ENGLISH HERITAGE

Old Hall Marshes, Essex

Louise Barker

SURVEY REPORT
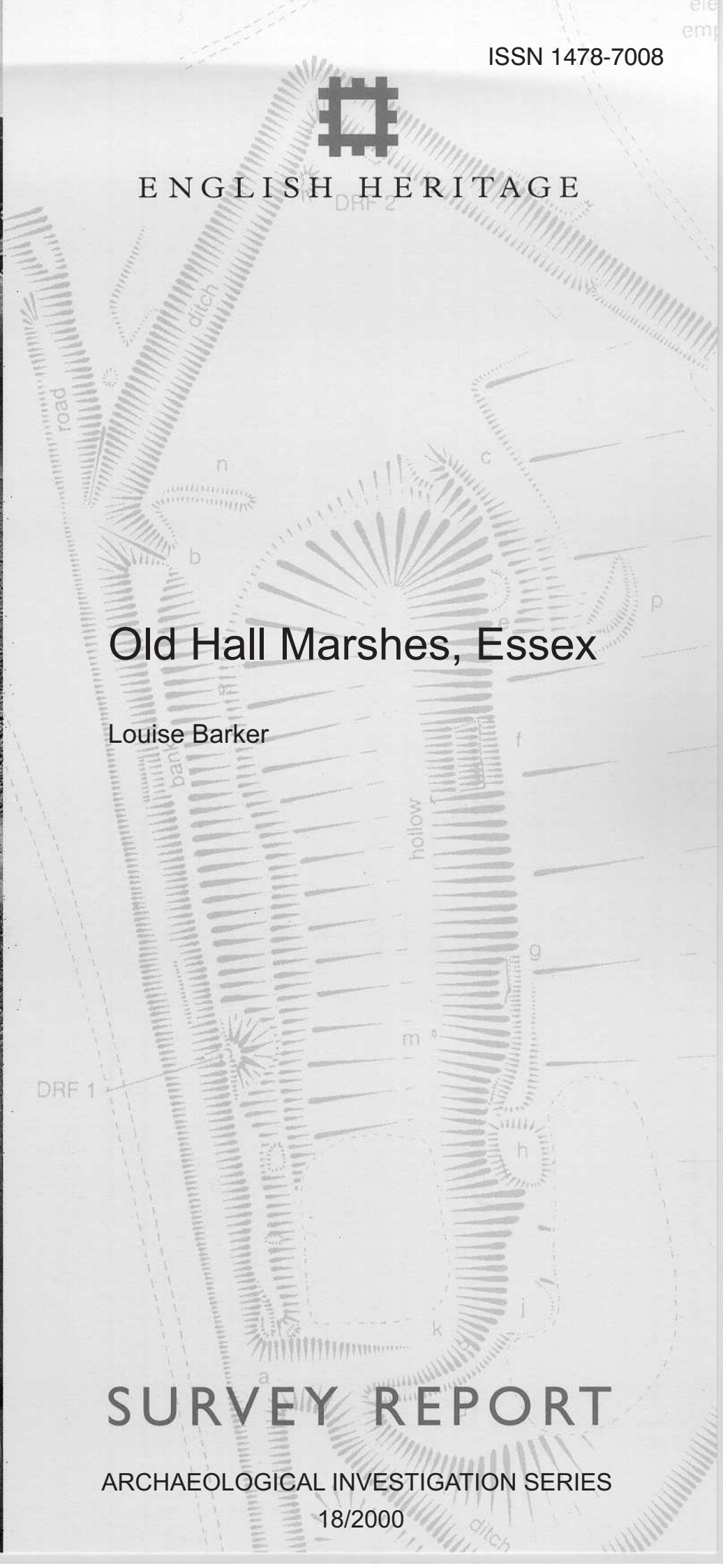
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ENGLISH HERITAGE

OLD HALL MARSHES,

ESSEX

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Survey by: Louise Barker, Moraig Brown and Paul Pattison
Drawings by: Louise Barker

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1. INTRODUCTION

During September 1999 English Heritage (Cambridge, Brooklands Office) surveyed the area of Old Hall Marshes (TL 980 120), located at the mouth of the Blackwater Estuary in Essex. The survey was carried out following a request by Essex County Council and the RSPB to help with the management of the RSPB reserve. Survey work consisted of a full ground reconnaissance to locate all visible sites of archaeological interest, a topographical survey at 1:2500 scale showing all archaeological features and selected surveys of sites of particular importance at the larger scale of 1:1000.

Site description

Old Hall Marshes was bought from Brigadier RBR Colvin in 1984 by the RSPB and is now managed by them as a bird reserve. The majority of the site lies in the parish of
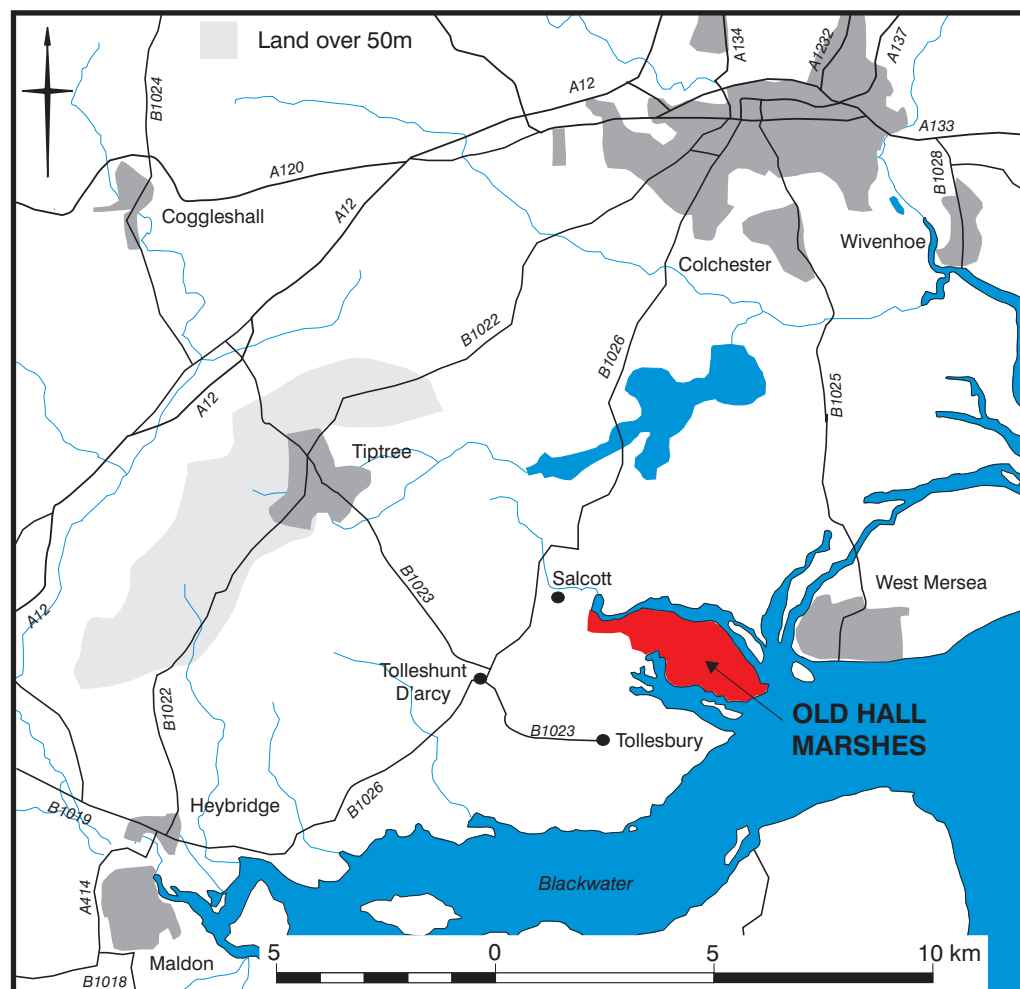
Figure 1
Location map

Tollesbury, with the exception of a small area in the north-western corner that is in Salcott. It is located 12km south of Colchester, at the point where the Blackwater Estuary empties into the North Sea (Fig 1). The marshland occupies a peninsular defined by the Salcott Channel to the north and the North Channel to the south, comprising 291 hectares (719 acres) of unimproved coastal grazing marsh with smaller areas of improved grassland, reedbed, saltmarsh and brackish water bodies. The majority of the reserve lies below the current mean high water spring tide with the exception of approximately 20 hectares (49.5 acres) of high ground centred around Old Hall Marsh Farm. Across the marshes from west to east, ground heights rise by 0.3-0.6m (RSPB 1996, 8).

Old Hall Marshes is part of the Blackwater Estuary Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR), also part of the mid-Essex Coast Special Protection Area (SPA/Ramsar) for wild and wetland birds and the Essex Coast Environmentally Sensitive Area (ESA). The site holds internationally important numbers of wintering dark-bellied brent geese and nationally important numbers of eight other species of wintering/passage waterfowl, together with garganey, gadwall, pochard, avocet and bearded tit. The reserve also supports 22 nationally scarce plant species and 64 nationally-scarce/rare invertebrates (RSPB 1996, 1).

Previous archaeological work

Within the assessment area 16 features are recorded in the County Sites and Monuments Record (SMR). These are listed in section 8 and noted throughout the report. In addition the two duck deoys were scheduled in 1999: National Monument Numbers 32407 and 32408. There are no records of any excavations on the marshes but the area was surveyed in 1995 for the National Mapping Programme by Essex County Council. The result is an aerial photographic transcription, produced by David Strachan at 1:10,000 scale, showing both duck decoys together with a number of internal banks located on the marshes (Strachan 1995).

Key

— Fence (modern)
— Fence (removed)
— Track
■ Bank
● Mound/Red Hill
■ Duck Decoy
■ Hollow
▲ ?Midden Site
■ Building (site of)
■ Sea Wall
■ Bank, not surveyed. Transcribed from aerial photographs (Strachan 1995)

Salcott Channel

Joyce's Head Fleet

Penny Hole Fleet

North Channel

Old Hall Marsh Farm
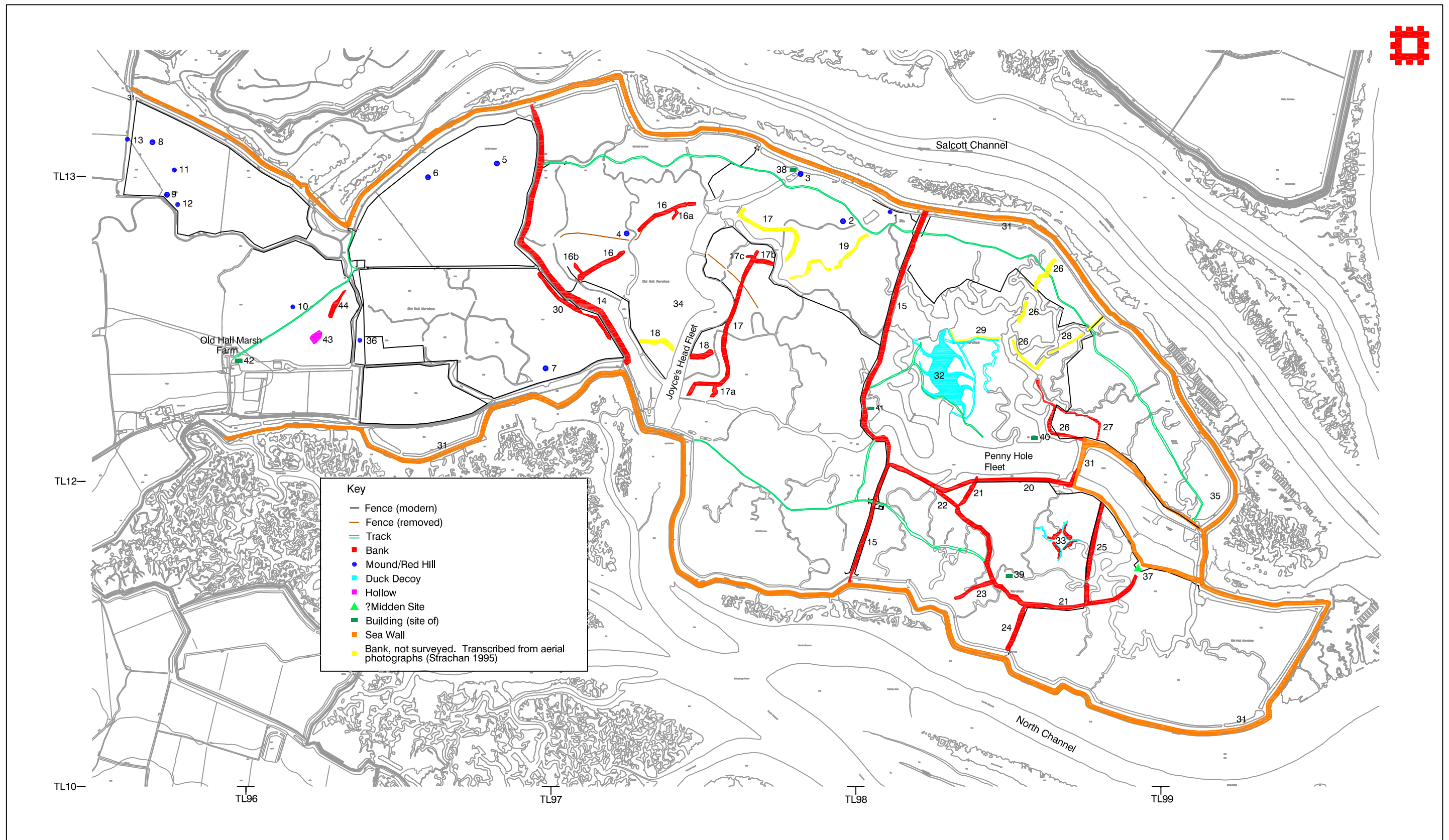
TL13
TL12
TL10
TL96
TL97
TL98
TL99

Figure 2 *EH Survey Plan Showing Archaeological features on Old Hall Marshes. Numbers Relate to Feature Descriptions within the Survey Report (Based on Ordnance Survey Digital Data, Crown Copyright Reserved)*

2. AN OUTLINE HISTORY OF OLD HALL MARSHES

Numbers in **bold** relate to archaeological features shown on Figure 2 and Figure 16, and listed in section 3 and section 7.

