

**ecology solutions ltd**

HANBURY (PM) LTD

PAGHAM SOUTH

## **Ecological Assessment**

ecology solutions for  
planners and developers

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## **1. INTRODUCTION**

### **1.1. Background & Proposals**

- 1.1.1. Ecology Solutions was commissioned by Hanbury (PM) Ltd to undertake ecological assessment work pursuant to the production of documentation in support of a planning application to be submitted in respect of Pagham South, West Sussex.
- 1.1.2. Development Proposals for the Application Site are for the provision of residential development (up to 400 units) along with public open space, retail and community provisions (including a primary school) associated landscape and biodiversity measures and access.
- 1.1.3. In finalising the Development Proposals, consultation has taken place with Arun District Council, Natural England and other key stakeholders. Relevant correspondence is cited or referred to wherever appropriate.

### **1.2. Site Characteristics**

- 1.2.1. The Application Site is 22.97ha in size and is located at the western settlement boundary of Pagham, to the immediate south of Summer Lane. The surrounding landscape is dominated by existing residential development to the north, south and east. To the west, south west and north west lies land under arable cultivation. To the immediate east lies Pagham Road.
- 1.2.2. The Application Site itself comprises arable land bounded by hedgerows and drainage ditches.

### **1.3. Ecological Assessment**

- 1.3.1. This document assesses the ecological interest of the Application Site as a whole. The importance of the habitats present is evaluated with regard to current guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM).
- 1.3.2. The report also describes the existing baseline conditions for the Application Site, setting these in the correct planning policy and legal framework and assessing potential impacts from development. Appropriate mitigation is identified that will offset any negative impacts and where possible provide for an ecological enhancement of the Application Site, in accordance with national, regional and local planning policy. Where appropriate, reference is made to habitats or species of principle importance in the UK<sup>1</sup>.
- 1.3.3. Matters concerning potential significant effects on the nearby Pagham Harbour Special Protection Area (SPA)/Ramsar site and other relevant European level designated sites are considered in detail within the report titled "Information to support a Habitats Regulations Assessment"

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<sup>1</sup> JNCC and Defra (on behalf of the Four Countries' Biodiversity Group) (2012) UK Post-2010 Biodiversity Framework. July 2012

(November 2016), produced by Ecology Solutions. That report should be read in conjunction with this Ecological Assessment.

## 2. SURVEY METHODOLOGY

2.1. The methodology utilised for the survey work can be split into three areas, namely desk study, habitat survey and faunal survey. These are discussed in more detail below.

### 2.2. Desk Study

2.2.1. In order to compile background information on the Application Site and its immediate surroundings the Sussex Biological Records Centre (SxBRC) were contacted. All relevant information is referenced within this report. Appendix 1 contains the full report provided by SxBRC.

2.2.2. Further information on designated sites from a wider search area was also obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC) database, which utilises data provided by Natural England. This information is reproduced at Appendix 2.

2.2.3. Additional supporting information on statutory designated sites of nature conservation importance was obtained from the websites of Natural England and the Joint Nature Conservation Committee. This information is referenced where appropriate.

### 2.3. Habitat Survey Methodology

2.3.1. Detailed Ecological survey work was undertaken by Aluco Ecology during 2016.

2.3.2. Habitat survey work was undertaken by Aluco Ecology over several visits in spring and summer 2016, to ascertain the general ecological value of the land contained within the boundaries of the site and to identify the main habitats and associated plant species. Notes on fauna utilising the site were also made during the course of these surveys.

2.3.3. The Application Site was surveyed based around extended Phase 1 survey methodology<sup>2</sup>, as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail.

2.3.4. Using the above method, the site was classified into areas of similar botanical community types, with a representative species list compiled for each habitat identified. The importance of the habitats present was evaluated with due consideration given to the current guidance published by the Institute of Ecology and Environmental Management (CIEEM)<sup>3</sup>.

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<sup>2</sup> Joint Nature Conservation Committee (1993). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. England Field Unit, Nature Conservancy Council, reprinted JNCC, Peterborough

<sup>3</sup> Institute of Ecology and Environmental Management (2006) *Guidelines for Ecological Impact Assessment in the United Kingdom* (version 7 July 2006). <http://www.ieem.org.uk/ecia/index.html>

## 2.4. Faunal Survey

- 2.4.1. General faunal activity (such as birds or mammals) observed during the course of the habitat survey was recorded, whether visually or by call. Attention was also paid to the potential presence of any protected, rare, notable or priority species. Specific surveys / assessments were undertaken in respect of bats, Badgers *Meles meles*, birds (wintering and breeding), Water Vole *Arvicola aquatica*, Otter *Lutra lutra*, Great Crested Newts *Triturus cristatus*, and reptiles.

## 2.5. Bat Survey

- 2.5.1. No buildings are present within the Application Site. All trees within the Application Site were appraised for their likely potential to support bat roosts in May 2016. For a tree to be classed as having some potential for roosting bats it must have one or more of the following characteristics:
- obvious holes, e.g. rot holes and old woodpecker holes;
  - dark staining on the tree below a hole;
  - tiny scratch marks around a hole from bats' claws;
  - cavities, splits and / or loose bark from broken or fallen branches, lightning strikes etc; and
  - very dense covering of mature ivy over trunk.
- 2.5.2. The habitats and features within the Application Site were appraised for their potential importance for use by foraging or navigating bats.
- 2.5.3. Bat activity transect surveys were undertaken monthly from May to September 2016. For each survey, transects were walked by surveyors using hand held recording equipment (Anabat detectors).
- 2.5.4. In addition automated bat recording equipment was left in strategic locations over consecutive nights in each month from May to September 2016. The locations where equipment was deployed are shown on Plan ECO2.

## 2.6. Badger Survey

- 2.6.1. The Application Site was subject to monitoring surveys for Badgers between May 2016 and in September 2016.
- 2.6.2. The survey comprises two main elements, namely searching thoroughly for the presence of Badger setts and recording any evidence of observed Badger activity.
- 2.6.3. For any setts that are encountered each sett entrance is noted and plotted even if the entrance appears disused. The following information is recorded:
- The number and location of well used or very active entrances; these are clear from any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently.

- The number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance.
- The number of disused entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be and the remains of a spoil heap.

2.6.4. Any signs of Badger activity, such as well-worn paths and push-throughs, snagged hair, footprints, latrines and foraging signs are recorded so as to build up a picture of the use of the site by Badgers. An assessment was also made of the likely use of immediately adjacent (off-site) habitats, with inspections undertaken where possible.

## 2.7. Bird Survey

2.7.1. Surveys were undertaken at the Application Site for both wintering and breeding birds. The methodology for each aspect of the bird survey work is detailed below.

### Wintering Birds

2.7.2. Wintering Bird surveys were undertaken from November 2014 to March 2015. The main purpose of these surveys is to assess the importance of habitats within the Application Site for wintering waders and wildfowl, with a specific focus on Dark-bellied Brent Goose *Branta bernicla*. The surveys were focussed on potential foraging and loafing habitats within the Application Site.

### Breeding Birds

2.7.3. Surveys visits were carried out at suitable times (i.e. mornings) over consecutive days in both May and June 2016. In general surveys were undertaken over a one to two hour period, with continual observations being taken for the duration of the survey.

2.7.4. Transects were walked, by an experienced ornithologist in the Application Site. The location, number and activity of all bird species present within and around the area during the survey period were recorded.

2.7.5. Observations were recorded within the Application Site as well as, where present, adjacent suitable habitats in the wider area.

2.7.6. The survey methodology employed was undertaken with reference to the Common Bird Census (CBC)<sup>4</sup> and BTO/RSBP guidelines<sup>5</sup>. This involves surveys undertaken at predefined locations with counts made of all bird species as well as their location and any notable behaviour. Breeding

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<sup>4</sup> *Bird Census Techniques*: Second Edition, Bibbey et al., 2000.

<sup>5</sup> *Bird Monitoring methods: A manual of techniques for key UK species*, Gilbert et al., 1998.

related behaviours / activities (including those probably breeding although definite proof was lacking) include:

- Bird apparently holding territory;
- Courtship and display;
- Nest-building (including excavating nest-hole);
- Distraction display or feigning injury;
- Adult carrying faecal sac or food;
- Adult entering or leaving apparently occupied nest site;
- Nest with eggs or eggshells found, or bird sitting but not disturbed;
- Nest with young; or downy young of ducks, game-birds, waders and other nidifugous species; and
- Recently fledged young.

## **2.8. Water Vole and Otter**

- 2.8.1. Specific Otter and Water Vole surveys were undertaken over two visits in 2016, with surveys undertaken in May and July. The banks of ditches were thoroughly searched for evidence of these species. Searches concentrated on looking for Water Vole burrows, droppings and feeding signs together with Otter holts (places of shelter), slides (a place used for regular access to the watercourse) and scats.

## **2.9. Reptile survey**

- 2.9.1. During the course of the initial survey work undertaken, the Application Site was appraised for its potential to support reptile species. Suitable habitat was identified in the form of rough grassland and boundary vegetation. On this basis, detailed reptiles surveys were undertaken. A standard methodology was adopted, with artificial refugia (50cm x 50cm squares of roofing felt) deployed throughout suitable habitat. The refugia were checked over seven survey visits, following a bedding in period. All surveys were undertaken during appropriate weather conditions in the period May and June 2016.

## **2.10. Great Crested Newts**

- 2.10.1. Specific survey and assessment work was undertaken by Aluco Ecology during 2014 and 2016 following standard guidance. The scope of the survey covered the Application Site and suitable habitats in the wider area. The majority of waterbodies within the Development Site were subject to at least an assessment for Great Crested Newt breeding suitability, with many also subject to detailed surveys.
- 2.10.2. A minimum of four survey visits were undertaken for each waterbody which maintained potential to support Great Crested Newts. In all instances, at least half of the required number of visits fell within the mid April to mid May period in line with current guidance. Surveys involved a combination of torching, bottle trapping, egg searching, netting (where applicable) and refuge searching.

### 3. ECOLOGICAL FEATURES

- 3.1. The Application Site was subject to an extended Phase 1 survey in May 2016. The vegetation present enabled the habitats to be satisfactorily identified and an accurate assessment of the ecological interest of the habitats to be undertaken.
- 3.2. The following main habitat / vegetation types were identified:
- Arable land;
  - Field margin;
  - Tree line;
  - Hedgerow;
  - Ditch; and
  - Hardstanding.
- 3.3. Each habitat identified during the ecological survey work is described below with an account of the representative plant species present.
- 3.4. The location and approximate extent of these habitats is shown on Plan ECO2.

#### **Arable land**

- 3.5. The vast majority of the Application Site consists of 4 arable fields, all of which are under intensive agricultural management. These fields are identified as fields F1, F2, F3 and F4.
- 3.6. Due to the management regime employed at the Application Site the floral diversity of the arable land is restricted to a number of common arable weeds. These species include; Scented Mayweed *Matricaria recutita*, Wild Raddish *Raphanus raphanistrum*, Scentless Mayweed *Tripleurospermum inodorum*, Common Fumitory *Fumaria officinalis*, Shepherd's Purse *Capsella bursa-pastoris*, Common Knotweed *Polygonum arenastrum*, Field Bindweed *Convolvulus arvensis*, Scarlet Pimpernel *Anagallis arvensis*, Cut-leaved Cranesbill *Geranium dissectum*, Creeping Buttercup *Ranunculus repens*, Common Poppy *Papaver rhoeas*, Sun Spurge *Euphorbia helioscopia*, Fat Hen *Chenopodium album*, Field Forget-me-not *Myosotis arvensis*, Red Deadnettle *Lamium purpureum*, Common Field Speedwell *Veronica persica*, Groundsel *Senecio vulgaris*, Greater Plantain *Plantago major*, Cleavers *Galium aparine*, Wild Oat *Avena fatua*, Black Twitch *Alopecurus myosuroides*, Annual Meadow Grass *Poa annua*, and Barren Brome *Bromus sterilis*.

#### **Field Margin**

- 3.7. The arable fields are bounded by field margins of rough grasses and ruderal vegetation dominated by a small number of species.
- 3.8. Grass species recorded include; False Oat Grass *Arrhenatherum elatius*; Cocks Foot *Dactylis glomerata*, Common Couch *Elytrigia repens*, Creeping Bent *Agrostis stolonifera*, Wall Barley *Hordeum murinum*, Perennial Rye-grass *Lolium perenne*, Soft Brome *Bromus hordeaceus*, Barren Brome *Bromus sterilis*, Yorkshire Fog *Holcus lanatus*, Rough Meadow Grass *Poa trivialis*. Crested Dog's-tail *Cynosurus cristatus* and Sweet Vernal Grass *Anthoxanthum odoratum*.

- 3.9. Tall ruderal species recorded include; Nettles *Urtica dioica*, Cow Parsley *Anthriscus sylvestris*, Creeping Thistle *Cirsium arvense*, Docks *Rumex obtusifolia* and *R. conglomeratus*, Cleavers *Galium aparine*, Bluebells *Hyacinthoides* sp., Daffodils *Narcissus* sp., Hedge Bedstraw *Galium album*, Greater Stitchwort *Stellaria holostea*. Bittersweet *Solanum dulcamara*, Creeping Buttercup *Ranunculus repens*, Hogweed *Heracleum sphondylium*, Red Campion *Silene dioica*, White Campion *Silene latifolia*, Ox-eye Daisy *Leucanthemum vulgare*, Lady's Bedstraw *Galium verum*, Common Vetch *Vicia sativa*, Hairy Tare *Vicia hirsuta*, Selfheal *Prunella vulgaris*, Ribwort Plantain *Plantago lanceolata*, Common Knapweed *Centurea nigra*, Common Mallow *Malva sylvestris*, Field Bindweed *Convolvulus arvensis*, Bracken *Pteridium aquilinum*, Bush Vetch *Vicia sepium*, Common Fleabane *Pulicaria dysenterica*, Soft Rush *Juncus effusus*, Wild Lettuce *Lactuca virosa* and White Bryony *Bryonia alba*.

### Tree Line

- 3.10. Trees lines are present at various locations along the Application Site boundary.
- 3.11. Tree line T1 is located along the eastern boundary of the Application Site and consists of Pedunculate Oak *Quercus robur*, Willow *Salix* sp., Ash *Fraxinus excelsior*, Hawthorn *Crataegus monogyna*, Field Maple *Acer campestre*, Whitebeam *Sorbus* sp. and Elm *Ulmus* sp. Bramble *Rubus fruticosus* scrub is present within the understorey and Ivy *Hedera helix* dominates the ground flora.
- 3.12. Tree line T2 is a short length of trees on the western boundary of the Application Site. The tree line consists of planted mature Poplars *Populus* sp.

### Hedgerow

- 3.13. Hedgerow H1 is located to the south of the Application Site on the southern boundary of field F3. The hedgerow is tall, well managed and dominated by Hawthorn with Blackthorn *Prunus spinosa*, Elm, Willow, Ash and Sycamore *Acer pseudoplatanus* and Bramble also present.
- 3.14. Hedgerow H2 is located to the south of the Application Site on the eastern boundary of field F4. The hedgerow is large, being approximately 4m wide and 6m high. Management is restricted along the edge facing field F4. The dominant species is present is Hawthorn with other species including; Oak, Elder *Sambucus nigra*, Honeysuckle *Lonicera periclymenum*, Bramble, and Bay *Laurus* sp. recorded.

### Ditch

- 3.15. A network of ditches is present within many of the field boundaries across the Application Site. In the main they are deep channelled with steep banks. During initial survey visits in May 2016 the majority of ditches were recorded to hold water although subsequent visits noted water levels dropping with some ditches drying completely.
- 3.16. Aquatic and marginal vegetation was, in the main limited in diversity although throughout the ditch network the following species were noted, Hemlock Water-

dropwort *Oenanthe crocata*, Great Willowherb *Epilobium hirsutum*, Watercress *Nasturtium officinale*, Common Water-starwort *Callitriche stagnalis*, Common Duckweed *Lemna minor*, Fools Watercress *Apium nodiflorum*, Compact Rush *Juncus conglomeratus*, Common Water Plantain *Alisma plantago-aquatica*, Remote Sedge *Carex remota* and Reedmace *Typha latifolia*.

- 3.17. The vegetation on the banksides is limited, in the main, to rough grasses as described within the field margins. In addition to stands of tall ruderal vegetation was also present along the ditches which again were consistent with species noted within field margins. Scrub species noted in association with the ditches include Weeping Willows *Salix x sepulcralis*, Grey Willow *Salix cinerea* and Field Maple.

### **Hardstanding**

- 3.18. A small area of hardstanding in the form of an access track is located between fields F2 and F3. Additional hardstanding is present in the form of the road network at the peripheries of the Application Site. These areas, in the main, support no plant species except for the small areas of roadside verge consisting of managed lawns.

#### 4. WILDLIFE USE OF THE SITE

- 4.1.1. During the surveys general observations were made of any faunal use of the site with specific attention paid to ascertain the potential presence of protected or notable species. Specific surveys / assessments were also undertaken with regard to Bats, Badgers, birds (wintering and breeding), Water Vole, Otter, Great Crested Newts and Reptiles.

##### 4.2. Bats

- 4.2.1. No buildings are present within the Application Site. Trees within the Application Site were assessed for their potential to support roosting bats.
- 4.2.2. During the specific surveys undertaken none of the trees within the Application Site were deemed to offer high potential to support roosting bats. However, some trees were noted to have some limited potential as bat roosting sites and a number of targeted emergence surveys were undertaken. The emergence surveys were focussed on potential roost features within the tree lines on the Application Site boundary. The emergence surveys were undertaken on 11<sup>th</sup> May 2016, 19<sup>th</sup> June 2016, 8<sup>th</sup> July 2016, 5<sup>th</sup> August 2016 and 2<sup>nd</sup> September 2016. No bats were recorded emerging from any of the targeted potential roost features.
- 4.2.3. It is considered that the Application Site does not support roosting bats.
- 4.2.4. Bat activity surveys (transect and automated surveys) were undertaken during May 2016 and September 2016. The results are presented below.

##### May (evening transect and automated survey)

###### *Transect Survey*

- 4.2.5. Species detected: Common Pipistrelle *Pipistrellus pipistrellus* and Soprano Pipistrelle *Pipistrellus pygmaeus*.
- 4.2.6. During the transect survey activity recorded was very low and, in the main, restricted to the treelines and hedgerows along the east and west of the Application Site.

###### *Automated Survey*

- 4.2.7. Species detected: Common Pipistrelle *Pipistrellus pipistrellus* and Soprano Pipistrelle *Pipistrellus pygmaeus*.
- 4.2.8. The automated detector was deployed over three consecutive nights between 11<sup>th</sup> and 13<sup>th</sup> May 2016 along the western and central field boundaries.
- 11<sup>th</sup> May 2016
- 4.2.9. A total of 65 passes were recorded with a roughly even split between Common and Soprano Pipistrelles. The first registration was at 21:15 with the last at 04:49.

12<sup>th</sup> May 2016

- 4.2.10. The level of activity was markedly reduced compared to the previous night with only 12 passes recorded, but again this was roughly split between Common and Soprano Pipistrelle. The first registration was at 21:17 and 04:28.

13<sup>th</sup> May 2016

- 4.2.11. No activity was recorded over this night.

June (evening transect and automated survey)

*Transect Survey*

- 4.2.12. Species detected: Common Pipistrelle and Soprano Pipistrelle.
- 4.2.13. As with the transect survey of the previous month activity, in the main, was restricted to the treelines and hedgerows along the east and west of the Application Site. The level of activity recorded was low, although comparative to the previous month the number of registrations was markedly higher.

*Automated Survey*

- 4.2.14. Species detected: Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared *Plecotus auritus* and Noctule *Nyctalus noctula*.
- 4.2.15. The automated detector was deployed over eight consecutive nights between 15<sup>th</sup> and 22<sup>nd</sup> June 2016 along the south eastern boundary of the Application Site.

15<sup>th</sup> June 2016

- 4.2.16. A total of 56 passes were recorded with the majority being Common Pipistrelles, the only other species recorded was Soprano Pipistrelle. The first registration was at 21:49 with the last at 04:02.

16<sup>th</sup> June 2016

- 4.2.17. Activity was limited to 10 registrations of Common Pipistrelle only. The first registration was at 21:47 and 02:11.

17<sup>th</sup> June 2016

- 4.2.18. A single registration of Common Pipistrelle was recorded at 21:43.

18<sup>th</sup> June 2016

- 4.2.19. A total of 84 passes were recorded on this night, again with the majority being Common Pipistrelle other species recorded include, Soprano Pipistrelle (recorded 9 times), Brown Long-eared Bat (recorded 2 times) and Noctule (recorded 2 times). The first registration was at 22:02 and the last was at 04:10.

19<sup>th</sup> June 2016

- 4.2.20. The level of activity was markedly reduced then on the previous night. Only 16 passes were recorded with all but one being Common Pipistrelle (with the other being Soprano Pipistrelle). The first registration was at 21:46 and the last was at 22:39.

20<sup>th</sup> June 2016

- 4.2.21. The level of activity was again further reduced in comparison to the previous night with only 8 passes recorded of Common Pipistrelle. The first pass was recorded at 02:26 and the last pass was at 04:06.

21<sup>st</sup> June 2016

- 4.2.22. Over this night activity recorded increased in comparison to the 2 previous nights. 66 passes were recorded, again, with the majority being Common Pipistrelle. The only other species recorded was Soprano Pipistrelle. The first registration was at 21:51 and the last registration was at 04:00.

22<sup>nd</sup> June 2016

- 4.2.23. The species recorded on this night were Common Pipistrelle and Soprano Pipistrelle with the majority being Common Pipistrelle. The first registration was at 21:27 and the last being 04:28.

July (evening transect and automated survey)

*Transect Survey*

- 4.2.24. Species detected: Common Pipistrelle, Soprano Pipistrelle and Noctule.
- 4.2.25. The transect survey recorded the majority of the activity in the north western boundaries of the Application Site with higher levels of activity recorded than in previous months, in context of the Application Site.

*Automated Survey*

- 4.2.26. Species detected: Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle *Pipistrellus nathusii*, *Myotis* sp., Brown Long-eared, Noctule and Serotine *Eptesicus serotinus*.
- 4.2.27. The automated detector was deployed on two occasions in July. The dates covered were consecutive nights between 8<sup>th</sup> and 9<sup>th</sup> July 2016 (deployed on the north western boundary) and from 28<sup>th</sup> to 31<sup>st</sup> July 2016 along the south western boundary of the Application Site.

8<sup>th</sup> July 2016

- 4.2.28. A total of 147 passes were recorded with the majority being Common Pipistrelles (142 passes), other records were of Soprano Pipistrelle (3 passes) and single passes of Brown Long-eared Bat and Noctule. The first registration was at 22:19 with the last at 03:50.

9<sup>th</sup> July 2016

- 4.2.29. Activity dropped significantly compared to the previous night with only 51 passes recorded and again the majority were of Common Pipistrelle (48 passes) with the remaining (3) passes attributed to Soprano Pipistrelle.

28<sup>th</sup> July 2016

- 4.2.30. The level of activity was similar to that of 9<sup>th</sup> July 2016 with Common Pipistrelle recorded in the majority with the only other species recorded being Soprano Pipistrelle. The first registration was at 21:39 and the last was at 04:44.

29<sup>th</sup> July 2016

- 4.2.31. The highest level of activity of all automated surveys was recorded on this night with 495 passes recorded, of which 463 passes were attributed to Common Pipistrelle. The remaining passes were attributed to Soprano Pipistrelle (30 passes) and a single pass each of both a *Myotis* sp. and Nathusius' Pipistrelle. The first pass was recorded at 21:38 and the last pass was at 04:38.

30<sup>th</sup> July 2016

- 4.2.32. Although still relatively high the level of activity drop compared to the previous night. In total 194 passes were recorded, again, with the majority being Common Pipistrelle (186 passes). The remaining passes were attributed to Soprano Pipistrelle (6 passes) and a *Myotis* sp. (2 passes). The first registration was at 21:30 and the last registration was at 04:41.

31<sup>st</sup> July 2016

- 4.2.33. The level of activity dropped again with a total of 154 passes recorded. Again Common Pipistrelle made up the majority of the passes, with Soprano Pipistrelle, *Myotis* sp. and Serotine also recorded. The first registration was at 21:40 and the last being 04:30.

#### August (evening transect and automated survey)

##### *Transect Survey*

- 4.2.34. Species detected: Common Pipistrelle and Soprano Pipistrelle.
- 4.2.35. The transect survey recorded the majority of the activity on the eastern boundary of the Application Site with bat noted to be using the tree line as foraging areas.

##### *Automated Survey*

- 4.2.36. Species detected: Common Pipistrelle and Soprano Pipistrelle.
- 4.2.37. The automated detector was deployed from 1<sup>st</sup> to 4<sup>th</sup> August 2016 on the south western (1<sup>st</sup> only) and eastern boundary of the Application Site.

1<sup>st</sup> August 2016

- 4.2.38. In total 2 passes were recorded both being of Common Pipistrelle at 01:01 and 01:34.

