

**Kent Wildfowling and Conservation Association – Higham Marsh
Habitat Enhancement Project**



Water Vole (Rob Budgen, 2016)

**The South Thames Estuary and Marshes SSSI Citation
Planning Application Proposal Supporting Documentation
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South Thames Estuary and Marshes SSSI citation

COUNTY: KENT

SITE NAME: SOUTH THAMES ESTUARY AND MARSHES

BOROUGH: GRAVESHAM, ROCHESTER UPON MEDWAY

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

Local Planning Authorities: GRAVESHAM BOROUGH COUNCIL, Rochester upon Medway Borough Council

National Grid Reference: TQ 770785 Area. 5449.14 (ha.) 13459.38 (ac.)

Ordnance Survey Sheet 1:50,000: 178. 1:10,000: TQ 67 SE, NE; TQ 77 SW, NW, NE; TQ 87 NW, NE

Dates Notified (Under 1949 Act): 1951, 1968 Date of Last Revision: 1981

Date Notified (Under 1981 Act): 1984 Date of Last Revision: 1991

Other Information:

Parts of the site are listed in 'A Nature Conservation Review', D A Ratcliffe (ed) CUP 1979. The site is also a candidate for designation under the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention) and as a Special Protection Area under European Community Directive 79/409 on the Conservation of Wild Birds. The site includes the former sites of Higham Marshes SSSI, Cliffe and Cooling Marshes SSSI and part of Medway Marshes SSSI. There are also four extensions to the existing SSSIs.

Reasons for Notification:

The South Thames Estuary and Marshes SSSI from Gravesend to the eastern end of the Isle of Grain forms a major component of the Greater Thames Estuary. The site consists of an extensive mosaic of grazing marsh, saltmarsh, mudflats and shingle characteristic of the estuarine habitats of the north Kent marshes. Freshwater pools and some areas of woodland provide additional variety and complement the estuarine habitats. The site supports outstanding numbers of waterfowl with total counts regularly exceeding 20,000. Many species regularly occur in nationally important¹ numbers and some species regularly use the site in internationally important² numbers. The breeding bird community is also of particular interest. The diverse habitats within the site support a number of nationally rare³ and scarce⁴ invertebrate species and an assemblage of nationally scarce plants.

Birds

The mudflats attract large numbers of feeding waders and wildfowl with the site being regularly used by redshank *Tringa totanus* in internationally important numbers. There is evidence from recent winter low-water counts that knot *Calidris canuta* and dunlin *Calidris alpina* exceed internationally important numbers when feeding on the mudflats. These counts also indicate that avocet *Recurvirostra avosetta* and ringed plover *Charadrius hiaticula* regularly exceed nationally important numbers.

During the high tide period, waterfowl disperse to roosts in marshes in north Kent and Essex. Nevertheless, high tide counts for this site clearly reveal species regularly reaching nationally important

numbers in winter including European white-fronted goose *Anser albifrons* spp *albifrons*, shelduck *Tadorna tadorna*, gadwall *Anas strepera*, teal *Anas crecca*, pintail *Anas acuta*, shoveler *Anas clypeata*, grey plover *Pluvialis squatarola*, curlew *Numenius arquata* and blacktailed godwit *Limosa limosa*. In addition, nationally important numbers of grey plover, curlew, black-tailed godwit, redshank and greenshank *Tringa nebularia* occur during autumn passage with redshank maintaining their nationally important numbers on spring passage.

During the breeding season the south Thames marshes support an outstanding assemblage of breeding birds including rare⁵ species such as garganey *Anas querquedula*, pintail, avocet and bearded tit *Panurus biarmicus*.

Specially protected birds⁶ found within the site include hen harrier *Circus cyaneus*, short-eared owl *Asio flammeus*, ruff *Philomachus pugnax*, common tern *Sterna hirundo*, avocet and golden plover *Pluvialis apricaria*.

