Adur Estuary SSSI
Information to inform the Management Plan 2025-2030

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Prepared by	Adur Estuary Steering Group: • Natural England • Adur District Council • Friends of Adur SSSI • Ouse & Adur Rivers Trust • RSPB • Sussex Wildlife Trust • Shoreham District Ornithological Society • Shoreham Port
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Foreward

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Natural England commissioned JBA consultants in 2025/2026 to prepare a draft management plan for the Adur Estuary SSSI, which has been subsequently updated with comments from the Adur Estuary Steering Group. The information in this report is to assist in the management of the Adur Estuary SSSI by providing information to inform the management and implement plan.

Natural England commissions a range of reports from external contractors to provide evidence and advice to assist us in delivering our duties. The views in this report are those of the authors and do not necessarily represent those of Natural England.

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1 Introduction

1.1 Objective

The overall objective of this plan is to improve the management of the Adur Estuary Site of Special Scientific Interest (SSSI) for the benefit of the habitats and species for which it is designated as well as those who live on and alongside the estuary and those who come to visit the designated site for recreation and to enjoy the nature and natural beauty it provides.

1.2 Site Description

The Adur Estuary SSSI is situated on the south coast of England near the mouth of the River Adur in Shoreham-by-Sea, West Sussex, and lies within areas of countryside, with the South Downs National Park and the urban area of Shoreham Town. As such it experiences a wide range of pressures.

The grid reference of the Old Shoreham Bridge, which is a prominent landmark in the centre of the site, is TQ20610596. Shoreham Port Authority are the Harbour Authority for the waterway up until this point, managing navigational safety within its jurisdiction from Hove Lagoon to the Old Toll Bridge and the outer Port limit (Marine Services - Shoreham Port). There are over 60 landowners across the SSSI, the large number due to the house boats and there is open access to the banks of the estuary on both sides of the channel, which is wide, deep and fast flowing, especially on an ebb tide. There are two footbridges, two road bridges and one railway flyover, which go over the River Adur within the SSSI. A map of the SSSI is shown in Figure 1.

The boundary of the SSSI are defined by the flood banks on both sides of the estuary from just north of Cuckoo Corner (TQ2040507177) upstream to the site of the old Shoreham Harbour Footbridge at the downstream end (TQ2164104786) and within these the estuary contains a number of habitats, including estuarine mudflats, lower saltmarsh with Annual Sea-Blite *Suaeda maritima* and Cord Grass *Spartina spp*., middle saltmarsh dominated by Sea Purslane *Halimione portulacoides* and upper saltmarsh with Sea Couch *Elymus pycnanthus*. Above this the vegetation grades into terrestrial communities, in particular Bramble *Rubus fruticosus* and Blackthorn *Prunus spinosa* scrub and False Oat-Grass *Arrhenatherum elatius* dominated tall grassland.

The SSSI also has a small area separated from the main part (TQ2070206627) north of the Adur Flyover (A27) which is a linear reedbed dominated almost exclusively by Common Reed *Phragmites australis*.

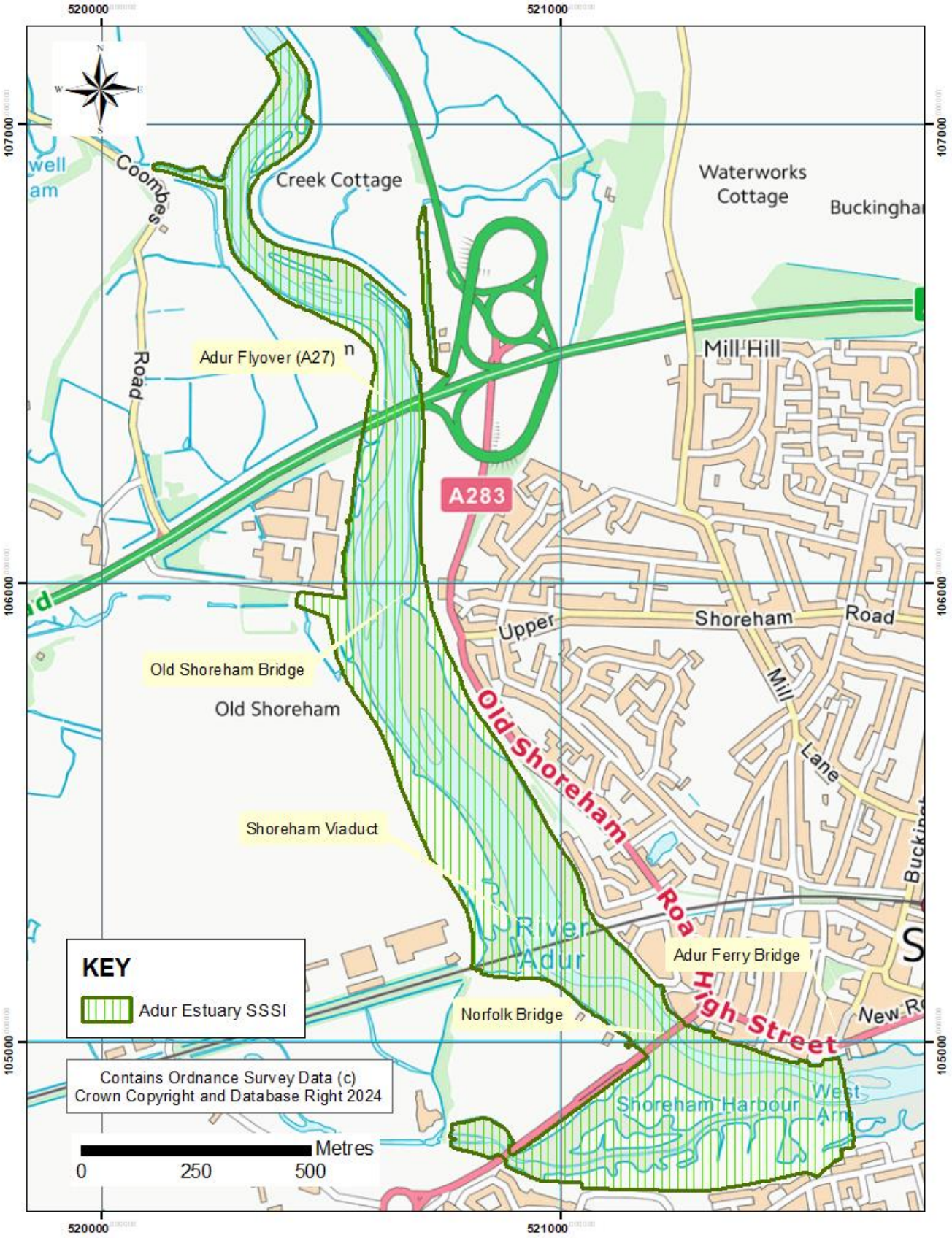


Figure 1 Adur Estuary SSSI and Location of Bridge

1.3 Site Interest Features

As confirmed in the Citation of the SSSI 1003359, the intertidal mudflats of the Adur Estuary support a number of wading birds, particularly Redshank *Tringa totanus*, Dunlin *Calidris alpina* and Ringed Plover *Charadrius hiaticula*; the latter population is of national importance as it regularly exceeds 1% of the total British population. In addition, a number of fenland bird species breed within the large reedbed east of the old railway line and north of the A27 (TQ2070206627), including Moorhen *Gallinula chloropus*, Reed Warbler *Acrocephalus scirpaceus* and Sedge Warbler *Acrocephalus schoenobaenus* (Nature Conservancy Council, 1987).

When designated, the saltmarsh areas were confirmed as the most extensive on the south Coast between Rye Harbour and Chichester and, unlike many of these habitats in and around the Solent, there was very little Cord Grass *Spartina spp*. within the estuary. The citation mentions a small area southeast of the Old Shoreham Bridge which is still extant, and this area attracts Brent Geese *Branta bernicla bernicla* during the Winter months (Tony Benton –Adur District Ornithology Society (ADOS) member pers comm.). This small stand and another in the West Arm of Shoreham Harbour (UKHab code t2a) qualifies as Annex I 1320 - Spartina swards (*Spartinion maritimae*) Saltmarsh Priority Habitat and the extensive beds of Sea Purslane along both banks of the estuary (UKHab code t2a8) qualify as Annex I 1330 - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) Priority Habitat.

1.4 Site Monitoring Features

There are three Monitoring Features for the Adur Estuary SSSI and these are:

- Aggregations of non-breeding birds - Ringed plover, *Charadrius hiaticula*
- Littoral sediment
- Saltmarsh (NVC Communities SM4(*Spartina maritima*) to SM28 (*Elytrigia repens*) - Common Standards Monitoring Guidance for Saltmarsh Habitats

The Aggregations of non-breeding birds - Ringed plover feature was assessed internally by Natural England as being in Unfavourable-declining condition. The saltmarsh was assessed in 2021 using a rapid assessment survey method and was classed as Unfavourable-declining (Natural England, 2021, Appendix A). The littoral sediment was also assessed in 2021 with 44.44ha being in Unfavourable-declining condition (Natural England, 2021, Appendix A), however this is mainly in the upper littoral zone. The lower littoral zone was last assessed in 2008 by Brighton University and was classified as being in Favourable condition (Natural England, 2021). The lower littoral zone assessment is being updated in 2026.

1.5 Site Use

The site is used by people and groups for informal and formal recreation and living, in the form of houseboats, all of which need to be considered alongside the nature conservation interests of the SSSI. The main uses of the site are for:

- Dwellings (houseboats)
- Water sports including paddle boarding, sea kayaking and wind-foiling
- Walking and hiking
- Cycling
- Exercising of dogs
- Bird watching
- Bait digging
- Picnicking
- Angling

1.6 Access

There is public access (by road, cycle path or public footpath, or open ground) along both banks of the estuary for the majority of the designated site, with some limited access around the houseboat community and near the High Street. Physical access is realistically only hindered around private residences and private boatyards. There are public access points, which are listed on the Adur and Worthing Website River Adur - Adur & Worthing Councils, with regard to the public accessing the water the only official launch point is Ropetackle Hard and open to all crafts except jet skis (Figure 2). Figure 3; shows other locations within the SSSI that are being used to launch from, these are unofficial launch points and are known areas for pressure on the SSSI features and further management is required to ensure official launch points are used only. There are private launch areas for the sea scouts, Adur Recreation Centre and Sussex Yacht Club, those are also not open to the public.

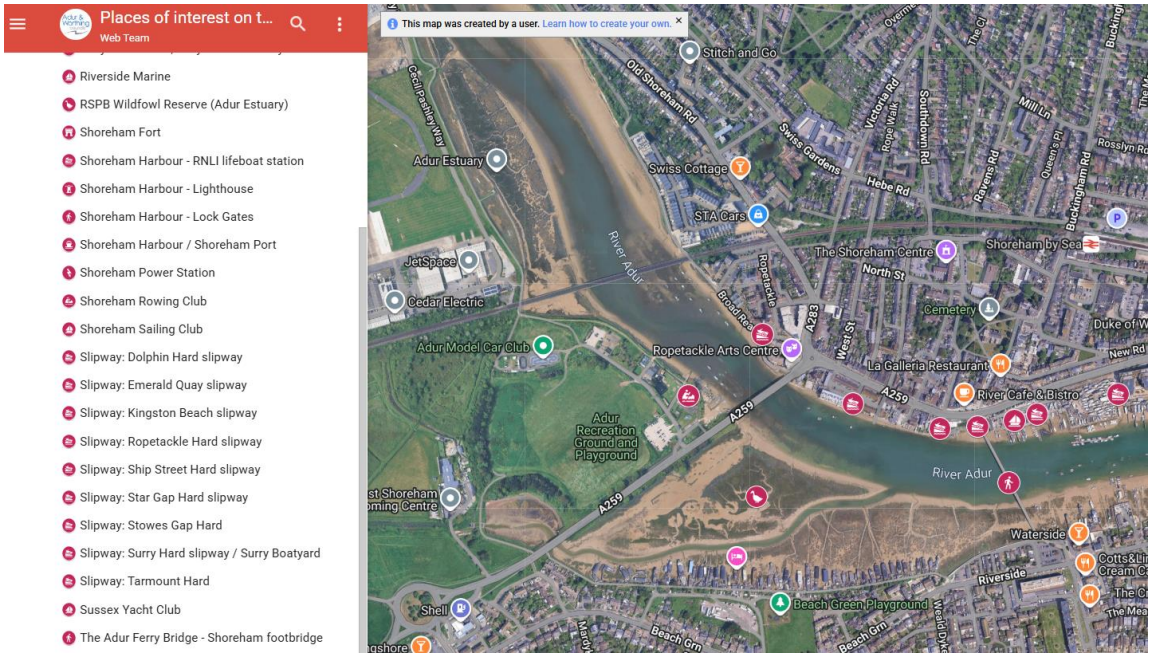


Figure 2 official launch point for the public at Ropetackle Hard north of the A29 bridge (plus other private slipways) noted across the SSSI on the Adur and Worthing Council website.