Old Hall Marshes were initially formed from the build up of silt overlying London Clay, washed down to sea by rivers and then lifted back to shore via tidal action. This formed individual mud banks which gradually united, becoming higher and broader, confining the flow of the tide to creeks and fleets. As plants began to colonise the mud flats, the saltings built up until they had grown so high that only the highest tides ever covered them. As the saltings dried they became good pasture land, rich in iodine and mineral salts on which sheep in particularly thrived. Gradually many of the saltings were inned or reclaimed and embankments built to keep the sea out altogether. As rain then washed the salt out of the surface of the marshes, the alluvial soil became highly fertile and suitable for arable (Grieve 1959, 3-4).

The Prehistoric and Roman periods

The earliest evidence for use of the Old Hall Marshes is found in earthworks known as 'red hills', comprising the remnants of salt production, and in particular fire-reddened debris. These mounds date to the late prehistoric and early Roman period and are commonly found along the Essex and Kent coastlines. Their locations are an indication of the approximate position of the coast line at this period (RSPB 1996, 19). On the reserve, there are 13 mounds, most of which may be red hills (see section 3).

The Medieval period to the present day

It is thought that Tollesbury and the Tolleshunts formed part of one large estate during the Saxon Period. However, by the time of the Domesday survey, this estate had been fragmented into several manors, all with the personal name 'Toll' (Rippon 1996, 10; Hunter 1999, 68). At Domesday, Tollesbury lay in the eastern part of Thurstable (*Turestapla*) Hundred, the land belonging to St. Mary of Barking (VCH 1901, 449). The small area in the north western part of the marshes was part of *Wensistreu* hundred and was known as *Salcata*.

In the medieval period Tollesbury supported four manors. Old Hall Marshes were part of the manor of *Tollesbury*, otherwise called: *Tolleshunt, Little Tolleshunt, Tollehunt Guisnes, Tolleshunt Bourchier*, the *manor of Tollesbury* and the *manor of Over Hall*. *Guisnes Court*, to the west of the marshes, is probably the site of the manor house. An estate map and auction catalogue of 1827 referred to this manor as the *Manor or Lordship*

Salcott Tithe

Owner: Robert Dickson

Tenant:
Margret Cline

SALCOT

TOLLESBURY

House and Farm

Old Hall Channel

Saltings

Wall

Twenty Four Acre Marsh

Lower Hackyard Marsh

Great Salt Marsh

Syphon Piece

Island Marsh

Long Slack Marsh

Lower Joyce's Head

Middle Marsh

First Decoy Marsh

Little Marsh

Sluice Marsh

Great Mount

Little Mount Marsh

Lower Slack Marsh

Ram Marsh

Decoy and Yard

Wether Marsh

Old Decoy Marsh

Syphon Saltings

Joyce's Head Marsh

Joyce's Head Marsh

Cottage Marsh

Coney Marsh

Second Decoy Marsh

Penny Hole Fleet

Third Joyce's Marsh

Forty Acres Marsh

Joyce's Head

Mersea Point Saltings

Wide Gate Marsh

Reeds

Saunders Marsh

Joyce's Marsh

Stack Yard Marsh

Little North Marsh

Second Little Marsh

Third Little Marsh

The Marsh

Third Joyce's Marsh

Second Little Marsh

First Little Marsh

Middle Joyce's Marsh

Pound Marsh

Great North Marsh

Second Marsh

First Joyce's Marsh

House and Farm

First Marsh

Second Chase

Old Hall Saltings

Wall

Great Cob Island

Little Cob Island

Tollesbury Tithe

Owner: Philip Bennett (Joyce's Head, Lower Joyce's Head, Penny Hole Fleet)

Tenants:
John Bygreave
Robert Dodd
Roger Watkins
John Wright
Joseph Fooler
Pearson Golding

Figure 3 *Part of the Tithe Maps for Tollesbury and Salcott relating to Old Hall Marshes, 1840 (after ECRO D/CT 363 and D/CT 306)*

of Tolleshunt Gynes otherwise Tolleshunt Bourchiers (ECRO: D/DDc E17) and similarly on an auction catalogue of 1949, the manor is called the *Guisnes Court estate* (ECRO: B 8575).

In the 13th century, the manor of Tollesbury was given by King John to Ernulph de Hordres, who in turn granted it in the marriage of his daughter to Baldwin, Earl of Guisnes. By the end of the 13th century Philip Baffet held it, from whom his daughter Alina or Alivia, Countess of Norfolk, took over with her first husband Roger le Bigod, Earl of Norfolk and then with her second husband, Hugh le Despenser, justice of England. In the 14th and 15th centuries the manor came to the Bourchier family by marriage and then to the Devreux, Gardiner (by purchase) and Hallam families before passing in marriage with the heiress to the Bennet family (Lovell 1991, 91; Muilman 1772, 406-407).

Philip Bennett was the landowner at the time of the tithe returns in 1840. The tithe map (Fig 3) records that, with the exception of Penny Hole and Joyce's Head Fleets, the remaining land was leased to six tenants - Pearson Golding; John Wright; John Bygreave, Joseph Fooler; Robert Dodd and Roger Watkins. These men used the marshes for pasture, their holdings divided by a network of natural creeks and artificial ditches. Beyond the sea wall, further marshland was leased as saltings (ECRO: D/CT 363). The Salcott tithe appointment of 1839 records that the north-west segment of the marshes, called *Forty Acres Marsh*, was owned by Robert Dickson and tenanted to Margret Cline (ECRO: D/CT 306). During this century Old Hall Marshes were owned by Brigadier R B R Colvin before passing to the RSPB in 1984.

How Old Hall fitted into the manor of Tollesbury is unclear and its particular origin and location are uncertain. Old Hall is probably the *Red Hall* immortalised in the late 19th century by the Revd S Baring-Gould (1950, 33-41), rector and historian of East Mersea. In his novel *Mehalah: A Story of the Salt Marsh*, Red Hall is dated to 1636 through a date stone above the door of the house (1950, 35). There is also a description of the house and surrounding marshland, given when Mehalah and her mother make a visit to pay rent to the landlord.

'In the midst of the pasture there stood a tall redbrick house…it rose from the flat like a tower. The basement consisted of cellars above ground, and there were arched entrances to these from the two ends. They were lighted by two small round windows about four feet from the ground. A flight of brick stairs built over an arch led from a paved platform to the door of the house, which stood some six feet above the level of the marsh   The house was built completely of brick. The windows were of moulded brick mullions and drip stone and the roof was of tile. Round the house was a yard paved with brick and a moat filled with rushes and weed.   There were a few low outhouses, stable, cowsheds,

bakehouse forming a yard at the back and into that descended the stair from the kitchen door over the flying arch like that in front.

The principle impression produced by the aspect of Red Hall on the visitor was its solitariness'

<div align="right">(Baring-Gould 1950, 34)</div>

Such solitude was likely to have been an influencing factor in the use of the building for smuggling, recounted by Baring-Gould, with cargo brought in via the many channels crossing the marshes and carted into the villages of Salcot and Virley with the farmer's horses (*ibid*).

Old Hall has also been identified as the *Dane Hall* in Alfred Ludgater's Essex Novel *The Mistress of Broadmarsh* – an old tudor mansion house destroyed by fire . In his *Marshland Adventure*, Wentworth Day describes Old Hall as a 16th-century house of timber and brick noggin, which stood on a hillock in the marshes.

Nowadays the name Old Hall refers to the former ale house known as The Ship or Ship Ahoy, formerly the *Crooked Billet*, no doubt after the smugglers who frequented it, and the busy quay/coal wharf and landing place for barges and coasters. Grain was shipped from this quay while coal and heavy goods were brought in (Savills 1984, 3). The quay was subsequently linked to the Crab and Winkle rail line, which passed through Tiptree and cut the western end of Old Hall Lane, before terminating on Tollesbury Wick (RSPB 1996, 20). The increased efficiency of the Tollesbury and Kelvedon light railway as part of the London and North Eastern railway led to the gradual decline of shipping trade from Old Hall (ECRO: D1235)

The Reclamation of the Old Hall Marshes

Documentary evidence records that parts of the Essex marshland were being embanked by the end of the 12th century, the embankments constructed out of the marshland clay. The rise in sea level in this period led to the construction of sea walls, and in 1210 to the *Law of the Marsh*, whereby each man was to contribute to the upkeep of defences from which he benefitted. Gradually, various commissions were formed for the upkeep and construction of embankments, beginning at the end of the 13th century when coastal defences came under the supervision of the King's justices and other dignitaries. At first these were confined to the Thames area, but slowly spread further north along the Essex coastline with the first commission, for Tendring Hundred, established in 1451. The first half of the 16th century also saw the establishment of the Courts of Sewers, a legal body which, for the next 300 years, was empowered to supervise the tidal defences, although it

seems that the Tollesbury marshes never came under their jurisdiction but remained the sole responsibility of the land owner (Grieve 1959, 6-12).

Reclamation of Old Hall Marshes was probably in an advanced state by the end of the 16th century: a return of 1638 reveals that 40 acres of Old Hall Marshes called *Newe Inne Marshe* had been reclaimed around 1598 by the owner, Sir Thomas Gardiner, a man associated with many of the reclamation schemes in East Essex at this time (ECRO: D/DBR M96a). This probably represents one of several piecemeal episodes of reclamation and, according to Gramolt, lay in the south-eastern corner of the present marshes, butting against the sea on its north, east and south sides, and bringing the line of the sea wall more or less to its present position (Gramolt 1960, 72). Similarly, at Salcot in 1602, twelve acres were reclaimed and six years later another twelve (*ibid* 1960, 71). A number of the linear banks surviving on the marshes are likely to represent the different episodes of this reclamation (see sections 3 and 7). By the time of Chapman and André's map of 1777 the marshes had been fully reclaimed and the present sea walls largely in place (Fig 4). Prior to their enclosure, the marshes were open and the saltings had gradually risen in elevation so that they were only covered at the highest tides and could therefore be used for grazing sheep, which thrived on the rich vegetation. It is possible that a number of the internal banks also represent causeways so that sheep were safe during high tides.

The fact that Old Hall Marshes were enclosed privately makes it difficult to chart the process of reclamation. It appears that most of the coastal grazing marshes of Essex were
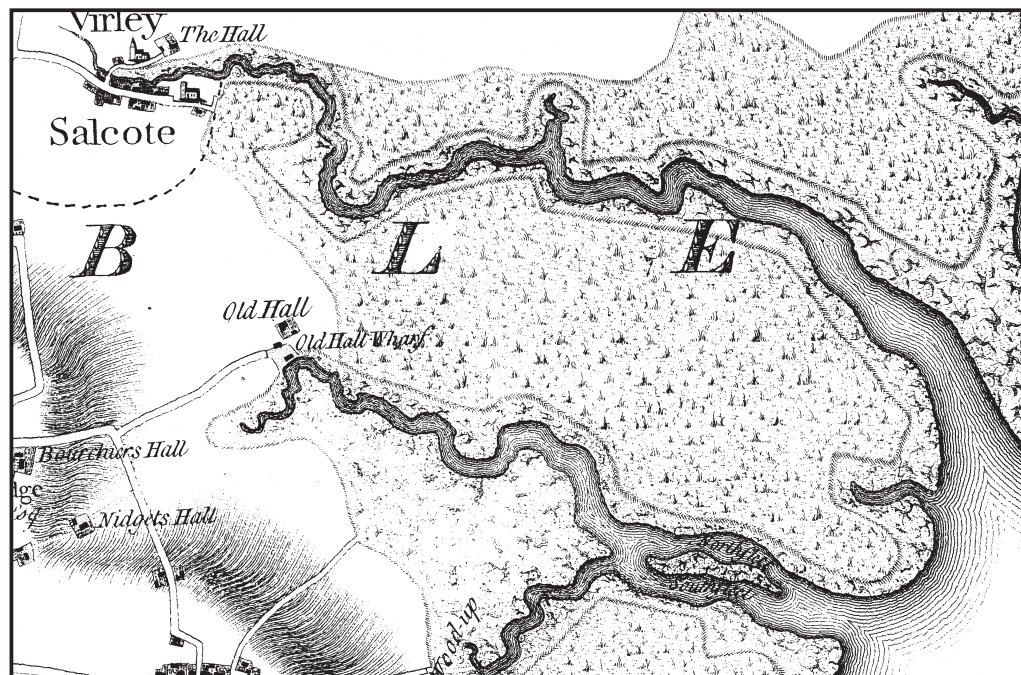

Figure 4
An extract of A Map of the County of Essex *by Chapman and André, 1777*

gained from the sea in three stages, between 1575-1715, 1780-1820 and 1850-1880 (Gramolt 1961 138-148). The price revolution was one of the main factors for the initial impetus: in 1638 some of the reclaimed Salcot marshes were worth 2s per acre in contrast to the saltings whose value was a mere 1d per acre (Gramolt 1960, 72). There was also an increased demand for agricultural and marshland products to satisfy a rapidly growing population, with Essex ideally placed for access to the London markets. Reclamation was made easier by the arrival in England of refugees from the Low Countries, many of whom were skilled in the erection and maintenance of sea walls. A number of Dutch tobacco pipes found in the body of the sea walls at Tollesbury possibly indicates their involvement (Gramolt 1960, 140-141). The second period of reclamation between 1780-1820 was given added impetus from the Society for the Encouragement of Arts, Manufactures and Commerce who awarded medals for gaining the greatest quantity of land from the sea as well as for the best reclamation techniques. During this period further marshland was being turned over to arable cultivation, when grain prices were high, especially during the Napoleonic Wars (Gramolt 1960, 143). By 1880 the sea walls in practically all localities had reached their maximum extent seaward (Gramolt 1960, 148).

