SPECIES

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LAND AT KNOWLE HILL, EASTLEIGH, HAMPSHIRE

ECOLOGICAL IMPACT ASSESSMENT

FINAL REPORT

JULY, 2020

LAND AT KNOWLE HILL, EASTLEIGH

ECOLOGICAL IMPACT ASSESSMENT

CONTENTS

LAND AT KNOWLE HILL, EASTLEIGH

ECOLOGICAL IMPACT ASSESSMENT

SUMMARY

Species Ecological Consultancy was instructed by Cranbury Estates Ltd to undertake an Ecological Impact Assessment for proposals for a residential development within land off Knowle Hill, Eastleigh, Hampshire. Ecological Surveys were undertaken by Species Ecological Consultancy between July, 2018 until June, 2019. The results of these surveys are presented in Species Ecological Consultancy (2019). A summary of these results is presented here and an assessment of the potential impacts of the proposals upon ecological receptors within the Zone of Influence of the proposals undertaken. Mitigation and compensation steps are also presented to ameliorate those impacts.

The site largely comprises pasture fields, themselves poor, semi-improved grassland and are dominated by grasses with low levels of herbs and surrounded by mature hedgerows and vegetation with trees. The sward is generally kept short through grazing and thus offers little refuge for wildlife and is of limited nature conservation value. Protected species issues are present on Site, largely in association with the mature, vegetated boundaries of the Site and the woodland/scrub to the west. These species include Great crested newts, bats, reptiles, birds and badgers. These issues require mitigation in order for UK protected species legislation and policy to be met.

A Mitigation Strategy is proposed that will retain and manage the mature vegetated boundaries of the Site and buffer these edges with new native planting. Land to the north and west of the Site will be brought into better management for nature conservation and enhanced for use by Great Crested Newts in particular. Grassland will be restored in these areas and the scrub brought into management. Hibernacula will be constructed to provide refuging and hibernation sites for amphibians and reptiles. It is considered that through implementation of this Mitigation Strategy that there is the potential for these proposals to have a minor positive impact upon nature conservation.

LAND AT KNOWLE HILL, EASTLEIGH

ECOLOGICAL IMPACT ASSESSMENT

1. INTRODUCTION

Overview

1.1 This document reports on the ecology and nature conservation value of land at Knowle Hill, Eastleigh and presents an Ecological Impact Assessment of the proposed scheme according to the current guidance (CIEEM, 2018). The Zone of Influence surveyed for impacts is identified as is the methodology used to assess nature conservation value. The current ecological baseline is then summarised along with details of relevant policies and plans with respect to the survey area.

1.2 The potential impacts of the proposals upon the features of nature conservation value are set out and mitigation for these impacts is discussed before examining any residual impacts and stating the significance of any such impacts. Proposed compensation is then considered before evaluating what the outcome of this assessment means in terms of current nature conservation policy.

The Zone of Influence

1.3 The Chartered Institute for Ecology and Environmental Management guidelines for ecological impact assessment in the UK and Ireland (2018) refers to the area considered to receive impacts from a proposal as the Zone of Influence. This zone is thus the area surveyed for features of ecological value. It is important for the assessment of ecological impacts that the Zone of Influence is defined. For the proposed development and its impacts upon features of biodiversity value, the zone of influence is defined as the area shown on **Plan 3**. This area comprises the footprint of the proposed development and the area approximately within 2km radius of the site. Given the topography of the site, it is considered that indirect effects produced by the proposed development, such as noise and water run-off may not be contained by the site.

Background

1.4 Species Ecological Consultancy was instructed by Cranbury Estates Ltd to undertake an ecological appraisal of land off Knowle Hill, Allbrook, Eastleigh, Hampshire (SEC, 2018) in May, 2018. It is proposed to develop the site to provide residential housing - the proposals are presented in **Plan 2**. This survey highlighted the need for further, in-depth ecological surveys in order to fully evaluate the ecological value of the site and to meet best practise.

These surveys were subsequently instructed and undertaken between July and November, 2018 and between April and June, 2019 (SEC, 2019). The results of these protected species surveys are summarised here.

Location

1.5 The Site comprises pasture fields and some outbuildings and is located off Knowle Hill, Eastleigh, Hampshire just off the A335 Allbrook Way, near junction 12 of the M3 (see **Plan 1** & **Photo 1**). Immediately to the west of the Site lies woodland, scrub, grassland and ponds that forms Allbrook Clay Pits Site of Importance for Nature Conservation (SINC). Further pasture fields lie on the opposite side of Allbrook Way to the east and a tributary of the River Itchen lies to the south-east. The M3 runs north-south to the west of the site and residential areas lie to the south and west of the Site.

1.6 The land on Site rises from south to north and is raised above Allbrook Way to the east. A public footpath runs along the western side of the Site from north to south between the Site and adjacent woodland.

Policy and Legislation

1.7 Nature conservation in the UK is protected by legislation, principally under the Habitats Regulations: The Conservation of Habitats and Species Regulations 2017 and the Wildlife and Countryside Act, 1981 (as amended). Further information is provided in **Appendix 1**. The Government's stance on biodiversity is set out in The National Planning Policy Framework (July, 2018) and includes how biodiversity policy is expected to be applied in order to achieve sustainable development. The environment is considered a core component of sustainable development and the planning system should contribute to and enhance the natural and local environment by:

- protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils;
- recognising the wider benefits of ecosystem services;
- minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- preventing both new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability.

1.8 To protect and enhance biodiversity and geodiversity, plans should:

- distinguish between the hierarchy of international, national and locally designated sites, allocate land with the least environmental or amenity value, where consistent with other policies; take a strategic approach to maintaining and enhancing networks

of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries;

- identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and

- promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

2.0 METHODOLOGY

Introduction

2.1 This document is based upon the Guidelines for Ecological Impact Assessment (EcIA) in the UK published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) which sets out the current best practice with respect to Ecological Impact Assessment.

2.2 The CIEEM methodology provides a stepwise, descriptive approach to the assessment process including the following stages:

- Scoping the requirements of the assessment;
- Identification of the zone of influence of the proposals;
- Identification and evaluation of ecological resources and features likely to be affected;
- Identification of the biophysical changes likely to affect valued ecological resources and features;
- Assessment of likely significant ecological impact;
- Necessary steps for mitigation of negative impacts;
- Evaluation of residual impacts following mitigation and necessary compensation;
- Provision of advice on the consequences for decision making in respect of significant ecological impacts.

2.3 This assessment approach relies upon the professional judgement of an ecologist and is evaluated upon the background of the future baseline conditions at the time of implementation were the proposed development not to take place.

Assessment Methodology

Determining Value of Ecological Features/Resources

2.4 In order to inform the assessment of impacts from the proposed development, the ecological features or resources currently present require evaluation of their importance in nature conservation terms. The criteria used by the CIEEM guidance does not readily assign values to categories as ecological features are complex and boundaries between values become difficult to define with precision. The guidelines therefore promote the use of professional judgement in determining the value of the feature being considered and rely upon available guidance, information and expert advice. However, it is necessary to present the value of a feature in a comparable manner and thus the CIEEM guidance determines the

value of an ecological resource or feature within a geographical context and thus value is defined as:

- International;
- UK;
- National (i.e. England/Northern Ireland/Scotland/Wales);
- Regional;
- County (or Metropolitan – e.g. in London);
- District (or Unitary Authority, City or Borough);
- Local or Parish; and
- Within the zone of influence only.

2.5 The judgement of value considers whether sites affected are designated for their ecological value, contain habitats or species protected by UK or EU legislation or are covered by Habitat or Biodiversity Action Plans (HAPs or BAPs). Rarity of features as well as potential future value or supporting value to another feature are important considerations. Whether or not a feature provides social value to people or economic value is also considered.

Impact Assessment

2.6 The assessment of impacts in line with CIEEM guidance is undertaken in relation to the baseline conditions within the zone of influence that are expected to occur if the Scheme were to not take place. Thus inevitably it is the future baseline conditions that are assessed. The assessment also evaluates the impact in terms of the following parameters:

- Positive or negative;
- Magnitude;
- Extent;
- Duration;
- Reversibility; and
- Timing and frequency.

2.7 The degree of confidence in the assessment of the impact on ecological structure and function is also stated. The parameters used here are:

- Certain/near certain: probability estimated at 95% chance or higher;
- Probable: probability estimated above 50% but below 95%;

- Unlikely: probability estimated above 5% but less than 50%;
- Extremely Unlikely: probability estimated at less than 5%.

2.8 The significance of the impact is then judged on the affect upon the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area, though the impact may of course differ at different geographical scales. The integrity of a site is defined as:

'…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.'

A site/ecosystem that achieves this level of coherence is considered to be at favourable condition.

2.9 The EC Habitats Directive uses the term 'conservation status' to discuss the impacts of plans or projects upon features of ecological value and how to assess significance of those impacts. The CIEEM guidance uses slightly modified versions of these definitions so that evaluation of conservation status can be applied to habitats or species within any defined geographical area:

- For habitats, conservation status is determined by the sum of the influences acting on the habitat and its typical species, that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area; and
- For species, conservation status is determined by the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area.

2.10 Conservation status may be evaluated for any defined study area at any defined level of ecological value. The extent of the area used in the assessment relates to the geographical level at which the feature is considered important.

Desk-Top Study

2.11 A desk-top study has been undertaken for the scheme area. Hampshire Biodiversity Information Centre (HBIC) was contacted for details of designated sites and protected species records within 2km of the site.

EXISTING ENVIRONMENT WITHIN THE ZONE OF INFLUENCE

Ecological Surveys

2.12 Ecological surveys were undertaken at the site between July, 2018 and June, 2019 to inform on the presence of protected species and habitats within the Zone of Influence. Surveys undertaken were:

- Botanical Survey;
- Bat Activity and Tree/Building Emergence Surveys;
- Badger Survey;
- Dormouse Survey;
- Great Crested Newt Survey;
- Breeding Bird Survey;
- Reptile Survey.

3. RESULTS AND EVALUATION

Designated Sites of Nature Conservation Value

3.1 Within the Zone of Influence of the proposals is a number of Statutory Sites designated for their nature conservation value. These are presented below:

River Itchen SAC SPA SSSI RAMSAR

3.2 The River Itchen and its environs are designated as of European and National nature conservation importance. The designation sheet for the SSSI is given in **Appendix IId**. The River Itchen lies approximately 230m to the south-east of the proposals site at its closest point. An Annex I habitat is present that is a primary reason for selection of this site. This is:

3260 Water courses of plain to montane levels with the Ranunculion fluitantis and CallitrichoBatrachion vegetation

3.3 The Itchen is a classic example of a sub-type 1 chalk river. The river is dominated throughout by aquatic *Ranunculus* spp. The headwaters contain pond water-crowfoot *Ranunculus peltatus*, while two *Ranunculus* species occur further downstream: stream water-crowfoot *R. penicillatus* ssp. *pseudofluitans*, a species especially characteristic of calcium-rich rivers, and river water-crowfoot *R. fluitans*.

3.4 Annex II species present that are a primary reason for selection of this site include:

1044 Southern damselfly Coenagrion mercuriale

Strong populations of southern damselfly *Coenagrion mercuriale* occur here, estimated to be in the hundreds of individuals. The site in central southern England represents one of the major population centres in the UK. It also represents a population in a managed chalk-river flood plain, an unusual habitat for this species in the UK, rather than on heathland.

1163 Bullhead Cottus gobio

The Itchen is a classic chalk river that supports high densities of bullhead *Cottus gobio* throughout much of its length. The river provides good water quality, extensive beds of submerged plants that act as a refuge for the species, and coarse sediments that are vital for spawning and juvenile development.

3.5 Annex II species present as a qualifying feature, but not a primary reason for site selection include:

1092 White-clawed (or Atlantic stream) crayfish Austropotamobius pallipes
1096 Brook lamprey Lampetra planeri

1106 Atlantic salmon Salmo salar

1355 Otter Lutra lutra

Solent Maritime SAC

3.6 The Solent is designated as an important site as it 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 site is the only one to contain more than one physiographic sub type of estuary.

3.7 The Solent encompasses a major estuarine system on the south coast and is the only cluster site. The Solent and its inlets are unique in Britain and Europe for their hydrographic regime of four tides each day, and for the complexity of the marine and estuarine habitats present within the area. Sediment habitats within the estuaries include extensive estuarine flats, often with intertidal areas supporting eelgrass Zostera spp. and green algae, sand and shingle spits, and natural shoreline transitions. Annex I Habitats found here include: Spartina swards and Atlantic salt meadows. The full designation sheet is provided at **Appendix IIf**.

Solent and Southampton Water SPA

3.8 The Solent and Southampton Water SPA supports an important population of bird species. In the breeding season the following species are regularly present: Mediterranean Gull *Larus Melanocephalus* (15.4% of the GB breeding population); Little Tern *Sterna albifrons* (2% of the GB breeding population), Roseate Tern *Sterna dougallii* (3.1% of GB breeding population); Common Tern *Sterna hirundo* (2.2% of the GB breeding population; Sandwich Tern *Sterna sandvicensis* 2.2% of the GB breeding population).

3.9 Over winter the area regularly supports an internationally important bird assemblage with a 5 year peak mean of 51,361 wildfowl present. This assemblage includes the following species: Teal *Anas crecca* (1.1% of the population); Brent Goose *Branta bernicla* (2.5% of the population); Ringed Plover *Charadrius hiaticula* (1.2% of the population), Black tailed Godwit *Limosa limosa* (2.2% of the GB breeding population); The full SPA designation sheet is provided in **Appendix IIg**.

3.10 The status of these species: Common Tern is listed as an Amber species on the Birds of Conservation Concern (BoCC) List and the UK population has increased by 17 % over the last 20 years (England population increased by 23% over the same period). The UK population has however decreased by 51% over the last year; the UK Teal population has increased by 52% over the last 25 years and 1% over the last 10 years; The Ringed Plover is listed as a Red BoCC species and the population has decreased by 60% over the last 25 years with a decrease of 39% over the last 10 years; Black-tailed Godwit are also listed as a red species on the BoCC species list and the population has increased by 335% over the last 25 years, with a

45% increase over the last 10 years; Brent Goose (dark bellied form) is listed as an amber BoCC species and has increased by 15% over the last 25 years and increased by 46% over the last 10 years.

Solent and Southampton Water RAMSAR

3.11 The area from Hurst Spit to Gilkicker Point along the South coast of Hampshire contains a diverse array of habitats that supports internationally important numbers of wintering waterfowl, important breeding gull and tern populations and an important assemblage of rare invertebrates and plants.

3.12 The site offers a rare major sheltered channel between a substantial island and the mainland which exhibits an unusual strong double flow and has long periods of slack water at high and low tide. The full designation sheet for the Solent and Southampton Water RAMSAR is provided at **Appendix IIh**.

New Forest SAC

3.13 The New Forest is designated as a Special Area of Conservation under the Habitats Directive due to the complex, diverse habitats to be found there and the rare species they support. The New Forest contains the largest area of lowland heathland in the UK, representing European Dry Heaths and is unusual due to its long history of grazing by ponies and cattle. The most extensive stands of Lowland Northern Atlantic Wet Heaths in Southern England, mainly of the M16 Erica tetralix –Sphagnum compactum type also occur here. These wet heaths are important for rare plants, such as Marsh Gentian *Gentiana pneumonanthe* and Marsh Clubmoss *Lycopodiella inundata*, and a number of dragonfly species, including the scarce blue-tailed damselfly *Ischnura pumilio* and small red damselfly *Ceriagrion tenellum*.

3.14 The New Forest contains Molinia meadows in southern England, therefore represents the Annex I Habitat Molinia meadows on calcareous, peaty or clayey-silt-laden soils. The site supports a large area of the heathy form of M24 Molinia caerulea – Cirsium dissectum fen-meadow. This vegetation occurs in situations of heavy grazing by ponies and cattle in areas known locally as 'lawns', often in a fine-scale mosaic with other mire and grassland communities.

3.15 Oligotrophic Waters containing very few minerals of sandy plains are Annex I Habitats represented within the New Forest. Hatchet Pond within the New Forest includes a pond which is an oligotrophic waterbody developed over fluvial deposits and is an isolated example of a habitat found more commonly in the uplands of the UK and thus contains northern species of plant not usually found in the South of England.

3.16 The New Forest is also the largest area of mature, semi-natural Beech *Fagus sylvatica* woodland in Britain and represents the Annex I Habitat Atlantic acidophilous Beech forests with Holly and sometimes also Yew in the shrub-layer. This mosaic with other types of woodland and heath has allowed unique and varied assemblages of epiphytic lichens and saproxylic invertebrates to be sustained, particularly in situations where the woodland is

open and the tree trunks receive plenty of light. The full designation sheet for the New Forest SAC is given at **Appendix IIi.**

New Forest SPA

3.17 The New Forest supports important populations of rare bird species including Nightjar *Caprimulgus europaeus* (8.8% of the Great Britain breeding population), Woodlark *Lullula arborea* (29.5% of the GB breeding population), Dartford Warbler *Sylvia undata* (33.6% of the GB breeding population), Honey Buzzard *Pernis apivorus* (12.5% of the GB breeding population), Hobby *Falco subbuteo* (5% of the GB population) and Wood Warbler *Phylloscopus sibilatrix* (at least 2% of the GB population). Over the winter the area regularly supports Hen Harrier *Circus cyaneus* (2% of the GB population). A copy of the full SPA designation sheet is given at **Appendix IIj**.

3.18 Due to recent successful conservation management efforts of heathland sites, the current status of these species has largely improved: Nightjar numbers have increased in the UK by 114% over the last 20 years and has recently moved from Red to Amber on the Birds of Conservation Concern List (BoCC 4, 2015); Woodlark now has a Green BoCC status and the population has increased by 1086% over the last 20 years; Dartford Warbler has an Amber status but the population has increased by 663% over the last 20 years; The Hen Harrier population has increased by 15% over the last 20 years.

3.19 Not all species have fared so well however: The GB Hobby population has increased by 31% over the last year but has decreased by 20% over the last 20 years; The Wood Warbler population has decreased by 32% over the last year and has significantly decreased over the last 20 years.

New Forest RAMSAR

3.20 The New Forest is an area of semi-natural vegetation including valley mires, fens and wet heath within catchments whose uncultivated and undeveloped state buffer the mires against adverse ecological change. The habitats present are of high ecological quality and diversity with undisturbed transition zones. The suite of mires is regarded as the locus classicus of this type of mire in Britain. Other wetland habitats include numerous ponds of varying size and water chemistry including several ephemeral ponds and a network of small streams mainly acidic in character which have no lowland equivalent in the UK. The plant communities in the numerous valleys and seepage step mires show considerable variation, being affected especially by the nutrient content of groundwater. In the most nutrient-poor zones, Sphagnum bog-mosses, cross-leaved heath, bog asphodel, common cottongrass and similar species predominate. In more enriched conditions the communities are more fen like. A copy of the full RAMSAR designation sheet is given at **Appendix IIk**.

New Forest SSSI

3.21 A copy of the full SSSI designation sheet is given at **Appendix IIL**.

Emer Bog SAC and Baddesley Common SSSI

3.22 Emer Bog is an example of an ungrazed valley bog with a rich flora and fauna which includes most typical bog species. Emer Bog lies approximately 6.05km to the west of the site, just north of North Baddesley. The main elements of the bog vegetation include tall stands of common reed *Phragmites australis* and a shorter mixed association of sedges, especially white sedge *Carex curta*, bottle sedge *C. rostrata* and star sedge *C. echinata*, with notable quantities of marsh cinquefoil *Potentilla palustris* and bogbean *Menyanthes trifoliata*, together with marsh violet *Viola palustris* and southern marsh-orchid *Dactylorhiza praetermissa*. The bog grades downstream into mature alder carr and upstream into heathland, heavily invaded with pine, birch and scrub. 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: Transition mires and quaking bogs. (Very wet mires often identified by an unstable 'quaking' surface).

3.23 The Citation sheet for Emer Bog SAC is provided in Appendix IIL.

Further Ecology Surveys

Botanical Survey

3.24 The Site is comprised of three pasture fields with Westfield House standing between the northern most two fields and the southern field. Mature vegetation surrounds the majority of the boundary. To the west is an area that has become scrubbed over with dense Bramble *Rubus fruiticosus* agg. or is proceeding through succession into woodland and is dominated by young sapling trees. To the north of the site is an area of scrub that is dominated by Bracken *Pteridium aquilinum* and Bramble with young Oak trees *Quercus robur*.

3.25 The fields on site are poor, semi-improved grassland and have been sown, fertilised and ploughed in the past. The habitat is dominated by grasses including Cock's-foot *Dactylis glomerate*, Yorkshire-fog *Holcus lanatus*, Perennial Rye-grass *Lolium perenne*, Sweet Vernalgrass *Anthoxanthum odoratum* and Creeping Bent *Agrostis stolonifera.* Herb level in the sward improves as you progress northwards and the herbs are largely found in close proximity to the mature vegetated boundaries. The field to the south has very few herbs present. Herbs present include Creeping buttercup *Ranunculus repens*, Common Yarrow *Achillea millefolium*, Daisy *Bellis perennis*, Scarlet Pimpernel *Anagallis arvensis* and Common Sorrel *Rumex acetos*a. Common Nettle *Urtica dioica* and Bramble occur near the boundaries.

3.26 As the grasslands have been semi-improved and heavily grazed, the grasslands do not readily fall into any specific native grassland type but are largely mesotrophic grassland with some acidic grassland components. These grasslands are considered to be of Low nature conservation value.