Figure 3 unofficial launch points noted across the SSSI.

2 Habitat

2.1 Broad Habitats

The habitats within the SSSI, other than the river channel itself, have been mapped following the UK Hab methodology (ref), with the map shown in Appendix B, and to which a key has been provided in Appendix B.1. This mapping also includes key areas of habitat outside of the SSSI where potential management interventions could be introduced in the future to support the SSSI and wider nature. Taken together, the SSSI and these areas constitute the study area for this report.

The mapping was derived from a walkover survey undertaken by Kieran Sheehan JBA Ecologist, on the 23rd July 2024. The main broad habitats present within the Adur Estuary SSSI are:

- Littoral Sediment
- Saltmarsh
- Fen, Marsh, Swamp
- Neutral Grassland
- Broadleaved Woodland

2.1.1 Littoral Sediment

There is 40.23ha of this habitat within the study area of which 0.04ha is made up of littoral rock; this is exposed on the left bank in a couple of locations where there are stones exposed through the mud or where the latter has been eroded. The locations are just upstream of the A27 bridge and under the Shoreham flyover. There is also 0.36ha of mixed mud and mostly sand around the island just upstream of the Old Shoreham Bridge.

2.1.2 Saltmarsh

There are 19.88ha of saltmarsh within the study area and this varies from a few small patches of Cord Grass (near the Old Shoreham Bridge and in the West Arm of Shoreham Harbour) at the lower end of the saltmarsh to the very large expanses of Sea Purslane beds which are exposed on both banks all along the estuary apart from in localised areas. There are occasionally narrow, linear stands of Sea Aster *Aster tripolium* on the seaward side of these stands or on the edges of desire lines, where these have eroded the cover of Sea Purslane. These beds are a real feature of the estuary ecosystem. Landward of these there are linear areas of grassy upper saltmarsh dominated by Sea Couch and this habitat typically covers the seaward edge of the flood embankments grading into more tall, neutral grasslands on the top.

Generally seaward of the saltmarshes there are large areas of intertidal mudflats, totalling 20.26ha. These habitats also exist within creeks dissecting the saltmarshes but generally there is a sharp edge between the two and there is very little in the way

of pioneer vegetation at the lower end of the saltmarsh where Annual Sea-blite Sueda maritima and Glasswort Salicornia spp. are notably absent, although they may be present in localised areas. Within the West Arm of Shoreham Harbour, the invasive species Papenfuss has begun to colonise these zones but typically throughout the estuary the ecotone between the mudflats and the saltmarsh is unusually sharp.

2.1.3 Fen, Marsh, and Swamp

This is relatively uncommon within the SSSI, with the exception of the 0.42ha of reedbed in the SSSI Unit 5 (area separate from the main part of the SSSI) north of the A27 flyover. This is very difficult to access but it is pure Common Reed Phragmites australis reedbed within a linear depression, likely a former soak drain at the base of the old railway embankment. There are very small patches elsewhere, such as at Cuckoo Corner. Outside of the SSSI this habitat is frequent along drains and channels throughout the more rural parts of the estuary, in particular the right bank (*River banks are defined by looking downstream (direction of flow) to identify the left and right banks*) from the Brighton Road to Ricardo and then north at Pad Farm, however, the overall area is still only 1.49ha. There are also patches within the drains on the left bank north of the A27 flyover.

2.1.4 Neutral Grassland

In total there are 27.54ha of this habitat within the study area although most of this lies outside the SSSI it is at or on the landward side of the flood embankments along the estuary. However, this habitat has the potential to be managed differently depending on the agreement of any land-owner, to benefit the interest features of the designation and, therefore, has been included within this section of the plan. 1.94ha of this is composed of unmanaged vegetation stands with a mixture of species with an additional 21.07ha being dominated by False Oat Grass; most of the latter is in the New Salts Farm Road area, however, the former can also be found along the flood embankments, especially in the north of the SSSI. There is also 1.60ha of sown 'species-rich' grassland on flood banks, mainly on the right bank between the airport and the estuary and in one small area on the left bank outside the SSSI near the A27 flyover.

2.1.5 Broadleaved Woodland

There are a number of woodlands within the wider study area, totalling 5.39ha, however, most of these are outside the designation boundary. These vary from treelines, such as that along the Brighton Road to mixed woodlands with a few conifers (Monterey Pine Pinus radiata) in the plantations around the embayment northwest of the Brighton Road (see Figure 4) and around the Adur Recreation Ground. There are 3.51ha of wet woodlands and these are mainly dominated by willows *Salix spp*. and they are located along the railway line West of the Adur flyover and in and around Pad Farm on the right bank North of the A27 flyover. There is one small, interesting stand, dominated by Crack Willow Salix fragilis on the right bank of the estuary North of the Brighton Road A59?; this is unusual given the saline location right at the top of the saltmarsh.

Figure 4 Broadleaved Planted Woodland on the NW side of the embayment North of the Brighton Road

2.2 Other Habitats

2.2.1 Improved Grassland

There are 49.37ha of this habitat throughout the study area with a small amount within the SSSI itself. This is generally sown grassland dominated by Perennial Ryegrass *Lolium perenne* that is used for grazing livestock, growing silage and also on amenity grassland, on sports pitches and public parkland. It is of little conservation interest, but it does afford opportunities for feeding geese and ducks depending on their habituation to people and the level of disturbance and predation risk.

2.2.2 Scrub

There is 24.65ha of scrub both within and outside of the SSSI. The majority of which is Bramble *Rubus fruticosus agg.* (13.88ha) dominated and this is typically found as pioneer scrub where mowing or grazing pressure has ceased or decreased markedly. It is found on the top of flood embankments, along old railway embankments and along drain sides where they have not been maintained. It is also colonising larger areas of formerly agricultural land East of New Salts Farm Road and at Pad Farm off Coombs Road North of the A27 flyover. In these locations it is advancing into False Oat Grass dominated neutral grassland and, over time, without

intervention, this will succeed into Blackthorn *Prunus spinosa* or Hawthorn *Crataegus monogyna* scrub and eventually into Sycamore *Acer pseudoplatanus* or Ash *Fraxinus excelsior* woodland. The remainder of the scrub (10.77ha) is Hawthorn-dominant and occurs along the old railway line north of the Old Shoreham Bridge; this has developed as a result of the expansion of the old hedgerows in the area.

2.2.3 Open Ground

This is a common habitat (3.89ha) within and outside of the SSSI with the latter typically being desire lines and unmetalled footpaths along and seaward of the flood banks. There are also metalled tracks, roads and other developments throughout the area, especially on the left bank, although there has been a large area of warehouse development and associated flood infrastructure works on the right bank at what is now called Panettoni Park at the northeastern corner of the airport.

Of most importance within the SSSI is the network of desire-lines and informal paths that have developed along and within the saltmarsh on both banks of the estuary. These have been created by people leaving the formal paths and walking along the top of the marsh between the Sea Purslane Beds and the Sea Couch upper saltmarsh grassland, creating areas of bare mud and trampled plants. In some places similar desire lines have also been created through the Sea Purslane beds themselves, dissecting them, leading to increasing erosion.

Finally, there are a few locations where a second (or even third) desire line has been created this time at the lower end of the Sea Purslane bed, preventing it further colonising the intertidal mud and creating a compacted pathway with a few Sea Aster plants in a line on the seaward edge (see Figure 5).

2.2.4 Hedgerows

There are a small number of hedgerows present within the study area although generally they are infrequent. They are usually composed of Hawthorn and are most frequent outside of the SSSI north of the A27 Adur flyover.

2.2.5 Ditches

There a large number ditches on the floodplain and, as mentioned above, many of these are colonised by reedbeds (see Figure 6), in particular Common Reed, although there are a few small patches within the drains dominated by Sea Clubrush *Scirpus maritimus* instead; these are quite prominent upstream of the A27 flyover on the left bank the estuary on the land inside a meander bend.

Figure 5 Unsurfaced path (left) and desire lines through the saltmarsh vegetation (right)

Figure 6 Ditch and pond colonised by Common Reed at Pad Farm

3 Fauna

3.1 Birds

3.1.1 Ringed Plover

This bird is a Monitored Feature of the Adur Estuary SSSI, therefore, the population size of this species contributes to the SSSI Condition Assessment (see Appendix A) and monthly high tide WEBS count British Trust for Ornithology (BTO) form the bases of this monitoring.

Historically, Newnham (The Birds of Shoreham, 1988) states that it is a scarce breeding species though it is a common migrant and winter visitor where it can be regularly seen on the River Adur and shoreline particularly between West Worthing and Ferring. Systematic counts on both the River Adur and Goring Gap have highlighted an increase in numbers during both autumn and winter since 1960. Peak numbers are present in August to early September and in November with levelling off during winter and rapidly decreasing in February and March. 330 birds were counted on 27th August 1986 on the River Adur although the average autumn number was around 250 with similar numbers in November and about a third less in the winter months (Newnham, 1988).

The current estimated UK wintering population of Ringed Plover is 42,000 individuals (Frost, et al., 2021) with Sussex as a whole estimated to support 1.5% of the national wintering population (Thomas, 2014). The desk study found a five-year peak mean of 41 individuals in the 2018/19-2022/23 WeBS report for the Adur Estuary which constitutes 0.9% of the UK population suggesting the estuary is no longer of national importance for this species, as it previously held 1% of the national total at designation. Ringed Plover is listed on the Red List as it has declined nationally by 37% since 1984.

Whilst the figures cannot be like for like over the period, it is clear that the numbers of Ringed Plover in the Adur Estuary have declined in parallel with the UK population declines, however, the declines in the estuary do appear to be higher than those recorded nationally.

3.1.2 Redshank

Previously, in the Birds of Shoreham (Newnham, 1988) it states that if Redshank *Tringa totanus* is not the most numerous then is certainly the most familiar of waders. The Redshank is the typical bird of the Adur salting's and formerly must have been a widespread breeding species in the river valley. In the autumn and winter, as with Dunlin *Calidris alpina*, the largest numbers are found on the river mudflats at Shoreham with smaller scattered groups on the intertidal zone mostly between Lancing and Ferring. Historical yearly peak counts for wintering Redshank are as follows, 100 (1978), 250 (1979), 185 (1980), 185 (1981), 231 (1982), 300 (1983),

158 (1984), 116 (1985) and 160 (1986). All peak counts occurred between the months of November and February (Newnham, 1988)

Currently Redshank has an estimated UK wintering population of 94,000 individuals (Frost et al. 2019) with the largest wintering numbers in Sussex occurring in Chichester Harbour (Thomas, 2014). The desk study found a five-year peak mean of 71 individuals in the 2018/19-2022/23 WeBS report for the Adur Estuary which constitutes 0.07% of the UK population suggesting the estuary is no longer of national importance for this species and numbers are in decline. Redshank are listed as Amber by the BTO as breeding pairs in the UK have declined by 49% from 1995-2022 (Heywood, 2024), and wintering populations have declined by 19% from 1997-2022 (Woodward, 2024).

Between 1978 and 1986 inclusive the peak mean for Redshank on the Adur Estuary was 187; this compares unfavourably with the 2018/19 to 2022/23 peak mean of 71 and represents a decline of 62%; a figure that potentially exceeds the national declines seen over shorter periods.

3.1.3 Dunlin

In the Birds of Shoreham (Newnham, 1988) it says that Dunlin is the most abundant of the wading birds to visit the Shoreham area and occurs as a common winter visitor and passage migrant. It has been recorded in all months of the year and the records showed that the wintering population had increased in number through the late twentieth century. In winter, the majority of Dunlin in the Shoreham area feed on the Adur estuary, an important site for this species, or on the intertidal beaches between Worthing and Ferring. Traditional high tide roost sites for this species on the Adur Estuary SSSI are the New Salts Farm and Brighton City Airport area. Historical yearly peak counts were as follows, 876 (1978), 1050 (1979), 1400 (1980), 1000 (1981), 1570 (1982), 1300 (1983), 900 (1984), 1030(1985) and 1400 (1986). All peak counts occurred between the months of November and February (Newnham, 1988).

