



**Swanscombe Peninsula SSSI
Kent**

***Notification under Section 28C of the Wildlife
and Countryside Act 1981***

Contact points and further information

This notification document is issued by Natural England's Sussex and Kent Team. During the current coronavirus situation, Natural England staff are working remotely and a limited number of our offices are open. Please send any correspondence relating to this notification by email or contact us by phone using the information below. Alternatively, you can send a response online using the Citizenspace link below.

Your contact point for specific enquiries relating to this notification is **Neil Fuller**.

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Email: thamesestuary@naturalengland.org.uk

Online: <https://consult.defra.gov.uk/natural-england/swanscombe-peninsula>

A second document (Swanscombe Peninsula SSSI - Supporting Information) is available online and on request using the details above. This contains information and extracts from relevant documents that have been used in the decision to notify this SSSI.

The date of notification of Swanscombe Peninsula SSSI is **11 March 2021**

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1. Summary

- 1.1 This document explains why Swanscombe Peninsula is notified by Natural England as a Site of Special Scientific Interest (SSSI).
- 1.2 Swanscombe Peninsula SSSI is an area of open mosaic habitat on previously developed land and traditional estuarine habitat which connects Ebbsfleet Valley to the southern shore of the River Thames between Dartford and Gravesend. The site includes chalk pits, free-draining grassland, scrub, wetlands, grazing marsh and saltmarsh. It is of special interest for its nationally important assemblages of invertebrates and breeding birds, populations of five species of vascular plant, and its geological features.
- 1.3 The site includes public rights of way and the Grain to Woolwich stretch of the England Coast Path, both of which provide opportunities for local communities and visitors to experience the natural environment.
- 1.4 Previously, one SSSI (Bakers Hole SSSI, last notified on 11 May 1989) has been notified on the Swanscombe Peninsula. This comprised a 6.89ha Geological Conservation Review site. Parts of Bakers Hole are also a Scheduled Monument. Swanscombe Peninsula SSSI includes the land previously notified as Bakers Hole SSSI and extensions totalling 257.21ha. The total area of the enlarged SSSI is 264.10ha.
- 1.5 The annexes to this document comprise the legal papers that detail the scientific interest of Swanscombe Peninsula SSSI, the management required to maintain this interest and maps of the site. You have a right to make representations or objections about the notification of the enlarged SSSI. Part 3 of this document explains how to do this.
- 1.6 Natural England's consent is required by owners and occupiers before any of the operations listed in *Annex 3* can be carried out. We will work closely with owners and managers, as well as other bodies, to ensure that existing operations and new works that are not considered likely to damage the special features of the SSSI can be carried out.

2. The legal background

- 2.1 Bakers Hole SSSI is enlarged under section 28C of the Wildlife and Countryside Act 1981 and is now known as Swanscombe Peninsula SSSI.
- 2.2 The enlarged site includes land within and extending beyond the previously notified Bakers Hole SSSI, as last notified in 1989.
- 2.3 With effect from the date of this notification under section 28C of the Wildlife and Countryside Act 1981, the previous notification of Bakers Hole SSSI dated 1989 ceases to have effect (section 28C(5) of the Wildlife and Countryside Act 1981).
- 2.4 Part 8 of this notification document contains the following legal papers required by section 28C of the Wildlife and Countryside Act 1981:
 - a citation detailing the reasons for notification (*Annex 1*);
 - a statement of Natural England's views on the management of the SSSI (*Annex 2*);
 - a list of operations requiring Natural England's consent (*Annex 3*); and
 - maps identifying the land subject to this notification (*Annex 4*).
- 2.5 This notification of the SSSI under section 28C has several effects. The key ones are summarised as follows:
 - owners and occupiers must give Natural England notice before carrying out, causing or permitting to be carried out any of the activities in the list of operations at *Annex 3*;
 - owners of land included in the SSSI have a legal obligation to notify Natural England within 28 days if the ownership or occupancy of the land changes;

- it is an offence for any person intentionally or recklessly to destroy or damage the special features of the SSSI or to disturb any of the fauna;
- other public bodies must consult Natural England before carrying out or authorising any works that may damage the SSSI; and
- it gives Natural England the ability to require the management of the SSSI by way of management schemes and notices.

2.6 If you require any further information or advice on how this notification affects you, please do not hesitate to contact Natural England using the information at the beginning of this document.

3. Making representations

3.1 You have a legal right to make objections and representations about this notification. Any representations, including those supporting the notification, or objections should be made in writing to Natural England's Sussex and Kent Team by **12 July 2021**. Representations can be sent by e-mail or online using the details on page 2. You may wish to seek legal or independent advice and your representative may wish to write to us on your behalf.

3.2 Natural England's Sussex and Kent Team will consider your objections or representations and will try to resolve them. If there are no unresolved objections, approval to confirm the notification will be considered by an appropriate Natural England Director within nine months of this notification.

