good status if there is change in environmental conditions. 2008 Assessment comments: Spartina maritima present, but not totally displacing native species
LITTORAL SEDIMENT	DAVID ANDREWS	011	1019415	41.7272	0.00	21/09/2018	Favourable	This assessment revises and updates the condition assessment of 2008 for estuarine water quality in relation to the interest features of the designated sites and should be read in conjunction with this earlier assessment on other aspects of site condition.Assessed in combination with other Langstone Harbour units, this part of the harbour achieves WFD Good (borderline) status on inorganic nitrogen, WFD High status on phytoplankton and WFD Good (borderline) status on opportunistic green macroalgae. There is not generally a dense cover of opportunistic green macroalgae (>75% cover density) in this unit.The water environment of the unit is assessed as borderline favourable for the interest features on the on the weight of evidence on inorganic nitrogen and no strong biological indication of eutrophication shown in this part of the harbour by phytoplankton and macroalgae.There is a significant nitrogen load input carried by tidal flow from the Solent and less so by minor rivers into the head of the harbour.The unit is considered at future risk of failing a favourable situation on the water environment as it is unclear whether the nutrient status is adequate to substantially prevent the growth of dense macroalgae mats with a wet weight biomass exceeding WFD Good status if there is change in environmental conditions. 2008 Assessment comments: There is a small area of saltmarsh in good condition present on a small shingle spit. There is also a small saline lagoon separate from the adjacent mudflat. Otherwise the unit is dominated by mudflat but this was not assessed in detail on this occasion.
ARABLE AND HORTICULTURE	DAVID ANDREWS	012	1023060	9.3071	0.00	03/01/2013	Unfavourable - Recovering	The northern part of this unit is now also under HLS and both agreements include scrub management works to improve the habitat for use by over-wintering birds

LITTORAL SEDIMENT	DAVID ANDREWS	013	1030406	205.0552	0.00		19/09/2018	Unfavourable - Recovering	This assessment revises and updates the condition assessment of 2010 for estuarine water quality in relation to the interest features of the designated sites and should be read in conjunction with this earlier assessment on other aspects of site condition. Assessed in combination with other Langstone Harbour units, this part of the harbour achieves WFD Good (borderline) status on mean winter inorganic nitrogen, WFD High status on phytoplankton and WFD Good (borderline) status on opportunistic green macroalgae. However, in this unit there can be areas with a dense cover of opportunistic green macroalgae (>75% cover density), more so than in some parts of the harbour. The water environment of the unit is assessed as unfavourable for the interest features on the weight of evidence on inorganic nitrogen and biological indication of eutrophication shown by the abundance of macroalgae, but recovering on the basis of a large reduction in nutrient inputs through diversion of wastewater.There remains a significant nitrogen load input carried by tidal flow from the Solent and less so by minor rivers into the head of the harbour. The unit is considered 'at risk' of not recovering to a favourable situation on the water environment as it is unclear whether the nutrient status will become adequate to substantially prevent the growth of dense macroalgae mats in this part of the harbour. 2010 Assessment comments: This is an extensive area of intertidal habitat as well as areas above high water important as roosting sites for wintering birds. The unit is considered to be suffering adverse impacts due to rising sea level which will be significantly reducing the extent of habitat exposed at low tide and hence reducing the value of the area for birds. Changes in sea level will also be impacting upon intertidal sediment biotopes, affecting their distribution and extent. This aspect will be addressed through the creation of compensatory habitat and managed coastal re-alignment at Medmerry. There is also concern about raised nutrient levels in the estuary resulting in excessive growth of green algae. This adversely affects the sediment in-fauna and reduces food availability for birds. The issue is being tackled through improvements to sewage treatment works and better control of diffuse pollution. In addition, the extent and quality of salt marsh is declining in this part of the site due to rising sea level. Again, this aspect is being addressed through the creation of compensatory habitat at Medmerry.

LITTORAL SEDIMENT	DAVID ANDREWS	014	1030407	356.4287	0.00		19/09/2018	Unfavourable - Recovering	This assessment revises and updates the condition assessment of 2009 for estuarine water quality in relation to the interest features of the designated sites and should be read in conjunction with this earlier assessment on other aspects of site condition. Assessed in combination with other Langstone Harbour units, this part of the harbour achieves WFD Good (borderline) status on mean winter inorganic nitrogen, WFD High status on phytoplankton and WFD Good (borderline) status on opportunistic green macroalgae. However, in this unit there can be areas with a dense cover of opportunistic green macroalgae (>75% cover density), more so than in some parts of the harbour. The water environment of the unit is assessed as unfavourable for the interest features on the weight of evidence on inorganic nitrogen and biological indication of eutrophication shown by the abundance of macroalgae, but recovering on the basis of a large reduction in nutrient inputs through diversion of wastewater.There remains a significant nitrogen load input carried by tidal flow from the Solent and less so by minor rivers into the head of the harbour. The unit is considered 'at risk' of not recovering to a favourable situation on the water environment as it is unclear whether the nutrient status will become adequate to substantially prevent the growth of dense macroalgae mats in this part of the harbour. 2009 Assessment comments: Unit considered to be in unfavourable recovering condition

LITTORAL SEDIMENT	DAVID ANDREWS	015	1041647	1.8023	0.00		29/03/2022	Unfavourable - No change	Coastal lagoons are a priority habitat type and are relatively uncommon in the UK. Additionally, some of the lagoon sub-types found in the UK are rare elsewhere in Europe. Saline lagoon habitats are listed in Annex 1 of the EU Habitats Directive. Natural England commissioned specialist surveys of twenty coastal lagoons in the Solent & Isle of Wight region in 2020. The methodology deployed was designed to follow earlier work conducted in 2013 so as to provide a comparison. The study included a re-assessment of the condition of the feature and identification of any threats to the habitat. The study included Shut Lake at Farlington Marshes, a peninsula of reclaimed tidal silt in Langstone Harbour, protected by a sea wall. Shut Lake was created by closing off a pre-existing sea-channel by sea walls to form a basin. A sluice under the sea wall allows ingress of saline water on high tides, but this is moderated by freshwater inputs from the surrounding terrestrial habitats. Previous studies determined that the salinity of Shut Lake is too low to maintain what can be described strictly as saline lagoon. The basin is surrounded by Salicornia saltmarsh, with dense reed beds along the southern and eastern edge, and on the north eastern corner, which are encroaching into the basin in places, although not significantly. At the time of survey water levels were relatively high, with the low saltmarsh area behind the reed bed next to the sluice fully flooded. The salinity of the lagoon was low (5‰), similar to previous measurements, although it seems likely that salinity levels undergo significant variation given the high degree of freshwater input. The measured pH was 7.7. The substratum is sandy mud over clay. No submerged vegetation was present, as was observed in previous years. The faunal assemblage recorded at Shut Lake was impoverished, with 12 taxa recorded in 2020, including 1 lagoonal specialist species, namely the isopod Lekanesphaera hookeri. The benthic community (10 species in total) was sparse and dominated by oligochaetes (including species preferring lower than fully marine saline conditions, such as Tubificoides pseudogaster and Baltidrilus costatus), with the occasional presence of insect larvae, nematodes and nemerteans. No lagoon specialist species were found in the benthic samples. No significant differences with the benthic community found in the lagoon in 2013 were detected. Net sweeps detected the lagoonal specialist isopod Lekanesphaera hookeri and Corophium volutator. The lagoonal specialist fauna in 2020 can be described as highly impoverished (1 species, Lekanesphaera hookeri), and this is lower representation of specialists than was recorded in 2013 (5 species in total). The lagoonal faunal diversity in 2020 was more similar to the findings of the 1996 survey, when Lekanesphaera hookeri was the only lagoonal specialist species recorded. Current management of the area is not conducive to improvement of lagoonal conditions as seawater ingress is restricted with the aim of protecting reed bed habitat supporting bittern. There is an on-going regime of management of the surrounding reed bed by cutting. Given the current water management regime and the resulting low salinity conditions, it is unlikely that Shut Lake will develop truly saline-lagoonal habitat conditions. However, the habitat retains a degree of conservation interest in supporting at least one lagoon specialist. This species is widely distributed around the coasts of Britain but is rare.

NEUTRAL GRASSLAND - Lowland	DAVID ANDREWS	016	1041648	111.4917	0.00		29/03/2022	Favourable	This is an area of coastal grazed neutral grassland and is part of an internationally important site for birds. The overall levels of scrub cover, bare ground and open-ness of the site are suitable for the bird interest. No obvious negative indicators were noted in the saltmarsh, lagoons and reed beds. A faulty tidal flap on the sea wall on east side of area has been identified as being the probable cause of an increase in reed cover. There is high cover of thistle and weeds in parts of the grassland which is creating a threat to continued suitability for wintering birds. Advice has been provided to the land manager and this should be addressed through changes in management. Shut Lake which was formerly included in this monitoring unit has been separated off as separate unit 15 to allow the condition of the saline lagoon feature to be reported more clearly.

11527 Magic SSSI Condition

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Legend

Sites of Special Scientific Interest Units (England)

- Favourable Condition
- Unfavourable Recovering
- Unfavourable no change
- Unfavourable Declining
- Part Destroyed
- Destroyed
- Not Assessed

Projection = OSGB36
xmin = 465400
ymin = 96960
xmax = 482500
ymax = 111400

0 1 2
km

Map produced by MAGIC on 23 June, 2023.

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ANNEX 5

Natural England Site Improvement Plan: Solent

Improvement Programme for England's Natura 2000 Sites (IPENS)

Planning for the Future

Site Improvement Plan

Solent

Site Improvement Plans (SIPs) have been developed for each Natura 2000 site in England as part of the Improvement Programme for England's Natura 2000 sites (IPENS). Natura 2000 sites is the combined term for sites designated as Special Areas of Conservation (SAC) and Special Protected Areas (SPA). This work has been financially supported by LIFE, a financial instrument of the European Community.

The plan provides a high level overview of the issues (both current and predicted) affecting the condition of the Natura 2000 features on the site(s) and outlines the priority measures required to improve the condition of the features. It does not cover issues where remedial actions are already in place or ongoing management activities which are required for maintenance.

The SIP consists of three parts: a Summary table, which sets out the priority Issues and Measures; a detailed Actions table, which sets out who needs to do what, when and how much it is estimated to cost; and a set of tables containing contextual information and links.

Once this current programme ends, it is anticipated that Natural England and others, working with landowners and managers, will all play a role in delivering the priority measures to improve the condition of the features on these sites.

The SIPs are based on Natural England's current evidence and knowledge. The SIPs are not legal documents, they are live documents that will be updated to reflect changes in our evidence/knowledge and as actions get underway. The information in the SIPs will be used to update England's contribution to the UK's Prioritised Action Framework (PAF).

The SIPs are not formal consultation documents, but if you have any comments about the SIP or would like more information please email us at IPENSLIFEProject@naturalengland.org.uk, or contact Natural England's Responsible Officer for the site via our enquiry service 0300 060 3900, or enquiries@naturalengland.org.uk

This Site Improvement Plan covers the following Natura 2000 site(s)

UK9011011	**Chichester and Langstone Harbours SPA**
UK9011051	**Portsmouth Harbour SPA**
UK9011061	**Solent & Southampton Water SPA**
UK0030059	**Solent Maritime SAC**

Site description

The Solent SIP covers the Solent Maritime SAC, Solent and Southampton Water SPA, Portsmouth Harbour SPA and Chichester and Langstone Harbours SPA.

The Solent is a complex site encompassing a major estuarine system on the south coast of England. The Solent and its inlets are unique in Britain and Europe for their hydrographic regime with double tides, as well as for the complexity of the marine and estuarine habitats present within the area. Sediment habitats within the estuaries include extensive areas of intertidal mudflats, often supporting eelgrass *Zostera spp*. and green algae, saltmarshes and natural shoreline transitions, such as drift line vegetation.

All four species of cordgrass found within the UK are present within the Solent and it is one of only two UK sites with significant amounts of the native small cordgrass *Spartina maritima*. The rich intertidal mudflats, saltmarsh, shingle beaches and adjacent coastal habitats, including grazing marsh, reedbeds and damp woodland, support nationally and internationally important numbers of migratory and over-wintering waders and waterfowl as well as important breeding gull and tern populations.

Plan Summary

This table shows the prioritised issues for the site(s), the features they affect, the proposed measures to address the issues and the delivery bodies whose involvement is required to deliver the measures. The list of delivery bodies will include those who have agreed to the actions as well as those where discussions over their role in delivering the actions is on-going.

Priority & Issue	Pressure or Threat	Feature(s) affected	Measure	Delivery Bodies
1 Public Access/Disturbance	Threat	A026(NB) Little Egret, A046a(NB) Dark-bellied Brent Goose, A048(NB) Common shelduck, A050(NB) Wigeon, A052(NB) Eurasian teal, A054(NB) Pintail, A056(NB) Shoveler, A069(NB) Red-breasted Merganser, A137(NB) Ringed Plover, A141(NB) Grey Plover, A144(NB) Sanderling, A149(NB) Dunlin, A156(NB) Black-tailed Godwit, A157(NB) Bar-tailed Godwit, A160(NB) Curlew, A162(NB) Common redshank, A169(NB) Turnstone, A176(B) Mediterranean Gull, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern, H1210 Annual vegetation of drift lines, H1220 Coastal shingle vegetation outside the reach of waves, Waterbird assemblage	Reduce disturbance through access management, awareness raising and wardening	Hampshire County Council, Natural England, RSPB, Southern Inshore Fisheries Conservation Authority (IFCA), Solent Forum, Harbours and ports, Solent Recreation Mitigation Partnership (SRMP), Partnership for Urban South Hampshire (PUSH)

2 Coastal squeeze	Threat	A026(NB) Little Egret, A046a(NB) Dark-bellied Brent Goose, A048(NB) Common shelduck, A050(NB) Wigeon, A052(NB) Eurasian teal, A054(NB) Pintail, A056(NB) Shoveler, A069(NB) Red-breasted Merganser, A137(NB) Ringed Plover, A141(NB) Grey Plover, A144(NB) Sanderling, A149(NB) Dunlin, A156(NB) Black-tailed Godwit, A157(NB) Bar-tailed Godwit, A160(NB) Curlew, A162(NB) Common redshank, A169(NB) Turnstone, A176(B) Mediterranean Gull, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern, H1140 Intertidal mudflats and sandflats, H1310 Glasswort and other annuals colonising mud and sand, H1320 Cord-grass swards, H1330 Atlantic salt meadows, Waterbird assemblage	Investigate options to create alternative habitat	Environment Agency, Natural England, Eastern Solent Coastal Partnership, Southern Coastal Group (SCG), Standing Conference on Problems Associated with the Coastline (SCOPAC)
3 Fisheries: Commercial marine and estuarine	Threat	A026(NB) Little Egret, A046a(NB) Dark-bellied Brent Goose, A048(NB) Common shelduck, A050(NB) Wigeon, A052(NB) Eurasian teal, A054(NB) Pintail, A056(NB) Shoveler, A069(NB) Red-breasted Merganser, A137(NB) Ringed Plover, A141(NB) Grey Plover, A144(NB) Sanderling, A149(NB) Dunlin, A156(NB) Black-tailed Godwit, A157(NB) Bar-tailed Godwit, A160(NB) Curlew, A162(NB) Common redshank, A169(NB) Turnstone, A176(B) Mediterranean Gull, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern, H1110 Subtidal sandbanks, H1140 Intertidal mudflats and sandflats, Waterbird assemblage	Introduce appropriate management measures where required and ensure compliance	Environment Agency, Southern Inshore Fisheries Conservation Authority (IFCA), Sussex Inshore Fisheries Conservation Authority (IFCA)

4 Water Pollution	Threat	A026(NB) Little Egret, A046a(NB) Dark-bellied Brent Goose, A048(NB) Common shelduck, A050(NB) Wigeon, A052(NB) Eurasian teal, A054(NB) Pintail, A056(NB) Shoveler, A069(NB) Red-breasted Merganser, A137(NB) Ringed Plover, A141(NB) Grey Plover, A144(NB) Sanderling, A149(NB) Dunlin, A156(NB) Black-tailed Godwit, A157(NB) Bar-tailed Godwit, A160(NB) Curlew, A162(NB) Common redshank, A169(NB) Turnstone, A176(B) Mediterranean Gull, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern, H1130 Estuaries, H1140 Intertidal mudflats and sandflats, H1310 Glasswort and other annuals colonising mud and sand, H1320 Cord-grass swards, H1330 Atlantic salt meadows, Waterbird assemblage	Implement actions in the Diffuse Water Pollution Plan, and investigate further pollution	Environment Agency, Hampshire and Isle of Wight Wildlife Trust, Natural England, Ofwat, Portsmouth Water Plc, RSPB, Rural Payments Agency (RPA), Southern Water Services Ltd, Green Blue, Harbours and ports, Chichester Harbour Authority
5 Changes in species distributions	Threat	A026(NB) Little Egret, A046a(NB) Dark-bellied Brent Goose, A048(NB) Common shelduck, A050(NB) Wigeon, A052(NB) Eurasian teal, A054(NB) Pintail, A056(NB) Shoveler, A069(NB) Red-breasted Merganser, A137(NB) Ringed Plover, A141(NB) Grey Plover, A144(NB) Sanderling, A149(NB) Dunlin, A156(NB) Black-tailed Godwit, A157(NB) Bar-tailed Godwit, A160(NB) Curlew, A162(NB) Common redshank, A169(NB) Turnstone, A176(B) Mediterranean Gull, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern, H1310 Glasswort and other annuals colonising mud and sand, H1320 Cord-grass swards, H1330 Atlantic salt meadows, S1016 Desmoulin`s whorl snail, Waterbird assemblage	Investigate the causes of change	Hampshire and Isle of Wight Wildlife Trust, Chichester Harbour Authority
6 Climate change	Threat	A176(B) Mediterranean Gull, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern	Investigate the effects of climate change	Not yet determined

7 Change to site conditions	Threat	A026(NB) Little Egret, A046a(NB) Dark-bellied Brent Goose, A048(NB) Common shelduck, A050(NB) Wigeon, A052(NB) Eurasian teal, A054(NB) Pintail, A056(NB) Shoveler, A069(NB) Red-breasted Merganser, A137(NB) Ringed Plover, A141(NB) Grey Plover, A144(NB) Sanderling, A149(NB) Dunlin, A156(NB) Black-tailed Godwit, A157(NB) Bar-tailed Godwit, A160(NB) Curlew, A162(NB) Common redshank, A169(NB) Turnstone, A176(B) Mediterranean Gull, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern, H1310 Glasswort and other annuals colonising mud and sand, H1320 Cord-grass swards, H1330 Atlantic salt meadows, S1016 Desmoulin`s whorl snail, Waterbird assemblage	Investigate the reasons for change	Not yet determined
8 Invasive species	Threat	A176(B) Mediterranean Gull, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern, H1110 Subtidal sandbanks, H1140 Intertidal mudflats and sandflats, H1150 Coastal lagoons, H1220 Coastal shingle vegetation outside the reach of waves, H1330 Atlantic salt meadows	Implement the management options to control invasive non-native species (INNS)	Hampshire and Isle of Wight Wildlife Trust
9 Direct land take from development	Threat	H1130 Estuaries, H1140 Intertidal mudflats and sandflats	Option appraisal for private coastal defences	Not yet determined
10 Biological Resource Use	Threat	A026(NB) Little Egret, A046a(NB) Dark-bellied Brent Goose, A048(NB) Common shelduck, A050(NB) Wigeon, A052(NB) Eurasian teal, A054(NB) Pintail, A056(NB) Shoveler, A069(NB) Red-breasted Merganser, A137(NB) Ringed Plover, A141(NB) Grey Plover, A144(NB) Sanderling, A149(NB) Dunlin, A156(NB) Black-tailed Godwit, A157(NB) Bar-tailed Godwit, A160(NB) Curlew, A162(NB) Common redshank, A169(NB) Turnstone, A176(B) Mediterranean Gull, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern, Waterbird assemblage	Appropriate egg collection licensing	Not yet determined

11 Change in land management	Threat	A176(B) Mediterranean Gull, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern, H1150 Coastal lagoons, H1210 Annual vegetation of drift lines, H1220 Coastal shingle vegetation outside the reach of waves, Waterbird assemblage	Ensure appropriate ditch management, and assess the effects of tidal sluice operation	Not yet determined
12 Inappropriate pest control	Threat	A176(B) Mediterranean Gull, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern, Waterbird assemblage	Increase control of foxes	Hampshire and Isle of Wight Wildlife Trust, Hampshire County Council, Natural England, RSPB
13 Air Pollution: impact of atmospheric nitrogen deposition	Pressure	A046a(NB) Dark-bellied Brent Goose, A050(NB) Wigeon, A054(NB) Pintail, A156(NB) Black-tailed Godwit, A160(NB) Curlew, A164(NB) Common greenshank, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern, H1130 Estuaries, H1150 Coastal lagoons, H1310 Glasswort and other annuals colonising mud and sand, H1330 Atlantic salt meadows, H2120 Shifting dunes with marram	Reduce the impacts of air pollution	Not yet determined
14 Hydrological changes	Threat	H1150 Coastal lagoons, H1320 Cord-grass swards, H1330 Atlantic salt meadows, S1016 Desmoulin`s whorl snail	Review abstraction licenses	Environment Agency
15 Direct impact from 3rd party	Threat	A026(NB) Little Egret, A046a(NB) Dark-bellied Brent Goose, A048(NB) Common shelduck, A050(NB) Wigeon, A052(NB) Eurasian teal, A054(NB) Pintail, A056(NB) Shoveler, A069(NB) Red-breasted Merganser, A137(NB) Ringed Plover, A141(NB) Grey Plover, A144(NB) Sanderling, A149(NB) Dunlin, A156(NB) Black-tailed Godwit, A157(NB) Bar-tailed Godwit, A160(NB) Curlew, A162(NB) Common redshank, A169(NB) Turnstone, A176(B) Mediterranean Gull, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern, H1130 Estuaries, H1140 Intertidal mudflats and sandflats, H1310 Glasswort and other annuals colonising mud and sand, H1320 Cord-grass swards, H1330 Atlantic salt meadows, Waterbird assemblage	Assess the activities and their effects	Natural England, Trading Standards Authority, Wildlife Crime Partnership

16 Extraction: non-living resources	Threat	H1110 Subtidal sandbanks, H1140 Intertidal mudflats and sandflats, H1310 Glasswort and other annuals colonising mud and sand, H1320 Cord-grass swards, H1330 Atlantic salt meadows	Investigate the extent and impact of shingle extraction	Not yet determined
17 Other	Threat	A026(NB) Little Egret, A046a(NB) Dark-bellied Brent Goose, A048(NB) Common shelduck, A050(NB) Wigeon, A052(NB) Eurasian teal, A054(NB) Pintail, A056(NB) Shoveler, A069(NB) Red-breasted Merganser, A137(NB) Ringed Plover, A141(NB) Grey Plover, A144(NB) Sanderling, A149(NB) Dunlin, A156(NB) Black-tailed Godwit, A157(NB) Bar-tailed Godwit, A160(NB) Curlew, A162(NB) Common redshank, A169(NB) Turnstone, A176(B) Mediterranean Gull, A191(B) Sandwich Tern, A192(B) Roseate Tern, A193(B) Common Tern, A195(B) Little Tern, H1110 Subtidal sandbanks, H1130 Estuaries, H1140 Intertidal mudflats and sandflats, H1220 Coastal shingle vegetation outside the reach of waves, H1310 Glasswort and other annuals colonising mud and sand, H1320 Cord-grass swards, H1330 Atlantic salt meadows, H2120 Shifting dunes with marram, S1016 Desmoulin`s whorl snail, Waterbird assemblage	Consider/explore boundary change to amend the SAC / SPA designations, to include habitats outside of the existing boundaries	Natural England

Issues and Actions

This table outlines the prioritised issues that are currently impacting or threatening the condition of the features, and the outstanding actions required to address them. It also shows, where possible, the estimated cost of the action and the delivery bodies whose involvement will be required to implement the action. Lead delivery bodies will be responsible for coordinating the implementation of the action, but not necessarily funding it. Delivery partners will need to support the lead delivery body in implementing the action. In the process of developing the SIPs Natural England has approached the delivery bodies to seek agreement on the actions and their roles in delivering them, although in some cases these discussions have not yet been concluded. Other interested parties, including landowners and managers, will be involved as the detailed actions are agreed and delivered. Funding options are indicated as potential (but not necessarily agreed or secured) sources to fund the actions.