3.27 The SINC contains woodland that is dominated by Silver Birch *Betula pendula*, Common Oak *Quercus robur*, Goat Willow *Salix caprea* and White Poplar Pop in parts. The woodland is regenerating following clay extraction and much of the ground flora is dominated by Bramble and Ivy *Hedera helix*. Bluebells *Hyacinthoides non-scripta* are present in the Spring. To the north-east of the SINC is a remnant of species-rich grassland that straddles the public footpath and extends west of it into the SINC. Though this grassland is being heavily threatened by being scrubbed over, herbs are abundant in the sward and there is a good species diversity here with three species of Orchid identified here: Early Purple Orchid *Orchis mascula*, Bee Orchid *Ophrys apifera* and Common Spotted-orchid *Dactylorhiza fuchsii*. Species found here also include Wild Carrot *Daucus carota*, Oxeye Daisy *Leucanthemum vulgare*, Agrimony *Agrimonia eupatoria*, Common Knapweed *Centaurea nigra* and Common Bird's-foot Trefoil *Lotus corniculatus.* This grassland is of Local-County nature conservation value and worthy of the SINC designation. To the boundary of the Site with the SINC to the north-west is a shaded, low boundary bank where good numbers of Broad-leaved Helleborine *Epipatis helleborine* occur and this is of Local nature conservation interest.

Protected Species

Bats

Buildings

Bat Emergence/Re-entry Surveys

3.28 No bats were seen or heard to emerge from or re-enter Westfield House but the physical structure of the buildings and the hedge boundaries present were used as commuting routes and for foraging. Low numbers of four species of bat were recorded foraging and commuting via the property: Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Noctule *Nyctalus noctula* and Serotine *Eptesicus serotinus* bats.

Trees

3.29 Limited mature trees occur around the boundaries of the site and those that are present are largely either young or moderate in age and have low or no potential to support a bat roost. None of these trees was confirmed as a bat roost. A mature Oak tree just outside the boundary of the site within the SINC to north west was confirmed as being a bat roost for 23 Soprano Pipistrelle bats. This bat roost is considered to be of less than Local nature conservation value. This roost will not be directly affected by the proposals.

Bat Activity Surveys

3.30 Nine species of bat were recorded foraging on site and within the adjacent SINC during the bat activity surveys undertaken in 2018 and 2019 (see **Table 1** below). The majority of the bat species recorded were the more common and widespread of the UK bat species apart from Barbastelle which is rare, Serotine which has a restricted southern distribution in the UK and its status is described as frequent and Whiskered/Brandt's which is less common than the other Myotis species recorded.

The Site

3.32 On the Site bat species were largely recorded commuting and foraging along the mature vegetated boundaries of the Site and all the boundaries of the site are commuting routes but the western boundary of the Site along the public footpath is in particular an important commuting route for Pipistrelle bats. Bats are also using the vegetated boundaries of Westfield House to reach the eastern boundary and to fly over Allbrook Way to reach the riverine habitats to the east. Here a single rare Barbastelle bat was observed in July 2018.

3.34 It was noticeable that few bats are present on site early and therefore that the number of bat roosts within close proximity to the site are few. Also, bats do largely not remain here all night, so many are passing through before moving on through the landscape.

3.35 Overall, the number of bats on site was found to be low-moderate with good numbers of Common Pipistrelle and Soprano Pipistrelle on occasion but other species were usually single visitors or two bats. Three Serotine bats were however recorded.

Table 1: *Bat species recorded at the Site and within the adjacent SINC*

Species – Common name	**Species - Latin name**	**Numbers recorded**	**Status**
Common Pipistrelle	*Pipistrellus pipistrellus*	10-20	Common & widespread
Soprano Pipistrelle	*Pipistrellus pygmaeus*	5-12	Common & widespread
Serotine	*Eptesicus serotinus*	2-3	Restricted distribution to the South of England and here widespread
Noctule	*Nyctalus noctula*	2-3	Common & widespread
Long-eared bat	*Plecotus* Sp.(most likely *auritus*)	1-2	Brown Long-eared = Common & widespread (Grey Longeared is much rarer and largely confined to South coast)
Barbastelle	*Barbastella barbastellus*	1	Rare
Natterer's	*Myotis nattereri*	1-2	Widespread & fairly common

Daubenton's	*Myotis daubentonii*	1-2	Widespread & fairly common
Whiskered/Brandt's	*Myotis mystacinus/Myotis brandtii*	1	Widespread but scarce

SINC

3.36 The SINC contained good numbers of bats but this fluctuated and much of the habitat available was not being foraged. Largely bats were recorded foraging along the boundary edges of the SINC and along the wider footpaths. Regularly the number of bats was surprisingly low within the SINC. Occasionally however, moderate numbers of Pipistrelle

bats were recorded: both April surveys of the SINC found good bat activity. The diversity of bat species found within the SINC was no greater than that found at the Site.

3.37 Again, as with the Site, it was noticeable that few bats are present with the SINC early on in an evening and thus It is likely that the number of bat roosts within close proximity to the site are few. Also, bats do largely not remain here all night and so many are passing through and utilising the feeding opportunities before moving on through the landscape.

3.38 The number of bats within the SINC was found to be low-moderate with good numbers of Common Pipistrelle and Soprano Pipistrelle on occasion but other species were usually single visitors or two bats.

Static Bat Detector Survey

3.39 The static bat detectors confirmed the presence of the same nine bat species within the Site and SINC as found during the walkover surveys. Bats were confirmed commuting and foraging along the boundaries of the site and the SINC to the west of the site. The average number of bat passes recorded using the static bat detectors varied highly between locations and from night to night but the pattern for the summary data of bat activity collected at Knowle Hill is consistent whichever way the data is presented. The average number of bat passes recorded peaked in August 2018 and then declined to June, 2019. August recorded a total average number of bat passes per bat detector of just under 3000 bat passes over 5 nights, whereas June 2019 recorded a total average number of bat passes of 63.6, a decline in bat activity of 47%.

3.40 The highest number of bat passes was recorded along the northern edge of the SINC in August 2018 where a static bat detector recorded 6576 bat passes over one night's survey. The second highest number of bat passes, 5772 bat passes, was also recorded in August along the northern edge of the SINC at static detector to the north of the small ornamental fishing pool.

3.41 The pattern of bat activity recorded indicates that there are no bat maternity roosts in the vicinity in early summer but that from mid-summer onwards there is an increased use of the

area by bats for foraging. The data supports the expected general pattern for bats in the UK, as by August bats born that year will have fledged and the populations of bats will be at their highest numbers for the year.

Badger

The Site

3.42 No badger setts were found on the Site. However, up to three badgers have been recorded foraging on site during bat surveys of the site, largely in association with the eastern boundary vegetation parallel with Allbrook Way. Badger foraging evidence has also been found along the western boundary of the site. Low numbers of foraging badgers on Site are considered of negligible nature conservation value.

SINC

3.43 The walkover survey of the SINC found a badger sett within the north-west boundary, within the steep bank that remains of the original ground level prior to clay extraction. However, no evidence of current use by badgers was found but rabbits were occupying many of the holes.

Dormice

The Site

3.44 No evidence of Dormice or their presence was found on Site or within the adjacent SINC. Dormice are however elusive and occur at low population density and it is not possible to completely prove absence from the survey area. However, habitats suitable for Dormice are present within the mature, vegetated boundaries of the site and this habitat is being retained as part of the proposals.

Water Vole

The Site

3.45 The Site contains no habitat suitable for Water vole.

SINC

3.46 No evidence of Water Vole was found within the SINC. The SINC is thus considered of low nature conservation value for Water Vole.

Otter

The Site

3.47 No evidence of Otter was found at the Site during the surveys undertaken. The boundaries and western edge of the Site are thus considered of Low nature conservation value for Otter.

SINC

3.48 Suitable foraging and refuging habitat for Otter does occur within the SINC. However, there is no watercourse linking the SINC to the wider riverine network and the SINC is on the opposite side of a major road from optimal habitats along the River Itchen. No Otter or evidence of their presence was recorded at the SINC during the survey undertaken. The SINC is thus considered of Moderate nature conservation value for Otter.

Birds

3.49 Fifty-one species of bird were recorded within the Zone of Influence of the proposals between July 2018 and June 2019. Of these species, eight are listed as Red species on the Birds of Conservation Concern List (Eaton *et al*., 2015) and eleven as Amber species. The UK populations of these species are considered to be declining.

3.50 Mature hedgerows with trees, bramble scrub and grassland habitats present on Site offer good nesting and foraging habitats for bird species. The open, semi-improved pasture land covering the majority of the site is however not of high foraging value for bird species.

3.51 Of the bird species recorded on Site twenty-five species of the more common UK species of woodland and hedgerow birds are considered to be breeding on site, with four of these species having a Birds of Conservation Concern Red Status. One breeding species, Dunnock, has Amber Status. These birds are largely utilising habitats proposed for retention as part of the proposals at the boundaries of the site and in the wooded area to the West but foraging does occur within the grassland for some species. The boundaries of the site also serve as wildlife corridors for bird species and many of the birds recorded at the Site have been commuting across the landscape via the Site, in particular to and from the direction of the River Itchen to the south-east. The Zone of Influence is considered to be of at least Local Nature Conservation Value for the bird species it supports.

Great Crested Newts

The Site

3.52 Two Great-Crested Newts (GCN) were found within the Site to the west side under separate refugia laid for the Site reptile survey in September, 2018. This confirms that the mature vegetation surrounding the boundary of the Site and the wooded area present to the west of the Site is Great-Crested Newt terrestrial habitat and is thus protected under UK and EU law.

SINC

eDNA Test

3.53 Water samples were taken from ponds located within 500m of the site in accordance with the accepted set methodology (Biggs *et al*., 2014). Three ponds within the SINC returned a positive result from the eDNA test and thus contain GCN. All the ponds with positive eDNA results were then assessed for their GCN population size and subjected to practical survey in order to fully evaluate the newt populations present. Egg search, torching and bottle trapping were undertaken.

3.54 No GCN were found in two of the ponds with a positive eDNA result using the field survey assessment techniques but Great-crested newts were found in the 3rd positive pond, Pond No. 3. The peak count for the number of GCN found in the pond was four newts and was recorded on two occasions (2 females, 2 males on one survey and 3 males and 1 female on a second survey). This number of Great-crested newts is considered to be a Low population in accordance with the guidelines (English Nature, 1991) where the number of newts found is <10. Both other species of UK newt were also found in this pond, Common newt *Lissotriton vulgaris* and Palmate newt *Lissotriton helveticus.* Pond 1 and Pond 4 were also found to contain low numbers of Palmate and Common newts.

3.55 The majority of the Site is grassland that is grazed very short and thus does not provide suitable foraging or refuging habitat for Great-crested newts. However, the mature vegetated boundaries around the site and the scrub and wooded areas to the west of the Site do offer suitable habitat. The Site is considered to be of Low nature conservation value for Great Crested Newts.

3.56 As GCN are a European Protected Species, it is likely that a licence from Natural England will be required in order for works to proceed and mitigation provided to offset impacts from the Proposals upon GCN terrestrial habitat to the west of the Site.

Reptiles

3.57 Very low numbers of reptiles were found on Site with two common species confirmed as being present: Slow Worm *Anguis fragilis* and Grass snake *Natrix natrix*. Seven Slow worm (4 male, 3 female) were found in total on the Site over the survey. A single Grass Snake was observed to the west of the site on the western edge of the public footpath. It is considered that the Site has a Low nature conservation value for common reptile

4.0 IMPACT IDENTIFICATION

Overview

4.1 This section presents an ecological impact assessment of the proposed scheme according to the current guidance (CIEEM, 2018).

Designated Sites

The River Itchen SAC SPA SSSI

Construction Impacts

Direct Effects

4.2 The River Itchen lies approximately 230m away from the Site at its closest point and therefore there will be no direct impact upon the river from the construction of the scheme.

Indirect Effects

4.3 The River Itchen lies downhill from the site to the south-east and without mitigation the construction of the Scheme has the potential for negative impacts upon the river. In prolonged wet weather, there is the potential for stored materials on site to become diluted and mobile and to run downhill towards the River Itchen as part of surface water run-off and cause pollution. It is likely that some of this material would be intercepted by the drainage systems of Knowle Hill & Allbrook Way but these drainage systems may then block and surface water continue to flow downhill. If left undealt with for some time, polluted surface water could run across the roundabout and down the slope into the river. Chemicals and fuel incorrectly stored and damaged may also leak into the surface water and cause pollution of the nearby habitats and river.

4.4 During the construction stage there is a high likelihood that dust will arise during the ground breaking, earth moving and excavation stage but this is weather dependent: if carried out in dry weather there is a higher risk that dust will be created. This dust unmitigated could fall into the River Itchen nearby or cover trees and shrubs leading to a decrease in their ability to photosynthesise.

4.5 Construction dust from movement of materials and vehicles on site may also without mitigation blow across to the River Itchen and pollute the watercourse. However, it is noted that the prevailing wind in the UK is from the south-west and thus some dust may be blown north away from the nearest part of the river to Allbrook Claypits SINC, pasture fields to the North and onto the M3 motorway. Should any fine particles accumulate in the river in high levels, it has the potential to impede the take up of oxygen from the water by aquatic organisms from invertebrates to fish and lead to their increased mortality. Fine silt particles have also been found to bind readily with chemical pollutants and these have been found to

have a detrimental impact on developing Atlantic Salmon embryos in rivers and this species is a qualifying feature for the River Itchen SAC.

4.6 Noise caused by construction traffic may unmitigated accumulate from several construction operations on site and from vehicles delivering materials on site, has the potential to disturb wildlife using the nearby river habitat such as breeding birds occurring along the river and also Water vole and Otter, both protected species, which are known to occur here and may be resting up along the watercourse. Air pollution may increase due to the increase in vehicle traffic brought about by the construction and the use of construction machinery on Site. This pollution may cause local impacts by being absorbed by vegetation or covering habitats with noxious particles and may cause a wider negative impact on air quality. This impact would be Short-term and is considered Likely.

Operational Impacts

Direct Effects

4.7 The River Itchen lies approximately 230m away from the Site at its closest point and therefore there will be no direct impact upon the river from the operation of the scheme.

Indirect Effects

4.8 Overall noise will increase due to the operational proposals, coming from private and service vehicle movements, moving along the roads on site and using the operational site and for example people undertaking home, garden or car maintenance. This increase in noise may again potentially disturb wildlife using the nearby river habitats such as breeding birds, Water vole and Otter, potentially leading to abandonment of the habitats and a failure to reproduce that year.

4.9 Recreational use of the footpaths alongside the River Itchen is unmitigated, likely to increase as part of the operational use of the site. This activity could in combination with other development nearby lead to an increase in disturbance to wildlife using the river such as birds, otter and Water vole. Physical damage could also occur from damage to the riverbank and an increase in use of the river for recreation by children may damage the shallow riverbed and disturb/displace/damage aquatic organisms such as fish and invertebrates.

4.10 Surface water run-off from the new areas of hard-standing on site has without mitigation, the potential to accumulate and, as in the construction phase highlighted above, has the potential to pollute the River Itchen and accumulation of fine particles may have a negative impact upon aquatic ecosystems: potentially by impeding uptake up of oxygen from the water by aquatic organisms or by combination with chemical pollutants and having a detrimental impact upon developing Atlantic Salmon present within the River Itchen.

Solent and Southampton Water SPA

Solent Maritime Special Area of Conservation (SAC);

Solent and Southampton Water RAMSAR

Construction Impacts

Direct Effects

4.11 The SPA lies approximately 8.2km from the proposals at its nearest point at Northam Marina and the SAC approximately 10.85km from the proposals at its nearest point at the Lower Test Nature Reserve. Therefore there will be no direct impact from the construction of the scheme upon these designated sites.

Indirect Effects

4.12 As the River Itchen flows into Southampton water there is the potential for negative impacts upon the river to extend into the wider system. As stated for the River Itchen, in prolonged wet weather, there is the potential for stored materials on site to become diluted and mobile and to run downhill towards the River Itchen as part of surface water run-off and cause pollution. This would eventually find its way into Southampton Water and the Solent. Chemicals and fuel incorrectly stored and damaged may also leak into the surface water and cause pollution of the nearby river and may again find its way into Southampton Water and the Solent.

4.13 Construction dust from movement of materials and vehicles on site may also without mitigation blow across to the River Itchen and pollute the watercourse. As discussed for the River Itchen, fine particles may accumulate in the river in high levels and have the potential to impede the take up of oxygen from the water by aquatic organisms from invertebrates to fish and lead to their increased mortality. Fine silt particles have also been found to bind readily with chemical pollutants and these have been found to have a detrimental impact on developing Atlantic Salmon embryos in rivers. These impacts may extend into the wider ecosystem.

Operational Impacts

Direct Effects

4.14 There will be no direct impact from the operation of the scheme upon these designated sites.

Indirect Effects

4.15 Solent Water lies to the south of the proposals and has the potential unmitigated to be impacted directly by the discharge of waste water from the proposals site, as this water after processing at Chickenhall, is discharged into the Itchen Navigation some 2.7km downstream from the Site, thereby into Southampton Water and into the Solent, and also from recreational disturbance by people both in the water and along the coastline. Regular groups of people walking along the coast may cause disturbance to protected wading birds

feeding as may also high numbers of sailing vessels passing too close to flocks of birds, and vessels being driven irresponsibly.

4.16 The Solent Disturbance Mitigation Project (2017) has shown that recreational disturbance in association with new residential development can reduce the quality of all the habitat in all the Solent SPAs. All development within 5.6km of the Solent SPA/SAC/RAMSAR sites is required to compensate for these recreational impacts. The proposals site just lies within this boundary mark. The development proposal outlined here will either make appropriate financial contributions to the SDM Project to compensate for these recreational impacts and to ameliorate the impacts of the scheme or will offer an enhanced area for recreation in association with the Proposals Site to provide alternative recreation space for the new residents.

New Forest SAC SPA RAMSAR SSSI

Construction Impacts

4.17 The Site lies 14.68km from the New Forest SAC SPA RAMSAR SSSI at its nearest point at Copythorne, hence there will be no impacts from the construction of the scheme upon this designated site.

Operational Impacts

Direct Effects

4.18 Due to the distance from the proposals, there will be no direct impact from the operation of the scheme upon the New Forest SAC SPA RAMSAR SSSI.

Indirect Effects

Recreational Pressure & Disturbance

4.19 The New Forest lies to the south of the proposals and has the potential through an increase in the residential population, particularly in combination with an increase in residents brought about by other similar development proposals in the area, to be affected by an increase in recreational impacts from the new residents. Recreational disturbance is one of the key negative issues for the status of the European Protected Sites along the South Coast of England. The New Forest contains many important habitats that are prone to physical damage by the sheer volume of visitors which visit the New Forest each year for walking and the rare species which depend upon these habitats are prone to disturbance, particularly rare ground nesting birds. Increased recreational use of the SPA/SAC/RAMSAR has the potential to physically damage the important habitats present through increased erosion of pathways and mobility of substrates and to disturb European protected bird species which nest on or near the ground. An increase in walking and dog walking have the potential to impact upon protected bird and reptile populations through physical disturbance and through increased mortality. Recreational disturbance and dog walking may cause damage to nests, destruction of eggs or displacement of birds from the nest causing vulnerable

species to fail to breed that year. This would have a significant negative impact upon the rare bird populations.

4.20 The New Forest National Park Authority operates a scheme to mitigate for impacts upon the designated sites from visitors from new housing through a financial payment based upon the number of bedrooms each property will provide. Eastleigh Borough Council has considered the impacts from development within its area and has stated that some mitigation is needed. Eastleigh considers that impacts are most likely to be reduced by provision of more local areas for recreation to provide an alternative location for enjoying the outdoors. This Scheme will therefore make appropriate financial payments or offer additional recreational land for the residents in association with the Proposals Site.

Atmospheric Pollution

4.21 An increase in the number of visitors in the area is likely to increase vehicle emissions and in close proximity to the SPA, this could negatively affect the heathland habitats present which support European protected bird species. These habitats are already subject to levels of nitrogen deposition that exceed critical loads.

Reduced Water Availability

4.22 Water resources are obviously an important issue for the protected site as habitats within the SPA include wetter habitats upon which the European bird species depend. An increase in development within the vicinity of the site is likely to increase the demand locally for this resource.

Emer Bog SAC and Baddesley Common SSSI

Construction Impacts

Direct Effects

4.23 The Site lies just over 6km from Emer Bog SAC and thus there will be no direct impacts upon this designated site from the Scheme.

Indirect Effects

4.24 The Site lies within the catchment of the River Itchen and the land slopes downhill towards the river. Emer Bog is within the catchment of the Tadburn Lake River and according to hydrological reports by Ron Allen (2002, 2017) is fed with water from a relatively limited area of land around it. It is considered therefore that there will be no indirect effects upon Emer Bog from the construction of this Scheme.

Operational Impacts

Direct Effects

4.25 The Site lies just over 6km from Emer Bog SAC and thus there will be no direct impacts upon this designated site from the operation of the Scheme.

Indirect Effects

4.26 Again, the Site lies within the catchment of the River Itchen and the land slopes downhill towards the river. Emer Bog is within the catchment of the Tadburn Lake River and according to hydrological reports is fed with water from a relatively limited area of land around it. Surface water drainage and sewerage issues will potentially have impacts upon the River Itchen and the Solent that it flows into.

4.27 It is likely that there will be some increased visitor numbers to Emer Bog from the new residents at the development. However, the designated site is accessed by boardwalks and as a Wildlife Trust Reserve is likely to be visited by those in search of nature conservation. It is also 6km away from the Site and would likely involve a special trip to visit. It is thus considered very unlikely that there will be indirect effects upon Emer Bog from the operation of this Scheme.

Vegetation

Construction Impacts

Direct Effects

4.28 Within the development area, unmitigated impacts upon habitats during the construction phase would include direct loss of 1.99 ha grassland habitat and damage due to construction vehicles and storage of building materials upon pasture land of low nature conservation value and to 10m of mature hedgerow and wooded boundary of Local Value.

Indirect Effects

4.29 Changes to the hydrology of the site brought about through the proposals may have a negative effect upon the existing vegetation around the boundary of the site, though this is unlikely for much of the Site as the land slopes away to the south. Unmitigated, dust from construction may negatively affect the vegetation on Site by reducing plants' ability to photosynthesise and grow.