2<sup>nd</sup> August 2016

- 4.2.39. No passes were recorded over the course of this night.

3<sup>rd</sup> August 2016

- 4.2.40. No passes were recorded over the course of this night.

4<sup>th</sup> August 2016

- 4.2.41. A total of 190 passes were recorded with 156 attributed to Common Pipistrelle and all others attributed to Soprano Pipistrelle. The first pass was recorded at 21:23 and the last pass was at 04:51.

September (evening transect and automated survey)

*Transect Survey*

- 4.2.42. Species detected: Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared Bat.
- 4.2.43. The transect survey recorded the majority of the activity in the north western boundaries of the Application Site. The September transect survey recorded the highest level of foraging activity compared to other surveys. The majority of this activity was attributed to Common and Soprano Pipistrelle, with a single Brown Long-eared Bat was recorded on the eastern boundary.

*Automated Survey*

- 4.2.44. Species detected: Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle and Serotine.
- 4.2.45. The automated detector was deployed on from 2<sup>nd</sup> September 2016 to 5<sup>th</sup> September 2016 to the south of the Application Site.

2<sup>nd</sup> September 2016

- 4.2.46. A total of 70 passes were recorded with the majority being Common Pipistrelles (65 passes), other records were of Soprano Pipistrelle (4 passes) and a single pass a Serotine. The first registration was at 21:11 with the last at 22:49.

3<sup>rd</sup> September 2016

- 4.2.47. The level of activity recorded on this night was the highest in September with a total of 338 passes recorded. 315 passes were attributed to Common Pipistrelle, 20 were attributed to Soprano Pipistrelle, 2 were attributed to Nathusius' Pipistrelle and a single pass of Serotine. The first pass was recorded at 19:58 and the last at 04:53.

#### 4<sup>th</sup> September 2016

- 4.2.48. The level of activity dropped compared to previous nights with 24 passes recorded in total. 17 were attributed to Common Pipistrelle with the remainder attributed to Soprano Pipistrelle. The first registration was at 20:29 and the last was at 05:13.

#### 5<sup>th</sup> September 2016

- 4.2.49. The number of passes recorded rose slightly compared to the previous night with a total of 41 registrations recorded. 33 of these were for Common Pipistrelle, 4 for Soprano Pipistrelle and 4 for Serotine. The first pass was recorded at 20:06 and the last pass was at 05:45.

#### Desk exercise

- 4.2.50. The desk exercise returned several bats records within the requested search area. No records exist for the Application Site itself. Within 2km of the Application Site records for six species of Bat including; Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared Bat, Grey Long-eared Bat *Plecotus. austriacus*, Daubenton's Bat *Myotis daubentoni*, Noctule and Serotine were returned.

### 4.3. **Badgers**

- 4.3.1. During the course of specific survey work undertaken at the Application Site no Badger activity has been recorded on site.
- 4.3.2. It is considered that Badgers do not utilise the Application Site.

#### Desk exercise

- 4.3.3. The data returned from SxBRC did not return any records of Badger within the Application Site or the wider search area.

### 4.4. **Water Vole and Otter**

- 4.4.1. Suitable Water Vole habitat is present within the Application Site in the form of wet ditches. The ditches are considered to be less suited to regular use by Otter, with all ditches being shallow and providing limited foraging / sheltering opportunities. However, the network may provide commuting routes for Otter across through the Application Site. As such, detailed survey work was undertaken for Water Vole and Otter with the Application Site.
- 4.4.2. Specific surveys for Water Vole and Otter were undertaken within the Application Site on 17 May 2016 and 28 July 2016. All suitable habitats were systematically inspected for field signs of both species. During both survey dates no signs of Water Vole or Otter were recorded within the Application Site.
- 4.4.3. Surveys for Water Vole and Otter were undertaken in 2015 of land immediately north of the Application Site. The habitats present within this land are similar to those present within the Application Site, although some

of the waterbodies are considered to be of higher suitability to Water Vole and Otter. The system of ditches present was systematically searched and although no signs of Otter were noted, field signs for Water Vole were recorded.

#### Desk exercise

- 4.4.4. The data search returned no records of Otter within the Application Site or the wider search area.
- 4.4.5. Records of Water Vole were returned from a number of locations north, south and west of the Application Site, although none from the Application Site itself.

### **4.5. Birds**

- 4.5.1. A series of bird survey were undertaken at the Application Site for wintering birds over the winter period 2014/2015 and breeding bird over the breeding season 2016. The results of these surveys are presented below.

#### Wintering Birds

- 4.5.1. Winter waterfowl surveys, undertaken by Aluco Ecology Ltd during the period November 2014 – March 2015 recorded no use of the Application Site by Dark-bellied Brent Goose, or indeed any waterfowl.

#### Breeding Birds

- 4.5.2. The Application Site consists of a number of habitats that are of potential value to breeding or foraging birds. These include the arable fields, wet ditches, tree lines and hedgerows.
- 4.5.3. A breeding bird survey was undertaken of the Application Site in 2016 over seven visits on the mornings of 11<sup>th</sup>, 17<sup>th</sup>, 21<sup>st</sup> and 29<sup>th</sup> May 2016 and 9<sup>th</sup>, 15<sup>th</sup>, and 28<sup>th</sup> of June 2016.
- 4.5.4. A total of 57 bird species were recorded during the course of survey work undertaken at the Application Site. However, not all these species were considered to be breeding within the Application Site. The majority of the birds recorded are common and widespread, although a number are notable for being UK BAP, Birds of Conservation Concern listed (BoCC) and/or listed on Schedule 1 of Wildlife and Countryside Act 1981 (Sch 1). Notable species considered to be breeding (or likely breeding) within the Application Site are; Mallard *Anas platyrhynchos*, Green Woodpecker *Picus viridus*, Skylark *Alauda arvensis* (UK BAP species and BoCC), House Martin *Delichon urbicum* (UK BAP species), Common Whitethroat *Sylvia communis* and Song Thrush *Turdus philomelos* (UK BAP species and BoCC red species), Dunnock *Prunella modularis* (UK BAP species).
- 4.5.5. Further notable species were recorded breeding in the wider area including; Grey Partridge *Perdix perdix* (UK BAP and BoCC), Stock Dove *Columba oenas*, Barn Owl *Tyto abla* (Sch 1), Tawny Owl *Strix aluco*, Little Owl *Athene noctua*, Common Swift *Apus apus*, Kestrel *Falco tinnunculus*, Starling *Sturnus viridis* (UK BAP species and BoCC), House Sparrow

*Passer domesticus* (UK BAP species and BoCC), Linnet *Linaria cannabina* (UK BAP species).

#### Desk exercise

- 4.5.6. Information returned as part of the desk study exercise shows several records for bird species within the requested search area. Many of these are in fact for species not subject to special protection in the UK, being common and widespread and are, in the main, associated with Pagham Harbour. None of these records are from the Application Site itself.

#### 4.6. Reptiles

- 4.6.1. The Application Site contains suitable habitat to support common reptile species, in the form rough grassland and scrub that is present at the field margins and Application Site boundaries.
- 4.6.2. Specific reptile surveys of suitable habitat within the Application Site were conducted from May 2016 to June 2016. Small populations of Common Lizard *Zootoca vivipara*, Grass Snake *Natrix natrix* and Slow-worm *Anguis fragilis* were recorded within suitable habitat on site the results of which are shown in Table 1.

| Survey # | Date     | Weather           | Common Lizard |          | Slow Worm |          | Grass Snake |          |
|----------|----------|-------------------|---------------|----------|-----------|----------|-------------|----------|
|          |          |                   | Adult         | Juvenile | Adult     | Juvenile | Adult       | Juvenile |
| 1        | 17.05.16 | Sunny 12-16°C     | 0             | 0        | 0         | 0        | 0           | 0        |
| 2        | 21.05.16 | Cloudy 14°C       | 1             | 0        | 0         | 1        | 0           | 0        |
| 3        | 25.05.16 | Cloudy 15°C       | 2             | 0        | 0         | 0        | 0           | 0        |
| 4        | 29.05.16 | Sunny 13°C        | 2             | 0        | 0         | 0        | 0           | 0        |
| 5        | 05.06.16 | Sunny 15°C        | 0             | 0        | 0         | 0        | 0           | 0        |
| 6        | 15.06.16 | Cloudy 15°C       | 0             | 0        | 0         | 0        | 1           | 0        |
| 7        | 28.06.16 | Partly Sunny 15°C | 2             | 0        | 1         | 0        | 0           | 0        |

**Table 1: Reptile survey results**

#### Desk exercise

- 4.6.3. Information returned through the data search shows that there are several existing records of four species of reptiles from within the local area, though none from the Application Site itself. Records were returned of Slow Worm, Grass Snake, Adder *Viper beris* and Common Lizard *Zootoca* within 2km of the Application Site. All these species are common and widespread across the UK.

#### 4.7. Great Crested Newts

- 4.7.1. A suite of survey work has been undertaken within the Application Site and wider area in 2014 and 2016. The findings of this survey and assessment work are detailed below.
- 4.7.2. The majority of the Application site consists of arable land which is negligible ecological value to Great Crested Newts, providing little sheltering, foraging or commuting opportunities. The potential terrestrial habitat is restricted to the field margins and hedgerows bounding the

Application Site. Within the Application Site a number of waterbodies (i.e. boundary ditches) are present which were assessed for their suitability as breeding ponds for Great Crested Newts. A number of these ditches were recorded to hold water (at a maximum depth of approximately 30cm) during early spring 2016, although were noted to dry significantly on subsequent survey visits. Noting the ephemeral nature of the onsite ditches it is considered that they are of low suitability for breeding Great Crested Newts.

- 4.7.3. Further assessment work was undertaken of the area within 500m of the Application Site. Four ponds were identified as well as additional ditches within this area, which are described below.
- 4.7.4. Pond P1 is approximately 250m east of the Application Site. It is situated in a housing estate and is approximately 50m x 15m in size and up to 1m deep. It is dominated by Willow on its northern boundary with a mix of native and non-native aquatic marginal vegetation including; Hemlock Water Dropwort, Common Reed *Phragmites australis* and Yellow Flag *Iris pseudochorus*.
- 4.7.5. The 2014 survey work recorded the presence of fish as well as Smooth Newt *Triturus vulgaris* and Palmate Newt *Lissotriton helveticus* from this pond.
- 4.7.6. Pond P2 is approximately 300m from the Application Site to the south east. It is approximately 50m x 25m in size, up to 0.5m deep and kidney shaped. Similarly to pond P1, it is located within a housing estate and is an amenity lake. It contains some native and non-native aquatic vegetation around parts of the margin, and other parts are open. The depth of water suggests it may dry out in some years.
- 4.7.7. No fish were noted. Smooth Newt, Palmate Newt and Common Frog *Rana temporaria* were recorded from this pond.
- 4.7.8. Pond P3 is a garden pond situated in the Rookery Farmhouse to the north east of the Application Site in excess of 500m away. The pond is approximately 10m x 10m and up to 1m deep with a spur at one end. The water column is clear and contains a number of native and some non-native species, including Curled Pondweed *Potamogeton crispus*, Greater Spearwort *Ranunculus lingua*, Bogbean *Menyanthes trifoliata*, Yellow Flag Iris, Celery-leaved Buttercup *Ranunculus sceleratus* and Willows partially shade the pond edges.
- 4.7.9. Smooth Newt, Palmate Newt and Common Frog were recorded from this pond.
- 4.7.10. Within the land to the immediate north there are three waterbodies that held water during early spring 2014. The water in the ditches was shallow with the deepest section throughout the ditch network being no more than 50cm (created behind a sluice gate). The habitats provide limited opportunities for Great Crested Newt as potential breeding ponds. During the survey Palmate Newt was recorded with no other amphibians were recorded on site.

- 4.7.11. The ditches within the Application Site contained small pools of ephemeral water of low value as breeding ponds for Great Crested Newt. These waterbodies contained small populations of Palmate Newt with no other amphibians were recorded on site.
- 4.7.12. These waterbodies were subject to specific survey work for Great Crested Newts in 2014. Great Crested Newt was not recorded in any of the waterbodies and they are considered absent from the Application Site and surrounding habitat. No further consideration is given to this species within this assessment.

#### Desk exercise

- 4.7.13. Records returned from SxBRC include only a single record of Great Crested Newt from North Mundham over 2km from the Application Site.

### **4.8. Invertebrates**

- 4.8.1. The habitats present are expected to support a range of common invertebrate species.
- 4.8.2. During the survey work undertaken a number of common invertebrates were recorded including a several butterflies such as Large White *Pieris brassicae*, Small White *P. rapae*, Green Veined White *P. napi*, Large Skipper *Ochlodes sylvanus*, Meadow Brown *Maniola jurtina*, Gatekeeper *Pyrionia tithonus*, Small Tortoiseshell *Aglais urticae*, Peacock *Inachis io*, Painted Lady *Vanessa cardui* and Red Admiral *Vanessa atalanta*. The now widespread Long-winged Conehead *Gomphocerippus rufus* and Roesel's Bush Cricket *Metrioptera roeseli* were present in rough grassland, and Speckled Bush Cricket *Leptophyes punctatissima* and Dark Bush Cricket *Pholidoptera griseoaptera* were noted in scrub edge. Wasp Beetle *Clytus arietis* was also recorded.

#### Desk exercise

- 4.8.3. The data search exercise returned records for the following species within the search area; Scarce Four-dot Pin-palp *Bembidion (Bembidion) quadripustulatum*, Philorhizus *Philorhizus vectensis*, Stag Beetle *Lucanus cervus*, Ghost Moth *Hepialus humuli*, Oak Hook-tip *Watsonalla binaria*, Brindled Beauty *Lycia hirtaria*, Dusky Thorn *Ennomos fuscantaria*, September Thorn *Ennomos erosaria*, Latticed Heath *Chiasmia clathrata subsp. clathrata*, Small Emerald *Hemistola chrysoprasaria*, Spinach *Eulithis mellinata*, Dark Spinach *Pelurga comitata*, Shaded Broad-bar *Scotopteryx chenopodiata*, Galium Carpet *Epirrhoe galiata*, Mullein Wave *Scopula marginepunctata*, Lackey *Malacosoma neustria*, Knot Grass *Acronicta rumicis*, Mouse Moth *Amphipyra tragopoginis*, Striped Lychnis *Cucullia lychnitis*, Figure of Eight *Diloba caeruleocephala*, Dot Moth *Melanchra persicariae*, Shoulder-striped Wainscot *Leucania comma*, Feathered Gothic *Tholera decimalis*, Garden Dart *Euxoa nigricans*, Lunar Yellow Underwing *Noctua orbona*, Small Square-spot *Diarsia rubi*, Green-brindled Crescent *Allophyas oxyacanthae*, Rosy Minor *Litoligia literosa*, Dusky Brocade *Apamea remissa*, Ear Moth *Amphipoea oculatea*, Rosy Rustic *Hydraecia micacea*, Rustic *Hoplodrina blanda*, Mottled Rustic *Caradrina morpheus*, Sallow *Cirrhia icteritia*, Dusky-lemon Sallow *Cirrhia gilvago*, Beaded Chestnut *Agrochola lychnidis*, Centre-barred Sallow *Atethmia*

*centrago*, Garden Tiger *Arctia caja*, White Ermine *Spilosoma lubricipeda*, Buff Ermine *Spilosoma lutea*, Cinnabar *Tyria jacobaeae*, White-letter Hairstreak *Satyrus w-album*, White Admiral *Limenitis camilla*, Small Heath *Coenonympha pamphilus*, Wall *Lasiommata megera*, Long-horned Bee *Eucera (Eucera) longicornis*, Moss Carder-bee *Bombus (Thoracobombus) muscorum* and Red-shanked Carder-bee *Bombus (Thoracobombus) ruderarius*.

- 4.8.4. Given the habitats present, their extent and quality, it is not expected that any important populations of protected or notable species would be reliant on the Application Site.

## 5. ECOLOGICAL EVALUATION

### 5.1. The Principles of Site Evaluation

- 5.1.1. The methods and standards for site evaluation within the British Isles have remained those defined in *A Nature Conservation Review* by Ratcliffe (1977)<sup>6</sup>. These are broadly used across the United Kingdom to rank sites, so priorities for Nature Conservation can be attained. For example, current SSSI designation maintains a system of data analysis that is roughly tested against Ratcliffe's criteria.
- 5.1.2. In general terms, these criteria are size, diversity, naturalness, rarity and fragility, while additional secondary criteria of typicalness, potential value, intrinsic appeal, recorded history and the position within the ecological / geographical units are also incorporated into the ranking procedure.
- 5.1.3. In addition, any assessment should not judge sites in isolation from others, since several habitats may combine to make it worthy of importance to nature conservation.
- 5.1.4. Further, relying on the national criteria would undoubtedly distort the local variation in assessment and therefore additional factors need to be taken into account, e.g. a woodland type with a comparatively poor species diversity, common in the south of England may be of importance at its northern limits, say in the border country.
- 5.1.5. The legislative and planning policy context are also important considerations and have been given due regard throughout this assessment.

### 5.2. Designated sites

#### **Statutory sites**

- 5.2.1. The Application Site does not form part of a statutory designated site of nature conservation interest. The nearest statutory designated site is Pagham Harbour SPA/Ramsar/SSSI/LNR site is located to the south and west of the Application Site, approximately 0.47km away at its closest point. Other European / international designated sites are located at considerably greater distances. For completeness, the Chichester and Langstone Harbours SPA / Ramsar site and the Solent Maritime Special Area of Conservation (SAC) are located approximately 6.5km to the west of the Application Site at their closest point. The Solent to Dorset Coast potential SPA (pSPA) boundary overlaps that of Pagham Harbour, with the boundary drawn to mean high water. There are no other such sites within 10km of the Application Site.
- 5.2.2. The proximity of the Application Site to sites designated on account of their European importance to nature conservation, namely Pagham Harbour SPA/Ramsar, means that it is necessary to assess the Development Proposals in line with the requirements of Regulation 61 of The Conservation of Habitats and Species Regulations 2010 (as

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<sup>6</sup> Ratcliffe, D A (1977). *A Nature Conservation Review: the Selection of Sites of Biological National Importance to Nature Conservation in Britain*. Two Volumes. Cambridge University Press, Cambridge.

amended), hereinafter referred to as the 'Habitats Regulations'. Information is presented such that the competent authority has all the necessary information before it in order to carry out its duties in considering the application in line with relevant planning policy and legislation, including specifically the Habitats Regulations. The detailed assessment is contained within the stand-alone document 'Information to enable a Habitats Regulations Assessment of the impacts on the Pagham Harbour Ramsar / Special Protection Area pursuant to Regulation 61 of The Conservation of Habitats and Species Regulations 2010', (hereafter referred to as the IHRA) produced by Ecology Solutions (document reference 5633.IHRA).

5.2.3. This section of the Ecological Assessment considers potential adverse impacts on statutory designated sites other than those designated at a European level of importance. Consideration has been given to potential impacts on the following sites, all of which are located within 3km of the Application Site:

- Pagham Harbour SSSI;
- Bognor Reef SSSI; and
- Pagham Harbour LNR.

#### Pagham Harbour SSSI / LNR

5.2.4. Pagham Harbour SSSI is designated on account of ecological and geological interest features. In relation to ecological matters, the site contains an extensive area of salt-marsh with tidal mudflats, shingle, open water, reed swamp and wet grassland. The site is of national importance for wintering wildfowl and waders and also for breeding birds within the harbour and the surrounding pasture. In addition, the site supports nationally important communities of plants and invertebrates.

5.2.5. Whilst the detailed reasons for notification of the SSSI and the interest features for the LNR differ from those of the SPA/Ramsar site, they are broadly consistent, with waterbird interest being a key feature of all relevant designations.

5.2.6. For the detailed assessment into potential significant impacts (effects) on habitats and bird species, the reader is directed to the IHRA where it is concluded that the development proposals would not adversely effect qualifying interest features at Pagham Harbour through noise, lighting, air quality or hydrological impacts. Mitigation is proposed in relation to avoiding/mitigating recreational impacts and potential impacts on Dark-bellied Brent Geese (in relation to supporting habitat issues).

5.2.7. No additional impacts have been identified in relation to this SSSI and no further mitigation is considered necessary.

#### Bognor Reef SSSI

5.2.8. Bognor Reef SSSI is designated on account of ecological and geological interest features. In relation to ecological matters, the site contains an extensive area of vegetated shingle, and old sand dune. In addition, the site supports nationally important communities of plants and invertebrates.

### *Potential adverse impacts*

- 5.2.9. Given the conclusions reached in relation to Pagham Harbour SPA/Ramsar/SSSI/LNR and the greater distances involved, no adverse impacts are likely to arise in relation to this SSSI and no mitigation is considered necessary.

### Non Statutory sites

- 5.2.10. There are no non-statutory designated sites of nature conservation interest within the Application Site or in close proximity. No mitigation is necessary.

### Ancient Woodland

- 5.2.11. There is no ancient woodland located within the Application Site itself. The closest area of ancient woodland located near Norton Priory approximately 2.8km south west of the Application Site. This site falls within the demise of the Pagham Harbour SPA/Ramsar/SSSI/LNR and the woodland is classified as 'ancient and semi-natural woodland'. Other areas of ancient woodland are located in the wider search area. It is considered that none of these sites would be adversely affected by the Development Proposals.
- 5.2.12. It is considered that no specific mitigation would be required.

### **Habitats within the Applications Site**

- 5.2.13. Overall it is considered that the habitats within the Application Site are of limited intrinsic ecological value.

### Arable Land and Field Margins

- 5.2.14. The majority of the Application Site consists of arable land with margins consisting of rough grassland. Arable land will be lost to the development footprint. In most instances, the field margins would form part of the open space/landscape provision.
- 5.2.15. The management practices associated with the arable land ensure that the ecological value of this habitat is very low and of negligible value at the site level. The composition of plant species is largely limited to arable weeds which are relatively common and widespread in the local and national context.
- 5.2.16. The Development Proposals offer the opportunity to provide significant areas of species rich wildflower grassland, as well as further provisions of the amenity greenspace. The grassland species compliment which would be delivered through these provisions will result in a significant net gain in the botanical interest of the Application Site. All such habitat would be subject to a management regime, which could be secured, for example, through an appropriately worded planning condition.

### Tree line

- 5.2.17. The existing trees / tree lines within the Application Site are to be largely retained, with only minor losses to trees occurring, as described within the "Arboricultural Impact Assessment & Tree Protection Plan" (Bosky Trees December 2016). The Development Proposals provide the opportunity to deliver new tree planting within the Application Site, providing an enhancement over the current situation.
- 5.2.18. It is recommended that during the construction phase of the Development Proposals a protective barrier be erected to ensure no damage is caused by machinery onsite to the retained tree belt.
- 5.2.19. It is recommended that new tree planting be based around native species and those of wildlife benefit wherever appropriate. Consideration should be given to the provision of both male and female native Black Poplar *Populus nigra* which is a tree of conservation concern in the UK.

### Hedgerow

- 5.2.20. Hedgerows within the Application Site are to be largely retained, albeit some losses will occur to facilitate access provision. These losses are described within the Arboricultural Impact Assessment & Tree Protection Plan document. The Development Proposals provide the opportunity to deliver new hedgerow / shrub planting within the Application Site, providing an enhancement over the current situation.
- 5.2.21. It is recommended that during the construction phase of the Development Proposals a protective barrier be erected to ensure no damage is caused by machinery onsite to the retained hedgerows.
- 5.2.22. It is recommended that new hedgerow / shrub planting be based around a diverse mix of native species and those of wildlife benefit wherever appropriate.

### Ditch

- 5.2.23. The current ecological value of the ditch network within the Application Site is fairly limited due to the variable water levels and the inundation of rough grass and tall ruderal species in the ditch channels.
- 5.2.24. Ditches within the Application Site are to be retained. The Development Proposals provide the opportunity to deliver new ditch / wetland features within the Application Site.
- 5.2.25. The Development Proposals will deliver enhancements to the ditch habitats by initial clearance (where necessary) and appropriate future management of marginal / bankside vegetation. The provision of new wet grassland species mixes in areas of new natural greenspace associated with wet features would also provide an enhancement over the current situation.
- 5.2.26. The combination of both retained and new will ensure continued and enhanced connectivity, shelter and foraging habitats for a range of faunal species.

