

1.1 Location

		Notes
Location	Pevensy Levels	Lying between Bexhill and Eastbourne, the Pevensy Levels cover an area of approximately 4,000 ha (10,000 ac). The National Nature Reserve lies in the parishes of Pevensy and Bexhill in the southern part of the Levels, either side of the A259 road near to Norman's Bay.
County	East Sussex	
District	Wealden	
Local Planning Authority	Wealden District Council	
National Grid Reference	TQ670058 /50_49' 14"N 0_22' 50"E	TQ 670058 (Southern section-described in this management plan) TQ 657065 (Northern Section - managed by the Sussex Wildlife Trust and described in a separate management plan.)

1.2 Land Tenure

	Area (ha)	Notes
Total Area of NNR	181.6Ha	This is the total area of the National Nature Reserve at Pevensey, however the ownership is split between Natural England and the Sussex Wildlife Trust. The management prescriptions for the Sussex Wildlife Trust land are given in a separate document which has been written in conjunction with Natural England.
Freehold	51.4 Ha	Natural England own this area of land.
Leasehold	x	
S 35 Agreement	x	
S16 Agreement	x	
Other Agreements	x	Annual grazing licence to Robert and Jason Smith of Holmes Farm, Whydown, Bexhill TN39 4RF
Legal rights of access	x	
Other rights, covenants, etc	x	
Notes		

1.3 Site Status

Legal designations affecting the site

Designation	Area (ha)	Date	Notes
SAC	N/A	Designation:	
SPA	N/A	Designation:	
Ramsar	51.4	Designation: 1998	<p>Pevensey Levels (including the Reserve) was designated under the RAMSAR convention in 1999. The relevant site selection criterion on which the designation was based is 2a and 2b.</p> <p>2a: The site supports an appreciable assemblage of rare, vulnerable or endangered species or subspecies of plant or animal, or an appreciable number of (identified species).</p> <p>2b: It is of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna. Pevensey levels Ramsar site is probably the best site in Britain for freshwater Molluscs, one of the five best sites for aquatic coleopteran and supports an outstanding assemblage of dragonflies. Of the 160 plants in Great Britain that can be described as aquatic, about 110 are found on Pevensey Levels. (For further information, visit http://www.jncc.gov.uk/page-161)</p>
NNR	51.4	Declaration(s): 2 May 1985 and 24 April 1986 and 12 July 1996	Designated to safeguard this undrained example of traditional grazing marsh with associated ditch flora, fauna and wetland birds.
SSSI	51.4	Notification (1981 Act):	<p>Originally notified in 1977, re-notified in 1990 under 1981 Act. Notification features:</p> <ul style="list-style-type: none"> • Lowland ditch system in grazing marsh. • Outstanding assemblage of vascular plants • Locality of <i>Potamogeton acutifolius</i> • Outstanding invertebrate assemblage W31 permanent wet mires (W314 rich fen) • Outstanding invertebrate assemblage: W21 open water and mineral marsh (W211 open water on disturbed sediments) • Outstanding assemblage of Odonata • Aggregation of wintering <i>Vanellus vanellus</i>
GCR	N/A		
Other designations (site):	N/A		
Wider designations:	N/A		

1.4 Physical Features

The physical aspects of the reserve which form part of the site's importance or which have a bearing on its management –

The physical features described below are indicative of the Reserve but have been written in relation to the Pevensey levels SSSI as it is important to put the reserve in the wider context of the surrounding area.

Geology

Geologically, the Levels are located where impervious Weald Clay reaching the coast has been overlain by superficial alluvial deposits. In places, the Weald Clay itself forms outcrops, as at Horse Eye. Tunbridge Wells Sands also reach the surface occasionally, as on part of Hooe Level.

Geomorphology

Once an area of inter-tidal mud flats, the Levels have developed in turn to salt marsh and fresh water marsh. This process has been aided by the deposition of shingle beach deposits and the process of long-shore drift, along the present coastline. This shingle ridge now protects the Levels from seawater inundation, since most of the site lies below the level of highest tide. Past intersection of the marshes by a series of ditches has created the present-day area of rich grazing meadows.