3.3 Any unresolved objections or representations will be considered by the Board of Natural England within nine months of this notification. Following consideration of objections and representations, the Board of Natural England may confirm or withdraw all or part of this notification. In reaching its decision the Board will consider whether, in light of the objections and representations received, Natural England remains of the opinion that the site is of special scientific interest. The desirability of the notification for socio-economic reasons will not form part of the Board's decision.

3.4 If you wish to emphasise any of your objections or representations to the Board in person, you should tell us when you write to us. You will then be advised of the date and location of the Board meeting.

3.5 Natural England will accept correspondence relating to unresolved objections up to seven days prior to the Board meeting at which the confirmation is due to be considered. Correspondence received after this date will only be presented to the Board in very exceptional circumstances and you will be expected to provide justification as to why there has been a delay in providing the information. The decision whether this information will be submitted to the Board is entirely at Natural England's discretion. The reason that there is a seven day cut off is to allow Board members sufficient opportunity to consider all of the issues and read all the relevant paperwork before they meet to take their decision.

3.6 Natural England has a policy of openness, which reflects our obligations under the Environmental Information Regulations 2004 and the Freedom of Information Act 2000. This legislation provides a legal right of access to information held by public bodies. This means that we will provide information on how we make our decisions on SSSIs to any person on request. This includes details of objections and representations received. We will assume, therefore, that your representation or objection can be made publicly available unless you indicate with clear and valid reasons which (if any) part(s) of these you wish to be excluded from this arrangement. However, you should be aware that the requirements of the legislation may mean that we cannot comply with your request that this information be withheld. We do, however, respect people's privacy and will take all reasonable steps to consult you before reaching a decision on disclosure of the information.

3.7 As an individual or organisation with an interest in Swanscombe Peninsula SSSI, your information will be stored and processed on a computer database that will be operated within the General Data Protection Regulation and the Data Protection Act 2018. For the

purposes of the Data Protection Act, the data controller is Natural England, Foss House, Kings Pool, 1-2 Peasholme Green, York YO1 7PX. For more information, please see the *SSSI notifications privacy notice* at <https://www.gov.uk/government/publications/natural-england-privacy-notice/site-of-special-scientific-interest-notification-privacy-notice> or request a copy using the details on page 2 of this document.

4. Reasons for notification

4.1 Swanscombe Peninsula SSSI is of special interest for the following nationally important features:

- **Geology**

Bakers Hole is a key Pleistocene site with a complex sequence of periglacial and temperate climate deposits, including solifluction, freshwater and possible estuarine deposits associated with the Ebbsfleet Valley. The deposits have yielded fossils and evidence of human occupation. The site contains Levallois lithic remains from the Middle Palaeolithic and palaeoenvironmental indicators, including fossils of small and large mammals, molluscs and ostracods.

- **Vascular plants**

Swanscombe Peninsular SSSI supports populations of five Nationally Scarce species of vascular plant, the first four of which are also 'Vulnerable' to extinction in Great Britain: divided sedge *Carex divisa*, yellow vetchling *Lathyrus aphaca*, slender hare's-ear *Bupleurum tenuissimum*, Bithynian vetch *Vicia bithynica* and round-leaved wintergreen *Pyrola rotundifolia subsp. maritima*.

- **Invertebrates**

Extensive areas of open mosaic habitat on previously developed land and semi-natural habitat including chalk pits, free-draining grassland, scrub, wetlands, grazing marsh and saltmarsh support four diverse assemblages of invertebrates.

Brownfield areas within the SSSI support assemblages of species associated with bare sand and chalk, and open short swards. These assemblages are rich in bee and wasp species which use the open substrates for nesting, prey collection and basking, and the rich wild flower resource for nectar and pollen. Priority Species (Section 41) within the assemblage include the Critically Endangered distinguished jumping spider *Sitticus distinguendus*, rare five-banded weevil-wasp *Cerceris quinquefasciata* and Nationally Scarce brown-banded carder bee *Bombus humilis*.

Wetland areas, primarily Black Duck Marsh and ponds resulting from construction of the Channel Tunnel Rail Link (CTRL), support assemblages of species associated with open water on disturbed mineral sediments, and saltmarsh and transitional brackish marsh. These wetlands support 84 species of water beetle. This represents over a quarter of the UK water beetle fauna. Notable species include the nationally scarce *Enochrus halophilus*, and the nationally rare great silver water Beetle *Hydrophilus piceus*.

- **Breeding birds**

The wetland areas of the site support an assemblage of breeding birds of lowland damp grassland, lowland open waters and their margins and lowland fen. Species associated with the fen and swamp habitats of Black Duck Marsh and the CTRL wetlands include bearded tit *Panurus biarmicus*, marsh harrier *Circus aeruginosus* and the elusive water rail *Rallus aquaticus*. Wetland habitats across the site support reed bunting *Emberiza schoeniclus*, sedge warbler *Acrocephalus schoenobaenus* and reed warbler. The wetland mosaic with scrub supports Cetti's warblers *Cettia cetti*.