The current estimated UK wintering population of Dunlin is 340,000 individuals (Frost, et al., 2021) with Sussex estimated to support between 4.5 -5% of the national wintering population (Thomas, 2014). The desk study found a five-year peak mean of 20 individuals in the 2018/19-2022/23 WeBS report for the Adur Estuary which constitutes 0.005% of the UK population suggesting the estuary is no longer of national importance for this species and that numbers have declined significantly. Dunlins are on the Red List as their winter population has decreased by 34% between 1997and 2022. The number of occupied breeding sites of the Dunlin have also decreased by 13% from 1972 - 2011 (BTO, 2024).

Once again, the local population trends mirror national trend with an annual peak mean count of 1,170 between 1978 and 1986 inclusive declining to a mean peak count of 20 between 2018/19 and 2022/23. This mean constitutes a decline in the numbers of Dunlin on the estuary of over 98% over a 45-year period. This figure is well in excess of the national declines recorded for this species.

3.1.4 Black-headed Gull

In the Birds of Shoreham (Newnham, 1988) it states that the Black-headed Gull *Chroicocephalus ridibundus* is the commonest species of gull recorded throughout the year in the Shoreham area but is particularly numerous from late July until late March. It can be found virtually everywhere feeding in farmland, refuse tips, in urban gardens and along the shore. Each evening large flocks gathered to roost on the beach, or in stormy conditions, in the Adur Valley. 2,000 were recorded on the River Adur in 1966, with 20,000 being recorded on Shoreham Airfield (now Brighton City Airport) on 15th January 1972 and up to 40,000 have been recorded in this same location during stormy conditions or when the airport becomes flooded (Newnham, 1988).

The current day estimated UK wintering population of Black-headed Gulls is 2,200,000 individuals (Frost, et al., 2021). The desk study found a five-year peak mean of 180 individuals in the 2018/19-2022/23 WeBS report for the Adur Estuary which constitutes 0.008% of the UK population. The UK breeding range of Black-headed Gulls was reported to have decreased by 12.5% between 1972 and 2011, and there has also been a decrease in the winter range by occupied 5% between 1984- 2007 (BTO, 2024).

Given that the figures for this species are recorded in different formats it is difficult to compare them directly, however, we can do some interpretation that will allow us to make some comparisons. For instance, if we appreciate that the peak mean count between 2018/19 and 2022/23 was 180, the peak count of 2,000 in 1966 would still be more than ten years' worth of the current population if no other birds were recorded that decade. The 20,000 recorded in January 1972 would be the equivalent of more than 100 years of recording at the present levels if no other counts were recorded. Given these disparities, it is clear that declines on this species nationally are mirrored and likely exceeded.

3.1.5 Lapwing

In the Birds of Shoreham (Newnham, 1988) it says that Lapwing *Vanellus vanellus* is a resident, winter visitor and passage migrant, particularly in cold weather. Lapwing flocks disperse quickly in June after breeding, as indicated by 135 in the lower Adur Valley on 19th June 1983 and 200 at Coombes on 13th June 1962. In 1985, 100 were reported on Shoreham Airfield on 10th August but quickly dispersed to feed on downland. Winter flocks gather in the Adur Valley, Brighton City Airport and at New Salts Farm between November and March where a high count of 6,000 was made in December 1984. However, flocks of 2,000-3,000 were not unusual (Newnham, 1988).

The current estimated UK wintering population of Lapwing is 620,000 individuals (Frost et al. 2019) with Sussex supporting between 1.6 - 3.2% of the national wintering population (Thomas, 2014). The desk study found a five-year peak mean of 149 individuals in the 2018/19-2022/23 WeBS report for the Adur Estuary; this represents 0.02% of the UK population. Lapwings are on the Red List as their UK breeding population has decreased by 62% from 1967 and 2022 (BTO, 2024). UK

Wintering populations have also declined, with a reduction of 46% between 1997and 2022 (Woodward, 2024)

Accepting that the wintering populations in the Adur Estuary peaked in the thousands in the 1980s and now number in the region of 150, there has been very large declines within the estuary, although the precise numbers difficult to elucidate. If we assume the mean peak wintering population in the 1980s was conservatively 1,500, the current wintering population of 149 would equate to a local decline of more than 90%. This compares quite well with national declines.

3.1.6 Snipe

In the Birds of Shoreham (Newnham, 1988) it states that Snipe *Gallinago gallinago* is a resident and winter visitor mainly to the Adur Levels and the river valley down to Shoreham. Large numbers are frequently recorded in the winter months with a maximum of 1,000 on the Adur Levels in January 1982. Up to 80 were recorded on Shoreham Airfield in February 1961.

It is estimated the current UK wintering population of Snipe is 1,000,000 individuals (Frost, et al., 2021). The desk study found a five-year peak mean of 121 individuals in the 2018/19-2022/23 WeBS report for the Adur Estuary which represents 0.01% of the UK population. The BTO report UK breeding populations of Snipe as stable, with no change between 1995 and 2022 (Heywood, 2024). UK wintering populations have expanded in distribution by 15.8% between 1984 and 2011 (BTO, 2024).

Once again the figures available for Snipe are not directly comparable, however, there is a tentative increase in the annual peak mean but this relies on a single data point at Shoreham Airfield in 1961 with a second data point of up to 1,000 being recorded on the Adur Levels; this likely includes the area North of Upper Beeding and cannot be relied upon. Overall, it is likely that the Snipe population in and around the Adur Estuary is static or even increasing slightly in tandem with the UK-wide figures.

3.1.7 Teal

In the Birds of Shoreham (Newnham, 1988) it notes that Teal *Anas crecca* is a common winter visitor and passage migrant which occurred mainly in its favoured habitat of wet grassland as found on the 786.38 Adur Levels. Numbers on the levels have declined since this study was published which is probably associated with improved drainage, amongst other factors. Historical yearly peak counts were as follows, 600 (1970), 200 (1971), 200 (1972), 400 (1974), 300 (1980), 220 (1981), 425 (1982), 160 (1984). In most years peak numbers occurred in January (Newnham, 1988).

The current estimated UK wintering population of Teal is 430,000 individuals (Frost et al. 2019) with Sussex estimated to support between 2.8 -3.9% of the national wintering population (Thomas, 2014). The UK supports a significant percentage of the north-west European population during the winter period. The desk study found a five-year peak mean of 72 individuals in the 2018/19-2022/23 WeBS report for the

Adur Estuary which represents 0.01% of the UK population. The BTO reports a decrease of 16.5% in the occupied breeding range of Teal between the years of 1972 and 2011 (BTO, 2024). Wintering UK populations, however, have increased by 11% between the years of 1997 and 2022 (Woodward, 2024)

The annual peak wintering numbers for Teal have decreased from 313 in the late 1970s and early 1980s to 72 individuals between 2018/19 and 2022/23, a decline of 77%. This contrasts with an 11% increase in wintering Teal across the UK between 1997 and 2022.

3.1.8 Turnstone

In the Birds of Shoreham (Newnham, 1988) it states that Turnstone *Arenaria interpres* are most frequently seen on the coast in the Shoreham area between Widewater and Ferring during the winter months. Note, however, that limited data is available for Adur Estuary in (Newnham, 1988). It has an estimated UK wintering population of 40,000 individuals (Frost, et al., 2021) with Sussex estimated to support 2 - 2.5% of the national wintering population (Thomas, 2014). The desk study found a five-year peak mean of 60 individuals in the 2018/19-2022/23 WeBS report for the Adur Estuary; this represents 0.15% of the UK population. BTO reports a decline of 21% in the wintering population of Turnstone between the years of 1997-2022 (Woodward, 2024). Given the absence of older data specific to the Adur Estuary it is impossible to ascertain whether locally there has been declines matching the national ones for this species.

3.1.9 Great black-backed Gull

In the Birds of Shoreham (Newnham, 1988) it states that the Great Black-backed Gull *Larus marinus* is recorded throughout the year with the largest numbers seen during the winter months. There have historically been counts in excess of 300 in each month between August and January with peak counts of 900 on 7th November 1979 and 800 on both 31st January 1979 and 14th January 1981 (Newnham, 1988).

Peak low tide counts for Great Black-backed Gull on the estuary in the winter of 2018/19 were 27 (Sept), 18 (Oct), 14 (Nov), 68 (Dec) and 24 (Mar), a mean if 30 each month (Tim Holter -ADOS pers comm). Given the peak winter counts for this species were in the many hundreds in the late 1970s and early 80s with an excess of 300 being recorded, the current counts are an order of magnitude lower.

The UK wintering population of Great Black-backed Gull is estimated at 76,000 individuals (Frost, et al., 2021). The desk study found a five-year peak mean of 53 individuals in the 2018/19-2022/23 WeBS report for the Adur Estuary which represents 0.06% of the UK population. Great Black-backed Gulls are on the UK Red List, with a BTO reported decline of occupied winter range by 5.6% between 1984- 2011 (BTO, 2024).

Overall, there appears to be a local decline in the estuary for this species of between 80% and 90%, which is much higher than the nationally reported decline of 5.6%.

3.1.10 Oystercatcher

In the Birds of Shoreham (Newnham, 1988) it states that Oystercatcher *Haematopus ostralegus* are recorded throughout the year with virtually all the observations coming from the coast or Adur Estuary, however, it should be noted that limited data is available specifically for the Adur Estuary in Newnham.

There is an estimated wintering population of 290,000 Oystercatchers in the UK (Frost, et al., 2021) with Sussex estimated to support around 0.6% of the national wintering population (Thomas, 2014). It is listed on the Amber List as there has been a significant decline. Due to these population declines, Oystercatcher is classed as Vulnerable in Europe as a whole. The desk study found a five-year peak mean of 21 individuals in the 2018/19-2022/23 WeBS report for the Adur Estuary which represents 0.007% of the UK population. The BTO reports a decline of 21% of breeding populations between 1995 and 2022 (Heywood, 2024). Wintering UK populations have also declined, with a 21% reduction reported between 1997 and 2022 (Woodward, 2024).

In the winter of 2016/17, the number of Oystercatchers recorded at low tide were 9 (Oct), 15 (Nov), 11 (Dec), 11 (Jan), 13 (Feb) and 14 (Mar) (Tim Holter- pers comm). The peak count was 15 but the winter mean was 12. This is slightly below the five-year peak mean for 2018/19 - 2022/23 of 21 but this is not likely to be significant given it is only one winter's data. In view of this it seems that the numbers of Oystercatcher in the Estuary are static.

3.1.11 Sandwich Tern

In the Birds of Shoreham (Newnham, 1988) it states that Sandwich Terns *Thalasseus sandvicensis* are rarely seen away from the coast where the species occurs as a passing migrant or feeding offshore.

Once again limited data is available for the Adur Estuary in (Newnham, 1988). The desk study found a five-year peak mean of 16 individuals in the 2018/19-2022/23 WeBS report for the Adur Estuary with the best month for this species being September indicating that birds use the estuary whilst on passage. Sandwich Tern are Amber listed. The BTO reported a decline of 12.3% of occupied UK breeding territories between 1972-2011. UK wintering territories of Sandwich Tern, however, have expanded by 120% between 1984- 2011 (BTO, 2024).

Given the limited data available for the estuary for this species, it is impossible to make any comparison with the numbers of Sandwich Terns on the estuary and the national trend.

3.1.12 Lesser Black-backed Gull

In the Birds of Shoreham (Newnham, 1988) it states that the Lesser Black-backed Gull *Larus fuscus* is the least numerous of the regularly occurring gulls and the records were mostly from the coast, River Adur and local refuse tips. This species was mostly encountered during spring and autumn migrations. Counts on the River

Adur were usually less than 30, the exceptions being 115 on 29th September 1955 and 50 during September in 1981 (Newnham, 1988).

The desk study found a five-year peak mean of 16 individuals in the 2018/19-2022/23 WeBS report for the Adur Estuary with the best month for this species being April indicating that birds use the estuary whilst on passage which is in line with (Newnham, 1988). Lesser Black-backed Gulls are currently Amber listed. Breeding populations are currently stable in the UK, and wintering populations have expanded in distribution by 21.6% between 1984 and 2011 (BTO, 2024).

Newnham's (1988) work estimated that the numbers of Lesser Black-backed Gull were less than 30 up until the early 1990s, however, the recent WeBS surveys showing a peak of 16 individuals. This tentatively indicates that there has been a decline in the numbers of Lesser Black-backed Gulls of up to 50% in the estuary; this contrasts with the numbers nationally which are stable.

3.1.13 Little Egret

The Little Egret *Egretta garzetta* first bred in Britain in 1996 and since then has successfully colonised much of southern Britain and Ireland. The winter distribution is also currently restricted to the southern half of Britain & Ireland, despite the fact that young birds are known to move some distance from their natal site (British Trust for Ornithology, 2023).

In the Birds of Shoreham (Newnham, 1988) it states that the only record for Little Egret in the Shoreham area was one passing east offshore at Portslade on 7th May 1983.