Soils

The soils of Pevensey Levels and the reserve comprise alluvial clays (Newchurch and Wallasea soil series) typical of reclaimed coastal marshes. The soils are poorly drained with a low hydraulic conductivity in the region of 0.05m/day. The soils are described as seasonally waterlogged or waterlogged for long periods in winter. In central parts of the marsh, the clay soil is underlain by a peat layer of variable thickness.

Hydrology & Hydrochemistry

The Levels have an extremely complex hydrological regime due to progressive land reclamation and drainage improvements, necessitated by agricultural intensification and the subsequent need for flood control. The network drains through Pevensey Bay and Norman's Bay via the Pevensey Haven and Waller's Haven respectively, and the sluices on the Wallers Haven and Pevensey Haven prevent saltwater intrusion into the drainage system. As the surface inflows and outflows are relatively small, the overall water balance of the Levels is predominantly controlled by precipitation and evaporation. The surface inputs of importance are the sewage treatment works that discharge into the Levels; in particular dry summers these can account for the majority of surface water input, and may provide the majority of organic and inorganic nutrients to the Levels. Groundwater movement is not an important factor on the Levels as the clay layer that underlies the Levels isolates them from the underlying chalk aquifer.

Climate

The climate of Sussex is subject to both oceanic and continental influences due to its geographical location. This results in relatively warm summers and mild winters along the coastal strip - including Pevensey Levels. The 1968-1998 mean annual rainfall for the Levels was 763mm. Analysis of long term mean monthly rainfall (1961 – 1990; Douglas, 1993) indicates a trend of decreasing rainfall over the Levels from 840mm (in the West) to 720 mm (in the East) due to a rain shadow effect created by the South Downs to the West of the site.

Above average daily sunshine hours, high mean annual temperatures and the strong winds that sweep across the marsh result in high rates of evapotranspiration. Long term average data indicate that the mean annual potential evaporation loss is 550mm, with slightly higher values for the seaward areas of wetland. On the Pevensey Levels evapotranspiration losses between May and August are close to twice as large as rainfall and transpiration data.

References

(Environment Agency Water Level Management Plan 2007)

1.5 Biological Features

The plants and animals which form part of the reserve's importance and which contribute to national and local biodiversity

The National Nature Reserve is included in the boundary of the Site of Special Scientific Interest and Ramsar site. Both these designations illustrating the contribution which the reserve makes to both local and national biodiversity.

Flora

The botanical interest of the Site of Special Scientific Interest is largely confined to the ditches, even the undrained fields having been agriculturally improved by fertiliser application and re-seeding. Following the dredging of a ditch, a distinct successional pattern occurs. First, floating and submerged aquatic plants such as duckweeds (*Lemna sp*) pondweeds (*Potamogeton sp*) or water fern (*Azolla sp*) colonize. These are followed by larger, floating or emergent plants such as frog-bit (*Hydrocharis morsus ranae*), bur-reed (*Sparganium erectum*) and arrowhead (*Sagittaria sagittifolia*). Finally common reed (*Phragmites australis*) becomes dominant at the expense of most other species. The most species rich ditches show a varied structure and a good mix of open water and emergent species. The broad-leaved pondweed (*Potamogeton natans*) and frog-bit are abundant, whilst the nationally rare sharp leaved pondweed (*Potamogeton acutifolius*) (RDB Vulnerable) is of particular importance. Other open water species include ivy leaved duckweed (*Lemna trisulca*) and the nationally scarce water soldier (*Stratiotes aloides*) and flat stalked pondweed (*Potamogeton friesii*). Emergents of interest include the nationally scarce greater water parsnip (*Sium latifolium*) and water dropwort (*Oenanthe fluviatilis*).