Botany Marsh West is a surviving fragment of grazing marsh, providing damp grassland habitat for lapwing *Vanellus vanellus*. Little egret *Egretta garzetta* and grey heron *Ardea cinerea* utilise a number of wetland habitats and forage within the intertidal habitats of

the adjacent River Thames. The water bodies support breeding waterfowl including pochard *Aythya ferina*, mute swan *Cygnus olor* and little grebe *Tachybaptus ruficollis*.

The chalk pits and areas of scrub support an assemblage of breeding birds of lowland scrub. Grasshopper warbler *Locustella naevia* can be found in open habitats on Broadness, while nightingale *Luscinia megarhynchos* favours the denser scrub areas of Botany Marsh East and the chalk pits. Linnets *Linaria cannabina* and lesser whitethroats *Curruca curruca* can be found in the former landfill tips and areas north of the CTRL wetlands.

5. Site boundary and relationship with other SSSIs

- 5.1 The boundary has been drawn to include land supporting the features of special interest and areas required to ensure their long-term sustainability. These include free-draining grassland, scrub, wetlands, grazing marsh, transitional grassland, saltmarsh and four chalk pits supporting scrub, grassland and free-draining substrates, as well as geological features.
- 5.2 The boundary of the SSSI follows the River Thames mean low water mark in the north and fence lines and roads for most of its remaining perimeter. In places where there is no mapped feature, the boundary is formed by straight lines between fixed points. The footprints of a number of internal built structures such as roads, pumping stations, treatment works and radar towers have been excluded from the boundary.
- 5.3 The nearest SSSI to Swanscombe Peninsula SSSI is Swanscombe Skull Site SSSI, approximately 0.5 km to the west. This site, which is also a National Nature Reserve, is designated for its nationally important geological features.

6. Management of the SSSI

- 6.1 This notification includes at *Annex 2* a statement of the management that Natural England considers is needed to conserve and enhance the features of special interest. Different management will be appropriate in different parts of the site and this statement is not intended to detail the exact requirements at specific locations. The statement is intended to explain how we can work with and support owners and managers in continuing to achieve positive management of the SSSI.
- 6.2 This notification also includes a list of the operations requiring Natural England's consent at *Annex 3*. The basis for the selection of these operations is set out in the Supporting Information document. Some operations may already be taking place. Where they do not cause any damage, they will be given consent. We will work with landowners and managers to agree lists of such existing and planned activities, which can be approved.
- 6.3 Where an operation has been granted a consent, licence or permission from another public body a separate consent will not generally be required from Natural England. However, other public bodies are required to consult Natural England before such consents, licences or permissions are issued.
- 6.4 In particular, we recognise the important roles of the owners and managers of the land in managing this site. We will continue to work with them to develop means to secure the sustainable management of Swanscombe Peninsula SSSI.

7. Supporting information

- 7.1 The detailed information, which has been used to assess the importance of this SSSI is available online and on request using the details on page 2 of this document.

8. Legal documents

- 8.1 Attached at *Annexes 1 - 4* are the legal documents, which are required by section 28C of the Wildlife and Countryside Act 1981.

Annex 1

Citation

This is a legal document on which you have a right to make objections or representations, as explained in part 3 of this notification document.

Site name: Swanscombe Peninsula

Unitary Authority/County: Kent

District: Dartford, Gravesham

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

Local Planning Authority: Dartford Borough Council, Gravesham Borough Council, Kent County Council.

National Grid reference: TQ605758

Area: 264.10

Ordnance Survey sheet: 1:50,000: 177

Notification date: 11 March 2021

Reasons for notification:

Swanscombe Peninsula SSSI is of special interest for the following nationally important features:

- Quaternary geology at Bakers Hole, a key Pleistocene site with a complex sequence of periglacial and temperate climate deposits and Middle Palaeolithic archaeology;
- populations of the plants divided sedge *Carex divisa*, yellow vetchling *Lathyrus aphaca*, slender hare's-ear *Bupleurum tenuissimum*, Bithynian vetch *Vicia bithynica* and round-leaved wintergreen *Pyrola rotundifolia* subsp. *maritima*;
- assemblages of invertebrates associated with bare sand and chalk, open short swards, open water on disturbed mineral sediments and saltmarsh and transitional brackish marsh; and
- two diverse assemblages of breeding birds, one associated with lowland open waters and their margins, lowland fen and lowland damp grassland, the other with lowland scrub.

General description:

Swanscombe Peninsula SSSI is a corridor of habitats connecting Ebbsfleet Valley with the southern shore of the River Thames between Dartford and Gravesend. Industrial processes such as engineering, power generation, landfill and dredging have left a legacy of low nutrient and often toxic substrates which have developed into bare open ground habitats with low scrub cover. The peninsula also supports wetland, grazing marsh and saltmarsh habitats. These habitats, coupled with a mild climate, provide ideal conditions for certain species and assemblages of plants, invertebrates and breeding birds.