Wall construction to keep out the sea was not always successful and floods are documented throughout the post-medieval period, causing great damage on Old Hall Marshes and resulting in the rebuilding of many segments of the sea wall. In 1815 a Chelmsford newspaper recorded £5000 damage following the flooding of 200 acres due to the fact that a sluice on the Old Hall Marshes had been under repair (Thornton 1977, 20). Shortly afterwards, in 1830, Isambard Kingdom Brunel was commissioned by the owner, Philip Bennet, to construct a new syphon. This syphon, located in a field known as *Syphins Piece* on the 1840 tithe map, consisted of two pipes of 8 and 10 inch diameters positioned over the sea wall (Gibson 1997, 1). Another major breech of the wall and flooding occurred in 1949, when severe damage was recorded:

'From the second stile there were two big breaches of approx. 30 feet which washed out to salting and marsh level and five smaller ones. From the pound at Joyce's Head to the bottom end of the south wall, the sea has gone over the top and washed out clay and on the Salcott side of Quinces Corner the top of the wall has been washed away'

(Grieve 1959, 454).

Land-use on the marshes

From the medieval period onwards, the main use of the Old Hall Marshes has been for grazing cattle and sheep, both the production of locally-bred stock and as a stop over to rest or to fatten animals on route from the northern counties (RSPB 1996, 21).

An account of farming on the marshes is given by Thornton, based on an oral account of Mr A Rice, who spent his working life on the Guisnes Hall Estate and especially at Old Hall Marshes. There, three labourers were employed for 330 acres of marshland. During the summer months until the beginning of September, there were as many as 700 cattle on the marshes, from all over Essex. Each parcel of marshland was a self-contained unit divided from other parcels by ditches, or post and rail *wing fences*. The fences were so arranged around the sea wall so that cattle could be driven along it to any particular part of the marshes without mingling with other herds. This presents a likely use for the linear banks inside the marshes. A further ditch separated the whole of the marshes from the sea wall, with plank bridges allowing access into a particular are of marsh. While cattle were on the marshes, the owner of that area was responsible for them (Thornton 1977, 14, 18).

By day sheep were grazed on the sea wall and saltings; at night they were brought into the centre of the marshes where they grazed on two small marshes known as *Sallow Bed* and *Little Ram Marsh* (Thornton 1977, 19). These names do not occur on a 1827 Estate Map but *Ram Marsh* is named on the 1840 Tithe appointment, as are other possible night pastures in *Pound Marsh* and *Stockyard Marsh* (Figs 3 and 5).

Structures associated with this form of agriculture include the windpump **38** which drew fresh water from a deep well, and pumped it via iron pipes to the centre of the marshes for livestock consumption, as ditch water was too brackish (Thornton 1977, 19). Structure **39** may have been used for storage or for shelter by the herdsman and shepherds.

A small part of the marshland, to the west of the large counter wall **14**, has been used for arable. This kind of reclamation probably occurred after 1840, at which time all land pertaining to the marshes was classified as pasture. In the most north-westerly field, in Salcott, ploughing took place in the 1960s when a red hill, site **11**, was flattened. Gramolt writes that the marshland pasture was generally brought under the plough after an application of chalk to the surface, which was then left for four years before ploughing began. During the 19th century arable occurred in a six course system – fallow, oats, white mustard of barley, clover or grass and two crops of wheat separated by one of beans or peas (Gramolt 1960, 392). However, the exact nature of the arable regime on Old Hall Marshes is unclear, and today most of the former arable areas are improved pasture.

Apart from agriculture, other industries are known to have occurred during the medieval and post medieval period. The presence of a building, site **40**, is an indication of the possible continuation of the salt industry. The rectangular platform, **37**, interpreted as a midden, also highlights the continued exploitation of the marine resources before the construction of the sea walls.

Estates:

- Bourchiers Hall Farm
- Old Hall Farm
- Old Hall (public house)

Saltings
Great Mount Marsh
Great Mount Marsh
White Gate Marsh
House Field
Little North Marsh
Little Mount Marsh
Lower Little North Marsh
Oyster Layings
Saltings
Part of Old Decoy Yard
Upper Little North Marsh
Old Hall
Hovel Marsh
Sanders Marsh
House Meadow
Little Hovel Marsh
Middle Little North Marsh
Lower Little North Marsh
Great North Marsh
Old Hall Wharf
Walk Marsh
Old Decoy Marsh
House Marsh
Joyce's Head Fleet
House marsh
House Marsh
Decoy Pond and Yard
Saltings
Decoy House
Decoy
Coney Ground
Weathers Marsh
Saltings
Joyce's Marsh
Penny Hole Fleet
Half New Penny Hole Marsh
Saltings
Middle Joyce's Marsh
Further Joyce's Marsh
Old Hall Creek
Saltings
Pound Marsh
Middle Marsh
Mud Bank
Saltings
Mersea Marsh
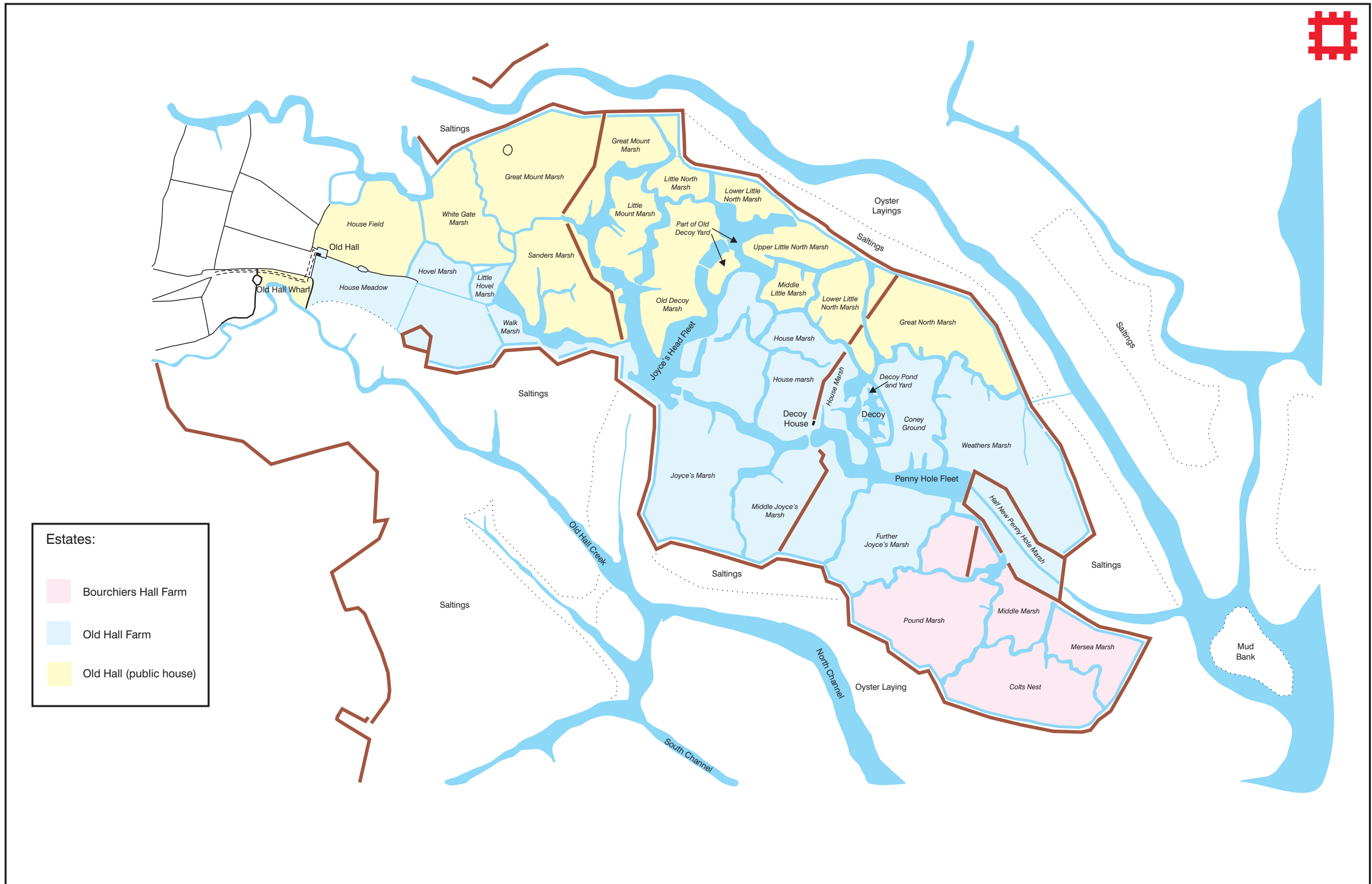North Channel
Oyster Laying
Colts Nest
South Channel

Figure 5 *Plan of the Freehold Estate in the Parishes of Tollesbury and Tolleshunt D'arcy in the County of Essex, 1827 (after ECRO D/DDc E17). Sea Wall and counter walls are picked out in red.*

One of the main natural resources exploited during the modern period was wild fowl, as shown by the two duck decoys, sites **32** and **33**. The larger decoy was provided with a hut, site **41**, for storage and for the shelter of the decoyman and his dog. The decoys had lost their original use by the turn of the century by which time shooting was the main sporting activity. Old Hall provided one of the best duck shoots in Essex, being frequented by many famous gentry (Thornton 1977, 20). The sale document for the Guisnes Court Estate in 1949 records that Old Hall Marshes were then one of the finest wild duck shoots on the English Coast; in 1947, one gun took a bag of 121 head from a morning flight (ECRO: B8575, 2).

A notable account of shooting on Old Hall Marshes was written by Wentworth Day, recounting the time between the two World Wars with 'Crawley' de Crespighy (the owner) and Charlie Wyheham-Martin. He would often stay overnight in Tollesbury Fleet and on the first day of shooting, the 8th of August, it was not uncommon for five or six guns to kill 200-300 ducks. After the Second World War there was a decline, with only up to 60 duck killed in one day; the years of wartime neglect, military disturbance by day and bombs by night, and also the construction of Abberton reservoir which became a perfect sanctuary for thousands of birds, were the main reasons for the decline (Wentworth Day 1949, 139-140).

3. ARCHAEOLOGICAL DESCRIPTION AND INTERPRETATION

Following full ground reconnaissance of the reserve, a number of features of archaeological interest were located. The section below lists and describes these features, together with those which were previously documented. For numbers which appear in **bold**, the relevant figure is given at the beginning of the section.

A) Mounds and red hills (Figs 2, 6, 15 and 16)

Ground reconnaissance located thirteen mounds, most of which are probably red hills, with the possible exception of site 3. Eight are previously undocumented. Red hills are associated with salt making, though the confirmation usually provided by the characteristic red soil is lacking in the undisturbed examples. They generally date to the Iron Age and Roman period - the Roman conquest brought new urban settlements such as Colchester, providing a stimulus for salt production - and represent the earliest visible evidence for human activity on the Old Hall Marshes. Large numbers of red hills have been found along the Essex and Kent coastlines, though many have been flattened by ploughing in recent times.

Antiquarian research into red hills began in the late 19th century, with investigations by Henry Stopes, William Cole, Revd J C Atkinson and the Canon Greenwell. Their work led to the realisation that red hills were the remains of an ancient industry, the exact nature and date of which remained unclear. In 1906, in order to solve the mystery, the Essex Archaeological Society and the Essex Field Club formed the *Red Hills Exploration Committee*. However, despite the excavation of numerous mounds, a definitive conclusion as to the nature of the industry remained elusive (Fawn *et al* 1995, 1-2). It was as late as the 1940s, following investigations of 1937-41 into five red hills on Canvey Island, that Linder was able to demonstrate that they were in use during the Romano-British period for the manufacture of crude pottery (briquetage), the utilisation of that pottery on site for the manufacture of salt by evaporation of sea water and for the curing and salting of fish in the estuary (Topping et al 1995, 28).

The mounds are formed of waste products from the various processes, principally 'burnt floors' (fire reddened debris: ashes, charred wood and clinker) separated by deposits of alluvial silt or clay. However, actual structures are sometimes found, usually hearths used for boiling the brine in briquetage vessels to reduce liquid and precipitate the salt. Red hills at Canvey Island and Goldhanger had flues associated with the hearths. Another feature occasionally found are clay-lined round-profiled 'settling' tanks, oval in shape, generally no more than 2m in diameter by 1m, and often found in groups of three.