Monitoring which has taken place since declaration of the NNR has shown that many ditches have been found to support 19 or more species over a 30m length which is a good indication of high species diversity contributing to local and national biodiversity. The Ramsar designation criteria sheet states that the area is of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora. Of the 160 plants in Great Britain that can be described as aquatic, about 110 are found on Pevensy Levels and a significant number of these are found on the reserve.. (See <http://www.jncc.gov.uk/pdf/RIS/UK11053.pdf> for details of the Ramsar designation)



Pevensey Levels Ramsar



Land designated as Ramsar



Scale 1:50000 Map 1 of 1



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Fauna

Invertebrates

The site supports outstanding invertebrate populations and is a top national site for molluscs and aquatic coleopteran. Indeed, the site is perhaps the best in Britain for freshwater mollusc fauna. A ramshorn snail *Segmentina nitida* (RDB: Endangered) is found in well oxygenated drains with lush vegetation and the European Protected *Anisus vorticulus* is also present. Particularly widespread and abundant on this site is the small aquatic snail *Valvata macrostoma* (RDB: vulnerable), and of particular interest is Britain's largest water beetle, the great silver water beetle *Hydrophilus piceus* (RDB: Rare).

Over 15 species of dragonfly (*Odonata*) have been recorded on the Reserve including the nationally scarce species, hairy dragonfly (*Brachyton pratense*) and variable damselfly (*Coenagrion pulchellum*) One of Britain's largest spiders the Fen Raft Spider (*Dolomedes plantarius*) (RDB: Endangered) has also been recorded on the Reserve.

Map

Birds

Pevensey has historically been of national importance for its wintering lapwing (*Vanellus vanellus*) which has exceeded 1% of the total British population. The site also supports about one fifth of the breeding yellow wagtails (*Motacilla flava*) in Sussex. Both species have been recorded on the Reserve.

Populations of breeding wetland birds have declined severely in recent years, but the Levels as a whole still hold some of the largest breeding populations of redshank, lapwing, yellow wagtail and *Acrocephalus* warblers in Sussex.

The diversity of wintering populations is largely dependent on the amount of water lying on the reserve. In 1988 when water was lying for long periods on the NNR, 100 shoveller were present all winter, and among 33 other

species, including many rare migrants such as temminck's stint, pectoral sandpiper, broad-billed sandpiper, avocet and little ringed plover. The maintenance of this water regime at migration and wintering periods will ensure that the NNR becomes a progressively more important site for wetland birds.

BAP priority species

All BAP priority species known to be associated with the Reserve are identified on the Reserve species list. In 2008, national matrixes were constructed linking the UK BAP species to the habitats they occupied, with notes describing particular niches for each species. From these matrixes, the habitat requirements of BAP priority species associated with the Reserve can be identified. Species associated with the Reserve include:

Communities

Habitat types

Ditches - The EFU survey of 1982-84 evaluated most of the ditches on Manxey South and Pevensey Bridge Levels as being Groups 4, 5 and 6, i.e. species-rich with a diverse structure of open water and emergent species. Pevensey Bridge was consistently rich, with more than 30 aquatic species being found in some of the ditch lengths surveyed. Subsequent condition assessment surveys to establish the condition of the ditch habitats have confirmed that the ditches in the Reserve are in Favourable condition.

Fields - Physical diversity in the pastures exists in the mixture of dry, damp and wet fields and by the variation in flora associated with the physical characteristics. For example those fields which remain wet throughout the winter and into the spring or even summer have well developed *Juncus* communities. Most of the fields are improved rye grass *Lolium perenne* leys with occasional creeping bent *Agrostis stolonifera*. There is the opportunity to manage the in field areas specifically for wetland birds.

Carr Woodland/Scrub – Whilst there is no willow carr woodland on the Reserve, there are small areas of blackthorn/hawthorn scrub which provide shelter for small mammals and birds and enhance the structural diversity of the NNR vegetation. It is perhaps necessary here to explain 'scrub cover' in relation to the surrounding area of the Reserve. The northern edge of Pevensey Bridge Level is bounded by a well developed willow carr, which acts as an important windbreak for the whole Level apart from its intrinsic value as a small mammal, herptile and invertebrate refuge and bird habitat. Pockets of willow are found scattered along the Norman's Bay road and perform a similar role. One factor mitigating against the value of such habitat is the tendency of corvids to nest in mature stands, thus posing a predation risk to nesting wetland birds. This needs to be borne in mind in the long-term and any further encroachment of scrub on the Reserve would not be appropriate.