The estimated UK wintering population of Little Egret is 11,000 individuals (Frost, et al., 2021). The desk study found a five-year peak mean of 12 individuals in the 2018/19-2022/23 WeBS report for the Adur Estuary which represents 0.1% of the UK population. The BTO reports an increase in UK breeding populations of Little Egret by 2,347% between 1995- 2022 (Heywood, 2024) Wintering populations have also increased, with an increase of 933% between 1997-2022 (Woodward, 2024). Given the relatively recent arrival of this species in Britain and its rapid colonisation of the island, there is very little historical data to work for, however, given the Adur Estuary's location on the South Coast, it is likely that its current population is stable, if not slightly increasing.

3.1.14 Other Species

Whilst this is not definitive of wetland bird species that occur on the Adur Estuary SSSI, it was also noted that species occur on passage and when occurring most are found between the Old Shoreham Bridge and the Town Quay. These species include:

- Whimbrel *Numenius phaeopus*
- Greenshank *Tringa nebularia*
- Avocet *Avocetta recurvirostra*
- Common Sandpiper *Actitis hypoleucos*

- Bar-tailed Godwit *Limosa lapponica*
- Black-tailed Godwit *Limosa limosa*
- Little Stint *Calidris minuta*
- Curlew Sandpiper *Calidris ferruginea*

In addition to the above other species occur within the terrestrial margins of the SSSI as well as on the supporting habitats in the area, including:

- Reed Warbler *Acrocephalus scirpaceus*
- Sedge Warbler *Acrocephalus schoenobaenus*
- Reed Bunting *Emberiza schoeniclus*
- Moorhen *Gallinula chloropus*
- Skylark *Alauda arvensis*
- Grey Heron *Ardea cinerea*
- Buzzard *Buteo buteo*
- Kestrel *Falco tinnunculus*
- Barn Owl *Tyto alba*

These birds depend on the mosaic of habitats on the fringe of the SSSI, including the grasslands, drains, wetlands, woodland and scrub that is present.

3.2 Other Fauna

3.2.1 Vertebrates

Mammals known to inhabit the SSSI include:

- Red Fox *Vulpes vulpes*
- Rabbit *Oryctolagus cunniculus*
- Roe Deer *Caprimulgus caprimulgus*
- Brown Rat *Rattus norvegicus*

Reptiles are also known and there is a colony of Common Lizard *Lacerta vivipera* (Nature Conservancy Council, 1987). There is also suitable habitat for Grass Snake *Natrix helvetica*, which have been known to previously frequent the area as well as Slow Worm *Anguis fragilis* (Environment Agency, 2017).

3.2.2 Invertebrates

The nationally scarce Long-legged China Mark moth *Dolicharthria punctalis* has been noted around Shoreham Beach (Adur and Worthing Councils, 2016). This feeds on knapweeds, plantains and clovers so are likely to be found within the Adur Estuary SSSI.

3.3 Other data opportunities

This report would be further supported by local data from the Sussex Biodiversity Record Centre and has been noted as a key missing resource from the current report.

4 Pressures

There is a variety of pressures within the estuary, each of which does not work in isolation. It is important to ensure all pressures are therefore considered in a holistic way. For example, the spread of non-native species may be exacerbated by access across the mud by water sports crafts, and the need for high tide roosts may be exacerbated by pressure of dogs.

4.1 Invasive Non-native Species (INNS)

The appearance of the non-native Papenfuss, an algae from the Northwest Pacific, has spread over the last two years along the north side of the channel in the West Arm of Shoreham Harbour (see Figure 7) and has now begun to colonise the south side of the channel (Jessica Jermain – RSBP volunteer pers comm.) and the embayment north of the flood Arch on the Brighton Road. This species has spread in Ireland and has been found on both coasts of North America and on the Eastern side of the Atlantic from Sweden to Morocco (CEFAS, 2018). More locally been found in in Dorset (2016) where large populations exist in Christchurch Harbour and on Brownsea Island, Poole Harbour

The effects of the species being present within the estuary will be looked at as part of Natural England's 2025/2026 littoral sediment surveys, after these surveys and if the species has affected the benthic infauna, which the birds on, However the 2025/2026 survey will not investigate if the non-native species is affecting access to the infauna.

Figure 7 *Gracilaria vermiculophylla* spreading on the mud in the embayment upstream of the RSPB Reserve

There are a number of other non-native species along the margins of the SSSI, however, these are typically garden escapes and include species of Cotoneaster *Cotoneaster spp*. and Cherry Laurel *Prunus laurocerasus*; these do not constitute a significant threat to the habitats and species of the SSSI.

4.2 Recreation

4.2.1 Walking

There is a long-established network of paths around the estuary, and most bird species will be habituated to people walking along these routes. When this is restricted to these tracks and semi-bound paths this is not a particular problem as any damage is localised and the avian interest of the SSSI is relatively unaffected. It is considered important that such recreation occurs and is encouraged as it allows people to appreciate the estuary and, consequently view it as an asset and a place worth preserving and protecting.

However, when the walkers stray off the path network onto sensitive habitats this can lead to damage to the habitats of the SSSI as well as causing disturbance to the birds of the estuary. Pathways created through the saltmarsh cause fragmentation and can prevent succession of natural habitats and bring recreational disturbance closer to foraging birds (see Figure 8). Disturbance to the birds, especially in spells of cold weather can cause additional stress and mortality. In estuaries birds tend to feed in areas with the greatest proportion of food resource and flushing from these areas to less 'energy-rich' feeding areas, making the site less suitable for wintering birds.

Figure 8 Desire lines through the saltmarsh opposite Panettoni Park

At times of the year when the energy demand of wading birds is at its greatest and prey availability is at its lowest, such disturbance needs to be prevented. In addition, such disturbance is also negatively affecting the vegetation on the saltmarsh at all times during the year and needs to be discouraged to allow the saltmarsh habitats to recover.

4.2.2 Exercising Dogs

Dog walkers can be a significant pressure on any nature conservation area. Some owners may be unaware that their family pet can be a threat to a wild bird and dogs running off leads across fragile habitats can cause damage. Free-running dogs are an additional pressure on groups of feeding birds and also a threat to ground-nesting birds. This is a critical issue to be addressed in order to reverse the apparent declines in the estuaries avian interest features.

Behavioural changes amongst regular site users such as dogwalkers who routinely follow the same or similar routes daily, is likely to be challenging. It is also important

that any education and encouraged change on site is proactive and does so without alienating site users.

4.2.3 Cycling

The majority of cyclists stay on the metalled cycle path, but there is some evidence of mountain bikers using the desire line paths through the saltmarsh. This needs to be discouraged. Also fast cycling on the footpaths that are shared spaces with walkers, might be encouraging walkers off these paths, so awareness to cyclist to reduce their speed and be aware of pedestrian should be considered.

4.2.4 Angling

Angling is allowed and license free in the intertidal sections of rivers. Although all anglers over 12 years need a rod licence see EA /Councils web link. It is undertaken at favoured locations on the rising tide. One such location is just south of the Shoreham flyover on the west bank where anglers can access the deeper waters of the channel from the flood bank and the Sea Purslane beds immediately next to this channel.

Angling appears to be a relatively small-scale activity within the SSSI, however, similar to other recreational activities access to the water crossed over sensitive areas of the saltmarsh, potentially damaging the habitats and causing disturbance to the avian interest of the SSSI. Therefore, positive engagement with anglers to ensure there is awareness of the sensitives of the site would be beneficial, again to do so without alienating site users.

4.2.5 Wing-foiling

Wing-foiling is a relatively new sport and the Adur Estuary has become a magnet for wing-foilers in recent years and this, unfortunately, means accessing the channel across the saltmarsh, damaging the sward in multiple access areas across the site (see example in Figure 9), which shows damage to vegetation from the main path to the water edge that may have been caused by people access the water’s edge and who do use the area for setting up equipment.

Both windsurfing and wing-foiling are currently prohibited within the Port's jurisdiction of the river, with a 6kts speed limit in place to maintain navigational safety. Though operational activity in the Port is changing, with limited commercial activity now taking place within the Western arm of the river, all activity should continue to abide by the General Directions of the Port unless stated otherwise.

However, as this activity is restricted to high tide and is most popular within the summer months, the impact on wading birds in the estuary is reduced to some degree. There are numerous pictures of wing-foilers utilising the estuary on the internet and there is a wing-foiling guide providing details of where to access the estuary as well as providing the current wind conditions and tide times. This does include the following notes of advice: *IMPORTANT: This spot is a Site of ‘Special Scientific Interest’ (SSSI) and is located close to an RSPB nature reserve. You must*

avoid this spot at low – mid tides and keep off the mud. This is a sensitive spot for wildlife so care must be taken not to disturb the birds.

Figure 9 Damaged saltmarsh vegetation resulting access/off-path walking along the west estuary bank South of Old Shoreham Bridge

4.2.6 Kayaking, Paddle Boarding and Wind Surfing

Paddle Boarding and Wind Surfing are older pursuits (with a recent surge in popularity for the former) and also employ a board to ride on. The RSPB leaflet also covers these sports and the 'green choices' it supports apply equally as the equipment needs somewhere to launch and the disturbance effects are similar and dismounting from the boards onto the saltmarshes, sand and mudflats entails the same risks.

Kayaking is an older sport and, whilst not as easy to demount as the latter sports, does allow for landing and portage, which is a particular problem in the West Arm of Shoreham Harbour in the RSPB reserve where kayakers get drawn-in by the main tributary channel and then, when the Tidal Arch Bridge is reached, there is a tendency for paddlers to turn right into a secondary channel alongside the Brighton Road which appears to lead back to the main Adur channel but is in fact only passable at high tide. At this point kayakers often dismount and portage across the saltmarsh back to the main Adur channel, damaging the saltmarsh in the process. The RSPB have also produced a leaflet for kayakers (see Figure 10, 11) explaining the dangers posed by kayakers to the bird interest on the Adur and encouraging them to stay in the main river channel.

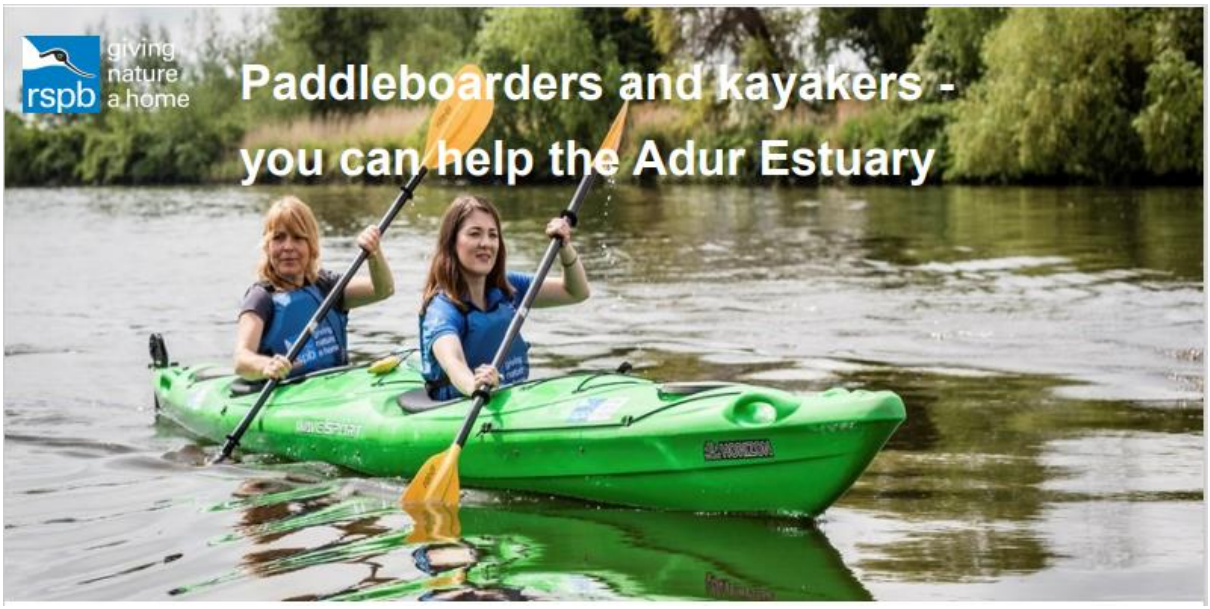


Figure 10 RSPB Leaflet header focussed on kayakers and paddleboarders
Publication2 Adur Paddlers guide final version.pdf

The Royal Society for the Protection of Birds (RSPB) has also co-produced a leaflet for paddlers and wing-foilers, which can be found on the Shoreham District Ornithological Society (SDOS) website which explains the value of the estuary for conservation as well as outlining where the SSSI and the RSPB reserve boundaries are and where you should launch and what to do to make 'green choices', such as keeping your distance from birds, sticking to the main channel and avoiding landing on the saltmarshes or mudflats.