Four chalk pits are included within the boundary of the SSSI and, in addition to the habitats described above, contribute to the varied topography. Chalk quarried from these pits was used for the manufacture of cement. JB White's Portland cement works and APCM (Blue Circle) occupied an area between these pits and the peninsula from 1845 to 1990. It is likely that the Swanscombe peninsula was used as a landfill site for the disposal of cement kiln dust from these works. The high pH and significant concentrations of chloride, sulphate and potassium associated with this dust result in greatly stunted plant growth and a largely early successional habitat. Northfleet landfill and Bakers Hole are also former chalk quarries with notable archaeological records. The former is back-filled and restored mainly to grassland and the latter conserved for its geological features.

Geology

Bakers Hole is a key Pleistocene site with a complex sequence of periglacial and temperate climate deposits, including solifluction, freshwater and possible estuarine deposits associated with the Ebbsfleet Valley. The deposits have yielded fossils and evidence of human occupation. The site contains Levallois lithic remains from the Middle Palaeolithic and palaeoenvironmental indicators, including fossils of small and large mammals, molluscs and ostracods. The temperate deposits correlate with an interglacial recognised as Marine Isotope Stage (MIS) 7. It is thought

that the three individual temperate episodes of MIS 7 may be represented at the site. Further investigation of this will help to establish a framework for MIS 7 sites in the British Pleistocene.

Vascular plants

Although vegetation communities of the peninsula have been significantly affected by the cement industry and construction of the Channel Tunnel Rail Link (CTRL), there are surviving fragments of habitats that are representative of a former more extensive marshland. These include intertidal mudflats, saltmarsh, sea wall corridor with transitional grasslands, grazing marsh with extensive reed-lined ditch networks, winter wet low-ways and scattered scrub. In addition to this, the relatively recent habitats of free-draining grassland and extensive scrub, and the increased range of waterbodies with brackish transitions, have collectively formed a habitat mosaic that has enabled characteristic and scarce plants to survive and establish.

The site supports nationally scarce species characteristic of coastal grazing marsh and transitional grassland, such as divided sedge *Carex divisa*, annual beard-grass *Polypogon monspeliensis*, stiff saltmarsh-grass *Puccinellia rupestris*, Borrer's saltmarsh-grass *Puccinellia fasciculata* and slender hare's-ear *Bupleurum tenuissimum*. The saltmarsh is rather species-poor, when compared with more expansive outer Thames areas but does support the nationally scarce golden samphire *Limbarda crithmoides* in one of its most upriver locations within the Thames Estuary.

The open grassland areas across the site support large populations of legumes, including the nationally scarce yellow vetchling *Lathyrus aphaca* and Bithynian vetch *Vicia bithynica*. The presence of the nationally rare hairy vetchling *Lathyrus hirsutus* and the endangered man orchid *Orchis anthorpophora* provide additional interest in grassland areas associated with scattered scrub. A sustainable population of the nationally scarce round-leaved wintergreen *Pyrola rotundifolia* subsp. *maritima* is found amongst denser scrub.

Invertebrates

The site supports over 1,700 species of invertebrate and four nationally important assemblages. Brownfield areas support assemblages of species chiefly associated with bare sand and chalk and open short swards. These assemblages are rich in bee and wasp species which use the open substrates for nesting, prey collection and basking, and the rich wild flower resource for nectar and pollen. Significant species within the assemblage include the critically endangered distinguished jumping spider *Sitticus distinguendus*, rare five-banded weevil-wasp *Cerceris quinquefasciata* and provisionally nationally scarce Phoenix fly *Dorycera graminum*. Nationally scarce species include the sea aster mining bee *Colletes halophilus*, black-headed mason wasp *Odynerus melanocephalus*, brown-banded carder bee *Bombus humilis* and chalk carpet moth *Scotopteryx bipunctaria*.

Wetland areas, primarily Black Duck Marsh and ponds resulting from construction of the CTRL support assemblages chiefly associated with open water on disturbed mineral sediments and saltmarsh and transitional brackish marsh. The marshland was formerly extensive and evidence of a possible prehistoric staked woven trackway is recorded at the mouth of a creek in Broadness.

These wetlands support 84 species of water beetle. This represents over a quarter of the UK water beetle fauna. This richness derives from a mix of fresh and brackish water. Species of note include the nationally scarce *Enochrus halophilus*, which is generally associated with brackish pools and ditch saltmarsh and the nationally rare great silver water beetle *Hydrophilus piceus*, found in marshes, drains and especially coastal grazing marshes. Other nationally scarce water beetles include the crawling water beetle *Peltodytes caesus* and whirligig beetle *Gyrinus paykulli* associated with well-vegetated margins, and the diving beetle *Rhantus frontalis*, which occurs in waterbodies with more exposed substrates characteristic of grazing marshes. Other species such as the nationally scarce soldier fly *Stratiomys singularior* develop as larvae feeding on detritus within the shallow sometimes temporary pools of these brackish coastal marshes and fens.

Breeding birds

The wetlands, grasslands, scrub, saltmarsh and intertidal mud within the SSSI support a range of breeding birds.