1.6 Cultural Features

Landscape importance, historical and archaeological features of the NNR and its use for purposes other than nature conservation

Joint Character Area:	Low Weald and Pevensey
<p>The Pevensey Levels have a very distinctive landscape character. The National Nature Reserve represents many of the key landscape characteristics and therefore makes an important contribution to both maintaining and enhancing the landscape of the Pevensey Levels. In particular, the Reserve is important for;</p> <ul style="list-style-type: none"> • Contributing to the large scale, open and windswept landscape. The landscape diversity of the Levels as a whole is added by 'eyes' or islands of higher ground which are visible from the reserve. • The landscape of Pevensey Levels is largely devoid of significant tree cover; management of the Nature Reserve ditches has meant that there has been no encroachment of scrub on the Reserve, above and beyond what was there at the time of purchase. This has been important for maintaining the open field structure which on other parts of the marsh has been lost due to neglect and lack of ditch management. • Drainage ditches and banks divide fields, with channels forming barriers to grazing stock. • Reed-fringed drainage ditches, rushy pasture and wet meadows are the key semi-natural habitats found within the landscape and the Reserve has helped to enhance and protect these features. In addition, patches of standing water across the reserve reinforce the wetland character of the area. <p>Archaeological and Historical Features</p> <p>Historic Environment reports have been undertaken on Pevensey and most often, these uncover earthworks associated with medieval salt production. Much of Pevensey was reclaimed from salt water marshland in the Late saxon and medieval periods and it is likely that the current sluices, sewers, drains and field boundaries are of this date. Research suggests that these areas were heavily utilised during the Mesolithic to bronze age periods. It is thought that many remains survive below the landscape created in the medieval period, it is likely to be waterlogged and thus there is high potential for the survival of organic matter as well as non-organic artefacts. It is generally considered that permanent pasture offers the best system of protecting archaeological remains, both buried and surviving earthworks. It is therefore likely that the sensitive management of the Reserve has helped protect and enhanced important archaeological features.</p> <p>Land-Use History –</p> <p>The Pevensey Levels area was a tidal inlet until the eastward drift of coastal shingle in the Middle Ages cut it off, and a salt marsh developed. Drainage of the marsh by "innings" (digging drainage ditches) allowed the development of summer grazing and, ultimately, some arable farming. For centuries, a pattern of summer grazing and winter flooding was maintained and the wildlife associated with the wet fields and ditches flourished. Since 1960, however, most of the marsh has been pump drained and this has very much reduced winter flooding. Draining has of course also lowered water levels and for a period of time allowed for arable production until large scale reversion took place under Agri-environment schemes.</p> <p>Land-use changes have posed a threat to the wildlife of the area with threats from pollution from farm wastes and developing towns, such as road development, agricultural intensification, neglect of ditches and their replacement by fences or shrubs, and increased use of chemicals such as pesticides and fertilisers. The changing economics of farming can create uncertainty over the present and future land-uses.</p> <p>The traditional form of grazing has been that of summer fattening which creates minimum poaching of the turf but can have serious effects on nesting birds early in the season if stocking rates are too high. Lack of grazing, however, would eventually allow the area to revert to carr woodland, while non-intervention in shallow water areas would lead to a similar result after invasion by reed.</p> <p>From its declaration in 1985, the NNR continued to be grazed with cattle in the Summer and sheep in the winter, with timing and stocking rates managed so as to avoid disturbing nesting waders in the early Summer and to minimise poaching of the ground during wet periods (particularly in Winter). It was apparent at the outset that there could be no control of water levels in the NNR ditches, whose levels fluctuated in conjunction with the supply ditch, the Wrenham Stream, which itself was under the control of the National Rivers Authority (now Environment Agency). The NRA then and the EA now, still control the level of the</p>	