Figure 11 RSPB/SDOS leaflet

4.2.7 Further information

Information boards have been installed along the estuary (see Figure 12) to highlight the importance of the site for nature, to foster an awareness of their surroundings and how certain activities can affect wildlife. These information boards aim to raise awareness particularly of part of the Adur Estuary which is a Site of Special Scientific Interest (SSSI).

The sign also includes a QR code which directs the member of the public to the Adur and Ouse Partnership website which provided further information on the water environment across the whole catchment. Home - Adur and Ouse Partnership.

The boards cover general background information on the SSSI, with three main take aways pieces of with advice:

- Keep to designated footpaths (see map) to avoid crushing sensitive plants.
- When accessing the water for recreation, avoid trampling saltmarsh and mud, or disturbing birds.
- Keep your dog close to you so that it does not scare birds or force them to fly.

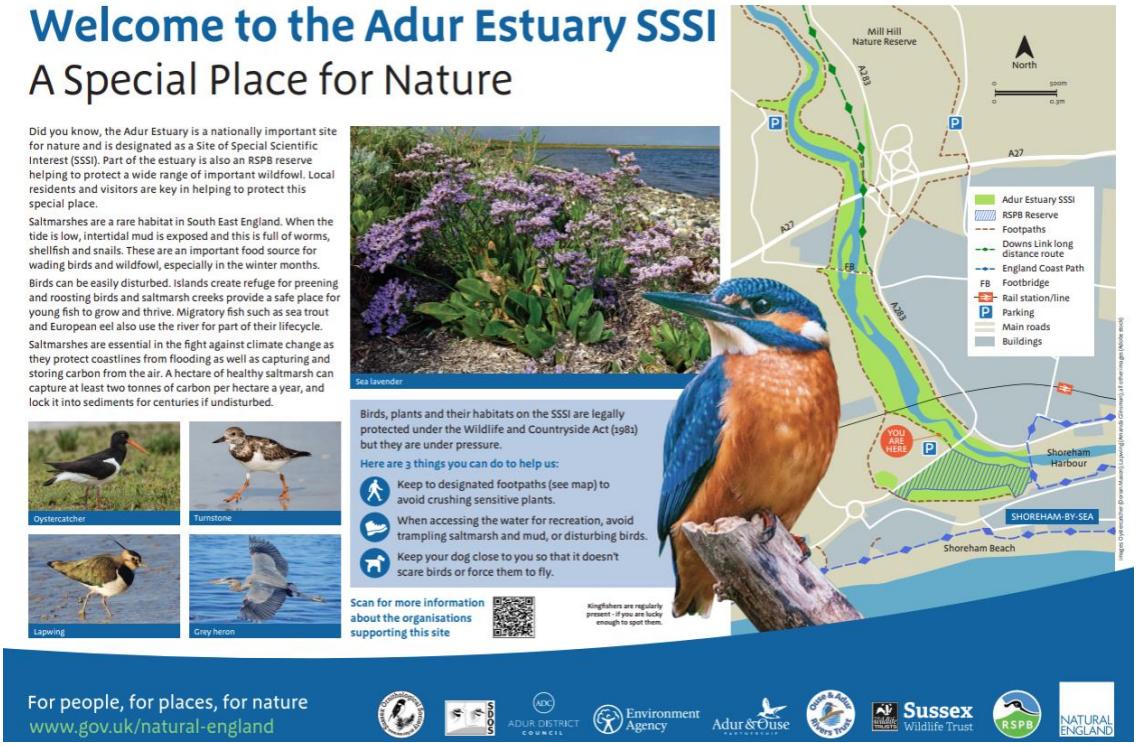


Figure 12 In-situ interpretation board by the Adur Centre

4.3 Development

The SSSI is under two different Planning Authorities, South Downs National Park for the area above the A27 and Adur District Council, for the area below the A27. This is an ongoing threat to the estuary, and the effects of developments such as private and public flood defences resulted in the loss of habitats, for example the construction of a new pumping station, with concomitant effects on the geomorphology of the river and its right flood bank. Habitats have also been lost on the west bank in recent years as a result of the re-development of the town; this process is still ongoing apace downstream of the designation (See Figure 13). There are also proposals to undertake upgrading works on the Adur flood banks on the right bank downstream of the Adur Ferry Bridge, where there is currently a gap (BBC, 2024), to raise them to the same levels as those recently upgraded. These pressures are unlikely to relent in the future and need to be planned for to ensure the integrity of the SSSI.

The houseboats of Shoreham are part of the town's character, providing a unique type of housing. However, it is important to ensure that the natural environment of this part of the river is conserved and enhanced. Adur District Council has created Good Practice Guide.https://www.adur-worthing.gov.uk/media/Media,98768,smxx.pdf

In addition, within the National Planning Policy designates saltmarsh as an irreplaceable habitat and that development resulting in its loss or deterioration should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.

Development within the SSSI has inputted into coastal squeeze issues (Figure 14), these issues are seen when hard defences prevent natural roll back of habitats inline with sea level rise. The coastal habitats are unable to migrate landwards, leading to a loss of saltmarsh and mudflat, reducing extent and function. Working with natural process on the coast, is not only beneficial for nature but also for the local communities. Multiple benefits seen when working with nature include flood protection, carbon capture and connecting people with nature, making areas resilient to climate change.

Adur District council have created a guidance note for applicants within Adur that have developments that have the potential to cause significant impacts to intertidal habitats. These points cover the hierarchical approach of avoid-mitigate-compensate and highlighting that development will also have to demonstrate how it is addressing the loss of intertidal habitat as a result of the development causing coastal squeeze. Adur Guidance Note for Intertidal Habitats

Figure 13 Re-development downstream of the SSSI on the Adur Estuary

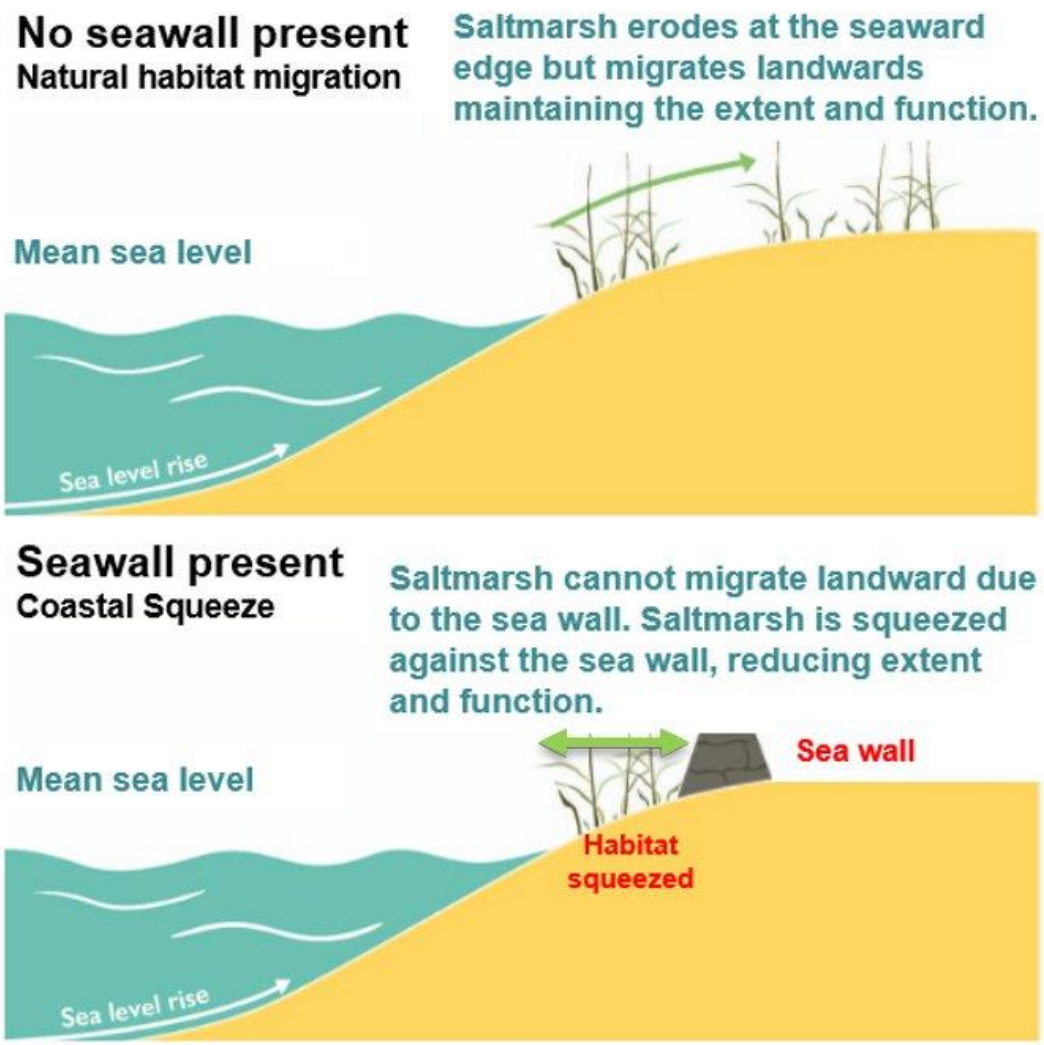


Figure 14 diagram which explains the impact of coastal squeeze.

4.4 Bait Digging

Bait digging can be a problem on the Adur Estuary and within the SSSI and, when the practice does not adhere to the Angling Trust Code of Conduct (Figure 15), e.g. reports have been made that the created holes are not always backfilled. This is recommended for safety reasons, as well as to maintain the intertidal habitat which is a feature of the SSSI. The key areas appear to be the right bank, where it is typically quieter, adjacent to Ricardo and up towards Cuckoo Corner, but it also occurs occasionally in other locations, such as on the sandy spit in the middle of the river at low tide opposite Panettoni Park.

EA signs have been placed to deter diggers on the flood bank (see Figure 16) in these locations.

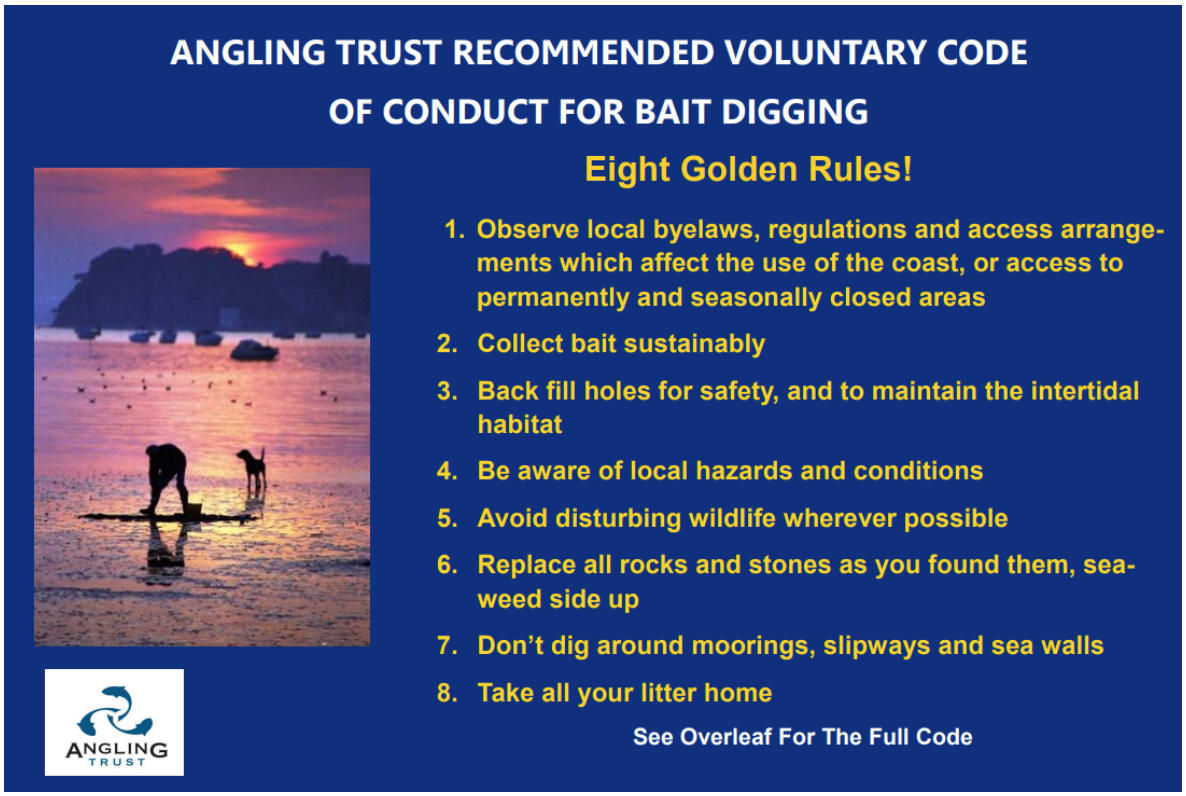


Figure 15 Copy of Angling Trust Code of conduct for bait digging Angling-Trust-Bait-Digging-Code-Of-Conduct-2012.pdf

Figure 16 An 'unofficial' bait digging prohibited sign on the right bank of the Adur aimed at risk of damaging the flood bank.