1 Public Access/Disturbance

Many human activites in the area can disturb birds. This includes activities such as: walking; dog walking; bird watching; boating; kayaking; kite surfing; hang gliding; paramotors; jet skis; wildfowling; model helicopters/aircraft; boat mooring, and Hovercraft. Recreational activities can also affect annual vegetation of drift lines (H1210) and the vegetation of stony banks (H1220).

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1A	Investigate the effect of recreation upon the annual vegetation of drift lines (H1210) and the perennial vegetation of stony banks (H1220) within the SAC.	£12,000	2015-17	Investigation / Research / Monitoring	Natural England	Natural England	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1B	Identify bird sensitive areas and dog walking zones and investigate alternative dog walking locations through liaison with dog owners.	Not yet determined	2014-17	Investigation / Research / Monitoring	Natural England	Solent Recreation Mitigation Partnership (SRMP)	

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1C	Improve dog owners' awareness of the impact of bird disturbance by dogs, of bird sensitive areas and alternative locations for their activity through liaison with dog owners, interpretation and updating of a website. Investigate access restrictions in most sensitive areas for overwinterng and breeding birds.	£30,000	2015-17	Advice: Education & awareness raising	Natural England	Natural England	Solent Forum

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1D	Improve users' awareness of the bird sensitive areas (refuge areas) and how they can minimise disturbance. Develop and disseminate codes of conduct for both recreational and commercial users using leaflets and interpretation boards.	£20,000	2015-17	Advice: Education & awareness raising	Natural England, Solent Disturbance and Mitigation Project (SDMP)	Local partnership	Solent Forum, Partnership for Urban South Hampshire (PUSH)

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1E	Assess the impact of all types of public disturbance (dogs, water sports etc) to breeding birds.	£75,000	2015-17	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1F	Investigate the effects of all aircraft (including military and model helicopters) upon birds in all areas of the SPA.	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Natural England	Hampshire County Council

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1G	Implement the recommendations of the Solent Forum Natural Environment Group projects on canoeing/kayaking and hovercraft /paramotors.	Not yet determined	2015-17	Advice: Education & awareness raising	Not yet determined	Solent Forum	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1H	Make all Solent Recreation Mitigation Partnership (SRMP) rangers full time, so that they can cover the breeding bird period as well as the wintering bird period.	£250,000 over 5 years	2015-20	Advice: Wardening	Natural England, Landfill tax, Community Infrastructure Levy (CIL), Voluntary conservation organisation	Local partnership	Hampshire and Isle of Wight Wildlife Trust, Hampshire County Council, RSPB, Solent Forum

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1I	Employ a manager to run a team of wardens across the Solent.	£200,000 over 5 years	2015-20	Advice: Wardening	Natural England, Landfill tax, Community Infrastructure Levy (CIL), Voluntary conservation organisation	Local partnership	Solent Forum

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1J	Introduce wardening for water-based recreational activities.	£330,000 over 5 years	2015-20	Advice: Wardening	Natural England, Landfill tax, Community Infrastructure Levy (CIL), Voluntary conservation organisation	Solent Recreation Mitigation Partnership (SRMP)	Southern Inshore Fisheries Conservation Authority (IFCA), Solent Forum, Harbours and ports

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1K	Limit access and disturbance to sensitive bird breeding areas and sites by managing: visitor numbers and intensity; screening; temporary movements of paths; notices, and temporary fencing etc.	Not yet determined	2015-20	Advice: Access Strategy	Not yet determined	Natural England	RSPB, Solent Forum, Solent Recreation Mitigation Partnership (SRMP)

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1L	Monitor bird response to disturbance; this should include surveying wader and wildfowl roosts and offshore waterfowl and analysing WeBs data.	Not yet determined	2015-20	Investigation / Research / Monitoring	Developer Contributions Scheme (DCS), Solent Recreation Mitigation Partnership (SRMP)	Natural England	Solent Forum

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1M	Investigate the extent of wildfowling to assess whether there is any impact on interest features.	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Solent Forum	

2 Coastal squeeze

Habitats are being lost as they are squeezed between rising sea levels and hard coastal defences that are maintained. There is a direct impact due to loss of the SAC habitats such as saltmarsh. There is also an impact on birds due to the loss of habitat for feeding, roosting and breeding. In some areas rising sea levels will result in coastal grasslands being lost to more saline grasslands, thus losing habitat for some breeding waders of the waterbird assemblage. The habitats that are lost could be created elsewhere, but there is difficulty in finding suitable areas. The neutral grassland habitats will take a long time to create as mitigation, but intertidal habitat can be created relatively quickly. Current compensation provides required habitat for Epoch 1 of the Shoreline Management Plan 2, further investigation is required for Epoch 2 and 3. This project will utilise outputs from Shoreline Management Plans, the Environment Agency's Regional Habitat Creation Project and the New Forest District Council/Channel Coastal Observatory's Solent Dynamic Coast Project.

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
2A	Investigate areas that can be used as compensatory habitat past the 2030 level of Medmerry - next steps in EA Regional Habitat Creation Programme.	Not yet determined	2014-20	Shoreline Management Plan and Strategies	Developer, Local Authority, Flood and Coastal Erosion Risk Management (FCERM) 2015-21	Environment Agency	Natural England, Southern Coastal Group (SCG), Standing Conference on Problems Associated with the Coastline (SCOPAC)

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
2B	Investigate and identify areas on the north coast of the Isle of Wight that can be used as compensatory habitat for coastal squeeze.	Not yet determined	2014-20	Shoreline Management Plan and Strategies	Developer, Local Authority, Flood and Coastal Erosion Risk Management (FCERM) 2015-21	Environment Agency	Natural England, Southern Coastal Group (SCG), Standing Conference on Problems Associated with the Coastline (SCOPAC)

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
2C	Provide alternative grazing marsh habitat to compensate for habitat loss as a result of managed realignment schemes, to compensate for coastal squeeze.	£2,000,000	2014-20	Shoreline Management Plan and Strategies	Developer, Local Authority, Flood and Coastal Erosion Risk Management (FCERM) 2015-21	Environment Agency	Natural England, Southern Coastal Group (SCG), Standing Conference on Problems Associated with the Coastline (SCOPAC)

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
2D	Investigate options and sites for habitat creation for SPA breeding birds.	£30,000	2015-20	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
2E	Encourage land owners to consider soft engineering approaches to coastal defence.	Not yet determined	2014-20	Implementation Of Appropriate Coastal Management	Not yet determined	Local partnership	Environment Agency, Eastern Solent Coastal Partnership

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
2F	Investigate causes of SPA breeding bird shifts in population and whether these are local/national/international trends, or site-specific declines.	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

3 Fisheries: Commercial marine and estuarine

Dredges (inc. Hydraulic), Benthic trawls and seines and Shore-based activities are categorised as 'Red' for these interest features (and specifically the sub-features: Intertidal muddy sand communities; Subtidal eelgrass *Zostera marina* beds as part of Defra's revised approach to commercial fisheries management in European Marine Sites (EMS), and requisite mechanisms are being or will be implemented by Southern IFCA and Sussex IFCA.
Commercial fishing activities categorised as 'amber or green' under Defra's revised approach to commercial fisheries in EMSs require assessment and (where appropriate) management. This assessment will be undertaken by SIFCA. For activities categorised as 'green', these assessments should take account of any in-combination effects of amber activities, and/or appropriate plans or projects, in the site.
Towed gear, hand gathering of shellfish, bait digging and aquaculture are the main fishery activties in this site.

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
3A	Commercial fisheries activities categorised as 'amber/green' under Defra's revised approach to commercial fisheries in European Marine Sites (EMS) are being assessed by Southern IFCA and Sussex IFCA to determine whether management is required. Where the assessments inidicate management is required, introduce appropriate measures.	Not yet determined	2014-16	Regulation: Creation / amendment of byelaws	Not yet determined	Southern Inshore Fisheries Conservation Authority (IFCA)	Environment Agency, Sussex Inshore Fisheries Conservation Authority (IFCA)

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
3B	If management measures are established, ensure compliance with bye-laws and provide an appropriate level of reporting to ensure sites are well managed and to enable Natural England to provide advice on the condition of the features and potential ongoing condition threats. Ongoing action.	Not yet determined	2014-20	Regulation: Creation / amendment of byelaws	Not yet determined	Southern Inshore Fisheries Conservation Authority (IFCA)	Sussex Inshore Fisheries Conservation Authority (IFCA)

4 Water Pollution

Water pollution affects a range of habitat and bird species at the site through eutrophication and toxicity. Sources include both point source discharges (including flood alleviation / storm discharges) and diffuse water pollution from agriculture / road runoff, as well as historic contamination of marine sediments, primarily from copper and Tributyltin (TBT). Environment Agency flood event discharge consents allow untreated waters to be discharged which end up in the SAC and are likely to have a negative impact. There is a threat of spillage from Oil Transportation and Transfer and by the usage by Ships & Pilotage.

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4A	Investigation into the sources of high marine background nitrogen, and identification of mechanisms for improvement if possible.	Not yet determined	2015-16	Investigation / Research / Monitoring	Not yet determined	Environment Agency	Natural England

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4B	Collect data on the distribution, extent and biomass of macroalgae mats in the Solent area, to help monitor the impact of water pollution from nitrogen inputs to the Solent.	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Environment Agency	Chichester Harbour Conservancy , Natural England

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4C	Review the evidence and revise Common Standards Monitoring guidance to include appropriate targets for macroalgae cover for littoral sediment habitats.	Not yet determined	2014-16	Investigation / Research / Monitoring	Not yet determined	Environment Agency/ Natural England	Hampshire and Isle of Wight Wildlife Trust, RSPB

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4D	Regularly monitor Nitrogen and Phosphorus concentrations entering the Solent area, to help monitor the extent of water pollution from Nitrogen and Phosphorus inputs.	Not yet determined	2015-20	Investigation / Research / Monitoring	Not yet determined	Environment Agency	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4E	Offset additional nitrogen inputs from new development, through the adoption of a Local Planning Authority Implementation Plan.	Not yet determined	2014-16	Regulation: Grant Appropriate Planning Permission	Developer Contributions Scheme (DCS)	Natural England	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4F	Reduce the Nitrogen load from sewerage systems within the catchment, to secure compliance with the Urban Waste Water Treatment Directive.	Not yet determined	2015-20	Water Industry Asset Management Plan (AMP): Implement Plan Scheme	Not yet determined	Environment Agency	Ofwat, Southern Water Services Ltd

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4G	Reduce Nitrogen from agricultural diffuse pollution, through catchment-wide delivery of the options under the New Environmental Land Management Scheme (part of implemention of the Agricultural Implemention Plan for the Nutrient Management Strategy).	Not yet determined	2016-20	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	Rural Development Programme (RDPE)	Natural England	Environment Agency

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4H	Reduce Nitrogen from agricultural diffuse pollution, through securing and implementing delivery of Catchment Sensitive Farming partnership project (Downs and Harbours Clean Water Partnership).	Not yet determined	2015-20	England Catchment Sensitive Farming (CSF)	Not yet determined	Local partnership	Environment Agency, Hampshire and Isle of Wight Wildlife Trust, Natural England, Portsmouth Water Plc

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4I	Run equine management awareness training events to address run-off, nutrients and dirty yard water entering watercourses from stables and equine pasture.	Not yet determined	2015-20	Advice: Education & awareness raising	Not yet determined	Not yet determined	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4J	Reduce Nitrogen from agricutural diffuse pollution through implementing tighter measures in Cross Compliance and the Nitrate Vulnerable Zone (NVZ) Action Programme, especially in relation to thin (chalk) soils and drinking water source protection zones.	Not yet determined	2015-20	Regulation: Other - obtain appropriate permissions	Not yet determined	Environment Agency	Rural Payments Agency (RPA)

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4K	Undertake farm visits within the priority areas to provide pollution prevention advice, and raise awareness of the catchment issues and the impacts of agriculture on SSSIs.	Not yet determined	2015-20	Advice: Education & awareness raising	Not yet determined	Environment Agency	Chichester Harbour Authority

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4L	Secure funding for a Catchment Sensitive Farming (CSF) project beyond March 2015.	Not yet determined	2015-17	Mechanism not identified / develop mechanism	Not yet determined	Local partnership	Environment Agency, Natural England

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4M	Ensure the delivery of the Test, Itchen and Alresford Pond Diffuse Water Pollution Plan (DWPP).	Not yet determined	2015-17	Diffuse Water Pollution Plan	Not yet determined	Not yet determined	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4N	Annually Review the Solent Diffuse Water Pollution Plan.	Not yet determined	2015-20	Diffuse Water Pollution Plan	Not yet determined	Natural England	Environment Agency

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4O	Secure funding to build on the *Love Where You Sail* campaign, to raise awareness amongst recreational boat users to encourage the use of shore-side toilet facilities, holding tanks where fitted, and disposal of waste at pump-out facilities. Where direct discharge of sewage is necessary, encourage this as far offshore as possible in areas where strong currents ensure dispersion and dilution.	Not yet determined	2015-17	Advice: Education & awareness raising	Not yet determined	Chichester Harbour Authority	Environment Agency, Green Blue, Harbours and ports

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4P	Set targets for favourable condition using the outputs from the Solent Nitrate Project.	Not yet determined	2015-17	Advice: Review Conservation Objectives	Not yet determined	Not yet determined	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4Q	Investigate the effects of eroding coasts at areas with historic landfill sites and potential for leaching of chemicals etc.	Not yet determined	2015-16	Investigation / Research / Monitoring	Landfill tax	Not yet determined	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4R	Investigate the sources and effects of Copper and Tributylin (TBT) in water bodies shown to have effects (e.g. River Hamble), to determine whether any management intervention is required.	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4S	Investigate the frequency and effects of storm discharges from further upstream in rivers that enter the Solent area, including the impacts of saline incursion.	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Environment Agency	n/a

5 Changes in species distributions

Many waders and wildfowl are decreasing in the Solent probably as they move north and east under national trends. Some fish, such as Sand eels, may be moving their breeding grounds resulting in less food availability for breeding terns. Invertebrate populations in the intertidal muds are changing and this may disadvantage some wintering wader species. Desmoulin's Whorl Snail has decreased dramatically. Areas of salt-marsh are eroding and decreasing resulting in decreasing breeding gulls and terns as their habitat decreases and decreasing plant species of salt-marshes.

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
5A	Resurvey all potential and previous sites for Desmoulin's whorl snail within the SAC, in order to establish distribution, abundance, habitat suitability and site management recommendations. This investigation should incorporate results from the 2004 Portsmouth Water report of Fishbourne.	£1,200	2015-16	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
5B	Investigate reasons for changes in distribution at local, national and international level of wintering birds, concentrating on species with high alerts that do not reflect national trends (shelduck, ringed plover, sanderling, and dunlin).	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
5C	Survey and assess the distribution and abundance of all *Spartina* species in the Solent in order to assess the extent of any die-back, and to provide evidence with which to guide further action.	Not yet determined	2015-16	Investigation / Research / Monitoring	Not yet determined	Chichester Harbour Authority	n/a

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
5D	Let a short term contract to collate all information, studies and surveys of the Solent.	Not yet determined	2015-16	Investigation / Research / Monitoring	Not yet determined	Hampshire and Isle of Wight Wildlife Trust	n/a

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
5E	Assess the Wetland Bird Survey (WeBS) and Seabird monitoring programme data for the whole of each SPA since classification, in order to inform trends in species populations.	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

6 Climate change

Climate change has impacts upon coastal species, in that gull and tern colonies are more frequently washed out with raising sea levels when storm surges cause flooding to habitats.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
6A	Investigation into the effects of climate change on bird breeding areas suffering more washouts due to rising sea levels.	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

7 Change to site conditions

There is an increasing loss of salt-marsh in much of the Solent for reasons unknown, and this needs to be investigated.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
7A	Investigation, to assess reasons for the reduction of saltmarsh within the Solent.	£15,000	2015-16	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
7B	Investigate the potential for recharge/re-creation of salt-marsh that is being lost, using information from the Solent Capital Dredge Scoping report, work undertaken by ABP on behalf of Wight Link at Boiler Marsh Lymington, and the Crown Estate report of the beneficial reuse project at Lymington Harbour.	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

8 Invasive species

The highest risk pathways through which marine INNS are introduced and then spread have been identified as: commercial shipping *(through release of ballast water, and biofouling on hulls)*; recreational boating *(through biofouling on hulls)*; aquaculture *(through contamination of imported or moved stock - or escaped stock in the case of the pacific oyster)*, and natural dispersal.

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
8A	Implement measures for invasive species including options/capital works, to combat Himalayan Balsam, *Rosa rugosa* and other shingle invasive plants.	Not yet determined	2014-20	Rural Development Programme for England (RDPE): Environmental Stewardship Higher Level Scheme (HLS)	Not yet determined	Not yet determined	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
8B	Assess the extent of the current problem by surveying and mapping for each of the terrestrial species.	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
8C	Secure funding for Solent Aliens Project.	Not yet determined	2015-17	Invasive Control Plan: Invasive Species Control Programme	Not yet determined	Hampshire and Isle of Wight Wildlife Trust	n/a

9 Direct land take from development

Private sea defences are causing disruption to the natural processes of allowing erosion to move sediments around the SAC.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
9A	Commission a study or options appraisal to inform advice regarding coastal defences under private ownership, to avoid direct land take from Natura 2000 sites and preventing natural processes.	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

10 Biological Resource Use

Gull egg collecting occurs in some places, and wildfowling occurs in several places. These activities are likely to be disturbing to breeding and wintering birds even though they are licenced/consented at the moment.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
10A	Ensure that, through egg collection licensing, there is a continuation of closed areas that are not harvested, as well as areas that are collected.	Not yet determined	2015-20	Regulation: Issue Appropriate Notice/Consent	Not yet determined	Not yet determined	n/a

11 Change in land management

Changes to land management are likely to occur in areas where tidal flaps/sluices are altered and this results in changes to water levels or salinity of that land. Some sluices are failing, which may also result in changes to water levels or salinity of land. Some ditches and drains are neglected and this can cause difficulties in land management, resulting in changes.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
11A	Assess the effects of poorly operating tidal sluices upon the habitats, species, water levels, salinity and management upstream, and investigate how far upstream the effects are felt.	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
11B	Implement the management of ditches.	Not yet determined	2014-20	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	Not yet determined	Not yet determined	n/a

12 Inappropriate pest control

Predator control is decreasing, resulting in increased predation by foxes etc. and this is the likely cause of decrease in successful breeding of gulls and terns.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
12A	Collate information on the best methods of preventing foxes from disrupting breeding gulls and terns.	£9,000	2015-16	Investigation / Research / Monitoring	Not yet determined	RSPB	Hampshire and Isle of Wight Wildlife Trust, Hampshire County Council

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
12B	Work with landowners to increase the control of foxes in order to reduce predation on gull and tern	Not yet determined	2014-20	Advice: Negotiation	Not yet determined	Natural England	Landowner(s)

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
12C	Investigate the effects of Buzzard predation upon breeding SPA birds within the SPA, or collate known information.	£8,000	2015-17	Investigation / Research / Monitoring	Not yet determined	RSPB	Hampshire County Council

13 Air Pollution: impact of atmospheric nitrogen deposition

Nitrogen deposition exceeds site relevant critical loads. Locally observed effects are unknown.