Wrenham Stream, which often has been dropped significantly in perceived times of 'flood threat', without any reference to the nature conservation requirements of the NNR and surrounding ditches. As a result of these circumstances, the Nature Conservancy Council installed clay dams on all the ditches entering the NNR, some with sluices to allow water in and out, while controlling ditch levels within. Natural England still maintains this control over NNR ditch levels. For the last 10 years, the Environment Agency have been developing and implementing a new Water Level Management Plan (WLMP) for the Pevensy Levels catchment. In 2009/10, the EA plan to implement their WLMP across the hydrological unit in which the Reserve is located. The WLMP involves detailed analysis of the hydrological dynamics of the ditch and ground water and the subsequent up-grading of water control structures to achieve control of water flow and field/ditch water levels. As the EA implement their new water regime, the effects on the NNR will be monitored and management adjusted accordingly. Ditch cleaning and re-profiling has continued within the NNR on a rotational basis since 1985. Maintenance of gates, roadside fencing and fencing of clay dams has also continued.

Socio-economic Use

Three local farmers are granted mowing and grazing licences but none derive a significant proportion of their income from the site. There is no public access on the Reserve other than through organised events and guided walks. Reserve visitors therefore make a limited if any contribution to the local economy because they are infrequent and tend to be as a result of ad hoc events.

Large tracts of open countryside of this nature are rare in south-east England and with the present huge development pressure in the south-east which is mirrored in the major building programmes being carried out on marshland on the outskirts of Eastbourne, the conservation of areas such as Pevensy Levels under a pastoral farming system is of crucial importance. This will provide much needed recreational opportunities in an area where semi-natural habitat of any kind is considered a fair game for the developer, for the sense of openness and freedom that one gets from such an expanse of undeveloped and 'wild' landscape is something that Britain generally, and this area in particular, is in grave danger of losing.

Whilst recreational activities on the reserve are non-existent, the Pevensy Levels are an important area for recreation with the public enjoying pursuits such as walking, fishing, cycling, horse riding and model aircraft flying as well as natural history pursuits such as bird watching. The National Nature Reserve, although not entirely suited for promoting access within the reserve itself could have a wider role in promoting quiet enjoyment of the countryside.

Education

Little educational use is currently made of the NNR, annual guided visits from undergraduates of the University of Sussex, occasional walks and a few other demonstration events for farmers/land managers but it is currently limited.

Research Use

Little use has been made of the NNR for research purposes in recent years, although as an International Site it has considerable potential, with some excellent ditches and rare species. University students do come out to the Reserve for monitoring and evaluation.

Demonstration

When originally purchased, the Reserve acted as a 'testing ground' to develop management prescriptions which could be applied elsewhere around the SSSI. Adaptations of these prescriptions were used for an English Nature grant scheme, called the Wildlife Enhancement Scheme (WES) which has operated across the SSSI since 1994. Little use is now made as a demonstration site, much more scope for demonstration in terms of ditch management, scrape creation and managing grassland for waders and wildfowl. New research findings from the RSPB Reserve at Berney Marshes in Suffolk, promise to provide some substantial opportunities for habitat enhancement in this respect. During the lifetime of this plan, the Reserve will be used to demonstrate some of the RSPB's field and ditch management techniques to other land managers, carefully coordinated with the staff managing Natural England's Higher Level Stewardship Scheme and the Environment Agency's Water Level Management Plan on the Levels

1.7 Access Features

Accessibility and visitor appeal, public transport routes, access routes and visitor facilities

English Nature Access Classification	Spotlight	Non-Spotlight		
		Gold	Silver	Bronze
				Y
EN Access Plan Category	Open	Managed	Restricted	Excluded
			Y	

Visitor Appeal and Suitability for Access

The Levels as a whole support a wide range of recreational activities, including walking, fishing, cycling, horse riding and model aircraft flying as well as natural history pursuits such as bird watching, therefore the Levels do appeal to a variety of user groups. The Reserve however, does not lend itself to these activities due to its location, wildlife interest and limited facilities.