### 5.3. Faunal Evaluation

#### Bats

- 5.3.1. **Legislation.** All bats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and included on Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (as amended) ("the Habitats Regulations"). These include provisions making it an offence to:
- Deliberately kill, injure or take (capture) bats;
  - Deliberately disturb bats in such a way as to be likely –
    - to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or to hibernate; or
    - to affect significantly the local distribution or abundance of the species concerned;
  - Damage or destroy any breeding or resting place used by bats;
  - Intentionally or recklessly obstruct access to any place used by bats for shelter or protection (even if bats are not in residence).
- 5.3.2. The words deliberately and intentionally include actions where a court can infer that the defendant knew that the action taken would almost inevitably result in an offence, even if that were not the primary purpose of the act.
- 5.3.3. The offence of damaging or destroying a breeding site or resting place (which can be interpreted as making it worse for the bat) is an absolute offence. Such actions do not have to be deliberate for an offence to be committed.
- 5.3.4. European Protected Species licences are available from Natural England in certain circumstances, and permit activities that would otherwise be considered an offence.
- 5.3.5. Licences can usually only be granted if the development is in receipt of full planning permission and it is considered that:
- i. There is no satisfactory alternative; and
  - ii. The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.
- 5.3.6. **Site Usage.** It is considered that the Development Proposals will not result in any impacts on bat roosting sites.
- 5.3.7. The Application Site is considered to be of some value to foraging / navigating bats though the evidence strongly suggests that the Application Site cannot be considered to be of significant value to bats, with the level of use consistent with regular use by a low number of individual bats of common species.
- 5.3.8. The most valuable feature for bats within the context of the Application Site are the tree lines and hedgerows. These habitats are to be largely

retained within the Development Proposals, with additional planting used to enhance opportunities on site.

- 5.3.9. It is considered that mitigation should be focussed upon the avoidance of increased lighting on the tree belt wherever possible.

*Mitigation / Enhancements*

- 5.3.10. Measures are proposed which aim to minimise adverse effects of the Development Proposals on foraging and navigational resources for foraging bats.
- 5.3.11. Wherever possible within the development proposals low pressure sodium lamps (or equivalent) should be used in preference to high pressure sodium or mercury lamps for external lighting. The brightness of the lights should be as low as practicable, with the times during which the lighting is used limited to provide some dark periods. The lighting should be directed to where it is needed thereby avoiding light spillage onto habitat features and any upward lighting will be negligible to avoid light pollution. Where necessary hoods should be fitted to lights, directing the light below the horizontal plane to where it is required, thus reducing the ecological impact of the light.
- 5.3.12. As a guide, ecologists generally advise that lighting levels of up to 1 lux on an ecological feature are sufficient to avoid an adverse effect and it is recommended that the lighting scheme aims to meet this wherever possible.
- 5.3.13. New landscape planting, including new native trees will enhance foraging opportunities for bats within the site whilst the proposals provide the opportunity to incorporate new roosting provisions for bats. It is proposed that a range of bat box types be provided, including those suited to inclusion within the fabric of buildings (e.g. bat bricks) and those suited to erection on suitable trees. A total of 20 bat boxes are proposed, with ten provided on buildings and ten on trees. Those on trees will be erected in pairs at different aspects on the tree in order to maximise the chances of uptake by bats. The precise mix and locations for such boxes can be secured through agreement with the planning authority at the Reserved Matters stage.
- 5.3.14. It is considered that the above provisions will maintain the favourable conservation status of bats within the local area and potentially result in a net benefit for this faunal group, providing an enhancement over the current situation and contributing towards the conservation aims for this group within the UK.

Birds

- 5.3.15. **Legislation.** Section 1 of the Wildlife and Countryside Act is concerned with the protection of wild birds. With certain exceptions, all wild birds and their eggs are protected from international killing, injuring and taking; and their nests, whilst being built or in use, cannot be taken, damaged or destroyed.

- 5.3.16. Schedule 1 lists species which are protected by special (i.e. greater) penalties. These species also enjoy additional protection whilst breeding, as it is also an offence to disturb adults or their dependant young when at the nest.
- 5.3.17. **Site Usage.** The Application Site is considered to be of some value to foraging and nesting birds. The majority are common widespread species nesting within tree / scrub habitats, although 2 Skylark (ground nesting species) territories were also recorded during survey work.

#### *Mitigation / Enhancements*

- 5.3.18. With regard to wintering birds a specific package of measures are proposed and detailed within the IHRA document produced by Ecology Solutions in support of this application. The measures are summarised below:
- On site provision for recreation activities including dog walking;
  - A package of measures aimed at alleviating existing and future pressures from visitor numbers at Pagham SPA/Ramsar/SSSI/LNR; and
  - Strengthening of the western boundary through extensive new planting in order to buffer the retained farmland to the west (used by Dark-bellied Brent Geese) from built form and movement of vehicles and people within the development. These measures are discussed below.
- 5.3.19. With regards to breeding birds, all species of birds receive general protection whilst nesting, it is recommended that in order to avoid a possible offence, vegetation clearance (if required) be undertaken outside of the main breeding season (March – July inclusive). However, should this not be possible, it is recommended that any vegetation scheduled to be cleared be checked for the presence of nesting birds immediately prior to removal by a suitably qualified ecologist.
- 5.3.20. New grassland, wetland and tree/shrub planting will enhance nesting provision for birds at the site. Further, the provision of nest boxes will increase such opportunities. In addition to standard nest boxes (to include open fronted varieties), it is proposed that those designed specifically for swifts and House Sparrows be included. The precise mix and locations for such boxes can be secured through agreement with the planning authority at the Reserved Matters stage.

#### Reptiles

- 5.3.21. **Legislation.** All reptile species receive protection under legislation in the UK. Smooth Snake *Coronella austriaca* and Sand Lizard *Lacerta agilis*, receive full legal protection in England due to their status as scarce, rather than local species, however, these would not be present within the site. The other reptile species, i.e. Slow-worm, Common Lizard, Grass Snake and Adder are common and widespread across the country. As such these species receive only partial protection under the Wildlife and Countryside Act 1981 (amended by the Countryside and Rights of Way

Act 2000) being protected from deliberate killing or injury, their habitat receiving no statutory protection.

- 5.3.22. The common reptile species (Slow-worm, Common Lizard, Grass Snake and Adder) are listed on the UK BAP List of Priority Species and Habitats, which provides a degree of non-statutory protection through planning policy to listed habitats and species. The statutory basis for listed BAP species and habitats is effectively provided by Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 which requires the publication of a list of species of flora, fauna and habitats considered to be of principal importance for the purpose of conserving biodiversity.
- 5.3.23. **Site Usage.** The rough grassland within the field margins across the Application Site is known to support a low population of Common Lizard, Slow-worm and Grass Snake.
- 5.3.24. The presence of common reptiles does not represent a constraint to development *per se*, but is moreover a matter of legal compliance.
- 5.3.25. Mitigation will be focussed upon ensuring that the populations of reptile species in the field margin habitat of the Application Site are not adversely affected by the proposals.

*Mitigation / Enhancements*

- 5.3.26. Existing reptile habitat is to be retained and enhanced within the Development Proposals. In this instance, it is considered that reptiles can be fully retained within the Application Site although depending on the fine detail of the final scheme, precautionary mitigation may be required to prevent an offence occurring. This may involve the use of temporary exclusion fencing to prevent colonisation of parts of the development footprint by reptiles. Where necessary a simple trapping and relocation exercise could be undertaken (minimum 30 days) in order to ensure that any areas of habitat which may support reptiles can be determined as clear of constraint before any invasive works take place. Further advice on this particular matter would be obtained from an appropriately experienced ecologist at the Reserved Matters stage.
- 5.3.27. Future management of wildflower grassland and hedgerow habitat will ensure suitable habitat remains for reptiles. In addition, by way of further enhancement it is proposed that three hibernacula will be created within suitable habitat.

## **6. PLANNING POLICY CONTEXT**

- 6.1. The planning policy framework that relates to nature conservation in this instance is issued at two main administrative levels: nationally through the National Planning Policy Framework (NPPF); and at the local level through the Arun District Local Plan (2003). Any proposed development will be judged in relation to the policies contained within these documents.

### **6.2. National Policy**

#### National Planning Policy Framework

- 6.2.1. National Planning Policy Framework (NPPF) sets out the Government's requirements for the planning system and was recently adopted (March 2012). It replaces previous national planning policy, including PPS9 (Biodiversity and Geological Conservation) which was published back in 2005.
- 6.2.2. Section 11 sets out the rationale for conserving and enhancing the natural environment and relevant policies relating to ecology and nature conservation are discussed below.
- 6.2.3. Policy at paragraph 113 requires local planning authorities to set criteria based policies, against which development on or affecting protected wildlife sites will be judged. It advocates that distinctions should be made between the hierarchy of international, national and locally designated sites such that protection is appropriate to their status.
- 6.2.4. Policy at paragraph 114 requires that local planning authorities adopt a strategic approach to creation, protection, enhancement and management of networks of biodiversity and green infrastructure.
- 6.2.5. Policy at paragraph 117 requires that planning policies promote the preservation, restoration and re-creation of priority habitats, ecological networks and the recovery of priority species, linked to national and local targets (i.e. BAPs) and biodiversity monitoring indicators.
- 6.2.6. Policy at paragraph 118 further emphasises the conservation and enhancement of biodiversity through applying a number of key principles, including the encouragement of opportunities to incorporate biodiversity in and around developments. In particular, provision is given for refusal of planning applications if significant harm cannot be avoided, mitigated or compensated for. It also provides protection for SSSIs, 'potential' SPAs, 'possible' SACs and 'listed or proposed' Ramsar sites, along with safeguarding irreplaceable habitats (i.e. ancient woodland).
- 6.2.7. Policy at paragraph 165 within later sections of the NPPF requires planning policies and decisions to be based on up-to-date information about the natural environment.
- 6.2.8. National policy therefore implicitly recognises the importance of biodiversity and that with sensitive planning and design, development and conservation of the natural environment can co-exist and benefits can, in certain circumstances, be obtained.

### 6.3. Local Policy

#### Arun District Local Plan 2003

- 6.3.1. Planning and development in Arun District is guided by the Local Plan. This Local Plan is set in place to guide development the period up to 2011. An emerging Local Plan is in development to cover the periods 2011 to 2031, although it is yet to be adopted.
- 6.3.2. The Local Plan sets out two policies relevant to ecology and nature conservation. These policies are; GEN29 Nature Conservation Across the District and GEN30 Protection of Species.
- 6.3.3. **GEN29** aims to retain the ecological value of features of nature conservation interest that do not form part of existing designated sites for nature conservation. Development can only be permitted if features present within the Application Site of natures conservation interest can be retained and/or incorporated into the proposals.
- 6.3.4. **GEN30** protects the districts diversity of flora and fauna and relates to any protected species. Development will not be permitted that adversely impacts on such species. Should permission be granted for any scheme requirements will be placed on the developer to secure and protect the flora and fauna on site.

### 6.4. Discussion

- 6.4.1. It is considered that the Development Proposals, following the recommendations in this report, would fully accord with national and local policy and will not lead to any adverse impacts on any sites designated for nature conservation, habitats of ecological interest or protected/notable species.

## **7. SUMMARY AND CONCLUSIONS**

- 7.1. Ecology Solutions was commissioned by Hanbury (PM) Ltd to undertake ecological assessment work pursuant to the production of documentation in support of a planning application to be submitted in respect of Pagham South, West Sussex.
- 7.2. Development Proposals for the Application Site are for the provision of residential development (up to 400 units) along with public open space, retail and community provisions (including a primary school) associated landscape and biodiversity measures and access.
- 7.3. This document assesses the ecological interest of the Application Site as a whole. The importance of the habitats present is evaluated with regard to current guidance published by IEEM.
- 7.4. The Application Site was surveyed based around extended Phase 1 survey methodology as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. Specific surveys / assessments were conducted in respect of bats, Badgers, reptiles, and Great Crested Newts. All detailed survey work was undertaken by Aluco Ecology.
- 7.5. Detailed consideration has been given to potential impacts on both statutory and non-statutory designated sites. In relation to European / international designated sites, all relevant information has been described within a separate IHRA document which should be read in conjunction with this report.
- 7.6. An appropriate level of mitigation and avoidance measures has been described for relevant European/international designated sites within the IHRA. These measures are set out within the IHRA and followed discussions with Natural England. No additional impacts have been identified in relation to any other designated site.
- 7.7. In relation to habitats, it is considered that the majority of the Application Site is of limited intrinsic ecological value, comprising arable land. Those features of greater value in the context of the Application Site are the hedgerows, ditches, tree lines and field margins. Whilst noting some losses to hedgerow and trees for access purposes such features are to be retained and enhanced wherever possible. Significant enhancements would be realised through the creation of extensive areas of species rich grassland, new wetland features and new tree/shrub/hedgerow planting, using native species wherever possible. These measures, in tandem with appropriate future management will result in a significant net gain for biodiversity at the Application Site.
- 7.8. A suite of protected species surveys and assessments have been undertaken. The Application Site currently offers areas of habitat which supports a small population of common reptile species and nesting and foraging opportunities for birds. Boundary features (trees and hedgerows in particular) offer foraging and navigational resources for bats although activity is considered to be limited to a low number of individuals.
- 7.9. No evidence for the presence or likely presence of any other protected or notable species was recorded.

- 7.10. Appropriate mitigation and enhancement measures have been proposed in order to avoid any adverse impacts on any protected species and moreover, deliver enhancements over the current situation.
- 7.11. In conclusion, on the evidence of the ecological surveys undertaken, with the use of appropriate safeguards and the recommendations set out in this report, there is no evidence to suggest that there are any overriding ecological constraints to the development of the site for purposes detailed in the Development Proposals.

## **PLANS & APPENDICES**

## PLANS

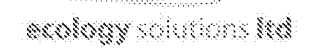
## **PLAN ECO1**

Application Site Location and Ecological  
Designations



**PLAN ECO2**  
Ecological Features

 APPLICATION SITE BOUNDARY  
 ARABLE LAND  
 FIELD MARGIN  
 TREELINE / HEDGEROW  
 DITCH  
 HARDSTANDING  
 ROADSIDE VERGE  
 AUTOMATED BAT DETECTOR LOCATION

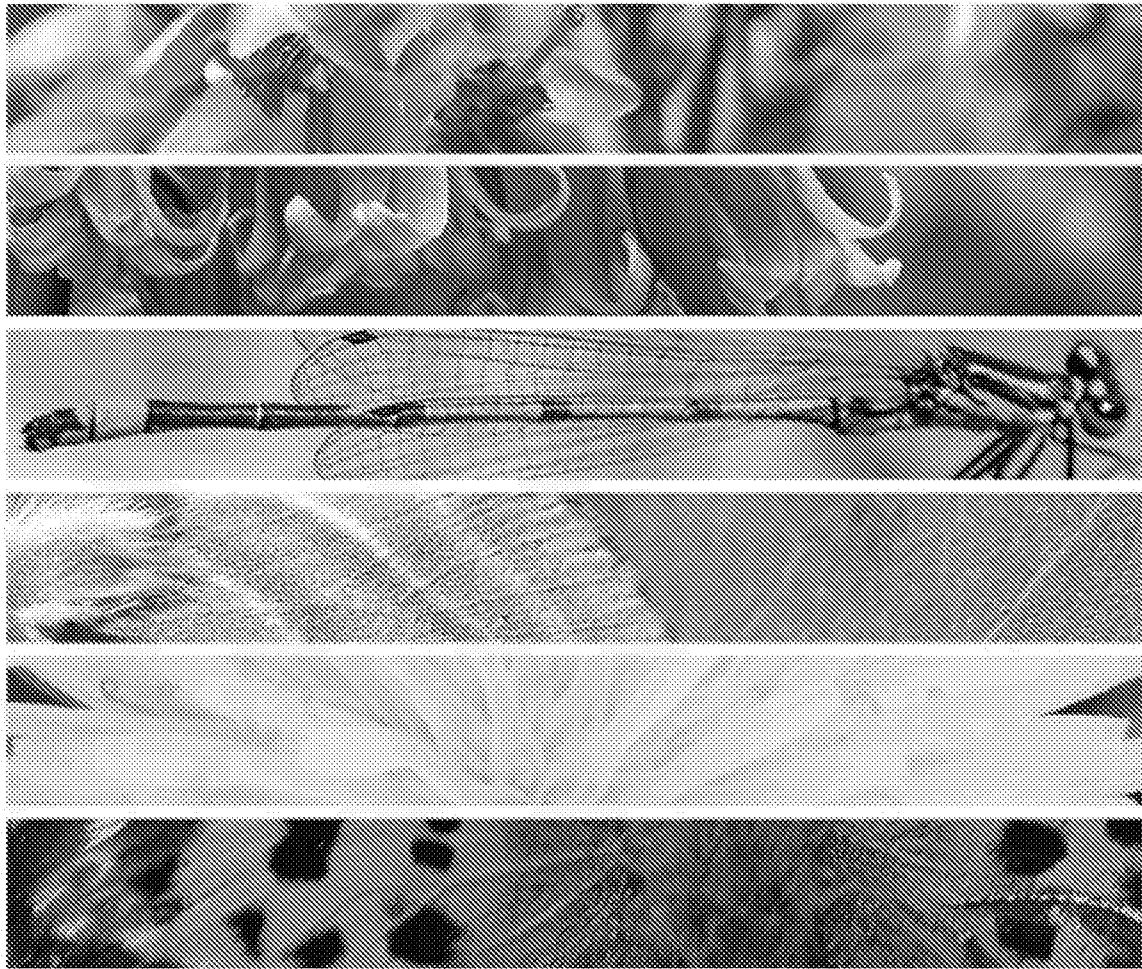


## PLAN ECO2: ECOLOGICAL FEATURES

## **APPENDICES**

## **APPENDIX 1**

Information returned as part of the desk study  
exercise



# Desktop Biodiversity Report

Pagham Road, Bognor Regis + 2km radius

SxBRC/16/243

Prepared for Gareth Knass (Aluco Ecology)

6th July 2016



**Sussex Biodiversity Record Centre**  
**desktop report regarding**  
**Pagham Road, Bognor Regis + 2km radius**  
**6th July 2016**

**Prepared for Gareth Knass**  
**Aluco Ecology**  
**SxBRC/16/243**

**The following information was requested:**

| <b>Information Available</b>                | <b>Requested</b> | <b>Format</b> |
|---------------------------------------------|------------------|---------------|
| Designated Sites, Habitats & Ownership Maps | Yes              | PDF           |
| Sussex Protected Species Register           | Yes              | PDF           |
| Sussex Bat Inventory                        | Yes              | PDF           |
| Sussex Notable Bird Report                  | Yes              | PDF           |
| UK BAP Species Inventory                    | Yes              | PDF           |
| Sussex Rare Species Inventory               | Yes              | PDF           |
| Sussex Invasive Alien Species               | Yes              | PDF           |
| Full Species List                           | No               |               |
| Environmental Survey Directory              | No               |               |

**The following designations are within the search area:**

**Local Wildlife Sites**

None

**Sites of Special Scientific Interest**

Bognor Reef

Pagham Harbour

**Other Designations/Ownership**

Environmental Stewardship Agreement

Local Geological Site

Local Nature Reserve

Marine Site of Nature Conservation

Special Protection Area

## Important information regarding this report

**It must not be assumed that this report contains the definitive species information for the site concerned.**

The species data held by the Sussex Biodiversity Record Centre (SxBRC) is collated from the biological recording community in Sussex. However, there are many areas of Sussex where the records held are limited, either spatially or taxonomically.

A desktop biodiversity report from SxBRC will give the user a clear indication of what biological recording has taken place within the area of their enquiry. The information provided is a useful tool for making an assessment of the site, but should be used in conjunction with site visits and appropriate surveys before further judgements on the presence or absence of key species or habitats can be made. It may be that the content of this report guides the reader as to which surveys should be carried out on the site.

This report was compiled using data held at SxBRC at the time of production. SxBRC takes data validation very seriously, but cannot be held responsible for the accuracy of data included in this report.

### Copyright

**The Sussex Biodiversity Record Centre must be acknowledged in all documents containing any part of the information contained in this report.** You can also use the whole of a SxBRC report (unedited) as an appendix in your own report.

The SxBRC operates as agent to the individuals and groups who provide their records free of charge. The data suppliers retain copyright on their data, while SxBRC retains copyright on its desktop biodiversity reports.

### Data usage

The data contained within this report is for use in the project for which the data was requested. It is not to be shared with third parties for use in other projects, unless permission is granted from SxBRC.

The data may be used for 12 months, after which a replacement SxBRC report must be requested. This ensures the most up-to-date information is being used.

### Ordnance Survey maps

Members of the public wishing to reproduce maps made by SxBRC under East and West Sussex County Council or Brighton and Hove City Council licences must use copying facilities that have been authorised by Ordnance Survey (OS). Further information can be found on the [OS website](#).

### Impartiality

SxBRC functions as custodian of biological data. Our role is to collect, manage and disseminate wildlife and habitat data. As such, we have to remain impartial and cannot offer opinions on the biodiversity value of a given site. Similarly, we cannot put forward objections to planning applications or be involved in campaigns.

### Supplying records

Our desktop biodiversity reports are only as good as the data we hold. We rely on the continuous submission of records to keep our database up-to-date. We are always grateful to receive records from ecological consultants and members of the public alike. We accept records in many different formats – please see our [website](#) for more details.

## MAPS

There are three maps included in a standard desktop biodiversity report which show designated sites (statutory and non-statutory); habitats and natural features; and ownership and management.

The key on a map only shows those layers which are located within the enquiry area or immediate area. Below is a list of all layers which we currently show on our maps, with details of the data source. Citation sheets and further information on each layer can be found towards the back of the pdf report.

| Designated sites                                      |                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Statutory</b>                                      |                                                                                                                                                                                                                                                                                                 |
| Area of Outstanding Natural Beauty (AONB)             | Downloaded from NE website.                                                                                                                                                                                                                                                                     |
| Country Park                                          | Downloaded from NE website.                                                                                                                                                                                                                                                                     |
| Local Nature Reserve (LNR)                            | Downloaded from NE website.                                                                                                                                                                                                                                                                     |
| Marine Conservation Zone (MCZ)                        | Downloaded from NE website.                                                                                                                                                                                                                                                                     |
| Marine Site of Nature Conservation Importance (MSNCI) | Supplied by ESCC in 2005.                                                                                                                                                                                                                                                                       |
| National Nature Reserve (NNR)                         | Downloaded from NE website.                                                                                                                                                                                                                                                                     |
| National Park                                         | Downloaded from NE website.                                                                                                                                                                                                                                                                     |
| Ramsar                                                | Downloaded from NE website.                                                                                                                                                                                                                                                                     |
| Site of Special Scientific Interest (SSSI)            | Downloaded from NE website.                                                                                                                                                                                                                                                                     |
| Special Area of Conservation (SAC)                    | Downloaded from NE website.                                                                                                                                                                                                                                                                     |
| Special Protection Area (SPA)                         | Downloaded from NE website.                                                                                                                                                                                                                                                                     |
| <b>Non-Statutory</b>                                  |                                                                                                                                                                                                                                                                                                 |
| Local Geological Site (LGS)                           | Originally supplied as hand drawn maps by the Booth Museum (Brighton) in 2009, LGS boundaries were digitised by SxBRC. Site boundaries are now administered by SxBRC and the Sussex Geodiversity Partnership and have been further improved as a result of ground surveys between 2010 to 2012. |
| Local Wildlife Site (LWS), formerly SSCI              | Supplied by WSCC, ESCC & BHCC.                                                                                                                                                                                                                                                                  |
| Notable Road Verge                                    | Owned and provided by ESCC and WSCC.                                                                                                                                                                                                                                                            |
| Habitats and natural features                         |                                                                                                                                                                                                                                                                                                 |
| Ancient/veteran tree                                  | Merged dataset created in July 2009. Data from Ancient Tree Hunt (national survey carried out in 2007/2008) and Tree Register of the British Isles (a charity which collates and updates data on notable trees).                                                                                |
| Ancient woodland                                      | Downloaded from NE website.                                                                                                                                                                                                                                                                     |
| Black poplar                                          | Created by SxBRC based upon species records arising from Sussex Wetland Landscapes Project.                                                                                                                                                                                                     |
| Chalk stream                                          | Created and owned by SWLP and SxBRC.                                                                                                                                                                                                                                                            |
| Coastal & floodplain grazing marsh                    | Downloaded from NE website.                                                                                                                                                                                                                                                                     |
| Coastal saltmarsh                                     | Supplied by EA, based on data from the SRCMP Habitat Mapping Project.                                                                                                                                                                                                                           |
| Coastal sand dune                                     | Supplied by EA, based on data from the SRCMP Habitat Mapping Project.                                                                                                                                                                                                                           |
| Coastal vegetated shingle                             | Downloaded from NE website.                                                                                                                                                                                                                                                                     |
| Ghyll woodland                                        | Boundaries drawn on paper maps by Dr Francis Rose which were then digitised by SxBRC. Not ground-truthed.                                                                                                                                                                                       |
| Intertidal chalk                                      | Supplied by EA, based on data from the SRCMP Habitat Mapping Project.                                                                                                                                                                                                                           |

|                                     |                                                                                                                                                                    |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Intertidal mudflat                  | Supplied by EA, based on data from the SRCMP Habitat Mapping Project.                                                                                              |
| Lowland calcareous grassland        | Merged dataset from NE and SDJC sources, created in 2005. Administered by SxBRC.                                                                                   |
| Lowland fen                         | Created by SxBRC in June 2011. Layer is an amalgamation of all the fen data currently available to SxBRC.                                                          |
| Lowland heathland                   | High Weald Heathland data created by the High Weald Unit in 2006. The rest of Sussex Heathland data was created by SxBRC, with funding from WSCC and RSPB in 2007. |
| Lowland meadow                      | Downloaded from NE website.                                                                                                                                        |
| Maritime cliff and slope            | Supplied by EA, based on data from the SRCMP Habitat Mapping Project.                                                                                              |
| Open water                          | Derived from OS mapping. This includes inland and tidal, running and standing water.                                                                               |
| Reedbed                             | Created by SxBRC in June 2011. Layer is an amalgamation of all the reedbed data currently available to SxBRC.                                                      |
| Saline lagoon                       | Created by SxBRC.                                                                                                                                                  |
| Traditional orchard                 | Downloaded from NE website.                                                                                                                                        |
| Wood-pasture & parkland             | Downloaded from NE website.                                                                                                                                        |
| <b>Ownership and management</b>     |                                                                                                                                                                    |
| Environmental Stewardship Agreement | Downloaded from NE website.                                                                                                                                        |
| National Trust property             | Owned and provided by National Trust.                                                                                                                              |
| RSPB reserve                        | Owned and provided by RSPB. Downloadable from their website.                                                                                                       |
| Sussex Wildlife Trust reserve       | Created and maintained by SxBRC on behalf of SWT.                                                                                                                  |
| Woodland Trust site                 | Owned and provided by the Woodland Trust.                                                                                                                          |

## Abbreviations

|       |                                                 |
|-------|-------------------------------------------------|
| BHCC  | Brighton and Hove City Council                  |
| EA    | Environment Agency                              |
| ESCC  | East Sussex County Council                      |
| NE    | Natural England                                 |
| PTES  | People's Trust for Endangered Species           |
| RSPB  | Royal Society for the Protection of Birds       |
| SDJC  | South Downs Joint Committee                     |
| SRCMP | Strategic Regional Coastal Monitoring Programme |
| SxBRC | Sussex Biodiversity Record Centre               |
| SWLP  | Sussex Wetland Landscapes Project               |
| SWT   | Sussex Wildlife Trust                           |
| WSCC  | West Sussex County Council                      |

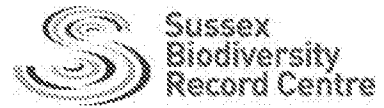
## Natural England datasets

These are available for anyone to download and use in their own Geographical Information System (GIS). Visit [www.gis.naturalengland.org.uk](http://www.gis.naturalengland.org.uk) for more information and register as a user.