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
13A	Control, reduce and ameliorate atmospheric nitrogen impacts.	Not yet determined	2014-20	Site Nitrogen Action Plan	Not yet determined	Not yet determined	Not yet determined

14 Hydrological changes

Titchfield Haven has a high level of water abstraction licences - if all were used then water levels would be too low in the SAC/SPA . Percolation of sea water through sea walls is causing saline intrusion into non-saline grassland habitats and changing them.

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
14A	Review abstraction licences and assess the potential impacts of them.	Not yet determined	2015-20	Water Industry Asset Management Plan (AMP): Abstraction Licence	Not yet determined	Environment Agency	n/a

15 Direct impact from 3rd party

Off-roading is causing damage to some areas of grassland. Private sea defences are causing disruption to the natural movement processes of natural materials along the coast. Military helicopters cause disturbance to wintering birds. House boats are unlicenced and have the potential to cause damage to intertidal habitats. Fly grazing is causing issues affecting large areas of Chichester Harbour.

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
15A	Investigate how wide the problem of off-roading is and the its effects (disturbance) upon wintering and breeding birds.	Not yet determined	2015-17	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
15B	Investigate mechanism/protocol (working with Trading Standards) to enable the removal of illegally grazing animals (fly grazing), as the lack of control of the grazing can lead to unfavourable condition of the grassland areas for breeding and wintering birds through overgrazing.	Not yet determined	2014-16	Investigation / Research / Monitoring	Not yet determined	Natural England	Trading Standards Authority, Wildlife Crime Partnership

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
15C	Assess any licences issued for the shooting of Brent Geese in order to ensure that licensed killing for crop protection purposes is carried out only as a last resort and in a way that does not impact on the Brent Goose population in the Solent SPA. This is particularly important as Brent Goose numbers are decreasing nationally.	Not yet determined	2014	Investigation / Research / Monitoring	Not yet determined	Natural England	n/a

16 Extraction: non-living resources

Shingle extraction for aggregates may have an adverse impact upon intertidal fauna and flora, and may affect the movement of coastal sediments that would in turn have an impact upon intertidal habitats.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
16A	Investigate the extent and effects of shingle extraction from within Natura 2000 sites.	£9,000	2015-17	Investigation / Research / Monitoring	Not yet determined	Not yet determined	n/a

17 Other

SAC/SPA boundaries may not cover the extent of all Annex 1 and Annex 2 features and/or supporting habitats.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
17A	Consider boundary change to amend the SAC / SPA designation, to include habitats outside of the existing boundaries and assess the suite of habitats and species currently designated.	£12,000	2015-17	Designation strategy (SSSI)	Natural England	Natural England	n/a

Site details

The tables in this section contain site-relevant contextual information and links

Qualifying features

#UK Special responsibility

Chichester and Langstone Harbours SPA	A046a(NB) *Branta bernicla bernicla*: Dark-bellied brent goose
	A069(NB) *Mergus serrator*: Red-breasted merganser
	A052(NB) *Anas crecca*: Eurasian teal
	A048(NB) *Tadorna tadorna*: Common shelduck
	A054(NB) *Anas acuta*: Northern pintail
	A157(NB) *Limosa lapponica*: Bar-tailed godwit
	Waterbird assemblage
	A160(NB) *Numenius arquata:* Eurasian curlew
	A050(NB) *Anas penelope*: Eurasian wigeon
	A056(NB) *Anas clypeata*: Northern shoveler
	A162(NB) *Tringa totanus*: Common redshank
	A141(NB) *Pluvialis squatarola*: Grey plover
	A144(NB) *Calidris alba*: Sanderling
	A149(NB) *Calidris alpina alpina*: Dunlin
	A169(NB) *Arenaria interpres*: Ruddy turnstone
	A191(B) *Sterna sandvicensis*: Sandwich tern
	A193(B) *Sterna hirundo*: Common tern
	A195(B) *Sterna albifrons*: Little tern
	A137(NB) *Charadrius hiaticula*: Ringed plover
Portsmouth Harbour SPA	A046a(NB) *Branta bernicla bernicla*: Dark-bellied brent goose
	A069(NB) *Mergus serrator*: Red-breasted merganser
	A156(NB) *Limosa limosa islandica*: Black-tailed godwit
	A149(NB) *Calidris alpina alpina*: Dunlin

Solent & Southampton Water SPA	A046a(NB) *Branta bernicla bernicla*: Dark-bellied brent goose
	A052(NB) *Anas crecca*: Eurasian teal
	A156(NB) *Limosa limosa islandica*: Black-tailed godwit
	Waterbird assemblage
	A176(B) *Larus melanocephalus*: Mediterranean gull
	A191(B) *Sterna sandvicensis*: Sandwich tern
	A192(B) *Sterna dougallii*: Roseate tern
	A193(B) *Sterna hirundo*: Common tern
	A195(B) *Sterna albifrons*: Little tern
	A137(NB) *Charadrius hiaticula*: Ringed plover
Solent Maritime SAC	H1110 Sandbanks which are slightly covered by sea water all the time
	H1320 Spartina swards (*Spartinion maritimae*)
	H1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
	S1016 *Vertigo moulinsiana*: Desmoulin`s whorl snail
	H1130 Estuaries
	H1210 Annual vegetation of drift lines
	H1220 Perennial vegetation of stony banks
	H1140 Mudflats and sandflats not covered by seawater at low tide
	H2120 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")
	H1150# Coastal lagoons
	H1310 Salicornia and other annuals colonising mud and sand

Site location and links

Chichester and Langstone Harbours SPA

Area (ha) **5810.03**	*Grid reference*	**SU761014**	Map link
Local Authorities			City of Portsmouth; Hampshire; West Sussex
Site Conservation Objectives			European Site Conservation Objectives for Chichester and Langstone Harbours SPA
European Marine Site conservation advice			Solent Maritime EMS
Regulation 33/35 Package			Regulation 33/35 package link

Marine Management Organisation site plan			n/a
Portsmouth Harbour SPA			
Area (ha) **1248.77**	*Grid reference*	**SU616036**	Map link
Local Authorities			City of Portsmouth; Hampshire
Site Conservation Objectives			European Site Conservation Objectives for Portsmouth Harbour SPA
European Marine Site conservation advice			Solent Maritime EMS
Regulation 33/35 Package			Regulation 33/35 package link
Marine Management Organisation site plan			n/a
Solent & Southampton Water SPA			
Area (ha) **5505.86**	*Grid reference*	**SZ335936**	Map link
Local Authorities			Hampshire; Isle of Wight; Southampton
Site Conservation Objectives			European Site Conservation Objectives for Solent & Southampton Water SPA
European Marine Site conservation advice			Solent Maritime EMS
Regulation 33/35 Package			Regulation 33/35 package link
Marine Management Organisation site plan			n/a
Solent Maritime SAC			
Area (ha) **11325.09**	*Grid reference*	**SU756003**	Map link
Local Authorities			City of Portsmouth; City of Southampton; Hampshire; Isle of Wight; West Sussex
Site Conservation Objectives			European Site Conservation Objectives for Solent Maritime SAC
European Marine Site conservation advice			Solent Maritime EMS
Regulation 33/35 Package			Regulation 33/35 package link
Marine Management Organisation site plan			n/a

Water Framework Directive (WFD)

The Water Framework Directive (WFD) provides the main framework for managing the water environment throughout Europe. Under the WFD a management plan must be developed for each river basin district. The River Basin Management Plans (RMBP) include a summary of the measures needed for water dependent Natura 2000 sites to meet their conservation objectives. For the second round of RBMPs, SIPs are being used to capture the priorities and new measures required for water dependent habitats on Natura 2000 sites. SIP actions for non-water dependent sites/habitats do not form part of the RBMPs and associated consultation.

Chichester and Langstone Harbours SPA

River basin	South East	South East RBMP
WFD Management catchment	Arun & Western Streams	
WFD Waterbody ID (Cycle 2 draft)	GB107041006520, GB107041012350	

Portsmouth Harbour SPA

River basin	South East	South East RBMP
WFD Management catchment	East Hampshire	
WFD Waterbody ID (Cycle 2 draft)	n/a	

Solent & Southampton Water SPA

River basin	South East	South East RBMP
WFD Management catchment	East Hampshire, Isle of Wight, New Forest, Test & Itchen	
WFD Waterbody ID (Cycle 2 draft)	GB107042011170, GB107042011190, GB107042011220, GB107042011300, GB107042011330, GB107042016340, GB107042016640, GB107042016840, GB107101005971, GB107101006020, GB107101006100, GB30745606, GB30745790	

Solent Maritime SAC

River basin	South East	South East RBMP
WFD Management catchment	Arun & Western Streams, Isle of Wight, New Forest	
WFD Waterbody ID (Cycle 2 draft)	GB107041006520, GB107041012350, GB107042011170, GB107042011190, GB107042011300, GB107042011330, GB107042016340, GB107101006020	

Overlapping or adjacent protected sites

Site(s) of Special Scientific Interest (SSSI)	
Chichester and Langstone Harbours SPA	Chichester Harbour SSSI
	Langstone Harbour SSSI
Portsmouth Harbour SPA	Portsmouth Harbour SSSI
Solent & Southampton Water SPA	Hythe to Calshot Marshes SSSI
	Upper Hamble Estuary & Woods SSSI
	Newtown Harbour SSSI
	Titchfield Haven SSSI
	Sowley Pond SSSI
	The New Forest SSSI
	North Solent SSSI
	Lymington River Reed Beds SSSI
	Thorness Bay SSSI
	Lincegrove & Hackett's Marshes SSSI
	River Test SSSI
	Hurst Castle & Lymington River Estuary SSSI
	Yar Estuary SSSI
	Whitecliff Bay & Bembridge Ledges SSSI
	Medina Estuary SSSI
	King's Quay Shore SSSI
	Eling & Bury Marshes SSSI
	Lower Test Valley SSSI
	Lymington River SSSI
	Brading Marshes to St Helen's Ledges SSSI
	Ryde Sands & Wootton Creek SSSI
	Lee-on-the Solent to Itchen Estuary SSSI

Solent Maritime SAC	Hythe to Calshot Marshes SSSI
	Lee-on-the Solent to Itchen Estuary SSSI
	Upper Hamble Estuary & Woods SSSI
	Bouldnor & Hamstead Cliffs SSSI
	Newtown Harbour SSSI
	Bracklesham Bay SSSI
	Chichester Harbour SSSI
	North Solent SSSI
	Lower Test Valley SSSI
	Langstone Harbour SSSI
	Thorness Bay SSSI
	Hurst Castle & Lymington River Estuary SSSI
	Yar Estuary SSSI
	Medina Estuary SSSI
	King's Quay Shore SSSI
	Eling & Bury Marshes SSSI
	Lincegrove & Hackett's Marshes SSSI
National Nature Reserve (NNR)	
Chichester and Langstone Harbours SPA	n/a
Portsmouth Harbour SPA	n/a
Solent & Southampton Water SPA	Newtown Harbour NNR
	North Solent NNR
	Titchfield Haven NNR
Solent Maritime SAC	Newtown Harbour NNR
	North Solent NNR
Ramsar	
Chichester and Langstone Harbours SPA	Chichester and Langstone Harbours

Portsmouth Harbour SPA	Portsmouth Harbour
Solent & Southampton Water SPA	Solent & Southampton Water
Solent Maritime SAC	Chichester and Langstone Harbours
	Solent & Southampton Water

Special Areas of Conservation (SAC) and Special Protection Areas (SPA)	
Chichester and Langstone Harbours SPA	Solent Maritime SAC
	Solent & Isle of Wight Lagoons SAC
Portsmouth Harbour SPA	n/a
Solent & Southampton Water SPA	South Wight Maritime SAC
	Solent Maritime SAC
	Solent & Isle of Wight Lagoons SAC
Solent Maritime SAC	Solent & Southampton Water SPA
	Chichester and Langstone Harbours SPA

Version	*Date*	*Comment*
1.0	07/10/2014	

ANNEX 6

Copy of the document published by Natural England titled “Advice on Achieving Nutrient Neutrality for New Development in the Solent Region – for Local Planning Authorities, Version 5 (June 2020)

ADVICE ON ACHIEVING NUTRIENT NEUTRALITY FOR NEW DEVELOPMENT IN THE SOLENT REGION

SECTION 1 INTRODUCTION

1.1 The water environment within the Solent region is one of the most important for wildlife in the United Kingdom. It is internationally important for its wildlife and is protected under the Water Environment Regulations[i] and the Conservation of Habitats and Species Regulations[ii] as well as national protection for many parts of the coastline and their sea.[iii] There are high levels of nitrogen and phosphorus input to this water environment with sound evidence that these nutrients are causing eutrophication at these designated sites. These nutrient inputs currently mostly come either from agricultural sources or from wastewater from existing housing and other development. The resulting dense mats of green algae and other effects on the marine ecology from an excessive presence of nutrients are impacting on the Solent's protected habitats and bird species.

1.2 There is uncertainty as to whether new growth will further deteriorate designated sites. This issue has been subject to detailed work commissioned by local planning authorities (LPAs) in association with Natural England, Environment Agency and water companies. This strategic work, which updates early studies, is on-going. Until this work is complete, the uncertainty remains and the potential for future housing developments across the Solent region to exacerbate these impacts creates a risk to their potential future conservation status.

1.3 One way to address this uncertainty is for new development to achieve nutrient neutrality. Nutrient neutrality is a means of ensuring that development does not add to existing nutrient burdens and this provides certainty that the whole of the scheme is deliverable in line with the requirements of the Conservation of Habitats and Species Regulations 2017 (as amended).

1.4 This report sets out a practical methodology to calculating how nutrient neutrality can be achieved. This methodology is based on best available scientific knowledge, and will be subject to revision as further evidence is obtained. It is our advice to local planning authorities to take a precautionary approach in line with existing legislation and case-law when addressing uncertainty and calculating nutrient budgets.

1.5 This report includes a brief summary of the planning and environmental context for this nutrient neutral approach, the detailed methodology and advice on mitigation. Further information and guidance is included in the annexes.

SECTION 2 PLANNING CONTEXT

2.1 The Partnership for Urban South Hampshire (PUSH), Natural England (NE), and Environment Agency (EA) have been jointly working to develop an Integrated Water Management Strategy (IWMS) since before 2008. This work examines the potential for the PUSH region to accommodate future housing growth without having a detrimental effect upon the water environment. A Water Quality Working Group has been set up to identify and analyse the existing evidence gaps and evaluate the need for strategic mitigation measures. A Water Quality Group including Natural England, Environment Agency and Chichester District Council have been working to identify solutions to water quality concerns in Chichester Harbour for at least 10 years. However, there is currently uncertainty as to whether there is sufficient capacity to accommodate the new housing growth.

2.2 Since March 2018, Natural England has been advising that one means of addressing this uncertainty for larger development (in excess of 200-300 houses), including all EIA development, is to calculate a nutrient budget and achieve nutrient neutrality.

2.3 During the summer of 2018, a review of the condition of designated sites water environment in the Solent harbours was undertaken (see next section). The best available up-to-date evidence has identified that some interest features at the designated sites, such as intertidal mudflat habitat and the wildlife they support are widely in unfavourable condition due to existing levels of nutrients and are therefore at risk from additional nutrient inputs.

2.4 It is Natural England's view that there is a likely significant effect on several internationally designated sites (Special Protection Areas, Special Areas of Conservation and Ramsar sites) due to the increase in wastewater from the new developments coming forward.

2.5 The uncertainty about the impact of new development on designated sites needs to be recognised for all development proposals that are subject to new planning permissions and have inevitable wastewater implications. These implications, and all other matters capable of having a significant effect on designated sites in the Solent, must be addressed in line with Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

2.6 LPAs and applicants will be aware of CJEU decisions regarding the assessment of elements of a proposal aimed toward mitigating adverse effects on designated sites and the need for certainty that mitigating measures will achieve their aims. The achievement of nutrient neutrality, if scientifically and practically effective, is a means of ensuring that development does not add to existing nutrient burdens.

2.7 The Water Quality Working Groups draw together expertise from local planning authorities, Environment Agency, Natural England and the water companies to examine this uncertainty further and develop an approach that ensures that

development can progress in a timely manner whilst ensuring the requirements of the Habitats Regulations are met. Further information is included in Annex 1.

SECTION 3 ENVIRONMENTAL CONTEXT

3.1 In 2018 and 2019 Natural England undertook a number of condition assessments of the features of the designated international sites around the Solent (the Solent Maritime SAC, Chichester and Langstone Harbours SPA, Portsmouth Harbour SPA, Solent and Southampton Water SPA) as well as the nationally designated SSSIs that underpin these international designations. An account of the outcome of these assessments, together the evidence used to support the conclusions, is given in Annex 2 with a brief summary below. Annex 2 also includes information on the Solent and Dorset Coast SPA and the Solent and Isle of Wight Lagoons SAC.

Solent Maritime SAC

3.2 For the Solent Maritime SAC the condition assessments completed considered the SAC features across the site as a whole and found the condition of these features - estuary, mudflat & sandflats, sandbanks – to be unfavourable. The unfavourable assessment is based on a number of attributes failing, including the nutrient water quality attribute. 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 infaunal quality. These failures are considered to be in part due to impacts from elevated nutrients.

3.3 Currently the site condition assessment does not include the saltmarsh feature which has not yet been assessed. However preliminary analysis of data shows that there was a loss of extent of saltmarsh across the Solent between 2008 and 2016.

Special Protection Areas and Ramsar sites (Solent and Southampton Water, Portsmouth Harbour and Chichester and Langstone Harbours)

3.4 Condition assessment for the SPAs and Ramsar sites have yet to be undertaken, but a number of bird features are declining as highlighted by recent Wetland Bird Survey alerts. A comparison with regional and national trends indicates that several of the declines are likely to be due to site specific reasons rather than reflecting wider national or regional population trends. While the cause of these site specific declines in the Solent area are largely unknown there are possible links to the elevated nutrient loading.

Sites of Special Scientific Interest (SSSI)

3.5 During 2018 and 2019, Natural England revised and updated the SSSI assessments in the greater Solent area in relation to the influence of the water environment on the condition of estuarine SSSI interest features that underpin the SAC and SPAs. These assessments especially included littoral sediment habitat (mudflat and other tidally

exposed sediment flats). The review of parts of the greater Solent area and some SSSI interest features is ongoing.

3.6 The SSSI interest feature assessments completed consider the concentrations of inorganic nitrogen status in each harbour and estuary, and evidence for ecological responses. Particular attention was given to records on phytoplankton abundance and the presence and abundance of opportunistic green macroalgae.

3.7 These SSSI assessments give a spatially more specific account of the condition of protected sites and details are given in Annex 2 with condition varying across different parts of the Solent. Overall some 81% of the total area assessed is in unfavourable condition. Breaking down this unfavourable area, 40% if it is classed as recovering condition, most of this being in Langstone Harbour but these units are considered 'at risk' of not recovering to a favourable situation as it is unclear whether the nutrient status will become adequate to substantially prevent the growth of dense macroalgae mats in parts of the Harbour.

3.8 In 2019 and 2020, a more detailed review of Chichester Harbour's intertidal features was undertaken of all the overlapping national and internationally designated features including saltmarsh, wintering and nesting birds. More than 3000 hectares of the harbour is in unfavourable declining condition. Reasons for feature declines are complex with many factors acting together, but water quality is one of the contributing causes to the observed declines.

SECTION 4 NUTRIENT NEUTRALITY APPROACH FOR NEW DEVELOPMENT

Introduction

4.1 Achieving nutrient neutrality is one way to address the existing uncertainty surrounding the impact of new development on designated sites. This practical methodology provides advice on how to calculate nutrient budgets and options for mitigation, should this be necessary.

4.2 There is evidence that inputs of both phosphorus and nitrogen influence eutrophication of the water environment. However, the principal nutrient that tends to drive eutrophication in the marine environment is nitrogen and this is supported by modelling and evidence. Please see Annex 2 for further details.

4.3 The best available evidence is for focus in the Solent harbours to be on nitrogen reduction, and reduction in both nitrogen and phosphorus in the Medina catchment. However, this approach may be refined if greater understanding of the eutrophication issue is gained by thorough new research or updated modelling.

4.4 The nutrient budget in this report calculates quantities of nitrogen (N) generated by development. This N comes in different forms and measured N concentrations vary according to exactly what is measured. These differences need to be recognised when calculating nutrient budgets. The key measurement is Total Nitrogen (TN), i.e. both organic and inorganic forms of nitrogen, because this is what is available for

plant growth. TN is the sum of the inorganic forms - nitrate-nitrogen (NO_3-N), nitrite-nitrogen (NO_2-N), ammoniacal - N - and organically bonded nitrogen.

4.5 For developments on the Isle of Wight that are impacting on the Medina estuary, both a phosphorus and nitrogen budget may be required. Natural England will work closely with the Isle of Wight Council and applicants to provide advice on a bespoke case-by-case basis.