Notable species associated with the fen and swamp habitats of Black Duck Marsh and the CTRL wetlands include bearded tit *Panurus biarmicus*, marsh harrier *Circus aeruginosus* and the elusive water rail *Rallus aquaticus*. Wetland habitats across the site also support reed bunting *Emberiza schoeniclus*, sedge warbler *Acrocephalus schoenobaenus* and reed warbler *Acrocephalus scirpaceus*, with the last of these often providing host nests for cuckoo *Cuculus canorus*. The wetland mosaic with scrub supports Cetti's warblers *Cettia cetti*.

Scrub varies in density across the site. Species such as grasshopper warbler *Locustella naevia* prefer the scattered patches in open habitats on Broadness, while nightingale *Luscinia megarhynchos*, bullfinch *Pyrrhula pyrrhula* and garden warbler *Sylvia borin* favour the denser scrub areas of Botany Marsh East and the chalk pits. Long-tailed tits *Aegithalos caudatus* favour areas of scrub with more open margins, whilst linnets *Linaria cannabina* and lesser whitethroats *Curruca curruca* are typically associated with the scrub mosaic of the former landfill tips and areas north of the CTRL wetlands, respectively.

Botany Marsh West is a surviving fragment of a formerly more extensive grazing marsh, providing damp grassland habitat for lapwing *Vanellus vanellus* and greylag goose *Anser anser*. Shelduck *Tadorna tadorna*, little egret *Egretta garzetta* and grey heron *Ardea cinerea* utilise a number of wetland habitats and forage within the intertidal habitats of the adjacent River Thames. Little egret and grey heron nest in the heronry south of Black Duck Marsh. The water bodies, particularly the larger examples within the CTRL wetlands and Black Duck Marsh, also support a number of breeding waterfowl including pochard *Aythya ferina*, tufted duck *Aythya fuligula*, gadwall *Mareca strepera*, shoveler *Spatula clypeata*, mute swan *Cygnus olor* and little grebe *Tachybaptus ruficollis*.

Annex 2

Views about Management

This is a legal document on which you have a right to make objections or representations, as explained in part 3 of this notification document.



Views About Management

Wildlife and Countryside Act 1981 Section 28(4)

A statement of Natural England's views about the management of Swanscombe Peninsula Site of Special Scientific Interest (SSSI)

This statement represents Natural England's views about the management of the Swanscombe Peninsula SSSI for nature conservation. It sets out, in principle, our views on how the site's special conservation interest can be conserved and enhanced. Natural England has a duty to notify the owners and occupiers of SSSIs of its views about the management of the site.

Not all of the management principles will be equally appropriate to all parts of the SSSI. Also, there may be other management activities, additional to our current views, which can be beneficial to the conservation and enhancement of the features of interest.

This Statement does not constitute consent for any of the 'operations requiring Natural England's consent'. The written consent of Natural England is required before carrying out any of those operations. Natural England welcomes consultation with owners, occupiers and users of the SSSI to ensure that the management of this site conserves and enhances the features of interest, and to ensure that all necessary prior consents are obtained.

Background

Post-industrial sites may support considerable nature conservation interest, particularly when they provide habitat connectivity with remnant semi-natural habitats, including saltmarshes and intertidal areas, and function as important refuges for wildlife within urban and intensive agriculture landscapes. For example, old quarries, industrial workings and old landfill areas can provide free-draining and impoverished substrates with unusual pH and mineral content within a varied topography. Where opportunities allow, these conditions enable a range of dry to wetland habitats to develop within a mosaic providing important transitions between them for the benefit of many animals and plants.

Management principles

A range of management approaches are required to maintain the special features of this SSSI in a favourable condition. Broadly speaking, they can be summarised as follows:

- Geological features – the management aim is to ensure that features remain intact, accessible for study and free from tree or scrub roots, which penetrate the deposits.
- Intertidal mudflats and saltmarsh – these habitats do not generally require active management. The priority is to maintain suitable water quality and tidal and sediment supply processes.
- Wet grassland – this habitat requires active management, primarily to remove each year's growth of vegetation, and the maintenance of a seasonally-high water table.
- All other habitats (including dry and wetland open mosaic habitats on previously developed land, scrub, ponds and swamp/fen) – the management aim is to maintain the overall extent and relative proportions of these habitats and the transitions between them in a complex mosaic. The distribution and juxtaposition of components of the mosaic will shift over time in line with vegetation succession and periodic, rotational management interventions to arrest that succession.

Management should seek to maintain the favourable hydrological conditions and levels of saline intrusion that support the range of coastal wetland habitats. The habitats within this site are highly sensitive to inorganic fertilisers and pesticides, applications of which should be avoided. Herbicides may be useful in targeting certain invasive species but should be used with extreme care. Access to parts of this site, and any recreational activities within it, may also need to be managed.

Even where the management aims summarised above are similar, the methods for achieving them in different parts of the site may vary significantly, as described in more detail below. It is also important to avoid any incidental damage when carrying out site management; for instance, vegetation clearance in breeding bird habitats should avoid the nesting season.

The site contains features that reflect its industrial past. Some of these may provide valuable supporting habitat for key species within the invertebrate assemblages. Management should ensure that where necessary these man-made structures are retained on site and, where appropriate, allowed to decay naturally.