They are thought to be for the evaporation of brine and to allow alluvium and other impurities to precipitate out prior to boiling. Finally, a typical occurrence are scatters of bricquetage, comprising various forms of crude clay vessels, hearth furniture and sherds of domestic pottery (de Brisay 1975, 6; Fawn *et al* 1990, 6-8; Rodwell 1979, 37, 133; Topping *et al* 1995, 28-30).

Most of the Old Hall mounds share the similar characteristics of rough circularity in plan, similar size and location adjacent to creek systems. Where undisturbed by ploughing, the mounds are between 13.5m and 21.0m across and 0.3m to 1.4m high (see section 7, sites **1** to **13**).

A more extensive red hill site, **36**, comprises an irregular and undulating spread of earthworks, with few clear elements, on the edge of the unimproved grazing marsh: the creek system survives to the east while there is improved pasture to the west (Fig 6). However, part of a mound remains, **a**, 18.0m by 14.0m by 0.7m high; cut into on the northern side by a rectilinear depression, **b**, 17.0m by 10.0m by 0.5m high, whose sides are sharply defined. A ditch, **c**, runs east from the depression towards the creek system; another ditch, **d**, heads north towards the mound before splitting and running around the southern and eastern sides. Finally, a bank, **e**, to the south of the main complex, runs north from the gate in the south west corner of the field before turning and running east into the adjacent field. This bank is cut by **d**.
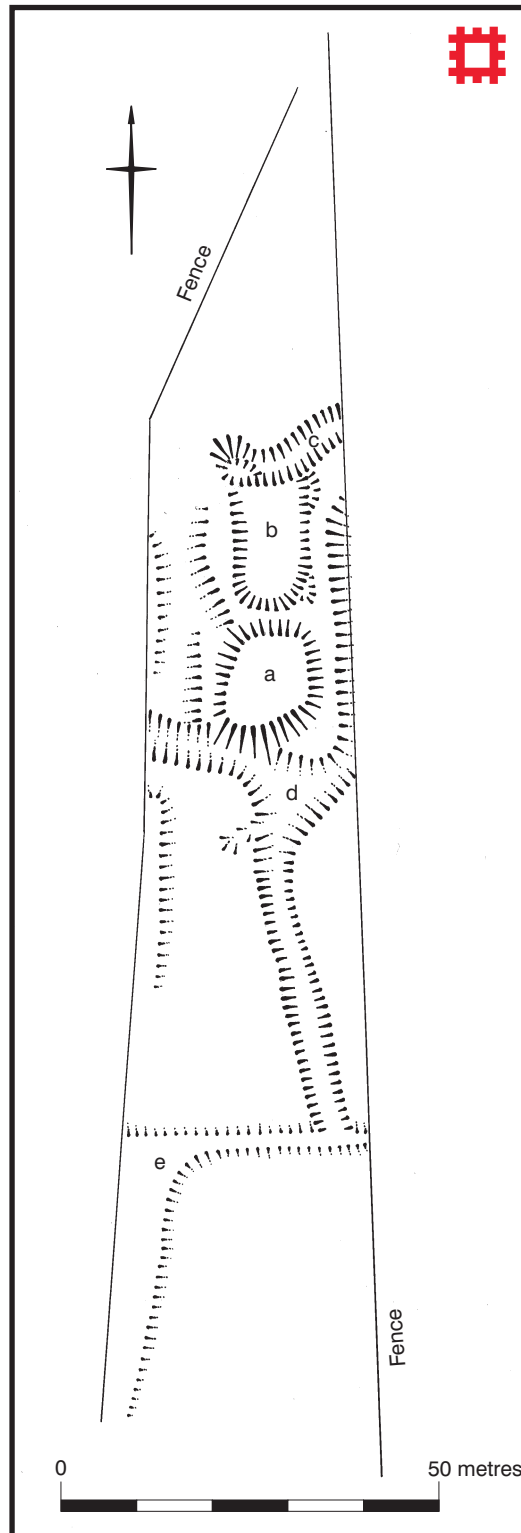

Figure 6
Red hill site 36. EH Survey Plan, at 1:1000 scale

Site **36** has been interpreted as a red hill (SMR No 16192) and reddened soil was noted in several eroded areas during the present survey. The site appears to have been severely damaged, with the relatively undisturbed slight mound, **a**, cut into by depression **b**, clearly the result of the quarrying away of red earth for agricultural use elsewhere - possibly on the former arable to the west. Ditches **c** and **d** are likely to be the remains of a relict creek system, partially defining the area of the red hill. Bank **e** follows the line of a former field boundary and the scarp that leads off from it runs directly to the gate in the corner of the field, forming a raised causeway for access to the site.

Red hills are located close to creek systems to exploit the salt water, a location that has been used to indicate the approximate position of the coastline during the late Iron Age and Roman periods (RSPB 1996, 19). Moreover, excavation has revealed that red hills often are covered by a spread of alluvium laid down by the gradual encroachment of the sea, an indication that most were formed on the old dry land surface before the rise in sea level (Fawn *et al* 1990, 5). If this is true, and assuming that all the mounds are red hills, then it is possible that the earliest ones on the marshes are nos **1-2** followed by **4**, **5** and **7**, then **6** followed by **10** and finally the cluster in the north-eastern corner **8**, **9**, **11**, **12** and **13**.

The mounds on Old Hall Marshes have not been excavated, the only dating evidence coming from site **12** in the form of Iron Age pottery. The proximity of site 3 to a wind pump and post-medieval pottery recovered from it, suggests that it is not a red hill but more likely the site of a structure associated with the wind pump. Site 6 was certainly re-used for a cottage as indicated on the OS map of *c* 1860 (Fig 7): excavated sites have produced evidence that red hill mounds were favoured locations for later occupation on marshlands liable to flooding (Fawn *et al* 1990, 36; Hurst 1965, 213; Sealey 1995, 65-82). Similarly, the top of mound **4** may have been flattened to provide a platform for a later structure. The porous red earth from the mounds was also used by farmers to improve the stiff clay soils of the region and may explain why mound **10** has been cut into as indicated on aerial photographs and why site **13** no longer survives (Stopes 1887, 98; NMR: 540/1025: 0067-0068).

At site **2**, a ditch around the eastern and southern edges of the mound links to the adjacent creek and may have served to bring salt water as close as possible for transfer to the settling tanks or hearth. Alternatively, the ditch may be similar to that excavated at Langenhoe I (TM 0127 1690), which had been cut after the formation of the mound, possibly to drain it for cultivation. Although there is no dating evidence, it has been suggested that such ditches served to keep the mounds dry for small-scale cultivation until inundation by the sea caused their abandonment, not being used again until after the sea walls were built and they were once more on dry land (Fawn *et al* 1990, 33).

Figure 7 Ordnance Survey 1st Edition, 1881 (reduced from 6-inch scale)

B) Internal Banks (usually referred to as 'counter walls') (Figs 2 and 16)

Twenty-two sections of linear earthwork, sites **14** to **30**, have been located on the marshes (see section 7). This includes certain stretches, ie **19**, parts of **26**, **28** and **29**, located by previous transcription of aerial photographs (Strachan 1995). All the earthworks are raised banks, usually with flanking ditches.

A number of different interpretations have been offered for these banks, the most popular being their use as counter walls, constructed during reclamation of the marshes from the sea. However, at the time of the Domesday survey of 1086, the majority of sheep grazing in Essex occurred on open marshlands; it has been suggested that at Tollesbury, raised causeways of peat sods gave sheep safe passages when the tides rose high (Grieve 1959, 5). They served as a dry refuge for the stock when the rest of the marshes were wet and flooded (Gramolt 1960, 258). Moreover, records for the Manor of Langenhoe between 1322-1414 reveal that *schepes bregge* and *pettynges* were made in order that sheep could graze the saltings (Gramolt 1960, 30). It is possible that some of the banks on Old Hall Marshes are remnants of this activity, pre-dating the main sea wall when the area was simply saltings: it would explain why several follow apparently random, wandering courses.

The dates of construction for the banks are unknown, though some presumably date from the late 16th-century endeavours of Sir Thomas Gardiner. A Tollesbury lease of 1598 obliged the *lessor* to keep the sea walls *defensible from and against the sea and tides and all outrages thereof* and to pay his tenants any damage caused by breaking in, overflowing or surrounding of the premises by the sea. To which end the landlord was entitled to take all the *earth and stuffe* he needed to repair them, with right of access for workman, horses and carts carrying *timber, piles, bushes and stuffe* out to the walls, and the use of room in a cottage on the leased property for his *waller* to lodge in (Grieve 1959, 21; ECRO: D/DBR M96a). The areas enclosed or *inned* during this period were generally near the high water mark of spring tides, and the sea wall construction was done on land which was not covered by water most of the time. Therefore, the area to be embanked was usually small and work generally completed in one season between March and October when there was reasonable expectation of low tides, calm weather and long daylight.

The practice was to build the wall in two arms, which were carried across the saltings towards the lowest point over which the completed wall was to pass. The proposed line was prepared by removing vegetation and by digging a trench to expose clean marsh clay, which would bond securely with the deposited bank material. Soft mud in rills and creeks was removed and hollows filled with brushwood and good clay. The walls were advanced at or near their full height, to prevent tides washing over and eroding them. The

most difficult part was closing the gap between the two arms, which was usually piled with timbers driven across the two ends of the wall and strengthened with cross pieces to prevented the earth from sliding out of the bottom. A full sea waller's gang consisted of twelve men, two fillers who cut the spits of wet clay, six runners who pushed the barrows of clay along the banks to the three packers working on the wall. In addition, a boy kept the equipment clean (Gramolt 1960, 219-221). The walls were covered with turf to reduce the rate of erosion. After construction, the walls required constant maintenance, including frequent heightening due to consolidation, slumping and weathering - let alone the gradual and continuing rise in sea level.

Construction of the banks probably occurred in several phases rather than in one piece (Christy *et al* 1928, 55; Gramolt 1961, 72). Those banks which enclose individual areas and which are of a more sinuous nature, such as **16**, **17** and **21** are likely either to predate the sea wall, protecting those areas prone to flooding on marshes which at that time were susceptible to only the very highest tides, or to have been made subsequently to protect individual areas.

Certain stretches of bank are contemporary with or post-date the present sea wall: two straight stretches, **14** and **15**, run north to south right across the marshes between the sea wall; while banks **23**, **24** and **28** abut the drainage ditch which runs around the interior of the sea wall. These banks are independent of tenantry patterns on the marshes and would assist both in major flood containment and in the routine traffic of livestock and vehicles to the various grazing marshes: crossing the marshes and creeks was difficult and segregation of various tenants' cattle very important. Some of the shorter banks, **16a**, **22** and **27**, that branch off from a main stretch and which enclose a small area, may have defined folds for the animals.

Other banks, notably **25** and **29**, seem to aid segregation of areas containing particular features such as the two duck decoys. Bank **25** cuts off part of a large fleet from the decoy pond **33** probably to prevent flooding and to stop brackish water from entering the fresh water decoy, especially as two of the decoy pipes were joined to natural water channels. Bank **29**, north of the large decoy pond **32**, may have performed the same role, given that the area is riddled with creek systems and fleets.

Most of the sinuous banks are redundant and have not been maintained since the construction of the present sea wall: they project only slightly above the level of the marsh. It is likely that, as in other areas of marshland, many banks have been removed, the material a valuable resource for repairing the more recent sea wall and infilling the uneven marshland. Where marshland has been taken into arable, banks were generally flattened to provide a greater area for cropping.

Between 1994 and 1998 a number of banks (**14**, **15** and **20**) have been heightened by the RSPBto mitigate against the risk of flooding by separating the marshes into four areas (RSPB 1996, 9). The height of the original sections, particularly those in the eastern half of the reserve showed extreme variation in height, from prominent to almost non-existant (Paul Charlton, RSPB *pers. comm.*)

C) The sea wall (Fig 2)

The sea wall, **31**, encloses Old Hall Marshes on all but the western edge of the survey area and comprises a large grass-covered bank, with a concrete face on the seaward side. It was constructed in steps by driving in reeved or split elm and then piling in heavy stones brought by barges at the right tide (Thornton 1977, 19-20).
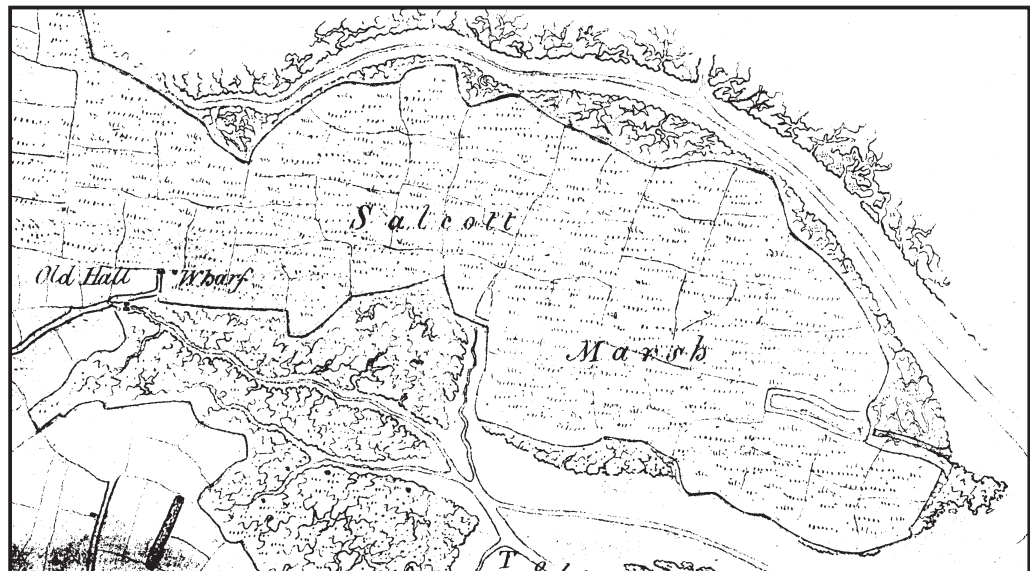

Figure 8
*Ordnance Survey
Draft Map, c1790*

The sea wall represents the maximum extent of seaward reclamation. It is first depicted on Chapman and André's map of 1777 (Fig 4), when it followed a very similar line to the present day, with the exception of the eastern edge, where the major difference was in the area joining Penny Hole Fleet. There, the large bank on the margins of the fleet formed part of the sea wall, leaving the area of Penny Hole Bottom open to the sea. This bank was heightened by the RSPB during 1995-96. Between 1777 and *c*1790, a further section of sea wall was added, enclosing more of the fleet from the sea (Fig 8).