Approach to calculating nutrient budgets

4.6 For those developments that wish to pursue neutrality, Natural England advises that a nitrogen budget is calculated for new developments that have the potential to result in increases of nitrogen entering the international sites. A nutrient budget calculated according to this methodology and demonstrating nutrient neutrality is, in our view, able to provide sufficient and reasonable certainty that the development does not adversely affect the integrity, by means of impacts from nutrients, on the relevant internationally designated sites. This approach must be tested through the 'appropriate assessment' stage of the Habitats Regulations Assessment. The information provided by the applicant on the nutrient budget and any mitigation proposed will be used by the local planning authority, as competent authority, to make an appropriate assessment of the implications of the plan or project on the designated sites in question. Further information of this process is available here.

4.7 The nutrient neutrality calculation includes key inputs and assumptions that are based on the best-available scientific evidence and research. It has been developed as a pragmatic tool. However, for each input there is a degree of uncertainty. For example, there is uncertainty associated with predicting occupancy levels and water use for each household in perpetuity. Also, identifying current land / farm types and the associated nutrient inputs is based on best-available evidence, research and professional judgement and is again subject to a degree of uncertainty.

4.8 It is our advice to local planning authorities to take a precautionary approach in line with existing legislation and case-law when addressing uncertainty and calculating nutrient budgets. This should be achieved by ensuring nutrient budget calculations apply precautionary rates to variables and adding a precautionary buffer to the TN calculated for developments. A precautionary approach to the calculations and solutions helps the local planning authority and applicants to demonstrate the certainty needed for their assessments.

4.9 By applying the nutrient neutrality methodology, with the precautionary buffer, to new development, the competent authority may be satisfied that, while margins of error will inevitably vary for each development, this approach will ensure that new development in combination will avoid significant increases of nitrogen load to enter the internationally designated sites.

Location of development

4.10 The nutrient neutrality approach only applies to developments where the treated effluent discharges into any Solent international sites (Solent Maritime SAC, Solent and Southampton Water SPA and Ramsar, Portsmouth Harbour SPA and Ramsar, Chichester and Langstone Harbours SPA and Ramsar), or any water body (surface or groundwater) that subsequently discharges into such a site. The catchment area is shown on Figure 1.

4.11 This approach may be refined if greater understanding of the eutrophication issue is gained by thorough new research or updated modelling.

Type of development

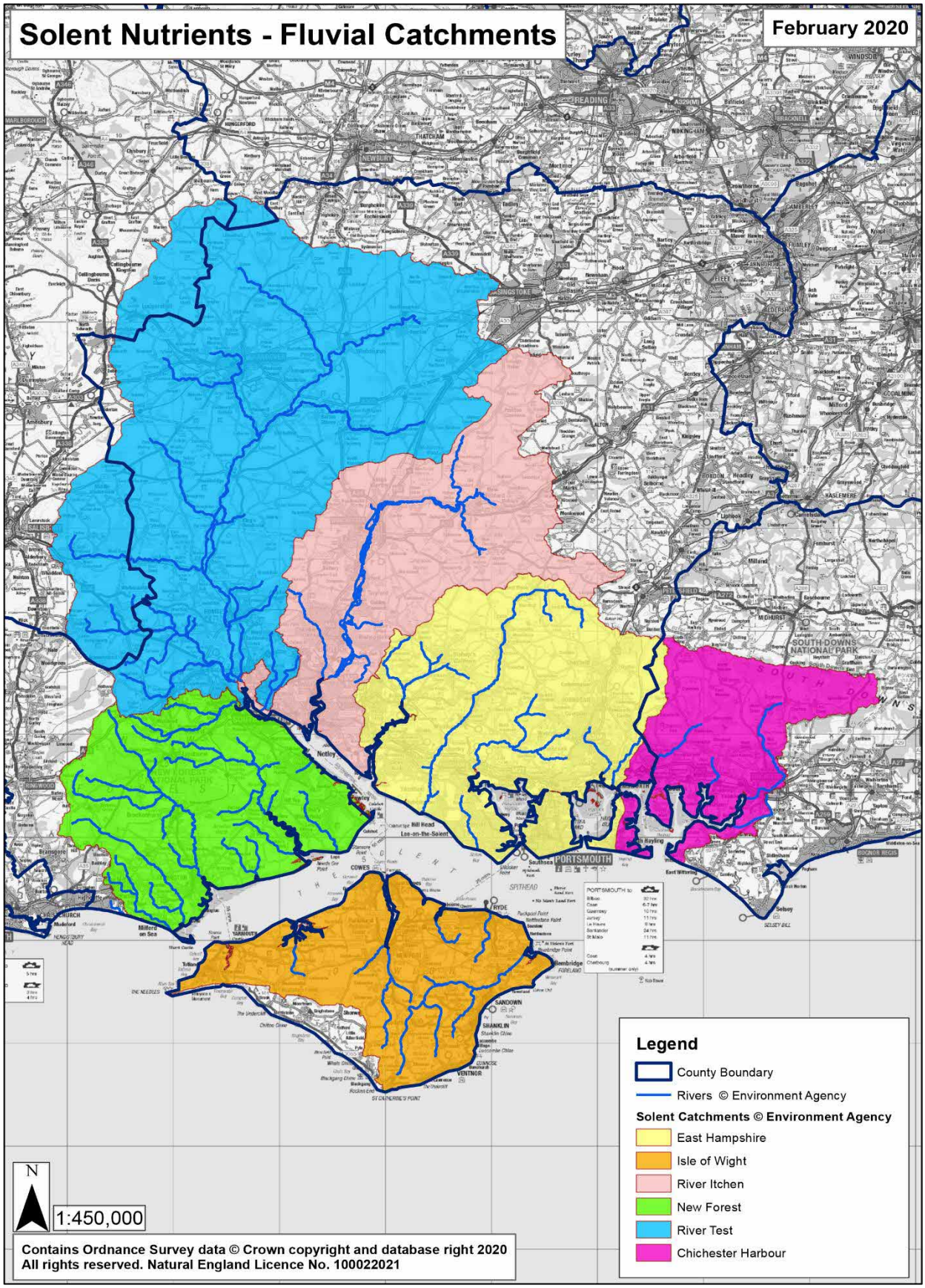
4.12 This methodology is for all types of development that would result in a net increase in population served by a wastewater system, including new homes, student accommodation, tourism attractions and tourist accommodation. This development will have inevitable wastewater implications.

4.13 Other commercial development not involving overnight accommodation will generally not be included. It is assumed that anyone living in the catchment also works and uses facilities in the catchment, and therefore wastewater generated by that person can be calculated using the population increase from new homes and other accommodation. This removes the potential for double counting of human wastewater arising from different planning uses.

4.14 Tourism attractions and tourism accommodation are exceptions, as these land uses attract people into the catchment and generate additional wastewater and consequential nitrogen loading on the Solent. This includes self-service and serviced tourist accommodation such as hotels, guest houses, bed and breakfasts and self-catering holiday chalets and static caravan sites. Other applications will be considered on their individual merits, for example new cruise ship facilities etc.

4.15 There may be cases where planning applications for new commercial or industrial development or changes in agricultural practices could result in the release of additional nitrogen into the system. In these situations, a case-by-case approach will be adopted. Early discussions with Natural England via our chargeable services (DAS) are recommended.

Figure 1 Solent Catchment Area Contains public sector information licensed under the Open Government Licence v3.0



Methodology for nutrient budgets

4.16 The initial stage is to determine whether the development will drain to the mains network or to a non-mains facility e.g. an on-site package treatment plants.

4.17 The methodology for development that drains to the mains network is in Section A. Please go to Section B if the new development is not on the mains network.

Section A

Stage 1 Calculate Total Nitrogen (TN) in kilograms per annum derived from the development that would exit the Wastewater Treatment Works (WwTW) after treatment

Stage1 *Step 1 Calculate additional population*

4.18 New housing and overnight accommodation can increase the population as well as the housing stock within the catchment. This can cause an increase in nitrogen discharges. To determine the additional population that could arise from the proposed development, it is necessary that sufficiently evidenced occupancy rates are used. Natural England recommends that, as a starting point, local planning authorities should consider using the average national occupancy rate of 2.4, as calculated by the Office for National Statistics (ONS), as this can be consistently applied across all affected areas.

4.19 However competent authorities may choose to adopt bespoke calculations tailored to the area or scheme, rather than using national population or occupancy assumptions, where they are satisfied that there is sufficient evidence to support this approach. Conclusions that inform the use of a bespoke calculation need to be capable of removing all reasonable scientific doubt as to the effect of the proposed development on the international sites concerned, based on complete, precise and definitive findings. The competent authority will need to explain clearly why the approach taken is considered to be appropriate. Calculations for occupancy rates will need to be consistent with others used in relation to the scheme (e.g. for calculating open space requirements), unless there is a clear justification for them to differ.

Stage 1 *Step 2 Confirm water use*

4.20 Determine the water use / efficiency standard for the proposed development to be defined in the planning application and, where relevant, the Environmental Statement. The nitrogen load is calculated from the scale of water use and thus the highest water efficiency standards under the building regulations will minimise the increase in nitrogen from the development.

4.21 It is recommended that each Local Planning Authority impose a planning condition on all planning permissions for one or more net additional new dwellings requiring construction to the optional requirement[iv] under G2 of the Building Regulations 2010.

4.22 A model condition is set out below:

"*The dwellings shall not be occupied until the Building Regulations Optional requirement of a maximum water use of 110 litres per person per day has been complied with."*

4.23 The water use figure is a proxy for the amount of wastewater that is generated by a household. New residential development may be able to achieve tighter water use figures, with or without grey water recycling systems, and this approach is supported from a water resource perspective (for example in support of Southern Water's Target 100 litres per person per day). However, the key measurement is the amount of wastewater generated by the development that flows to the wastewater treatment works.

4.24 If tighter water use restrictions are used in the nutrient calculation – with or without grey water recycling systems – these restrictions should reflect the wastewater expected to be generated over the lifetime of the development. There is a risk that when kitchen and bathroom fittings are changed by occupants over the years, less water-efficient models could be installed. It is Natural England's view that it would be difficult to evidence and secure delivery of tighter restrictions at this time. However, if sound evidence can be provided, this will be considered on a case-by-case basis.

4.25 It is Natural England's view that while new developments should be required to meet the 100 litres per person a day standard, the risk of standards slipping over time and the uncertainty inherent in the relationship between water use and sewage volume should be addressed by the use in the calculation of 110 litres per person per day figure.

Stage 1 *Step 3 Confirm WwTW and permit level*

4.26 Identify the Wastewater treatment works (WwTW) that the development will drain to and whether it has a TN permit.

4.27 For most planning applications, the WwTW provider is not confirmed until after planning permission is granted. The nutrient calculation should be based on the permit levels of the most likely WwTW. In any cases where the WwTW changes, a reassessment of the nutrient calculation will be required to ensure the development is nutrient neutral.

<u>WwTWs with TN permit</u>

4.28 Identify the permit concentration limit for Total Nitrogen at the proposed WwTW. If the WwTW will have a tightened permit concentration limit for Total Nitrogen under the company's Water Industry Asset Management Plan by 2024 then use this tightened value. If a new WwTW is proposed, obtain a determination from the

Environment Agency on the permit limit for Total Nitrogen that would apply to the works and when they are likely to be built.

4.29 Where there is a permit limit for Total Nitrogen, the load calculation will use a worst case scenario that the WwTW operates at 90% of its permitted limit. A water company has the option of operating the works as close to the consent limit as practicable without breaching the consent limit. Natural England and the Environment Agency have agreed to take 90% of the consent concentration limit as the closest the water company can reasonably operate the works without risk of breaching the consent limit.

WwTWs without a TN permit

4.30 For developments that discharge to WwTWs with no TN permit limit, best available evidence must be used for the calculation. In the first instance, Southern Water or other wastewater provider should be contacted for details of the nitrogen effluent levels for the specific WwTW. Robust evidence may be available to derive a value for nitrogen in the wastewater stream based on the type of wastewater treatment at the works.

4.31 However, if this data is not available, a figure of 27mg/l can be used. This figure has been derived by Southern Water from nitrogen effluent concentrations at two WwTWs in the Solent area and this average figure may change if new evidence becomes available.

4.32 It is not possible to apply the 90% correction in these cases as these WwTWs are not regulated by a Total Nitrogen consent limit.

Relationship between TN and water use

4.33 For WwTWs with TN consents there is a direct relationship between TN and water use. For example, for WwTWs with a permit of 9 mg /l, it can be calculated that for each litre of water that passes through the works, 8.1mg (90% of 9 mg/l) of nitrogen could be released into the water environment. If a household uses 150 litres, this equates to 1215 mg of TN; if this is reduced to 100 litres, 810 mg of TN is released.

4.34 For WwTWs without a TN consent level, the relationship between water use and TN in the effluent is more complex, but applying the same methodology for nutrient neutrality is considered appropriate.

4.35 For these WwTWs, there is no guarantee that reductions in water use will lower TN discharges. These WwTWs are not regulated by the concentration of TN in each litre of effluent. Instead, the TN concentration could vary depending on the flow volume and concentration of TN coming into the WwTW. Growth in area will lead to more people which will increase the amount of nitrogen reaching a WwTWs and this could then change TN levels in the effluent. However, there is currently no clear correlation

between the TN concentration of the WwTW discharge and size of population served. It is therefore not considered necessary to correct for this factor. The processes at WwTWs and how nitrogen changes its form during treatment are complex, especially the interaction between different levels of nitrogen and carbon in the wastewater. Any error due to marginal increases in TN concentration with increases in population served by a particular WwTW will be covered by the precautionary 20% buffer.

4.36 Please note that due to this uncertainty the use of measures designed to reduce water consumption as a means of reducing TN are not appropriate in areas served by WwTWs without an N permit. This is likely to affect authorities with WwTWs that drain into rivers, as many of these WwTWs do not have TN permit limits currently.

Stage 1 *Step 4 Calculate Total Nitrogen (TN) in Kg per annum that would exit the WwTW after treatment derived from the proposed development*

4.37 The TN load is calculated by multiplying the water use of the proposed development by the appropriate concentration of TN after treatment at the WwTW.

4.38 An element of the TN within the wastewater coming from a household is from the drinking water supplied to that household. However, this forms a relatively small proportion (<10%) of this total. This has been calculated by using a nitrate-N concentration in drinking water of 8mg/l and a TN generated per person of 3.5kg/yr.

4.39 Moreover, in order for favourable condition for the Solent sites to be achieved it is necessary for there to be substantial reductions in ground and river water nitrogen concentrations. Since drinking water comes from these same sources these reductions will in turn affect TN concentrations in drinking water. It is therefore not appropriate to calculate TN budgets over the lifetime of the development based on the current elevated TN levels in drinking water. To do so would lock in a higher TN discharge from development that would offset the required improvements in TN levels in drinking water from changes in agricultural practice over time.

4.40 Notwithstanding the above, it is our advice that it is appropriate to discount an amount of N that would be present in groundwater and river water if they were in a more natural condition. Peer review research indicates that the mean natural river concentration would have been below 0.45 mg/l nitrate-nitrogen[v]. Evidence also suggests that a nitrate concentration in rivers of c2 mg/l equates to the average concentrations in rivers before the 1960s, prior to the dramatic increase in N concentrations during the subsequent decades[vi]. This nitrate concentrations corresponds well with emerging evidence from the Poole Harbour catchment where it is considered that restoration to a favourable conservation status would require a nitrogen load below 1000 tonnes of TN per year landward input. To achieve this, average TN levels in river water in the Poole Harbour catchment would need to be <c2.75 mg/l TN.

4.41 The total annual nitrogen load reductions necessary to achieve a favourable conservation status for the international sites within the greater Solent area have yet to be determined. However, for the purpose of the methodology, a river and groundwater TN concentration of 2 mg/l is considered at this stage to be likely to meet the restoration objectives for the Solent international sites. We therefore recommend that a discounted figure of 2 mg/l is used to reflect the amount of N that would otherwise be present in river and groundwater.

4.42 Natural reductions in nitrogen concentrations, mainly through de-nitrification processes, also occur within watercourses. The scale of de-nitrification is complex and dependent on a number of variables, including the characteristics of the water channels, season, water flows, N concentrations, and uptake by plant communities, etc. Insufficient evidence is currently available to properly evaluate de-nitrification rates within the greater Solent catchments and therefore this factor has not been included within the current methodology. Nevertheless natural de-nitrification processes, particularly for discharges in the upper Solent catchment, provide an additional precautionary factor for the methodology.

Worked example of a nutrient budget calculation for discharge to a WwTW using methodology.

4.43 The following worked example calculates the Total Nitrogen load of a development of 1000 dwellings based on a WwTW with a consent limit for Total Nitrogen of 9 mg/l.

4.44 Where residential developments also include other overnight accommodation such as tourist accommodation and attractions, the associated water use from these additional land uses will need to be included in the calculation. These rates should be based on empirical evidence from similar developments or published literature and will be assessed on a case by case basis.

Table 1 – Calculating wastewater Total Nitrogen load from proposed development

STAGE 1 - WORKED EXAMPLE TO CALCULATE TOTAL NITROGEN (TN) LOAD FROM DEVELOPMENT WASTEWATER				
Step	**Measurement**	**Value**	**Unit**	**Explanation**
Development proposal	Development types that would increase the population served by a wastewater system	1000	Residential dwellings	
Step 1	Additional population	2400	Persons	Uses an average household size of 2.4 x 1000 dwgs (greenfield site).
Step 2	Wastewater volume generated by development	264,000	litres/day	2400 persons (step 1) x 110 litres. Where relevant, deduct wastewater volume of population displaced by the proposed development.
Step 3	Receiving WwTW environmental TN permit limit. Assume discharge to be at 90% of consent limit.	8.1	mg/l TN	90% of the consent limit = 8.1 mg/l TN.
Step 4	Deduct acceptable TN loading (@ 2 mg/l TN) (as defined in paragraph 4.40)	6.1	mg/l TN	8.1 (step 3) – 2 mg/l TN
Step 5	TN discharged after WwTW treatment	1,610,400	mg/TN/day	264000 (step 2) x 6.1 (step 4) =1,610,400
Step 6	Convert mg/TN to kg/TN per day	1.6104	Kg/TN/day	Divide by 1,000,000
Step 7	Convert kg/TN per day to kg/TN per year	587.8	Kg/TN/yr	1.6104 x 365 days
Wastewater total nitrogen load	**587.8 kg/TN/yr**			

Stage 2 Adjust nitrogen load to account for existing nitrogen from current land use

4.45 This next stage is to calculate the existing nitrogen losses from the current land use within the redline boundary of the scheme. The nitrogen loss from the current land use will be removed and replaced by that from the proposed development land use. The net change in land use will need to be subtracted from or added to the wastewater Total Nitrogen load.

4.46 Nitrogen–nitrate loss from agricultural land can be modelled using the Farmscoper model. A study commissioned by Natural England from ADAS modelled this loss for different farm types across the river catchments that drain to the Solent (ADAS UK Ltd. 2015. Solent Harbours Nitrogen Management Investigation).

4.47 If the development area covers agricultural land that clearly falls within a particular farm type used by the Farmscoper model then the modelled average nitrate-nitrogen loss from this farm type should be used. The farm types used in the ADAS model are set out in Table 2, with the nitrate-nitrogen loss. Further details on farm classification are included in Appendix 1.

Table 2 Farm types and average nitrogen-nitrate loss

AVERAGE NITRATE-NITROGEN LOSS PER FARM TYPE IN THE SOLENT CATCHMENT AREA (kg/ha)	
Cereals	31.2
Dairy	36.2
General Cropping	25.4
Horticulture	29.2
Pig	70.4
Lowland Grazing	13.0
Mixed	28.3
Poultry	70.7
Average for catchment area	**26.9**

4.48 If the proposed development area covers several or indeterminate farm types then the average nitrate-nitrogen loss across all farmland may be more appropriate to use. The average figure is also included in Table 2.

4.49 The figures in the ADAS report are based on 2010 land use data and may be updated from time-to-time as land use and agricultural practice to control nitrate loss changes.

4.50 For maize farms, it is recommended that the general cropping nitrogen leaching rate is used in the calculation. For sites that are in use as allotments, it is recommended

that the most appropriate farm type for allotments is the average rate of 26.9 kg/ha/yr. For sites that are currently in use as horse paddocks, it is recommended that the lowland grazing figure should be used in the calculation.

4.51 It is important that farm type classification is appropriately precautionary. It is recommended that evidence is provided of the farm type for the last 10 years and professional judgement is used as to what the land would revert to in the absence of a planning application. In many cases, the local planning authority, as competent authority, will have appropriate knowledge of existing land uses to help inform this process.

4.52 There may be areas of a greenfield development site that are not currently in agricultural use and have not been used as such for the last 10 years. In these areas as there is no agricultural input into the land a baseline nitrogen leaching value of 5 kg/ha should be used. This figure covers nitrogen loading from atmospheric deposition, pet waste and nitrogen fixing legumes.

4.53 Where development sites include wildlife areas, woodlands, hedgerows, ponds and lakes that are to be retained, these areas can either be excluded from the calculation as there will be no change in nitrogen input onto this land, or included with the same nitrogen leaching rate in stage 2 and 3. This approach assumes that if they are adopted as green infrastructure or a wildlife area in the new development, appropriate management can be secured with any planning permission (see next section) to restrict nitrogen loading.

4.54 A similar approach can also be taken for the redevelopment of urban land as the nitrogen leaching rate would be 14.3 kg/ha in stage 2 and 14.3 kg/ha in stage 3. If there is no change in site area, these areas can be excluded from the calculation.

4.55 For sites, where existing land use is not confirmed, it is Natural England’s advice to local planning authorities and applicants to take a precautionary approach in line with existing legislation and case-law.