4.5 Water Quality

The Adur Water Body is currently classified as being in 'Moderate' condition (Environment Agency, 2023) with it failing under Chemical status due to high concentrations of Polybrominated diphenyl ethers and Mercury and its compounds. These levels are likely due to legacy issues as measures have been taken to address the origins of these pollutants, however, it will take time for the levels of these compounds in the estuary to reduce (Environment Agency, 2019a; 2019b). Dissolved Inorganic Nitrogen contributes to the 'Moderate' status classification of the Estuary, but investigations of this issue have shown there is not a problem (Environment Agency, 2023).

Water Quality, in this case bathing quality monitoring, is undertaken monthly by Adur and Worthing Councils to estimate the quality of the water in the estuary. As there is no guidance on classifying water quality in transitional waters, the council have used the bathing quality monitoring method instead (Adur and Worthing Councils, 2023). The data shows there are no current water quality issues within the estuary, and this is confirmed by Surfers against Sewage (2024) who, at the time of writing, show no water quality alerts in place at a location near the Adur Ferry Bridge.

4.6 Further information required

As water quality was not directly assessed for this report, it is noted that further investigation is needed to determine the status of the estuary.

5 Management

5.1 Management suggestions for the SSSI (Figure 17)

1. To protect the habitats on the estuary from further encroachment, avoiding coastal squeeze.
2. Ensure development proposals fully assess their impact directly on the habitats within the SSSI as well as those that will cause indirect impacts, such as a requirement for new infrastructure to permit development that will impact upon the designation.
3. To remain vigilant and proactive in identifying invasive non-native species in the estuary and where appropriate controlling them as rapidly as possible with ongoing monitoring to ensure there is no recurrence of any infestations.
4. To continue with water quality monitoring on the estuary and participate in addressing issues when they become apparent.
5. To raise awareness with the public about the SSSI and its interest features to increase understanding of the fragility of the habitats present.
6. To encourage change to adverse behaviours via events and community liaison opportunities.
7. To work with water sports governing bodies and local groups to raise awareness and alter adverse behaviours within the estuary.
8. To investigate the development of clearly signposted locations for the setup of water sports to facilitate formal access to the channel at high tide.
9. To work with anglers and governing bodies to reduce impacts from bait-digging and angling within the SSSI.

5.2 Supporting Objectives

10. Consider the expansion of the SSSI to include supporting habitat on suitable land surrounding the estuary to create roosting and wintering areas for SSSI birds.
11. Liaise with land managers to formulate management agreements for land that can be managed to support the interest features of the site and potentially be designated.

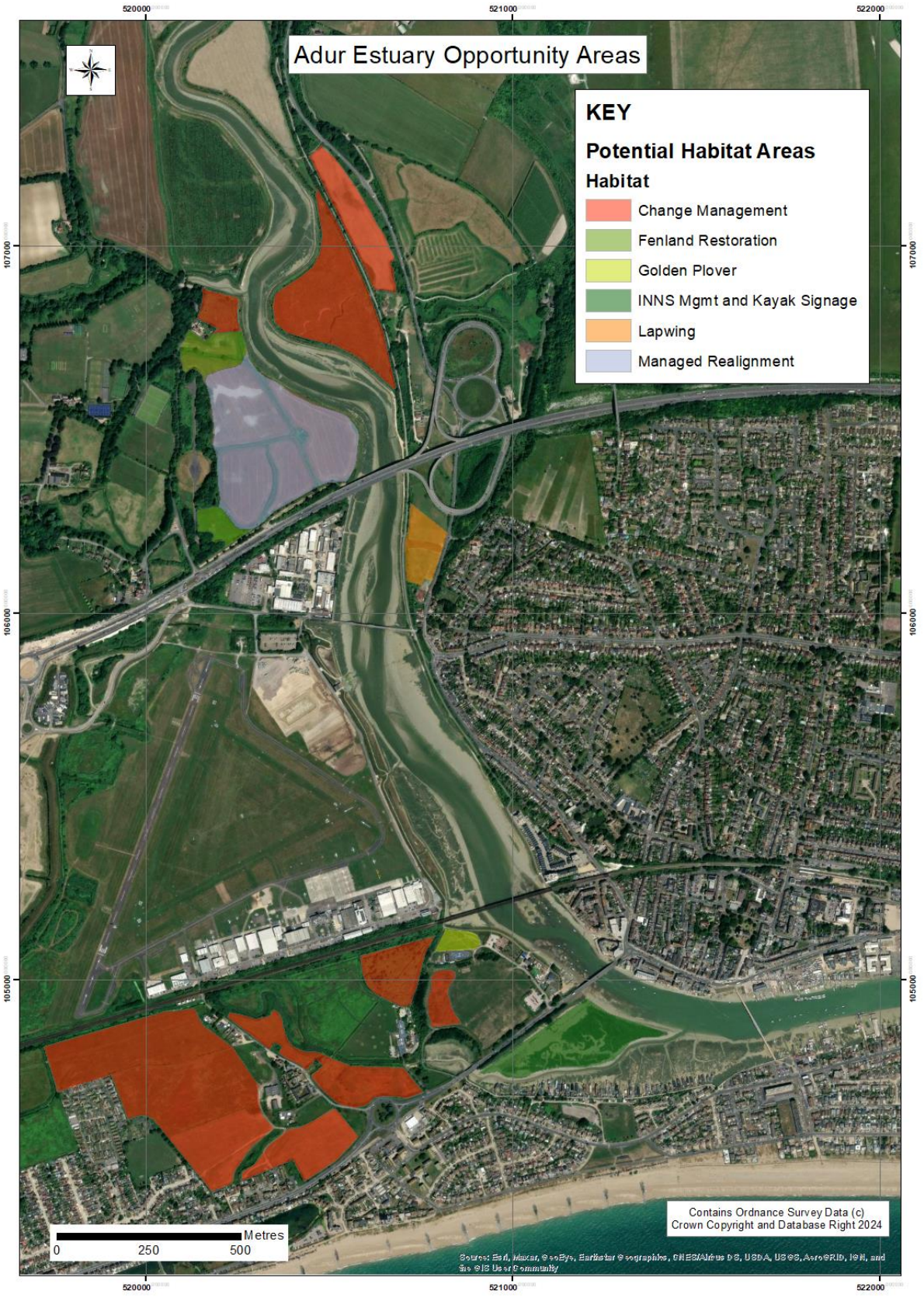


Figure 17 Potential Habitat Creation opportunities around the SSSI. *Please note that these are only possible opportunities for habitat creation and have not been actively discussed with landowners.*

5.3 Proposals

5.3.1 Development

There is a need to work with the Local Planning Authorities (LPA), who understand the issues surrounding the estuary, including the locations of sensitive areas both within and outside of the SSSI. Natural England, as Statutory Consultees, are consulted on any development proposal with the potential to affect the SSSI, including Local Plans and all statutory bodies have a legal duty to consider biodiversity and whether any proposal may have the potential to adversely affect the site, either alone or in-combination with other projects. Overall, there is a need to work with the Local Authorities and work together on solutions to avoid and mitigate any impacts.

Adur Council are hoping to access funding to support the establishment of a capital project officer to deliver their Pad Farm saltmarsh scheme, which is currently at the feasibility stage. This project is part of the Adur River Recovery Project and is being advanced in its design and understanding of impacts and design considerations.

The Sussex Wildlife Trust (SWT) have also engaged with the Adur Local Plan process, where it highlighted the need for the SSSI and surrounding habitat to receive more recognition, in relation to direct and indirect impacts from development. The Adur Local Plan adopted in 2017 made a commitment to produce a Green Infrastructure SPD but as, yet this has not been fulfilled. With emerging strategies for nature being developed there could be scoped to consider how priorities emerging from the LNRS could be considered to improve condition of the associated habitats. The site should not be looked at in isolation, it should be recognised as part of the wider landscape and identify opportunities for the site to adapt with climate change both directly and in terms of supporting habitat, for example the Adur River Recovery Project.

The creation of the Local Nature Recovery Strategies (LNRS) which are a statutory requirement from the Environment Act 2021. That aims to protect the important places for nature, and identify the opportunities to restore or create it, where it can have the most benefit for wildlife and people. Local Nature Recovery Strategy is creating a Local Habitat Map, which will show where measures - achievable actions to deliver LNRS priorities - could be targeted to deliver greatest benefit. Sussex Nature Recovery | Sussex Nature Recovery

5.3.2 Invasive Non-Native Species (INNS)

Investigate the spread of Papenfuss within the estuary and understand the potential impacts of the species on the features of the SSSI. If needed, implement a plan to potentially remove current population and develop a programme of monitoring to detect the presence of any new populations. This should be planned in consultation with the Non-native Species Secretariat (NNSS) who can provide technical advice on the most efficacious method for the eradication of this species.

A vigilant approach to monitoring INNS should also be introduced along the estuary and tributaries to identify any recent colonists and, if they are found, to eradicate them before they can become established. Other than Papenfuss, the area is currently free of most of the most damaging INNS in the UK and it is imperative that it remains so.

A steering group of landowners and interested parties would enable a joined-up approach to monitoring and managing INNS within the SSSI.

5.3.3 Education

A collaborative and coordinated programme of education about the Adur Estuary and the SSSI needs to be implemented as soon as possible. This should include visits to local schools, in which there are some already engaged with the SSSI, and community groups and, potentially arranging school visits to the estuary to explain its features and the importance of preserving the estuary and its biodiversity. The Adur River Recovery partners have rolled out a public engagement programme in 2024 which could form the catalyst for this (Adur River Recovery, 2023).

This should be combined with visits by partners to local water sports and angling clubs to talk about the estuary and the need to reduce disturbance, particularly at certain times of the year, and how this can be of benefit to both the conservation of the estuary and, therefore, retain the beauty of the estuary that attracts people in the first place. Engaging with clubs to explain the sensitivity of the saltmarsh and its importance as a foraging area for young fish and explaining the impacts of disturbance on the wider biodiversity of the estuary.

Noticeboards and leaflets should be distributed aimed at encouraging dog walkers to keep dogs under close control when exercising and explaining why a loose dog 'just chasing the birds' is a serious matter. The use of repeated small signs along walkways asking dog owners to stay on the path and keep dogs under close control may also be a useful reinforcement of the need to keep off the saltmarshes. Liaison with the Dog's Trust, who also own land in the area, may be useful and they could help signpost people to other suitable exercise areas in the locality. Fencing of pressure points could also be considered in addition to the above, for example, on the left between the Oystercatcher Apartments (TQ 2098505464) and the Old Shoreham Bridge (TQ 2071705945), where there are two 2 parallel paths along the river: the official tarmac Downs Link path and an unofficial path right next to the river along the top of the saltmarsh. Such fencing does not need to be continuous but focussed on the entry points, where dogs and people gain access to the saltmarsh.

Additional signage could be beneficial across the site in areas currently missed with installed signage, such as, water sports users entering the site from the river. RSPB have installed marker buoys within the nature reserve.

5.3.4 Landing points

All water sports and boat users should be encouraged to use official launch points only as listed on the Adur and Worthing Website. Any new official location should be

agreed across all partners to ensure it is the most suitable place for the SSSI's features and water sports users to ensure it is fit for purpose. If there is a reach of river without official access, formalisation of a single access route to the water's edge should be considered. Any proposal for the addition of an official access points will require landowner permissions and SSSI Consent from Natural England.

Currently, Kayakers are directed to a small number of launch points, but wing-foilers are directed to a reach with no such point. All user groups should be encouraged to included warnings similar to that found on the Wingfoilguide website, with clear links to the official advice leaflets.

There is an overarching question regarding the compatibility of wing-foiling (and wind surfing) with the requirements of the SSSI and the species that depend on it. This is beyond the scope of this plan but, in order to understand the impacts, there is a need to fully appreciate how wing-foilers use the estuary; when, where and what times of the tide and season as well as what they require in order to enjoy the sport and reduce its environmental impact.