# Designated Site Map (SxBRC/16/243)

Land at Pagham Rd, Bognor Regis + 2km radius

Prepared for Gareth Knass (Aluco Ecology Ltd) - 06/07/2016

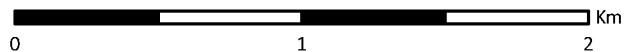


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www.sxbrc.org.uk  
01273 497521



## Key to Map:

- Enquiry area
- Species search area
- Site of Special Scientific Interest
- Special Protection Area
- Ramsar
- Local Nature Reserve
- Marine SNCI
- Local Geological Site



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RAMSAR, Special Area of Conservation (SAC), Special Protection Area (SPA), National Park, Area of Outstanding Natural Beauty (AONB), National Nature Reserve (NNR), Site of Special Scientific Interest (SSSI), Local Nature Reserve (LNR) and Country Park data reproduced with permission of Natural England. Site of Nature Conservation Importance (SNCI) data provided by East and West Sussex County Councils, and Brighton & Hove City Council. Notable Road Verge data supplied by East and West Sussex County Councils. Local Geological Site (LGS) data created by SxBRC in partnership with Sussex Geodiversity Group. © Crown Copyright. All rights reserved 2016.

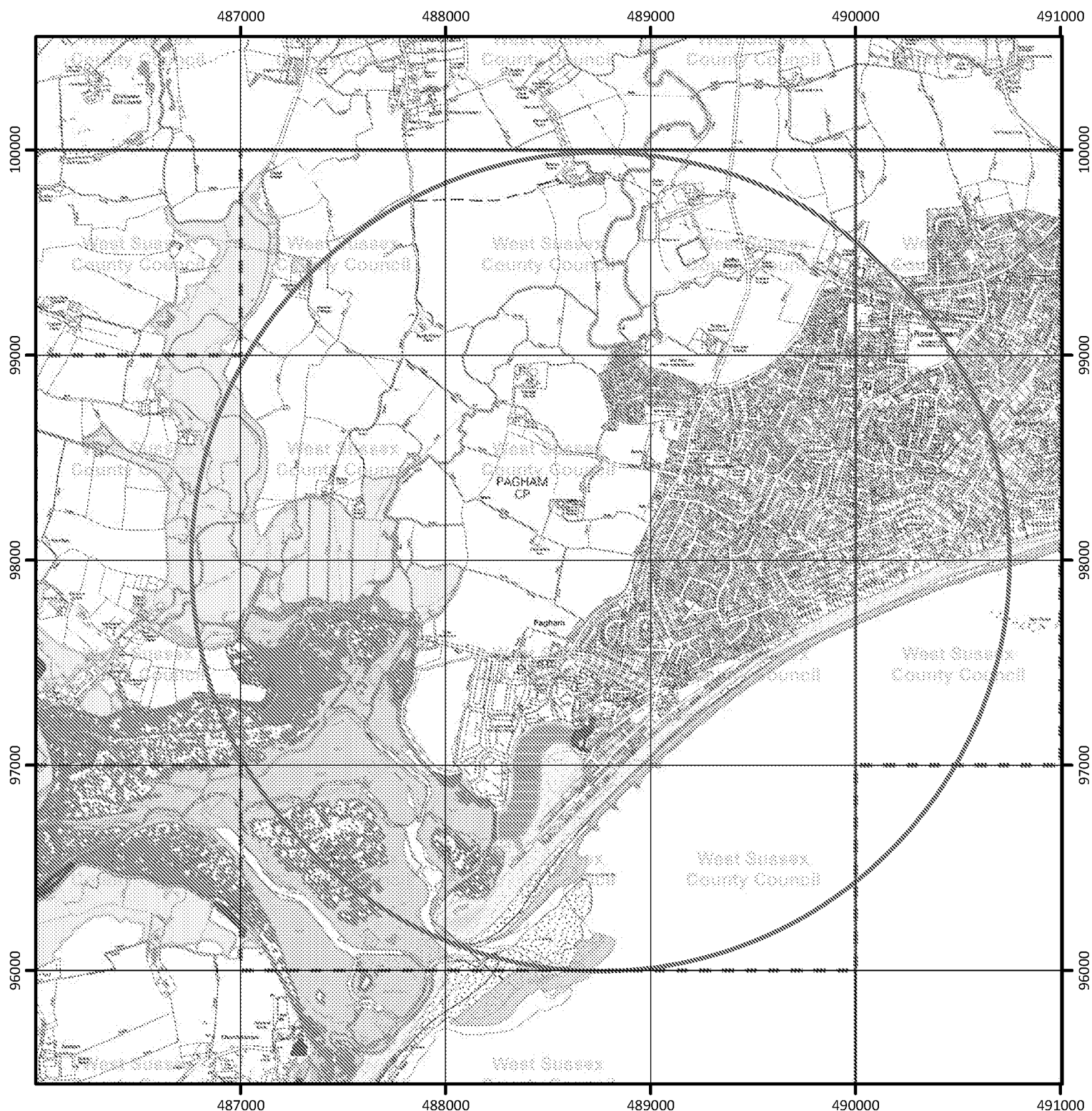
# Habitat & Natural Features Map (SxBRC/16/243)

Land at Pagham Rd, Bognor Regis + 2km radius

Prepared for Gareth Knass (Aluco Ecology Ltd) - 06/07/2016

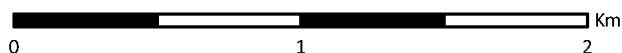


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## Key to Map:

- Enquiry area
- Species search area
- Ancient/veteran tree
- Black-poplar
- Reedbed
- Intertidal mudflat
- Coastal vegetated shingle
- Saline lagoon
- Coastal saltmarsh
- Open Water
- Traditional orchard
- Coastal & floodplain grazing marsh



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Ancient woodland, traditional orchards, woodpasture and parkland, vegetated shingle and saline lagoon data reproduced with permission of Natural England. Revised coastal and floodplain grazing marsh data remains provisional and is also reproduced with permission of Natural England. Chalk grassland data supplied by Natural England and South Downs Conservation Board. Black Poplar data supplied by Sussex Wetland Landscapes Project. Ghyll woodland data supplied by Dr Francis Rose. Reedbed data funded by Environment Agency and West Sussex County Council is provided by Sussex Biodiversity Record Centre and maintained by RSPB. Heathland data funded by West Sussex County Council, RSPB and High Weald AONB Unit. Ancient/veteran tree data derived from results of the Ancient Tree Hunt Project and the Tree Register of the British Isles (TROBI). South East Coastal Habitat Mapping data reproduced with permission of Environment Agency. © Crown Copyright. All rights reserved 2016.

Habitat data held by Sussex Biodiversity Record Centre (SxBRC) are created in-house or obtained from a variety of dataset providers. SxBRC continually strive to further improve and update these data wherever possible. However, this map should be treated as indicative rather than definitive: data may be generated from a range of field survey and/or predictive methods, each of which may have its own inherent limitations. In some situations a recent ground survey may be required to establish definitively the current status of a particular habitat at a specific location.

# Ownership & Management Map (SxBRC/16/243)

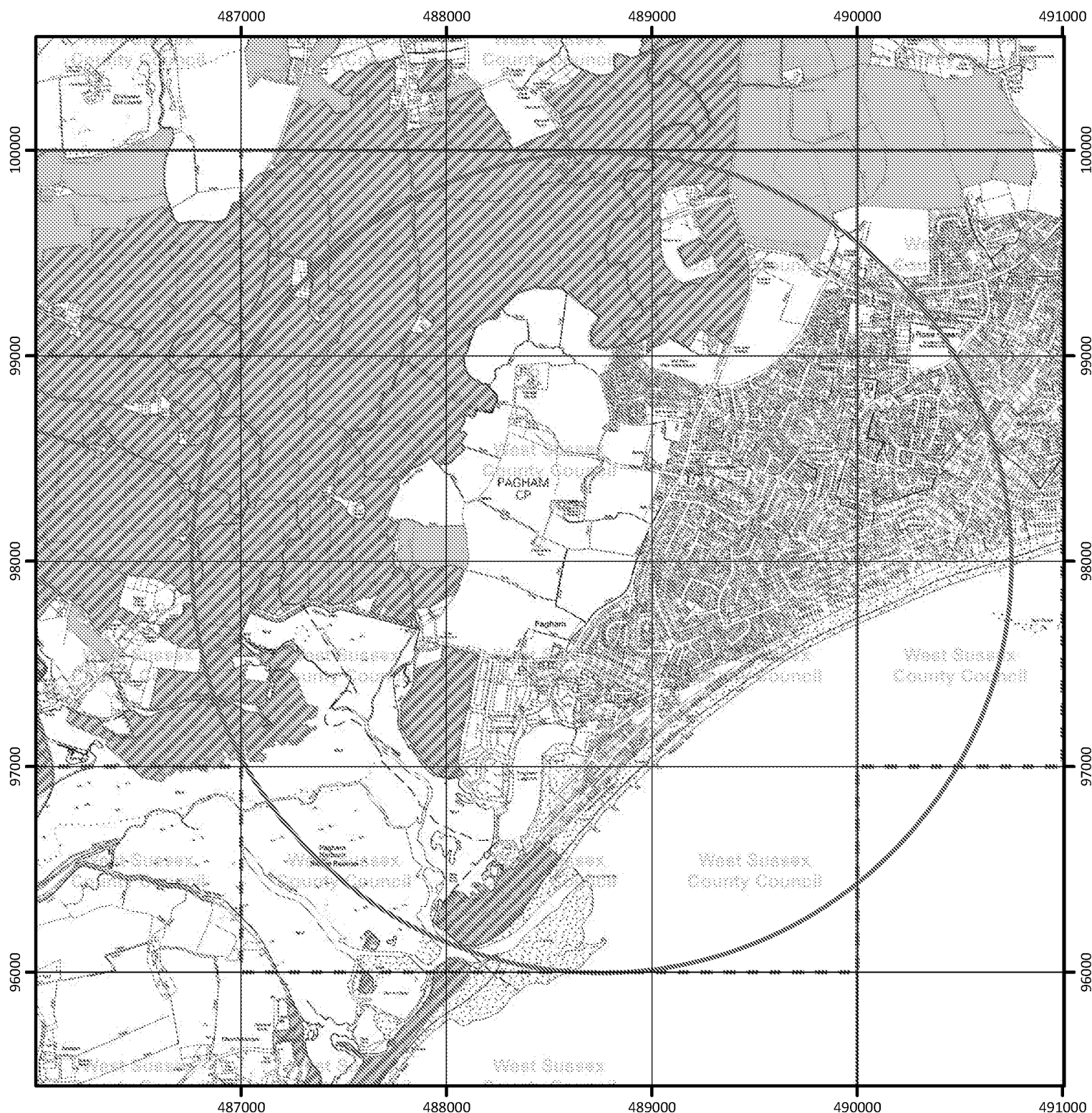
Land at Pagham Rd, Bognor Regis + 2km radius

Prepared for Gareth Knass (Aluco Ecology Ltd) - 06/07/2016



**Sussex  
Biodiversity  
Record Centre**

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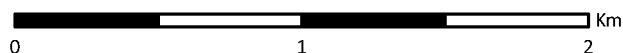


## Key to Map:

- Enquiry area
- Species search area
- SWT reserve

## Environmental Stewardship Agreements:

- Higher Level Stewardship (HLS)
- Entry Level Stewardship (ELS)
- Organic ELS
- Organic ELS plus HLS
- ELS plus HLS



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Environmental Stewardship Agreement data reproduced with permission of Natural England. Other datasets reproduced respectively with permission of the Woodland Trust, Forestry Commission, National Trust, Sussex Wildlife Trust and Royal Society for the Protection of Birds. © Crown Copyright. All rights reserved 2016.

# MAP CITATION SHEETS

## SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

Sites of Special Scientific Interest (SSSIs) are areas notified under the Wildlife and Countryside Act 1981, as being of special interest for nature conservation. They represent the finest sites for wildlife and natural features supporting many characteristic, rare and endangered species, habitats and natural features. Notification as a SSSI is primarily a legal mechanism organised by Natural England and selected according to specific scientific criteria. *The Guidelines for the Selection of Biological SSSIs*, published in 1989 by the Joint Nature Conservation Council, set down the selection criteria for both biological and geological SSSIs.

**Biological SSSIs** form a national network of wildlife sites. Sites are selected in such a way that the protection of each site, and hence the network, aims to conserve the minimum area of wildlife habitat necessary to maintain the natural diversity and distribution of Britain's native flora and fauna and the communities they comprise. Each site, therefore, is of national significance for its nature conservation value.

**Geological SSSIs** are sites chosen for their research value, the criterion being that they are of national or international importance. Geological conservation is concerned with the maintenance of our geological and geomorphological heritage.

There are over 4,000 SSSIs in England of which just under 150 are in Sussex. Natural England is responsible for identifying and protecting these sites. This is achieved, primarily, in partnership with SSSI owners and managers, and as a result the majority are in good condition and well managed.

Ever growing pressures on our landscape and countryside mean that SSSIs are an increasingly precious part of our natural heritage. Damaging SSSIs is unacceptable, either in the short or long term, and must be avoided if they are to remain the finest wildlife and natural heritage sites in England. Once lost, the special interest of a site may be difficult or impossible to restore or recreate. Owners and occupiers (i.e. landowners, tenants and commoners) of SSSIs must give Natural England written notice before initiating any operations likely to damage the site, or allowing someone else to carry out these activities. None of the operations listed in the notification documents may proceed without Natural England's consent.

Under the Countryside and Rights of Way Act 2000 (CROW) anyone who intentionally or recklessly destroys or damages any of the flora, fauna or geological or physiological features of an SSSI is guilty of an offence. They are liable, on summary conviction, of a fine of up to £20,000.

For more information on SSSIs visit the [Natural England website](#).

## SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

|                                        |                                                                 |                               |   |
|----------------------------------------|-----------------------------------------------------------------|-------------------------------|---|
| <b>Site Name:</b>                      | <b>Bognor Reef</b>                                              |                               |   |
| <b>County:</b>                         | West Sussex                                                     |                               |   |
| <b>District:</b>                       | Arun                                                            |                               |   |
| <b>Local Planning Authority:</b>       | Arun District Council                                           |                               |   |
| <b>Size:</b>                           | 64.4 hectares (159.1 acres)                                     |                               |   |
| <b>National Grid Ref:</b>              | SZ912982                                                        |                               |   |
| <b>Date Notified (Under 1949 Act):</b> | 1980                                                            | <b>Date of last revision:</b> | - |
| <b>Date Notified (Under 1981 Act):</b> | 1988                                                            | <b>Date of last revision:</b> | - |
| <b>Other Information:</b>              | This site will be listed in 'A Geological Conservation Review'. |                               |   |

### Reason for Notification

This site comprises a long stretch of foreshore of great geological interest and an extensive area of vegetated shingle, a habitat type which is rare in Britain. At the western end is a small area of old sand dune with an interesting flora including a specially protected species listed on Schedule 8 of the Wildlife and Countryside Act 1981.

### Biological Interest

The shingle strip which runs along the beach at Bognor develops into an extensive shingle beach west of SZ915982. In the shelter of the main bank shingle plant communities have developed, typically with yellow horned poppy *Glaucium flavum*, sea beet *Beta vulgaris*, and the uncommon sea kale *Crambe maritima*. Small grassy patches occur infrequently, with false oat-grass *Arrhenatherum elatius* and red fescue *Festuca rubra*.

The small outlying area of sand dune at The Green is all that remains of a once much more extensive dune system. The grassland, scrub and small marsh support a number of interesting plants and invertebrates including the long-winged conehead grasshopper *Conocephalus discolor* and the nationally endangered childing pink *Petrorhagia nanteulii*.

### Geological Interest

The foreshore here is one of the few places where the whole thickness of the London Clay can be studied in sequence, although favourable tides occur infrequently and some exposures remain constantly under water. Most of the rocks are clays or sands but there are two sequences of more resistant rocks: calcareous sandstones which form the main Bognor Reef and glauconitic sandstones which comprise the less substantial Barn Rocks to the west. The fossil flora and fauna of these beds is outstanding.

The site is a key site for plant fossils from the London Clay (divisions B1 and B2) and is of great importance to the study of Tertiary floras. It is the only locality in the Hampshire Basin to yield abundant London Clay plants and the only site known to have yielded plants from the B2 division of this formation. The site has yielded examples of some one hundred and thirty species (representing seventy families), including numerous type specimens. Dominant families include the Vitaceae, Menispermaceae and Burseraceae. The genera *Bognoria* and *Aldwichia* are found only here, as are some thirty species. An outstanding palaeobotanical site of great importance to studies of Tertiary floras.

The eastern foreshore is a valuable site which has yielded a diverse Lower Eocene avifauna, including a significant number of small species which are only rarely preserved. Seven species (representing seven orders) have been recorded from the site. For five species this is the type locality. Three orders, the Charadriiformes, Columbiformes and Apodiformes, are unique to Great Britain at this time.

Finally the most important site in the world for pyritised fossil insects (especially beetles) is on the foreshore at Aldwick. This mode of fossilisation preserves insects uncrushed and they can be extracted simply by sieving. The insects are allochthonous, being derived from the land and associated with a marine fauna (of Lower Eocene age) after death. One species of beetle belongs to a genus, *Pactopus*, now confined to western North America, and otherwise unknown in a fossil state. Other beetles include representatives of modern tropical genera, as well as the earliest known members of the families Eucnemidae and Anobiidae.

## SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

### Operations likely to damage the special interest

**Site name: Bognor Reef (OLD1004068)**

#### Ref. No. Type of operation

1. Cultivation, including ploughing, rotovating, harrowing, and re-seeding.
2. Grazing and changes in the grazing regime (including type of stock or intensity or seasonal pattern of grazing and cessation of grazing).
3. Stock feeding and changes in stock feeding practice.
4. Mowing or other methods of cutting vegetation and changes in the mowing or cutting regime (including hay making to silage and cessation).
5. Application of manure, fertilisers and lime.
6. Application of pesticides, including herbicides (weedkillers).
7. Dumping, spreading or discharge of any materials.
8. Burning.
9. The release into the site of any wild, feral or domestic animal\*, plant or seed.
10. The killing or removal of any wild animal\*, including pest control.
11. The destruction, displacement, removal or cutting of any plant or plant remains, including tree, shrub, herb, hedge, dead or decaying wood, moss, lichen, fungus, leaf-mould, turf.
12. Tree and/or woodland management+ and changes in tree and/or woodland management+.
- 13a. Drainage (including the use of mole, tile, tunnel or other artificial drains).
14. The changing of water levels and tables and water utilisation (including irrigation, storage and abstraction from existing water bodies and through boreholes).
15. Infilling of ditches, dykes, drains, ponds, pools, marshes or pits.
- 16b. Coastal fishing or fisheries management and seafood or marine life collection, including the use of traps or fish cages.
17. Reclamation of land from sea, estuary or marsh.
18. Bait digging in intertidal areas.
19. Erection of sea defences or coast protection works, including cliff or landslip drainage or stabilisation measures.
20. Extraction of minerals, including shingle, sand and gravel, topsoil, subsoil, shells and spoil.
21. Construction, removal or destruction of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, or the laying, maintenance or removal of pipelines and cables, above or below ground.
22. Storage of materials.
23. Erection of permanent or temporary structures, or the undertaking of engineering works, including drilling.
24. Modification of natural or man-made features, clearance of loose rock, scree or spoil and battering, buttressing, grading or seeding rock-faces, outcrops or cuttings, infilling of pits and quarries.
26. Use of vehicles or craft likely to damage or disturb features of interest.
27. Recreational or other activities likely to damage or disturb features of interest.
28. Game and waterfowl management and hunting practice.

\* 'Animal' includes any mammal, reptile, amphibian, bird, fish or invertebrate.

+ Including afforestation, planting, clear and selective felling, thinning, coppicing, modification of the stand or underwood, changes in species composition, cessation of management.

## SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

|                                        |                                                                                                                                                                                                                           |                               |      |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------|
| <b>Site Name:</b>                      | <b>Pagham Harbour</b>                                                                                                                                                                                                     |                               |      |
| <b>County:</b>                         | West Sussex                                                                                                                                                                                                               |                               |      |
| <b>District:</b>                       | Chichester, Arun                                                                                                                                                                                                          |                               |      |
| <b>Local Planning Authority:</b>       | Chichester District Council, Arun District Council                                                                                                                                                                        |                               |      |
| <b>Size:</b>                           | 615.9 hectares (1521.9 acres)                                                                                                                                                                                             |                               |      |
| <b>National Grid Ref:</b>              | SZ875970                                                                                                                                                                                                                  |                               |      |
| <b>Date Notified (Under 1949 Act):</b> | 1954                                                                                                                                                                                                                      | <b>Date of last revision:</b> | 1980 |
| <b>Date Notified (Under 1981 Act):</b> | 1986                                                                                                                                                                                                                      | <b>Date of last revision:</b> | -    |
| <b>Other Information:</b>              | This site lies within the South Coast Plain. Pagham Harbour is a proposed NCR site. This site contains Pagham Harbour GCR site and part of Bognor Regis (Palaeobotany) GCR site. This is also a proposed Ramsar/SPA site. |                               |      |

### Reason for Notification

This site comprises an extensive central area of salt-marsh and tidal mudflats with surrounding habitats including shingle, open water, reed swamp and wet permanent grassland. Pagham Harbour is of national importance for wintering wildfowl and waders and also for breeding birds both within the Harbour and the surrounding grazing pasture. The site supports nationally important communities of plants and invertebrates.

Pagham Harbour was reclaimed for agriculture in the late nineteenth century but was flooded again by a storm in the early twentieth century. The extensive intertidal mudflats are rich in algae and invertebrates and provide important feeding areas for birds.

Salt-marsh is a habitat threatened nationally through reclamation for agriculture. The lower part of the salt-marsh is dominated by the hybrid common cord-grass *Spartina anglica* with patches of the glassworts *Salicornia* spp. Above this zone sea-purslane *Halimione portulacoides* covers large areas with other species such as sea aster *Aster tripolium* in the periphery. At one part of the site within a mixed salt-marsh community greater sea-spurrey *Spergularia media* and sea lavender *Limonium vulgare* are found. The upper margin of the salt-marsh has developed a narrow strip of grassland dominated by sea couch *Elymus pycnanthus*.

Vegetated shingle is a nationally rare community. At Pagham, the type and extent of plant cover is dictated by the shifting nature of the substrates, the sea defence works, and by its relative exposure to the elements. In sheltered areas a diverse grass sward has developed with herbs such as early forget-me-not *Myosotis ramosissima*, biting stonecrop *Sedum acre* and the nationally endangered childing pink *Petrorhagia nanteuilli*. This contrasts with the sparse vegetation of the shingle ridge where the uncommon sea-kale *Crambe maritima* and yellow-vetch *Vicia lutea* are found.