Due to its qualities and history, the site has an important role to play in better understanding the ecological requirements of key invertebrates; for instance, by experimenting with innovative techniques to inform the management of other sites. Some species within the invertebrate assemblages require conservation at a metapopulation level and an abundant forage resource within the wider landscape. Consequently, we acknowledge the importance of sympathetic management within a wider landscape.

Geology

The geological interests within the SSSI at Bakers Hole are shallow, finite, sensitive and irreplaceable. The main management principles are to conserve the resource in the long-term, while permitting scientific usage, which involves accessing the sediments via exposing temporary sections, trial pits and boreholes as well as specimen collecting with consent. Balancing these two opposing principles is the key to long-term positive management.

Judgment of how much collecting can be permitted, while sustaining the resource, must be made on a case-by-case basis. Collecting of specimens requires very careful management to ensure that the geological resource is conserved. Where there is any doubt, caution should be applied before removing or allowing any material to be removed.

Sites such as this with a finite geological resource are particularly sensitive because the important interest features are typically restricted in volume. In addition to unconsented specimen collecting, any activity which disturbs, conceals, or requires removal of part or all of the geological interest features can cause irreparable damage or destruction, and should not be permitted. Any structure or proposal that restricts access to the feature for sampling (for example by excavation, boreholes and trial pits), should also not be allowed.

Vegetation control, involving sensitive removal of large trees and scrub, is required at Bakers Hole to avoid root penetration disrupting the shallow, finite deposits and to enable re-exposure of the geological features when required for study. The maintenance of permanent exposures is not advisable at Bakers Hole due to the soft nature of the geology.

Intertidal mudflats and saltmarsh

Mudflats often occur in the upper intertidal zones of estuaries, eventually progressing to saltmarsh in the highest part of the tidal range and beyond the tidal limit. Mudflats and saltmarshes are important feeding sites for water birds, with saltmarshes additionally providing refuge and breeding grounds. Saltmarshes are also an important habitat for invertebrates, particularly in areas of structurally diverse vegetation.

Muddy coasts are natural habitats generally dominated by tidal processes and the need for active management is usually minimal. However, their proper management requires an understanding of inputs and processes, both natural and anthropogenic. Maintenance of good water quality and sediment quality is important, and the sediment budget within the estuarine or coastal system should not be restricted by anthropogenic influences.

The birds that use mudflats and saltmarshes are vulnerable to disturbance from human activities, for example, bait digging, dog walking and wildfowling. Increased disturbance can lead to reduced time spent feeding, or individuals being restricted to areas with a poor food supply. Management should seek to minimise any such disturbance.

The location and extent of mudflats and saltmarsh is dependent on the ability of the estuary or coast where they occur to respond to sea level rise and changing sediment regimes. Where appropriate management needs to create space for landward roll-back in response to sea-level rise and to allow the system to respond to associated changes, such as movement of physical features.

Wet grassland

Wet grasslands occur on land that is subject to periodic flooding or has a seasonally high water table and is waterlogged for much of the year. They often support a wide variety of plants and animals and are an important habitat for breeding waders and wintering wildfowl.

Wet grassland requires active management if it is to retain its conservation interest. Generally, each year's growth of vegetation must be removed. Otherwise the sward becomes dominated by tall, vigorous grasses and rushes which, together with an associated build-up of dead plant matter, suppress less vigorous species and lower the botanical richness of the sward. Traditionally, this management is achieved by grazing. Cattle are often the preferred stock, being relatively tolerant of wet conditions and able to control tall grasses and rank vegetation. They also tend to produce a rather uneven, structurally diverse sward. Grazing usually takes place between late spring and early autumn, but the precise timing and intensity will depend on local conditions and requirements, such as the need to avoid trampling ground-nesting birds. Heavy poaching should be avoided but light trampling can be beneficial in breaking down leaf litter and providing areas for seed germination. Agricultural operations in general should be avoided before mid-June to minimise disturbance to breeding birds or the destruction of nests. An element of managed scrub, both within and fringing the grassland can be of importance to birds and invertebrates.

A mosaic of winter flooded and permanently un-flooded grassland is desirable, with both temporary and permanent pools present. From April onwards, the area of standing surface water should be reduced to increase the area available for nesting waders and to concentrate aquatic invertebrates in small pools to provide suitable feeding areas for their young. Some shallow areas of flooding should be maintained until late June to provide patches of bare muddy ground on which the birds and their young can feed as raised sward height makes feeding on the drier areas more difficult. The birds using these features are directly vulnerable to disturbance, which can cause them to lose time spent feeding or drive them to areas with a poorer supply of food. Management should seek to minimise any harmful disturbance.

Careful maintenance of existing ditches and drains is usually acceptable practice, but abandonment or deepening of ditches can be harmful. Cultivation and increased drainage are likely to be damaging and should be avoided.