Construction of the sea wall may have been similar to that for the counter walls (described above) but the magnitude of the task would have required a larger construction gang and more maintenance: in the 20th century, when Old Hall Marshes was part of the
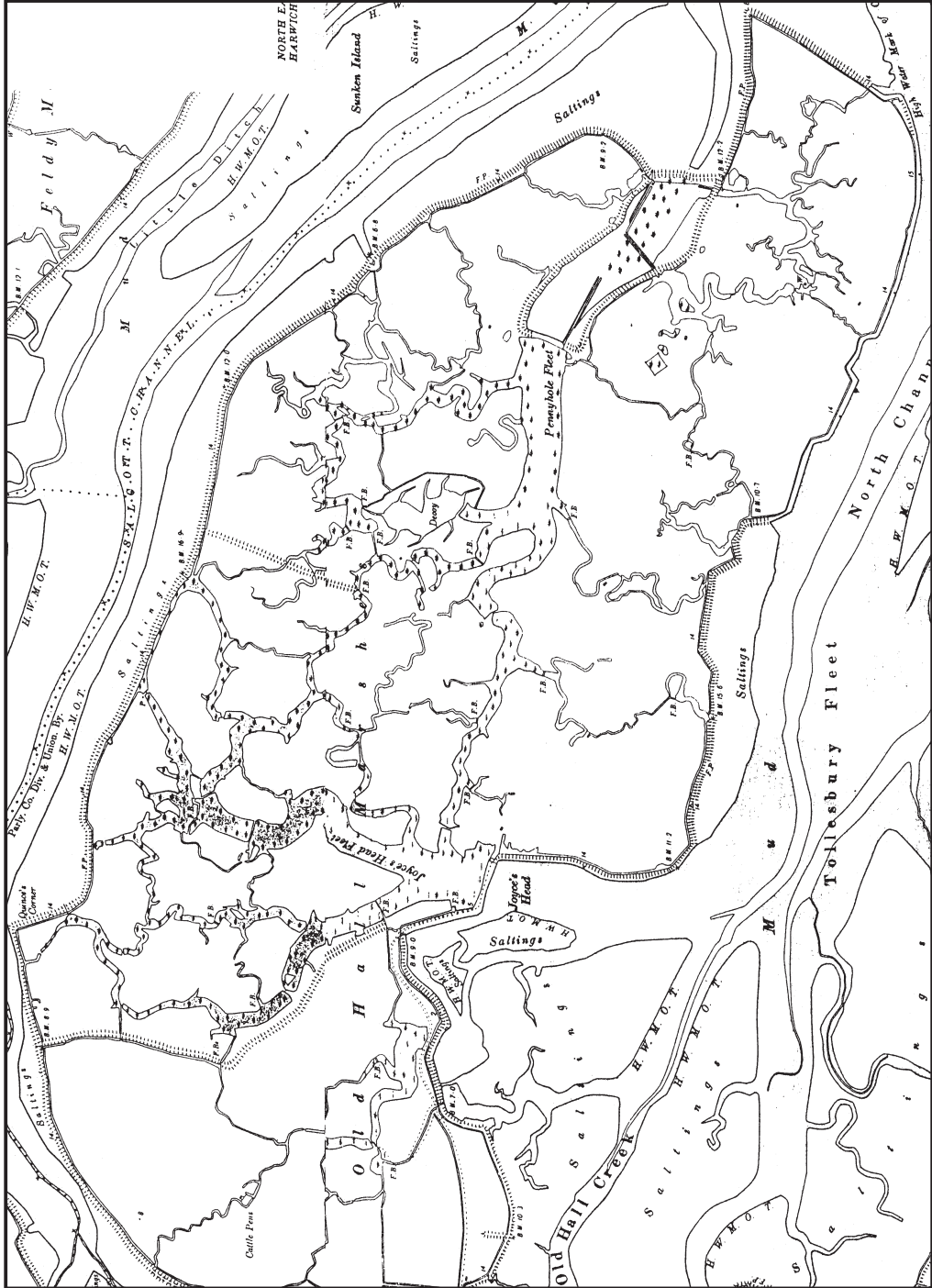
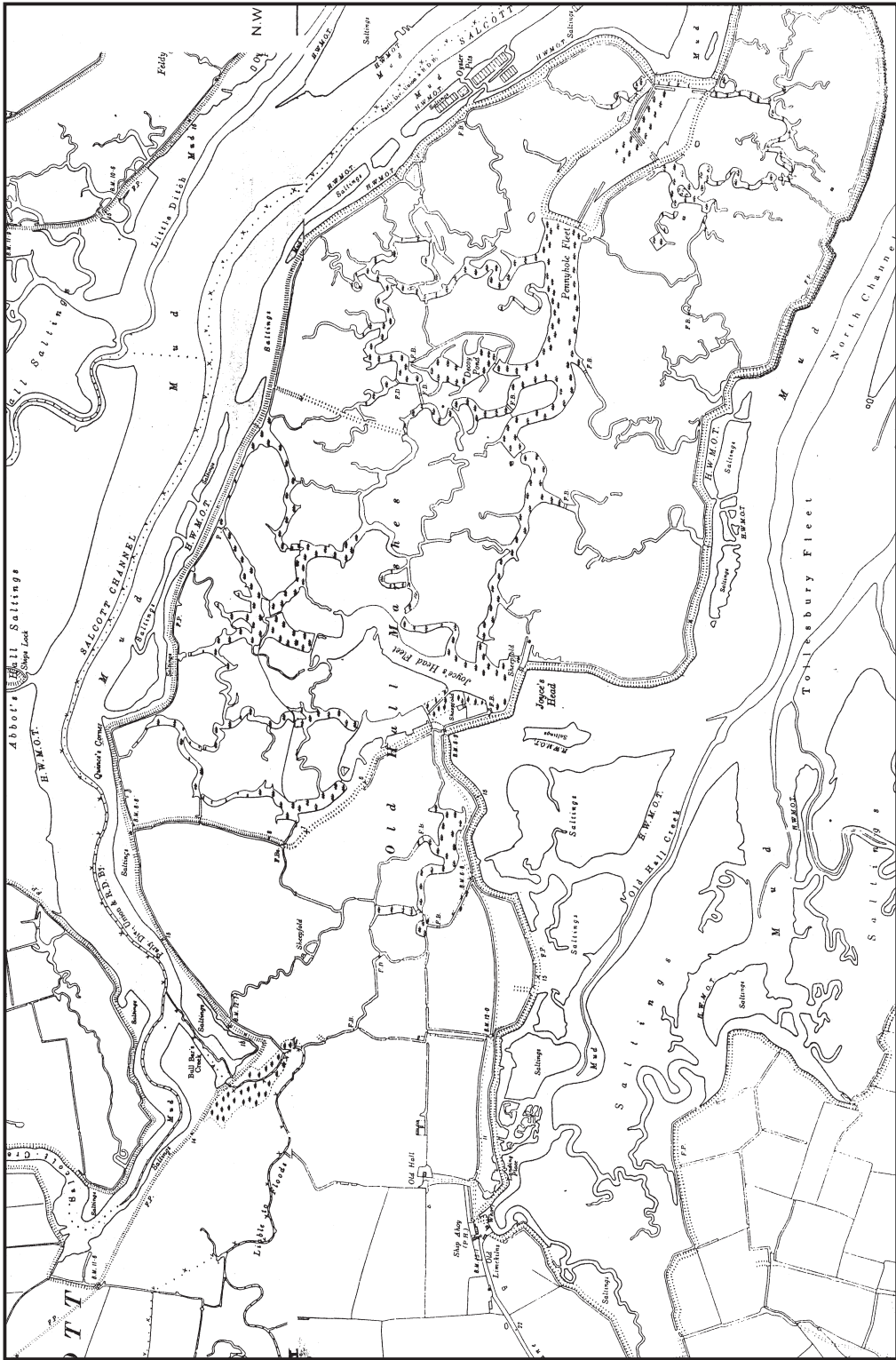Figure 9 *Ordnance Survey 2nd Edition, 1897 (reduced from 6-inch scale)*

Figure 10 *Ordnance Survey 3rd Edition, 1925 (reduced from 6-inch scale)*

Guisnes Court estate, a gang of three men and a foreman were employed continuously on its upkeep (Thornton 1977, 20).

Cartographic evidence reveals some detail concerning alterations to the sea wall. The 1827 Estate map does not show any wall to the south of Old Hall, with only a dashed line representing the line of a wall depicted both by Chapman and André in 1777 and by the OS *c*1790 (Figs 5, 4 and 8). It is possible that this part of the wall was breached and that at the time of the 1827 survey it was still under repair: the breach may be that reported in the Chelmsford Chronicle for September 1815, when over 200 acres were flooded (Thornton 1977, 20). By 1840 it was fully rebuilt (Fig 3). A remnant of the earlier wall is represented on all three subsequent OS map editions as a small stretch of wall running north and which formed part of a pentagonal 'enclosure' on the 1827 map (Figs 7, 9 and 10).

The only further change represented in cartographic sources appears on the second edition OS map of 1897 (Fig 9). Two stretches of the southern sea wall are not depicted, with only the internal drainage channel shown, possibly because there had been further breaches and repairs were in hand. By the time of the third edition OS map of 1926, the sea wall was complete and indeed the map depiction of the two stretches is bolder than the surrounding walls (Fig 10).

D) Duck Decoys (Figs 2, 11 and 16)

The earliest references to duck decoys appear in litigation records of the 13th and 14th centuries, specifically in 1280, 1415 and 1432 (Glegg 1946, 191). However, these are believed to have been trap decoys rather than enticing decoys as represented at Old Hall Marshes. The latter were introduced from Holland and first reliably described by John Evelyn at St James Park in 1665. Duck decoying in Essex is believed to have commenced around this time (Glegg 1946, 191-192). In his description of Essex in the 18th century, the Rev T Cox highlights the importance of the duck decoy in this part of the country: *'by the sea there are divers decoys'* (Magna Britannia vol 1, 722 in Glegg 1946, 202).

Decoys are found in quiet locations such as coastal marshes, where fresh water pools attract migrating ducks coming to rest and feed. The cutting of ditches called pipes, which curve and become narrower away from the pool, was designed to trap the ducks. There are always several pipes, according to the shape and extent of the pool, and different ones were used depending on the direction of the prevailing wind: captures could only be made from pipes along which the wind was blowing into the pond. Landing places are located on the banks of the pond and in the mouths of pipes.

Each pipe was arched over at intervals with hoops of wood or iron over which continuous netting was strung. The netting tapers to the far end of the pipe and terminates in a bag where the fowl were eventually collected. Along the sides of the pipe there were a series of reed screens, with peepholes set one behind another at fixed intervals to conceal the decoyman and his dog.

The process of catching the wild fowl started with the taming of a number of ducks during the summer months; they were taught to come at a whistle and feed on grain thrown by the decoyman at the mouth of one of the pipes. The tame ducks, feeding happily, were an encouragement for wild ducks to land and these were enticed further by more grain, scattered up the pipe. At this point the decoyman's dog would reveal itself briefly to the ducks from behind a screen. Strange as it may seem, the wild fowl usually followed the dog further into the pipe, possibly in the belief that they were driving it away. Apparently, the curving nature of the pipe meant that the ducks did not expect a trap and also hid them from the rest of the pool. Once the ducks were well down the pipe, the decoyman showed himself and waved his arms to frighten them, at which point the wild ducks alight up the pipe into the prevailing wind, and thereby into the tunnel bag. The tame birds did not rise at the decoyman's activity, swimming back instead to the main pool. The tunnel bag could be detached with the entire catch and the birds were strangled. There are some variations in the process, with some drives only requiring bait and a decoyman whilst others simply used a dog. The number of wild fowl caught in each drive is recorded as being between 10 and 50, with varying numbers of drives throughout the day.