4.56 Please note if evidence can be provided to support an alternative nitrogen figures for any existing land use, then this information will be reviewed by the local planning authority and Natural England.

4.57 A worked example to calculate the nitrogen load from existing land use is set out in Table 3.

Table 3 Calculating nitrogen load from current land use

STAGE 2 - WORKED EXAMPLE TO CALCULATE NITROGEN LOAD FROM CURRENT LAND USE				
Step	**Measurement**	**Value**	**Unit**	**Explanation**
1	Total area of existing agricultural land	40	Hectares	This is the area of agricultural land that will be lost due to development
2	Identify farm type and confirm nitrate loss.	26.9	Kg/ha/yr	The developable area covers several farm types therefore an average has been used. Reference Appendix 1 and Table 2
3	Multiply area by nitrate loss	1,076	Kg/N/yr	40 ha x 26.9 kg/N/yr
Nitrogen load from current land use	1,076 Kg/N/yr			

Stage 3 Adjust nitrogen load to account for land uses with the proposed development

4.58 The last stage is to add in the nitrogen load that will result from the new development that is not received by a WwTW. This includes the nitrogen load from the new urban development and from the new open space including any Suitable Alternative Natural Greenspace (SANG), Nature Reserves, or Bird Refuge Areas as identified within the redline boundary of the scheme.

4.59 The calculation only includes the areas of the site where there will be a change in land use, for example from agricultural land to new urban development or agricultural land to Suitable Alternative Natural Greenspace (SANG) / open space. Where there is no proposed change to land use, this land should be excluded from the nitrogen budget as there will be no change to the nitrogen load from this area.

4.60 A worked example is shown in the table below. This is based on a developable area of 38 hectares covering land in a mix of farm types with the removal of 2 hectares of agricultural land to create SANG.

Urban development

4.61 The nitrogen load from the new urban development results from sewer overflows and from drainage that picks up nitrogen sources on the urban land. Urban development includes the built form, gardens, road verges and small areas of open space within

the urban fabric. These nitrogen sources include atmospheric deposition, pet waste, fertilisation of lawns and gardens and inputs to surface water sewers. The nitrogen leaching from urban land equates to 14.3 kg/ha/yr[vii]. Appendix 2 sets out the scientific research and literature in relation to this figure.

Open Space and Green Infrastructure

4.62 Nitrogen loss draining from new designated open space or Suitable Alternative Natural Greenspace (SANG) should also be included. The nitrogen leaching from this land is likely to equate to 5 kg/ha/yr. Appendix 3 sets out the scientific research and literature in relation to this figure. This figure can also be used where new nature reserves or bird refuge areas are created and for new woodland planting areas.

4.63 The competent authority will need to be assured for that this open space will be managed as such and there will be no additional inputs of nutrients or fertilisers onto this land for the duration of the development. Appropriate conditions or other legal measures may be necessary to ensure it will not revert back to agricultural use, or change to alternative uses that affect nutrient inputs in the long term. It is therefore recommended that the 5 kg/ha/yr rate applies to areas of designated open space on-site of around 0.5 hectares and above. These sites will also need long term management to ensure the provision of dog bins and that these are regularly emptied.

4.64 Small areas of open space within the urban fabric, such as road verges, gardens, children's play areas and other small amenity areas, should not be included within this category. The urban development figure is appropriate for these land uses.

Community food growing provision

4.65 For any areas of the site that are proposed for community food growing provision such as allotments, it is recommended that the average farm type rate is used (26.9 kg/ha/yr).

Table 4 – Adjust nitrogen load to account for future land uses

STAGE 3 - WORKED EXAMPLE TO CALCULATE NITROGEN LOAD FROM FUTURE LAND USES				
Step	**Measurement**	**Value**	**Unit**	**Explanation**
1	New urban area	38	Hectares	Area of development that will change from agricultural land to urban land use
2	Nitrogen load from future urban area	543.4	Kg/N/yr	38 ha x 14.3 Kg/N/yr
3	New SANG / open space	2	Hectares	Area of development that will change from agricultural land to SANG / open space
4	Nitrogen load from SANG / open space	10	Kg/N/yr	2 ha x 5.0 Kg/N/yr
5	Combine nitrogen load from future land uses	553.4	Kg/N/yr	543.4 Kg/N/yr + 10 Kg/N/yr
Nitrogen load - future land uses	553.4 Kg/N/yr			

Stage 4 ***Calculate the net change in the Total Nitrogen load that would result from the development***

4.66 The last stage is to calculate the net change in the Total Nitrogen load to the Solent catchment with the proposed development. This is derived by calculating the difference between the Total Nitrogen load calculated for the proposed development (wastewater, urban area, open space etc) and that for the existing land uses.

4.67 It is necessary to recognise that all the figures used in the calculation are based on scientific research, evidence and modelled catchments. These figures are the best available evidence but it is important that a precautionary buffer is used that recognises the uncertainty with these figures and in our view ensures the approach prevents, with reasonable certainty, that there will be no adverse effect on site integrity. Natural England therefore recommends that a 20% precautionary buffer is built into the calculation.

4.68 There may be instances where it is the view of the competent authority that an alternative precautionary buffer should be used on a site-specific basis where sufficient evidence allows the legal tests to be met.

4.69 Table 5 sets out a worked example.

Table 5 Nitrogen Load Budget

STAGE 4 - WORKED EXAMPLE TO CALCUATE THE NET CHANGE IN NITROGEN LOAD FROM THE DEVELOPMENT				
Step	**Measurement**	**Value**	**Unit**	**Explanation**
1	Identify nitrogen load from wastewater (stage 1)	587.8	Kg/TN/yr	See Table 1
2	Calculate the net change in nitrogen from land use change - subtract existing land uses nitrogen load (stage 2) from future land uses nitrogen load (stage 3)	-522.6	Kg/TN/yr	553.4 (stage 3) - 1076 (stage 2) = -522.6 Kg/TN/yr
3	Determine nitrogen budget – the Total Nitrogen wastewater load for the proposed development plus the change in nitrogen load from land use change (the latter figure may be positive i.e. the change in land use will generate more nitrogen, or negative i.e. the change in land use will generate less Nitrogen)	65.2	Kg/TN/yr	587.8 (step 1) + -522.6 (step 2) = 65.2 Kg/TN/yr
4	Where TN budget is positive add 20% precautionary buffer	78.24	Kg/TN /yr	64.8 + 20% = 78.24
Total Nitrogen that needs to be neutralised	**78.24 Kg/TN /yr**			

Section B

Methodology for calculating TN budgets for package treatment plants (PTPs)

4.70 The Environment Agency has a presumption against private sewage treatment works in sewered areas and will always seek connection to the mains sewer where possible and practicable. A principle concern relates to the failure rates of PTPs and the lack of review and periodic upgrades via regulatory systems that apply to mains. There will be site specific factors (e.g. in proximity to watercourses, soil saturation levels, etc.) that would need to be considered when evaluating this risk.

4.71 Further advice from the Environmental Agency on the use of PTP may be found at - https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits. Additional guidance may also be available via local planning authorities. For example, Chichester District Council has adopted a supplementary planning document for surface and foul drainage - https://www.chichester.gov.uk/article/29757/Supplementary-planning-documents-and-policy-guidance.

4.72 Where development are proposing to use package treatment plants, or similar, it is recommended that the TN level is calculated on a per person basis. On average each person produces sewage containing 0.0035 tonnes of nitrogen per year (3.5 kilograms)[viii].The TN prior to treatment = number of additional population x 3.5 Kg = Kg/TN/yr.

4.73 The percentage reduction of TN that may be applied as result of treatment will depend on the efficiency of the treatment processes employed and must be assessed on a case by case basis. NB The evidence supporting the efficiency of PTPs should include the test result documents from the lab (in English) and/or measured effluent concentrations from real world applications, not just the covering certificate. Information will also need to be provided on the long term monitoring and management of these installations and this will need to be secured.

4.74 Bespoke calculations of the TN load may be possible for larger PTPs in instances where robust evidence of the performance of the system in removing nitrogen is provided. In addition to the above, the evidence will need to include, as a minimum, a full year of operation and supporting information to ensure that the concentration of total nitrogen within the effluent can be reliably predicted. In these cases, early consultation with Natural England, through our charged advice service, and the competent authority is recommended.

4.75 Table 6 sets out a worked example for Stage 1. Stages 2, 3 and 4 of the above methodology can then be applied.

Table 6 Alternative Stage 1 methodology for package treatment plants (PTPs)

STAGE 1 - WORKED EXAMPLE TO CALCULATE TOTAL NITROGEN (TN) LOAD FROM DEVELOPMENT WASTEWATER WITH AN ONSITE PTP (prior to treatment)				
Step	**Measurement**	**Value**	**Unit**	**Explanation**
Development proposal	Development types that would increase the population served by a wastewater system	100	Residential dwellings	
Step 1	Additional population	240	Persons	Based on average household size of 2.4
Step 2	TN prior to treatment Based on 3.5 Kg TN per person per year	840	Kg TN /yr	240 (step 1) x 3.5 Kg TN per person per yr
Step 3	Receiving PTP TN reduction efficiency	70	%	Efficiency of PTP used must be evidenced.
Step 4	TN discharged after PTP treatment	252	Kg TN /yr	30% of 840
Step 5	Acceptable N loading (as defined in paragraph 4.40) Based on 110 l per day per person	52,800	mg TN /day	Total waste water from development (110l x 240 persons) x Acceptable N loading of 2 mg/l
Step 6	Convert acceptable TN loading to TN Kg / Yr	19.3	Kg TN / Yr	Divide by 1000000 x by 365 days
Step 7	TN discharged - acceptable N loading (@ 2 mg/l)	232.7	Kg TN / Yr	252 (step 4) – 19.3 (step 6)
PTP Total Nitrogen Load	**232.7 Kg TN / Yr**			

SECTION 5 MITIGATION

Introduction

5.1 If there is a nitrogen surplus from the WwTW discharge (a positive figure), then mitigation is required to achieve nitrogen neutrality. If the calculation identifies a deficit (a negative figure), no mitigation is required. In the worked example set out in Table 5, the nitrogen budget with 20% buffer is 77.8 Kg/TN/yr. Nitrogen neutrality would therefore require appropriate mitigation measures that would remove a minimum of 77.8 Kg/TN/yr.

5.2 Mitigation can be 'direct' through upgrading sewage treatment works and through alternative measures, e.g. interceptor wetlands; or 'indirect' by taking land out of high nitrogen uses, e.g. crops or intensive livestock systems that result in an excess of nitrogen lost to the water environment.

5.3 The purpose of the mitigation measures is to avoid impacts to the designated sites, rather than compensating for the impacts once they have occurred. Avoiding impacts is achieved by neutralising the additional nutrient burden that will arise from the proposed development, achieving a net zero change at the designated sites in a timely manner.

5.4 To ensure it is effective mitigation, any scheme for neutralising nitrogen must be certain at the time of appropriate assessment so that no reasonable scientific doubt remains as to the effects of the development on the international sites. This will need consideration of the delivery of mitigation, its enforceability and the need for securing the adopted measures for the duration of the development's effects, generally 80-125 years.

5.5 Schemes that are being delivered by other sectors (for example water industry and agricultural sector) for the purpose of meeting the necessary conservation measures designed for the international sites and to take appropriate steps to avoid the deterioration of the international sites should not also be used as mitigation for plans and projects, as this would compromise the original purpose and would be unlikely to meet the legal tests of the Habitats Regulations.

5.6 Further information has been included in this section on recommended mitigation measures. Each mitigation scheme will be assessed on its own merits and on a case by case basis, based on the submitted evidence. We recommend applicants to discuss options with local planning authorities and Natural England through our charged advice service, at the earliest opportunity. However, it is ultimately the decision of the local planning authorities, as competent authorities, to determine the suitability of the proposed mitigation scheme in line with the legal tests in the Habitats Regulations.

Types of mitigation

Conversion of agricultural land for community and wildlife benefits

5.7 Permanent land use change by converting agricultural land with higher nitrogen loading to alternative uses with lower nitrogen loading, such as for local communities, wildlife, and under schemes for flood management or to deliver the UK Government's Net Zero greenhouse gas emissions target by 2050[ix], is one way of neutralising nutrient burdens from development. It is important to retain the best and most versatile agricultural land in food production, particularly food crop production. However, there are a number of reasons to support conversion of agricultural land where the land is less economic to farm. There may also be a wide range of incidental benefits for the local community and wildlife from this change, as well as delivery of wider planning policy objectives and climate emergency pledges.

On-site options

5.8 One option is to increase the size of the SANGs and Open Space provision for the development on agricultural land that reduces the nitrogen loss from this source. This can be secured as designated open space or by other legal mechanisms.

Off-site options

5.9 Another option is to acquire, or support others in acquiring, agricultural land elsewhere within an appropriate river catchment area. By changing the land use in perpetuity (e.g. to woodland, heathland, saltmarsh, wetland or conservation grassland), this reduces the nitrogen loss from this source.

5.10 Mitigation land should be appropriately secured to ensure that at the time of appropriate assessment it is certain that the benefits will be delivered in the long term. Natural England advises that this can be achieved through an appropriate change of ownership to a local planning authority or non-government organisation. However, it is recognised that there may be other legal mechanisms available to the competent authority to ensure deliverability and enforceability of a mitigation proposal. These can be considered on a case by case basis.

5.11 Small scale developments are encouraged to consider opportunities for providing local small scale mitigation measures that deliver multiple benefits. Possible options include the creation of local ponds, wetlands, local nature reserves, community orchards (without nitrogen inputs), or copse. Another example is to turn a strip (in excess of 10m width) of agricultural land immediately adjacent to a public footpath into a greenway. This could be demarcated by hedges or woodland planting for both public and wildlife benefits.

Woodland planting

5.12 Woodland planting on agricultural land is a means of securing permanent land use change without necessitating land purchase. It can be evidenced easily by aerial photography and site visits. The level of woodland planting required to achieve nutrient neutrality is 20% canopy cover at maturity. In very broad terms, this equates to 100 trees per hectare, although this is dependent on the type of trees planted and there are also options that this can be achieved by natural regeneration, especially if adjacent to existing native woodland. It is our preference that native broadleaf species are selected where possible, to secure wider biodiversity gains. A nitrogen leaching rate from woodland planting is likely to equate to 5 kg/ha/yr.

5.13 In a relatively short time, the woodland planting would require a felling licence and woodland removal would also be covered by the EIA Regulations where woodland is planted as mitigation for internationally designated sites. There are therefore a number of layers of security for the competent authorities to ensure this mitigation is being delivered effectively. Planted woodland does require management for the first decade in terms of plug fencing and maintenance until the canopy has reached above browsing height, thereafter management is relatively minimal though some thinning is preferable to enable mature trees to develop.

5.14 Woodland planting would secure carbon capture, biodiversity and recreational benefits. The established woodlands could also be used for wood fuel production or coppice timber production.

Wetlands

5.15 Wetlands receiving nitrogen-rich water can remove a proportion of this nitrogen through processes such as denitrification and sedimentation. Wetlands can be designed as part of a sustainable urban drainage (SUDs) system, taking urban runoff/stormwater; discharges from STWs can be routed through wetlands; or the flow, or part of the flow, of existing streams or rivers can be diverted through wetlands. Wetlands deliver incidental wildlife and biodiversity benefits, with possible drainage and flood defence benefits (by reducing risk of harm from natural hazards).

5.16 It is essential that wetlands and SUDs are maintained to provide ongoing nutrient removal. Provisions for resourcing the ongoing maintenance of SUDs will need to be secured with any planning permission. Further information on the potential for nitrogen mitigation using wetlands is included in Appendix 4.

Wastewater Treatment Work Upgrades

5.17 Mitigation options at WwTWs include the agreement with the wastewater treatment provider that they will maintain an increase in nitrogen removal at the WwTW. This may include either upgrades to infrastructure (long term), or where the existing WwTW infrastructure has capacity an agreement to operate the WwTW at a higher standard than required by the discharge consent. Natural England, Environment

Agency, Local Planning Authorities and water companies are working together to explore these options.

5.18 There may also be opportunities to progress a wetland at a WwTWs, at the final stage of the process, once the permit consents have been met. It is possible to discharge the WwTWs outfall through wetlands, prior to release into the wider environment. Further details of this option is included in Appendix 4.

Size of mitigation land

5.19 The mitigation land must be sufficient to ensure the legal tests in the Habitats Regulations can be met.

5.20 Larger schemes create more opportunities for other sources of funding. Land that is taken out of agriculture for nutrient mitigation could also qualify for additional funding for future management to meet other legislative and policy requirements. For example, with additional management and infrastructure, this land may qualify as Suitable Alternative Natural Greenspace to relieve recreational pressure on international designated sites or, alternatively, to deliver a strategic bird reserves in line with Solent Waders and Brent Goose Strategy. Furthermore, larger schemes have the potential to deliver wider community and biodiversity benefits and these options should be encouraged where possible.

5.21 Smaller schemes will also be acceptable where the legal tests in the Habitats Regulations are met so there is certainty around these measures, for example, their deliverability, enforceability and long term use

Location of mitigation

5.22 The location of the mitigation site will also influence the effectiveness of the measure. The appropriate location for mitigation land firstly depends on the catchment of the development and location of the WwTWs outfall. Consideration then needs to be given to site specific factors such as geology, hydrology and topography.

Identifying the catchment for mitigation land

5.23 The fluvial catchment for the Solent internationally designated sites is shown on Figure 1. Figures 2 – 7 show the catchment area at a larger scale[x].

5.24 A key objective is to ensure mitigation land is situated in the most effective location. In order to achieve this, it may be appropriate to establish mitigation land in a number of locations or catchments. For example, for some of the coastal WwTWs, there is a widespread distribution of output to a number of designated sites within the Solent. Therefore a number of catchments would be appropriate locations for mitigation land. This view is based on modelling that has been undertaken by the Environment Agency and analysed by water quality specialists within Natural England in relation to the internationally designated sites. The modelling identifies the relative contributions

of all nitrogen sources within the harbours and estuaries of the Solent and is the best available scientific evidence available[xi].

5.25 The following recommendations can generally be applied to determine the suitability of the mitigation location. These recommendations are based on spatial principles and temporal principles

Spatial principles

5.26 It is Natural England's view that mitigation land within the same catchment as the development location is appropriate.

River catchments

5.27 For WwTWs that drain into the rivers, it is appropriate for the mitigation land to be within the same river catchment as the outfall location. This is the preferred solution in all cases. If this is not possible, mitigation in close alternative catchments would be appropriate in the following cases.

River Test and River Itchen

5.28 It is appropriate for the River Test and River Itchen catchment to be considered as one catchment. Therefore development located in the River Test catchment could be mitigated in the River Itchen catchment and *vice versa*.

Bartley Water

5.29 It is also appropriate for development within the Bartley Water catchment (New Forest) to be included with the Test and Itchen catchment. This is due to the close proximity of the outfalls within Southampton Water and the tidal flows between these estuaries.

New Forest Rivers

5.30 It is appropriate for the New Forest rivers that outfall to the southern coast of the New Forest to be considered as one catchment – River Beaulieu, River Lymington, Danes Stream, Dark Water, Sowley Stream and the coastal areas.

River Meon

5.31 For development that outfalls to the River Meon, it would be appropriate to mitigated within the River Hamble catchment and within the Portsmouth Harbour catchment.

River Hamble

5.32 For development that drains to ground within the River Hamble catchment or to a WwTWs that drains to the River Hamble, eg Bishops Waltham WwTW, mitigation land is limited to within the River Hamble catchment.

Isle of Wight Rivers

5.33 For development that drains to ground within the catchment of or direct to the each of the Isle of Wight rivers, eg Eastern Yar, mitigation land is limited to within the same river catchment.

Portsmouth Harbour, Langstone Harbour and Chichester Harbour

5.34 For the WwTWs that drains to each harbour (Portsmouth Harbour, Langstone Harbour and Chichester Harbour), priority locations for mitigation are the same river catchment as the WwTW outfall.

5.35 For example, the Bosham WwTW outfalls at the base of Bosham and Fishbourne Channels within Chichester Harbour. The most effective location for mitigation is within the same catchment as these arms of Chichester Harbour.

5.36 In some cases there may be opportunities to mitigate within other river catchments within the harbours. These will be examined on a case by case basis and we advise early consultation with Natural England and the local planning authority.

Coastal WwTWs

5.37 For development that drains to coastal WwTW (Portswood WwTW, Woolston WwTW, Millbrook WwTW) within the northern part of Southampton Water, mitigation is appropriate in the following catchments – River Test, River Itchen, Bartley Water.

5.38 For development that drains to other coastal WwTWs in Southampton Water eg Ashlett Creek WwTW, mitigation is appropriate in the following catchments - River Test, River Itchen, River Meon, River Hamble, eastern catchments of the New Forest.

5.39 For development that drains to Peel Common WwTW, mitigation is appropriate in the following catchments – River Meon, Portsmouth Harbour, Medina Estuary, Wootton Creek, Newtown Harbour, Langstone Harbour.

5.40 For development that drains to Budds Farm WwTW, mitigation is appropriate in the following catchments – River Meon, Portsmouth Harbour, Langstone Harbour, Chichester Harbour, Wootton Creek, Medina Estuary (and the estuaries in between).

5.41 For development that drains to Pennington WwTW, mitigation is appropriate in the following catchments, south coast of New Forest, Western Yar, Newtown Harbour

Drain to ground

5.42 For developments that drain to ground via a package treatment plant (PTP) or mains WwTWs, it is appropriate for mitigation land to be within the same catchment as the outfall location of the PTP or WwTW.