Vegetation

The saltmarshes support characteristic vegetation dominated by the saltmarsh grasses *Puccinellia*, the glassworts *Salicornia*, sea aster *Aster tripolium*, sea lavender *Limonium vulgare* and sea purslane *Halimione portulacoides*, with nationally scarce plants such as golden samphire *Inula crithmoides*⁴ and *Puccinellia fasciculata*⁴.

The grazing marsh complexes, including seawalls, counterwalls, fleets, dykes, runnels and seasonally wet depressions provide suitable conditions for a wide range of plants and animals. The grassland habitats range from the damp muddy areas near the dykes, where characteristic plants include divided sedge *Carex divisa*⁴, small goosefoot *Chenopodium botryodes*⁴ and golden dock *Rumex maritimus*⁴, to the dry seawalls and counterwalls which support scarce species in addition to many widespread plants. These scarce plants include slender hare's ear *Bupleurum tenuissimum*⁴, sea clover *Trifolium squamosum*⁴ and sea barley *Hordeum marinum*⁴, all of which are more abundant in the Thames estuary than elsewhere in Britain. Some seasonally damp depressions in the grassland contain the bulbous foxtail grass *Alopecurus bulbosus*⁴ whilst the more level turf is dominated by a variety of grasses including other foxtails *Alopecurus*, bents *Agrostis*, rye-grass *Lolium perenne* and fescues *Festuca*, with various herbs such as clovers *Trifolium* and buttercups *Ranunculus* also present. The rare and specially protected least lettuce *Lactuca saligna*⁷ which was previously recorded on seawalls in this site may still survive.

The dykes and fleets which are an integral part of the grazing marsh have a range of salinities and consequently support an interesting range of plants. Those nearest the sea tend to be the most brackish, and generally have sea club-rush *Scirpus maritimus*, common reed *Phragmites australis* and fennel pondweed *Potamogeton pectinatus* as the most abundant species; some also include nationally scarce species such as brackish water-crowfoot *Ranunculus baudotii*⁴. In the freshwater dykes further inland there is a greater variety of species, plants such as branched bur-reed *Sparganium erectum* and reed-maces *Typha* spp. May become dominant. Nationally scarce plants associated with the dykes include soft hornwort *Ceratophyllum submersum*⁴ with water soldier *Stratiotes aloides*⁴ present in dykes near Higham.

The mudflats have beds of eelgrass including *Zostera angustifolia*⁴ and *Z. noltii*⁴ and the Allhallows region of the site has areas of vegetated shingle with the nationally scarce sea kale *Crambe maritima*⁴ present.

Invertebrates

This site supports a diverse invertebrate fauna and includes nationally rare³ beetles, flies and true bugs. The 'scarce emerald damselfly' *Lestes dryas*, listed in the British Red Data Book*, in the Cliffe area of the site. In addition, 100 nationally scarce species of invertebrate have been recorded including *Lejops vittata* (a hoverfly), *Saldula opacula* (a shorebug) and the dotted fan-foot moth *Macrochilo cribrumalis*, all of which are restricted to wetland, estuarine or grazing marsh habitats. The water beetle fauna is of particular interest and includes four species of *Bagous* (aquatic weevils), three species of *Berosus* and the great silver water beetle *Hydrophilus piceus*.

Notes

¹ Nationally important numbers corresponds to more than 1% of the British population.

² Internationally important numbers corresponds to more than 1% of the northwest European population.

³ Species regarded as nationally rare are recorded from 1-15 of the 10 x 10km squares in Britain.

⁴ Species regarded as nationally scarce are recorded from 16-100 of the 10 x 10km squares in Britain.

⁵ Listed in 'Red Data Birds in Britain', NCC/RSPB 1990.

⁶ Species listed on Annex 1 of the EEC Birds Directive (79/409/EEC).

⁷ Plants listed on Schedule 8 of the Wildlife and Countryside Act 1981.

SSSI/ASSI Conservation Objectives

A statement of English Nature's views about the management of South Thames Estuary and Marshes Site of Special Scientific Interest (SSSI).