Pagham Harbour has a wide variety of wetland habitats. Brackish drainage ditches dissect the land where common reed *Phragmites australis* dominates. This forms fairly extensive swamps in some areas including the Severals to the west of the Harbour which are important for breeding and migrating reed and sedge warblers. Sidlesham ferry to the north-west provides high water feeding and roosting areas for waders while Pagham Lagoon in the east is a stormy weather sheltering site for sea duck. Here may also be found the nationally endangered starlet sea anemone *Nematostella vectensis*.

The small amount of woodland at Pagham Harbour is dominated by willow and oak. One of these areas supports a small heronry. In contrast, the ancient woodland at Norton Priory is drier with oak standards and a rich ground flora. Scrub is found both in the form of hedges and as more extensive patches with hawthorn *Crataegus monogyna* and gorse *Ulex europaeus* being the main constituents. The damp unimproved grassland surrounding the Harbour is used as a major wader roost and is grazed by large numbers of Brent Geese. Some fields of improved grassland are included in the site as they too, support nationally important populations of birds.

Pagham Harbour is an overwintering area for over 120 species of bird. The numbers of wintering pintail,

ringed and grey plover and black-tailed godwit regularly reach 1% of British populations and the site is of international importance for wintering ruff and Brent Geese. The mudflats also provide food for a diverse breeding community of birds including oystercatcher, shelduck and redshank.

Notable invertebrates include the sand dart *Agrotis ripae*, Matthew's wainscot moth *Mythimna favicolor* and the long-winged conehead grasshopper *Conocephalus discolor*.

### **Geology**

Pagham Harbour is a key site for coastal geomorphology. It is significant both as a classic shingle spit landform and for the links that have been demonstrated between the coastal near shore and offshore forms and sediments. The shingle spit system comprises a series of sub-parallel ridges and recurves, marking different phases of extension and frontal accretion. Shingle reaches the beach *via* the intertidal zone, and the so-called "Pagham delta" and the behaviour of the spits and delta are intimately linked with water and sediment circulation around the Selsey peninsula. The area also provides an excellent example of the role of weed rafting of shingle in coastal sediment budgets.

This site also includes, at the north-eastern end, part of a key site for plant fossils from the London Clay (divisions B<sub>1</sub> and B<sub>2</sub>). It is the only locality in the Hampshire Basin to yield abundant London Clay plants and the only site known to have yielded plants from the B<sub>2</sub> division of this formation. The site has yielded examples of some one hundred and thirty species (representing seventy families), including numerous type specimens. Dominant families include the Vitaceae, Menispermaceae and Burseraceae. The genera *Bognoria* and *Aldwichia* are only found here, as are some thirty species. An outstanding palaeobotanical site of great importance to studies of Tertiary floras.

## SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

### Operations likely to damage the special interest

**Site name: Pagham Harbour (OLD1000620)**

#### **Ref. No. Type of operation**

1. Cultivation, including ploughing, rotovating, harrowing, and re-seeding.
2. Grazing and changes in the grazing regime (including type of stock or intensity or seasonal pattern of grazing and cessation of grazing).
3. Stock feeding and changes in stock feeding practice.
4. Mowing or other methods of cutting vegetation and changes in the mowing or cutting regime (including hay making to silage and cessation).
5. Application of manure, fertilisers and lime.
6. Application of pesticides, including herbicides (weedkillers).
7. Dumping, spreading or discharge of any materials.
8. Burning.
9. The release into the site of any wild, feral or domestic animal\*, plant or seed.
10. The killing or removal of any wild animal\*, including pest control.
11. The destruction, displacement, removal or cutting of any plant or plant remains, including tree, shrub, herb, hedge, dead or decaying wood, moss, lichen, fungus, leaf-mould, turf.
12. Tree and/or woodland management+ and changes in tree and/or woodland management+.
- 13a. Drainage (including the use of mole, tile, tunnel or other artificial drains).
- 13b. Modification of the structure of watercourses (eg rivers, streams, springs, ditches, dykes, drains), including their banks and beds, as by re-alignment, re-grading and dredging.
- 13c. Management of aquatic and bank vegetation for drainage purposes.
14. The changing of water levels and tables and water utilisation (including irrigation, storage and abstraction from existing water bodies and through boreholes).
15. Infilling of ditches, dykes, drains, ponds, pools, marshes or pits.
- 16a. Freshwater fishery production and/or management, including sporting fishing and angling.
- 16b. Coastal fishing or fisheries management and seafood or marine life collection, including the use of traps or fish cages.
17. Reclamation of land from sea, estuary or marsh.
18. Bait digging in intertidal areas.
19. Erection of sea defences or coast protection works, including cliff or landslip drainage or stabilisation measures.
20. Extraction of minerals, including shingle, sand and gravel, topsoil, subsoil, shells and spoil.
21. Construction, removal or destruction of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, or the laying, maintenance or removal of pipelines and cables, above or below ground.
22. Storage of materials.
23. Erection of permanent or temporary structures, or the undertaking of engineering works, including drilling.
24. Modification of natural or man-made features, clearance of loose rock, scree or spoil and battering, buttressing, grading or seeding rock-faces, outcrops or cuttings, infilling of pits and quarries.
26. Use of vehicles or craft likely to damage or disturb features of interest.
27. Recreational or other activities likely to damage or disturb features of interest.
28. Game and waterfowl management and hunting practice.

- \* 'Animal' includes any mammal, reptile, amphibian, bird, fish or invertebrate.
- + Including afforestation, planting, clear and selective felling, thinning, coppicing, modification of the stand or underwood, changes in species composition, cessation of management.

## KEY NATIONAL AND INTERNATIONAL SITE DESIGNATIONS

### National Nature Reserve (NNR)

National Nature Reserves are statutory reserves established under the Wildlife and Countryside Act 1981. NNRs may be owned by the relevant national body (e.g. Natural England in England) or established by agreement. A few are owned and managed by non-statutory bodies, for example the Sussex Wildlife Trust. NNRs cover a selection of the most important sites for nature conservation in the UK. There are six NNRs in Sussex.

### Special Area of Conservation (SAC)

Special Areas of Conservation are sites designated by Member States under the EC Habitats Directive. The aim is to establish a European network of important high quality conservation sites that will make a significant contribution to conserving habitats and species considered to be most in need of conservation at a European level. There are 12 SAC sites in Sussex.

### Special Protection Area (SPA)

Special Protection Areas are designated under the EC Birds Directive, to conserve the habitat of certain rare or vulnerable birds and regularly occurring migratory birds. Any significant pollution or disturbance to or deterioration of these sites has to be avoided. All SPAs are also designated as SSSIs. There are six SPA sites in Sussex.

### Ramsar

Ramsar sites are designated under the Convention on Wetlands of International Importance. Under the Convention, each government must select its best wetlands according to very clear criteria, which include: a wetland that regularly supports 20,000 or more waterbirds; a wetland that regularly supports 1% of the individuals in a population of one species or subspecies of waterbird. Wetlands are broadly defined to include marsh, fen, peatland and water. All designated Ramsar sites are also designated as SSSIs. There are four Ramsar sites in Sussex.

### National Park

National Parks are beautiful, spectacular and often dramatic expanses of countryside. In the UK people live and work in the National Parks and the farms, villages and towns are protected along with the landscape and wildlife. They differ from Areas of Outstanding Natural Beauty (AONBs) in that each National Park has its own authority for planning control and other services.

The creation of the South Downs National Park (SDNP) was confirmed on 12th November 2009 and came into being on 1st April 2010.

Further information can be found on the [SDNP Authority website](#).

### Area of Outstanding Natural Beauty (AONB)

Areas of Outstanding Natural Beauty are areas of high scenic quality that have statutory protection in order to conserve and enhance the natural beauty of their landscapes. They differ from National Parks in their more limited opportunities for extensive outdoor recreation and by the way they are managed. AONBs are designated by Natural England under the Countryside and Rights of Way Act 2000.

There are two AONBs in Sussex covering approx. 114,000 hectares; Chichester Harbour and High Weald. Each has an associated body concerned with the area's conservation:

**Chichester Harbour Conservancy** [www.conservancy.co.uk](http://www.conservancy.co.uk)

**High Weald AONB Unit** [www.highweald.org](http://www.highweald.org)

### Marine Conservation Zone (MCZ)

MCZs protect a range of nationally important marine wildlife, habitats, geology and geomorphology. In November 2013 27 MCZs were designated in English inshore and English and Welsh offshore waters in the first tranche of sites. Three of these sites were designated off Sussex; Kingmere, Beachy Head West and Pagham Harbour. More MCZs will be designated in future rounds or 'tranches', although it is uncertain how many.

Further information can be found on the [JNCC website](#).

### **Local Nature Reserve (LNR)**

Local Nature Reserves are for both people and wildlife. All district and county councils have powers to acquire, declare and manage LNRs. To qualify for LNR status, a site must be of importance for wildlife, geology, education or public enjoyment. Some are also SSSIs. There are 36 LNRs in Sussex.

### **Country Park**

Country Parks were established as a result of the 1968 Countryside Act to provide a wide range of opportunities for recreation, health, education and improve the quality of life for local communities. Natural England recognises Country Parks as significant places that contribute to England's accessible natural green space. There are 11 Country Parks in Sussex, the details of which can be obtained from the local authorities.

### **Local Geological Site (LGS)**

Previously known as Regionally Important Geological/Geomorphological Sites (RIGGS), LGS are non-statutory designations that have been identified by local geodiversity groups as being of importance. There are over 120 LGS in Sussex which have been assessed by the Sussex Geodiversity Partnership. The features identified as being important become a material consideration in any future development, and should be taken into account by the relevant local authority.

A selection of LGS with public access in Sussex can be viewed on the [Sussex Geodiversity Partnership's website](#).

### **Marine Site of Nature Conservation Importance (MSNCI)**

Marine Sites of Nature Conservation Importance are non-statutory sites identified on account of the special interest of their marine habitats, the fauna and flora, or for unusual geological and geomorphological features. They are an extension of the series of terrestrial SNCIs. The identification of these sites is to highlight their importance for marine wildlife and to emphasise the risks of certain operations damaging their interest. There are 23 MSNCIs off the Sussex coast.

### **Environmental Stewardship**

Environmental Stewardship is an agri-environment scheme managed by Natural England that provides funding to farmers and other land managers to deliver effective environmental management.

There are four elements to Environmental Stewardship, three of which are relevant in Sussex:

**Entry Level Stewardship (ELS)** goes beyond the Single Payment Scheme requirement to maintain land in good agricultural and environmental condition.

**Organic Entry Level Stewardship (OELS)** is the organic strand of ELS. It is geared to organic and organic/conventional mixed farming systems and is open to all farmers not receiving Organic Farming Scheme aid.

**Higher Level Stewardship (HLS)** involves more complex types of management where agreements are tailored to local circumstances.

Further information can be found on the [Natural England website](#).

**Further information on many of the designations listed above can be found on the [Natural England website](#).**

# Information Sheet on Ramsar Wetlands (RIS)

*Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8<sup>th</sup> Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9<sup>th</sup> 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](mailto:RIS@JNCC.gov.uk)

FOR OFFICE USE ONLY.

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Designation date

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Site Reference Number

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## 2. Date this sheet was completed/updated:

Designated: 30 March 1988

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## 3. Country:

UK (England)

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## 4. Name of the Ramsar site:

Pagham Harbour

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

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

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## 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* ✓ -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* ✓ -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 45 48 N                      00 45 38 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: Chichester

10 km south-east of Chichester.

**Administrative region:** West Sussex

**10. Elevation (average and/or max. & min.) (metres):    11. Area (hectares): 636.68**

Min.        -1

Max.        5

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.

Pagham Harbour comprises an extensive central area of saltmarsh and tidal mudflats with surrounding habitats including lagoons, shingle, open water, reed swamp and wet permanent grassland.

The intertidal mudflats are rich in invertebrate and algae, and provide important feeding areas for birds. The lower saltmarsh is dominated by common cord-grass but also includes patches of glasswort. At higher levels sea-purslane is abundant. The area supports internationally important numbers of wintering pintail and nationally important numbers of dark-bellied brent goose, grey plover and black-tailed godwit.

**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).

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

**Qualifying Species/populations (as identified at designation):**

**Species with peak counts in winter:**

Dark-bellied brent goose, *Branta bernicla* 2512 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3)

**Species/populations identified subsequent to designation for possible future consideration under criterion 6.**

**Species with peak counts in winter:**

Black-tailed godwit, *Limosa limosa islandica*, 377 individuals, representing an average of 1% 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](http://www.bto.org/survey/webs/webs-alerts-index.htm).

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

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

**a) biogeographic region:**

Atlantic

**b) biogeographic regionalisation scheme** (include reference citation):

Council Directive 92/43/EEC

**16. Physical features of the site:**

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

|                             |                                                                                                                                                                                                                                                  |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Soil & geology              | neutral, shingle, sand, mud, clay, alluvium, nutrient-rich, sedimentary, gravel                                                                                                                                                                  |
| Geomorphology and landscape | lowland, coastal, floodplain, shingle bar, subtidal sediments (including sandbank/mudbank), intertidal sediments (including sandflat/mudflat), open coast (including bay), enclosed coast (including embayment), estuary, islands, lagoon, pools |
| Nutrient status             | mesotrophic                                                                                                                                                                                                                                      |
| pH                          | circumneutral                                                                                                                                                                                                                                    |
| Salinity                    | brackish / mixosaline, fresh, saline / euhaline                                                                                                                                                                                                  |
| Soil                        | mainly mineral                                                                                                                                                                                                                                   |
| Water permanence            | usually permanent                                                                                                                                                                                                                                |

|                                   |                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary of main climatic features | Annual averages (Bognor Regis, 1971–2000)<br>( <a href="http://www.metoffice.com/climate/uk/averages/19712000/sites/bognor_regis.html">www.metoffice.com/climate/uk/averages/19712000/sites/bognor_regis.html</a> )<br>Max. daily temperature: 13.7° C<br>Min. daily temperature: 7.7° C<br>Days of air frost: 24.0<br>Rainfall: 717.4 mm<br>Hrs. of sunshine: 1902.9 |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**General description of the Physical Features:**

Pagham Harbour is an estuarine basin that comprises an extensive central area of saltmarsh and intertidal mudflats, surrounded by lagoons, shingle, open water, reed swamp and wet permanent grassland.

**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).

Pagham Harbour is an estuarine basin that comprises an extensive central area of saltmarsh and intertidal mudflats, surrounded by lagoons, shingle, open water, reed swamp and wet permanent grassland.

**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                                    | 33.3   |
| Other | Other                                          | 31     |
| E     | Sand / shingle shores (including dune systems) | 20.1   |
| H     | Salt marshes                                   | 5.2    |
| F     | Estuarine waters                               | 3.3    |
| J     | Coastal brackish / saline lagoons              | 2.4    |
| Sp    | Saline / brackish marshes: permanent           | 2.2    |
| Tp    | Freshwater marshes / pools: permanent          | 0.8    |
| W     | Shrub-dominated wetlands                       | 0.6    |
| A     | Shallow marine waters                          | 0.6    |
| M     | Rivers / streams / creeks: permanent           | 0.3    |
| 9     | Canals and drainage channels                   | 0.2    |

**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.

This site comprises an extensive central area of saltmarsh and tidal mudflats with surrounding habitats including shingles, open water, reed swamp and wet permanent grassland. Pagham Harbour is of national importance for wintering, wildfowl and waders and also for breeding birds both within the Harbour and the surrounding grazing pasture. The site supports nationally important communities of plants and invertebrates.

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.**

*Petrorhagia nanteuillii*

---

**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 with peak counts in spring/autumn:**

|                                                               |                                                                                                                      |
|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Little egret , <i>Egretta garzetta</i> , West Mediterranean   | 60 individuals, representing an average of 3.6% of the GB population (5 year peak mean 1998/9-2002/3)                |
| Whimbrel , <i>Numenius phaeopus</i> , Europe/Western Africa   | 104 individuals, representing an average of 3.4% of the GB population (5 year peak mean 1998/9-2002/3 - spring peak) |
| Common greenshank , <i>Tringa nebularia</i> , Europe/W Africa | 20 individuals, representing an average of 3.3% of the GB population (5 year peak mean 1998/9-2002/3)                |

**Species with peak counts in winter:**

|                                                                            |                                                                                                        |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Slavonian grebe , <i>Podiceps auritus</i> , Northwest Europe               | 14 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9-2002/3)  |
| Northern pintail , <i>Anas acuta</i> , NW Europe                           | 462 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3) |
| Grey plover , <i>Pluvialis squatarola</i> , E Atlantic/W Africa -wintering | 704 individuals, representing an average of 1.3% of the GB population (5 year peak mean 1998/9-2002/3) |
| Spotted redshank , <i>Tringa erythropus</i> , Europe/W Africa              | 5 individuals, representing an average of 3.6% of the GB population (5 year peak mean 1998/9-2002/3)   |

**Species Information****Nationally important species occurring on the site.****Invertebrates.**

*Nematostella vectensis*

---

**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

**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                             | +       | +        |

---

## 25. Current land (including water) use:

| Activity                                     | On-site | Off-site |
|----------------------------------------------|---------|----------|
| Nature conservation                          | +       |          |
| Tourism                                      | +       | +        |
| Recreation                                   | +       | +        |
| Current scientific research                  | +       |          |
| Bait collection                              | +       | +        |
| Arable agriculture (unspecified)             |         | +        |
| Permanent arable agriculture                 |         | +        |
| Livestock watering hole/pond                 | +       | +        |
| Permanent pastoral agriculture               | +       | +        |
| Hunting: recreational/sport                  | +       | +        |
| Sewage treatment/disposal                    | +       | +        |
| Flood control                                | +       | +        |
| Irrigation (incl. agricultural water supply) |         | +        |
| Transport route                              |         | +        |

|                   |  |   |
|-------------------|--|---|
| Urban development |  | + |
|-------------------|--|---|

## 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? |
|-------------------------|--------------------|----------------------------------------------------------|---------|----------|---------------|
| No factors reported     | NA                 |                                                          |         |          |               |
|                         |                    |                                                          |         |          |               |

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)                 | +       | +        |
| Special Protection Area (SPA)                                         | +       |          |
| Land owned by a non-governmental organisation for nature conservation | +       |          |
| Management agreement                                                  | +       |          |
| Site management statement/plan implemented                            | +       |          |

### b) Describe any other current management practices:

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

## 28. Conservation measures proposed but not yet implemented:

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

No information available

## 29. Current scientific research and facilities:

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

### Contemporary.

#### Fauna.

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

### Completed.

#### Environment, Flora and Fauna.

Extensive research and surveys into tidal regimes, sediment movement and the distribution of all major animal and plant groups has been carried out in Pagham Harbour.

## 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.

There is an interpretative centre for the Local Nature Reserve.

A full time Education Officer is employed, the programme being particularly directed at schoolchildren.

## 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.

Land based recreation:

Walking including dog walking - all year.

Bird watching - all year.

Sea bathing - mostly summer.

Wildfowling: Only in agreed areas - 1 September to 20 February

Adjacent seasonal caravan parks - mainly summer.

## 32. Jurisdiction:

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

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

## 33. Management authority:

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

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

## 34. Bibliographical references:

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

### Site-relevant references

Barne, JH, Robson, CF, Kaznowska, SS, Doody, JP & Davidson, NC & Buck, AL (eds.) (1998) *Coasts and seas of the United Kingdom. Region 8 Sussex: Rye Bay to Chichester Harbour*. Joint Nature Conservation Committee, Peterborough. (Coastal Directories Series.)

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- Robinson, AWH (1995) The harbour entrances of Poole, Christchurch and Pagham. *Geographical Journal*, **121**(1), 33-50
- Shedder, M & Shedder, A (1989) Lagoon survey of the south coast, Dorset to East Sussex, 1989. Final report. *Nature Conservancy Council, CSD Report*, No. **1116**
- Sneddon, P & Randall, RE (1994) *Coastal vegetated shingle structures of Great Britain: Appendix 3. Shingle sites in England*. Joint Nature Conservation Committee, Peterborough
- Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H & Whitehead, S (eds.) (2001) *The UK SPA network: its scope and content*. Joint Nature Conservation Committee, Peterborough (3 vols.)  
[www.jncc.gov.uk/UKSPA/default.htm](http://www.jncc.gov.uk/UKSPA/default.htm)
- West Sussex County Council (1987) *A guide to Pagham Harbour Nature Reserve*. West Sussex County Council, Chichester
- Wood, C (ed.) (1984) Sussex sublittoral survey. Selsey Bill to Beachy Head. *Nature Conservancy Council, CSD Report*, No. **527**

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Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**  
Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • email: [ramsar@ramsar.org](mailto:ramsar@ramsar.org)

# NATURA 2000 – STANDARD DATA FORM

## Special Protection Areas under the EC Birds Directive.

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

22/12/2015

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

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

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

Further technical documentation may be found here  
[http://bd.eionet.europa.eu/activities/Natura\\_2000/reference\\_portal](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](http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf)

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

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

<http://jncc.defra.gov.uk/>



# NATURA 2000 - STANDARD DATA FORM

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

SITE UK9012041  
SITENAME Pagham Harbour

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- [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

|                      |                                   |                             |
|----------------------|-----------------------------------|-----------------------------|
| <b>1.1 Type</b><br>A | <b>1.2 Site code</b><br>UK9012041 | <a href="#">Back to top</a> |
|----------------------|-----------------------------------|-----------------------------|

### 1.3 Site name

|                |
|----------------|
| Pagham Harbour |
|----------------|

|                                              |                                   |
|----------------------------------------------|-----------------------------------|
| <b>1.4 First Compilation date</b><br>1988-03 | <b>1.5 Update date</b><br>2015-12 |
|----------------------------------------------|-----------------------------------|

### 1.6 Respondent:

|                                                                                                       |
|-------------------------------------------------------------------------------------------------------|
| <b>Name/Organisation:</b> Joint Nature Conservation Committee                                         |
| <b>Address:</b> Joint Nature Conservation Committee Monkstone House City Road Peterborough<br>PE1 1JY |
| <b>Email:</b>                                                                                         |

### 1.7 Site indication and designation / classification dates

|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Date site classified as SPA:</b>                | 1988-03                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>National legal reference of SPA designation</b> | Regulations 12A and 13-15 of the Conservation Habitats and Species Regulations 2010,<br>( <a href="http://www.legislation.gov.uk/ukxi/2010/490/contents/made">http://www.legislation.gov.uk/ukxi/2010/490/contents/made</a> )<br>as amended by The Conservation of Habitats and Species (Amendment) Regulations 2011<br>( <a href="http://www.legislation.gov.uk/ukxi/2011/625/contents/made">http://www.legislation.gov.uk/ukxi/2011/625/contents/made</a> ). |

## 2. SITE LOCATION

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## 2.1 Site-centre location [decimal degrees]:

### Longitude

-0.760555556

### Latitude

50.76333333

## 2.2 Area [ha]:

629.01

## 2.3 Marine area [%]

53.4

## 2.4 Sitelength [km]:

0.0

## 2.5 Administrative region code and name

### NUTS level 2 code

### Region Name

|      |                              |
|------|------------------------------|
| UKJ2 | Surrey, East and West Sussex |
|------|------------------------------|

## 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

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| 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       | A675 | Branta bernicla bernicla |   |    | w                      | 1794 | 1794 | i    |      | G       | C               |       | C    |      |
| B       | A151 | Philomachus pugnax       |   |    | w                      | 10   | 10   | i    |      | G       | C               |       | C    |      |
| B       | A195 | Sterna albifrons         |   |    | r                      | 7    | 7    | p    | P    | G       | C               |       | C    |      |
| B       | A193 | Sterna hirundo           |   |    | r                      |      |      | p    | P    | DD      | C               |       | C    |      |

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information

- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

## 4. SITE DESCRIPTION

### 4.1 General site character

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| Habitat class              | % Cover            |
|----------------------------|--------------------|
| N03                        | 5.2                |
| N02                        | 39.2               |
| N01                        | 0.6                |
| N07                        | 2.8                |
| N14                        | 30.3               |
| N06                        | 1.0                |
| N16                        | 0.7                |
| N05                        | 20.2               |
| <b>Total Habitat Cover</b> | 100.00000000000001 |

### Other Site Characteristics

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

### 4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC) During the breeding season the area regularly supports: *Sterna albifrons* (Eastern Atlantic - breeding) 0.3% of the GB breeding population 5 year mean, 1992-1996 *Sterna hirundo* (Northern/Eastern Europe - breeding) % of the GB breeding population Count, as at 1996 Over winter the area regularly supports: *Philomachus pugnax* (Western Africa - wintering) 1.4% of the GB population 5 year mean, 1995-1999 ARTICLE 4.2 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: *Branta bernicla bernicla* (Western Siberia/Western Europe) 0.6% of the population 5 year peak mean 1991/92-1995/96