For wing-foilers there is currently an unofficial setting-up point at TQ2085805661 where, unfortunately, there has been some damage to the middle and upper saltmarsh, however, there is a metalled area 75m upstream at TQ2082805718 that could be used for setting-up instead, although there is currently no access across the saltmarsh at this point. A new, dedicated access could be created at this point with the current informal access point discouraged. A new national body for wind-foilers is currently being formed; liaison with this body needs to be initiated as soon as it is place.

In order to support the above initiatives, it should be investigated the need for either new, or confirmation on existing areas for official access points. The potential locations of these needs to be determined by the partners and fully understood if suitable within the SSSI and any effect on the features.

If taken forward they should be as near as possible to the most favoured current informal access locations, to limit introducing addition access areas. This is particularly relevant for the reach between the Old Shoreham Bridge and the Railway flyover where wing-foil users are currently directed and there are no formal slipways or launching points. However, this needs to be looked at very carefully, as there is limited saltmarsh which needs to be conserved, and risks in official set up points discussed, e.g. area spill over.

Figure 18 Unofficially access point near the Adur Flyover showing a raised path to the channel.

5.3.4 Dogs on leads

There is a Public Spaces Protection Order (PSPO) in force until 21st December 2025 that limits access by dogs off the lead to land within the Adur and Worthing Councils' area, however, it does not cover the riverbanks along the estuary north of the Norfolk Bridge. The public is consulted on PSPOs, therefore, there is an opportunity to extend this order to restrict dogs off lead along the estuary banks north of the SSSI, covering the SSSI in 2025.

There are also Byelaws for the LNRs at Lancing Ring and Mill Hill. These bylaws do not allow Bringing into, or permitting to remain within the Reserve, any dog, unless it is kept on a lead or effectively restrained from worrying or disturbing any animal or bird. These bylaws could be used as a template for a similar bylaw covering the Adur Estuary SSSI.

The provision of dog exercise areas away from the river could be explored with the Council to provide alternative locations to allow dogs to run off the lead.

5.3.5 Public footpath

A potential option to allow more space for walkers and the exercising of dogs is to make footpaths wider (Adur River Recovery, 2023) to permit the separation of

cyclists and other footpath users. Contributors also raised the requirement to slow cyclists down, as the existing speeds on the footpaths, especially North of the Old Shoreham Bridge, encourage people to walk on the saltmarsh if dogs are off lead.

This needs to be combined with an education campaign to raise awareness of shared spaces generally and the need to promote good conduct amongst their users.

5.3.6 Water Quality

Continue with the current monitoring plan and expand this into areas where there are obvious problems, such as near the houseboats, and if necessary, consider introducing measures to reduce pollutant levels if they show a negative trend or are currently in excess of maximum discharge limits. The Environment Agency should liaise with Adur and Worthing Councils to introduce a full suite of chemical testing in the same locations that the council currently test, specifically:

- Old Shoreham Toll Bridge
- Adur Ferry Bridge
- Norfolk Bridge
- from the channel to the west of Adur Recreation Ground

The council only test for bacteriological contamination and this needs to be extended for WFD monitoring purposes as no monitoring for priority hazardous substances is currently being carried in the transitional waters of the estuary. By working together, the council and the EA can carry out the testing at the same time and place, saving manpower resources.

5.3.7 Pad Farm

The northern fields at Pad Farm (Figure 19), Areas 6 and 7 in Figure 5 7, outside the current managed realignment boundary (Area 5) could be converted to floodplain meadows; one through management and one through the reversion of the present arable regime to one of permanent grassland supplemented by the blocking of field drains. Plans for this 12.16ha area have already been outlined in (JBA Consulting, 2022) and will not be covered here. However, it is important that the realignment scheme proposals dovetail with those for the land near Pad Farm and across the estuary on the east bank.

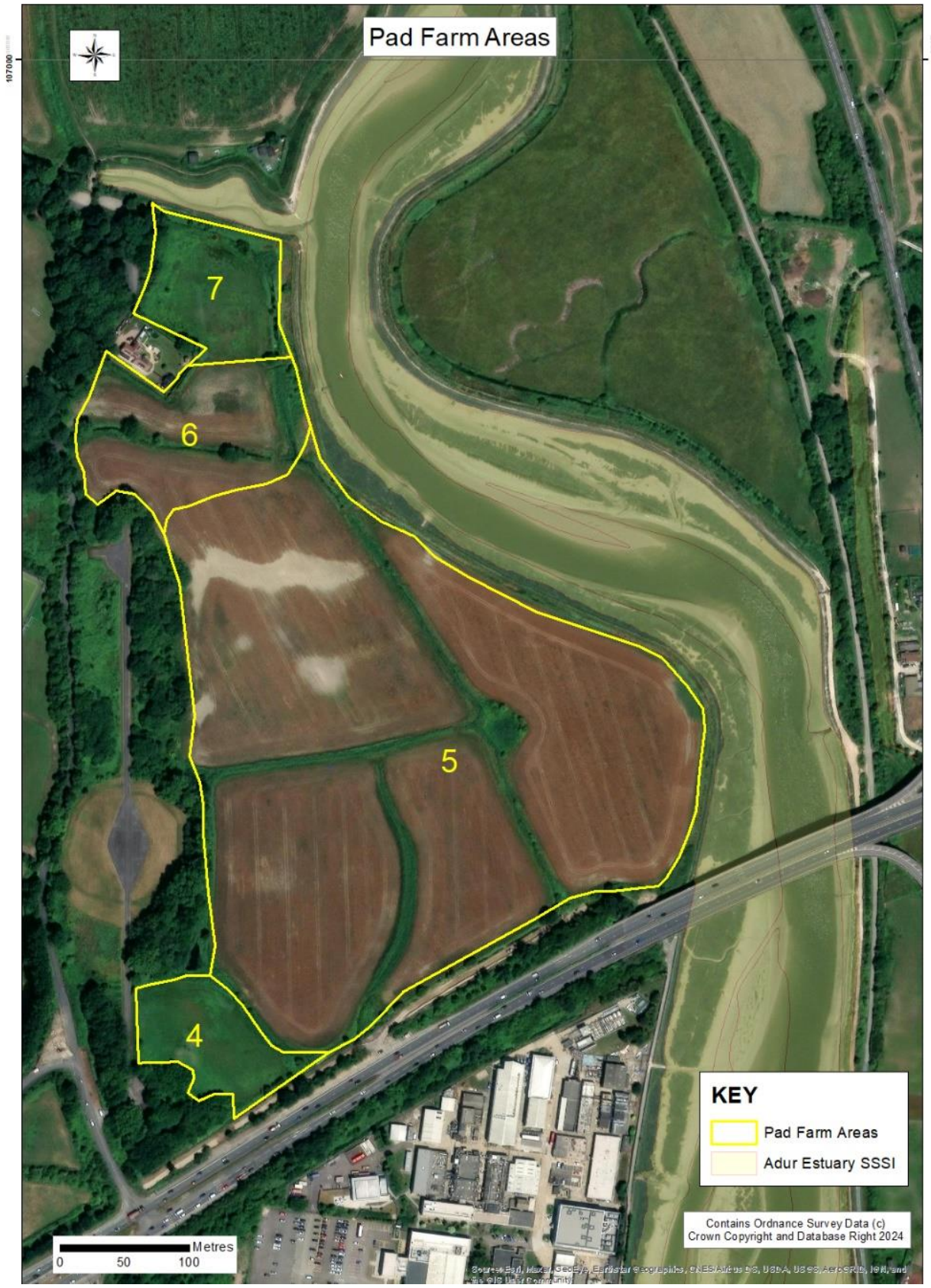


Figure 19 Potential Pad Farm Habitat Management and Creation Areas

5.3.9 New Salts Farm

Outline plans for this 18.12ha area have already been costed up for this location, within a larger area (Clarke, 2022) and will not be covered further here. However, again, it is important that the scheme proposals act in synergy with those for the rest of the estuary and its environs.

5.3.10 Angling

There is an ongoing need to work with angling associations to understand their requirements and ensure anglers are aware of the SSSI and the potential issues that can arise from their sport and how these can be mitigated.

5.3.11 Bait Digging

Bait digging should, if possible, be restricted to the areas of the estuary outside the SSSI or in agreed locations and times, ensuring it is practised in accordance with the Angling Trust Code of Conduct. Bait digging should ideally be carried out using a bait pump, especially if bait is being collected from within the SSSI. This causes minimal damage, apart from footsteps and leaves the rest of the sub-surface fauna in situ. Where holes are dug, they should be backfilled. In addition, consideration should be given to designating, in collaboration with anglers and bait-diggers, collecting/ no collecting zones which will allow foraging and roosting birds to benefit from undisturbed areas; these are critical during the winter months.

5.3.12 Tern Rafts

One option that has been proposed is the creation of 'Tern Islands' within the RSPB reserve in the Western Arm of the estuary (see Figure 20,21).

These could provide high tide roosts in even the highest tides for waders and gulls, rather like the mound at the northern point of the isolated saltmarsh near the Norfolk Bridge. This location (Scurvy Point) acts as such a refuge in even the highest tides, where birds are safe from predation by mammals.

Figure 20 Tern Raft Location Area and Scurvy Point

Figure 21 High Tide Roosting Point on the RSPB Reserve

5.3.13 Evidence Gathering and Monitoring

There are a number of questions surrounding the numbers of birds on the estuary and whether they are declining or not. Whilst there is data for some species, not all of the species have good datasets as they are covered within a wider survey area which are not specific enough or they have not been surveyed systematically. An estuary-specific agreed list of birds should be surveyed using an agreed survey system and these surveys should take place during all three survey periods within the year. This data as it is gathered will provide an accurate picture of bird numbers and their usage of the wider estuary and key locations. This will also help, as new habitat areas come online, to demonstrate how successful or otherwise in attracting birds and at what time of the year. Such evidence will also help with fine-tuning management requirements for each site.

As mentioned in Section 5.3.7 a programme of water quality monitoring should be implemented for the transitional waters of the estuary, and this should be done in conjunction with the current monthly bacteriological testing undertaken by Adur and Worthing Councils.

This Management Plan has mapped all of the areal habitats within the study area, including those within the SSSI, however, these have not been assessed for condition and neither have the linear habitats, such as drains and hedgerows. If changes in Habitat Management are being undertaken, then there is the potential that Biodiversity Net Gain can be used to help fund these as well as habitat creation

schemes. However, in order to quantify the baseline biodiversity credit value, condition assessment surveys will be required. There is also the possibility of using biodiversity offsetting from other development sites to fund habitat improvements within the study area. Some idea of the likely value of biodiversity gains can be gleaned from (Clarke, 2022).

Local Nature Recovery Strategies (LNRS) were introduced by the Government in 2023 with the aim of covering the whole of England with powers being delegated downwards to local authorities to produce plans by the end of March 2025. Worthing and Adur Council have joined forces with neighbouring councils and West Sussex County Council to produce the West Sussex LNRS. The strategy will be integrated into the planning system ensuring that areas where there is the greatest potential for realising nature recovery benefits will be more effectively considered in planning decisions.