The decline of the decoys resulted from the intensification of grazing in the 19th century together with the increasing use of the gun, which disturbed the tranquility needed for the decoys to operate. In 1800, the proprietors and occupiers of decoys in the neighbourhood of the Blackwater formed an association for the purpose of prosecuting those who disturbed wildfowl at or near a decoy. A notice to this effect was printed in the Chelmsford Chronicle and was addressed to Gunners and Puntmen, offering a five guinea reward to those who gave information which led to the conviction of offenders (Gramolt 1960, 342). For the market, there was also competition from imported birds caught in Dutch decoys, together with the large number trapped in other continental breeding grounds. In 1886 the Old Hall Marshes decoy, site **32**, was one of only three still operating in Essex (Christy 1890, 50-58; Glegg 1946, 191-202; Harting 1888, 164-168).

The names for the two decoys on Old Hall Marshes have been taken from Miller Christy (1890):

32: Old Hall Decoy (TL 982 123): it was not possible to survey this decoy due to the high reed cover, so the following description is taken from a recent visit by another fieldworker and from a late 19th-century account (writing after a visit to the decoy in 1888) (MPP, 1999; Miller Christy, 1890; see also SMR No 11560 and National Monument No 32407).

The decoy is well preserved late 18th- to early 19th-century example, located in the central part of the marshes, immediately north of Penny Hole Fleet. It has an irregular oval pond with eight pipes containing wooden/iron hoops. The irregularity suggests that it was once part of the main creek, its western boundary once a natural channel. On the eastern side a man-made enclosing ditch defines the boundary as illustrated on the 1827 estate map (Fig 5).

At present the open water of the pond is fringed with reeds and five of the eight pipes are choked; the other three, when cleared, revealed wooden supports and iron loops for nets along the pipe edges. The areas between the pipes are slightly raised, possibly upcast material from the cutting of the pipes.

This decoy was still in use when Miller Christy visited the site in 1888, when a Dr J H Salter was the tenant. At this period the decoy was rarely used, with shooting a more popular activity. Teal were the main visitors, but pintail, , tufted duck, long-tailed duck, pochard, golden eye, merganser and divers of various kinds were also noted. Miller Christy recorded the recollection of Sir Ralph P Gallway that the pool formerly covered some 14 acres and had eight pipes, as indicated on the first and second edition OS maps (Figs 7 and 9). However, together with Mr EA Fitch, Miller Christy also noted that there were only six pipes at that time, instead of the former seven, as represented on the 1827 estate map (Fig 5). The two south-eastern pipes were disused and a new one built to replace them (1890, 63-64).

33: Old Decoy or Teal Pond (TL 9875 1180): this decoy survives as an earthwork and was surveyed at 1:1000 scale (Fig 11). It consists of a sunken pond, some 38m square, defined by a bank 1.3m high on all four sides, with four pipes between 30m and 40m long extending through the bank from each corner. Along one side of each pipe the banks are extended with an average height of 0.5m. These banks, formed from the up-cast during the construction of the pond and pipes, formed ideal landing and resting places for the ducks. The eastern and western pipes are linked to the creek system (see also SMR No 16282 and National Monument No 32408).

Miller Christy came here in June 1888 when the decoy was disused, though it had formerly been used for taking teal (Miller Christy 1890, 64). On the OS map of 1897, it is
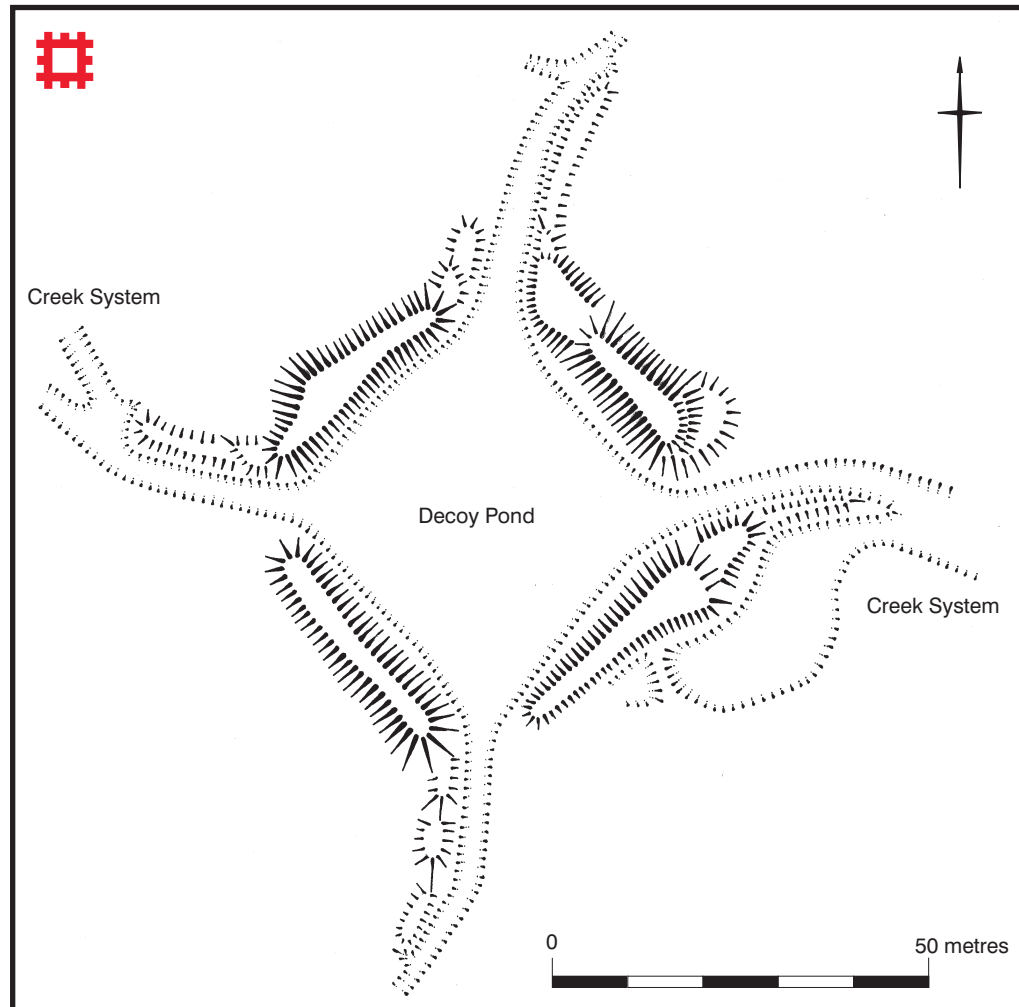
depicted simply as a square pond, while the subsequent edition of 1920 includes the southern and eastern pipes, the latter shown linked to a creek (Figs 9 and 10).

34: On the 1827 estate map and auction catalogue, the area immediately west of Joyce's Head Fleet is called *Old Decoy Marsh* with two areas to the north referred to as *being Part of Old Decoy Yard* (Fig 5). Although aerial photographs do not reveal any decoys in this area, at the northern end of Joyce's Head Fleet, eastern side, three short channels lead off from the fleet, as represented on OS maps . They are the right shape for pipes and it could be inferred that they formed part of a decoy pond (Figs 7, 9 and 10).

35: The 1840 tithe appointment names an area next to the eastern sea wall and above Penny Hole Bottom as *Old Decoy Marsh* (Fig 3). Cartographic and aerial photographs do not reveal any evidence for a decoy pond in this area.

E) Miscellaneous features (Figs 2, 12 and 16)

37: Large platform (TL 9890 1180): a large squarish platform, **a**, some 30m by 30m and 1.4m high, cut by a ditch **b**, 2.0m wide, on its southern side and abutted on its eastern and western corners by the sea wall, **c**, running around Penny Hole Bottom (Fig 12). A counter wall, **d**, **21**, approaches from the south, crossing a creek, and links with the ditch cutting the platform. The platform itself is flat and featureless apart from a small scarp, 0.2m high, along part of its western side: this is upcast material from recent recutting of the ditch. Another, similar feature is associated with spoil from recent maintenance of the sea wall .
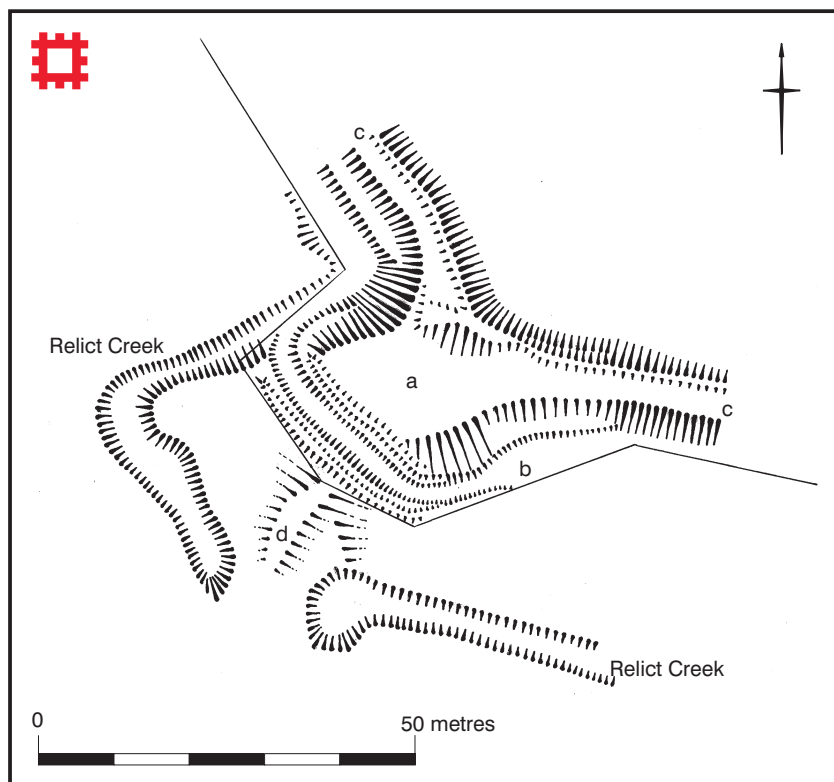

Figure 12
English Heritage
survey plan of
Platform 37 at
1:1000 scale

The platform has been classified as a settlement site because of pottery and tile finds dating to the medieval and post medieval periods (SMR 16433-4). Large quantities of oyster shell also suggest a midden. The presence of tiles and the regularity of the platform might indicate some form of building or structure, utilised for gathering and processing marine resources. A similar site was excavated in 1913 at Hullbridge where there was a 'kitchen' mound which consisted of burnt earth and charcoal, shells of edible molluscs, broken bone, unburnt wood, medieval green glaze pottery, fragments of cooking pots and broken roof tiles. The mound, 2ft 9in high, sat on top of the original surface of the saltings and formed part of a larger complex containing rectilinear tanks and mounds for refuse

from the salt making process (Christy *et al* 1928, 38). Rodwell also excavated a red hill site on Canvey Island in 1964, where medieval deposits up to 3 feet thick in places overlay earlier Iron Age and Roman levels (Hurst 1965, 213; RCHME 1994). However, it is possible also that the Old Hall Marshes platform is of more recent origin and that the finds of archaeological material are redeposited At present there is insufficient evidence to make a formal interpretation.

38: Wind pump (TL 9777 1300): the rectangular base of a wind pump, in red and cream brick, standing to its original height of 0.9m and measuring 4.2m by 2.7m. The southern wall is beginning to fall away. On the top surface, in each corner, are the bolts for securing the timber and metal framework of the wind pump. In the centre, a circular well shaft, 1.43m across, is crudely covered with concrete slabs, but is well constructed in red brick. At the time of survey, it was almost full of water.

This is not the site of a post-medieval syphon, designed and constructed by Isambard Kingdom Brunel during 1830-1834, to drain the salt marsh (SMR No 18115). It is however, the remains of a Dutch windpump which pumped water from a deep well, and conducted it via iron pipes to the centre of the marshes for livestock consumption, as the brackish nature of the ditch water throughout the area was not suitable for them (Thornton 1977, 19). This windpump was also described in Baring-Gould's novel *Mehalah: A Story of the Salt Marsh* where it was used as a look-out during smuggling operations:

'A high sea-wall hid the reclaimed land….Behind it rose the gaunt black structure of a windmill used for pumping the water out of the dykes into the marsh. It was working now, the great black arms revolving in the breeze and the pump creaking'

(1950, 33).

39: Post-medieval house (TL 9859 1168): the foundations of a building in red brick and timber. The site is now virtually turfed over, with only a few fragments visible. There was a building here in the post-medieval period (SMR No 18114). The tithe map of 1840, together with the OS map editions of c 1860, 1897 and 1926, all depict a structure here (Figs 3, 7, 9 and 10) but it is not shown on the detailed 1827 estate map, a fact which may indicate construction between 1827 and 1840. The 1897 and 1926 OS maps also label a footbridge nearby, allowing access to the marshes beyond. There are a number of possible uses:

- The close proximity to duck decoy **33** could infer that it was used as a decoy house and for shooting parties.

• The 1827 estate map and 1840 tithe map both name the area where the structure is situated as *Pound Marsh*. Perhaps this was an area where cattle were brought to graze overnight, the building forming a shelter for the herdsman or shepherd (Figs 3 and 5).

40: Brick building (site of) (TL 9858 1214)*: the ruins of a brick building of *c* 1650-1700 could not be located due to heavy vegetation and reed cover: nothing is visible on aerial photographs. It has been suggested by the Colchester Excavation Committee to be the remains of a salt house or works (SMR No 11506) and its location between two large creeks leading from Penny Hole Fleet would be consistent with such use. If it was part of a medieval saltern then it may have been a drying store.