Operational Impacts

Direct Effects

4.30 There may be some occasional damage to vegetation around the boundary of the site, to the wooded area to the west and within the SINC buffer habitat, caused by the introduction of residents, in particular children and youths who may cause physical damage. Rarely there may be accidental damage from fires and vehicular collision.

Indirect Effects

4.31 Unmitigated there may be minor changes in pollution exposure to the mature vegetated boundaries of the Site from operation from vehicles and from changes to hydrology from gardening/leaks/car washing etc., though this is considered unlikely and would be short term. Without appropriate mitigation herbaceous plants from the landscaping of the Site and new residents' gardens may colonise the adjacent SINC woodland and grassland habitats. This would occur over the long-term and would be a Significant Negative Impact upon the adjacent SINC. Residents may also remove plants from the SINC habitats for installation in their own gardens. This may be a Significant Negative Impact depending upon the level of abuse.

Bats

Construction Impacts

Direct Effects

4.32 No bat roosts were found on site and thus there will be no direct impacts upon bat roosts from construction. However, it is considered that unmitigated there may be limited direct impacts from construction upon bats in the short-term, as use of machinery after dark and before sunrise, storage of materials and the physical construction of buildings, may interrupt bat flat lines and cause collision and death. In particular the construction of an access road through the mature vegetation on the boundary that is being used by foraging bats is most likely to cause impacts. Use of the open pasture fields, where the new housing is to be located, by foraging bats is however limited and largely restricted to the boundary vegetation which is to be retained. Such direct, adverse impacts are considered probable, temporary and likely to be moderate in magnitude. The Significance of this impact is considered uncertain but likely to be a Significant Negative Impact without mitigation. There will however be a direct loss of grassland foraging habitat used by a low number of bats to housing and this adverse impact will be certain, permanent and low-moderate in magnitude. It is considered probable that without mitigation there would be a Significant Negative Impact for the rarer bat species present.

Indirect Effects

4.33 Noise, vibration or fumes from construction machinery and operations may indirectly disturb a small bat roost of Soprano Pipistrelle bats located on the eastern edge of the adjacent SINC and near to the western boundary of the Site and may lead to bats being temporarily displaced. Lighting of works after dark/before sunrise will disturb bat foraging and is most likely to dissuade bats from foraging and commuting near the Site but may also attract limited species. Such adverse, indirect impacts are likely to be temporary, will last the duration of construction, and be moderate in magnitude. The confidence in this prediction is Certain. Without mitigation it is considered Probable that there would be a Significant Negative Effect upon bats.

Operational Impacts

Direct Effects

4.34 On operation of the unmitigated scheme there would be occasional direct impacts upon foraging bats from vehicles entering the access to the Site through the mature vegetation boundary that is used as a bat commuting route, leading to bat injury and death. Such adverse impacts would be focused around dusk when bats are commuting away from roosts using the vegetated western boundary of the Site. Collisions may also occur with vehicles elsewhere on the Site immediately following operation of the Site before bats learn the changes to their environment. Thus these impacts would decrease rapidly with time as bats adjust. These impacts are therefore considered moderate. Without mitigation it is considered Probable that there would be a short-term Significant Negative Effect.

Indirect Effects

4.35 Without mitigation, increased lighting from windows and external lighting and the general increase in noise, activity and disturbance from people living in the development is likely to decrease the use of the site by foraging bats, particularly by the rarer species of bat recorded using the boundaries of the site. The number of bats crossing the site from west to east is also likely to be significantly reduced. It is considered that these adverse impacts would be probable and be a Significant Negative Effect.

Badgers

Construction Impacts

Direct Effects

4.36 Without mitigation collisions between low numbers of badgers and construction traffic across the Site may occur particularly early on in the construction phase and at dusk and dawn, earlier and later in the year when evenings and mornings are darker for longer. Thus low numbers of badgers may be directly injured or killed as a result of the proposals. This unmitigated adverse impact is considered possible and permanent and a Significant Negative Effect upon badgers is likely.

4.37 Open pasture, which is badger foraging habitat, will be directly lost to the housing development and thus without mitigation, there will be a permanent adverse impact upon badgers from the loss of feeding opportunities. Some new amenity grassland will be created with Open Space areas as part of the scheme which will offer some foraging for badgers. Without mitigation this adverse impact is certain and permanent and will possibly have a Significant Negative Effect but on a feature of negligible nature conservation value.

Indirect Effects

4.38 Noise, fumes and vibration from the construction may dissuade badgers from using the disused setts nearer the site or from foraging on Site but this is considered unlikely. Without

mitigation, construction trenches on site created as part of the works, may trap or injure passing badgers overnight and cause mortality.

Operational Impacts

Direct Effects

4.39 Introducing vehicular traffic to the site may, in the short-term lead to low numbers of collisions with traffic, particularly at the access road through the mature boundary

vegetation and along the eastern boundary of the Site where low numbers of badgers have been regularly seen. This will be particularly so during the early and later part of the year when days are shorter and unmitigated may lead to mortalities. This impact is considered possible. Vehicular speeds on the site will however be low and thus avoidance manoeuvres should be possible to avoid impacts in most cases.

Indirect Effects

4.40 It is considered that on operation the proposals may unmitigated lead to negative impacts upon badgers through increased noise and lighting disturbance on site, wider recreational use of the woodland to the west of the Site and of the Allbrook Claypits SINC to the west where some disused setts have been found. Badgers may be dissuaded from using these habitats as a result. This is considered possible and may lead to a Significant Negative Impact upon the badger population from further loss of foraging opportunities.

Great Crested newts

Construction Impacts

Direct Effects

4.41 The site itself is currently largely unsuitable for use by Great Crested Newts (GCN) and thus the proposed works would currently have a limited direct impact upon this species. However, should time elapse before commencement of the works, the grassland may become overgrown and will then offer suitable foraging and refuging habitat. It is highly likely however that the Site will remain horse grazed until the proposals proceed.

4.42 Work to enhance the biodiversity of the Site within the woodland to the west and SINC buffer may, in the absence of mitigation, negatively affect GCN in the short-term through mortality and disturbance which would dissuade newts from foraging along the west of the Site. This is considered likely.

Indirect Effects

4.43 Indirectly the small population of GCN present within the boundary of the Site and within the woodland to the west of the site would be subject to noise and vibration from the construction of the scheme. This would likely dissuade newts from foraging near the Site and moving through the boundary vegetation and temporarily reduce the habitat available

to them. However, works are not likely to operate at night and newts are active during this time. Thus newts may still continue to forage here and this is considered likely.

4.44 The installation of the roads along the western boundary of the site may unmitigated occasionally cause GCN fatalities through foraging out of the SINC buffer and becoming trapped along kerb stones and falling into drainage gully pots. These impacts are certain to occur, will be permanent and unmitigated be likely Significant Negative Impacts upon common amphibians.

Operational Impacts

Direct Effects

4.45 The appearance of vehicular traffic on the access road at the break in continuous vegetation around the boundary may elevate direct negative impacts upon animals through road traffic fatalities. The installation of the roads along the western boundary of the site may unmitigated occasionally cause GCN fatalities through foraging out of the SINC buffer and becoming trapped along kerb stones and moving in the path of road traffic. These impacts are probable, will be permanent and unmitigated be likely Significant Negative Impacts upon amphibians.

Indirect Effects

4.46 It is considered that on operation the proposals would unmitigated lead to negative impacts upon GCN through increased recreational use of the woodland to the west of the Site and of the Allbrook Claypits SINC to the west. This local increase in residents would unmitigated lead to higher levels of disturbance and habitat damage. Breeding ponds may be damaged by children/youths, with detrimental impacts upon recruitment of new individuals into the population. The arrival of domestic pets, particularly cats, with the new residents of the houses will unmitigated have an adverse impact upon amphibians, leading to an increase in death and injury of animals. This impact is considered probable and would be a Significant Negative Impact.

4.47 It is likely that over time some of the new houses will create dense gardens around them and ponds that are suitable habitat for use by GCN. This habitat may become occupied by newts and be a positive gain of the proposals. However, unmitigated the standard storm water drains and concrete kerbs along the tarmac roads of the proposals would channel any wandering newts into the drains from where they would not be able to escape. This may therefore increase the level of mortality in the GCN population. This impact is considered probable and would be a Significant Negative Impact.

Reptiles

Construction Effects

Direct Effects

4.48 The majority of the Site was found not to support common reptiles but the vegetated boundaries of the Site and the retained woodland to the west were found to contain a small reptile population. This area of the Site is proposed as a buffer zone for the adjacent SINC and thus direct construction impacts of the proposals upon reptiles will be limited. Measures to enhance the woodland area and SINC buffer for biodiversity may unmitigated, have a short-term negative effect upon common reptiles through mortality caused by habitat creation and management. These adverse impacts are probable and may be temporary or permanent. It is thus possible that a Significant Negative Impact upon a small population of common reptiles may occur.

Indirect Effects

4.49 Increased noise and vibration on the Site from construction traffic is likely to disturb reptiles using the western boundary of the Site and may unmitigated dissuade reptiles from remaining within this habitat. These impacts are probable and may be short or long-term and may cause a significant impact upon the small population of common reptiles present.

4.50 The installation of tarmac roads with concrete kerbs and gully pots as part of the proposals may without mitigation channel foraging reptiles into the drains with an increase in reptile mortality. These impacts may occur but reptiles are generally deterred by the break in vegetation, from crossing tarmac roads. These impacts will be temporary to permanent and unmitigated may be possible Significant Negative Impacts upon common reptiles.

Operational Effects

Direct Effects

4.51 The installation of tarmac roads with concrete kerbs may, without mitigation, initially direct reptiles into roads where they might collide with newly installed traffic, with an increase in mortality. These impacts are possible without mitigation and may be short-term to permanent.

Indirect Effects

4.52 Increased ambient noise and disturbance at the site brought about by the occupation of houses may unmitigated dissuade reptiles from remaining within the boundaries of the site. Increased recreation by residents of the new housing along the public footpath and within the SINC habitats adjacent may dissuade common reptiles from using the habitats immediately to the west of the Site. This is considered likely and possibly a Significant Negative Effect given the small population of reptiles on site. However, if new homeowners establish dense garden planting and have compost heaps, then new habitats may also become available created for refuging and foraging common reptiles on site. This is considered possible.

4.53 The arrival of domestic pets, particularly cats, at the development site will unmitigated have an adverse impact upon common reptiles, leading to an increase in death and injury of animals. This is considered probable and would be a Significant Negative Effect upon such a small population of reptiles.

Birds

Construction Effects

Direct Effects

4.54 The majority of the Site does not provide nesting bird habitat but does provide foraging for a good number of bird species and so 14.3 ha foraging habitat will be lost to the scheme. This loss will be permanent and without mitigation may cause a Significant Negative Effect upon the Site bird population. The mature vegetation around the boundaries of the Site and the woodland to the west offers suitable nesting and foraging habitat for birdlife. The majority of this habitat will be retained and enhanced as part of the proposals and thus direct impacts from the scheme will be limited. Works to manage and enhance the habitats present for wildlife within the west of the Site may without mitigation cause limited mortality to birds through direct loss of individuals and destruction of nests with eggs. This is a criminal offence.

Indirect Effects

4.55 Noise and vibration from the construction of the proposals has the potential to displace breeding birds from their nests around the boundaries of the site, cause them to abandon their young and to be displaced from foraging habitats including the eastern edge of the Allbrook Clay Pits SINC. This impact is likely to be short-term and is therefore unlikely to be significant in the long-term. The proposals include buffer areas for the mature boundaries of the Site from development and so bird use is certain to return to these areas relatively quickly.

Operational Impacts

Direct Effects

4.56 An increase in bird death may be brought about by collisions with introduced traffic introduced to the site, particularly in the short-term and during short days early and late in the year. This is impact is considered likely but not significant upon the whole population.

Indirect Effects

4.57 The increase in noise disturbance to the site through occupation of housing may also cause birds to be displaced from the boundary vegetation on Site, in particular for species that are more sensitive. This impact is considered likely but not significant. The introduction of

domestic pets from occupation of the houses, particularly cats, is unmitigated, likely to lead to an increase in bird mortality on the site. In time the local bird population may adapt their behaviour to some extent to address this impact. This impact may be a Significant Negative Impact to the local bird population.

5.0 MITIGATION

Overview

5.1 In order to mitigate for the potential impacts of the scheme, it is proposed that the mature, vegetated boundaries of the site are retained and buffered from the proposals by further native species planting and some fencing, in order for wildlife to continue to be able to move around the site and across the landscape. Artificial light will not be allowed to shine on these areas in order to limit disturbance. Larger areas of habitat to the west and north of the site will be retained and managed to maximise its biodiversity within a Nature Conservation Area, particularly for the low population of Great Crested Newts, a European Protected Species, which is present here. Clearance of some scrub and dense sapling growth will be undertaken to restore some species-rich grassland to these areas to increase invertebrate prey for wildlife and to mitigate the loss of grassland habitat to the proposals. A mosaic of scrub and grassland is proposed adjacent to the more wooded areas within the Site of Importance for Nature Conservation to the west of the site (see **Plan 3**). Some public access control will be necessary through fencing, to prevent negative impacts upon the wildlife present here from potential increased public recreation and from their domestic pets.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

5.2 The contractor for the Site will provide a CEMP for the site to encompass the measures to be taken to prevent impacts from the construction of the proposals upon the environment. This will include the following measures:

- Use of appropriate hoarding on Site to contain air and noise pollution impacts on Site as much as possible;

- Wheel washing of construction traffic will be undertaken on Site to prevent mud and materials being carried off site, onto the highway and potentially washing downhill towards the river. Vehicles will be inspected prior to leaving the site. A designated hard-standing area will be created on site specifically for this purpose with temporary drainage measures installed and a power-washer used to wash down vehicle's wheels. Any excess mud will be collected and removed from site;

- Machinery and plant traffic will be kept to a minimum on site along specific designated routes, in order to minimise the churning-up of soils and in particular of virgin ground;

- In order to prevent pollution incidents, materials will be stored within a Site Compound on Site. Hazardous materials will be kept on an area of hard-standing and regular checks of containers will be carried out for potential leaks. A CoSHH

(Care of Substances Hazardous to Health) register will be kept on Site within the Site Office, which will document all the materials stored on site and their safe handling requirements;

- Environment Agency pollution prevention guidelines will be followed including:

  - PPG2: Above Ground Oil Storage Tanks;

  - PPG8: Safe Storage and Disposal of Used Oils;

  - PPG26: Storage of Handling of Drums and Intermediate Bulk Containers;

- Spill response kits will be kept in appropriate, accessible locations on Site in case of a pollution incident. This kit will comprise absorbent pads, granules and waste bags to dispose of any contaminated materials. Spare kits will also be kept within the Site
  Compound and regular inspections made that they are complete and in place;

- Fuel storage will also take place within the Site Compound on hard-standing within a dedicated refuelling area. Refuelling oiling and greasing of plant will take place on the hard-standing and away from any surface water drains. Site Toolbox Talks for staff and contractors will include details of the refuelling procedures;

- Dust emissions will be controlled as much as possible, particularly in dry weather. This will require spraying of the ground with water to ensure that the ground surface and that of materials remains damp, thereby preventing particles becoming airborne. In wet weather, greater attention will be paid to vehicle cleaning to ensure significant quantities of mud are not trafficked onto local roads, which once dry can become a significant source of dust;

- Materials will be delivered between 8:00 and 18:00 or in line with permitted times from the planning permission.

- Working times will be agreed with the local planning authority

- Parking on Site will be in a set compound area away from the boundaries of the Site and particularly away from the western boundary of the Site.

DESIGNATED SITES

River Itchen SAC SPA SSSI RAMSAR

5.3 Construction Effects

Drainage

As part of a comprehensive Drainage Strategy for the Scheme produced by Cole Easdon Consultants (CEC, 2020), drainage will be controlled during the construction phase and surface water runoff controlled through a temporary drainage scheme, including measures for removing suspended solids and potential contaminants. The development will also occur in phases, with top soil stripping carried out in a limited location at any one time to control the volume of sediment laden runoff. The access roads and the proposed drainage networks with flow controls and Petrol Interceptor beneath the roads will be laid first to provide early operational drainage for the Site. This will be followed by the installation of the infiltration basin and swales, as shown in CEC Plan 6557/501(A) (CEC, 2020). The upper flow control manhole (adjacent to the infiltration basin) will be plugged at this stage to divert construction runoff to the attenuation/infiltration features and prevent silted runoff entering the public sewer. A weir wall built into the same manhole will allow excess runoff to pass downstream and into the public sewer at a controlled rate with the presence of the downstream hydrobrake. The basin may include a clay lined sediment forebay to settle sediment further. Runoff will then flow into the main basin to dispose via infiltration. Runoff will direct towards the swales as overland flow; several check dams built across the swales will slow down runoff/sediment. Clay bunds and swales will be built around the site perimeter to intercept excess overland flows. As such, no uncontrolled runoff or sediment will reach the downstream areas or the River Itchen during construction phase.

5.4 At the end of each construction phase, the sediment forebay and flow control chambers will be cleared of sediment. Removed silt may be disposed of by spreading in an area of the site where surface runoff will not convey silt deposits back to the basin/swales. The infiltration basin and swales will be scoured of sediment from forebay and main basin and swales after the final completion of the development. The basin/swales will be reinstated to the design bed and banks and adjoining open area planted with appropriate vegetation and plantation. All the highway gullies and pipes will be jetted to clear it of debris after the completion of the build. The Petrol Interceptor will be inspected for debris/oil accumulation and cleared if necessary.

5.5 The site contractor will adopt best site management practices to separate construction dust, sediment and fuel/oils from mixing with runoff, as part of the wider Construction Environmental Management Plan (CEMP) to be developed by the main site contractor. The CEMP will detail how construction works will be undertaken and managed in accordance with legislative requirements and construction industry best practice to minimise the potential environmental effects of construction activities at the site.

Air and Noise pollution

5.6 Pegasus Group has produced a Framework Construction Traffic Management Plan (2020) that sets out to the framework for managing the movement of construction vehicles on the Site to minimise the effects of construction traffic, particularly large delivery vehicles, travelling to and from the site during the construction period in advance of an appointed contractor. Steps are set out to minimize construction traffic movements on Site to make movements as economic as possible and thus to reduce air pollution. Also, to contain the potential pollution impacts of construction traffic within the Site and thus aim to prevent any negative impacts upon the River Itchen SAC to the south. The following measures will be implemented:

- Hoarding will be installed on Site and maintained in good condition to prevent unwanted access to the construction Site, to provide noise and dust attenuation, screening and Site security where required;
- where feasible large plant machinery will remain on site throughout the construction of the development. This will assist in minimising unnecessary local trips made by large and heavy vehicles travelling to and from the site each day. To the degree possible, plant machinery would arrive at the beginning of the construction period and depart at the end of the construction period to minimise air pollution and prevent the spread of dust and mud from the Site onto the local highway network;
- Wheel washing facilities will be provided on Site for construction vehicles at the contractor's compound in order to ensure no mud or loose material is transferred onto the local highway network;
- Deliveries to the Site will be managed to prevent queuing of traffic and the parking of construction vehicles off-Site. Specific provision for parking of an HGV vehicle on Site will be included;
- All plant and construction materials will be stored within the site boundary in a secure compound. Deliveries of building materials will be carefully phased throughout the construction period to ensure there is sufficient storage space available for direct offloading and storage on the site.

Operational Effects

5.7 In order to prevent impacts from surface water run-off from the operational scheme upon the nearby River Itchen, a comprehensive Drainage Strategy has been designed (CEC, 2020) to manage the flow of water across the site. The Scheme includes sustainable drainage measures. Runoff will be appropriately treated within a combination of pre-treatment units (e.g. silt chambers, trap gullies, Petrol Interceptor) and SuDS devices (rainwater butts, soakaways, permeable paving, infiltration basins and vegetated swales) to ensure that runoff entering the River Itchen (via public sewerage system) is of acceptable quality. A SuDS scheme will be created with an infiltration basin and surface water directed to focused areas of the Site for infiltration. In this way pollution of the River Itchen nearby will be

avoided. A petrol interceptor has been incorporated to the scheme to prevent any impacts upon the River Itchen downstream. Each property will be provided with a rainwater butt to capture and store some rainwater for garden use.

5.8 In line with the Eastleigh Borough's recommendation, three level of treatment will be afforded to runoff from all hard areas as below:

- Adoptable roads - Trap Gullies, Oil Separator and Swale or Infiltration Basin;
- Private areas (in no infiltration zone) - Rainwater Butts, Catchpits, Oil Separator and Swale or Infiltration Basin; and
- Private areas (in infiltration zone) - Rainwater Butts, Catchpits and Soakaways/Permeable Paving.

5.9 Consequently, the development will not increase surface water runoff or associated flood risk in the locality and will not adversely affect water quality of the receiving water environment.

5.10 The southern region of the Site will drain in a sustainable manner via soakaways, and permeable paving. All adoptable highways will drain via trapped gullies into the adoptable piped network. The piped network will comprise oversized pipes with an overflow into the infiltration basin, which will dispose runoff via infiltration once it enters the basin. Swales will be provided alongside the highway to collect overland flows off the highway surface (facilitated by intermittent dropped kerb arrangement) to cater for flows exceeding the piped network capacity. Refer to CEC Plan 6557/501(A) (CEC, 2020).

5.11 The infiltration basin and vegetated swales will be landscaped within the strategic open space to offer a multifaceted benefit of combining flood risk management with water quality protection, biodiversity and recreation. The proposal therefore accords with the local and national policies and guidance.

5.12 Long term ownership and maintenance responsibilities for all the drainage devices will be secured prior to occupation. The developer will put in place suitable management arrangements for the SuDS for the lifetime of the development. Including regular maintenance in line with C753 The SuDS Manual.

Solent and Southampton Water SPA

Solent Maritime Special Area of Conservation (SAC);

Solent and Southampton Water RAMSAR

5.13 As for The River Itchen a comprehensive Drainage Strategy has been designed for the scheme to address the potential impacts upon the wider riverine system and the Solent Sites designated for their nature conservation value (see above). Recreational impacts increased by the scheme will either be addressed via payment towards the Local Authority Scheme or

through provision of Suitable Alternative Natural Greenspace from the applicant's landholding near to the Site.