All other habitats (including dry and wetland open mosaic habitats on previously developed land, scrub, open water, swamp and fen)

Much of this site comprises a complex mosaic of habitats which have formed on previously developed land, as well as remnants of habitats with more semi-natural origins. This mosaic includes free-draining herb-rich grassland, disturbed bare ground, open swards, scrub, open waters, swamp, fen and wetlands with brackish transitions. The component habitats grade into one another and the transitions between them are important. Many of the special invertebrates and breeding birds rely on several elements of the mosaic, so it is essential that management maintains the full range and broad proportions of habitats and transitions, near to one another and with complex structural variation.

The mosaic of habitats will change over time if processes of natural succession continue unchecked. For instance, if the site is not managed it is likely that areas currently supporting open and flower-rich grassland will become increasingly dominated by robust, species-poor vegetation and affected by shading-out from trees, scrub or bramble. Appropriate timing and levels of cutting,

soil disturbance and tree/scrub/bramble removal may be necessary to maintain the desirable balance of successional stages of key habitats within the site.

Management should aim to leave a complex structure with varied micro-topography after disturbance and ensure that the site supports adequate quantities of suitable bare ground (including within swards and on slopes, micro-cliffs and cliff exposures). This can be achieved by the complete clearance of areas on a rotational basis or regular disturbance within existing open areas. It is important though that all elements of the habitat mosaic are represented at appropriate spatial scales over time and this will influence the scale of clearance works that is desirable. Where appropriate (although not in areas supporting important geological or archaeological features), up-rooting scrub in wet and dry habitats may be beneficial by avoiding herbicide use and creating periodic disturbance.

Both natural and artificial open waters, such as freshwater and brackish ponds and ditches can support a wide range of aquatic plants and often provide important habitats for breeding birds, invertebrates and amphibians. Some ponds may only contain water during certain periods of the year and these temporary ponds are important for specialised plants and animals which depend on the seasonal nature of the habitat. Swamps develop on the fringes of open water, or in shallow depressions with permanent standing water. Swamps usually consist of a single species of plant such as reeds, with a few other species thinly distributed among them. Swamps and fens represent transient stages in the change from open water to dry land.

Natural succession will lead to the gradual drying out of wetland habitats and therefore some scrub and bramble clearance may be required. Ditches and ponds may need to be de-silted on a rotational basis to slow succession down. Silt and plant material should only be removed from a portion of the pond or ditch at any one time, allowing sufficient recovery time before other areas are dredged. Additionally, a range of water depths and areas of exposed muddy margins should be retained. It may be desirable to maintain a range of ponds and ditches in various stages of succession.

Management should either seek to retain swamp and fen communities in the same place or provide new niches for the swamp and fen communities to develop in. Vegetation succession may be slowed by raising the water table and by periodically removing any encroaching scrub. If the vegetation surface of the whole wetland appears to be building up or drying out for some other reason it may be necessary to create scrapes or ponds. Rotational cutting can help maintain reedbeds by encouraging reed growth and preventing excessive leaf litter. This is best undertaken during the winter (November–March) with all cut material removed.

Wetland areas (such as brackish ditches, ponds and shallow depressions) can be impacted by changes to the hydrological regime and alterations to the current levels of saline intrusion. Management should seek to maintain the favourable hydrological conditions that support the range of wetland habitats on site.

The management of wetland habitats should maintain good water quality. Nutrient increases can cause a loss of aquatic plants and increased algal growth. Other factors can also lead to a decrease in aquatic plants in favour of algae, including introduction of species such as bottom feeding coarse fish which uproot plants and disturb sediments.

Open waters and other wetlands are particularly susceptible to invasion by non-native aquatic plants such as Australian swamp stonecrop and parrot's feather. These species grow rapidly, taking up available habitat and smothering other plants. These plants should be removed as soon as they are observed. Some native species such as duckweeds are also able to take over in this way, but such growths are usually avoided by maintaining appropriate nutrient levels in the water.

Although some scrub will need to be cleared periodically to maintain open habitats and wetlands (as described above), it is an essential component of the habitat mosaic in this site. It supports breeding birds and the transitional zone between scrub and other habitats can be particularly important for invertebrates.

Often, scrub is a transitional stage that will develop into woodland if unmanaged. Structural diversity and a mosaic of age classes is important for maintaining the diversity of species that an

area of scrub is able to support. For example, hawthorn scrub supports the greatest variety of bird and insect species in the early and middle stages of growth.

Scrub can be managed using rotational cutting (as part of a wider approach to managing the mosaic of habitats at this site), which should aim to maintain a mosaic of patches at different stages of growth. Where stands of scrub are to be maintained in situ, they can be cut in small patches to create an intimate mixture of scrub and grassland. Grazing is another method for managing scrub and on some sites and locations may be a more suitable management tool than cutting. By its nature, grazing can help to create a patchy mosaic of scrub. As with cutting, it can also help to maintain a range of age classes. However, stock levels need to be carefully controlled and too high a grazing pressure may lead to an impoverished vegetation structure and prevent natural regeneration, leading to a loss of cover over time. Where the objective is to increase the area of scrub an initial period of fencing to control grazing may be required.

Where scrub supports nesting grey herons *Ardea cinerea* and/or little egrets *Egretta garzetta*, management should aim to keep areas around the heronry quiet and undisturbed.