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

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.

The management views set out below do not constitute consent for any operation. English Nature's written consent is still required before carrying out any operation likely to damage the features of special interest (see your SSSI notification papers for a list of these operations). English Nature 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.

Management Principles

Littoral sediments (mud and sand flats)

Intertidal mud and sand flats include a range of generally muddy or sandy low-gradient shores that are exposed to air during low tide and submerged during the higher tides. High energy shores, such as those on open coasts, are generally sandy in nature whilst more sheltered, low energy flats are muddier. They support a wide variety of marine invertebrates that represent an important food source for many fish and bird species.

Good water quality and sediment quality should be maintained, and the sediment budget within the estuarine or coastal system should not be restricted by anthropogenic influences.

The birds that use mud and sandflats for feeding and roosting are vulnerable to disturbance from human activities, for example, bait digging, dog walking and wildfowling. These activities can lead to reduced time spent feeding, or individuals being restricted to areas with a poor food supply. Disturbance should therefore be minimised, especially at times when bird populations may be stressed, such as during severe winter weather.

The location and extent of mud or sandflats is dependent on the extent to which the estuary or coast where they occur is constrained from responding to sea level rise and changing sediment regimes. Management needs to create space to enable landward roll-back to take place in response to sea-level rise, and should also allow the system to be dynamic and retain the flexibility to respond to associated changes such as the movement of physical features within the system, e.g. migrating subtidal sandbanks.

Coastal saltmarsh

Saltmarshes form the upper vegetated portions of intertidal mudflats in sheltered coastal locations, such as estuaries, lagoons and beach plains. There is typically a zonation of vegetation, from plants adapted to regular immersion by the tides (halophytes), through to more widespread plant species in the areas less frequently covered by the sea. The halophyte plant species are confined to this type of habitat, and areas of structurally diverse vegetation provide good invertebrate habitat. Saltmarshes are also important nursery sites for several fish species, and important refuge, feeding and breeding grounds for wading birds and wildfowl.

Where saltmarshes require management this has traditionally been achieved by grazing, and previously used regimes should be continued. Grazing provides a variety of different habitats, particularly for wintering bird species, and if grazing were to cease there may be a loss of botanical diversity. The precise timing and intensity will vary according to local conditions and requirements, for example the type or availability of stock, or the need to avoid trampling ground nesting birds. However on many sites, the aim will be to create a short turf that can be attractive to over-wintering wildfowl, with a reduction in stock density in the early summer for the benefit of ground-nesting birds. Indeed, careful reduction of grazing can increase the number of breeding birds, without significantly altering the plant species composition. Care should be taken not to overgraze the site, as this may reduce the diversity of animal and plant species that the saltmarsh is able to support, as well as potentially impact the sediments supporting the saltmarsh.

Not all saltmarsh habitats require active management to retain their conservation interest. Where there has not been a history of grazing, the saltmarsh will be able to maintain itself and grazing-sensitive species are likely to be present, therefore grazing should not be introduced.

There are a number of factors that are contributing to saltmarsh change that management may need to take into consideration. These include coastal erosion as a result of coastal flood-defence works, rising sea-levels, variations in sediment deposition, and land claim for development.

Wet grassland with breeding and wintering bird interest

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. Wet grassland often supports a wide variety of plants and animals, in particular birds and invertebrates, and is 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. Cattle also tend to produce a rather uneven, structurally diverse sward. However, ponies, or even hill sheep, can be used if necessary. Grazing usually takes place at times 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 a field can be of importance to birds and invertebrates, as can a surrounding hedge.

Partial winter flooding is important in maintaining suitable habitat conditions for wintering birds. A mosaic of winter flooded grassland and permanently un-flooded grassland is desirable, with both temporary and permanent pools present. The maintenance of a mosaic of shallow surface pools and un-flooded areas during the winter will provide roosting and feeding habitat for wintering wildfowl and waders. From April onwards, the area of standing surface water should be reduced to increase the area available for nesting waders and also by concentrating 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, especially at times when bird populations are under stress, such as severely cold conditions. Predators, especially crows and related species, should be controlled and this may be best achieved by limiting their nesting sites. Careful maintenance of existing ditches and drains is usually acceptable practice, but abandonment or deepening of ditches can be harmful.