As there is an existing good network of Public Rights of Way across the marsh, there is no real need to increase walking paths across the Reserve, as the public can already access significant areas of the marshland habitat. Additional paths across the Reserve would not create any essential links to other access paths. In terms of its primary botanical interest, public access is compatible with objectives for nature conservation in relation to ditch flora and fauna. However, there is a conflict between public access and the success of ground-nesting birds whose breeding performance could be reduced by public access. In addition disturbance could also affect wintering waders and wildfowl populations. As the Reserve is relatively small and encompasses one major habitat type, there are limited opportunities for zoning of access.

The suitability and appropriateness of increasing access on the reserve is therefore limited, however the reserve is more suitable for hosting organised events at certain times of the year and Natural England could be more pro-active in working with Sussex Wildlife Trust to ensure that the NNR is made more accessible through a series of events or guided walks which could be aimed at specific target groups, whereby the access is controlled.

Access Provision

The Reserve is not easily accessible by public transport and is realistically only accessible by car and bike. Walking to the reserve is not an option due to the lack of pavements along dangerous and winding roads. There is currently no car park (there are roadside pull-ins but parking is limited) at the reserve or cycle racks and no space is currently available for providing these facilities. Most of the site does not lend itself to disabled access due to the nature of a wetland site. One compartment however, the eastern-most section, which rises to form part of Rockhouse Bank, could provide limited access to the NNR, with panoramic views of the marsh within easy walking distance. Because this bank comprises higher, drier ground, it is not used by breeding or feeding waders. The decision has been made therefore, to provide for open access on foot to this section, allowing visitors to enter the Reserve, at a point where most of the site can be viewed, without undue disturbance to wildlife.

Visitor Facilities

No facilities are currently provided and there is no real scope for putting in any facilities on the lower fields due to the wet nature of the open marsh. On Rockhouse Bank, at the roadside entrance, kissing gates, designed to allow wheelchair access are to be installed, providing an opportunity for the more adventurous to enjoy a little bird watching, away from the traffic of the narrow lane. The use of this new provision will be monitored and facilities will be developed accordingly.

			including Nationally scarce species.															
6	Standing open water and canals (ditches)	Dolomedes Plantarius	Only found at two sites in Britain – Pevensey is the national stronghold for this species - recorded on the Reserve			✓		✓					✓					
7	Standing open water and canals (ditches)	Anisus Vorticulus	Ramshorn Snail (Added to European Protected Species list in 2007)			✓					✓		✓					
8	Coastal and floodplain grazing marsh	Wintering Birds	Population of lapwings. The site is of National Importance as the number of wintering Lapwings has regularly exceeded 1% of the total British population			✓		✓										
9	Coastal and floodplain grazing marsh	Breeding Birds	The site is important for breeding bird populations – Lapwing, Redshank, Yellow wagtail										✓					

Table 1.8.4 Socio-economic Use

Feature No.		Very Important	Important	Insignificant
11	Economic Use		✓ Local graziers use the meadows on the Reserve for grazing livestock.	
12	Community Involvement			✓

Table 1.8.5 Education, Research & Demonstration

Feature No.		Very Important	Important	Insignificant
13	Education			✓ Little use is currently made of the Reserve by educational groups.
14	Research			✓ Little use is currently made of the Reserve for research purposes.
15	Demonstration			✓ Little use is currently made of the Reserve for demonstration purposes.

Table 1.8.6 Public Access

Feature No.		Very Important	Important	Insignificant
16	Public Access			✓ Limited public access on site

Table 1.8.7 Other Estate Assets

Site assets, not listed in preceding summary tables, which the management plan needs to address

Feature No.	Asset Description	Notes
17	Licences and conveyances	Grazing Licences/Legal commitments
18	Estate Infrastructure - gates	There are 17 field gates on the Reserve, Locations shown on map 7
19	Estate Infrastructure Stock / Boundary fencing	Locations on map 7
20	Estate Infrastructure – sluices and bunds	Locations shown on map 7