Allbrook Claypits Site of Importance for Nature Conservation (SINC)

5.14 It is proposed that the woodland and scrub habitats to the west of the Site that border the SINC are enhanced to benefit biodiversity and that a wildlife buffer zone of 20m width is created along the western boundary to buffer the SINC from any impacts from the proposals. This buffer will be planted with native species and managed for wildlife, in particular Great crested newts and common amphibians, reptiles and birds. A variety of scrub and grassland mosaics with differing sward heights will be created to provide refuge and foraging habitats as well as providing a recreation area for the new residents. Some areas will be fenced off to prevent human and domestic pet access to safeguard some habitat for wildlife. New hibernacula and wood piles will be created within this Nature Conservation Area to provide refuge and hibernation habitat for reptiles and amphibians.

Vegetation

Existing woodland management

5.15 The woodland to the west of the site within the Nature Conservation Area will be managed for its nature conservation interest. Any non-native species will be gradually removed and the establishment of a native species understorey encouraged. Ivy and dead wood will be retained in trees and dead wood will be retained *in situ* as dead wood piles for invertebrates to feed upon and a loggery established. Interpretation boards will be installed to educate about the species present on site and the nature conservation work ongoing.

Hedgerows

5.16 Much of the mature vegetation around the boundaries of the site comprises more recent planting and has not been managed as hedgerow, however some areas to the Western and northern boundaries of the site are overgrown or overstood hedgerow. These areas will be returned to regular hedgerow management and new areas of native species hedgerow established in the gaps along the eastern boundary of the public footpath. Management of the existing hedgerow will be undertaken over a 3- year period to bring the hedgerow back into management, with one third of the hedgerow being managed at any one time. Work will take place to replant native whips where required and to lay the hedgerows. Mature trees will be retained along the hedgerows and work will take place during the winter to prevent impacts upon wildlife by undertaking works when many species will be hibernating.

New native scrub, tree and longer grassland mosaic

5.17 Wildflower meadow will be restored to the area to the west and north of the Site as a Nature Conservation Area within which some scrub will be retained but some scrub also removed in order to diversify the existing habitats present and to improve the biodiversity of

the Site. Native species will be used in order to prevent impacts from invading alien species upon the adjacent SINC habitats. In restoring more herb-rich grassland to this area the invertebrate population of the Site will be increased, providing an enhanced food resource for other wildlife such as birds, reptiles and amphibians. Success in creating wildflower grassland will require the grassland to be cut in late July/early August and the arisings removed from the site, so they do not increase the fertility of the soil. Amongst this grassland, clumps of existing scrub and new native species, fruiting, flowering and seeding shrubs will be established to add structure to the NCA and to provide nesting habitat for birds and refuge habitat for reptiles and amphibians. Species planted will include Silver Birch, Goat Willow and Crab Apple as well as Holly, Hawthorn and Blackthorn. Planting will be used to create scalloped areas with longer grassland, to create sheltered foraging and refuge areas for wildlife. Areas will be created that will not be fully accessible to people and domestic pets to encourage use by wildlife. Chain-link Fencing will be used to help to try to screen off some areas but hidden within scrub planting. New native tree and shrub planting will be established within the Wildlife Buffer proposed alongside the mature boundary vegetation of the site, further enhancing the biodiversity of the site. Non-native plants will not be used for the planting scheme to prevent their spread into the adjacent SINC and to prevent them out competing native plant species. Plants will be chosen that flower and fruit to provide wildlife with foraging opportunities. Night-scented varieties of plant will be included to attract invertebrate prey of bats to enhance the Site for foraging bat species.

Bats

5.18 Retention of the mature, vegetated boundaries of the Site will safeguard the bat commuting and foraging habitats present on Site. Planting and appropriate habitat management to maximise biodiversity within the proposed Nature Conservation Area and the Site Wildlife Buffer will provide new foraging resources for bats through enhancing the invertebrate food available, provide sheltered areas of foraging and an enhanced wildlife corridor from north to south across the site. Roughly fifty percent (29) of the proposed houses will have an integrated bat brick installed in an appropriate location to provide new bat roosting habitat here and to improve on the lack of bat roosting habitat within the immediate area of the Site. The boundary habitats and the Nature Conservation Area will not be lit and no new housing will be allowed to shine onto these habitats. All lighting will be in line with best practice - to minimise light pollution using cowling and downward focused lighting and through low level, low light solutions.

Badgers

5.19 The new native planting proposed within the Wildlife Buffer will contain fruiting and flowering plant species to provide foraging resources for wildlife including badger and to try to keep badger away from the roads and future resident's gardens. Mown grassland within the Wildlife Buffer will mitigate for the loss of the existing grassland to the proposals and provide some invertebrate foraging. Creation of more species-rich grassland within the

Nature Conservation Area to the west of the Site will also provide enhanced invertebrate foraging habitat for use by badger.

Dormice

5.20 Retention of the existing mature, vegetation habitat around the boundaries of the site and ensuring its connectivity with the adjacent SINC to the west, will ensure that should Dormice be present on site, that they will be able to forage and move throughout the Site. New native species planting proposed within the Wildlife Buffer will extend the foraging and refuging habitats available and provide more connective habitats across the landscape. Diversifying the existing habitats to the west of the site within the Nature Conservation Area will enhance the invertebrate assemblage present and provide more foraging resources for Dormice. Fencing will be incorporated within the planting with the aim to eventually provide areas inaccessible to domestic pets through a meshed structure of hedgerow shrubs and chain-link fencing.

Birds

5.21 New native species planting within the Nature Conservation Area and the Wildlife Buffer will provide new foraging and refuge habitat for birdlife on Site to offset the disturbance brought about by the proposals. Design of the new scrub/tree/grassland mosaic proposed will aim to create some areas less accessible to people and domestic pets. Such areas will offer some longer grassland areas to facilitate the movement of ground foraging species to move across the Site. The Nature Conservation Area and the buffer zone will not be lit to prevent impacts upon bird species. Roughly fifty percent (30) of the proposed houses will have a swift brick installed to allow birds to nest within the new buildings and to enhance the protected breeding habitats available for birds on Site.

Great Crested Newts

5.22 A grassland and scrub mosaic will be created with new planting within the Nature Conservation Area and Wildlife Buffer, providing an interface between longer and mown grassland. This will create refuging, foraging and basking habitat for amphibians around the Site. It is likely that a European Protected Species Licence will be required that sets out the mitigation steps proposed for GCN at the Site in order to avoid/reduce any impacts of the Scheme. Longer grassland will be managed to form scallop-shaped areas to capture and retain the heat from the sun for basking and will facilitate movement across the Site through continuous, connected habitats. Three hibernacula will be created within the Nature Conservation Area (NCA), two to the west and one to the north of the Site to provide hibernating and refuging habitat for amphibians. Six wood piles will also be created within the NCA and Wildlife Buffer to enhance the invertebrate food available and to provide refuging habitat. Design of the new scrub/tree/grassland mosaic proposed will aim to create some areas less accessible to people and domestic pets - dense new, native species planting

with chain-link fencing incorporated will be installed and management of existing vegetation focused to create such enclosed areas. Ongoing habitat management will be necessary to maintain the balance of habitats available as part of a Habitat Management Plan.

5.23 Measures will be taken along the roads within the development to mitigate for amphibians and reptiles. High kerbs will be avoided at road edges to try not to impact wildlife movement across the Site and frog ramps will be installed in the drains to allow any animals that become trapped to escape.

Reptiles

5.24 The mitigation proposed for amphibians at the Site as part of the Proposals is also appropriate for reptiles with a grassland and scrub mosaic to be created within the Nature Conservation Area and Wildlife Buffer to enhance the suitable habitats available. Longer grassland will be managed to form scallop-shaped areas to capture and retain the heat from the sun and the interface created between the longer and mown grassland will provide basking habitat for reptiles. Connected areas of longer grassland will facilitate reptile movement across the Site. Three hibernacula will be created within the NCA and six wood piles will also be created within the NCA and Wildlife Buffer to enhance the invertebrate food available and to provide refuging habitat. Design of the new scrub/tree/grassland will aim to create some areas less accessible to people and domestic pets.

6.0 RESIDUAL EFFECTS

Vegetation

Residual Effects

6.1 It is considered that following the mitigation strategy proposed and with time, there would be no residual impacts upon areas of vegetation within the Site. Impacts upon vegetation would therefore be Not Significant.

Protected Species

Bats

Residual Effects

6.2 It is considered that following the implementation of the proposed Mitigation Plan that overall, there will be minor positive residual effects upon bats as a result of the Scheme.

Badgers

Residual Effects

6.3 There will be a neutral impact upon Badgers following the implementation of the Scheme.

Dormice

Residual Effects

6.4 There will be no residual impacts upon Dormice following the implementation of the Scheme.

Birds

Residual Effects

6.5 It is considered that following the implementation of the proposed Mitigation Plan that there will be minor positive residual effects upon birds as a result of the Scheme.

Great Crested Newts

Residual Effects

6.6 It is considered that overall, there will be a neutral impact upon Great Crested Newts following the implementation of the Scheme.

Common Reptiles

Residual Effects

6.7 Residual effects on common reptiles are predicted to be minor positive if the Scheme is implemented as envisaged and the Mitigation Plan is followed.

6.8 A summary table of the ecological impact assessment at Land at Knowle Hill is provided below:

Table 2: Summary of Ecological Impact Assessment

	Potential Effect	Nature of Effect	Significance	Mitigation/Enhancement	Geographical Importance							Residual Effects
					I	UK	E	R	C	D	L	
CONSTRUCTION												
DESIGNATED SITES **River Itchen SAC SPA SSSI, RAMSAR;** **New Forest National Park SAC SPA SSSI RAMSAR;** **Solent and Southampton Water SPA;** **Solent Maritime SAC;** **Solent and Southampton Water RAMSAR;** **Allbrook Clay Pits SINC;**	Pollution from construction works;	Temporary to Permanent	Low-High	Compliance with CEMP on site; Correct implementation of Mitigation Plan; Provision of alternative recreational space on site; contributions to nutrient neutrality scheme, New Forest recreational impacts, Solent Disturbance Mitigation Project Scheme.	*					*		Neutral
VEGETATION	Loss of grassland	Permanent	Low	New habitats created in open space areas and NCA.							*	Neutral
BATS	Loss of foraging habitat, disturbance.	Temporary - Permanent	Moderate	Provision of roosting bricks in new housing; New foraging grassland in open space areas and NCA.	*							Minor Beneficial

BADGERS	Loss of foraging habitat, disturbance.	Permanent	Negligible	New foraging habitats created in open space areas and NCA.								Neutral
BIRDS	Loss of foraging habitat, disturbance.	Permanent	Moderate	New foraging and roosting habitats created in open space areas and NCA.							*	Minor Beneficial
REPTILES	Loss of foraging habitat, disturbance.	Temporary - Permanent	Minor	Hibernacula created in NCA; New foraging habitats created in open space areas and NCA.							*	Minor Beneficial
GREAT CRESTED NEWTS	Loss of foraging habitat, disturbance.	Temporary - Permanent	Minor	Hibernacula created in NCA; New foraging habitats created in open space areas and NCA.	*							Neutral
OPERATION												
DESIGNATED SITES **River Itchen SAC SPA SSSI, RAMSAR;** **New Forest National Park SAC SPA SSSI RAMSAR;** **Solent and Southampton Water SPA** **Solent Maritime Special Area of Conservation (SAC);** **Solent and Southampton Water RAMSAR**	Recreational damage and disturbance to habitats/species; Pollution from surface water drainage/Sewerage disposal;	Temporary to Permanent	Low-High	Correct implementation of Mitigation Plan; Provision of alternative recreational space on site; contributions to nutrient neutrality scheme, New Forest recreational impacts, Solent Disturbance Mitigation Project Scheme; Compliance with Drainage Strategy.	*							Neutral

Allbrook Clay Pits SINC;										*		
VEGETATION	Recreational impacts, pollution.	Temporary - Permanent	Low	New habitats created in open space areas and NCA.							*	Neutral
BATS	Disturbance.	Permanent	Moderate	Provision of roosting bricks in new housing; New foraging grassland in open space areas and NCA.	*							Minor Beneficial
BADGERS	Disturbance.	Permanent	Negligible	New foraging habitats created in open space areas and NCA.								Neutral
BIRDS	Disturbance.	Permanent	Moderate	New foraging and roosting habitats created in open space areas and NCA.							*	Minor Beneficial
REPTILES	Disturbance.	Permanent	Minor	Hibernacula created in NCA; New foraging habitats created in open space areas and NCA.							*	Minor Beneficial
GREAT CRESTED NEWTS	Disturbance.	Permanent	Minor	Hibernacula created in NCA; New foraging habitats created in open space areas and NCA.	*							Neutral

7.0 SUMMARY

Overview

7.1 Though there are significant ecological receptors of Local to County value at Land at Knowle Hill, Eastleigh, these are largely confined to the mature vegetated boundaries of the site, to the woodland and scrub area to the west and to the adjacent SINC. The pasture fields directly affected by the scheme are of low nature conservation value. The nearby River Itchen SAC SPA RAMSAR SSSI will not be directly affected by the scheme and potential indirect effects from potential pollution from the scheme will be prevented through the implementation of a comprehensive Drainage Strategy, including sustainable measures to deal with surface water drainage on Site, and through a Construction Management Plan produced by the contractor for the proposals. No other European Protected Sites are directly affected by the Scheme. Measures to address impacts from waste water upon the River Itchen/Solent ecosystem will be made by offsetting land within the applicant's ownership out of agriculture or making the appropriate contribution for nutrient neutrality to the Local Authority Scheme. Potential recreational impacts upon European Sites from new residents brought about by the proposals will be addressed by contributions to the Local Authority Scheme or by provision of Suitable Alternative Natural Greenspace nearby to the proposals by the applicant.

Designated Sites

7.2 Potential indirect effects from the proposals upon the nearby River Itchen SAC SPA RAMSAR SSSI will be prevented through the management of potential construction impacts on Site. This management will be implemented through the following documents:

- a Construction Environmental Management Plan;
- a Drainage Strategy;
- a Framework Construction Traffic Management Plan; and
- an Ecological Mitigation Strategy.

7.3 Potential wastewater impacts upon the Solent Maritime SAC, Solent and Southampton Water SPA will be addressed by achieving nutrient neutrality for wastewater impacts by offsetting land taken out of agriculture locally to remove nitrogen from the local ecosystem and catchment of the River Itchen. Recreational impacts upon the Solent designated sites will be compensated through provision of Suitable Alternative Natural Greenspace (SANG) for recreation within the applicant's land-holding nearby or by financial contributions from the developer to the Solent Recreation Mitigation Strategy. Recreational impacts upon the New Forest designated sites will be compensated for by the same means but contributing to the New Forest Mitigation Scheme.

Vegetation

7.4 The grassland on site is largely semi-improved with low numbers of herbs and has been disturbed for agricultural purposes. Wooded and scrubbed-over areas to the west of the site are in the early stages of succession and thus not of any great age. These habitats are considered to be of Low nature conservation value. Measures to retain and enhance natural vegetation within the west and north of the Site as part of the Mitigation Strategy proposed will enhance the nature conservation value of the habitats present.

Protected Species

Bats

7.5 No bat roosts are present on Site during the survey but low numbers of nine species of bats were recorded foraging and commuting along the boundaries of the site and the SINC and in association with the vegetation links around Westfield House. Occasional passes by a rare Barbastelle bat were recorded. A small bat roost of one of the more common species of bat – Soprano Pipistrelle, was found within an Oak tree within the SINC to the north-west of the Site. The bat population on site is considered to be of moderate nature conservation value. Through the retention and safeguarding of the mature vegetated boundaries of the Site which are used for foraging and as commuting habitat, measures to minimise light pollution and provision of new bat roosting habitat within approximately half of the proposed new housing on Site there will overall be a minor positive benefit to bats from the scheme.

Badgers

7.6 No badger setts were found on the Site, but low numbers of badgers were recorded foraging on Site. Through the retention and safeguarding of the mature vegetated boundaries around the Site, provision of open space areas of amenity grassland and new habitats within the Nature Conservation Area for foraging, it is considered that there will overall be a neutral impact of the Scheme upon badgers.

Dormice

7.7 No Dormice or evidence of Dormice was found on site. It is considered unlikely that Dormice are present and likely that there will be no negative impacts upon Dormice from the Scheme.

Birds

7.8 The Zone of Influence was found to contain a breeding bird population of at least Local Nature Conservation Value focused within the retained vegetation around the boundary of

the site. Through retention and safeguarding of these mature, vegetated boundaries, creation and management of new and existing suitable habitats to the west and north of the Site for nature conservation benefit, that overall there will be a minor positive benefit to the local bird population from the Scheme.

Common Reptiles

7.9 Low numbers of two species of common reptiles were found on the western boundary of the Site. Through retention, safeguarding and buffering the mature boundary vegetation on Site and creation of protected new habitats and management of existing suitable habitats for biodiversity, that there will overall be a minor benefit from the Scheme for common reptiles.

Great Crested Newts

7.10 Low numbers of Great Crested Newts were found along the western boundary of the Site in association with the mature vegetation. There are no waterbodies on the Site suitable for breeding GCN. However, breeding ponds were confirmed adjacent to the Site within 250m, within the Allbrook Claypits SINC. The Site is thus confirmed to have some foraging habitat suitable for use by GCN and is considered to be of low nature conservation value for GCN. Through retention and buffering of the mature vegetated boundaries of the Site, bringing existing habitats to the west and north of the Site into better management for biodiversity and creation of new foraging and hibernation habitats within the wildlife buffer, it is considered that overall there would be a neutral impact upon GCN as a result of the Scheme.

7.11 It is considered that on implementation of the measures set out here, and within the associated documents identified, that the nature conservation interests of the Site and the Zone of Influence will be conserved and enhanced. Any significant negative impacts upon protected European Sites within the Zone of Influence will be ameliorated and overall result in an enhancement to biodiversity in the locality of the Site.

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PLANS

PLAN 1: Site Location (Google Earth, 2020)


Stockbridge
Kings Worthy
Hampshire
Alresford
Winchester
Alderbury
Knowle Hill, Eastleigh
Romsey
SO50 4LZ
North Baddesley
Eastleigh
Totton
Southampton
Lyndhurst
Hythe
Google Earth
©2018 Google
N
10 mi

PLAN 2: Proposed Scheme Layout


PLANNING | DESIGN | ENVIRONMENT | ECONOMICS
KEY:
APPLICATION BOUNDARY
TARMACADUM
GARDEN/POS/HIGHWAY VERGE
SITE ACCESS
PRIVATE HOUSETYPE
AFFORDABLE HOUSETYPE
PROPOSED PLANTING
INDICATIVE ATTENUATION BASIN
BELOW GROUND SURFACE WATER STORAGE
EXISTING DWELLING RETAINED
EXISTING PROW
POTENTIAL FOOTPATH CONNECTIONS
EXISTING VEGETATION
ALLBROOK WAY
WESTFIELD HOUSE
N
W
E
S
0 10 50m
LAND WEST OF ALLBROOK WAY, EASTLEIGH - INDICATIVE SITE LAYOUT
Pegasus Design
www.pegasusgroup.co.uk | TEAM/DRAWN BY: MFA/JA/SHT | APPROVED BY: MFA | DATE: 15/01/20 | SCALE: 1:500 @ A0 | DRWG: BRS.3586_16 SHEET NO. REV: D | CLIENT: CRANBURY ESTATES LTD

PLAN 3: Ecological Mitigation Strategy (Google Earth 2020).


ECOLOGICAL MITIGATION STRATEGY
KEY
= Site area
= interpretation board
= new planting/buffer
= grassland/scrub mosaic
= hibernacula
= bat box
= bird box
= wood pile
Google Earth
©2018 Google
100 m
N

APPENDICES

APPENDIX I: SUMMARY OF UK LEGISLATION & POLICY

Legislation

The Conservation of Habitats and Species Regulations 2017

Otherwise known as 'The Habitats Regulations', this legislation transposes the EU Habitats Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna into UK law. Under this legislation Special Areas of Conservation (or SACs) and Special Protection Areas (SPA) can be designated as sites of European importance. These sites and their qualifying interests are protected from damage.

Species listed under Schedule 2 of these regulations are protected from deliberate killing, injury or significant disturbance and their breeding sites or resting places are also protected from damage and destruction. European protected species include: all UK species of bat, dormice, otter and great crested newts.

In order for development that may affect one of the above species to proceed and to avoid committing an offence, licences are achievable from Natural England. In order for licences to be granted the following tests must be met:

- The proposal must be necessary '*to preserve public health or public safety or for other imperative reasons of over-riding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'*;
- The proposals must *not be detrimental to the maintenance of the population of the* species concerned at a favourable conservation status in their natural range;
- There must be no *'satisfactory alternative'.*

Wildlife & Countryside Act 1981

The Wildlife & Countryside Act 1981 (as amended) is the principal mechanism for the legislative protection of wildlife in the UK. This Act relates to the designation and protection of Special Sites of Scientific Interest (SSSI) and Protected Species. The Act includes:

- The protection of SSSIs and prohibitive lists of potentially damaging operations;
- The protection of wild birds from intentional killing and injury, destruction of their nests whilst being built or in use and taking of eggs;
- The protection of animals listed on Schedule 5 from intentional killing, injury and taking, possession and sale. Places used for shelter and protection are also protected against intentional disturbance, obstruction, damage and destruction. Species on Schedule 5 include:
    - Bats (all species);
    - Dormice;
    - Water Vole;
    - Great Crested Newt;

- Otter;
- All UK reptile species;
- Common amphibians;
- Certain invertebrates including Stag Beetle.