Ditches

Ditches are artificial habitats created by land drainage, or occasionally by the channelisation of small streams. They may represent the only remaining freshwater habitat within former wetland areas, and often support a wide range of aquatic plant and animal (in particular invertebrate) species that would have previously been more widespread in ponds and wetlands.

If left unmanaged, silt accumulates in the bottom of the ditches, and emergent plants such as reeds are able to colonise across the width of the ditch, leading to a loss of aquatic plant diversity and a gradual drying out of the ditch. To prevent this, periodical removal of sediment and vegetation may be necessary to return the ditch to an early stage of the management cycle. Ideally, ditch management should be undertaken on a rotation, creating a series of different management stages across a site at any one time. All stages of the management cycle have wildlife interest; recently cleared ditches are good for plants and animals which favour newly created habitats and cannot tolerate competition with other species; middle-stage ditches support a rich aquatic plant flora; and late-stage ditches may be important for a variety of invertebrates. The removal of both sediment and vegetation is usually better than simply cutting the vegetation, which does not recreate the earliest stages of the ditch management cycle. Where possible, management should aim to create shallow shelving margins rather than steep ditch sides. Where water voles are known to be present, the relevant good practice guidelines for ditch management and conservation should be followed.

Most ditch systems are subject to water level control, which should be managed to ensure that there is a sufficient depth of water (0.3-0.5m) in ditches throughout the year. Rapid or extreme changes in water level should be avoided unless they are known to be important to plant or animal communities relying on such fluctuations.

Ditches are susceptible to increased levels of nutrients which can cause a loss of aquatic plants and increases in algal growth. Other activities that can lead to this include the control or removal of aquatic plants, or the introduction of species such as bottom feeding coarse fish which uproot plants and disturb ditch sediments. Ditches are also susceptible to invasion by non-native aquatic plants such as floating pennywort and water fern, which are able to grow rapidly taking up available habitat and smothering other plants. Some native plants including a number of duckweed species are also able to take over in this way (although such growths are usually exacerbated by increased nutrients in the water) and management may be necessary to control such invasions where they cause a problem.

An important feature of many coastal ditch systems relating to water quality is the transition between freshwater and brackish water conditions, which often results in interesting changes in plant and animal species along ditch lengths or across the site. Management should aim to maintain such freshwater-brackish transitions where they occur.

Seagrass (*Zostera*) beds

Seagrass refers to a group of flowering marine plants that usually form beds or meadows on soft sediments in shallow coastal waters and some shores. Seagrass beds perform the important function of binding and stabilising sediment, and they support rich communities of plants and animals. They produce large amounts of organic matter that provides an important source of food for the wider marine ecosystem, and there are a number of species that are entirely dependent on seagrass habitats. Seagrass beds also provide an important nursery area for fish in the summer, as well as a food source for wintering wildfowl.

Management should aim to maintain good water and sediment quality, as seagrass beds are sensitive to excessive nutrient enrichment, which can lead to outbreaks of algae that can smother the seagrass, thus reducing the amount of light that is available to individual plants. Management should also aim to ensure that the sediment budget within the estuarine or coastal system is not restricted by anthropogenic influences.

Coastal lagoons

Coastal lagoons are saline water bodies separated from the sea by a barrier (e.g. sand, shingle or rock sill). A small number are separated by tidal narrows which restrict the flow of water into and out of the lagoon. This separation from the sea makes them unique among coastal habitats and means that saline lagoons are either tideless, or where inlets occur, the tide has only a restricted effect on the lagoon. They retain part of their water-body at low tide, and this water may be either saline or brackish. They often support unusual assemblages of marine, estuarine and aquatic plants and animals, including lagoonal specialist species.