Temporal principles

5.43 Within chalk geology where the nitrogen discharge is to ground and remote from watercourses there is likely to be a considerable delay (it may take up to 1 year for ground water discharges to percolate through a meter of chalk) before the nitrogen discharged reaches the international designated sites. In such circumstances mitigation measures that take effect quickly may not need to be implemented immediately. We advise that these issues are examined on a case by case basis in consultation with the relevant local planning authority or authorities and Natural England.

Identifying optimal locations for mitigation

5.44 Any discharge from a development that is directed to a WwTW that outfalls to the estuaries and harbours has the potential to reach the designated sites in a matter of hours or tide cycle. It is therefore important for any mitigation sites to be located in the most optimal locations. Sites that are downstream of the WwTWs and upstream of the designated sites are ideally located to reduce the nutrient load reaching the designated sites.

5.45 It is our preference that mitigation sites are prioritised within the lower fluvial catchment and in close proximity to water courses that drain into the Solent estuaries and harbours. Sites that are located on tertiary geology or clay are preferred or sites that are located on the break of slope onto chalk bedrock. These sites reduce the time lag between the nutrient benefits of changes to land use within the catchment and the benefits to the designated sites.

5.46 For sites located on the upper fluvial catchment of the Solent on the chalk bedrock, without any water course in close proximity, there may be a time lag for consideration. It is our advice that the depth of the chalk groundwater is considered. For sites where the groundwater is more than 5m below ground level, then this land is unlikely to be appropriate for mitigation for short term development. Although it may be appropriate for development that is phased over more than 5 years, provided the mitigation land is delivered straightaway.

5.47 There may be sites where there is evidence of a short time lag between nutrient reduction at the mitigation site and the designated sites, or where the mitigation site is located on a geology or in an area that will result in additional benefits for nutrient removal, over and above the change in land use at the site itself. These options will be considered on a case by case basis.

Strategic Solutions

5.48 It is appreciated that achieving nutrient neutrality may be difficult for smaller developments, developments on brownfield land, or developments that are well-progressed in the planning system. Natural England is working closely with local planning authorities to progress Borough /District/ City/ Authority wide and more

strategic options that achieve nutrient neutrality and enable this scale of development to come forward.

5.49 A number of options are coming forward. It is recommended that discussions are held with the relevant local planning authorities with regard to these options. Further information will be available on the Partnership for South Hampshire website and Chichester District Council website in due course.

5.50 Natural England can provide further advice on the methodology and mitigation options through our chargeable services (DAS).

[i] The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

[ii] Conservation of Habitats and Species Regulations (England and Wales) Regulations 2017 (as amended)

[iii] Including Wildlife and countryside Act 1981 as amended, Countryside and Rights of Way Act 2000, Marine and Coastal Access Act 2009, Natural Environment and Rural Communities Act 2006

[iv] The optional requirement referred to in G2 requires installation and fittings and fixed appliances for the consumption of water at 110 litres per person per day.

[v] Desmit, X., Thieu, V., Billen, G., Campuzano, F., Dulière, V., Garnier, J., Lassaletta, L., Ménesguen, A., Neves, R., Pinto, L., Silvestre, M., Sobrinho, J.L., Lacroix, G., 2018. Reducing Marine Eutrophication May Require a Paradigmatic Change. Science of the Total Environment 635 (2018) 1444–1466

[vi] Crossley, Laura Helen (2019) Palaeoenvironmental reconstruction of Poole Harbour water quality and the implications for estuary management. *University of Southampton, Doctoral Thesis*, 331pp,

Howden, N.J.K., Burt, T.P., 2009. Statistical analysis of nitrate concentrations from the Rivers Frome and Piddle (Dorset, UK) for the period 1965–2007. Ecohydrology 2, 55–65. doi:10.1002/eco.39,

Howden, N. J. K., Burt, T. P., Worrall, F., Whelan, M. J., & Bieroza, M. (2010). Nitrate concentrations and fluxes in the River Thames over 140 years (1868-2008): Are increases irreversible? *Hydrological Processes*, **24**, 2657– 2662. https://doi.org/10.1002/hyp.7835

[vii] Supplementary Planning Document – Achieving Nitrogen Neutrality in Poole Harbour. 2017

[viii] Supplementary Planning Document – Achieving Nitrogen Neutrality in Poole Harbour, 2017

[ix] https://www.theccc.org.uk/publication/land-use-policies-for-a-net-zero-uk/

[x] These plans contain public sector information licensed under the Open Government Licence v3.0

[xi] Environment Agency – CPM modelling, SAGIS/SIMCAT and Telemac modelling for Water Framework Directive DIN and Ecological Impact Investigations, 2014

Figure 2

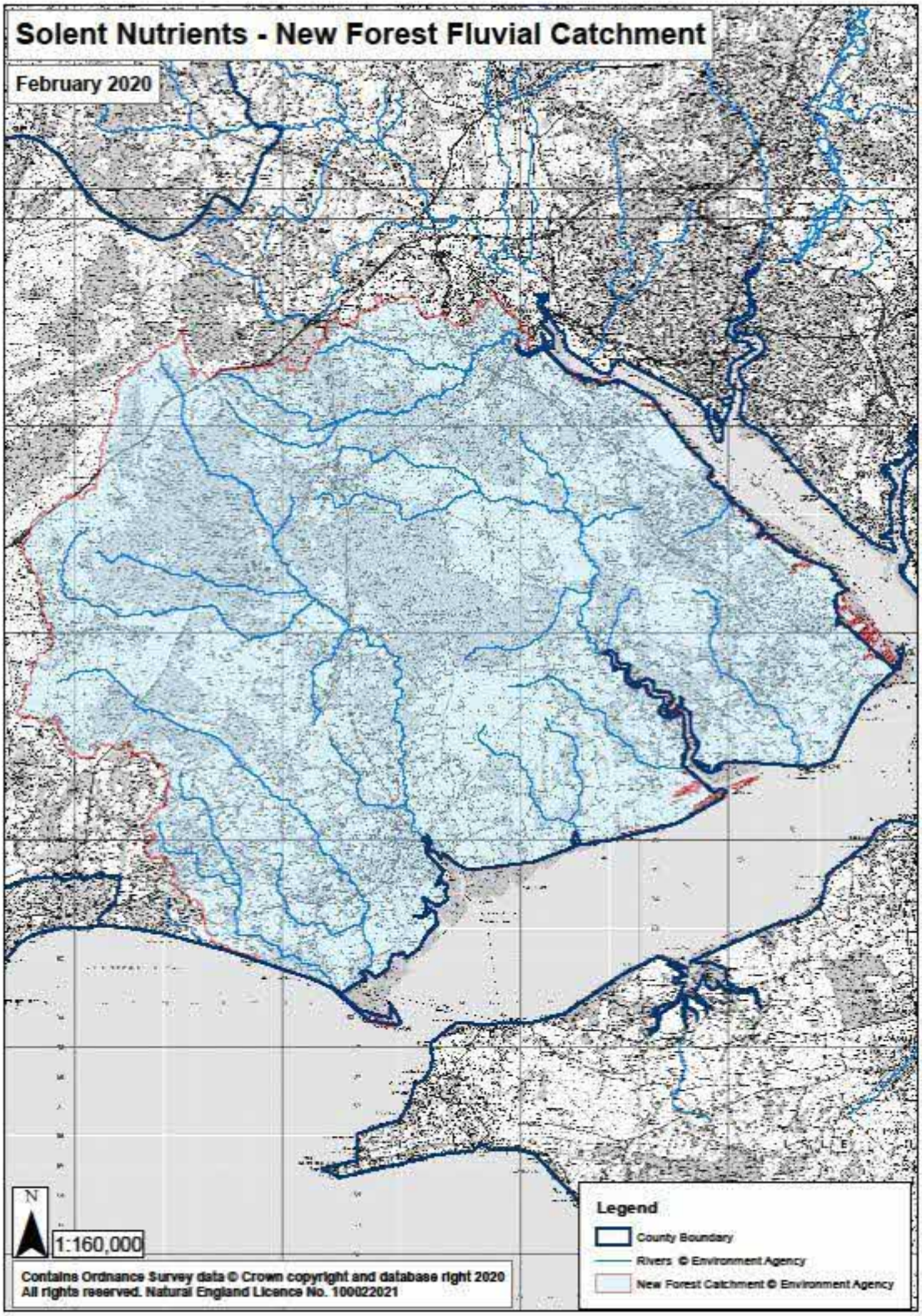

Solent Nutrients - New Forest Fluvial Catchment
February 2020
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Figure 3

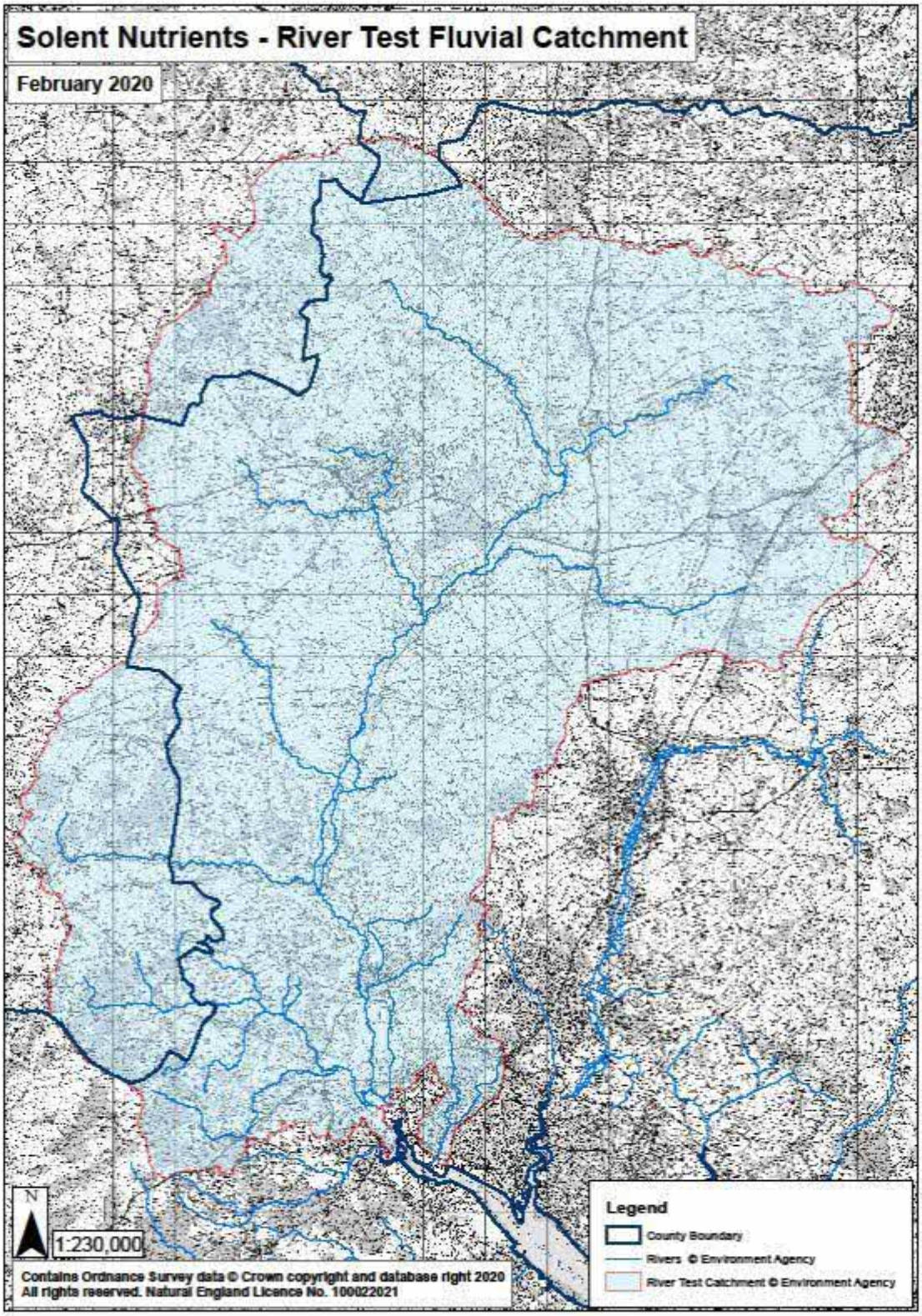
Solent Nutrients - River Test Fluvial Catchment
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Figure 4

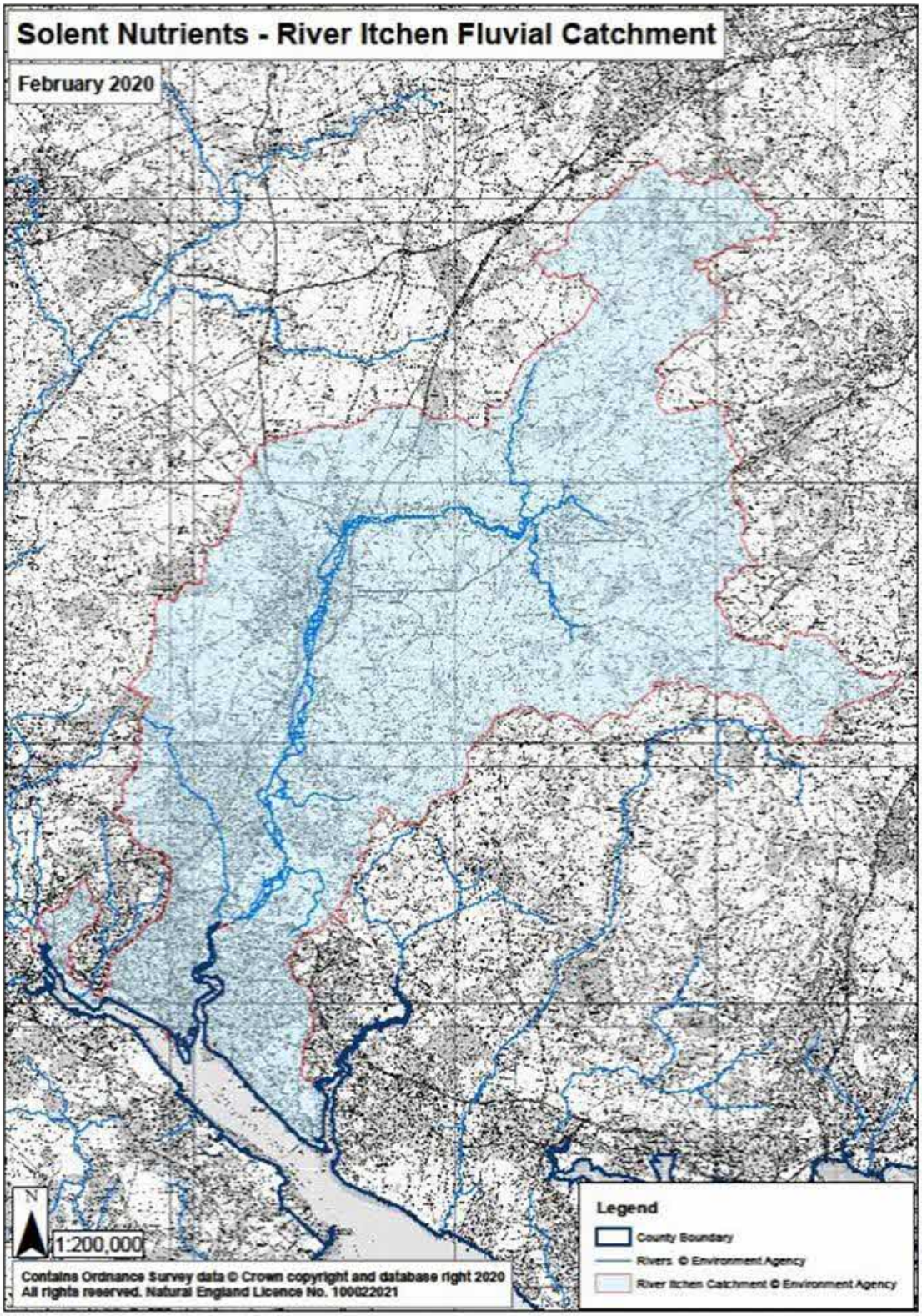
Solent Nutrients - River Itchen Fluvial Catchment
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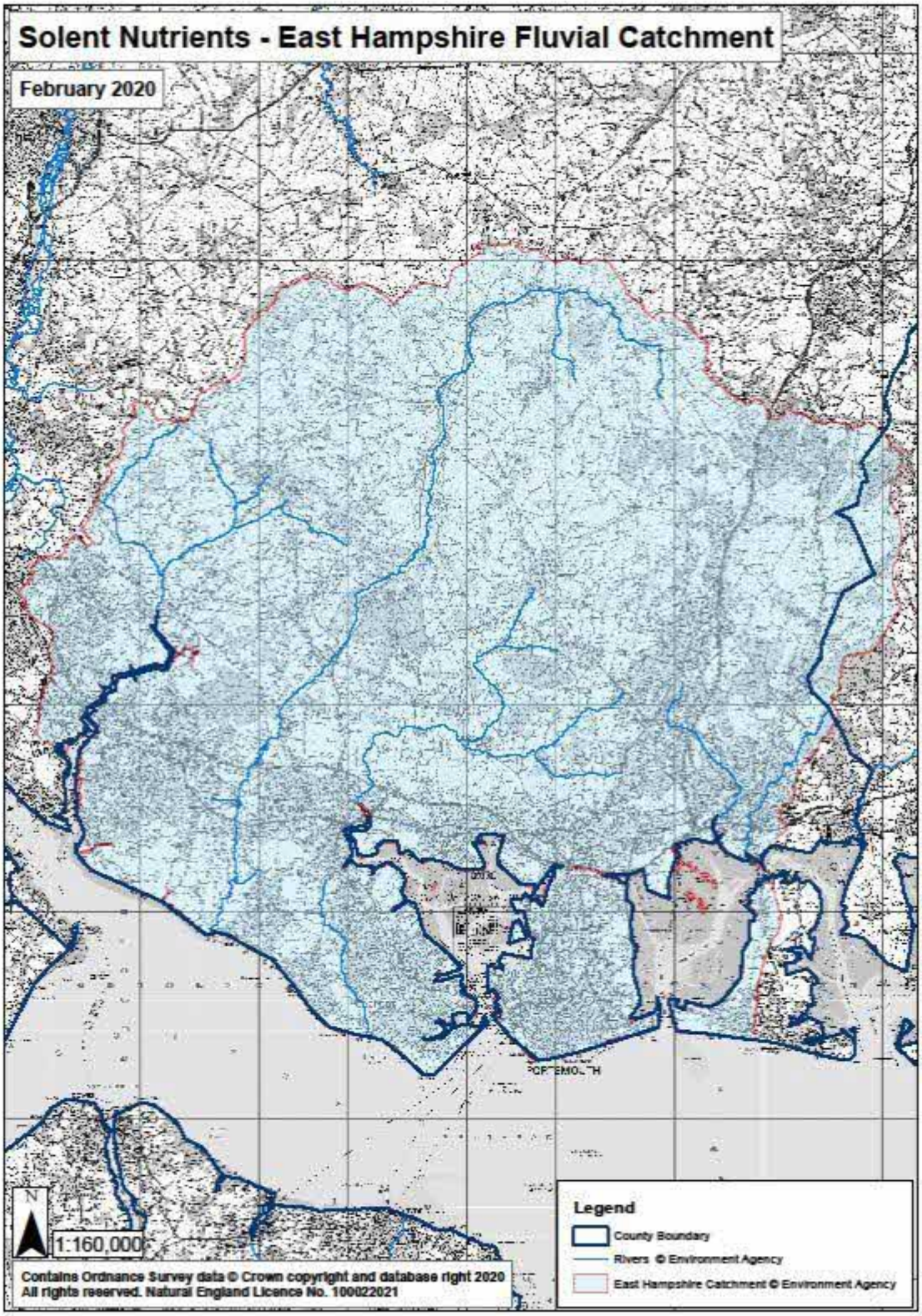
Figure 5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East Hampshire Catchment © Environment Agency