41: The old Decoy House (site of) (TL 9803 1223): on the 1827 estate map this structure is referred to as the decoy house in *House Marsh*, which consisted of a house and stable (Fig 5). It is represented on the 1840 tithe map and appointment in *Cottage Marsh*, tenanted by John Wright esq and on all three OS map editions (Figs 2, 7, 9 and 10). It was still standing in 1949 and photographed for the front cover of the auction catalogue of the Guisnes Court Estate (ECRO: B 8575, Fig 13). The photograph shows a brick-built house with a single chimney, and an entrance with adjacent window in one elevation. It appears to have two stories, the upper floor in the roof space and without windows. A single-storey weatherboarded lean-to stood against one end and the whole building was contained by a post and wire fence.

Figure 13
Decoy hut 41 in 1949 (ECRO: B8575)

The sales catalogue records the following:

'..the old Decoy House, the Mecca of many sportsman, standing in the middle of the marsh, can be used to provide overnight sleeping accommodation if required'

(ECRO: B 8575, 4).

Originally then, the building provided accommodation and storage for a decoyman. In winter months, decoymen had to be close to the decoy pond as some nights were spent breaking ice to ensure open water for the morning flights (Gould, 1890 28).

42: Old Hall: Old Hall appears on the Chapman and André map of 1777 (Fig 4) in the same location as the present Old Hall Marsh Farm, with Old Hall Wharf a little to the south. If there was a manor house, as the name implies, then its location is not known (SMR No 1142). The popular stories of *Mehalah* and *The Mistress of Broadmarsh* perhaps have given Old Hall something more of a mystery and grandeur than it actually had (Baring-Gould 1950; Ludgater 1924).

43: (TL 96231 12469): a large amorphous hollow, 50m by 25m by 0.8m deep, tapering to the north-east (Fig 14).

Figure 14
*Aerial photograph
showing features
43 and 44 (NMR
AP: 540/1025/67)*
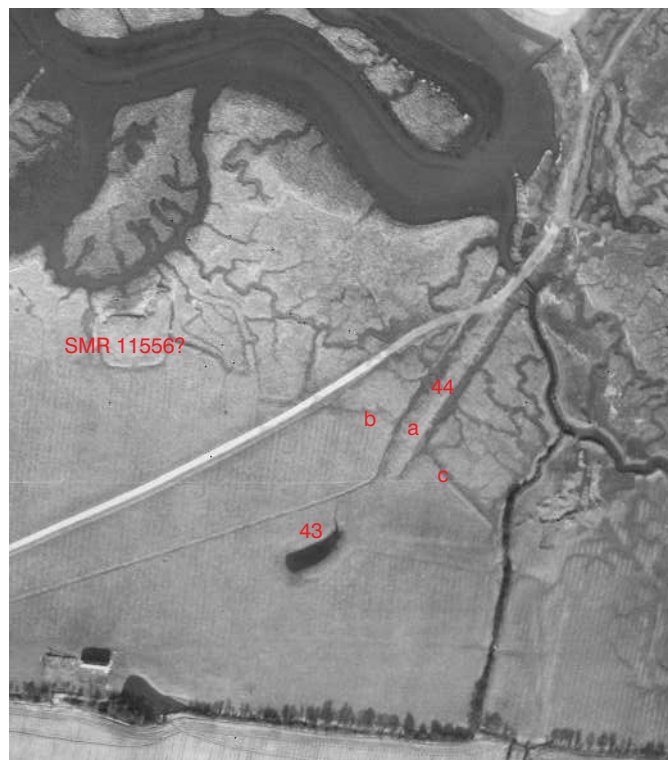
44: (TL 96289 12577): a long low bank, 8.0m wide by 0.4m high **a**, with a terminus at its western end and very slight ditches on either side, 3.6m wide by 0.2m deep. It is visible on aerial photographs (Fig 14), leading from a creek on the eastern boundary of the field, apparently cutting through a second bank **b**, with a third running south-east from it towards the eastern boundary of the field **c**.   These banks apparently separate areas of ploughed land from marshland and are probably

counter walls, constructed to stop flooding of reclaimed land (NMR APs: 540/1025/67-68). On later aerial photographs, when the whole area had been reclaimed and ploughed, only the main bank remained visible (CUCAP: 0208). The group may correspond with SMR No 16707, described as a complex of earthwork features visible on aerial photographs and thought to be associated with salt production. A red hill **10,** also located in this area (SMR No 11556), is not visible on the ground or on aerial photographs.

4. CONCLUSIONS

The 219 hectares of unimproved grassland on Old Hall Marshes is the largest surviving remnant in Essex and the fourth largest example in the east of England (RSPB 1996, 27). Its continued management as a bird reserve and coastal grazing marsh will provide a good context for the management and preservation of an ancient landscape both of late medieval and post medieval enclosure and also of Iron Age and Roman salt production. This report has served to define only the visible and known elements of that landscape: much more lies beneath the surface.

Future work might concentrate on the following:

- Small-scale excavations of the red hills would verify their interpretation and provide important additional information in the continued study of these structures throughout Essex.

- Small-scale excavations to determine the structure and date of the internal banks.

- Reed cover and other vegetation prevented or limited the location and survey of several features. Another opportunity might be sought to record:

  - Duck Decoy **32** (SMR 11560).

  - Structure **39** (SMR 18114) was located but not surveyed, due to the grass cover. A number of wall lines are known to exist and it would therefore be useful to gain an accurate plan of this structure.

  - Structure **40** (SMR 11506) was not located. Its suggested association with salt production needs to be verified.

- Investigation of the platform **37** (SMR 16433 and 16434) is needed. It is the only feature to reveal direct evidence of the medieval period on the marshes as a whole.

- The base of the wind pump, site **38** (SMR 18115), is in need of some consolidation.

- Investigation of the saltmarsh and inter-tidal zone outside the sea wall.

- Research into the activities of I K Brunel, in respect of draiange works on the marshes.

5. SURVEY AND RESEARCH METHODS

The archaeological field survey was carried out during September 1999 by Louise Barker, Moraig Brown and Paul Pattison. Hard detail and most features were surveyed using a Wild TC1610 Electronic Theodolite with integral EDM, using Key Terra Firma surveying software. Data was captured on a Wild GRM 10 Rec Module and plotted via computer on a HP Designjet 750C Plus plotter. Small, selected areas were surveyed at 1:1000 scale using conventional graphical methods.

The report was researched and written by Louise Barker and edited by Paul Pattison. Illustrations are by Louise Barker, using CorelDraw 8 and AutoCAD Map software; the final report was assembled using CorelVentura 8 software by Moraig Brown.

The site archive had been deposited in the National Monuments Record Centre, Kemble Drive, Swindon SN2 2GZ under the event reference 1310727.

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6. ACKNOWLEDGEMENTS

The author is grateful to the Paul Charlton and Chris Tyas of the RSPB at Old Hall Marshes for their help throughout the project. Also to Alison Bennett, Nigel Brown, Paul Gilman, David Strachan and Sue Tyler of Essex County Council for providing us with relevant data and to the staff of Essex County Records Office for their help.

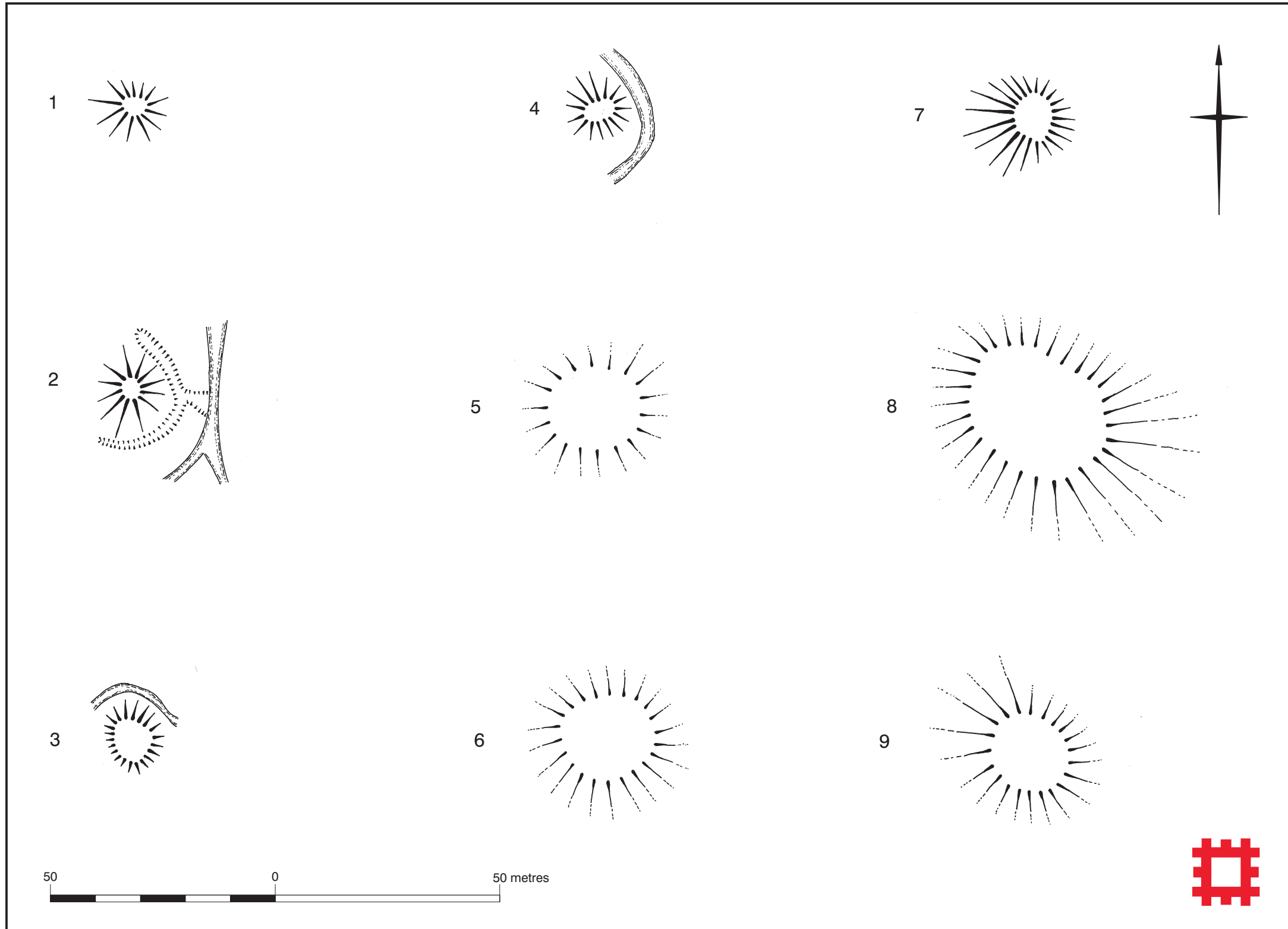Ordnance Survey digital data was provided by Ray Brewer of Essex County Council.

Figure 15 *Survey plan of the mounds on Old Hall Marshes at 1:1000 scale*

7. SITE GAZETTEER – MOUNDS AND BANKS

For numbers that appear in **bold**, see relevant figures.

Mounds and red hills (Figs 2, 15 and 16)

All of the following mounds are located on the edges of creeks.

1: TL 98112 12884: a low earth mound, roughly circular in shape, 13.5m by 19.0m by 0.6m high. This mound is disturbed by animal burrowing, exposing small quantities of oyster shells.

2: TL 97957 12852: a prominent well-preserved earth mound, roughly circular in shape, 15.5m by 21.0m by 1.4m high. A ditch, 2.0m wide by 0.4m high runs, around the eastern and southern edges of the mound, with an outlet channel leading into the nearby creek.

3: TL 97819 13004: a low earth mound, roughly circular in shape, 14.0m by 15.0m by 0.75m high. Some sherds of post medieval pottery were noted in exposed soil areas.

4: TL 97248 12813: a prominent earth mound, roughly circular in shape, 15.0m by 15.5m by 1.0m high. In comparison with the other mounds, it is not as regular in shape and has a flatter top.

5: TL 96823 13942: a very low earth mound of amorphous shape, 23.0m by 30.6m by 0.3m high. This mound is located in an area of improved pasture, previously ploughed, with a relict creek system still visible. Although there is some doubt about the nature of this mound, a slight shelf between it and the creek suggests that it may be more than the general undulation of the creek landscape.

6: TL 96594 12995: a very low earth mound of amorphous shape, 30.6m by 22.0m by 0.4m high, set slightly back from a relict creek system. As with feature **5** this mound is located in an area of improved grassland, formerly ploughed. The 1827 estate plan and the 1840 tithe map show a circular feature in a similar location to this mound, in an area called *Great Mount* and *Great Mount Marsh* respectively (Figs 2 and 5). It is also shown on the first edition OS map, labelled *Mount Cottage* (Fig 7). This is clearly an indication of the reuse of a red hill site for later occupation.

7: TL 96981 12369: a prominent earth mound, circular in shape, 16.5m by 17.0m by 0.6m high. The close proximity of creeks around the mound has accentuated its edges so that it appears particularly prominent, although is heavily eroded and disturbed by animal activity.

8: TL 95961 13112: a large roughly circular earth mound, 50.0m by 40.0m by 0.6m high. It is located in improved grassland, formerly ploughed, and has been heavily spread and flattened by that process. This mound is located in the same area as SMR No 16900, which is recorded as a linear earthwork. Whether this is an erroneous entry, a separate feature or even mound **11** (SMR No 11468) is unclear and has therefore been given a separate gazetteer number.