- The protection of plants listed on Schedule 8;

Countryside & Rights of Way Act 2000

The CRoW Act strengthened parts of the Wildlife and Countryside Act to include the term 'reckless' when considering whether an offence is intentional. Thus if it can be demonstrated that sufficient knowledge of the likelihood of an offence is known then prosecution will follow.

Natural Environment & Rural Communities (NERC) Act 2006

The NERC Act firmly places a duty on Local Authorities to conserve biodiversity. The Act required the publication of a list of the living organisms and types of habitat which are of principal importance for the purpose of conserving biodiversity: the Section 41 List. The conservation of species on this list forms part of the duty of Local Authorities to conserve biodiversity. Species on the list include:

- All species of UK bat;
- All species of UK reptile;
- All species of UK amphibian;
- Otter, dormice, water vole and hedgehog;
- Birds including Skylark, Cirl Bunting and Yellowhammer;
- Invertebrates including the butterflies Wall, Dingy Skipper and Brown Hairstreak.

Protection of Badgers Act 1992

Due to their persecution, badgers are protected from killing, injuring and their setts from damage under the Protection of Badgers Act 1992. Development may need licences from Natural England to disturb or destroy badger setts where works are required in close proximity.

Hedgerow Regulations 1997

Important hedgerows are protected from removal by the Hedgerow Regulations 1997. Criteria are used to identify whether a hedgerow is one of importance for ecological, historical or landscape reasons.

Policy

National Planning Policy Framework (July, 2018)

The Government's stance on biodiversity is set out in The National Planning Policy Framework (July, 2018) and includes how biodiversity policy is expected to be applied in order to achieve sustainable development. The environment is considered a core component of sustainable development and the planning system should contribute to and enhance the natural and local environment by:

- protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils;
- recognising the wider benefits of ecosystem services;
- minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- preventing both new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability.

To protect and enhance biodiversity and geodiversity, plans should:

- distinguish between the hierarchy of international, national and locally designated sites, allocate land with the least environmental or amenity value, where consistent with other policies; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries;

- identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and

- promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

Biodiversity Action Plans (BAPs)

UK Biodiversity Action Plan

The UK Biodiversity Action Plan is the UK Government's response to signing up to the Convention on Biological Diversity in 1992 and is the national strategy to identify nature conservation priorities and key principals for future biodiversity conservation.

Local Biodiversity Action Plan (LBAP)

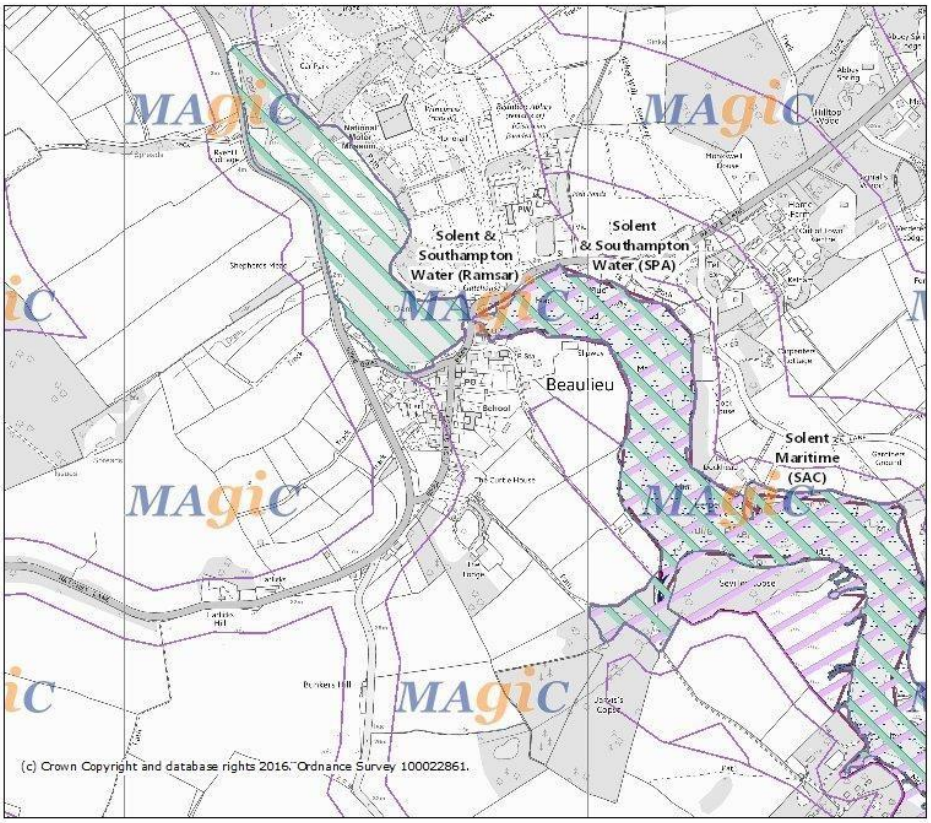
The UK BAP is implemented at a local level through local BAPs. The relevant Local BAP is The Biodiversity Action Plan for Hampshire (2000).

APPENDIX II - DESIGNATED SITES

APPENDIX IIa: European Protected Sites in the Vicinity of the Proposals (MAgiC, 2020)

MAGiC

European Protected Sites



Legend

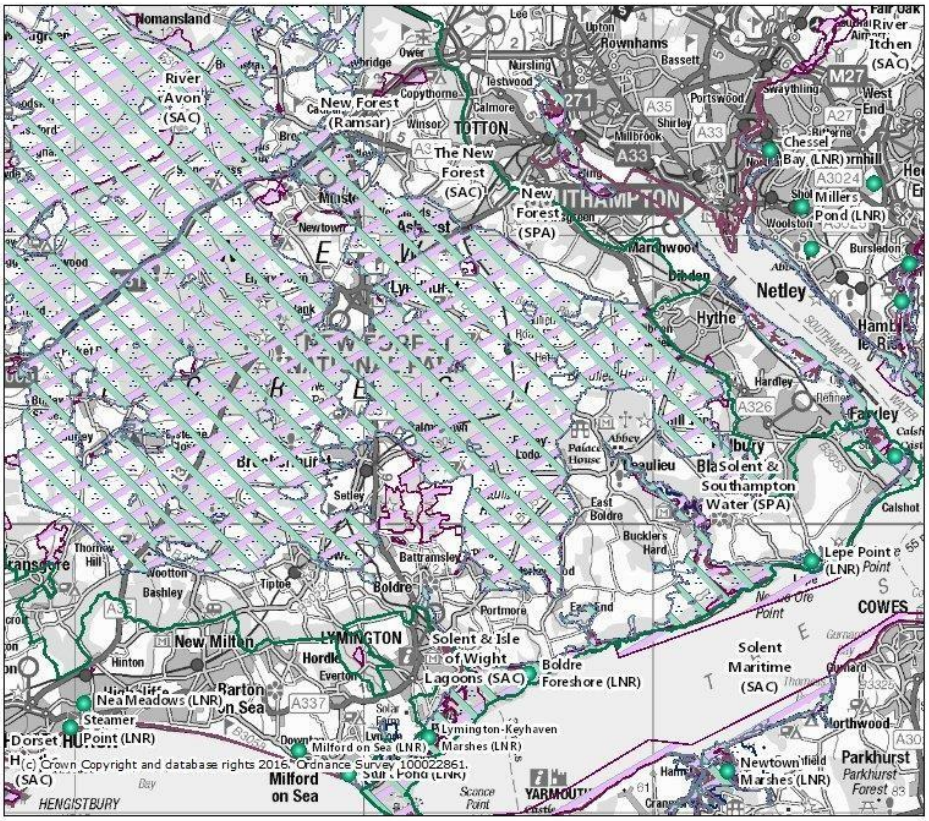
- Limestone Pavement Orders (England)
- Local Nature Reserves (England)
- Moorland Line (England)
- National Nature Reserves (Scotland)
- National Nature Reserves (Wales)
- National Parks (England)
- National Parks: Lake District and Yorkshire Dales Variation Orders 2012 - subject to confirmation (England)
- Ramsar Sites (England)
- Ramsar Sites (Scotland)
- Ramsar Sites (Wales)
- SSSI Impact Risk Zones – to assess planning applications for likely impacts on SSSIs/SACs/SPAs & Ramsar sites (England)
- Sites of Special Scientific Interest (Scotland)
- Sites of Special Scientific Interest (Wales)
- Special Areas of Conservation (England)
- Special Areas of Conservation (Scotland)

Projection = OSGB36
xmin = 437400
ymin = 101200
xmax = 440100
ymax = 103100
Map produced by MAGIC on 31 July, 2016.
Copyright resides with the data suppliers and the map must not be reproduced without their permission. Some information in MAGIC is a snapshot of the information that is being maintained or continually updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.

APPENDIX IIb: European Protected Sites in the Vicinity of the Proposals (MAgiC, 2020).

MAgiC

EU sites wider



Legend

- Limestone Pavement Orders (England)
- Local Nature Reserves (England) - points
- Moorland Line (England)
- National Nature Reserves (Scotland) - points
- National Nature Reserves (Wales) - points
- National Parks (England)
- National Parks: Lake District and Yorkshire Dales Variation Orders 2012 - subject to confirmation (England)
- Ramsar Sites (England)
- Ramsar Sites (Scotland)
- Ramsar Sites (Wales)
- Sites of Special Scientific Interest (Scotland)
- Sites of Special Scientific Interest (Wales)
- Special Areas of Conservation (England)
- Special Areas of Conservation (Scotland)
- Special Areas of Conservation (Wales)
- Special Protection Areas (England)
- Special Protection Areas (Scotland)
- Special Protection Areas (Wales)
- Biosphere Reserves (Scotland)
- Biosphere Reserves (Wales)

Projection = OSGB36
xmin = 411800
ymin = 88640
xmax = 455100
ymax = 119200

APPENDIX IIc: RIVER ITCHEN SAC DESIGNATION SHEET

River Itchen

Site details

Location of River Itchen SAC/SCI/cSAC

Country	England
Unitary Authority	Hampshire and Isle of Wight
Centroid*	SU467174
Latitude	50.9539
Longitude	-1.3347
SAC EU code	UK0012599
Status	Designated Special Area of Conservation (SAC)
Area (ha)	303.98

* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

General site character

Inland water bodies (Standing water, Running water) (40%)
Bogs, Marshes, Water fringed vegetation, Fens (27%)
Humid grassland, Mesophile grassland (19%)
Improved grassland (1%)
Broad-leaved deciduous woodland (10%)
Mixed woodland (2%)
Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas) (1%) Natura 2000 standard data form for this site as submitted to Europe (PDF, < 100kb).

Interactive map from MAGIC (Multi-Agency Geographic Information for the Countryside).

Note:
When undertaking an appropriate assessment of impacts at a site, **all** features of European importance (both primary and non-primary) need to be considered.

Annex I habitats that are a primary reason for selection of this site

3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation

The Itchen is a classic example of a sub-type 1 chalk river. The river is dominated throughout by aquatic *Ranunculus* spp. The headwaters contain pond water-crowfoot *Ranunculus peltatus*, while two *Ranunculus* species occur further downstream: stream water-crowfoot *R. penicillatus* ssp. *pseudofluitans*, a species especially characteristic of calcium-rich rivers, and river water-crowfoot *R. fluitans*.

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

Not applicable.

Annex II species that are a primary reason for selection of this site

1044 Southern damselfly Coenagrion mercuriale

Strong populations of **southern damselfly *Coenagrion mercuriale*** occur here, estimated to be in the hundreds of individuals. The site in central southern England represents one of the major population centres in the UK. It also represents a population in a managed chalk-river flood plain, an unusual habitat for this species in the UK, rather than on heathland.

1163 Bullhead Cottus gobio

The Itchen is a classic chalk river that supports high densities of **bullhead *Cottus gobio*** throughout much of its length. The river provides good water quality, extensive beds of submerged plants that act as a refuge for the species, and coarse sediments that are vital for spawning and juvenile development.

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

1092 White-clawed (or Atlantic stream) crayfish Austropotamobius pallipes

1096 Brook lamprey Lampetra planeri

1106 Atlantic salmon Salmo salar

1355 Otter Lutra lutra

APPENDIX IId: RIVER ITCHEN SSSI DESIGNATION SHEET

County: Hampshire Site Name: River Itchen

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981. Environment Agency Region: Southern Water Company: Southern Water plc, Portsmouth Water plc Local Planning Authorities: Hampshire County Council; Winchester City Council; Eastleigh Borough Council; Southampton City Council.

National Grid References: SU 589274, SU 563353 & SU 599324 to SU 439153 Length of River SSSI: Approx. 42 km Ordnance Survey Sheets: (1:50 000) 185 & 196 Area: 748.02 ha Date notified (under 1981 Act and 1991 Acts):

Itchen Valley (Winnall Moors): 29 June 1984 Itchen Valley (Winchester Meadows): 29 June 1984 Itchen Valley (Cheriton to Kingsworthy): 29 June 1984 River Itchen: 17 July 1996 River Itchen further notification: 16 August 2000

Date confirmed: 25 April 2001

Reasons for Notification

This site is notified for classic chalk stream and river, fen meadow, flood pasture and swamp habitats, particularly formations of in-channel vegetation dominated by water crowfoot *Ranunculus* spp, riparian vegetation communities (including wet woodlands) and side channels, runnels and ditches associated with the main river and former water meadows. The site is also notified for significant populations of the nationally-rare southern damselfly *Coenagrion mercuriale* and assemblages of nationally-rare and scarce freshwater and riparian invertebrates, including the white-clawed crayfish *Austropotamobius pallipes*. This site is notified for otter *Lutra*, water vole *Arvicola terrestris*, freshwater fishes including bullhead *Cottius gobbo*, brook lamprey *Lampetra planeri* and Atlantic salmon *Salmo salar*, and the assemblage of breeding birds including tufted duck *Aythya fuligula*, pochard *A. ferina* and shoveler *Anas clypeata*, the waders lapwing *Vanellus vanellus*, redshank *Tringa totanus* and snipe *Gallinago gallinago*, and wetland passerines including sedge warbler *Acrocephalus schoenobaenus*, reed warbler *A. scirpaceus* and Cetti's warbler *Cettia cettia*.

General Description

The Itchen typifies the classic chalk river and shows a greater uniformity in physical characteristics along its entire length than other rivers of this type. Since the river is mainly spring-fed, there is only a narrow range of seasonal variation in physical and chemical characteristics. The water is of high quality, being naturally base-rich and of great clarity; and its temperature is relatively constant, with dissolved oxygen levels at or near saturation. However, as in many lowland rivers, there is evidence of nutrient enrichment in parts of the system. The river's vegetation is dominated by higher plants, and the aquatic flora is exceptionally species-rich with many typical chalk stream plants present in abundance. The majority of these plants are present throughout the system and downstream changes are less

than in most other rivers. The Itchen supports one of the few populations of the native whiteclawed crayfish remaining in the rivers of southern England and breeding otters. The Itchen valley contains areas of fen, swamp and meadow supporting vegetation with diverse plant communities, some species-rich. These areas, together with semi-natural riparian vegetation bordering much of the river's courses, provide habitat for diverse invertebrate assemblages which include nationally-rare and scarce species, including aquatic molluscs.

The River Itchen has been modified over the centuries by provision of water-heads for mills and the irrigation of water meadows. These developments, in addition to the construction of the Itchen Navigation (now disused), have resulted in a multiplicity of water courses. The Itchen is world renowned for game fishing, largely provided by brown trout, both wild and stocked populations, and to a lesser extent salmon and sea trout. The river's channels and banks are regularly managed to maintain and facilitate the fishing, and this has contributed to its present character and appearance. In the Alresford area, near the headwaters of the Itchen, commercial cress growing is a substantial industry, and a number of commercial fish farms are located along the upper river. A small number of sewage treatment works also discharge into the river. Water for public and agricultural use is abstracted via boreholes from the river's aquifer as well as its channel. Traditional water meadow management has ceased, but the flood pasture, marsh and fen vegetation which developed on them is still present in those meadows not converted for modern intensive grass or arable production.

Flora

The Itchen supports an abundant and exceptionally species-rich aquatic flora. At the height of the growing season the river bed is covered with vegetation unless recently subject to a weed cut. A major feature of the flora is that many of the typical chalk stream species are present in abundance and those lowland species which are typical of slow-flowing rivers with clay or silt substrates are either absent or localised.

The chalk stream community is dominated by brook water-crowfoot *Ranunculus penicillatus* var. pseudofluitans, lesser water-parsnip *Berula erecta*, fool's water-cress *Apium nodiflorum* and bluntfruited water-starwort *Callitriche obtusangula*. In the deeper middle to lower reaches river waterdropwort *Oenanthe fluviatilis*, unbranched bur-reed *Sparganium emersum*, common club-rush *Schoenoplectus lacustris* and various pondweed species (*Potamogeton* species) all become much more abundant. Other characteristic chalk plants can be found on finer substrates, including opposite-leaved pondweed *Groenlandia densa*, mare's-tail *Hippurus vulgaris* and horned pondweed *Zannichellia palustris*. The occasional appearance of the eutrophic-tolerant species curled pondweed *Potamogeton crispus* and spiked water-milfoil *Myriophyllum spicatum* provides evidence of localised enrichment. Ivyleaved duckweed *Lemna trisulca* is characteristic of 'classic' chalk river only.

The river's banks support abundant lesser pond sedge *Carex acutiformis*, reed canary-grass *Phalaris arundinacea* and reed sweet-grass *Glyceria maxima* along their full length. Tall perennials such as greater willowherb *Epilobium hirsutum*, meadowsweet *Filipendula ulmaria*, purple-loosestrife *Lythrum salicaria*, yellow loosestrife *Lysimachia vulgaris* and orange balsam *Impatiens capensis* (an introduced species) are also widespread. Amongst the more localised and infrequent river bank species are skullcap *Scutellaria galericulata* and meadow *rue Thalictrum flavum*. Low-growing wateredge plants such as watercress *Rorippa*

nasturtiumaquaticum, water mint *Mentha aquatica*, water forget-me-not *Myosotis scorpioides* and water speedwell *Veronica anagallis-aquatica* often carpet the river bank bases and river margins. Another feature of the Itchen is the number of plant species which may be regarded as relics of a wetland flora, growing along the wetter stretches of river bank. These include water dock *Rumex hydrolapathum*, greater tussock-sedge *Carex paniculata*, common reed *Phragmites australis*, marsh marigold *Caltha palustris* and bulrush *Typha latifolia.*

The site includes former water meadows and pastures in the Itchen Valley of high nature conservation importance. The soils of the valley include alluvium, peat and tufa (calcareous marl). These combined with the meadow's networks of ridges and drains result in complex mosaics of dry grassland, rush pasture, fen meadow, flood pasture and swamp communities. The floristic diversity of the meadows is high, and species-rich communities typical of wet, calcareous pastures are well represented. The river and its carriers maintains the high groundwater levels which are important for the botanical diversity and interest, as are appropriate levels of grazing. Also important is the continuity between these wet grasslands, the river bank vegetation and other riparian vegetation in the valley.

The fen meadow and flood pasture communities considered characteristic of former water meadows with moist calcareous soils are of highest botanical interest. The fen meadow community is very variable in its composition and structure, the differences usually being due to environmental and management factors such as grazing and mowing. Some of the community's typical species are often abundant in these meadows. Amongst the most constant species are general grassland ones: creeping bent *Agrostis stolonifera*, red fescue *Festuca rubra*, Yorkshire fog *Holcus lanatus*, common mouse-ear *Cerastium fontanum*, meadow vetchling *Lathyrus pratensis* and red clover *Trifolium pratense*. Prominent associates represent the fen character of the community: jointed rush *Juncus articulatus*, water mint *Mentha aquatica*, fen bedstraw *Galium uliginosum*, marsh bedstraw *G. palustre*, greater bird'sfoot trefoil *Lotus uliginosus*, marsh horsetail *Equisetum palustre*, wild angelica *Angelica sylvestris*, common fleabane *Pulicaria dysenterica*, marsh lousewort *Pedicularis palustris* and ragged robin *Lychnis flos-cuculi*.

The flood pasture community occupies less extensive areas. Usually lying in the transition from dry grassland to wet drain or on lower lying ground alongside the river, it is also rich in species with abundant short sedges and localised carpets of mosses mostly *Calliergon cuspidatum*. Many typical species of flood pasture also feature in the fen meadow community, its distinguishing plants including prominent marsh marigold *Caltha palustris*, water avens *Geum rivale*, meadow buttercup *Ranunculus acris*, carnation sedge *Carex panicea* and brown sedge *C. disticha*, together with crested dog's-tail *Cynosurus cristatus*, common sorrel *Rumex acetosa*, ribwort plantain *Plantago lanceolata* and common spike-rush *Eleocharis palustris*.

Species present which are associated with unimproved grassland include, adder's tongue *Ophioglossum vulgatum*, betony *Stachys officinalis*, bogbean *Menyanthes trifoliata*, common sedge *Carex nigra*, distant sedge *C. distans*, Devil's-bit scabious *Succisa pratensis*, marsh arrowgrass *Triglochin palustre*, marsh lousewort *Pedicularis palustris*, marsh pennywort *Hydrocotyle vulgaris*, marsh valerian *Valeriana dioica*, meadow rue *Thalictrum flavum*, pepper saxifrage *Silaum silaus*, purple moor-grass *Molinia caerulea*, southern marsh orchid *Dactylorhiza praetermissa* and quakinggrass *Briza media*.

The plants which usually dominate the fen and swamp communities of the drains, that is reed sweet-grass *Glyceria maxima*, lesser pond sedge *Carex acutiformis* and reed canary-grass *Phalaris arundinacea*, can be widespread in the meadows and occur in the other communities. The tall, thick vegetation growth of the drains also includes gipsywort *Lycopus europaeus*, marsh thistle *Cirsium palustre*, common valerian *Valeriana officinalis*, marsh ragwort *Senecio aquaticus* and meadowsweet, and in places greater tussock-sedge swamp has developed.