Figure 6

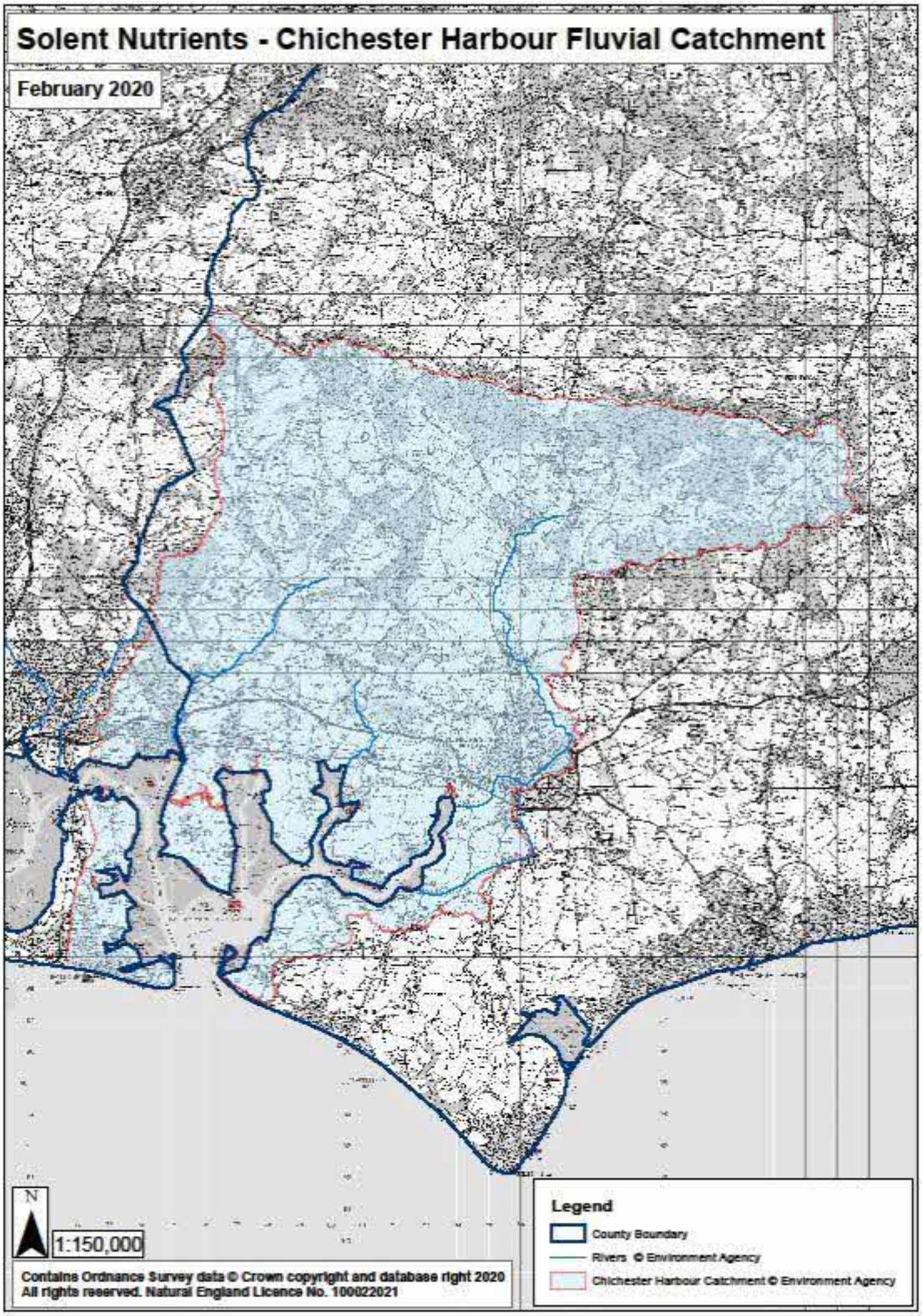
Solent Nutrients - Chichester Harbour Fluvial Catchment
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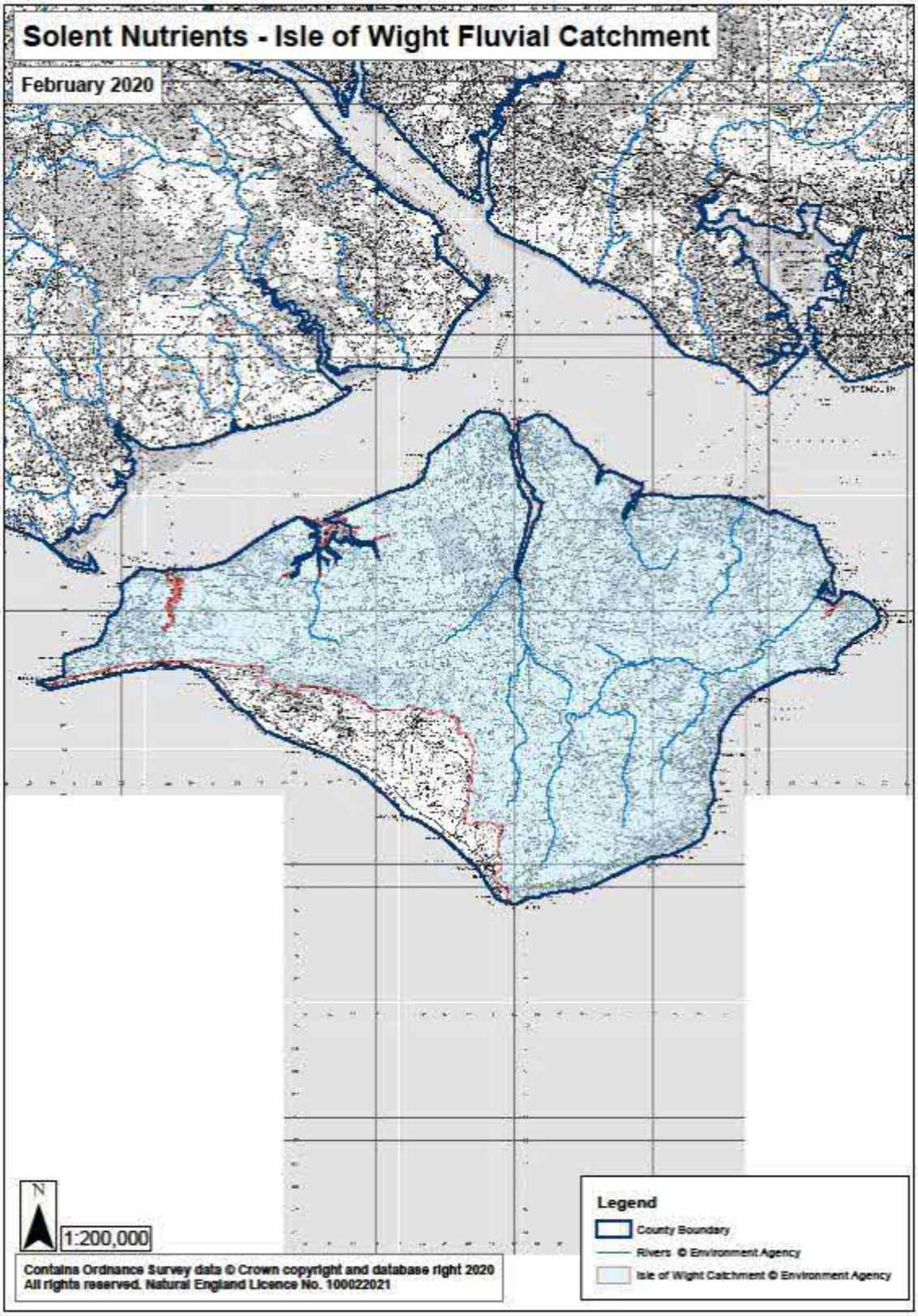
Figure 7


Solent Nutrients - Isle of Wight Fluvial Catchment
February 2020
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ANNEX 1 PLANNING CONTEXT

A1.1 In 2016, an Integrated Water Management Study (IWMS) for South Hampshire was commissioned by the Partnership for Urban South Hampshire (PUSH) Authorities, with the Environment Agency and Natural England. This examined the delivery of development growth in relation to legislative and government policy requirements for designated sites and wider biodiversity. It updated an earlier study in 2008. Similar studies have also been undertaken for Chichester Harbour and growth in Sussex (2018) though this study was largely for Water Framework Directive assessments.

A1.2 The IWMS for South Hampshire was completed in March 2018 and identified that there is currently uncertainty as to whether new housing growth can be accommodated without having a detrimental effect upon the water environment.

A1.3 The updated IWMS report in March 2018 concluded that there is uncertainty about the impact of local plan growth on the designated sites, especially after 2020. There was uncertainty about the efficacy of catchment measures to deliver the required reductions in nitrogen levels, and/or whether the upgrades to wastewater treatment works will be sufficient to accommodate the quantity of new housing proposed.

A1.4 To examine this issue further, local planning authorities set up a Water Quality Working Group in South Hampshire to add to the one already in existence for Chichester with the Environment Agency, Natural England and water companies. The objectives of these groups include identifying and analysing the existing evidence gaps and evaluating the need for strategic mitigation measures. The primary focus of this work is to address the uncertainty associated with strategic local plan growth.

A1.5 Natural England is working closely with local planning authorities to address this wider issue and progress options that achieve nutrient neutrality. It is appreciated that this may be difficult for smaller developments, developments on brownfield land or developments that are well-progressed in the planning system.

A1.6 Natural England has advised affected local planning authorities to set up Borough-wide, or strategic approaches that developments can contribute to thereby ensuring that this uncertainty is fully addressed by all applications and is working closely with affected local planning authorities to help address this issue.

ANNEX 2 ENVIRONMENTAL CONTEXT

Designated sites review

Solent Maritime SAC and SPAs

A2.1 In 2018, condition assessments of the estuary, mudflat & sandflats, and sandbanks features of the Solent Maritime SAC were undertaken. The condition assessments completed considered the SAC features across the site as a whole and found the condition of these features assessed to be unfavourable. The unfavourable assessment is based on a number of attributes failing, including the nutrient water quality attribute. Other attributes were also found to be failing, such as the extent, distribution, rhizome structure and reproduction, and biomass of seagrasses, as well as the infaunal quality of the intertidal mud and sand features. These failures are likely to be in part due to impacts from nutrients. Currently the site condition assessment does not include the saltmarsh feature which has not yet been assessed. However preliminary analysis of data shows that there was a loss of extent of saltmarsh across the Solent between 2008 and 2016. The cause of this loss it is not known but elevated nutrients can contribute towards the susceptibility of saltmarsh to erosion through effects on plant root growth and the cohesion of mud around the roots. In 2019/20 the intertidal areas of the Chichester Harbour estuary were examined in detail including the saltmarsh feature. The saltmarsh feature of this part of the SAC is in unfavourable declining condition due to the poor quality of the remaining marsh and ongoing net loss. Chichester Harbour contained half the saltmarsh feature area at designation of the SAC. Water quality impacts (macroalgal mats rotting and living) were recorded on all the saltmarsh surveyed.

A2.2 A full SPA condition assessment has yet to be undertaken, however the 2019/20 assessment of Chichester Harbour included assessment of the Chichester and Langstone Harbours SPA as well as the SSSI birds. This showed that shelduck populations on the SSSI and the SPA are showing a 71% decline in the long term that appears to be tracking that of the region although not the British trend. The declining proportion of the regional numbers supported by this site suggest that site-specific pressures are affecting this species. While the cause of these site specific declines in Chichester Harbour and the Solent area more widely are yet to be confirmed, research has found that the foraging ability of shelduck can be affected by algal mats. The wintering bird assemblage in general across Chichester Harbour is in unfavourable no change condition.

Solent and Dorset Coast Special Protection Area

A2.3 The Solent and Dorset Coast Special Protection Area (SPA) protects important foraging areas at sea used by qualifying interest features from colonies within adjacent SPAs, namely the Solent and Southampton Water SPA and the Chichester and Langstone Harbours SPA. These qualifying interest features are the foraging and nesting of three species of tern: common tern, Sandwich tern and little tern. This

site was designated in 2020. Given the relationship between the designated sites for the foraging areas and the colonies, the threats and condition of each these interrelated designated sites should be considered in combination as part of the Habitat Regulations Assessment. The SPA has not yet been fully condition assessed but the Chichester Harbour review of 2020 looked at not only breeding numbers of the three tern species in but also the productivity (how many chicks survived). The terns in Chichester Harbour, which are also a feature of the SSSI, are considered to be overall in unfavourable declining condition. The relationship of the tern breeding and foraging populations to water quality impacts in the Solent is not currently known, although it is not thought to be the primary reason for declining numbers of poor productivity in Chichester Harbour.

Solent and Isle of Wight Lagoons Special Area of Conservation

A2.4 The Solent encompasses a series of coastal lagoons, including percolation, isolated and sluiced lagoons. The site includes a number of lagoons in the marshes in the Keyhaven – Pennington area, at Farlington Marshes in Langstone Harbour, behind the sea-wall at Bembridge Harbour and at Gilkicker, near Gosport.

A2.5 The water quality target for the coastal lagoon features is to maintain nutrient levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels. Surveys in 2013, noted several lagoons had high pH levels likely due to photosynthetic activity, however there were no records of opportunistic macroalgae or phytoplankton blooms and most lagoons (except for Butts Lagoon and Shut Lake) continue to support good lagoonal communities. The sediment in Butts Lagoon has remained anoxic in surveys in 2013, although this represents similar conditions to that present in baseline surveys. Therefore, available evidence does not indicate that eutrophication is affecting site integrity at any of the lagoons within the SAC, except for Butts Lagoon.

SSSI

A2.6 During 2018 and 2019, Natural England revised and updated the SSSI assessments in the greater Solent area in relation to the influence of the water environment on the condition of estuarine SSSI interest features that underpin the SAC and SPAs. These assessments especially included littoral sediment habitat (mudflat and other tidally exposed sediment flats). The review of parts of the greater Solent area and some SSSI interest features is ongoing.

A2.7 The SSSI interest feature assessments completed consider the concentrations of inorganic nitrogen status in each harbour and estuary, and evidence for ecological responses. Particular attention was given to records on phytoplankton abundance and the presence and abundance of opportunistic green macroalgae. Other responses to elevated nutrients may also occur, such as effects on phytoplankton composition and seagrass and saltmarsh extent and composition. These have not yet been assessed.

A2.8 Where there is sufficient information to show that the water environment causes interest features to be in unfavourable condition, this has been recorded within the completed assessments. In addition, in cases where there is significant uncertainty that elevated nutrient levels are affecting the condition of interest features, a provisional assessment of borderline favourable condition is recorded, along with a potential threat that unfavourable condition may become apparent with more evidence. In cases where there is currently inadequate information to come to a conclusion the SSSI assessment has remained unchanged. Some parts of the greater Solent area are also recorded to be in unfavourable condition for SSSI interest features for reasons other than the water environment, such as coastal squeeze and disturbance. A brief summary of the condition classes in relation to the water environment for interest feature condition follows.

Unfavourable Declining Condition

A2.9 The 2018 assessment did not assign units to this condition as this condition requires demonstration of significant deterioration or declines in populations above threshold numbers for birds or loss of habitat for features or demonstrable and consistent worsening of attributes over time.

A2.10 The more detailed, follow-on assessment, to review trends in the interest features of Chichester Harbour in 2019/20 has determined that the Chichester Harbour condition is declining due to the continued net loss of the saltmarsh feature, poor condition of the remaining marsh, declining numbers of some species of terns and low or zero productivity of nesting terns in the Harbour. Overall the wintering bird assemblage was unfavourable no change not because the birds populations were stable but because on average the declines in populations were not sufficient to trigger a declining status. Trends varied with species, with those species that can switch to other foraging methods and habitats away from the intertidal in general showing lesser declines or even increases. The other features assessed (littoral sediment, eelgrass were all given unfavourable status but with low confidence and Natural England were unable to discern a trend due to insufficient data. The units were assigned to the features in the worst condition where the data was of high confidence so overall the intertidal habitats in Chichester Harbour in unfavourable declining condition.

Unfavourable no change

A2.11 This work identified that there are sections of the designated sites in the Solent that are unfavourable for the interest features on the weight of evidence of elevated levels of inorganic nitrogen and biological indication of eutrophication shown by the abundance of macroalgae. Where sites are recorded as unfavourable, opportunistic green macroalgae is recorded to reach >75% cover, or a biomass of 1kg/m^2 or more. In these cases there is also little or no evidence of any reduction in nutrient status that would be adequate to substantially prevent the growth of dense macroalgae mats.

A2.12 There are unfavourable (no change) assessment on units within the following estuaries and harbours in Hampshire: Southampton Water, Hamble estuary, Portsmouth Harbour, Chichester Harbour and on the Isle of Wight: Yar estuary, Newtown Harbour, Medina estuary, Wootton Creek and Bembridge Harbour.

Unfavourable recovering (at risk)

A2.13 The review identified that there are parts of Langstone Harbour where the water environment of a unit is assessed as unfavourable for the interest features on the weight of evidence on inorganic nitrogen concentrations and biological indications of eutrophication, shown by the abundance of macroalgae (>75% cover density or a biomass of ≥ 1kg/m^2), but recovering on the basis of a large reduction in nutrient inputs through diversion of wastewater. These units are considered 'at risk' of not recovering to a favourable situation on the water environment as it is unclear whether the nutrient status will become adequate to substantially prevent the growth of dense macroalgae mats in parts of the Harbour. Also other potential ecological responses to elevated nutrient concentrations that could affect the condition of the designated features, such as impacts on saltmarsh and seagrass, have not been assessed.

A2.14 The 2018 assessments did not identify any Unfavourable (recovering) units where there is a littoral sediment feature in any of the other estuaries and harbours.

Favourable – high threat

A2.15 Some sections of the designated sites in the Solent are provisionally assessed as borderline favourable for the interest features. Here there is elevated levels of inorganic nitrogen but, at a local unit scale, the data that is available only demonstrates slight biological indication of eutrophication shown by some presence of macroalgae (<75% cover density, or a biomass of <1kg/m^2). These are provisional assessments with a high threat that the nutrient status is inadequate to substantially prevent detrimental ecological effects on designated features, particularly if there is change in environmental conditions. The high threat assessment also reflects the fact that other potential ecological responses to elevated nutrient concentrations that could affect the condition of the designated features, such as impacts on saltmarsh and seagrass, have not yet been assessed.

A2.16 There are favourable (high threat) units within the following estuaries and harbours in Hampshire: Lymington estuary, Solent and Itchen Estuary, Test Estuary, Southampton Water, Portsmouth Harbour, Chichester Harbour, Langstone Harbour, and on the Isle of Wight: Newtown Harbour and Bay and Bembridge Harbour.

Catchment work

A2.17 The high levels of nitrogen and phosphorus input to the water environment is currently caused by agricultural sources and wastewater from existing housing.

There are a number of mechanisms already in place to reduce the amount of nutrient inputs within our rivers and coastal waterbodies.

A2.18 Within the river catchments; Defra's Catchment Sensitive Farming (CSF) programme works with agriculture to reduce diffuse sources of pollution such as fertiliser and slurry run-off. One of the aims of this work is to deliver environmental benefits from reducing diffuse water pollution. To achieve these goals CSF delivers practical solutions and targeted support which should enable farmers and land managers to take voluntary action to reduce diffuse water pollution from agriculture to protect water bodies and the environment.

A2.19 In addition, Southern Water is upgrading their wastewater treatment works to reduce the amount of phosphorus inputs from human sewage. There are agreed improvements to phosphorus permits on four Southern Water Services on the River Test and phosphorus upgrades at two wastewater treatment works on the River Itchen.

A2.20 Natural England has recently published a review of the effectiveness of catchment sensitive farming approaches in the report "Catchment Sensitive Farming Evaluation Report – Water Quality Phases 1 to 4 (2006-2018) (NE731)". Work is on-going to evaluate the effectiveness of such work in reducing existing inputs into the Solent's water environment. Nationally, the results in this report state that water quality is estimated to have improved, due to reduced pollutant loadings, by between 1.2 and 6.5 per cent across water bodies associated with Phase 1 CSF Target Areas.

Type of nutrient inputs to designated sites

A2.21 There is evidence that inputs of both phosphorus and nitrogen influence eutrophication of the water environment. However, the principal nutrient that tends to drive eutrophication in the marine environment is nitrogen and this is supported by modelling and evidence.

A2.22 A modelling assessment has been undertaken by the Environment Agency to understand the importance of nitrogen in causing the growth of macroalgae and phytoplankton within estuaries in the Solent. This work used the Combined Phytoplankton and Macroalgae model developed by Cefas and was assessed at a water body scale. This scale provides an overview and may mask conditions that are unfavourable for designated interest features at a more local scale. The modelling suggests that in one estuary, the Medina, both nitrogen and phosphorus availability may control macroalgae growth (e.g. Rees-Jones et al 2014 and Udal *et al* 2014).

A2.23 The best available evidence is for focus in the Solent harbours to be on nitrogen reduction, and reduction in both nitrogen and phosphorus in the Medina catchment. However, this approach may be refined if greater understanding of the eutrophication issue is gained by thorough new research or updated modelling.

A2.24 The nutrient budget in this report calculates quantities of nitrogen (N) generated by development. This N comes in different forms and measured N concentrations vary according to exactly what is measured. These differences need to be recognised when calculating nutrient budgets. The key measurement is Total Nitrogen (TN), i.e. both organic and inorganic forms of nitrogen, because this is what is available for plant growth. TN is the sum of the inorganic forms - nitrate-nitrogen (NO3-N), nitrite-nitrogen (NO2-N), ammoniacal-N - and organically bonded nitrogen.

A2.25 Total Nitrogen is measured by WwTW where there is a permit with a TN limit consent. However, for WwTWs without permits, measurements could be inorganic nitrogen (nitrate + nitrite + ammoniacal N) or TN or a mix. Most river quality monitoring by EA only records the inorganic N forms. The Farmscoper report measures nitrate-nitrogen not TN. Nitrate is normally the largest component of TN but quantities of organic N are significant. In the Test catchment dissolved organic nitrogen has been found to comprise 7% of the potential biologically available nitrogen in the river and 13% of that in the estuary (Purdie, 2005). Thus, the land use change element of this methodology will underestimate TN leaching. We therefore advise that this uncertainty is recognised as one of the several factors taken into account by the recommended precautionary buffer approach adopted by this methodology.

A2.26 For developments on the Isle of Wight that are impacting on the Medina estuary, both a phosphorus and nitrogen budget may be required. Natural England will work closely with the Isle of Wight Council and applicants to provide advice on a bespoke case-by-case basis.

A2.27 This approach is also supported by scientific literature which confirms that whilst both nitrogen and phosphorus should be reduced to tackle estuarine eutrophication, primarily the focus should be on nitrogen. Phosphorus reduction alone does not address the mechanisms caused by elevated nitrogen that affect sea-grass health and the structural stability, extent and plant species diversity of saltmarsh. In addition, most land use measures to reduce nitrogen are also likely to reduce phosphorus concurrently.

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Appendix 1 – Farm Types

The UK system is based on weighting the contributions of each enterprise in terms of their associated outputs. The weights used (known as 'Standard Outputs' or SOs) are calculated per hectare of crops and per head of livestock and used to calculate the total standard output associated with each part of the Farm Business.