Date notified: 11 March 2021

Annex 3

List of operations requiring Natural England's consent

This is a legal document on which you have a right to make objections or representations, as explained in part 3 of this notification document.

Operations requiring Natural England's consent **Wildlife and Countryside Act 1981 Section 28 (4)(b)**

The operations listed below may damage the features of interest of **Swanscombe Peninsula SSSI**. Before any of these operations are undertaken you must consult Natural England and may require consent.

It is usually possible to carry out many of these operations in certain ways, or at specific times of year, or on certain parts of the SSSI, without damaging the features of interest. If you wish to carry out any of these activities please contact the Natural England Area Team, who will give you advice and where appropriate issue a consent. Please help us by using the 'notice form' (provided at notification and available on request) to ask us for consent to carry out these operations.

In certain circumstances it will not be possible to consent these operations, because they would damage the features of interest. Where possible the Area Team will suggest alternative ways in which you may proceed, which would enable a consent to be issued. To proceed without Natural England's consent may constitute an offence. If consent is refused, or conditions attached to it which are not acceptable to you, you will be provided with details of how you may appeal to the Secretary of State.

Standard reference number	Type of operation
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- | | |
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| 1. | Cultivation, including ploughing, rotovating, harrowing and re-seeding. |
| 2. | Grazing and alterations to the grazing regime (including type of stock, intensity or seasonal pattern of grazing). |
| 3. | Stock feeding and alterations to stock feeding practice. |
| 4. | Mowing or cutting vegetation and alterations to the mowing or cutting regime (such as from haymaking to silage). |
| 5. | Application of manure, slurry, silage liquor, fertilisers and lime. |
| 6. | Application of pesticides, including herbicides (weedkillers) whether terrestrial or aquatic, and veterinary products. |
| 7. | Dumping, spreading or discharging of any materials. |
| 8. | Burning. |
| 9. | Release into the site of any wild, feral, captive-bred or domestic animal, plant, seed or micro-organism (including genetically modified organisms). |
| 10. | Killing, injuring, taking or removal of any wild animal (including dead animals or parts thereof), or their eggs and nests, including pest control and disturbing them in their places of shelter. |
| 11. | Destruction, displacement, removal or cutting of any plant or plant remains, including tree, shrub, herb, hedge, dead or decaying wood, moss, lichen, fungal fruiting bodies, leaf-mould and turf. |
| 12. | Tree and/or woodland management and alterations to tree and/or woodland management (including, planting, felling, pruning and tree surgery, thinning, coppicing, changes in species composition, removal of fallen timber). |
| 13a. | Draining (including the use of mole, tile, tunnel or other artificial drains). |
| 13b. | Modification to the structure of water courses (ditches and drains), including their banks and beds, as by re-alignment, regrading, damming or dredging. |
| 13c. | Management of aquatic and bank vegetation for drainage purposes. |

Standard reference number	Type of operation
14.	Alterations to water levels and tables and water utilisation (including irrigation, storage and abstraction from existing water bodies and through boreholes). Also the modification of current drainage operations.
15.	Infilling or digging of ditches, drains, ponds, pools, marshes or pits.
16a.	Freshwater fishery production and/or management, including sporting fishing and angling and alterations to freshwater fishery production and/or management.
16b.	Coastal fishing, fisheries management and seafood or marine life collection, including the use of traps or fish cages and alterations to coastal fishing practice or fisheries management and seafood or marine life collection.
17.	Reclamation of land from sea, estuary or marsh.
18.	Bait digging in intertidal areas.
19.	Erection and repair of sea defences or coast protection works.
20.	Extraction of minerals including topsoil, subsoil, chalk, sand, gravel and spoil.
21.	Destruction, construction, removal, rerouting, or regrading of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, including soil and soft rock exposures 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.
24a.	Modification of natural or man-made features and clearance of boulders, large stones, loose rock or spoil.
24b.	Battering, buttressing, grading or seeding of geological exposures (spoil and soil) and infilling of pits and quarries.
25.	Removal of geological specimens including rock samples, minerals and fossils.
26.	Use of vehicles or craft.
27.	Recreational or other activities likely to damage or disturb the features of special interest.
28a.	Game and waterfowl management and hunting practices and alterations to game and waterfowl management and hunting practice.
28b.	Use of lead shot.

Notes

- i. This is a list of operations appearing to Natural England to be likely to damage the special features of the SSSI, as required under section 28 (4) (b) of the Wildlife and Countryside Act 1981.
- ii. Where an operation has been granted a consent, licence or permission from another authority separate consent will not be required from Natural England. However, other authorities are required to consult Natural England before such consents, licences or permissions are issued.
- iii. Any reference to 'animal' in this list shall be taken to include any mammal, reptile, amphibian, bird, fish or invertebrate.

Date notified: 11 March 2021

National Grid Reference: TQ605758

Annex 4

Map showing the land notified

This is a legal document on which you have a legal right to make objections or representations, as explained in part 3 of this notification document.

Insert map(s) here