### 4.3 Threats, pressures and activities with impacts on the site

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

| Negative Impacts |                              |                             |                        |
|------------------|------------------------------|-----------------------------|------------------------|
| Rank             | Threats and pressures [code] | Pollution (optional) [code] | inside/outside [i o b] |
| H                | H02                          |                             | B                      |
| H                | G01                          |                             | I                      |
| H                | J02                          |                             | B                      |
| H                | F02                          |                             | I                      |

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

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

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

i = inside, o = outside, b = both

| Positive Impacts |                               |                             |                        |
|------------------|-------------------------------|-----------------------------|------------------------|
| Rank             | Activities, management [code] | Pollution (optional) [code] | inside/outside [i o b] |
| H                | B02                           |                             | I                      |
| H                | G03                           |                             | I                      |
| H                | A02                           |                             | I                      |
| H                | D05                           |                             | I                      |

## 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://jncc.defra.gov.uk/pdf/Natura2000\\_StandardDataForm\\_UKApproach\\_Dec2015.pdf](http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf)  
<http://publications.naturalengland.org.uk/category/6490068894069216>

## 5. SITE PROTECTION STATUS (optional)

### 5.1 Designation types at national and regional level:

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| Code | Cover [%] | Code | Cover [%] | Code | Cover [%] |
|------|-----------|------|-----------|------|-----------|
| UK04 | 100.0     |      |           |      |           |

## 6. SITE MANAGEMENT

### 6.1 Body(ies) responsible for the site management:

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|               |                 |
|---------------|-----------------|
| Organisation: | Natural England |
| Address:      |                 |
| Email:        |                 |

### 6.2 Management Plan(s):

An actual management plan does exist:

|                                     |                        |
|-------------------------------------|------------------------|
| <input type="checkbox"/>            | Yes                    |
| <input type="checkbox"/>            | No, but in preparation |
| <input checked="" type="checkbox"/> | No                     |

### 6.3 Conservation measures (optional)

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

# EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS

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

## 1.1 Site type

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

## 3.1 Habitat representativity

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

## 3.1 Habitat code

| CODE | DESCRIPTION                                                                                                                  | PAGE NO |
|------|------------------------------------------------------------------------------------------------------------------------------|---------|
| 1110 | Sandbanks which are slightly covered by sea water all the time                                                               | 57      |
| 1130 | Estuaries                                                                                                                    | 57      |
| 1140 | Mudflats and sandflats not covered by seawater at low tide                                                                   | 57      |
| 1150 | Coastal lagoons                                                                                                              | 57      |
| 1160 | Large shallow inlets and bays                                                                                                | 57      |
| 1170 | Reefs                                                                                                                        | 57      |
| 1180 | Submarine structures made by leaking gases                                                                                   | 57      |
| 1210 | Annual vegetation of drift lines                                                                                             | 57      |
| 1220 | Perennial vegetation of stony banks                                                                                          | 57      |
| 1230 | Vegetated sea cliffs of the Atlantic and Baltic Coasts                                                                       | 57      |
| 1310 | Salicornia and other annuals colonizing mud and sand                                                                         | 57      |
| 1320 | Spartina swards (Spartinion maritimae)                                                                                       | 57      |
| 1330 | Atlantic salt meadows (Glauco-Puccinellietalia maritimae)                                                                    | 57      |
| 1340 | Inland salt meadows                                                                                                          | 57      |
| 1420 | Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)                                               | 57      |
| 2110 | Embryonic shifting dunes                                                                                                     | 57      |
| 2120 | Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")                                                   | 57      |
| 2130 | Fixed coastal dunes with herbaceous vegetation ("grey dunes")                                                                | 57      |
| 2140 | Decalcified fixed dunes with Empetrum nigrum                                                                                 | 57      |
| 2150 | Atlantic decalcified fixed dunes (Calluno-Ulicetea)                                                                          | 57      |
| 2160 | Dunes with Hippophae 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 Callitriche-Batrachion vegetation                        | 57      |
| 4010 | Northern Atlantic wet heaths with Erica tetralix                                                                                      | 57      |
| 4020 | Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix                                                                  | 57      |
| 4030 | European dry heaths                                                                                                                   | 57      |
| 4040 | Dry Atlantic coastal heaths with Erica vagans                                                                                         | 57      |
| 4060 | Alpine and Boreal heaths                                                                                                              | 57      |
| 4080 | Sub-Arctic Salix spp. scrub                                                                                                           | 57      |
| 5110 | Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)                                         | 57      |
| 5130 | Juniperus communis formations on heaths or calcareous grasslands                                                                      | 57      |
| 6130 | Calaminarian grasslands of the Violetalia calaminariae                                                                                | 57      |
| 6150 | Siliceous alpine and boreal grasslands                                                                                                | 57      |
| 6170 | Alpine and subalpine calcareous grasslands                                                                                            | 57      |
| 6210 | Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)             | 57      |
| 6230 | Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)               | 57      |
| 6410 | Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)                                                  | 57      |
| 6430 | Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels                                               | 57      |
| 6510 | Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)                                                                   | 57      |
| 6520 | Mountain hay meadows                                                                                                                  | 57      |
| 7110 | Active raised bogs                                                                                                                    | 57      |
| 7120 | Degraded raised bogs still capable of natural regeneration                                                                            | 57      |
| 7130 | Blanket bogs (* if active bog)                                                                                                        | 57      |
| 7140 | Transition mires and quaking bogs                                                                                                     | 57      |
| 7150 | Depressions on peat substrates of the Rhynchosporion                                                                                  | 57      |
| 7210 | Calcareous fens with Cladium mariscus and species of the Caricion davallianae                                                         | 57      |
| 7220 | Petrifying springs with tufa formation (Cratoneurion)                                                                                 | 57      |
| 7230 | Alkaline fens                                                                                                                         | 57      |
| 7240 | Alpine pioneer formations of the Caricion bicoloris-atrofuscae                                                                        | 57      |
| 8110 | Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)                                      | 57      |
| 8120 | Calcareous and calcshist screes of the montane to alpine levels (Thlaspietalia rotundifolii)                                          | 57      |
| 8210 | Calcareous rocky slopes with chasmophytic vegetation                                                                                  | 57      |
| 8220 | Siliceous rocky slopes with chasmophytic vegetation                                                                                   | 57      |
| 8240 | Limestone pavements                                                                                                                   | 57      |
| 8310 | Caves not open to the public                                                                                                          | 57      |
| 8330 | Submerged or partially submerged sea caves                                                                                            | 57      |
| 9120 | Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion roburi-petraeae or Ilici-Fagenion) | 57      |
| 9130 | Asperulo-Fagetum beech forests                                                                                                        | 57      |
| 9160 | Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli                                                   | 57      |
| 9180 | Tilio-Acerion forests of slopes, screes and ravines                                                                                   | 57      |
| 9190 | Old acidophilous oak woods with Quercus robur on sandy plains                                                                         | 57      |
| 91A0 | Old sessile oak woods with Ilex and Blechnum in the British Isles                                                                     | 57      |
| 91C0 | Caledonian forest                                                                                                                     | 57      |
| 91D0 | Bog woodland                                                                                                                          | 57      |
| 91E0 | Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)                            | 57      |
| 91J0 | Taxus baccata woods of the British Isles                                                                                              | 57      |

### 3.1 Relative surface

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

### 3.1 Conservation status habitat

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

### 3.1 Global grade habitat

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

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

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

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

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

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

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

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

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

### 3.3 Assemblages types

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

#### 4.1 Habitat class code

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

#### 4.3 Threats code

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

| CODE | DESCRIPTION                                                                                                                                                                                                                                                                                                                             | PAGE NO |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| E03  | Discharges                                                                                                                                                                                                                                                                                                                              | 65      |
| E04  | Structures, buildings in the landscape                                                                                                                                                                                                                                                                                                  | 65      |
| E06  | Other urbanisation, industrial and similar activities                                                                                                                                                                                                                                                                                   | 65      |
| F01  | Marine and Freshwater Aquaculture                                                                                                                                                                                                                                                                                                       | 65      |
| F02  | Fishing and harvesting aquatic resources                                                                                                                                                                                                                                                                                                | 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      |

# West Sussex Local Geological Site (LGS) Survey 2010



## Condition Monitoring Form for NI 197 Reporting

Woods Mill, Henfield, West Sussex BN5 9SD. Tel: 01273 497521  
Email: [sxbrcl@sussexwt.org.uk](mailto:sxbrcl@sussexwt.org.uk) Website: [www.sxbrcl.org.uk](http://www.sxbrcl.org.uk)

| 1. Site Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                                 |  |                              |  |                      |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------|--|------------------------------|--|----------------------|--|
| <b>Site Name &amp; LGS ID</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | <b>Bognor Foreshore SU90/10</b> |  |                              |  |                      |  |
| <b>Site Type</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | EC                              |  | <b>Grid Reference</b>        |  | SZ897976 to SU934987 |  |
| <b>Date of Visit</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | 06/10/2010                      |  | <b>Local Authority</b>       |  |                      |  |
| <b>Surveyor</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | Peter Anderton                  |  | <b>Landowner</b>             |  |                      |  |
| <b>1:50,000 BGS Sheet no.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | 317/332                         |  | <b>1:25,000 OS Sheet no.</b> |  | 121                  |  |
| <b>LGS designation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | <b>Scientific</b>               |  | <b>Educational</b>           |  | <b>Aesthetic</b>     |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | X                               |  | X                            |  |                      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                 |  |                              |  | <b>Historical</b>    |  |
| <b>Interest Feature(s):</b><br>Foreshore exposures of London Clay including sandstones forming the well known Bognor Rock Reef and visible offshore as the Bognor Rocks and Barn Rocks. Extremely important site for early Eocene fossils.<br><b>Stratigraphy:</b> London Clay Division A including Bognor Sand member, Division B including Barn Rock member, Division C, Thames Group, Early Eocene in age.<br><b>Sedimentology:</b> grey silty and sandy clay with interbedded seams of septarian concretions. Bognor Sand member comprises massive concretions of hard calcareous sandstone in a matrix of glauconitic sand. Barn Rock member is similar with smaller concretions. Deposited in a shallow marine environment with successive cycles of marine transgression and shallowing.<br><b>Palaeontology:</b> extremely important site for early Eocene fossils, notably plants, insects and birds. Also yields a diverse marine fauna including fish and molluscs. The Aldwick Beds are of international importance for their insect fauna particularly beetles. |  |                                 |  |                              |  |                      |  |
| <b>Previous management and dates (if any)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                 |  |                              |  |                      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                 |  |                              |  |                      |  |

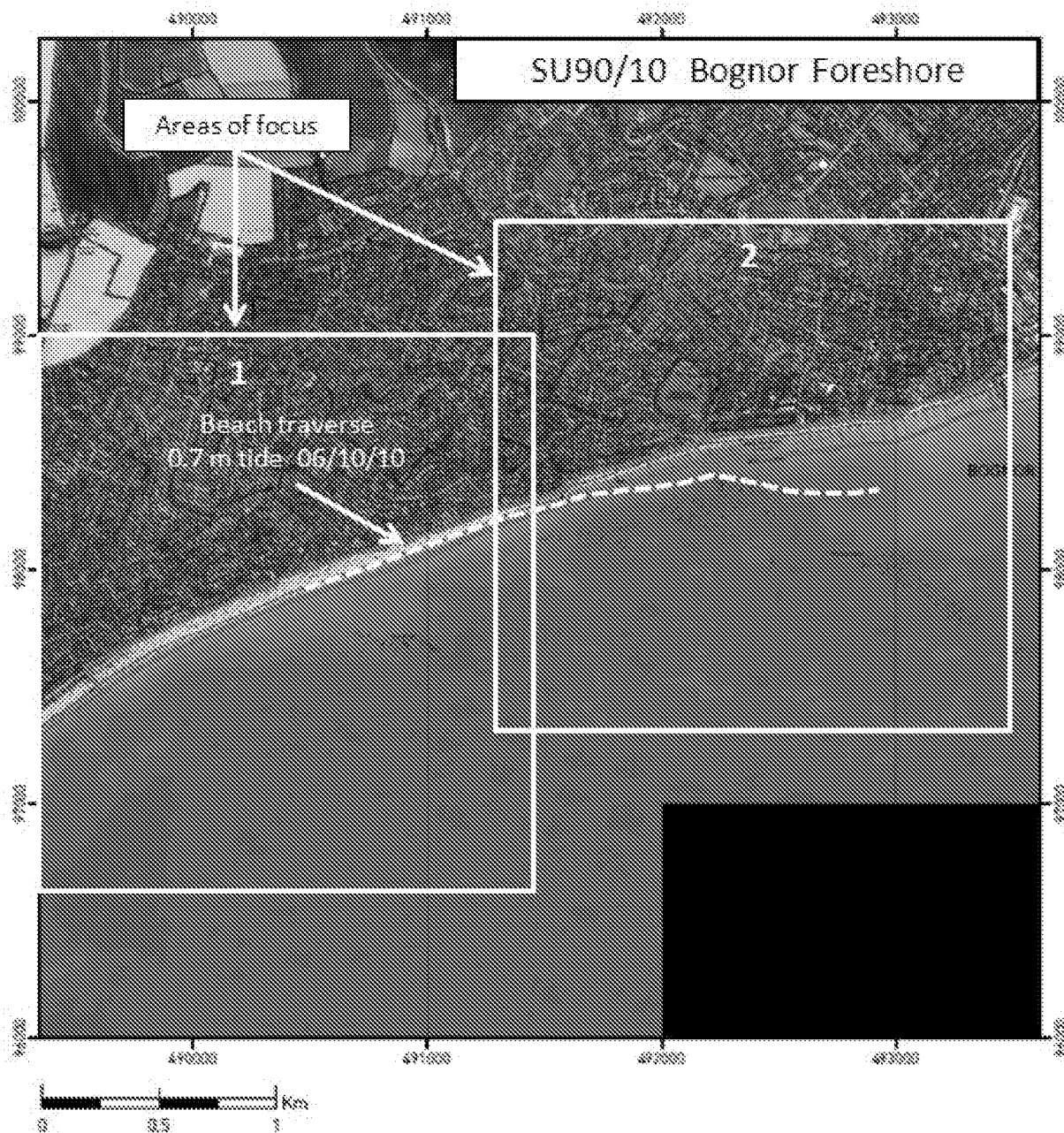
| 2. Primary Factors          |                                                                         |  |            |                                                                                                                                                                                                                                                                                                                              |  |  |
|-----------------------------|-------------------------------------------------------------------------|--|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Bedrock feature             | <b>Is (are) the feature(s) exposed?</b>                                 |  | <b>Y</b>   | <b>If No, can it (they) practically be re-exposed?</b>                                                                                                                                                                                                                                                                       |  |  |
|                             | <b>Is (are) the feature(s) being affected by the following factors?</b> |  |            |                                                                                                                                                                                                                                                                                                                              |  |  |
|                             | <b>Factor</b>                                                           |  | <b>Y/N</b> | <b>Comments</b>                                                                                                                                                                                                                                                                                                              |  |  |
|                             | Vegetation                                                              |  | N          |                                                                                                                                                                                                                                                                                                                              |  |  |
|                             | Scree/Mass Movement                                                     |  | N          |                                                                                                                                                                                                                                                                                                                              |  |  |
|                             | Flooding                                                                |  | N          |                                                                                                                                                                                                                                                                                                                              |  |  |
|                             | Dumping/Landfill                                                        |  | N          |                                                                                                                                                                                                                                                                                                                              |  |  |
|                             | Quarrying/Engineering Works                                             |  | N          |                                                                                                                                                                                                                                                                                                                              |  |  |
|                             | Development (housing/industrial)                                        |  | N          |                                                                                                                                                                                                                                                                                                                              |  |  |
|                             | Others (please define) - Coastal erosion                                |  | Y          | The shingle beach is being managed for coastal protection so the exposures on the foreshore are being gradually eroded and are usually covered by sand and water. However, shallow digging could reveal exposures where necessary. Fossils are continually eroded from the sediments and can be found in the beach deposits. |  |  |
| Superficial deposit feature | <b>Is (are) the feature(s) exposed?</b>                                 |  | <b>N/A</b> | <b>If No, can it (they) practically be re-exposed?</b>                                                                                                                                                                                                                                                                       |  |  |
|                             | <b>Is (are) the feature(s) being affected by the following factors?</b> |  |            |                                                                                                                                                                                                                                                                                                                              |  |  |
|                             | Vegetation (Trees or crop planting)                                     |  |            |                                                                                                                                                                                                                                                                                                                              |  |  |
|                             | Agricultural practices (deep ploughing)                                 |  |            |                                                                                                                                                                                                                                                                                                                              |  |  |
|                             | Quarrying/Engineering Works                                             |  |            |                                                                                                                                                                                                                                                                                                                              |  |  |
|                             | Development (housing/industrial)                                        |  |            |                                                                                                                                                                                                                                                                                                                              |  |  |
|                             | Others (please define) -                                                |  |            |                                                                                                                                                                                                                                                                                                                              |  |  |

|                       |                                                                             |   |     |
|-----------------------|-----------------------------------------------------------------------------|---|-----|
| Geomorphology feature | Is (are) the geomorphological feature(s) being allowed to evolve naturally? |   | N/A |
|                       | Is (are) the feature(s) being affected by the following factors?            |   |     |
|                       | Vegetation                                                                  | N |     |
|                       | Sea Defences                                                                | N |     |
|                       | River Management                                                            | N |     |
|                       | Ground Stabilisation (slopes/sand dunes)                                    | N |     |
|                       | Water level change                                                          | N |     |
|                       | Development (housing/industrial)                                            | N |     |
|                       | Others (please define) –                                                    | N |     |

| 3. Secondary Factors                                                                                                                    |                                                                      |     |                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Factors that do not directly affect the feature(s) but may need to be managed in order for feature(s) to maintain a desirable condition |                                                                      |     |                                                                                                                                                                                                                                                                    |
|                                                                                                                                         | Factor                                                               | Y/N | Comments                                                                                                                                                                                                                                                           |
| Site access                                                                                                                             | Are any of the following causing difficulties in accessing the site? |     |                                                                                                                                                                                                                                                                    |
|                                                                                                                                         | Physical obstacles                                                   | N   |                                                                                                                                                                                                                                                                    |
|                                                                                                                                         | Landowner permissions                                                | N   |                                                                                                                                                                                                                                                                    |
|                                                                                                                                         | Protected species/habitats                                           | N   |                                                                                                                                                                                                                                                                    |
|                                                                                                                                         | Other (please define)<br>Tides                                       | Y   | The foreshore exposures are only visible at very low tides and their full extent is only seen at extreme low tides (0.2 m). Even then an onshore wind can raise sea level enough to restrict access. Exposures are mainly visible between Bognor Pier and Aldwick. |
| Furniture                                                                                                                               | Are any of the following in an undesirable condition?                |     |                                                                                                                                                                                                                                                                    |
|                                                                                                                                         | Interpretation Boards                                                | N   |                                                                                                                                                                                                                                                                    |
|                                                                                                                                         | Benches/Fences/Gates                                                 | N   |                                                                                                                                                                                                                                                                    |
|                                                                                                                                         | Earthworks                                                           | N/A |                                                                                                                                                                                                                                                                    |
|                                                                                                                                         | Other (please define)                                                |     |                                                                                                                                                                                                                                                                    |
| Other features                                                                                                                          | Are there any other features of interest that should be considered?  |     |                                                                                                                                                                                                                                                                    |
|                                                                                                                                         | Biodiversity                                                         | Y   | Bognor reef is an SSSI designated for its biological as well as its geological value. Shingle and sand dune habitats are important.                                                                                                                                |
|                                                                                                                                         | Historic Environment                                                 | N   |                                                                                                                                                                                                                                                                    |
|                                                                                                                                         | Other (please define)                                                |     |                                                                                                                                                                                                                                                                    |

| 4. Site Status                                                                                                                                                                                                                                                                                                                                                                                                 |                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Overall, is the site in a desirable condition for use(s) of the feature(s) identified?                                                                                                                                                                                                                                                                                                                         | <u>Yes</u> / No / Uncertain      |
| If Yes - what management is required (if any) for the feature(s) to maintain a desirable condition:<br><br>At present the site is still accessible and frequently visited by fossil collectors. However, coastal erosion will continue and sea level will probably rise, gradually reducing visibility. Management is not practical. Any coastal defence works which cover the exposures would be detrimental, |                                  |
| For the above, is the management: <i>Being undertaken / Going to be undertaken / Not going to be undertaken / Not possible</i>                                                                                                                                                                                                                                                                                 |                                  |
| If Uncertain or No - what management is required for the feature(s) to reach and maintain a desirable condition:<br><br>                                                                                                                                                                                                                                                                                       |                                  |
| For the above, is the management: <i>Being undertaken / Going to be undertaken / Not going to be undertaken / Not possible</i>                                                                                                                                                                                                                                                                                 |                                  |
| Are there any secondary factors that need further management?                                                                                                                                                                                                                                                                                                                                                  | Yes / <u>No</u> / Not applicable |
| Suggested management in order for the feature(s) to reach/maintain a desirable condition:<br><br>                                                                                                                                                                                                                                                                                                              |                                  |

| 5. Supplementary Information - Natural England                                                                        |          |                |                                   |         |         |                |                        |                        |                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------|----------|----------------|-----------------------------------|---------|---------|----------------|------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Bognor Reef is designated as an SSSI by Natural England.                                                              |          |                |                                   |         |         |                |                        |                        |                                                                                                                                    |
| The citation is for its biological and geological value and it is classified by Natural England as a geological site. |          |                |                                   |         |         |                |                        |                        |                                                                                                                                    |
| Unit 3 of the SSSI corresponds to the foreshore.                                                                      |          |                |                                   |         |         |                |                        |                        |                                                                                                                                    |
| The latest condition assessment was in 2008 and a summary is shown below.                                             |          |                |                                   |         |         |                |                        |                        |                                                                                                                                    |
| Team - South East - Eastern Area - SSSI name - Bognor Reef - Staff member responsible for site - Elaine Webster       |          |                |                                   |         |         |                |                        |                        |                                                                                                                                    |
| County                                                                                                                | District | Main habitat   | Staff member responsible for unit | Unit no | Unit ID | Unit area (ha) | Latest assessment date | Assessment description | Condition assessment comment                                                                                                       |
| West Sussex                                                                                                           | Arun     | Earth heritage | Elaine Webster                    | 3       | 1019289 | 25.81          | 12 Sep 2008            | Favourable             | Foreshore exposures are only fully visible on lowest tides but there has been no recent obscurance or other activities which would |