Any management needs to be carefully tailored to the needs of each individual lagoon and should be based on an understanding of the natural features of importance and the external factors affecting the lagoon. Indeed, where a lagoon is in a good and stable condition, active management is unlikely to be necessary. Maintaining salinity and water depths can be a key management priority, particularly where some lagoons become increasingly separated from the sea as a result of natural coastal processes - the balance between freshwater (e.g. from rainfall, streams or artificial outputs) and saline (i.e. sea water) inputs may change as a result. It may be necessary to actively manage freshwater and seawater input to favour certain species or communities. Whilst freshwater input is not essential to the conservation of lagoons, some connectivity with seawater is.

The water depth is also critical to many of the lagoonal specialist species with a depth between 0.5 and 1m being desirable. Some deeper water refuges are also beneficial. Siltation from surrounding land run-off

may need to be addressed.

Water quality, and any direct and/or diffuse inputs from the surrounding land, can have a profound effect upon the productivity of lagoons and well-being of specialist species. Saline lagoons can show extreme reactions to a build up of some types of nutrients and therefore it may be necessary to actively manage inputs, especially where in close proximity to farmland.

In some cases, it may be desirable to allow vegetation to encroach into the lagoon to increase the diversity of habitats present, particularly for some breeding and migratory bird species. However vegetation should not be allowed to encroach to such an extent that it significantly reduces the areas of open water and shallow water, thus reducing the variety of habitats available to specialist species within the lagoon itself.

Islands in saline lagoons can be important for breeding birds and some management of the vegetation on these islands may be necessary to provide the best conditions for breeding birds. Two typical methods of vegetation control include flooding and hand clearance.

Vegetated shingle

Shingle is defined as sediment with particle sizes from 2-200mm. Shingle beaches form where sediment is first deposited on the shore by wave action. These deposits can then build up into more stable spits, bars or forelands. The types of vegetation that occur on shingle depend on the stability and structure of the shingle itself, but all must be able to cope with the unique physical and hydrological conditions typical of this habitat. This results in some communities being unique to shingle; including unusual moss- and lichen-rich communities that are of great conservation value. Shingle structures also provide important habitats for invertebrates and breeding birds.

A key management requirement is to avoid or minimise surface disturbance, especially in the more open communities. Many of the vegetation types and species associated with shingle are fragile and vulnerable to damage from trampling. This breaks up the fine humus that develops in the upper layers of the shingle that is vital for the plants to survive. Where recreational pressures are significant enough to result in the loss of vegetation cover, or prevent its recovery, it may be necessary to take steps to manage access. Disturbance of areas important for breeding birds should be minimised during the breeding season.

Where there is more closed vegetation cover, light grazing, by rabbits for example, may be all that is needed to prevent scrub encroachment on areas of grassland and heath. However, if there is a tradition of sheep grazing; it may be beneficial to continue this practice at a low intensity. In some cases grazing is not necessary, because of the low rates of plant growth on shingle structures, and can even be damaging, due to the fragility of shingle habitats. The introduction of grazing where it has not been traditionally practiced would not be beneficial.

All habitats

The habitats within this site are highly sensitive to inorganic fertilisers and pesticides, applications of which should be avoided both within the site itself and in adjacent surrounding areas. Herbicides may be useful in targeting certain invasive species, but

should be used with extreme care. Access to this site, and any recreational activities within, may also need to be managed.

Operations likely to damage the special interest

Site name: South Thames Estuary and Marshes

OLD1003874

Ref. No.	Type of Operation
1	Cultivation, including ploughing, rotovating, harrowing, and re-seeding.
2	Grazing.
3	Stock feeding.
4	Mowing or other methods of cutting vegetation.
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+.
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 peat, 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 boulders, large stones, infilling of pits and quarries.
26	Use of vehicles or craft likely to damage or disturb features of interest.
17	Recreational or other activities likely to damage or disturb features of interest.
28	Game and waterfowl management and hunting practices.

* '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.