All the grassland communities can develop into a tall coarse sward if grazing is relaxed. Along certain drains and stretches of riverbank cattle grazing creates and maintains particular habitat conditions on which specialised invertebrates depend. The quality of wildlife habitat these meadows provide is emphasised by the presence of rich invertebrate faunas with rare species.

Invertebrates

Over 210 invertebrate taxa (species and groups of species) have been recorded from the River Itchen itself. The main groups represented are Oligochaete worms, Crustacea such as the very abundant shrimp *Gammarus pulex*, Diptera (flies) and Neuroptera. The Ephemeroptera (mayflies) are also a major element of the fauna with 19 species from six families represented. Reflecting the highly productive nature of the chalk stream environment, maximum numbers of individuals of each of the main groups may reach 4000 per square metre. The river is rich in aquatic molluscs, and the nationally-rare pea mussel *Pisidium tenuilineatum* (RDB3 *see notes), a species requiring fairly unpolluted conditions in canals and lowland rivers, has been recorded. Gastropod molluscs are also present in the river: *Valvata piscinalis*, *Gyraulus albus* and *Theodoxus fluviatilis*. Two nationallyscarce rifle beetles, *Riolus cupreus* and *R. subviolaceus*, both of which occur in moderately flowing water on stones and in vegetation, have been recorded. Two species of caddisfly of nationally scarce status occur, *Metalype fragilis* and *Ylodes conspersus*: the former characteristic of highly calcareous areas, the latter living in aquatic weeds. The upper Itchen is a stronghold of the white-clawed crayfish *Austropotamobius pallipes*.

The river, banks and adjoining areas of riparian vegetation or grazed water meadow support rich invertebrate assemblages. Usually specialized in their habitat requirements, some species are dependant on tall fen vegetation or wet woodland whilst others require the exposed wet muddy conditions provided by light cattle grazing and poaching. Nationally rare (RDB *see notes) species have been recorded; the flies *Syneches muscarius* (pRDB2) and *Platypalpus infectus*, and the mining bee *Macropis europaea* (RDB2). A very rare "dung" fly *Cosmetopus dentimanus* (RDB 1) has also been found, it has been previously recorded in Britain only from the Leckford Abbas Estate in the Test Valley. A further fourteen nationally-scarce species of fly have been recorded at these locations, together with 75 species of other insects (including dragonflies, damselflies, bush crickets and beetles) considered local in their distribution.

Twenty-four species of soldier fly (Stratyiomidae), including the soldier fly *Odontomyia argentata* (RDB3) have been recorded along ditches and drains in the Itchen Valley Country Park making it a top national site for this group. Meadow drains in the lower Itchen Valley also support populations of the nationally rare southern damselfly *Coenagrion mercuriale* (RDB3), which is

also of European importance. The numbers recorded place the site amongst the most important in Britain for this species.

Fish

The Itchen is a very important recreational game fishery. Almost the entire river is managed to maintain and facilitate fishing for trout (brown and rainbow), with fishing for sea trout and Atlantic salmon *Salmo salar* also taking place along the lower reaches. Pike and other coarse fish are regularly removed but still maintain a presence. The fish fauna of the Itchen is typical of lowland chalk rivers, though the community has been modified by introductions of rainbow trout and hatchery-reared brown trout, and the removal of other species. In the uppermost reaches of the Itchen native populations of brown trout *Salmo trutta* are believed to persist, and strong populations of bullhead and brook lamprey are notable elements of the natural fish fauna and of European importance. Atlantic salmon stock levels on the River Itchen are giving great cause for concern. The major pressure on this population within the riverine environment has been identified as poor in-gravel egg survival caused by high levels of silt input to the river. The majority of extra silt originates from cultivated land and point sources such as fish farms, sewage treatment works and cress farm discharges. In recent years substantial effort has been made to restore the river channel for Atlantic salmon by gravel reinstatement, cleaning and channel modifications.

Birds

The River Itchen and the areas of riparian vegetation in the site provide valuable habitat for characteristic riverine bird species. Kingfisher *Alcedo atthis*, grey wagtail *Motacilla cinerea* and little grebe *Tachybaptus ruficollis* are frequent. In the dense vegetation along the river's margins, coot *Fulica atra* and moorhen *Gallinula chloropus* are common, and tufted duck and mute swan *Cygnus olor* nest. Sedge warbler and reed warbler are numerous in the tall vegetation with scattered scrub along the water courses, and the formerly rare Cetti's warbler is becoming widely established in the same habitat. Water rail *Rallus aquaticus*, also breed in dense wetland vegetation. Breeding birds of the Itchen valley such as snipe, redshank and lapwing, tufted duck, pochard and shoveler are well represented. Passage species using the river's margins include common sandpiper *Actitis hypoleucos* and green sandpiper *Tringa ochropus*. Kingfisher and grey heron *Ardea cinerea* are the river's resident and most commonly seen fish-eating birds, though cormorant *Phalacrocorax* carbo now increasingly range along the river.

Mammals

Three native freshwater semi-aquatic mammals - the water shrew *Neomys fodiens*, water vole and otter - are well established on the Itchen. Water vole populations have declined nationally, and the River Itchen retains nationally important populations. Bats are also well represented within the River
Itchen catchment and species such as the serotine bat *Eptesicus serotinus*, Daubenton's bat *Myotis daubentonii*, noctule bat *Nyctalus noctula* and the 55 Kilohertz pipistrelle bat

Pipistrellus pygmaeus use the riverine and floodplain habitats for feeding and where appropriate for roosting.

Studies of the Itchen by the limnologist R W Butcher more than 50 years ago add an educational and historical value to the river's intrinsic nature conservation interest.

Notes: * Red Data Book (RDB) identifies the status of Britain's rarest invertebrate species:

RDB 1= Endangered; RDB2=Vulnerable; RDB3 Rare.

Other Information:

The site now encompasses three former Sites of Special Scientific Interest: Itchen Valley (Cheriton to Kings Worthy), Itchen Valley (Winnall Moors) and Itchen Valley (Winchester Meadows) notified in 1983 and 1984.

The following species found in this site are also listed on Annex II of The European Communities
Directive 92/43/EEC, on the Conservation of Natural Habitats and of Wild Fauna and Flora - The Habitats Directive, - brook lamprey, Atlantic salmon, bullhead, whiteclawed crayfish, southern damselfly and otter.

The southern damselfly, otter, white-clawed crayfish and water vole are on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are specially protected. The kingfisher, grey heron and Cetti's warbler are on Schedule I of the same Act.

APPENDIX IIe: ALLBROOK CLAY PIT SINC

DESIGNATION SURVEY SHEET

Hampshire Biodiversity Information Centre

Allbrook Clay Pit

Grid Reference : SU45402140

Survey Summary

File Reference : 42-0175

District : Eastleigh (unparished)

Vice-County : 11, South Hampshire

A varied site comprising of old steep sided brickpits, excavated for clay, now filled with water. Undulating ground around is colonised by regenerating birch, ash and oak woodland with areas of unimproved grassland and scrub. The variety of habitats present provide good feeding and breeding opportunities for a wide range of species.

Designation: Site of Importance for Nature Conservation

Survey Type : Phase II

Survey Date : 04/10/2002

Data Owned By : Hampshire Biodiversity Information Centre Partnership

Data Recorded By : Sue Mazdon

Survey Time on Site : Not recorded

Total Area : 10 ha

Taxon Name	Common Name	Status
Myriophyllum alterniflorum	Alternate Water-milfoil	South Hampshire Scarce (VC11)

Type Geology

Description London Clay

Habitats Recorded Not determined at time of survey

04/10/2002 - ACID/NEUTRAL GRASSLAND (SU45402140) Allbrook Clay Pit

Survey Details

Present NotableTaxon Name Taxon Common Name *Achillea millefolium* P Yarrow *Agrimonia eupatoria* P Agrimony *Agrostis canina* P Velvet Bent *Agrostis stolonifera* P Creeping Bent *Anthoxanthum odoratum* P Sweet Vernal-grass *Artemisia vulgaris* P Mugwort *Dactylis glomerata* P Cock's-foot *Deschampsia cespitosa* P Tufted Hair-Grass *Dipsacus fullonum* P Wild Teasel *Elodea canadensis* P Canadian Waterweed *Equisetum arvense* P Field Horsetail *Equisetum fluviatile* P Water Horsetail *Geranium molle* P Dove's-foot Crane's-bill *Heracleum sphondylium* P Hogweed *Holcus lanatus* P Yorkshire-fog *Juncus articulatus* P Jointed Rush *Juncus bufonius* agg. P Toad Rush agg. *Juncus inflexus* P Hard Rush *Lolium perenne* P Perennial Rye-grass *Lotus corniculatus* P Common Bird's-foot-trefoil *Mentha aquatica* P Water Mint *Myriophyllum alterniflorum* P Y Alternate Watermilfoil *Nymphaea alba* P White Water-lily *Plantago lanceolata* P Ribwort Plantain *Potamogeton* P
Pondweed *Potentilla reptans* P Creeping Cinquefoil *Primula vulgaris* P Primrose *Pulicaria dysenterica*
P Common Fleabane *Ranunculus repens* P Creeping Buttercup *Rubus fruticosus* agg. P Bramble *Rumex acetosa* P Common Sorrel *Senecio jacobaea* P Common Ragwort *Trifolium pratense* P Red Clover *Typha latifolia* P Bulrush

Species Summary

Total no. of species : 34

Note : Indicator species may be present but have not have been flagged or counted as no habitat has been recorded.

Habitats Recorded

Not determined at time of survey

04/10/2002 - WOODLAND (SU45402140) Allbrook Clay Pit

Survey Details

Acer pseudoplatanus P Sycamore *Alnus glutinosa* P Alder *Betula pendula* P Silver Birch *Brachypodium sylvaticum* P False-brome *Carex sylvatica* P Wood-sedge *Castanea sativa* P Sweet Chestnut *Cirsium vulgare* P Spear Thistle *Corylus avellana* P Hazel *Crataegus monogyna* P Hawthorn *Deschampsia cespitosa* P Tufted Hair-Grass *Dryopteris affinis* subsp. affinis P BucklerFern *Fraxinus excelsior* P Ash *Geum urbanum* P Wood Avens *Hedera helix* P Ivy *Ilex aquifolium* P Holly *Iris pseudacorus* P Yellow Iris
Populus tremula P Aspen *Quercus robur* P Pedunculate Oak *Ranunculus repens* P Creeping Buttercup *Rosa canina* P Dog-rose *Rubus fruticosus* agg. P Bramble *Salix cinerea* P Common Sallow *Sambucus nigra* P Elder *Silene dioica* P Red Campion *Sorbus aucuparia* P Rowan *Taxus baccata* P Yew *Ulex europaeus* P Gorse

Species Summary

Total no. of species : 27

Note : Indicator species may be present but have not have been flagged or counted as no habitat has been recorded.

Indicators Species :

Ancient Woodland Vascular Plants (AWVP) - species most strongly associated with ancient woodland and are typical components of botanically rich ancient woodland communities Acid/neutral grassland indicators - species which seldom occur outside of unimproved acid/neutral grasslands or are indicative of a long period of uninterrupted grassland management Chalk grassland indicators - species characteristic of unimproved chalk downland or have a strong affinity to calcareous soil.

Habitat Classifications :

Priority: Habitats identified as the highest priority for conservation action in the UK NVC: A system of classifying natural habitat communities according to species associations Phase 1: A standardised system for surveying, classifying and mapping broad wildlife habitats including urban areas Peterken: A stand type classification that describes woodlands by tree species Species Abundance:

Frequency: D=dominant A=abundant F=frequent O=occasional R=rare L=locally Frequencies within brackets ( ) indicate non-native occurrences

Notes:

Habitat and Species designations and statuses:

Habitat designations/categories and species legislation/statuses are correct at the time the report was generated and may not necessarily reflect those applicable either at the time of survey or later than the generated date.

Allbrook Clay Pit (SU45402140) [42-0175] - 04-10-2002

Site Summary

A varied site comprising of old steep sided brickpits, excavated for clay, now filled with water. Undulating ground around is colonised by regenerating birch, ash and oak woodland with areas of unimproved grassland and scrub. The variety of habitats present provide good feeding and breeding opportunities for a wide range of species.

Site Description

1. Mown amenity grassland with scrub fringe.

2. Regenerating woodland dominated by young pole-stage ash and silver-birch on undulating and often steep abandoned brick pits. Understorey of frequent to occasional hawthorn, hazel, elder, oak, yew, holly and buddleia. Ground flora dominated by ivy and bramble but with occasional

to locally frequent wood avens, wood sedge, field horsetail, false woodbrome and scaly-male fern.

3. Water filled pit with steep bare sides. Shallows dominated by white water-lily with frequent yellow flag, alternate-flowered water milfoil and reedmace.

4. Willow and alder regenerating along pit sides and colonising shallows of water filled pits. Much bare clay exposed.

5. A smaller water-filled pit with willow and alder margins. Shallows dominated by water horsetail, hard rush and reedmace.

6. Steep bank and flatter plateau above pit. Grassland dominated with abundant herbs including ragwort, red clover, bird's-foot-trefoil, fleabane, water mint, meadow thistle and bramble.

7. Grassland surrounded by scrub along footpath. Abundant hogweed, teasel and red clover, frequent self-heal and fleabane, occasional agrimony.

APPENDIX IIf: Solent Maritime Special Area of Conservation

Solent Maritime
Site details

Location of Solent Maritime SAC/SCI/cSAC

Country	England
Unitary Autho	City of Portsmouth; City of Southampton; Hampshire; Isle of Wight; West Sussex
Centroid*	SU756003
Latitude	50.79638889
Longitude	-0.927777778
SAC EU cod	UK0030059
Status	Designated Special Area of Conservation (SAC)
Area (ha)	11243.12

* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

General site character

Marine areas, Sea inlets (14%)
Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins) (59%)
Salt marshes, Salt pastures, Salt steppes (23%)
Coastal sand dunes, Sand beaches, Machair (0.5%)
Shingle, Sea cliffs, Islets (3%)
Broad-leaved deciduous woodland (0.5%)

Boundary map and associated biodiversity information on the NBN Gateway.

Natura 2000 standard data form for this site as submitted to Europe (PDF, < 100kb).

Interactive map from MAGIC (Multi-Agency Geographic Information for the Countryside).

APPENDIX IIg: Solent and Southampton Water SPA

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 UK9011061
SITENAME Solent and Southampton Water
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
1.1 Type 1.2 Site code
A UK9011061
1.3 Site name
Solent and Southampton Water
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:
1.7 Site indication and designation / classification dates
Date site classified as SPA: 1998-10
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
Back to top
2.1 Site-centre location [decimal degrees]:
Longitude -1.525833333
Latitude 50.74027778
2.2 Area [ha]: 2.3 Marine area [%]
5401.12 59.3
2.4 Site length [km]:
0.0
2.5 Administrative region code and name
NUTS level 2 code Region Name
UKJ3 Hampshire and Isle of Wight
2.6 Biogeographical Region(s)
Atlantic
(100.0 %)
3. ECOLOGICAL INFORMATION
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 A052 *Anas crecca* w 4400 4400 i G B C
B A675
Branta bernicla bernicla
w 7506 7506 i G B C
B A137
Charadrius hiaticula
w 552 552 i G C C
B A176
Larus melanocephalus
r 2 2 p G A C
B A616
Limosa limosa islandica
w 1125 1125 i G A C
B A195 *Sterna albifrons* r 49 49 p G B C
B A192 *Sterna dougallii r* 2 2 p G B A
B A193 *Sterna hirundo r* 267 267 p G B C
B A191 *Sterna sandvicensis* r 231 231 p G C C
A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles Group: in case that the data on species are sensitive and therefore have to be blocked for any public S: access enter: yes in case that a species is no longer present in the site enter: x (optional)NP: p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory
Type: species use permanent) i = individuals, p = pairs or other units according to the Standard list of population units and Unit: codes in accordance with Article 12 and 17 reporting (see) reference portal C = common, R = rare, V = very rare, P = present - to fill if data are Abundance categories (Cat.): deficient (DD) or in addition to population size information G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with Data quality: 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
51361 51361 i X
A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M =Group: Mammals, P = Plants, R = Reptiles for Birds, Annex IV and V species the code as provided in the reference portal should be usedCODE: in addition to the scientific name in case that the data on species are sensitive and therefore have to be blocked for any publicS: access enter: yes in case that a species is no longer present in the site enter: x (optional)NP: i = individuals, p = pairs or other units according to the standard list of population units and codesUnit: in accordance with Article 12 and 17 reporting, (see) reference portal Abundance categories: C = common, R = rare, V = very rare, P = presentCat.: Annex Species (Habitats

Directive), National Red List data; Motivation categories: IV, V: A: B: Endemics; International Conventions; other reasons C: D:
4. SITE DESCRIPTION
4.1 General site character
Habitat class % Cover
N02 47.7
N07 3.4
N05 10.2
N16 0.6
N03 18.2
N04 2.8
N10 17.1
Total Habitat Cover 100
Other Site Characteristics 1 Terrestrial: Soil & Geology: mud,acidic,alluvium,sedimentary,neutral 2 Terrestrial: Geomorphology and landscape: floodplain,coastal,lowland 3 Marine: Geology: sand,gravel,sedimentary,shingle 4 Marine: Geomorphology: open coast (including bay),lagoon,estuary,intertidal rock,enclosed coast (including
Back to top
Positive Impacts
Rank
Activities, management [code] Pollution
(optional) [code] inside/outside [i|o|b]
H A04 I H A02 I H D05 I H B02 I H D05 I H A03 I
Negative Impacts
Rank
Threats and pressures [code] Pollution
(optional) [code] inside/outside [i|o|b]
H H02 B H F02 I H M01 B H M02 B H G01 I
embayment),shingle bar,islands,intertidal sediments (including sandflat/mudflat)

Ramsar Wetland Types: Marine and coastal wetlands

4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC) During the breeding season the area regularly supports: *Larus melanocephalus* 15.4% of the GB breeding population 5 year peak mean, 1994-1998 *Sterna albifrons* (Eastern Atlantic - breeding) 2% of the GB breeding population 5 year peak mean, 1993-1997 *Sterna dougallii* (Europe breeding) 3.1% of the GB breeding population 5 year peak mean, 1993-1997 *Sterna hirundo* (Northern/Eastern Europe - breeding) 2.2% of the GB breeding population 5 year peak mean, 1993-1997 *Sterna sandvicensis* (Western Europe/Western Africa) 1.7% of the GB breeding population 5 year peak mean, 1993-1997.

ARTICLE 4.2 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: *Anas crecca* (North-western Europe) 1.1% of the population 5 year peak mean, 1992/3-1996/7 Branta *bernicla bernicla* (Western Siberia/Western Europe) 2.5% of the population 5 year peak mean, 1992/3-1996/7 *Charadrius hiaticula* (Europe/Northern Africa - wintering) 1.2% of the population 5 year peak mean, 1992/3-1996/7 *Limosa limosa islandica* (Iceland - breeding) 1.7% of the population 5 year peak mean, 1992/3-1996/7 ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF

BIRDS Over winter the area regularly supports: 51361 waterfowl (5 year peak mean 1991/92-1995/96) Including: *Branta bernicla bernicla* , *Anas crecca* , *Charadrius hiaticula* , *Limosa limosa islandica*

4.3 Threats, pressures and activities with impacts on the site
The most important impacts and activities with high effect on the site
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/3212324
http://publications.naturalengland.org.uk/category/6490068894089216
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)
5.1 Designation types at national and regional level:
Code Cover [%] Code Cover [%] Code Cover [%]
UK04 100.0 UK01 21.8
X
Back to top
6. SITE MANAGEMENT
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
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 (*CallunoUlicetea*) 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 *CallitrichoBatrachion* 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 (*FestucoBrometalia*) (* 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

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

APPENDIX IIh: Solent and Southampton Water RAMSAR

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: 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: 01 October 1998 3. Country: UK (England) 4. Name of the Ramsar site: Solent and Southampton Water 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 44 25 N 01 31 32 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: Southampton Solent and Southampton Water lies on the central south coast of England. Administrative region: City of Portsmouth; City of Southampton; Hampshire; Isle of Wight
10. Elevation (average and/or max. & min.) (metres): 11. Area (hectares): 5346.44 Min. -1 Max. 9 Mean 1 12. General overview of the site: Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland. The area covered extends from Hurst Spit to Gilkicker Point along the south coast of Hampshire and along the north coast of the Isle of Wight. The site comprises of estuaries and adjacent coastal habitats including intertidal flats, saline lagoons, shingle beaches, saltmarsh, reedbeds, damp woodland, and grazing marsh. The diversity of habitats support internationally important numbers of wintering waterfowl, important breeding gull and tern populations and an important assemblage of rare invertebrates and plants.
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, 2, 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 The site is one of the few major sheltered channels between a substantial island and mainland in European waters, exhibiting an unusual strong double tidal flow and has long periods of slack water at high and low tide. It includes many wetland habitats characteristic of the biogeographic region: saline lagoons, saltmarshes, estuaries, intertidal flats, shallow coastal waters, grazing marshes, reedbeds, coastal woodland and rocky boulder reefs. Ramsar criterion 2 The site supports an important assemblage of rare plants and invertebrates. At least 33 British Red Data Book invertebrates and at least eight British Red Data Book plants are represented on site.