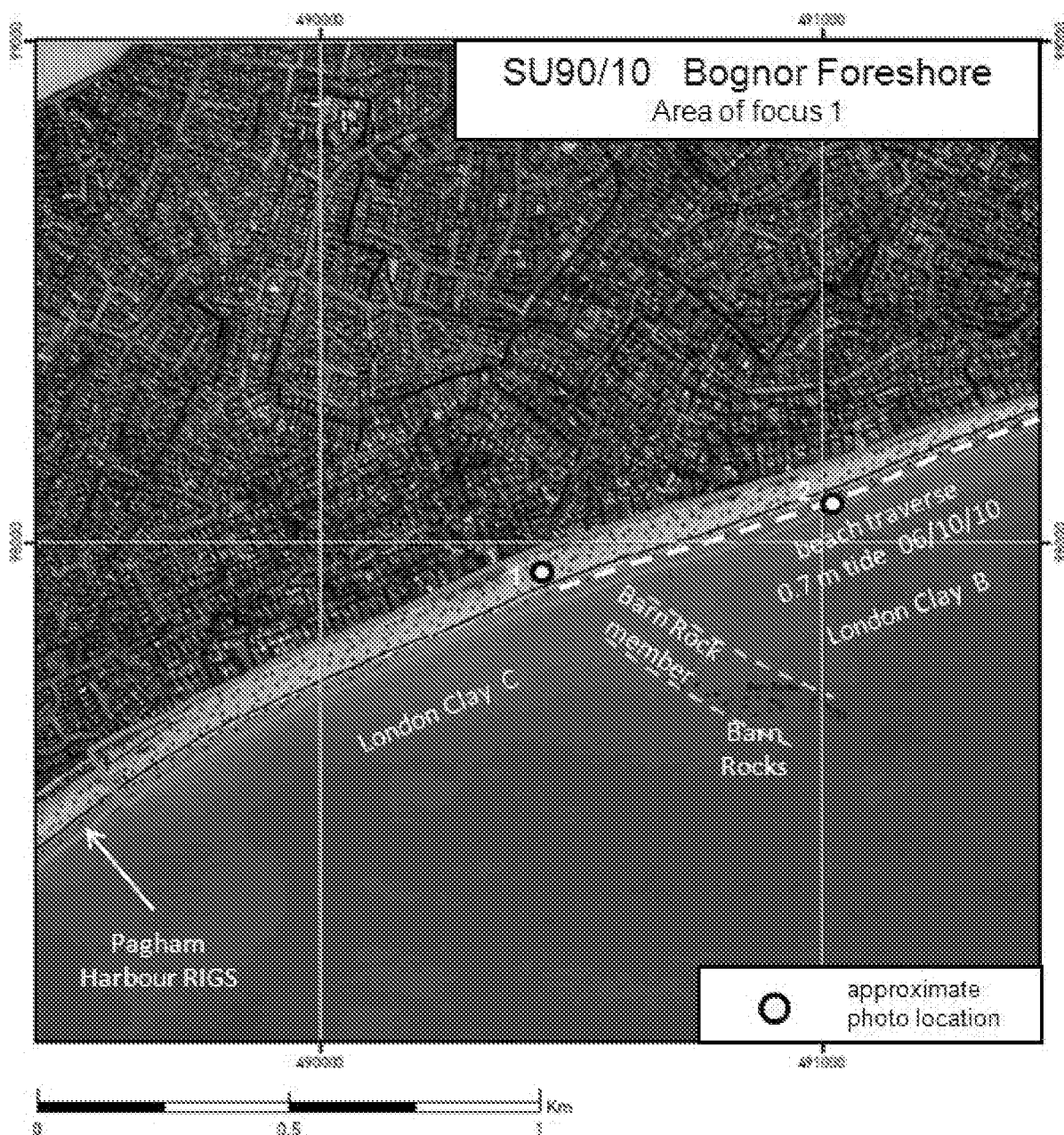
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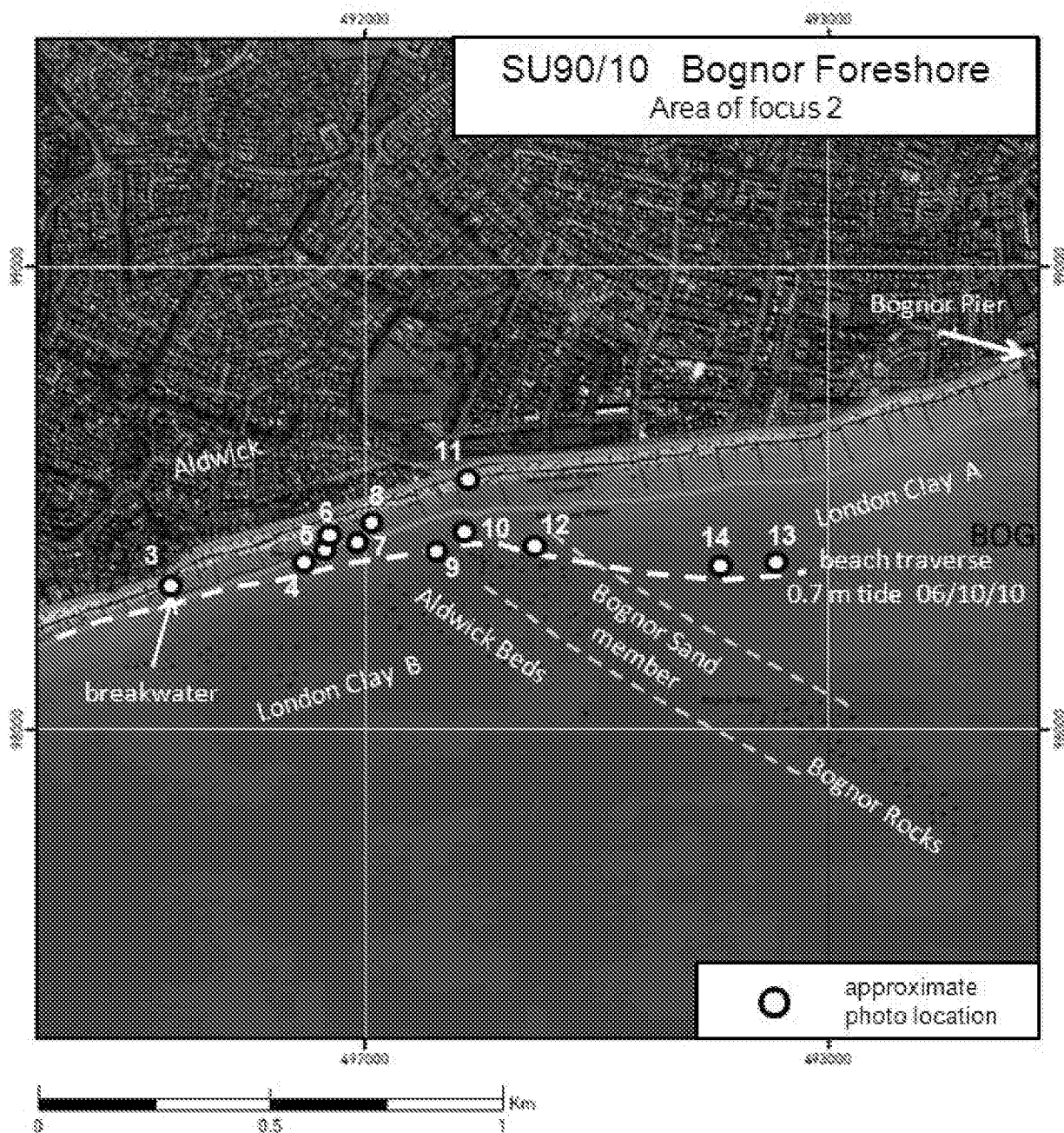
Photos – Eight figure grid references, landmark, direction of photo (bearing)



1. Foreshore at Coastguard Parade opposite Barn Rocks one hour before a low 0.5m tide on 07/10/10. No exposures are visible on the foreshore. The Barn Rocks themselves were also submerged although they are still visible on the lowest tides. Grid ref. SU90459795. Direction ENE.



2. Typical view of the foreshore between Coastguard Parade and the breakwater at Aldwick within one hour before a low 0.7m tide. No exposures are visible. Grid ref. SU91019808. Direction ENE.



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## Photos



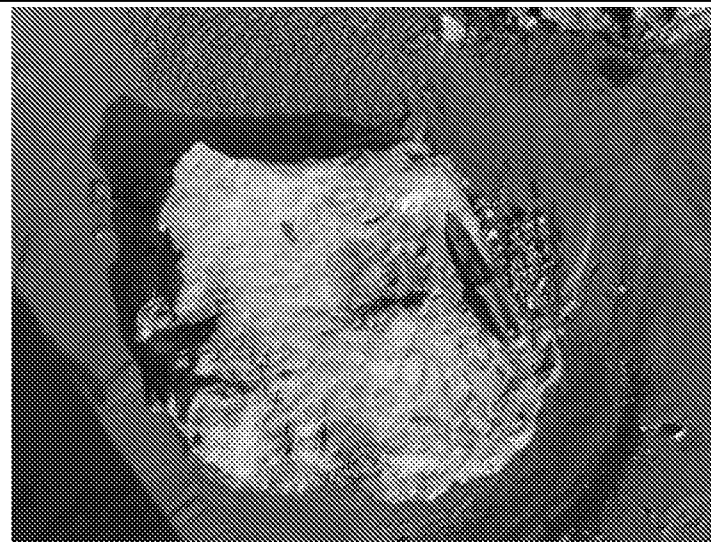
3. Foreshore viewed from Aldwick breakwater within one hour of low 0.7m tide. Rocks first appear on the foreshore west of this point. Grid ref. SU91589831. Direction ENE.



4. Foreshore between Aldwick breakwater and West Park showing first occurrence of large sandstone rocks characteristic of the Bognor Rock Reef. Grid ref. SU91879836. Direction ENE.



5. Sandstone rocks on the foreshore. The rocks higher on the foreshore are relatively clean but seaward they are encrusted with seaweed. Grid ref. SU91919838. Direction NE.



6. Detail of block of calcareous sandstone with bivalve shell fossils visible. Digging tool for scale 23cm. Grid ref. SU91929842.



7. This is in the vicinity of the Aldwick Beds but apart from the sandstone rocks and scattered septarian nodules the beds here are covered by sand. Grid ref. SU91989841. Direction NE.



8. Split fragments of septarian nodules on the upper foreshore. Digging tool for scale 23cm. Grid ref. SU92019845.



9. The sandstone rocks of the main Bognor Rock Reef exposed close to low 0.7m tide. Grid ref. SU92159838. Direction SE.



10. Large sandstone concretion elongated parallel to the bedding strike. Grid ref. SU92219843. Direction ENE.



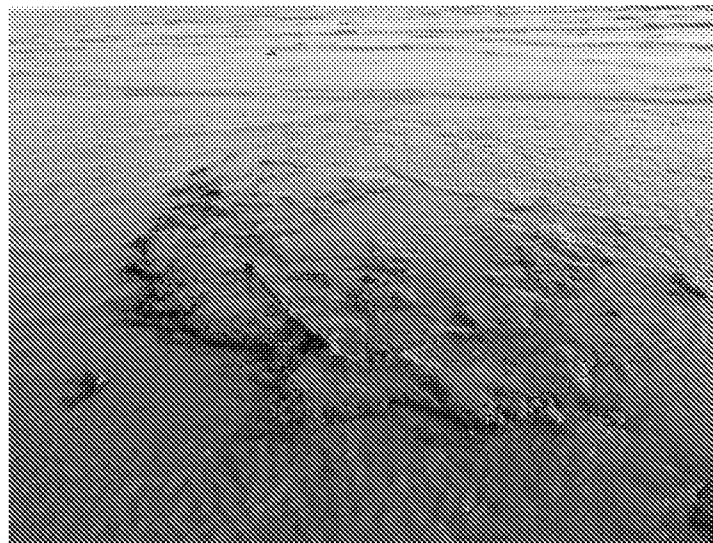
11. Bognor Rock Reef from the top of the beach with the offshore Bognor Rocks just visible on a low 0.7m tide. Grid ref. SU92229854. Direction SE.



12. Outcrop of softer sandstone to the west of the main reef. Elongated parallel to bedding strike. Grid ref. SU92369839. Direction E.



13. Grey clays of London Clay Division A exposed east of Bognor Pier just after a low 0.7m tide. Grid ref. SU92889836. Direction NW.



14. Detail of clay outcrop east of Bognor Pier. 1m pole for scale. Grid ref. SU92769836. Direction S.

# West Sussex Local Geological Site (LGS) Survey 2010

Condition Monitoring Form for NI 197 Reporting



| 1. Site Information                                                                                                                                                                                                                                                                                                            |  |                               |  |                              |  |                    |  |                   |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------|--|------------------------------|--|--------------------|--|-------------------|--|
| <b>Site Name &amp; LGS ID</b>                                                                                                                                                                                                                                                                                                  |  | <b>Pagham harbour SZ89/04</b> |  |                              |  |                    |  |                   |  |
| <b>Site Type</b>                                                                                                                                                                                                                                                                                                               |  | EC and IA                     |  | <b>Grid Reference</b>        |  | SZ875970           |  |                   |  |
| <b>Date of Visit</b>                                                                                                                                                                                                                                                                                                           |  | 19/08/2010                    |  | <b>Local Authority</b>       |  |                    |  |                   |  |
| <b>Surveyor</b>                                                                                                                                                                                                                                                                                                                |  | Peter Anderton                |  | <b>Landowner</b>             |  |                    |  |                   |  |
| <b>1:50,000 BGS Sheet no.</b>                                                                                                                                                                                                                                                                                                  |  | 317/332                       |  | <b>1:25,000 OS Sheet no.</b> |  | 120                |  |                   |  |
| <b>LGS designation</b>                                                                                                                                                                                                                                                                                                         |  | <b>Scientific</b>             |  | <b>X</b>                     |  | <b>Educational</b> |  | <b>X</b>          |  |
|                                                                                                                                                                                                                                                                                                                                |  |                               |  |                              |  | <b>Aesthetic</b>   |  |                   |  |
|                                                                                                                                                                                                                                                                                                                                |  |                               |  |                              |  |                    |  | <b>Historical</b> |  |
|                                                                                                                                                                                                                                                                                                                                |  |                               |  |                              |  |                    |  | <b>X</b>          |  |
| <b>Interest Feature(s):</b>                                                                                                                                                                                                                                                                                                    |  |                               |  |                              |  |                    |  |                   |  |
| Tidal inlet with double shingle spit at the entrance. Mud flats and marshes cover an area of about 2km by 2km. Key site for coastal geomorphology. Also includes SW end of Bognor foreshore underlain by Tertiary sediments of London Clay Formation (not investigated here, see report on LGS site Bognor Foreshore SU90/10). |  |                               |  |                              |  |                    |  |                   |  |
| <b>Stratigraphy:</b> London Clay Formation Division C, Thames Group, early Eocene in age.                                                                                                                                                                                                                                      |  |                               |  |                              |  |                    |  |                   |  |
| <b>Sedimentology:</b> Bedrock - clays deposited in shallow marine conditions.                                                                                                                                                                                                                                                  |  |                               |  |                              |  |                    |  |                   |  |
| Superficial - modern shingle beach deposits and tidal mud flats.                                                                                                                                                                                                                                                               |  |                               |  |                              |  |                    |  |                   |  |
| <b>Palaeontology:</b> key site for plant fossils from the London Clay.                                                                                                                                                                                                                                                         |  |                               |  |                              |  |                    |  |                   |  |
| <b>Geomorphology:</b> classic shingle spit platform with double spits across harbour entrance and related submarine accumulation with deltaic form beyond the harbour mouth. Active dynamic system driven by changes in longshore drift.                                                                                       |  |                               |  |                              |  |                    |  |                   |  |
| <b>Historical:</b> long history of changes in the shingle spits, including man-made ridge built across harbour mouth in 1876 and subsequently breached in a storm in 1910.                                                                                                                                                     |  |                               |  |                              |  |                    |  |                   |  |
| <b>Previous management and dates (if any)</b>                                                                                                                                                                                                                                                                                  |  |                               |  |                              |  |                    |  |                   |  |
|                                                                                                                                                                                                                                                                                                                                |  |                               |  |                              |  |                    |  |                   |  |

| 2. Primary Factors          |                                                                         |  |            |                                                                                                               |  |  |
|-----------------------------|-------------------------------------------------------------------------|--|------------|---------------------------------------------------------------------------------------------------------------|--|--|
| Bedrock feature             | <b>Is (are) the feature(s) exposed?</b>                                 |  | <b>N</b>   | <b>If No, can it (they) practically be re-exposed?</b>                                                        |  |  |
|                             | <b>Is (are) the feature(s) being affected by the following factors?</b> |  |            |                                                                                                               |  |  |
|                             | <b>Factor</b>                                                           |  | <b>Y/N</b> | <b>Comments</b>                                                                                               |  |  |
|                             | Vegetation                                                              |  | <b>N</b>   |                                                                                                               |  |  |
|                             | Scree/Mass Movement                                                     |  | <b>N</b>   |                                                                                                               |  |  |
|                             | Flooding                                                                |  | <b>N</b>   |                                                                                                               |  |  |
|                             | Dumping/Landfill                                                        |  | <b>N</b>   |                                                                                                               |  |  |
|                             | Quarrying/Engineering Works                                             |  | <b>N</b>   |                                                                                                               |  |  |
|                             | Development (housing/industrial)                                        |  | <b>N</b>   |                                                                                                               |  |  |
|                             | Others (please define) - Coastal sedimentation                          |  | <b>Y</b>   | London Clay deposits are usually buried beneath modern beach shingle, sand and water, and are rarely exposed. |  |  |
| Superficial deposit feature | <b>Is (are) the feature(s) exposed?</b>                                 |  | <b>Y</b>   | <b>If No, can it (they) practically be re-exposed?</b>                                                        |  |  |
|                             | <b>Is (are) the feature(s) being affected by the following factors?</b> |  |            |                                                                                                               |  |  |
|                             | Vegetation (Trees or crop planting)                                     |  |            |                                                                                                               |  |  |
|                             | Agricultural practices (deep ploughing)                                 |  |            |                                                                                                               |  |  |
|                             | Quarrying/Engineering Works                                             |  |            |                                                                                                               |  |  |
|                             | Development (housing/industrial)                                        |  |            |                                                                                                               |  |  |
|                             | Others (please define) -                                                |  |            |                                                                                                               |  |  |

|                       |                                                                             |   |   |
|-----------------------|-----------------------------------------------------------------------------|---|---|
| Geomorphology feature | Is (are) the geomorphological feature(s) being allowed to evolve naturally? |   | Y |
|                       | Is (are) the feature(s) being affected by the following factors?            |   |   |
|                       | Vegetation                                                                  | N |   |
|                       | Sea Defences                                                                | N |   |
|                       | River Management                                                            | N |   |
|                       | Ground Stabilisation (slopes/sand dunes)                                    | N |   |
|                       | Water level change                                                          | N |   |
|                       | Development (housing/industrial)                                            | N |   |
|                       | Others (please define) –                                                    | N |   |

| 3. Secondary Factors                                                                                                                    |                                                                      |     |                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------|
| Factors that do not directly affect the feature(s) but may need to be managed in order for feature(s) to maintain a desirable condition |                                                                      |     |                                                                                                                        |
|                                                                                                                                         | Factor                                                               | Y/N | Comments                                                                                                               |
| Site access                                                                                                                             | Are any of the following causing difficulties in accessing the site? |     |                                                                                                                        |
|                                                                                                                                         | Physical obstacles                                                   | N   |                                                                                                                        |
|                                                                                                                                         | Landowner permissions                                                | N   |                                                                                                                        |
|                                                                                                                                         | Protected species/habitats                                           | Y   | Parts of the nature reserve are not accessible and others have restricted access during the breeding season.           |
|                                                                                                                                         | Other (please define)<br>Tides                                       | Y   | Any exposures of London Clay would only be visible at very low tides or extreme low tides (0.2 m).                     |
| Furniture                                                                                                                               | Are any of the following in an undesirable condition?                |     |                                                                                                                        |
|                                                                                                                                         | Interpretation Boards                                                | N   |                                                                                                                        |
|                                                                                                                                         | Benches/Fences/Gates                                                 | N   |                                                                                                                        |
|                                                                                                                                         | Earthworks                                                           | N/A |                                                                                                                        |
|                                                                                                                                         | Other (please define)                                                |     |                                                                                                                        |
| Other features                                                                                                                          | Are there any other features of interest that should be considered?  |     |                                                                                                                        |
|                                                                                                                                         | Biodiversity                                                         | Y   | Pagham Harbour is an SSSI with major biological importance for wetland, salt marsh and shingle habitats and for birds. |
|                                                                                                                                         | Historic Environment                                                 | N   |                                                                                                                        |
|                                                                                                                                         | Other (please define)                                                |     |                                                                                                                        |

| 7. Site Status                                                                                                                                                                                                                                                             |                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Overall, is the site in a desirable condition for use(s) of the feature(s) identified?                                                                                                                                                                                     | <u>Yes</u> / No / Uncertain      |
| <p>If Yes - what management is required (if any) for the feature(s) to maintain a desirable condition:</p> <p>The site is managed for its biological value and no management is practical for the geological features. Any coastal defence works would be detrimental.</p> |                                  |
| <p>For the above, is the management: <i><b>Being undertaken</b></i> / <i>Going to be undertaken</i> / <i>Not going to be undertaken</i> / <i>Not possible</i></p>                                                                                                          |                                  |
| <p>If Uncertain or No - what management is required for the feature(s) to reach and maintain a desirable condition:</p>                                                                                                                                                    |                                  |
| <p>For the above, is the management: <i>Being undertaken</i> / <i>Going to be undertaken</i> / <i>Not going to be undertaken</i> / <i>Not possible</i></p>                                                                                                                 |                                  |
| Are there any secondary factors that need further management?                                                                                                                                                                                                              | Yes / <u>No</u> / Not applicable |
| <p>Suggested management in order for the feature(s) to reach/maintain a desirable condition:</p>                                                                                                                                                                           |                                  |

**Pagham Harbour is designated as an SSSI by Natural England.**

The citation is for its biological and geological value and it is classified by Natural England as a geological site.

Units 14 and 16 correspond to the outer spit and units 24 and 15 correspond to the inner spit.

The latest condition assessment was in 2010 and a summary is shown below.

**Team** - South East - Eastern Area - **SSSI name** - Pagham Harbour - **Staff member responsible for site** - Elaine Webster

| County      | District   | Main habitat           | Staff member responsible for unit | Unit no | Unit ID | Unit area (ha) | Latest assessment date | Assessment description | Condition assessment comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------|------------|------------------------|-----------------------------------|---------|---------|----------------|------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| West Sussex | Chichester | Supralittoral sediment | Elaine Webster                    | 14      | 1017447 | 19.05          | 12 Sep 2008            | Favourable             | First CVSM assessment and the vegetated shingle came out well. The coastal geomorphology is also in favourable condition.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| West Sussex | Arun       | Earth heritage         | Elaine Webster                    | 15      | 1016777 | 12.92          | 10 Jun 2010            | Favourable             | Site visited with SSSI officer Elaine Webster. SSSI interest feature assessed: SD1 - Rumex crispus - Glaucium flavum shingle community. The unit, part of the Pagham Harbour Local Nature Reserve, supports some strandline vegetation including Atriplex prostrata Spear-leaved Orache, Beta maritima Sea Beet, Sedum acre Biting Stonecrop and Suaeda maritima Annual Sea-blite. Since the previous assessment the shingle bar has shifted in position, as part of the natural dynamic processes of the shingle system. This change does not affect the assessment of this unit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| West Sussex | Chichester | Earth heritage         | Elaine Webster                    | 16      | 1017438 | 57.65          | 10 Jun 2010            | Favourable             | Site visited with SSSI Officer Elaine Webster. SSSI interest feature assessed: SD1 - Rumex crispus - Glaucium flavum shingle community. The unit, part of the Pagham Harbour Local Nature Reserve, supports shingle vegetation in its northern half including several positive indicator species, dominated by Crambe maritima with frequent Elytrigia atherica and occasional Glaucium flavum, Sedum acre, Cerastium diffusum and Solanum dulcamara. However, invasive red valerian Centranthus ruber is at risk of encroaching into the northern half of the unit and requires immediate attention. The council who are responsible for managing the Local Nature Reserve are aware of this problem. Much of this vegetation appears to have encroached from adjacent unit 14.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| West Sussex | Chichester | Supralittoral sediment | Elaine Webster                    | 24      | 1029562 | 19.48          | 10 Jun 2010            | Favourable             | Site visited with SSSI Officer Elaine Webster. SSSI interest feature assessed: SD1 - Rumex crispus - Glaucium flavum shingle community. The unit, part of the Pagham Harbour Local Nature Reserve, supports shingle vegetation including several positive indicator species, dominated by Crambe maritima with frequent Elytrigia atherica and occasional Glaucium flavum Yellow-horned Poppy, Echium vulgare Viper's-bugloss, Sedum acre Biting Stonecrop, Tripleurospermum maritimum Sea Mayweed, Cerastium diffusum Sea Mouse-ear and Solanum dulcamara Bittersweet. In addition there are patches of lichen cover (Cladonia spp and a black lichen which indicates minimal disturbance) scattered across the south-western end of the unit. Much of this vegetation is in good condition with these species occurring at appropriate levels of cover across the unit, especially within the south-western end of the unit. In addition, scattered Silene uniflora Sea Campion occurs within the central part of the unit near to the car park. However this appears to be adversely affected by rabbit grazing in this area which should be monitored. Also of concern is occasional invasive red valerian Centranthus ruber present particularly where the unit meets unit 23. Although not at a significant level of cover yet within this unit, this poses a serious risk to the condition of this unit and should be addressed as soon as possible, preferably as part of a wider plan to address this invasive species for the SSSI as a whole. The council who are responsible for managing the Local Nature Reserve are aware of this problem. |

**Pagham Harbour is designated as an SSSI by Natural England.**

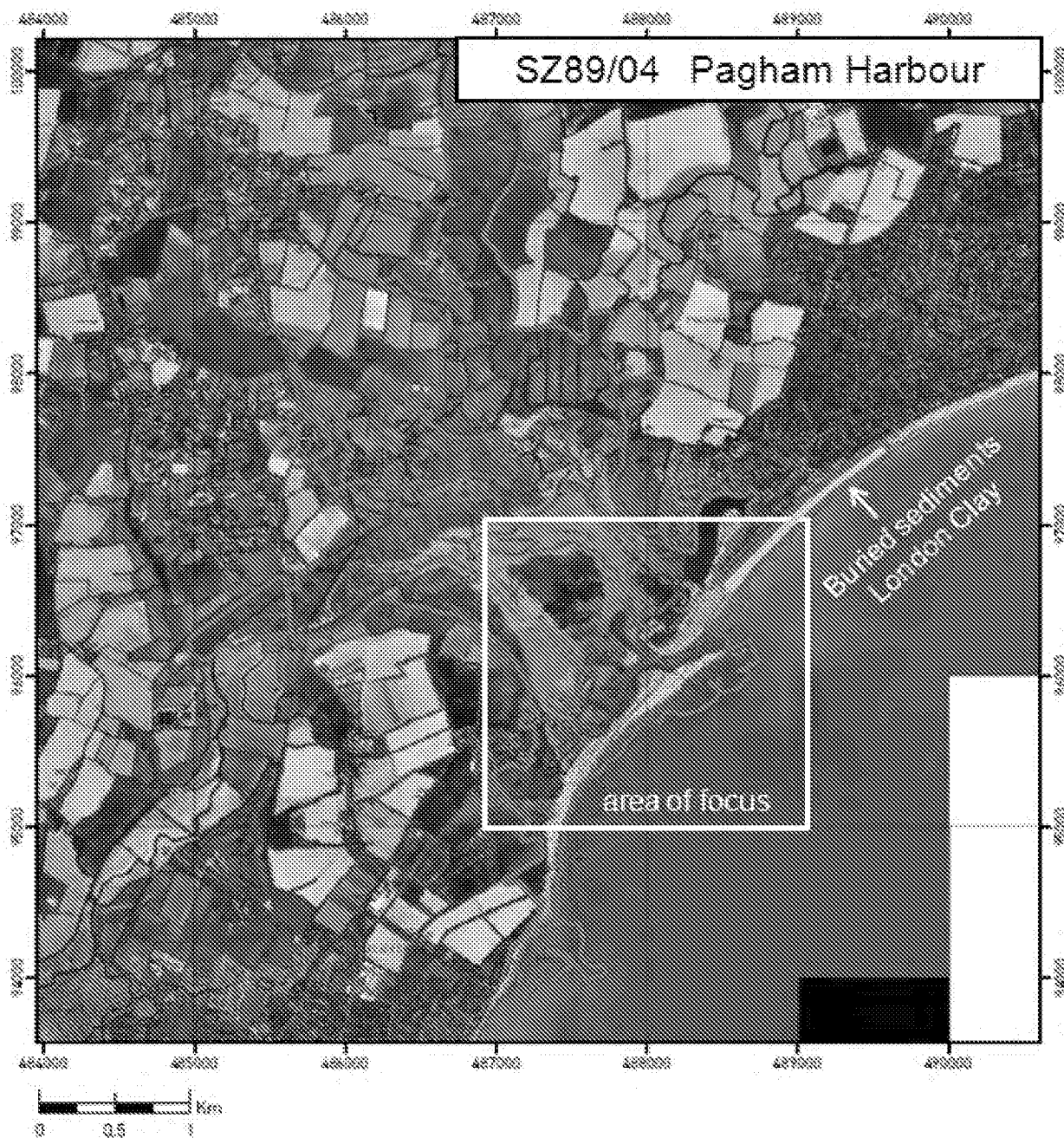
The citation is for its biological and geological value and it is classified by Natural England as a geological site.