Cereals
Holdings on which cereals, combinable crops and set-aside account for more than two thirds of the total SO and (pre-2007) where set-aside alone did not account for more than two thirds of the total SO. (Holdings where set-aside accounted for more than two thirds of total SO were classified as specialist set aside and were included in "other" below.)

General cropping
Holdings on which arable crops (including field scale vegetables) account for more than two thirds of the total SO, excluding holdings classified as *cereals;* holdings on which a mixture of arable and horticultural crops account for more than two thirds of their total SO excluding holdings classified as *horticulture* and holdings on which arable crops account for more than one third of their total SO and no other grouping accounts for more than one third.

Horticulture
Holdings on which fruit (including vineyards), hardy nursery stock, glasshouse flowers and vegetables, market garden scale vegetables, outdoor bulbs and flowers, and mushrooms account for more than two thirds of their total SO.

Specialist Pigs
Holdings on which pigs account for more than two thirds of their total SO.

Specialist Poultry
Holdings on which Poultry account for more than two thirds of their total SO.

Dairy
Holdings on which dairy cows account for more than two thirds of their total SO.

Lowland Grazing Livestock
Holdings on which cattle, sheep and other grazing livestock account for more than two thirds of their total SO except holdings classified as *dairy.* A holding is classified as lowland if less than 50 per cent of its total area is in the Less Favoured Area (LFA).

Mixed
Holdings for which none of the above categories accounts for more than 2/3 of total SO. This category includes mixed pigs and poultry farms as well as farms with a mixture of crops and livestock (where neither accounts for more than 2/3 of SOs).
http://farmbusinesssurvey.co.uk/DataBuilder/UK_Farm_Classification_2014_Final.pdf

Appendix 2 – Leaching of nitrogen from urban areas

The average total nitrogen leaching rate from an urban area (14.3kg/ha/yr) comes from values for hydrologically effective rainfall (478mm - precipitation minus losses from evapo-transpiration) and the nitrogen concentration of leachate (3mg/l) given in Bryan et al (2013) the latter figure derived from an AMEC report. The value for nitrogen concentration is similar to one quoted in House et al (1993) who give a mean event concentration of 3.2mg/l for total nitrogen (with this value derived from other sources) with a range of 0.4-20mg/l. Thus although it is not specified by Bryan et al (2013), it is probably reasonable to take the 3mg/l to be total nitrogen especially since the organic component of N from urban areas is likely to be relatively small.

Mitchell (2001) gives the following event mean concentrations in mg/l total N from urban areas; Urban Open 1.68; Ind/Comm 1.52; Residential 2.85; Main roads 2.37.
It is recognised that the datasets that produced these figures are not large (n = 14 in this case), a good deal of uncertainty remains and that further sampling is needed to validate models of pollutant effects from urban runoff (Leverett et al 2013).

Typical nutrient concentrations in urban stormwater runoff in the U.S. are 2.0 mg/l for total N (TN) (Schueler 2003). Population densities seem to be less in the most studied urban catchments (eg Groffman et al 2004 in Baltimore, Hobbie et all 2017 in Minnesota) than those in the UK but this does not necessarily lead to an increase in the rate of nitrogen leaching from the catchment for the factors affecting this value are complex. Thus although there will clearly be variation between different urban areas, there is insufficient knowledge to be able to predict N leaching from the different characteristics of these areas. And for practical purposes an overall N leaching figure is needed; nothing found in the literature indicates that another value would be more representative than 3mg/l.

An N leaching figure can also be derived by using the relationship between mean stream and river flow rate and catchment area. The ratio for the gauging station on the River Meon at Mislingford is 0.014m^3/sec/km^2 and, with a TN concentration of 3mg/l, this equates to a TN leaching rate of 13.2mg/l, similar to the value obtained when hydrologically effective rainfall is used.

Comparison can also be made with direct measurements of TN urban outputs from studies in the USA (Hobbie et al 2017, Groffman 2004). The values in the Hobbie paper for urban catchments in Minnesota varied from 12.5-27.2 kg/ha/yr with a mean of 17.3 kg/ha/yr. The outputs measured by Groffman (2004) were smaller (between 5.5 and 8.6kg/ha/yr) but these were less urbanised catchments, several including areas of old growth forest where nitrogen retention was very high. Thus these values are broadly of the same order as the 14.3 kg/ha/yr leaching figure initially calculated.

Nitrogen inputs in these studies come predominantly from three sources - atmospheric deposition, pet waste and lawn fertilisation. N deposition was slightly lower in both Baltimore and Minnesota than values from APIS in the around the Solent (23.8kg/ha/yr for hedgerows

or woodland, 14.7kg/ha/yr for grassland). No UK studies have been found to compare with the US ones for N inputs in urban areas from pet waste or from lawn fertilisation.

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Appendix 3 - Estimating the leaching of total nitrogen (TN) from natural greenspace (SANG).

A number of assumptions must be made about the management of the SANG to allow an estimate of TN leaching to be made. These are as follows:

- The vegetation of the SANG would be predominantly permanent grassland but with an element of tree and scrub cover (this will of course vary for different SANGS but a 20% average figure is used here). The degree of tree and scrub cover will not greatly affect the result as both permanent grassland and woodland/scrub exhibit a high degree of N retention. It matters most because of the differences in the rate of atmospheric N deposition between the two habitats.
- The grassland would be permanent (ploughing will release large amounts of N) and is not fertilised either with artificial fertiliser or manures. It may be ungrazed or grazed very lightly (<0.1LU/ha/yr) with no supplementary feeding (even without supplementary feeding, grazing can increase N leaching because N retention is lower when N is delivered in the form of cattle urine and dung [Wachendorf et al 2005]).
- The grassland may be cut with the cutting regime dependent on other factors. Cuttings may be left or removed from site as the case may be but should not gathered and composted in heaps on site. Any gorse within the scrub should be controlled so it is no more than rare across the mitigation area since a significant amount of nitrogen fixation occurs within gorse stands.

A generic leaching value for N concentration from AMEC for ‘rough grazing’, quoted in Bryan et al (2013), is 2mg/l. Using this concentration together with a value of 478mm for the hydrologically effective rainfall (HER) gives a leaching value for N of 9.6 kg/ha/yr. A similar value (8.8kg/ha/yr) is obtained if the relationship between mean stream flow and catchment area (0.014 cumecs/km^2 which is the ratio for the gauging station on the nearby River Meon at Mislingford) is used instead, keeping the same N concentration of 2mg/l. It is not clear whether these AMEC concentrations are for total nitrogen or for inorganic nitrogen.

The particular grassland management regime for which the 2mg/l N concentration applied is not known. However, even though studies of N leaching from natural unfertilised grasslands are rare in the literature (most are of agricultural grasslands with fertiliser inputs of some sort) it seems likely that this value is higher than might be expected from a natural grassland with no fertiliser inputs such as a SANG. Thus for example TN leachate concentrations were between 0.44 and 0.67 mg/l in an extensively managed montane grassland (that still had one slurry application per year) and the equivalent mean TN loss was 1.0, 2.6 and 3.1 kg/ha/yr for three different areas (Fu et al 2017).

Adjusting for a SANG with 20% woodland/scrub, using the AMEC woodland generic leaching value of 0.5mg/l (Bryan et al 2013) for the woodland/scrub component, results in an N output of 8.1 kg/ha/yr.

The 0.5mg/l value is also much higher than the very low nitrate concentrations in streams from purely forested catchments (Groffman 2004) and from those reported by for a large sample of forested streams by Mulholland et al 2008 where the mean nitrate-N concentrations were <0.1mg/l. All but a few of the samples from an unfertilised suburban lawn had nitrate-N concentrations below the detectable limit of 0.2mg/l (Gold et al 1990). The same was true for a forest plot and the average nitrate-N losses from both home lawn and the forest plots averaged 1.35 kg/ha/yr over 2 years. These studies of both grassland and woodland nutrient cycling suggest that the AMEC generic leachate concentration of 3mg/l, resulting in an N output of 9.6kg/ha/yr, is too high when applied to a SANG.

Despite there being no direct N fertiliser inputs on a SANG, N inputs will still occur from three main sources. These are atmospheric deposition, pet waste and N fixation from legumes and estimating the contribution of each of these sources, together with the proportion of N retained, is an alternative method of working out the N contribution from a SANG.

N deposition

The following are typical values taken from APIS for TN deposition in the Solent area. .

Improved grassland 14.7 kgN/ha/yr; Arable horticultural 14.7 kgN/ha/yr; Neutral grassland 14.7 kgN/ha/yr

Hedgerows 23.8 Kg N/ha/year; Broadleaved, Mixed and Yew Woodland 23.8 Kg N/ha/year

Using the value for hedgerows and woodland for the 20% scrub component of the hypothetical SANG and the neutral grassland value for the rest results in a deposition rate of 11.76 + 4.76 = 16.5 kg/ha/yr.

Pet waste

SANGs are specifically designed to attract increased levels of public access particularly dog walkers so the potential inputs of N from dog waste are likely to be significant.

Hobbie et al (2017) give a figures for TN inputs from this source for entire urban areas and these vary between 3.56 and 21.2kg/ha/yr for 7 urban catchments with a median of 6.9kg/ha/yr. A figure of 17kg/ha/yr can be gleaned from Baker 2001 which was worked out using information on pet numbers, nutritional needs, pet weights etc; 76% of this was from dogs.

The heavy use of SANGS by dogs suggests that N inputs would most likely be higher than these figures averaged over the whole urban area. Nevertheless, inputs to the SANG from this waste means that it is not deposited elsewhere in the urban area where N may anyway end up in the same receiving water.

TN retention in grasslands will also be higher than the average over other parts of the urban area but the characteristics of the inputs from dogs is likely to lower the amount of TN

retained because the concentrated patchy nature of the input will reduce the proportion of TN retained compared with more evenly spread inputs, as mentioned above.

Picking up dog faeces will obviously reduce the input from but not remove inputs from urine. Dog urine has a high N content.

In these circumstances there is clearly uncertainty about the level of input from this source the highest figure from Hobbie et al (21.2kg/ha/yr) has been used but adjusted downwards because not all of this will be from dogs resulting in an overall value of 16.1 kg/ha/yr.

This has also been done on the basis that funding, together with a binding commitment, is provided for in perpetuity collection of dog waste and enforcement of pick up rather than relying on direct LA resources which could stop at any time.

TN fixation

Hobbie et al (2017) give a value for this of 17.5kg/ha/yr from direct investigation of unfertilised urban parks and this is the value used. Fixation would only be in the grassland part of the SANG which reduces the figure to 14 kg/ha/yr.

TN retention

A number of studies have shown high TN retention in urban areas (eg 80% Hobbie et al 2017) thought to be mainly attributable to TN retention in urban grasslands and lawns which may be in turn related to high carbon within organic matter in the soils. The release of large quantities of N when permanent grassland is ploughed illustrates the capacity of these grassland for N storage (eg Howden et al 2011).

Direct measurements of total N outputs from urban grasslands in the Groffman et al (2009) studies in Baltimore also show high N retention in urban grassland but there are difficulties in applying these results directly to SANGs partly because the plots were either quite heavily fertilised or may have had unmeasured N inputs from neighbouring land. Nitrate-N losses from an unfertilised home lawn averaged 1.35 kg/ha/yr over 2 years (Gold et al 1990). Generally the complex processes and uncertainties about how the management of these grasslands might affect the degree of TN retention and TN output makes estimation of the proportion retained difficult. Nevertheless a value of 90% given in Groffman et al (2009), and supported by a number of references given there, would seem reasonable considering also that overwatering and over fertilising, neither of which would happen on a SANG, seem to be factors that lead to more leaching.

Woodland and scrub. N retention measured in forest plots in Baltimore was very high (95%) Groffman (2004). N percolation losses measured by Gold et al 1990 in forest plots were low and similar to those in unfertilised lawn. However, it is probably not valid to equate a scrub/woodland part of a SANG with the forest plots measured in the Groffman studies in Baltimore for these were old growth well established forests. Nevertheless there is still likely to be high N retention in these areas even if not as much as 95%.

Given all of the above, a 90% TN retention rate over the SANG as a whole has been used in the calculation below**Inputs**

N Deposition (APIS) = 16.5 kg/ha/yr
Pet waste 16.1 kg/ha/yr
N fixation 14 kg/ha/yr

Total = 46.6 kg/yr

Watershed retention of TN 90%

Total TN output = 4.66 kgN/ha/yr

Conclusion

The question of estimating TN outputs from a SANG has been approached from different angles. These investigations all indicate that the value used so far – 13 kg/ha/yr is too high. Instead an TN output of 5 kg/ha/yr is considered to be close to the true value but still sufficiently precautionary.

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Appendix 4 – Potential for N mitigation using wetlands

Where N budget calculations indicate that N outputs from proposed developments are greater than pre development conditions, the use of new constructed wetlands to retain some of the N output is one mitigation option.

There are a number of possibilities for different types of constructed wetland. Wetlands can be designed as part of a sustainable urban drainage (SUDs) system, taking urban runoff/stormwater; discharges from STWs can be routed through wetlands; or the flow, or part of the flow, of existing streams or rivers can be diverted through wetlands.

Wetlands receiving nitrogen-rich water can remove a proportion of this nitrogen through processes such as denitrification and sedimentation. This has been demonstrated in numerous studies; a recent systematic review of the effectiveness of wetlands for N (and P) removal (Land et al 2016) used data from 203 wetlands worldwide of which the majority were free water surface (FWS) wetlands (similar in appearance and function to natural marshes with areas of open water, floating vegetation and emergent plants). The median removal rate for wetlands that were included in this review was 93g/m^2/yr (or just under a tonne/ha/year). The proportion of N removed is termed the efficiency and the median efficiency of wetlands included in the Land review was 37%.

Many factors influence the rate of N removal in a wetland the most important being hydraulic loading (HLR - a function of the inlet flow rate and the wetland size), inlet N concentration and temperature. Together inlet N concentration and flow rate determine the amount of N that flows through the wetland which ultimately limits the amount of N saving that can be achieved.

The rate of removal can also be expressed in terms of the amount of N removed per unit wetland area. This removal rate will typically increase as the inlet N concentration increases, at least within the normal range of inlet N concentrations. Thus wetlands that treat the N rich discharges, for example from STWs, or water in rivers where the N concentrations are high, will remove more N per unit area than say, wetlands treating water in a stream where water quality is very good and the N concentration is low. Thus if space is at a premium, and the goal is to remove as much N as possible, it makes sense to site wetlands where N concentrations are high.

For wetlands to work well, specialist design input based on sound environmental information will be necessary. There will be a need for consultation with relevant statutory bodies. These processes are likely to be easier where wetlands are an integral part of a larger development. Wetlands do offer additional benefits above offering neutrality but will also require ongoing monitoring, maintenance and adjustments beyond any particular developments completion. Consideration of the long term security of facilities and their adoption at an early stage is advisable.

There are a number of publications which advise about constructed wetlands. For example, Kadlec and Wallace (2009) is a comprehensive source of information covering all stages related to the implementation of different types of constructed wetland. The many papers relating the results from detailed monitoring over many years of the performance of two constructed wetlands in Ohio, USA are also instructive (eg Mitsch et al 2005, 2006, 2014).

Stormwater wetlands

These are what is termed event-driven precipitation wetlands with intermittent flows. There will normally be baseflow and stormwater components to the inputs.

For such wetlands Kadlec and Wallace state that:-

'*A typical configuration consists of a sedimentation basin as a forebay followed by some combination of marshes and deeper pools'*

However, ponds are usually less effective at removing N (Newman et al 2015) than shallow FWS wetlands so the emphasis here should be on the latter although a small initial sedimentation basin is desirable since is likely to reduce the maintenance requirement for sediment removal in the FWS wetland. One advantage of this type of wetland is that it can be designed as an integral part of SUDs for the development and therefore is subject to fewer constraints.

Some wetlands with intermittent flows are prone to drying out and may need provisions for a supplemental water source. In some circumstances, this may be possible through positioning the wetland bottom so that there is some connection to groundwater. However many varieties of wetland vegetation can withstand drying out although there may be a small reduction in water quality improvement (Kadlec and Wallace 2009). Nevertheless base and stormwater flows to each wetland should be worked out to ensure that it is viable.

Wetlands need to be appropriately sized taking into account the HLR and N loading rates. To give a general idea of the areas involved, a wetland 1ha in area would serve a development area of about 50ha.

Calculating the potential N retention in such wetlands involves first determining the proportion of the HER that will pass through the wetland because a percentage of the water carrying N will go directly into groundwater, bypassing storm drains and SUDs and the constructed wetlands. This percentage will depend on such factors as the proportion of hard surface within the development and the geology. Then, assuming the inlet TN concentration is 3mg/l, a proportionate reduction of 37% can be used to work out the amount of N retained.

Provision is needed to control tree and scrub invasion, for wetlands with emergent vegetation medium height such as Typha and reed had higher rates of denitrification than those dominated by trees and woody shrubs (Alldred and Baines 2016).

Other critical aspects of design are the water control structures - inflow and outflow arrangements with water level control – and the need or otherwise for a liner. This last issue is related to soil permeability. A variety of emergent wetland plants, not only reed, can be effective within wetlands. Wetlands with a number of different plant species, rather than monocultures, are desirable both for biodiversity reasons and because they are more resilient against changes in environmental conditions; different species will have different tolerances. Guidance concerning planting can be found in Kadlec and Wallace (2009); allowance should be made in planting ratios and densities for different rates of expansion of different species. Another approach is to use material containing wetland plant seeds from a nearby wetland with a species composition similar to the one preferred. However, unless the donor site is carefully monitored, this would obviously increase the risk of importing unwanted alien plants.

Sedimentation will eventually compromise some aspects of the wetland's function and rejuvenation measures will be necessary (Kadlec and Wallace 2009). The same authors indicate a sediment accretion rate in the order of 1 or 2cm/yr and give examples of rejuvenation after 15 and 18 years but other wetlands have not needed any significant restoration in similar timespans. Various different options for the management of sediment accumulation are given by Qualls and Heyvaert (2017). There of course needs to be provisions to ensure that appropriate maintenance and restoration measures, guided by monitoring, are periodically carried out.

Other sources of information about stormwater wetlands include Wong et al (1999, available on line). The papers about a stormwater wetland in the Lake Tahoe Basin in California are also useful (Heyvaert et al 2006, Qualls and Heyvaert 2017).

Constructed wetlands taking discharges from STW

Many of the considerations discussed above for stormwater wetlands apply equally here. There will obviously be constraints on the location and size of such a wetland because of land availability in the area of the STW. The flow from the STW together with the N concentration in the discharge are needed to determine the approximate size of a wetland. We would recommend a wetland area that gives an N loading of about 500 $g/m^2/yr$ or lower. Because many of the discharges from STW have a high N concentration the potential for N retention in such wetlands is also high. The concentration of N in the outflow will be variable but the purpose of such wetlands is to retain N overall rather than to provide a specific constant standard of water quality in the outflow.

Wetlands associated with streams and rivers

Diverting part of the flow of a stream or river through a wetland, with the outflow returning to the watercourse, provides another opportunity for N saving. For obvious reasons such wetlands would mostly need to be located on the river floodplain. The inlet flow rate can be controlled so it is appropriate for the size of the wetland created and so that the ecology of the watercourse is not compromised in the section affected.

There can be other concerns in relation to the potential effects on the stream or river. An abstraction licence will almost certainly be required.

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ANNEX 7

Letter from Natural England to Havant Borough Council re: Use of Natural England Solent Nutrients Guidance (September 2022)

Date: 09 September 2022

Customer Services
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T 0300 060 3900

David Hayward
Planning Policy Manager
Havant Borough Council

BY EMAIL ONLY

Dear David

RE: Use of Natural England Solent Nutrients Guidance (v5 June 2020)

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

Your authority recently contacted Natural England to clarify whether certain aspects of Natural England's 2020 Solent Nutrients guidance are still relevant and can still be referred to, following the national rollout of updated guidance and catchment calculators earlier this year. It is for Havant Borough Council as competent authority to be satisfied with the information provided to support nutrient budget calculations and nutrient mitigation proposals within an appropriate assessment that may enable a conclusion to be made of no adverse effects on site integrity, in relation to the Solent coastal Habitats sites. Please see below for clarification on what aspects of both sets of guidance Natural England consider can be relied upon when assessing nutrient impacts:

Natural England updated guidance and calculators (2022)

> Nutrient budgets and mitigation proposals should be developed in line with all aspects of this guidance. The relevant catchment calculator (in the case for development within the borough of Havant, the Solent coastal Habitats sites) should be utilised unless a bespoke approach is employed; bespoke approaches should be robustly evidenced and justified, and be suitably precautionary.

Natural England Solent Nutrients Guidance (v5 June 2020)

> Paragraph 4.63 outlines a recommendation that the nutrient leaching rate for open space/green infrastructure applies to areas of designated open space of around 0.5 hectares and above. Such areas are likely to need appropriate conditions or other legal measures to ensure the land will not change to alternative uses that affect nutrient inputs in the long term, and that long term management will be necessary to ensure the provision of dog bins and that these are regularly emptied. This advice still applies, noting that the Greenspace nutrient leaching level for nitrogen in the new guidance is 3kgTN/ha/yr, and for phosphorus is 0.02 kgTP/ha/ya.
>
> The general principles with regard to mitigation options in Section 5 remain relevant, however please note the specific advice for wetlands has now been superseded with the Wetland Framework, built by The Rivers Trust and the Constructed Wetland Association.
>
> The spatial principles in relation to suitable location of mitigation within Section 5 still apply, as the evidence base for these has not changed.

If you have any queries relating to the advice in this letter please do not hesitate to contact Natural England.

Yours sincerely,

The Thames Solent Area Team,
Natural England
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