Ramsar criterion 5
Assemblages of international importance:
Species with peak counts in winter: 51343 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 397 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/92002/3) Species with peak counts in winter: Dark-bellied brent goose, Branta bernicla bernicla, 6456 individuals, representing an average of 3% of the population (5 year peak mean 1998/92002/3) Eurasian teal , Anas crecca, NW Europe 5514 individuals, representing an average of 1.3% of the population (5 year peak mean 1998/9-2002/3) Blacktailed godwit , Limosa limosa islandica, Iceland/W Europe 1240 individuals, representing an average of 3.5% of the population (5 year peak mean 1998/9-2002/3) 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 occurring 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 acidic, neutral, shingle, sand, mud, alluvium, sedimentary Geomorphology and landscape lowland, island, coastal, floodplain, shingle bar, subtidal sediments (including sandbank/mudbank), intertidal sediments (including sandflat/mudflat), open coast (including bay), enclosed coast (including embayment), estuary, lagoon, intertidal rock Nutrient status eutrophic pH no information Salinity brackish / mixosaline, fresh, saline / euhaline Soil mainly mineral Water permanence usually permanent Summary of main climatic features Annual averages (Everton, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites /everton.html) Max. daily temperature: 14.0° C Min. daily temperature: 7.0° C Days of air frost: 32.5 Rainfall: 763.7 mm Hrs. of sunshine: 1750.
7 General description of the Physical Features: The Solent and Southampton Water comprises a series of estuaries and harbours with extensive mudflats and saltmarshes together with adjacent coastal habitats including saline lagoons, shingle beaches, reedbeds, damp woodland and grazing marsh.
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). 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 of four tides each day, and for the complexity of the marine and estuarine habitats present within the area. Sediment habitats within the estuaries include extensive estuarine flats, often with intertidal areas supporting eelgrass Zostera spp. and green algae, 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.
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 19. Wetland types: Marine/coastal wetland Code Name % Area G Tidal flats 47.9 H Salt marshes 18.5 Sp Saline / brackish marshes: permanent 14.9 E Sand / shingle shores (including dune systems) 12.1 Tp Freshwater marshes / pools: permanent 3.7 D Rocky shores 1.5

J Coastal brackish / saline lagoons 0.7 Xf Freshwater, tree-dominated wetlands 0.7 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 estuaries and harbours of the Solent are particularly sheltered and form the largest number and tightest cluster of small estuaries anywhere in Great Britain. The Solent and Isle of Wight system is notable for its large range and extent of different habitats.

The intertidal area is predominantly sedimentary in nature with extensive intertidal mud and sandflats within the sheltered harbours and areas of gravel and pebble sediments on more exposed beaches. These conditions combine to favour an abundant benthic fauna and green algae which support high densities of migrant and over-wintering wildfowl and waders.

Eelgrass Zostera beds occur discontinuously along the north shore of the Isle of Wight and in a few places along the northern shore of The Solent.

The Solent system supports a wide range of saltmarsh communities. Upper saltmarshes are dominated by sea purslane *Atriplex portulacoides*, sea plantain *Plantago maritima*, sea meadow grass *Puccinellia maritima* and sea lavender *Limonium vulgare*; locally thrift *Armeria maritima* and the nationally scarce golden samphire *Inula crithmoides* are abundant. Lower saltmarsh vegetation tends to be dominated by sea purslane, cord grass *Spartina* spp., glasswort *Salicornia* spp. and sea-blite *Suaeda maritima*. Cord-grasses dominate much of the saltmarsh in Southampton Water and in parts of the Solent and it was the original location of the introduction of *Spartina alterniflora* and subsequent hybridisation with the native species.

There are several shingle spits including Hurst spit, Needs Ore Point, Calshot spit and Newtown Harbour spits which support a characteristic shingle flora.

A range of grassland types lie inshore of the intertidal zone including unimproved speciesrich neutral and calcareous grasslands, brackish grazing marsh systems and reed dominated freshwater marshes.

The brackish water lagoons associated with grazing marsh systems behind the seawalls, e.g. Keyhaven-Lymington, Gilkicker lagoon, and at Brading Marshes contain internationally important communities of rare and endangered invertebrates and plants. 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. *Eleocharis parvula*, *Geranium purpureum forsteri*, *Lotus angustissimus*, *Ludwigia palustris*, *Orobanche purpurea*, *Lamprothamnium papulosum*, *Spartina maritima Zostera marina*

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 11 apparently occupied nests, representing an average of 10.1% of the GB population (Seabird 2000 Census) Black-headed gull , *Larus ridibundus*, N & C Europe 6911 apparently occupied nests, representing an average of 5.4% of the GB population (Seabird 2000 Census) Sandwich tern , *Sterna* (*Thalasseus*) *sandvicensis sandvicensis,* W Europe 268 apparently occupied nests, representing an average of 2.5% of the GB population (Seabird 2000 Census) Roseate tern , *Sterna dougallii dougallii*, W Europe 1 apparently occupied nests, representing an average of 1.9% of the GB population (Seabird 2000 Census) Common tern , *Sterna hirundo hirundo*, N & E Europe 192 apparently occupied nests, representing an average of 1.8% of the GB population (Seabird 2000 Census) Little tern , *Sterna albifrons albifrons*, W Europe 22 apparently occupied nests, representing an average of 1.1% of the GB population (Seabird 2000 Census) Species with peak counts in spring/autumn: Little egret , *Egretta garzetta*, West Mediterranean 115 individuals,

representing an average of 6.9% of the GB population (5 year peak mean 1998/92002/3) Spotted redshank , *Tringa erythropus*, Europe/W Africa 13 individuals, representing an average of 9.5% of the GB population (5 year peak mean 1998/92002/3) Common greenshank , *Tringa nebularia*, Europe/W Africa 58 individuals, representing an average of 9.7% of the GB population (5 year peak mean 1998/92002/3) Species with peak counts in winter: Little grebe , *Tachybaptus ruficollis ruficollis*, Europe to E Urals, NW Africa 105 individuals, representing an average of 1.3% of the GB population (5 year peak mean 1998/92002/3) Slavonian grebe , *Podiceps auritus*, Northwest Europe 12 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/92002/3) Black-necked grebe , *Podiceps nigricollis nigricollis*, Europe, N Africa 3 individuals, representing an average of 2.5% of the GB population (5 year peak mean 1998/92002/3) Great cormorant , *Phalacrocorax carbo carbo*, NW Europe 247 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/92002/3) Common shelduck , *Tadorna tadorna*, NW Europe 964 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/92002/3) Eurasian wigeon, *Anas penelope*, NW Europe 7907 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/92002/3) Northern pintail , Anas acuta, NW Europe 359 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/92002/3) Northern shoveler , *Anas clypeata*, NW & C Europe 267 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/92002/3) Red-breasted merganser , *Mergus serrator*, NW & C Europe 142 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/92002/3) Water rail , +, Europe 17 individuals, representing an average of 3.7% of the GB population (5 year peak mean 1998/92002/3) Grey plover , *Pluvialis squatarola*, E Atlantic/W Africa -wintering 1171 individuals, representing an average of 2.2% of the GB population (5 year peak mean 1998/92002/3) Dunlin , Calidris alpina alpina, W Siberia/W Europe 10417 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3) Eurasian curlew , *Numenius arquata arquata*, *N. a. arquata* Europe (breeding) 1766 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/92002/3) Species Information Nationally important species occurring on the site. Invertebrates. *Allomelita pellucida, Gammarus insensibilis*, *Nematostella vectensis*, *Arctosa fulvolineata*, *Aulonia albimana*, *Anisodactylus poeciloides*, *Anthonomus rufus*, *Baris analis*, *Berosus spinosus*, *Cantharis fusca*, *Drypta dentata*, *Leptura fulva*, *Meligethes bidentatus*, *Paracymus aeneus*, *Staphylinus caesareus*, *Aphrosylus mitis*, *Atylotus latistriatus*, *Dorycera graminum*, *Haematopoda grandis*, *Hippobosca equina*, *Linnaemya comta*, *Stratiomys longicornis*, *Syntormon mikii*, *Tetanocera freyi*, *Villa circumdata*, *Trachysphaera lobata*, *Paludinella littorina*, *Truncatellina cylindrica*, *Andrena alfkenella*, *Acleris lorquiniana*, Elachista littoricola, Melissoblaptes zelleri, Platytes alpinella, *Psamathrocrita argentella*, *Armandia cirrhosa*

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 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: 24. Land tenure/ownership: Ownership category Onsite Off-site Non-governmental organisation (NGO) + + Local authority, municipality etc. + +
National/Crown Estate + + Private + + Public/communal + + Other + +
25. Current land (including water) use: Activity On-site Off-site Nature conservation + Tourism + Recreation + Current scientific research + Collection of non-timber natural products: (unspecified) + Commercial forestry + Cutting/coppicing for firewood/fuel + Fishing: (unspecified) + Fishing: commercial + Fishing: recreational/sport + Marine/saltwater aquaculture + Gathering of shellfish + Bait collection +
Information Sheet on Ramsar Wetlands (RIS),
Arable agriculture (unspecified) + Permanent arable agriculture + 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) + Oil/gas exploration + Oil/gas production + Transport route + Domestic water supply + Urban development + Nonurbanised settlements + Military activities + +
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 + +
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, ChAMPs are in place or are being developed.
Is the site subject to adverse ecological change? YES
Information Sheet on Ramsar Wetlands (RIS), page 10
Ramsar Information Sheet: UK11063 Page 10 of 13 Solent and Southampton Water
Produced by JNCC: Version 3.0, 13/06/2008
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) + National Nature Reserve (NNR) + + Special Protection Area (SPA) + Land owned by a nongovernmental organisation for nature conservation + + Management agreement + + Special
Area of Conservation (SAC) + Management plan in preparation +
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. Numbers of migratory and wintering waterfowl 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 (EA/Southern Water) Various research and educational establishments carry out ongoing research into a number of different aspects of the environment. Flora. Saltmarsh Monitoring (EN project). Spartina survey (EN project). Completed. Flora. Sand dune and saltmarsh NVC survey. Habitats. Habitat surveys (various local individual surveys). Species surveys (various local individual surveys). 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. Various educational programmes exist within the voluntary conservation organisations, research institutes, education centres and also Local Authorities e.g. Newtown National Nature Reserve managed by National Trust, Medina Valley Centre, and Southampton Oceanography Centre.

There are a number of interpretation facilities present and proposed in the area e.g. National Nature Reserve & Local Nature Reserve and proposed centre of coastal management on Isle of Wight. 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. Almost all the estuaries in the Ramsar site are used extensively for a wide range of leisure and recreational activities, particularly waterbased recreation. Land based recreation: Walking including dog-walking is popular along large stretches of the coast and estuaries. The presence of country parks, NNR and LNRs on the coast also attract large numbers of people to certain locations. Bait-digging and collection of shellfish occurs in a number of locations. Birdwatching is also a popular activity with a number of favoured locations with easy access. Some golf courses are also present. Water-based recreation: The Solent is an internationally important centre for yachting, dinghy sailing and power-boating and national important for canoeing, and water-skiing. A small amount of hovercraft racing sometimes occurs. Wildfowling and egg collection: Private, syndicate and club wildfowling operate on the marshes. Small-scale egg-collecting also occurs. Bait-digging and angling also occur. Air Recreation: There is a proposed microlighting centre within the area. The high degree of recreation in the Solent is accompanied by a high degree of supporting developments e.g. marinas, boatyards, clubs, holiday centres occur throughout the area. 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
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Information Sheet on Ramsar Wetlands (RIS), page 12
Ramsar Information Sheet: UK11063 Page 12 of 13 Solent and Southampton Water Produced by JNCC: Version 3.0, 13/06/2008
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APPENDIX IIi: New Forest SAC

The New Forest

Site details

Location of The New Forest SAC/SCI/cSAC

Country	England
Unitary Autho	Hampshire; Wiltshire
Centroid*	SU225075
Latitude	50.8664
Longitude	-1.6806

SAC EU coc	UK0012557
Status	Designated Special Area of Conservation (SAC)
Area (ha)	29213.57

* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

General site character

Bogs, Marshes, Water fringed vegetation, Fens (7%)
Heath, Scrub, Maquis and Garrigue, Phygrana (34%)
Dry grassland, Steppes (10%)
Humid grassland, Mesophile grassland (3%)
Broad-leaved deciduous woodland (29%) Coniferous woodland (17%)

Boundary map and associated biodiversity information on the NBN Gateway.

Natura 2000 standard data form for this site as submitted to Europe (PDF, < 100kb).

Interactive map from MAGIC (Multi-Agency Geographic Information for the Countryside).

Note:
When undertaking an appropriate assessment of impacts at a site, **all** features of European importance (both primary and non-primary) need to be considered.

Annex I habitats that are a primary reason for selection of this site

3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)

Hatchet Pond in the New Forest in the south of England is in fact three ponds, one of which is an example of an oligotrophic waterbody amidst wet and dry lowland heath developed over fluvial deposits. It contains shoreweed *Littorella uniflora* and isolated populations of northern species such as bog orchid *Hammarbya paludosa* and floating bur-reed *Sparganium angustifolium*, alongside rare southern species such as Hampshire-purslane *Ludwigia palustris*. Hatchet Pond is therefore important as a southern example of this lake type where northern species, more common in the uplands of the UK, co-exist with southern species.

3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea

In the New Forest **vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*** occurs on the edge of large temporary ponds, shallow ephemeral pools and poached damp hollows in grassland, which support a number of specialist species in a zone with toad rush *Juncus bufonius*. These include the two nationally scarce species coral-necklace *Illecebrum verticillatum* and yellow centaury *Cicendia filiformis*, often in association with allseed *Radiola linoides* and chaffweed *Anagallis minima*. Heavy grazing pressure is of prime importance in the maintenance of the outstanding flora of these temporary pond communities. Livestock maintain an open habitat, controlling scrub ingress, and trampling the surface. Commoners' animals also transport seed in their hooves widely from pond to pond where suitable habitat exists. Temporary ponds occur throughout the Forest in

depressions capable of holding water for part of the year. Most ponds are small (between 510 m across) and, although great in number, amount to less than 10 ha in total area.

4010 Northern Atlantic wet heaths with Erica tetralix

The New Forest contains the most extensive stands of lowland **northern Atlantic wet heaths** in southern England, mainly of the M16 *Erica tetralix – Sphagnum compactum* type. M14 *Schoenus nigricans – Narthecium ossifragum* mire is also found on this site. The wet heaths are important for rare plants, such as marsh gentian *Gentiana pneumonanthe* and marsh clubmoss *Lycopodiella inundata*, and a number of dragonfly species, including the scarce blue-tailed damselfly *Ischnura pumilio* and small red damselfly *Ceriagrion tenellum*. There is a wide range of transitions between wet heath and other habitats, including dry heath, various woodland types, *Molinia* grasslands, fen, and acid grassland. Wet heaths enriched by bog myrtle *Myrica gale* are a prominent feature of many areas of the Forest. Unlike much lowland heath, the New Forest heaths continue to be extensively grazed by cattle and horses, favouring species with low competitive ability.

4030 European dry heaths

The New Forest represents **European dry heaths** in southern England and is the largest area of lowland heathland in the UK. It is particularly important for the diversity of its habitats and the range of rare and scarce species which it supports. The New Forest is unusual because of its long history of grazing in a traditional fashion by ponies and cattle. The dry heaths of the New Forest are of the H2 *Calluna vulgaris – Ulex minor* heath type, and H3 *Ulex minor – Agrostis curtisii* heath is found on damper areas. There are a wide range of transitions between dry heath and wet heath, *Molinia* grassland, fen, acid grassland and various types of scrub and woodland. Both the New Forest and the two Dorset Heath SACs are in southern England. All three areas are selected because together they contain a high proportion of all the lowland **European dry heaths** in the UK. There are, however, significant differences in the ecology of the two areas, associated with more oceanic conditions in Dorset and the continuous history of grazing in the New Forest.

6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)

The New Forest represents ***Molinia* meadows** in southern England. The site supports a large area of the heathy form of M24 *Molinia caerulea – Cirsium dissectum* fen-meadow. This vegetation occurs in situations of heavy grazing by ponies and cattle in areas known locally as ‘lawns’, often in a fine-scale mosaic with **4010 Northern Atlantic wet heaths** and other mire and grassland communities. These lawns occur on flushed soils on slopes and on level terrain on the floodplains of rivers and streams. The New Forest ***Molinia* meadows** are unusual in the UK in terms of their species composition, management and landscape position. The grasslands are species-rich, and a particular feature is the abundance of small sedges such as carnation sedge *Carex panicea*, common sedge *C. nigra* and yellow-sedge *C. viridula* ssp. *oedocarpa*, and the more frequent occurrence of mat-grass *Nardus stricta* and petty whin *Genista anglica* compared to stands elsewhere in the UK.

7150 Depressions on peat substrates of the Rhynchosporion

The New Forest, one of three sites selected in southern England, is considered to hold the largest area in England of **Depressions on peat substrates of the *Rhynchosporion***, in complex habitat mosaics associated primarily with the extensive valley bogs of this site. The habitat type is developed in three situations: in natural bog pools of patterned bog surfaces, in flushes on the margins of valley mires and in areas disturbed by peat-digging, footpaths, tracks, ditches etc. In places the habitat type is rich in brown mosses *Cratoneuron* spp. and *Scorpidium scorpioides*, suggesting flushing by mineral-rich waters. The mosaics in which this habitat type occurs are an important location for bog orchid *Hammarbya paludosa*.

9120 Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)

The New Forest is the largest area of mature, semi-natural beech *Fagus sylvatica* woodland in Britain and represents **Atlantic acidophilous beech forests** in the most southerly part of the habitat's UK range. The mosaic with other types of woodland and heath has allowed unique and varied assemblages of epiphytic lichens and saproxylic invertebrates to be sustained, particularly in situations where the woodland is open and the tree trunks receive plenty of light. The traditional common grazing in the Forest by cattle and ponies provides opportunities to explore the impact of large herbivores on the woodland system.

9130 Asperulo-Fagetum beech forests

The New Forest is the largest area of mature, semi-natural beech *Fagus sylvatica* woodland in Britain; much of it is a form of W14 *Fagus sylvatica – Rubus fruticosus* woodland that conforms to the Annex I type ***Asperulo-Fagetum* beech forests**. The mosaic with other types of woodland and heath has allowed unique and varied assemblages of epiphytic lichens and saproxylic invertebrates to be sustained, particularly in situations where the woodlands are open and the tree trunks receive plenty of light. The traditional common grazing in the Forest by cattle and ponies provides opportunities to explore the impact of large herbivores on the woodland system.

9190 Old acidophilous oak woods with Quercus robur on sandy plains

The New Forest is representative of **old acidophilous oak woods** in the southern part of its UK range. It is the most extensive area of active wood-pasture with old oak *Quercus* spp. and beech *Fagus sylvatica* in north-west Europe and has outstanding invertebrate and lichen populations. This site was preferred over other sites that lack a succession of age-classes because, although scattered over a wide area, the oak stands are found within a predominantly semi-natural landscape with a more balanced age-structure of trees. The traditional common grazing in the Forest by cattle and ponies provides opportunities to explore the impact of large herbivores on the woodland system. The New Forest has been identified as of potential international importance for its saproxylic invertebrate fauna by the Council of Europe (Speight 1989).

91D0 Bog woodland * Priority feature

Within the New Forest, in southern England, birch – willow *Betula* – *Salix* stands occur over valley bog vegetation, with fringing alder *Alnus* – *Sphagnum* stands where there is some water movement. These stands appear to have persisted for long periods in stable association with the underlying *Sphagnum* bog-moss communities. The rich epiphytic lichen communities and pollen record provide evidence for the persistence of this association. The **Bog woodland** occurs in association with a range of other habitats for which the site has also been selected.

91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) * Priority feature

The New Forest contains many streams and some small rivers that are less affected by drainage and canalisation than those in any other comparable area in the lowlands of England. Associated with many of the streams, particularly those with alkaline and neutral groundwater, are strips of alder *Alnus glutinosa* woodland which, collectively, form an extensive resource with a rich flora. In places there are examples of transitions from open water through reedswamp and fen to alder woodland. The small rivers show natural meanders and debris dams, features that are otherwise rare in the lowlands, with fragmentary ash *Fraxinus excelsior* stands as well as the alder strips. In other places there are transitions to **9190 Old acidophilous oak woods with *Quercus robur* on sandy plains** and **9120 Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer** (***Quercion robori-petraeae* or *Ilici-Fagenion***), for which this site has also been selected.

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

7140 Transition mires and quaking bogs

7230 Alkaline fens

Annex II species that are a primary reason for selection of this site

1044 Southern damselfly Coenagrion mercuriale

The New Forest in central southern England is an outstanding locality for **southern damselfly *Coenagrion mercuriale***, with several population centres and strong populations estimated to be in the hundreds or thousands of individuals and with a long history of records. With Preseli, Dorset Heaths and the River Itchen, it represents one of the four major population centres in the UK.

1083 Stag beetle Lucanus cervus

The New Forest represents **stag beetle *Lucanus cervus*** in its Hampshire/Sussex population centre, and is a major stronghold for the species in the UK. The forest is one of

the most important sites in the UK for fauna associated with rotting wood, and was identified as of potential international importance for its saproxylic invertebrate fauna by the Council of Europe (Speight 1989).