Unit 23 corresponds to the SW end of Bognor foreshore.

The latest condition assessment was in 2010 and a summary is shown below.

**Team** - South East - Eastern Area - **SSSI name** - Pagham Harbour - **Staff member responsible for site** - Elaine Webster

| County      | District   | Main habitat           | Staff member responsible for unit | Unit no | Unit ID | Unit area (ha) | Latest assessment date | Assessment description | Condition assessment comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------|------------|------------------------|-----------------------------------|---------|---------|----------------|------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| West Sussex | Chichester | Supralittoral sediment | Elaine Webster                    | 23      | 1029561 | 9.41           | 10 Jun 2010            | Unfavourable no change | Site visited with SSSI Officer Elaine Webster. SSSI interest feature assessed: SD1 - Rumex crispus - Glaucium flavum shingle community. The unit, under private ownership, supports shingle vegetation including several positive indicator species, dominated by Crambe maritima with frequent Elytrigia atherica and occasional Glaucium flavum Yellow-horned Poppy, Echium vulgare Viper's-bugloss, Sedum acre Biting Stonecrop, Tripleurospermum maritimum Sea Mayweed, Cerastium diffusum Sea Mouse-ear and Solanum dulcamara Bittersweet. However the unit has been heavily invaded by red valerian Centranthus ruber which has established a dense and expanding cover, most likely as a result of garden invasives from the adjacent houses. It appears little action has been taken to remove this species over recent years, and requires immediate action to prevent further encroachment. This should be addressed preferably as part of a wider plan to address this invasive species for the SSSI as a whole. In addition, some of the neighbouring residents keep boats on the unit which has resulted in some degradation of existing shingle vegetation. |



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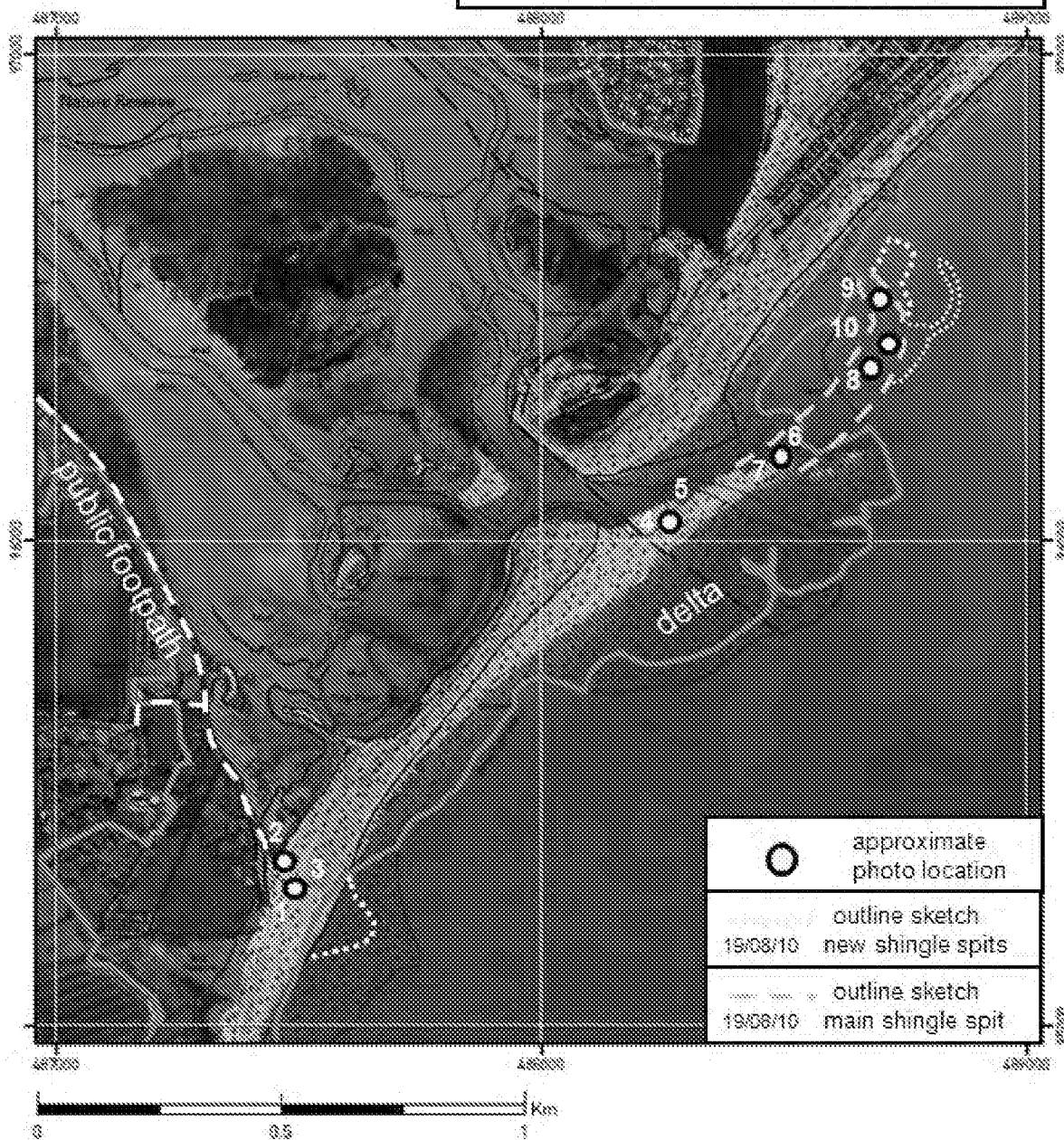
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# SZ89/04 Pagham Harbour



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## Photos



1. Outer spit viewed from SW end of the harbour. Grid ref. SZ87499528. Direction NE.



2. Outer spit with salt marsh behind viewed from SW end of the harbour. Grid ref. SZ97479533. Direction NNE.



3. Subsidiary spit developing at SW end of the harbour. Grid ref. SZ87499528. Direction SE.



4. NE end of outer spit showing channel between it and the inner spit. Grid ref. SZ88269603. Direction NE.



5. Location where the river channel breaches the spit system. Grid ref. SZ88269603. Direction WNW.



6. NW end of outer spit showing evidence of two earlier recurved spits behind the recurved termination of the present spit. This area has apparently formed since the time the aerial photograph was taken. Grid ref. SZ88499617. Direction NE.



7. Outer spit viewed from northern end with sea to the left and river channel to the right. Grid ref. SZ88499617. Direction SW.



8. Recurved tip of the present-day spit. Grid ref. SZ88679634. Direction NNE.



9. Subsidiary spit forming beyond the main outer spit at the present river mouth. Grid ref. SZ88699649. Direction NNE.



10. Subsidiary recurved spit forming beyond the main outer spit near the present river mouth. Grid ref. SZ88719640. Direction NE.

## COASTAL & FLOODPLAIN GRAZING MARSH

Grazing marsh is periodically inundated pasture, or meadow with ditches that maintain the water levels, containing standing brackish or fresh water. Sites may contain seasonal water-filled hollows and permanent ponds with emergent swamp communities.

### **Why is it important?**

- Wading birds such as redshank feed on invertebrates forced close to the surface by the high water table and shallow surface floods.
- Around 500 species of vascular plant have been recorded from grazing marsh including rare species such as narrow-leaved water-dropwort.
- It supports large numbers of invertebrates including over a thousand nationally notable species.
- Drainage channels and open water associated with grazing marsh support a number of fish species and can provide important spawning areas.
- Water filled ditches are often used by otter, water vole, and various dragonflies.



Lapwing

### **Coastal and floodplain grazing marsh in Sussex**

Sussex has around 14,000 hectares of grazing marsh, with the rivers Arun, Adur, Ouse and Cuckmere all having important areas. Just under half of Sussex's floodplains consist of wet grassland, however much of this has been agriculturally improved decreasing its value for wildlife. Pevensey Levels is one of only three sites in Britain where the large fen raft spider is found, and two rare species of ramshorn snail can also be found in Sussex.

### **What are the threats?**

- Conversion to agriculture through drainage and fertilizer application.
- Drainage and flood defences can disrupt the hydrology of sites.
- Overgrazing, neglect or early grazing, can affect breeding birds.
- Water pollution, which can be exacerbated if concentrated by over-abstraction.
- Floodplain development, aggregate extraction and recreational pressure.
- Isolation and fragmentation of sites reduces dispersal opportunities making species more susceptible to extinction.

### **Some associated species**

- Lapwing *Vanellus vanellus*
- Merlin *Falco columbarius*
- Marsh mallow moth *Hydraecia osseola*
- Desmoulin's whorl snail *Vertigo moulinsiana*
- Greater water parsnip *Sium latifolium*
- Star sedge *Carex echinata*

### **Further information**

- Floodplain Meadows Partnerships [REDACTED]
- Sussex Wetland Landscapes Project: [REDACTED]

(Illustration courtesy of Natural England.)

## COASTAL SALTMARSH

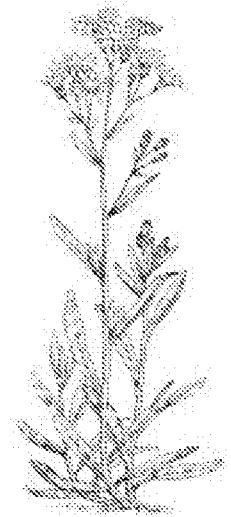
Coastal saltmarshes lie at the top of the intertidal zone on fine sediments. The vegetation here is adapted to regular immersion by the tide.

### **Why is it important?**

- Saltmarshes are an important resource for breeding and wintering wading birds and wildfowl.
- They provide sheltered nursery sites for several species of fish.
- Areas with high structural and plant diversity are particularly important for invertebrates.

### **Coastal saltmarsh in Sussex**

The majority of saltmarsh in Sussex is found in Chichester Harbour, and smaller amounts in Pagham and Rye Harbours. Sussex's saltmarshes support a number of nationally scarce plants including sea barley and golden samphire.



Sea aster

### **What are the threats?**

- “Coastal squeeze” resulting from coastal development, erosion and coastal defences, restricts the ability of saltmarsh habitat to move.
- Disruption of natural coastal processes as a result of coastal protection work, dredging or coastal defences can affect natural sediment systems.
- Non-native species such as cord grass.

### **Some associated species**

- Twite *Carduelis flavirostris*
- Bass *Dicentrarchus labrax*
- Starwort moth *Cucullia asteris*
- Shore crab *Carcinus maenas*
- Common saltmarsh grass *Puccinella maritima*
- Sea aster *Aster tripolium*

(Illustration courtesy of Natural England.)

## COASTAL VEGETATED SHINGLE

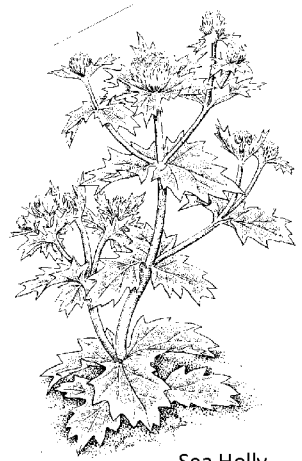
Shingle is an accumulation of pebbles with a diameter between 2-200mm. In Sussex the shingle is composed mainly of flint pebbles derived by marine or glacial erosion of Cretaceous chalk and Tertiary deposits.

### ***Why is it important?***

- Vegetated shingle is a rare habitat and some of the plants and animals found here are very restricted in their distribution.
- Shingle is important for breeding birds, in particular gulls and terns.
- Many rare species are found including species of moth and spider.

### ***Coastal vegetated shingle in Sussex***

A significant area of vegetated shingle exists in Sussex, accounting for almost a fifth of the total resource in England. Areas of vegetated shingle can be found in both East and West Sussex, with the most extensive area being in the Rye and Dungeness area.



Sea Holly

### ***What are the threats?***

- Coastal defence work can interrupt natural sediment movement which affects coastal habitats including vegetated shingle.
- Sea level rise and increased storms could destroy vegetated shingle areas.
- Recreation impacts including trampling, disturbance of animals and introduction of non-native plant species.

### ***Some associated species***

- Lesser black-backed gull *Larus fuscus*
- Little tern *Sternula albifrons*
- Toadflax brocade *Calophasia lunula*
- Brown-banded carder bee *Bombus humilis*
- Yellow horned poppy *Glaucium flavum*
- Sea holly *Eryngium maritimum*

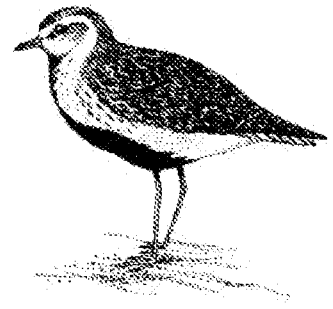
(Illustration courtesy of Natural England.)

## INTERTIDAL MUDFLAT

Mudflats are sedimentary intertidal habitats created by deposition in low energy coastal environments particularly estuaries and other sheltered areas.

### ***Why are they important?***

- Mudflats are part of a habitat sequence between open water and saltmarsh, and have an important role in reducing the impact of waves upon saltmarshes, damage to coastal defences and flooding of low-lying land.
- A wide range of invertebrates is supported including molluscs, annelids and lugworms.
- Mudflats are highly productive, making them important feeding areas for birds. They support internationally important populations of migrant and wintering waders.
- Due to their sheltered nature mudflats are important areas for fish, in particular flatfish, which use them as nursery areas.



Golden plover

### ***Intertidal mudflats in Sussex***

Sussex has just over 1,100 hectares of intertidal mudflats. Much of this occurs in a mosaic with saltmarsh and seagrass beds.

### ***What are the threats?***

- Sea level rise is expected to result in the loss of up to 10,000 hectares of intertidal mudflat by 2013, with much of this in southern England.
- Land claim for development, and industry including hard flood defences.
- Pollution from agricultural, industrial and urban sources.
- Human disturbance from fishing and bait digging can have adverse impacts.
- Introduction of invasive species such as cord grass.

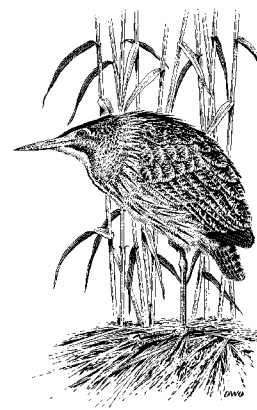
### ***Some associated species***

- Golden plover *Pluvialis apricaria*
- Atlantic salmon *Salmo salar*
- Lugworm *Arenicola marina*
- Mud shrimp *Corophium volutator*
- Glasswort *Salicornia europaea*
- Spiral wrack *Fucus spiralis*

(Illustrations courtesy of Natural England.)

## REEDBED

Reedbeds are wetlands dominated by stands of common reed where the water table is at or above ground level for most of the year. They tend to incorporate open water and ditches, and areas of wet grassland and carr woodland may also be associated with them.



Bittern

### ***Why are they important?***

- They provide important breeding and roosting habitat for birds including rare species such as bearded tit and Cetti's warbler.
- A number of invertebrates are recorded from reedbeds including moths, snails and beetles. Many of the species found are now uncommon.
- Reedbeds provide a refuge for shoals of fish, which in turn provide food for other species.

### ***Reedbeds in Sussex***

The majority of reedbeds in Sussex are less than five hectares in size. The largest reedbed in Sussex is at Filsham, which is around 17 hectares.

### ***What are the threats?***

- Drainage for farming and development, and over-abstraction of water.
- Water pollution can cause a loss of diversity and dominance by a few species.
- Flood defence measures can contribute to loss of reedbeds.
- A lack of management.

### ***Some associated species***

- Bittern *Botaurus stellaris*
- Grass snake *Natrix natrix*
- Swollen spire snail *Mercuria confusa*
- Flame wainscot *Mythimna flammea*
- Common reed *Phragmites australis*
- Reed sweet-grass *Glyceria maxima*

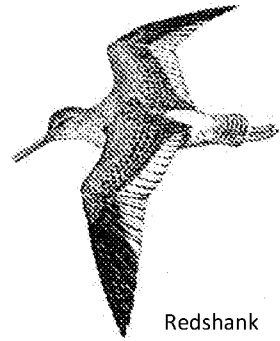
### ***Further information***

- Sussex Wetland Landscapes Project: [www.sussexotters.org](http://www.sussexotters.org)

(Illustration courtesy of Natural England.)

## SALINE LAGOON

Lagoons are natural or artificial bodies of saline water partially separated from the sea by shingle, sand, a rocky shore or sea wall. Seawater input can be through percolation, via a channel or by overtopping.



Redshank

### ***Why are they important?***

- The salinity of lagoons can vary considerably, and they support specialised species of plants and animals, which reflect the degree of salinity.
- Lagoons often have soft sediments (mud or sand) making them important for burrowing invertebrates, and stoneworts some of which are extremely rare.
- Lagoons provide important habitat for birds.

### ***Saline lagoons in Sussex***

In Sussex saline lagoons occur at over 30 sites, which is around 3% of the total UK resource.

### ***What are the threats?***

- Saline lagoons will often naturally fill-in through vegetation succession. This would naturally be offset by lagoon creation; however this may be limited by human activity.
- Pollution, particularly through nutrient enrichment, affects the vegetation community.
- Artificial control of water input to lagoons will affect salinity.
- Coastal defence work can interrupt natural sediment movement which affects coastal habitats and structures including lagoons.
- Sea level rise will lead to the loss of some lagoons; however it may also result in the creation of new ones.

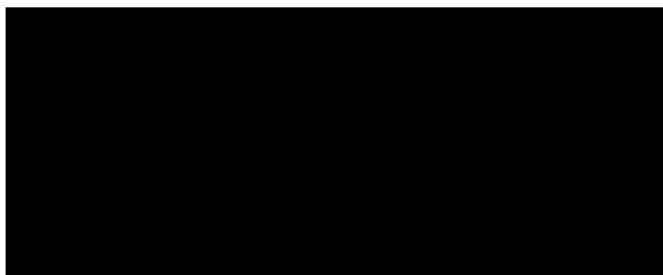
### ***Some associated species***

- 3-spined stickleback *Gasterosteus aculeatus*
- Knot *Calidris canutus*
- Sea slater *Ligia oceanica*
- Lagoon cockle *Cerastoderma glaucum*
- Tasselweed *Ruppia* spp.
- Foxtail stonewort *Lamprothamnium papulosum*

(Illustration courtesy of Natural England.)

## **Sussex Biodiversity Record Centre**

Woods Mill  
Henfield  
West Sussex  
BN5 9SD



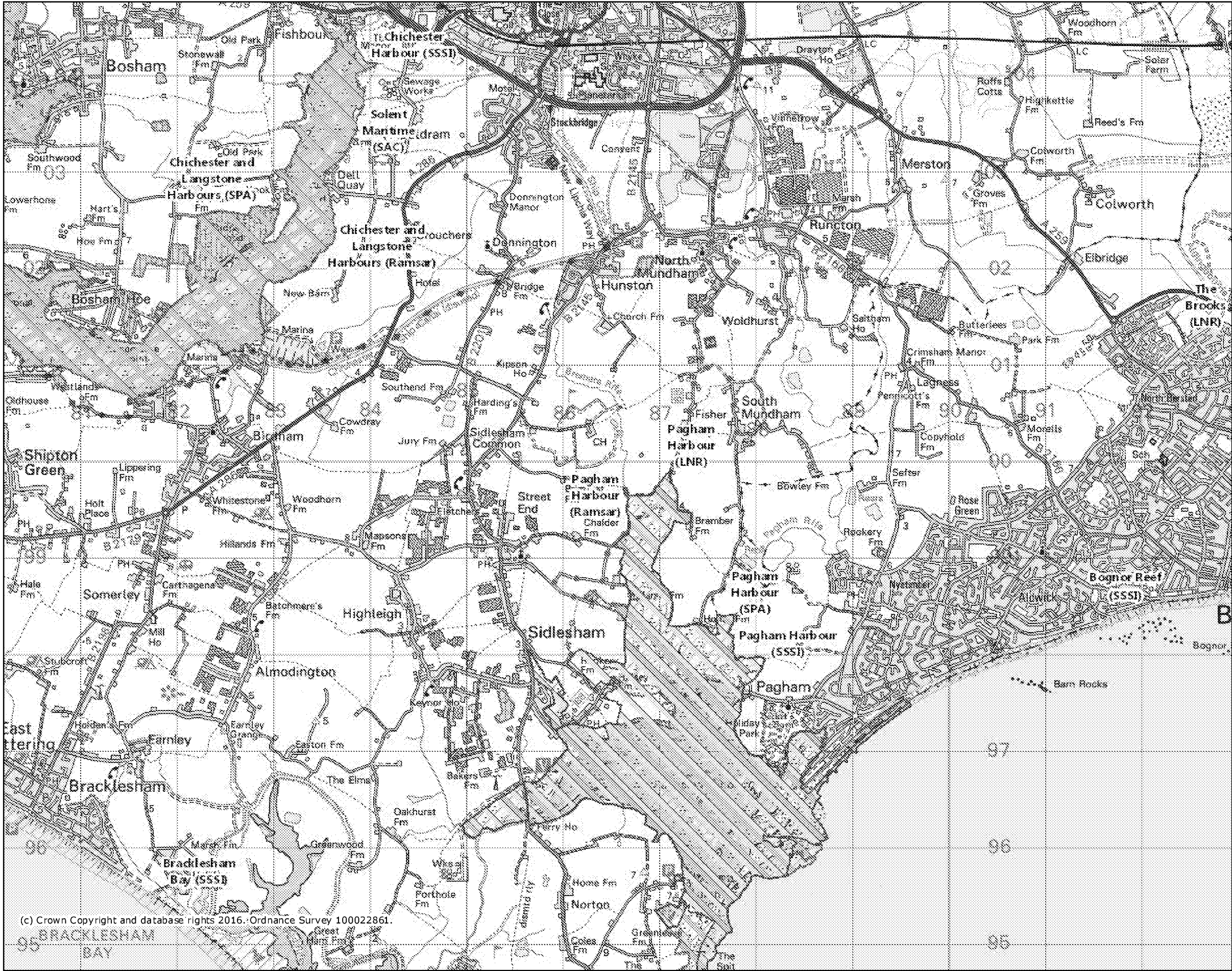
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A list of our current funding partners can be found on our website: [www.sxbrc.org.uk/about/partners](http://www.sxbrc.org.uk/about/partners)

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## **APPENDIX 2**

Information obtained from MAGIC



Legend

- Local Nature Reserves (England)
- Ramsar Sites (England)
- Sites of Special Scientific Interest (England)
- Special Areas of Conservation (England)
- Special Protection Areas (England)
- Ancient Woodland (England)
  - Ancient and Semi-Natural Woodland
  - Ancient Replanted Woodland

Projection = OSGB36  
xmin = 479900  
ymin = 95150  
xmax = 493300  
ymax = 104300  
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