9: TL 9575 1293: a low amorphous earth mound, 30.0m by 35.0m by 0.3m high, with a creek system to the north, south and east. It is situated in an area of improved grassland, which was under the plough in 1963 (SMR No 11467). There is some animal disturbance on top of the mound.

Unlocated Mounds:

The following are recorded in the Essex SMR but could not be located during the present survey.

10: TL 9610 1260 (SMR No 11556): a red hill in improved pasture, formerly ploughed. It was recorded on a map produced by Stopes (1887, 103) and aerial photographs show that it had been partially quarried by 1953, lying adjacent to an area of arable (NMR APs: RAF 540/1025/0067-0068). It is likely, therefore, that this mound has been destroyed by a combination of quarrying and ploughing.

11: TL 9580 1300 (SMR No 11468): a red hill, ploughed in 1963, revealing pieces of unspecified briquetage. It is mentioned in the Victoria County History (1963, 176).

12: TL 9578 1289 (SMR No 11469): a red hill, bulldozed in 1953, at which time pieces of Iron Age pottery and briquetage were recovered. It appears on Stopes' map (1887, 103) and is also mentioned in the Victoria County History (1963, 176).

13: TL 9560 1313 (SMR No 11470): a red hill, no longer visible on the surface, located in an area of improved grassland. As the area was formerly under the plough, the mound was possibly flattened in the process.

Banks (Figs 2 and 16)

14*:* Two large adjacent banks, aligned north to south. The smaller western bank is the earlier and carries a track: it is first represented on the 1827 estate map and appears on all subsequent OS map editions (Figs 5, 7, 9 and 10). The larger eastern bank was constructed in 1998 by the RSPB to prevent mass flooding of the marshes. Today, the banks separate the grazing marsh from improved pasture.

15: A large bank, 3.0m wide and 2.0m high, aligned north to south. Its regular appearance and size results from heightening carried out by the RSPB during 1994-95 and in 1998. It is represented on the 1827 estate map with a break allowing the passage of Penny Hole Fleet (Fig 5), although today it blocks the fleet. All the OS map editions show only the northern third (Figs 7, 9 and 10). This is the only section of bank recorded in the county SMR (No 16717).

16: A bank 390.0m long, 11.0m wide and 1.1m high, aligned north-east to south-west between bank **14** and Joyce's Head Fleet. The bank, which is flat-topped and has flanking ditches, stops at the fleet and resumes on the other side. The north-eastern half is represented on the OS map of 1926 as a fence line which turned due west (Fig 10): the remains of this fence is visible on the ground as a slight ditch.

Two small sections of bank leave the main section:

- **16a***:* An unusual bank heading south from the northern part of the main bank, taking two sharp turns before terminating at a creek edge. It is 10.3m wide, with a maximum height of 0.75m, and has a more bowl-like profile.
- **16b***:* Near the southern end of the main bank, a short section leads north to a creek edge. It is 10.0m wide, with a height of 1.0m.

17: A sinuous bank *c* 850m long, truncated by several fleets on the eastern side of Joyce's Head Fleet. It varies in width between 7.0m and 10.0m, and in height between 0.5 and 1.1m. Its profile is bowl-like and there is a ditch on each side, 1.6m wide and 0.6m high.

Three smaller sections leave the main one:

- **17a***:* Leading south from the southern end of the main bank and terminating at a creek edge.
- **17b:** This may be part of the original line of the main bank. Subsequently, it is possible that the main bank was extended and turned east, thereby truncating this small stretch.

- **17c:** This small stretch be associated with the main bank which runs east on this line at this point, thereby truncating bank **17b**.

18: Two sections of bank separated by Joyce's Head Fleet, aligned east to west across the marshes between banks **14** and **17**.

19: A bank with many angular turns, running north-east to south-west across the northern third of the marshes between banks **17** and **15**.

20: A substantial bank along the southern edge of Penny Hole Fleet, between bank **15** and the original sea wall **31**. Its regular appearance, is a result of work carried out by the RSPB during 1995-96, when the bank was heightened.

21: A sinuous bank, encircling the area of a duck decoy **33**, leading south from Penny Hole and ending at the original sea wall around Penny Hole Bottom at feature **37**. Although truncated by bank **20**, the original line continues, running directly for Penny Hole Fleet. Several other banks lead off from it. It is in a severely eroded state with the top surface regularly dipping and undulating. Where best preserved, it is 11.5m wide and 1.2m high with a flat top.

22: This bank runs west from bank **21** and originally terminated at a creek edge, thereby enclosing a small area. Bank **20** skirts the northern edge of this bank close to its western end.

23: A bank aligned north-east to south-west from the southern edge of bank **21** to the drainage channel inside the sea wall.

24 A flat topped bank, 12.4m wide and 0.8m high, running north to south from the southern edge of bank **21** to the drainage channel on the inner side of the sea wall. It is much better defined than the nearby bank **23** and has a ditch on either side.

25: A straight bank that runs north to south through the eastern third of the area defined and enclosed by bank **21**. It consists of two sections separated by a creek. The longer of the two sections crosses a second creek, the channel of which forms one of the pipes for a duck decoy **33** lying a short distance to the west.

26: This bank runs along the eastern side of a channel which leads from the northern edge of Penny Hole Fleet. It is linked to the original sea wall **31** which ran around Penny Hole

Bottom. It is 11.8m wide by 1.6m high with a rounded top, but becomes less well defined as it progresses northwards through an area dissected by creeks. Banks **27**, **28**, and **29** lead off it.

27: A low bank of rounded profile, 7.8m wide and 0.4m high, running east from bank **26** before turning south to the original sea wall around Penny Hole Bottom. It is heavily eroded and very sinuous but appears to define a rectangular enclosure with bank **26**.

28: This bank is most clearly visible on aerial photographs, running through an area heavily dissected with creeks. It runs in a north-easterly direction from the eastern side of bank **26** up to the drainage ditch inside the sea wall.

29: Separated from bank **26** by a creek, this bank is also most clearly visible on aerial photographs. It runs west, across the top of duck decoy **32**, and has a ditch along its southern edge.

30: A flat topped bank, badly eroded, running north to south alongside the eastern ditch of bank **14**. It is roughly 0.6m high, and averages 10.0m in width.

8. DATA FROM THE ESSEX SITES AND MONUMENTS RECORD

SMR No 11467 (TL 9575 1293):	Red Hill, salt working site.
SMR No 11468 (TL 9580 1300):	Red Hill, salt working site. Ploughed in 1963, revealing pieces of briquetage.
SMR No 11469 (TL 9578 1289):	Red Hill, salt working site. Bulldozed in 1953 which produced iron age pottery and briquetage.
SMR No 11470 (TL 9560 1313):	Red Hill, salt working site.
SMR No 11556 (TL 9610 1260):	Red Hill, salt working site.
SMR No 16192 (TL 964 125):	Red Hill, salt working site. This site is noted as comprising a series of grassed earthworks with red soil exposed in places. Important technological features are expected to survive beneath the surface.
SMR No 16707 (TL 963 125):	Earthwork features. Visible on early RAF vertical photographs. The earthworks are thought to be associated with salt production.
SMR No 16900 (TL 958 130):	Linear Feature. Visible on aerial photographs of 1953, this earthwork is located in an area of red hills.
SMR No 11506 (TL 9858 1214):	Ruins of brick building, post medieval. It has been suggested by the Colchester Excavation Committee that the building was the site of a salt house or works.
SMR No 16433-16434 (TL 9890 1180):	Settlement site with associated pottery and tile finds, medieval/post-medieval. A rectangular earthwork associated with finds of pottery and tile and large quantities of oyster shell.
SMR No 18114 (TL 9859 1168):	House or hut platform, post medieval. Ruins of bricks and timber.
SMR No 11427 (TL 959 124):	Old Hall, post medieval house. First recorded on Chapman and André map of 1777. At present it is located at the site of the present Old Hall Marsh Farm.

SMR No 11560 (TL 982 123):	Decoy pond, post medieval. First recorded on 1827 sales map of Farebrother, Wilson and Lye.
SMR No 16282 (TL 9875 1180):	Decoy Pond (earthwork): Square decoy pond with pipes extending from each corner, two of which connect with former creeks. A slight bank is visible around the main pond. The site does not appear on the Chapman and André map of 1777 or the First Edition OS.
SMR No 16717 (TL 90 12):	Former sea walls, modern. Visible on aerial photographs as banked linear features, constructed in the process of reclaiming the marshes.
SMR No 18115 (TL 9777 1300):	Syphon, post medieval. The possible site of a syphon designed and constructed by Isambard Kingdom Brunel during 1830-34 to drain the salt marshes.

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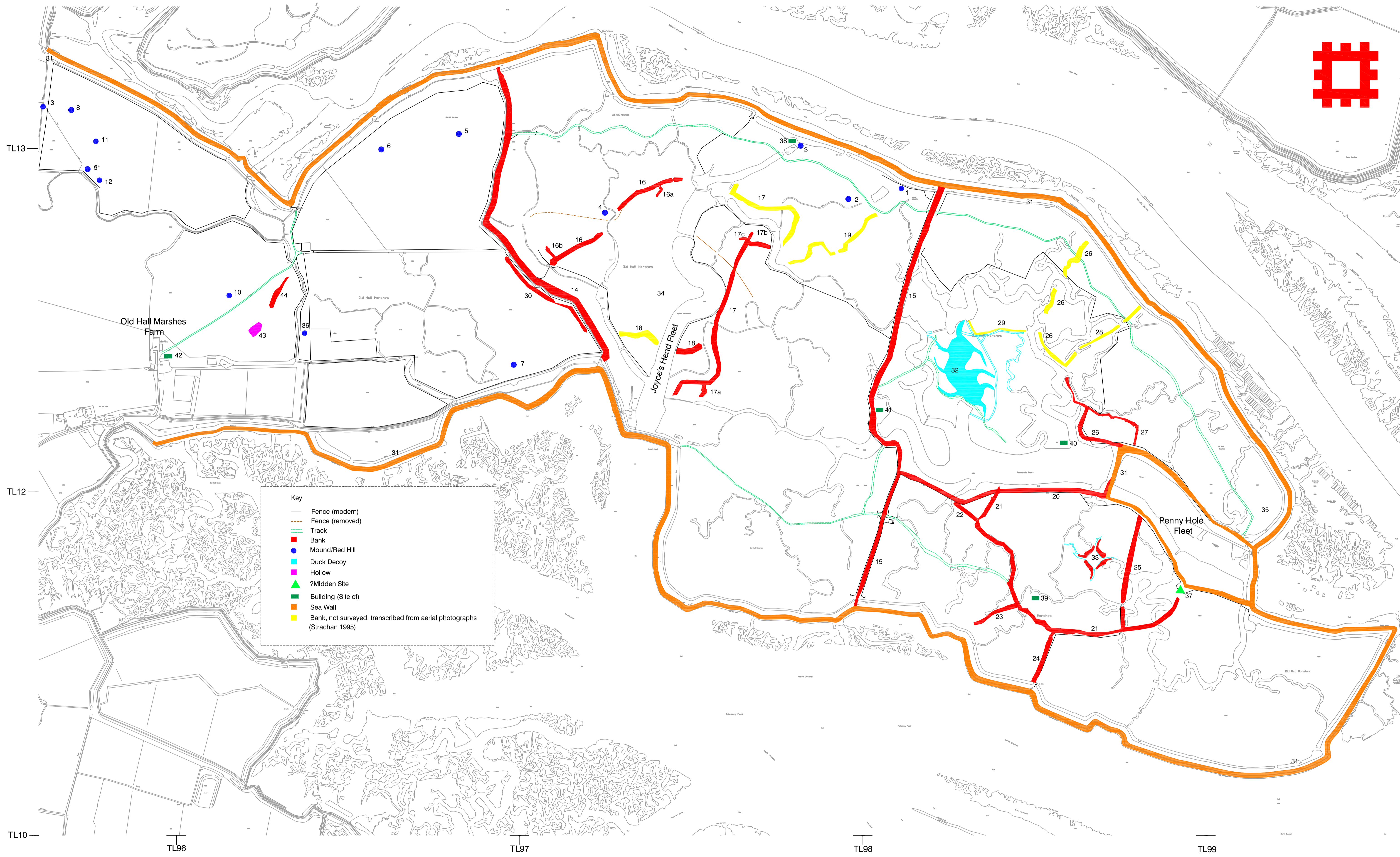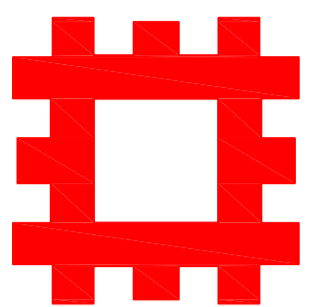CUCAP 0039, 1:2500 (26th January 1999)

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Key

— Fence (modern)
--- Fence (removed)
— Track
■ Bank
● Mound/Red Hill
■ Duck Decoy
■ Hollow
▲ ?Midden Site
■ Building (Site of)
■ Sea Wall
■ Bank, not surveyed, transcribed from aerial photographs
   (Strachan 1995)

Old Hall Marshes
Farm

Joyce's Head Fleet

Penny Hole
Fleet

TL13
TL12
TL10
TL96
TL97
TL98
TL99
TL31