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

1166 Great crested newt Triturus cristatus

APPENDIX IIj: New Forest SPA

European Site Conservation Objectives for The New Forest Special Area of Conservation Site Code: UK0012557

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:

H3110. Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae); Nutrient-poor shallow waters with aquatic vegetation on sandy plains;

H3130. Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea; Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels;
H4010. Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath;

H4030. European dry heaths H6410. Molinia meadows on calcareous, peaty or clayey-siltladen soils (*Molinion caeruleae*); Purple moor-grass meadows

H7140. Transition mires and quaking bogs; Very wet mires often identified by an unstable `quaking` surface;

H7150. Depressions on peat substrates of the Rhynchosporion;

H7230. Alkaline fens; Calcium-rich springwater-fed fens;

H9120. Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion); Beech forests on acid soils;

H9130. Asperulo-Fagetum beech forests; Beech forests on neutral to rich soils;

H9190. Old acidophilous oak woods with Quercus robur on sandy plains;

H91D0. Bog woodland*;

H91E0. Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae); Alder woodland on floodplains*;

S1044. *Coenagrion mercuriale*; Southern damselfly;

S1083. *Lucanus cervus*; Stag beetle;

S1166. *Triturus cristatus*; Great crested newt

APPENDIX IIk: New Forest RAMSAR

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: 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: 22 September 1993 3. Country: UK (England) 4. Name of the Ramsar site: The New Forest 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:
FOR OFFICE USE ONLY. DD MM YY

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 49 32 N 01 39 22 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: Southampton Central southern England Administrative region: Hampshire; Wiltshire
10. Elevation (average and/or max. & min.) (metres): 11. Area (hectares): 28002.81 Min. 9 Max. 125 Mean 54 12. General overview of the site: Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland. The New Forest is an area of semi-natural vegetation including valley mires, fens and wet heath within catchments whose uncultivated and undeveloped state buffer the mires against adverse ecological change. The habitats present are of high ecological quality and diversity with undisturbed transition zones. The suite of mires is regarded as the locus classicus of this type of mire in Britain. Other wetland habitats include numerous ponds of varying size and water chemistry including several ephemeral ponds and a network of small streams mainly acidic in character which have no lowland equivalent in the UK. The plant communities in the numerous valleys and seepage step mires show considerable variation, being affected especially by the nutrient content of groundwater. In the most nutrient-poor zones, Sphagnum bog-mosses, cross-leaved heath, bog asphodel, common cottongrass and similar species predominate. In more enriched conditions the communities are more fenlike.
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, 2, 3
Information Sheet on Ramsar Wetlands (RIS), page 3
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 Valley mires and wet heaths are found throughout the site and are of outstanding scientific interest. The mires and heaths are within catchments whose uncultivated and undeveloped state buffer the mires against adverse ecological change. This is the largest concentration of intact valley mires of their type in Britain.
Ramsar criterion 2 The site supports a diverse assemblage of wetland plants and animals including several nationally rare species. Seven species of nationally rare plant are found on the site, as are at least 65 British Red Data Book species of invertebrate.
Ramsar criterion 3 The mire habitats are of high ecological quality and diversity and have undisturbed transition zones. The invertebrate fauna of the site is important due to the concentration of rare and scare wetland species. The whole site complex, with its examples of semi-natural habitats is essential to the genetic and ecological diversity of southern England.

See Sections 21/22 for details of noteworthy species
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 acidic, neutral, sand, clay, alluvium, peat, nutrient-poor, gravel

Geomorphology and landscape lowland, hilly Nutrient status oligotrophic pH acidic, alkaline Salinity fresh Soil mainly mineral Water permanence usually permanent, usually seasonal / intermittent

Summary of main climatic features Annual averages (Everton, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites /everton.html) Max. daily temperature: 14.0° C Min. daily temperature: 7.0° C Days of air frost: 32.5 Rainfall: 763.7 mm Hrs. of sunshine: 1750.7
General description of the Physical Features: The New Forest comprises a complex mosaic of habitats overlying mainly nutrient-poor soils over plateau gravels. The major components are the extensive wet and dry heaths with their rich valley mires and associated wet and dry grasslands, the ancient pasture woodlands and inclosure woodlands, the network of clean rivers and streams, and frequent permanent and temporary ponds.
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). The New Forest comprises a complex mosaic of habitats overlying mainly nutrient-poor soils over plateau gravels. The major components are the extensive wet and dry heaths with their rich valley mires and associated wet and dry grasslands, the ancient pasture woodlands and inclosure woodlands, the network of clean rivers and streams, and frequent permanent and temporary ponds.
18. Hydrological values: Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc. Flood water storage / desynchronisation of flood peaks, Maintenance of water quality (removal of nutrients) 19. Wetland types: Inland wetland Code Name % Area Other Other 92.5 U Peatlands (including peat bogs swamps, fens) 5.3 Xf Freshwater, tree-dominated wetlands 0.8 W Shrubdominated wetlands 0.6 M Rivers / streams / creeks: permanent 0.4 Xp Forested peatland
0.4
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 New Forest valley mires and fens include the following community types: M21a Narthecium ossifragum–Sphagnum papillosum mire, Sphagnum auriculatum–Rhynchospora sub-community; M6di Carex echinata–Sphagnum recurvum mire, Juncus acutiflorus sub-community; M29 Hypericum elodes–Potamogeton polygonifolius soakway; M1 Sphagnum auriculatum bog pool; M14 Schoenus nigricans–Narthecium ossifragum mire, and other marl bogs. Alder carr: W4 Betula pubescens–Molinia caerulea and W5 Alnus glutinosa–Carex paniculata. Information Sheet on Ramsar Wetlands (RIS),
Wet heath: M16a Erica tetralix–Sphagnum compactum wet heath, Succisa pratensis–Carex panicea sub-community, and M16c Erica tetralix–Sphagnum compactum wet heath, Rhynchospora alba– Drosera intermedia sub-community. Other inundation communities of note are: MG8; MG11; MG13; M22 and M23. Bog woodland – rich in relict lichen communities. Residual floodplain woodland. 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. *Pulicaria vulgaris*, *Eriophorum gracile*, *Mentha pulegium*, *Ludwigia palustris*, *Pilularia globulifera*, *Elatine hexandra, Eleocharis acicularis*, *Gentiana pneumonanthe*, *Illecebrum verticillatum*, *Lycopodium inundatum*, *Carex montana*, *Cicendia filiformis*, *Deschampsia setacea*,

Thelypteris palustris, *Hammarbya paludosa*, *Eleocharis parvula*, *Galium debile*, *Gentiana pneumonanthe, Impatiens noli-tangere*, *Myosurus minimus*, *Oenanthe pimpinelloides*, *Parentucellia viscose*, *Polypogon monspeliensis*, *Polygonum minus*, *Ranunculus tripartitus*, *Rhynchospora fusca*, *Thelypteris palustris*, *Utricularia intermedia*. 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. Species currently occurring at levels of national importance: Species regularly supported during the breeding season: Dartford warbler , *Sylvia undata*, Europe 538 pairs, representing an average of 33.6% of the GB population (Source period not collated) Species with peak counts in winter: Hen harrier, *Circus cyaneus*, Europe 15 individuals, representing an average of 2% of the GB population (Source period not collated) Species Information Species occurring at levels of international importance. Invertebrates.
Coenagrion mercuriale, *Lucanus cervus* Nationally important species occurring on the site. Amphibians. *Triturus cristatus* Fish. *Lampetra planeri*, *Cottus gobio* Invertebrates. Scientific Name Common Name GB Status *Amara famelica* A ground beetle pRDB3 *Bagous frit* A weevil pRDB3 *Buckleria paladum* A plum moth pRDB3 *Caloptilia falconipennel* A micro moth pRDB3 *Cantharis fusca* A soldier beetle pRDB3 *Coniocleonus nebulosus* A weevil pRDB3 *Crambus silvella* A pyralid moth pRDB3 *Dieckmaniellus gracilis* A seed weevil pRDB3 *Euplectus punctatus* A short-winged mould pRDB3 *Lampronia fuscatella* A longhorn moth pRDB3 *Leptura fulva* A longhorn beetle pRDB3 *Miscroscydmus minimus* A small ant-like beetle pRDB3 *Paraphotistus nigricorni* A click beetle pRDB3 *Procraerus tibialis* A click beetle pRDB3 *Telmatophilus brevicolli* A silken fungus beetle pRDB3 *Tenthredopsis friesei* A sawfly pRDB3 *Acritus homoeopathicus* A carrion beetle RDB3 *Ampedus cinnabarinus* A click beetle RDB3 *Aradus corticalis* a flat bark bug RDB3 *Arctosa fulvolineata* A wolf spider RDB3 *Brachyopa bicolor* A hoverfly RDB3 *Callicera aurata* A hoverfly RDB3 *Catocala promissa* Light Crimson Underwing RDB3 *Chorthippus vagans* Heath Grasshopper RDB3 *Coenagrion mercuriale* Southern Damselfly RDB3 *Colydium elongatum* A narrow timber beet RDB3 *Corticeus unicolour* A darkling beetle RDB3 *Diodontus insidiosus* A solitary wasp RDB3 *Enochrus isotae* A scavenger water beetle RDB3 *Grammoptera ustulata* A longhorn beetle RDB3 *Haematopota grandis* A horse fly RDB3 *Haliplus variegatus* A crawling water beetle RDB3 *Halpodrassus umbratilis* A ground spider RDB3 *Heliothis maritima* Shoulder-striped Clover RDB3 *Heterogenea asella* Triangle RDB3 *Hirudo medicinalis* Medicinal Leech RDB3 *Hydrothassa hannoveriana* A leaf beetle RDB3 *Leptothorax interruptus* An ant RDB3 *Leptura sexguttata* 6 spotted longhorn RDB3 *Malachius aeneus* A malachine beetle RDB3 *Mesosa nebulosa* A longhorn beetle RDB3 *Microrhagus pygmaeus* A false click beetle RDB3 *Moma alpium* Scarce merveille du jour RDB3 *Nysius helveticus* A ground bug RDB3 *Ortholomus punctipennis* A ground bug RDB3 *Orthoperus brunnipes* A minute fungus beetle RDB3 *Pachybrachius luridus* A ground bug RDB3 *Paederus caligatus* A rove beetle RDB3 *Pelecocera tricincta* A hoverfly RDB3 *Psen spooneri* A solitary wasp RDB3 *Thyridanthrax fenestratu* A bee fly RDB3 Tipula (*Yamatipula) marginata* A cranefly RDB3 *Triplax lacordairii* A shiny fungus beetle RDB3 *Aderus brevicornis* An aderid beetle pRDB2 *Donacia bicolora* A leaf beetle pRDB2 *Gnorimus nobilis* A dung beetle or chafer pRDB2
Limonia (Mewtalimnobia) A cranefly pRDB2 *Neompheria bimaculata* A fungus gnat pRDB2 *Trachys minuta* A jewel beetlep pRDB2 *Xyletinus longitarsis* A wood boring beetle pRDB2 *Zeugophora flavicollis* A leaf beetle pRDB2 *Agabus brunneus* A water beetle RDB2 *Argynnis adippe* High Brown Fritillary RDB2 *Brachypeza armata* A fungus gnat RDB2 *Catocala sponsa* Dark Crimson Underwing RDB2 *Diaperis boleti* A darkling beetle RDB2 *Graptodytes flavipes* A water beetle RDB2 Helophorus laticollis A scavenger water beetle

RDB2 *Lymexylon navale* A timber beetle RDB2 *Pachythelia villosella* A bagworm moth RDB2 *Pocota personata* A hoverfly RDB2 *Solva maculata* A fly RDB2 *Stenoptilia graphodactyl* A plume moth RDB2 *Stethophyma grossum* Large Marsh Grasshopper RDB2 *Thanatus formicinus* A running crab spider RDB2 *Anthicus tristis* An antlike beetle pRDB1 *Chrysops sepulchralis* A horse fly pRDB1 *Cicadette montana* New Forest Cicada pRDB1 *Endophloeus markovichian* A narrow timber beetle pRDB1 *Euheptaulacus sus* a dung beetle pRDB1 *Gasterophilus nasalis* A bot fly pRDB1 *Heptaulacus testudinariu* A dung beetle or chafer pRDB1 *Lagria atripes* A darkling beetle pRDB1 *Lebia cyanocephala* A ground beetle pRDB1 *Manda mandibularis* A rove beetle pRDB1 *Platydema violaceum* A darkling beetle pRDB1 *Pseudopomyza atrimana* A fly pRDB1 *Pterostichus kugelanni* A gorund beetle pRDB1 *Silvanoprus fagi* A beetle pRDB1 *Strangalia revestita* A longhorn beetle pRDB1 *Tachinus bipustulatus* A rove beetle pRDB1 *Tachys edmondsi* A ground beetle pRDB1 *Tachys walkerianus* A ground beetle pRDB1 *Acylophorus glaberrimus* A rove beetle RDB1 *Andrena ferox* A solitary bee RDB1 *Anthaxa nitidula* A jewel beetle RDB1 *Apalus muralis* An oil beetle RDB1 *Aphodius niger* A dung beetle or chafer RDB1 *Bagous brevis* A weevil RDB1 *Bagous czwalinai* A weevil RDB1 *Bagous longitarsis* A weevil RDB1 *Batrisodes delaporti* A short-winged mould RDB1 *Caliprobola speciosa* A hoverfly RDB1 *Chrysomela tremula* A leaf beetle RDB1 *Cryptocephalus nitidulus* A leaf beetle RDB1 *Emus hirtus* Hairy Rove-beetle RDB1 *Eucnemis capucina* A false click beetle RDB1 *Eutheia linearis* A small antlike beetle RDB1 *Formica transkaucasica* The Bog Ant RDB1 *Gryllus campestris* Field Cricket RDB1 *Homonotus sanguinolentus* A spider-hunting wasp RDB1 *Longitarsus nigerrimus* A leaf beetle RDB1 *Megapenthes lugens* A click beetle RDB1 *Melandyra barbata* A false darkling beetle RDB1 Paromalus parallelepiped A carrion beetle RDB1 *Potamia setifemur* A muscid fly RDB1 *Pterostichus aterrimus* A ground beetle RDB1 *Triops cancriformsi* Apus RDB1 *Velleius dilatatus* Hornet Rove-beetle RDB1 *Anergates atratulus* Dark Guest Ant RDB K *Atomaria lohsei* A silken fungus beetle RDB K *Ptenidium turgidum* A featherwing beetle RDB K *Aleochara fumata* A rove beetle pRDBK *Atheta nannion* A rove beetle pRDBK *Atheta puberula* A rove beetle pRDBK *Bibloplectus tenebrosus* A short-winged mould pRDBK *Cryptophagus micaceus* A silken fungus beetle pRDBK *Eutheia plicata* A small antlike beetle pRDBK *Gyrophaena poweri* A rove beetle pRDBK *Hister quadrimaculatus* A carrion beetle pRDBK *Leiodes macropus* A round fungus beetle pRDBK *Leiodes nigrita* A round fungus beetle pRDBK *Leiodes triepkii* A round fungus beetle pRDBK *Limotettix atricapillus* A leafhopper pRDBK *Mordellistena humeralis* A tumbling flower beetle pRDBK *Onthophagus fracticornis* A dung beetle or chafer pRDBK *Phyllodrepa salicis* A rove beetle pRDBK *Ptinella limbata* A featherwing beetle pRDBK *Scydomoraphes sparshalli* A small antlike beetle pRDBK *Sitona puberulus* A weevil pRDBK *Stenichnus poweri* A small antlike beetle pRDBK *Stenus morio* A rove beetle pRDBK *Tabanus miki* A horse fly pRDBK *Zyras cognatus* A rove beetle pRDBK *Agathidium confusum* A round fungus beetle RDB I *Amarochara bonnairei* A rove beetle RDB I *Atomaria sahlbergi* A silken fungus beetle RDB I *Cassida nebulosa* A leaf beetle RDB I *Euconnus denticornis* A small antlike beetle RDB I *Euplectus decipiens* A short-winged *mould RDB I Euryusa optabilis A rove beetle RDB I Ityocara rubens A rove beetle RDB I Lithocharis obsoleta* A rove beetle RDB I *Medon castaneus* A rove beetle RDB I *Planeustomus flavicollis* A rove beetle RDB I *Stenus asphaltinus* A rove beetle RDB I *Stichoglossa semirufa* A rove beetle RDB I *Tachnnus scapularis* A rove beetle RDB I *Tychobythinus glabratus* A short-winged mould RDB I *Bidessus unistriatus Formica candida Longitarsus ferrugineus Lymnaea glabra Biblioplectus tenebrosus Helophorus laticollis Hydroporus rufifrons Phaonia jaroschewskii Eristalis cryptarum Chirocephalus diaphanous Eyndyas nigripes Helophorus longitarsus Hydrochus elongates Hygropora cunctans Aleochara discipennis Athetis palustris Pelosia muscerda Dolichopus andalusiacus Tetanocera freyi Bagous collignesis Telmaturgus tumidulus Tabanus bovines*.

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 Archaeological/historical site Environmental education/ interpretation Forestry production Livestock grazing Nonconsumptive recreation Scientific research Sport fishing Sport hunting Tourism
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:
24. Land tenure/ownership: Ownership category On-site Off-site Non-governmental organisation (NGO) + + Local authority, municipality etc. + + National/Crown Estate + + Private + Other + +
25. Current land (including water) use: Activity On-site Off-site Nature conservation + + Tourism + + Recreation + + Current scientific research + Commercial forestry + + Cutting/coppicing for firewood/fuel + + Cutting of vegetation (smallscale/subsistence) + Fishing: recreational/sport + + Bait collection + Shifting arable agriculture + Livestock watering hole/pond + Grazing (unspecified) + + Rough or shifting grazing + Permanent pastoral agriculture + + Hay meadows + + Hunting: recreational/sport + + Sewage treatment/disposal + + Flood control + + Mineral exploration (excl. hydrocarbons) + + Transport route + + Urban development + Non-urbanised settlements + Military activities + Information Sheet on Ramsar Wetlands (RIS),
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?
Commercial-scale forest exploitation
1 + + +
Drainage/land-claim: (unspecified)
1 + + +
Introduction/invasion of non-native plant species 1
+
Recreational/tourism disturbance (unspecified)
1 + +

For category 2 factors only. What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Is the site subject to adverse ecological change? NO

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) + + National Nature Reserve (NNR) + + Special Protection Area (SPA) + Land owned by a non-governmental organisation for nature conservation + + Management agreement + Site management statement/plan implemented + Special Area of Conservation (SAC) + b) Describe any other current management practices:
Information Sheet on Ramsar Wetlands (RIS),

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. Environment. SSSI monitoring. Flora and Fauna. Research into the effects of disturbance of ground-nesting birds has been discussed and once methodologies have been agreed resources will be sought. Completed. Flora and Fauna. Vegetation and Invertebrate Surveys of selected sites. 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. Facilities include Minstead Study Centre and the Countryside Education Trust which is available for local schools and institutions. A ranger/recreation Service is provided by the Forestry Commission.
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. Camping, informal walking, horse-riding, cycling, bird-watching, shooting, etc - all year. No evidence that current levels of recreational activities threaten site. Recreational facilities are now under review. 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
Bratton, JH (ed.) (1991) British Red Data Books: 3. Invertebrates other than insects. Joint Nature Conservation Committee, Peterborough

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.

APPENDIX IIL: EMER BOG SAC – CITATION FORM

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 UK0030147

SITENAME Emer Bog

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

1.1 Type 1.2 Site code

B UK0030147

1.3 Site name

Emer Bog

1.4 First Compilation date 1.5 Update date

2001-03 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: 2001-03

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

2.1 Site-centre location [decimal degrees]:

Longitude -1.438333333

Latitude 50.99

2.2 Area [ha]: 2.3 Marine area [%]

36.76 0.0

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

2.6 Biogeographical Region(s)

Atlantic

(100.0 %)

3. ECOLOGICAL INFORMATION

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

7140

5.99 G A C A B

for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enterPF: "X" in the column PF to indicate the priority form. in case that a habitat type no longer exists in the site enter: x (optional)NP: decimal values can be enteredCover: for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is notCaves: available. G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data withData quality: some extrapolation); P = 'Poor' (e.g. rough estimation)

4. SITE DESCRIPTION

4.1 General site character

Habitat class % Cover

N16 40.2

Positive Impacts

Rank

Activities, management [code]

Pollution (optional) [code]

inside/outside [i|o|b]

H A02 I H B02 I

Negative Impacts

Rank

Threats and pressures [code]

Pollution (optional) [code]

inside/outside [i|o|b]

H J02 B H H04 B H G01 I

N08 43.5

N07 16.3

Total Habitat Cover 100

Other Site Characteristics 1 Terrestrial: Soil & Geology: peat,basic,acidic 2 Terrestrial: Geomorphology and landscape: lowland

4.2 Quality and importance Transition mires and quaking bogs for which this is considered to be one of the best areas in the United Kingdom.

4.3 Threats, pressures and activities with impacts on the site

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

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

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

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

Code Cover [%] Code Cover [%] Code Cover [%]

UK04 100.0

6. SITE MANAGEMENT

6.1 Body(ies) responsible for the site management:

Organisation: Natural England

Address:

X

Email:

6.2 Management Plan(s): An actual management plan does exist:

Yes

No, but in preparation

No

6.4 Conservation measures (optional) For available information, including on Conservation Objectives, see Section 4.5.
6.5 EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS
6.6

6.7 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.
6.8
6.9 1.1 Site type CODE DESCRIPTION PAGE NO A Designated Special Protection Area 53
6.10 B
6.11 SAC (includes candidates Special Areas of Conservation, Sites of Community Importance and designated SAC)
6.12 53
6.13 C SAC area the same as SPA. Note in the UK Natura 2000 submission this is only used for Gibraltar 53
6.14
6.15 3.1 Habitat representativity CODE DESCRIPTION PAGE NO A Excellent 57 B Good 57 C Significant 57 D Non-significant presence 57
6.16
6.17 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
6.18 3130
6.19 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea
6.20 57
6.21 3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. 57 3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation 57
6.22 CODE DESCRIPTION PAGE NO 3160 Natural dystrophic lakes and ponds 57 3170 Mediterranean temporary ponds 57 3180 Turloughs 57
6.23 3260
6.24 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation
6.25 57
6.26 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
6.27 6210
6.28 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)
6.29 57
6.30 6230
6.31 Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)
6.32 57
6.33 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
6.34 9120
6.35 Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)
6.36 57
6.37 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
6.38 91E0
6.39 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)
6.40 57
6.41 91J0 Taxus baccata woods of the British Isles 57
6.42
6.43 3.1 Relative surface CODE DESCRIPTION PAGE NO A 15%-100% 58 B 2%-15% 58 C < 2% 58
6.44
6.45 3.1 Conservation status habitat CODE DESCRIPTION PAGE NO A Excellent conservation 59 B Good conservation 59 C Average or reduced conservation 59
6.46
6.47 3.1 Global grade habitat CODE DESCRIPTION PAGE NO A Excellent value 59 B Good value 59 C Significant value 59
6.48
6.49 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

6.50
6.51 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
6.52
6.53 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
6.54
6.55 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
6.56
6.57 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
6.58
6.59
6.60 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
6.61
6.62 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
6.63 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
6.64 F03
6.65 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.)
6.66 65
6.67 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
6.68
6.69 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

PHOTOS

Photo 1: Aerial View of the whole site – Knowle Hill (Google Earth, 2019).