5.3.3.1 Further information

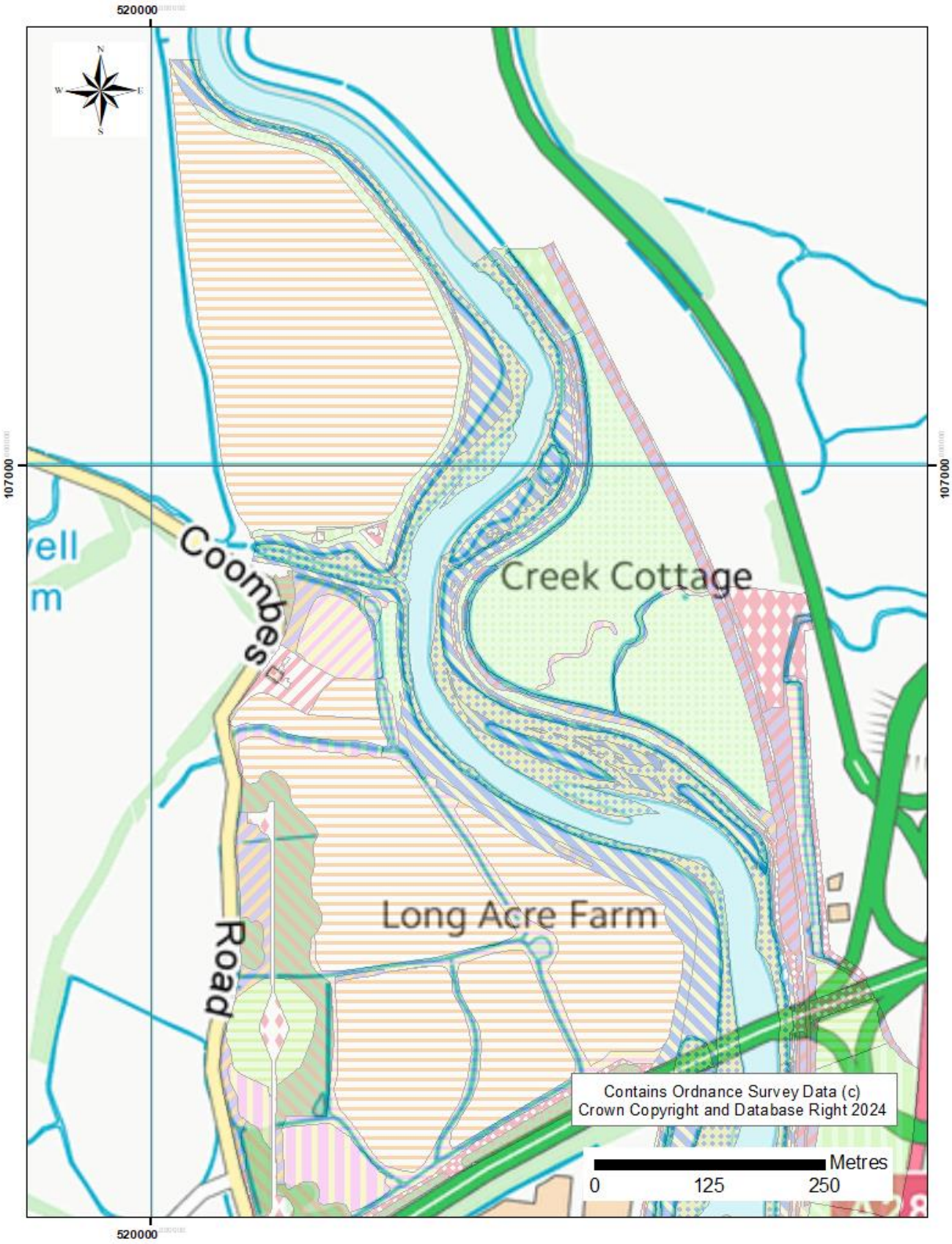
This report would benefit from mapping of the current community engagement.

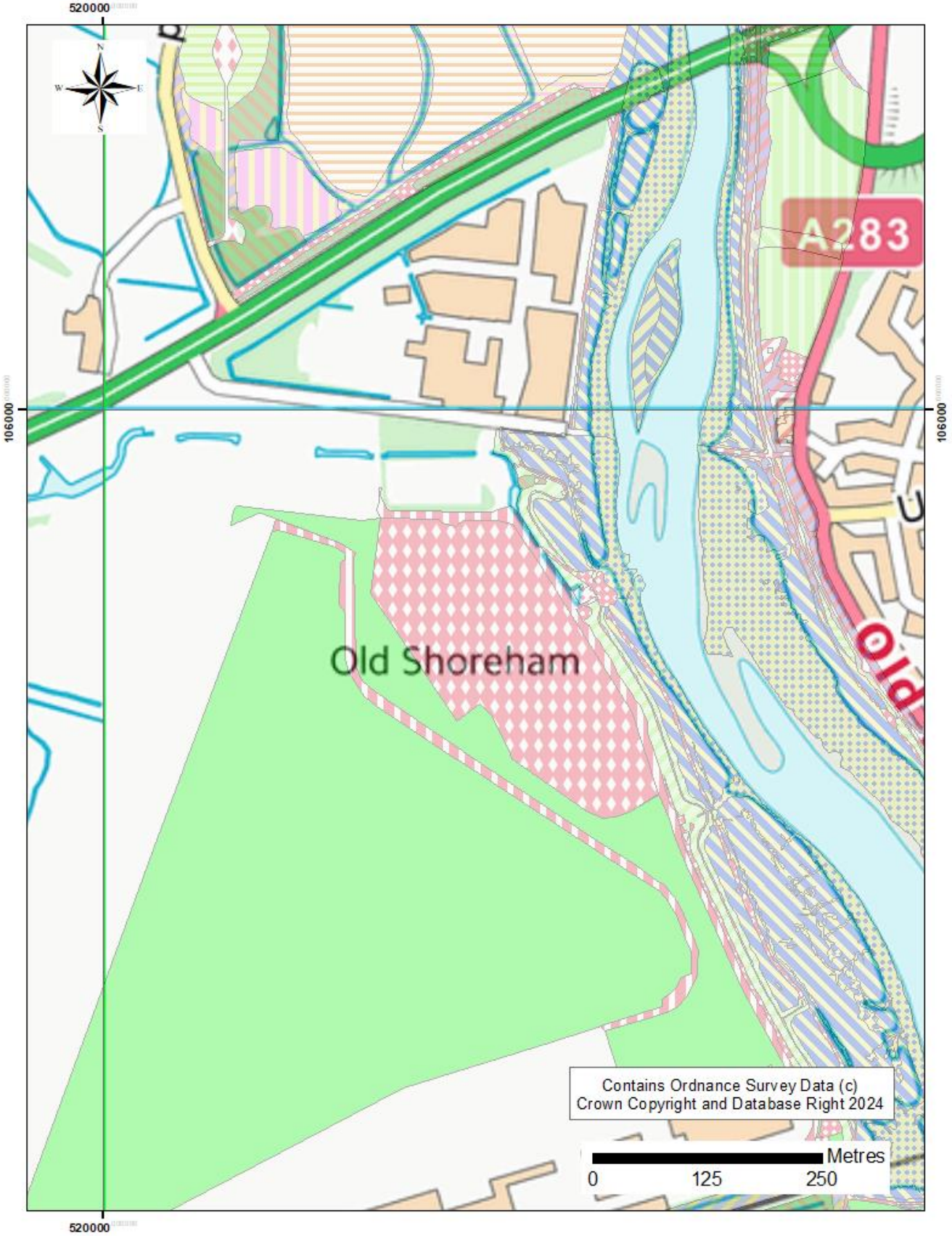
6 Appendix

A Site feature condition – (National England Designated Site View date 13/02/2026)

Habitat name	Assessment date	Assessment description	Comment	Adverse condition reasons
LITTORAL SEDIMENT	15/02/2021	Unfavourable - Declining	: A rapid SSSI assessment was carried out for this unit and the saltmarsh appears fragmented and degraded with no obvious transition zones. The EA's Tidal Walls scheme is nearly complete, but a new sluice is now being constructed on the west bank in connection to the development of the airport site. A new footpath has developed below the tidal walls at this point which has further degraded and fragmented the marsh. Recently, there have been increased numbers of reports of recreational water users and bait collectors trampling the marsh and disturbing the birdlife, especially during the Covid pandemic lock downs. Restoration work is planned further up the estuary and in relation to the Tidal walls scheme, therefore another assessment in two or three years is recommended to assess for any improvement in condition.	COASTAL - COASTAL SQUEEZE, PUBLIC ACCESS/DISTURBANCE - PUBLIC ACCESS/DISTURBANCE,
LITTORAL SEDIMENT	23/10/2008	Favourable	RE Intertidal sediments assessed 2008 by Brighton University. In summary study found faunal diversity and composition variable, but comparable with other estuarine sites on the south coast of England- 'it appears condition of the littoral sediment features is favourable'.(BERG, Uni of Brighton, 2009).RE sediment regime & Sea Level Rise: Based on research by Phill Teasdale (pers comm) despite some evidence of erosion at certain locations, in general the marshes surfaces seem to be accumulating sediment at the present time. Given that sea-levels are rising it might be the case that the Adur marshes are currently in a transition period and in light of the fact that the lower estuary is heavily influenced by coastal defence measures etc. coastal squeeze may become a more significant problem in the near future.	
FEN, MARSH AND SWAMP - Lowland	09/03/2021	Unfavourable - Declining	The reedbed is separated from the estuary itself by a wide footpath. It is very overgrown and appears to have been reprofiled with loose soil evident.	LACK OF CORRECTIVE WORKS - INAPPROPRIATE SCRUB CONTROL, PUBLIC ACCESS/DISTURBANCE - PUBLIC ACCESS/DISTURBANCE,
LITTORAL SEDIMENT	15/02/2021	Unfavourable - Declining	A rapid SSSI assessment was carried out for this unit and the saltmarsh appears fragmented and degraded with no obvious transition zones. Coastal defence works on the east bank between the road bridge and the old Toll Bridge and increasing levels of trampling and disturbance due to recreation activities (both on and off the water) may have contributed to this decline. Small areas of Spartina spp. were observed on the east bank as far up as the Toll Bridge.	COASTAL - COASTAL SQUEEZE, PUBLIC ACCESS/DISTURBANCE - PUBLIC ACCESS/DISTURBANCE,

B JBA UKHabs Maps

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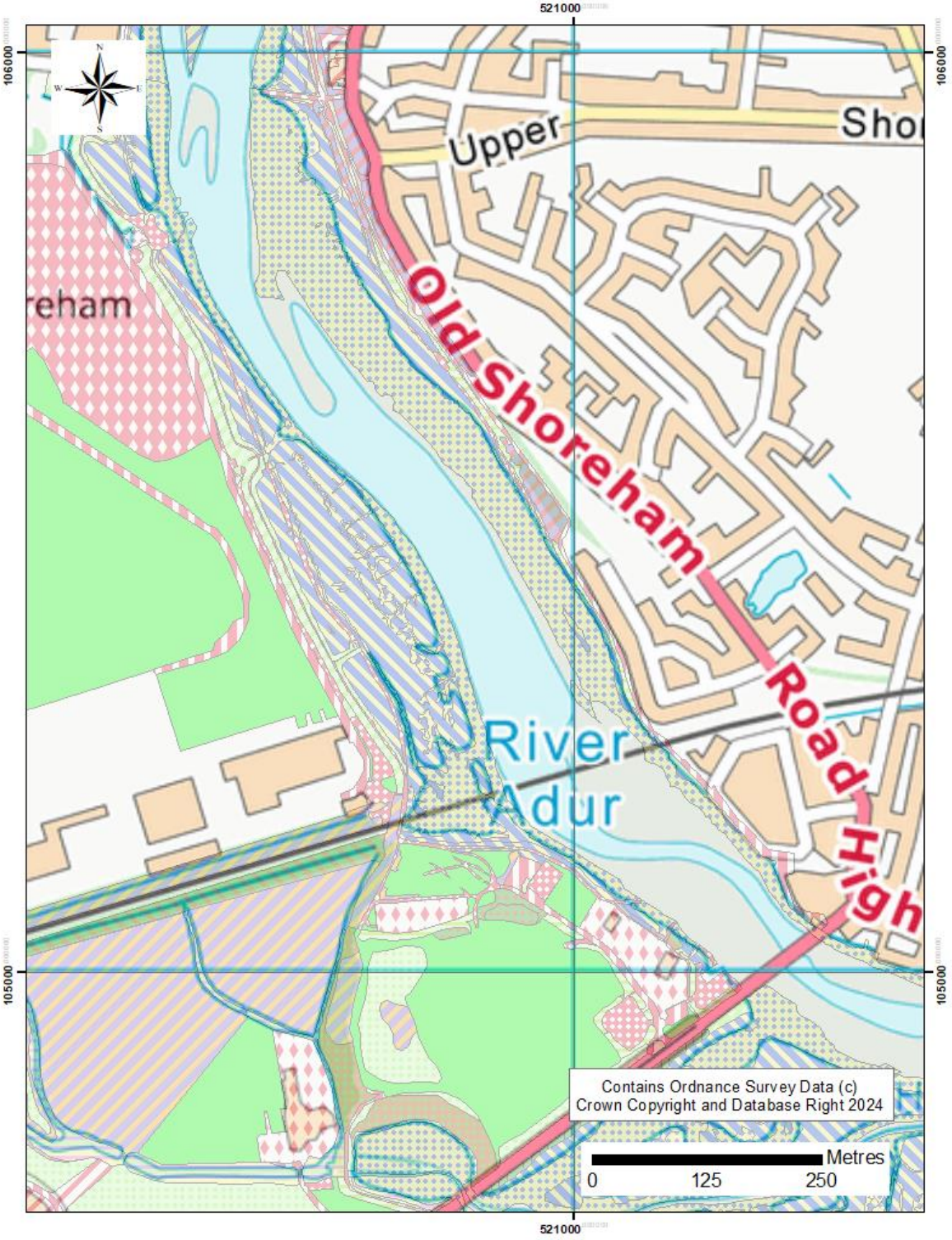
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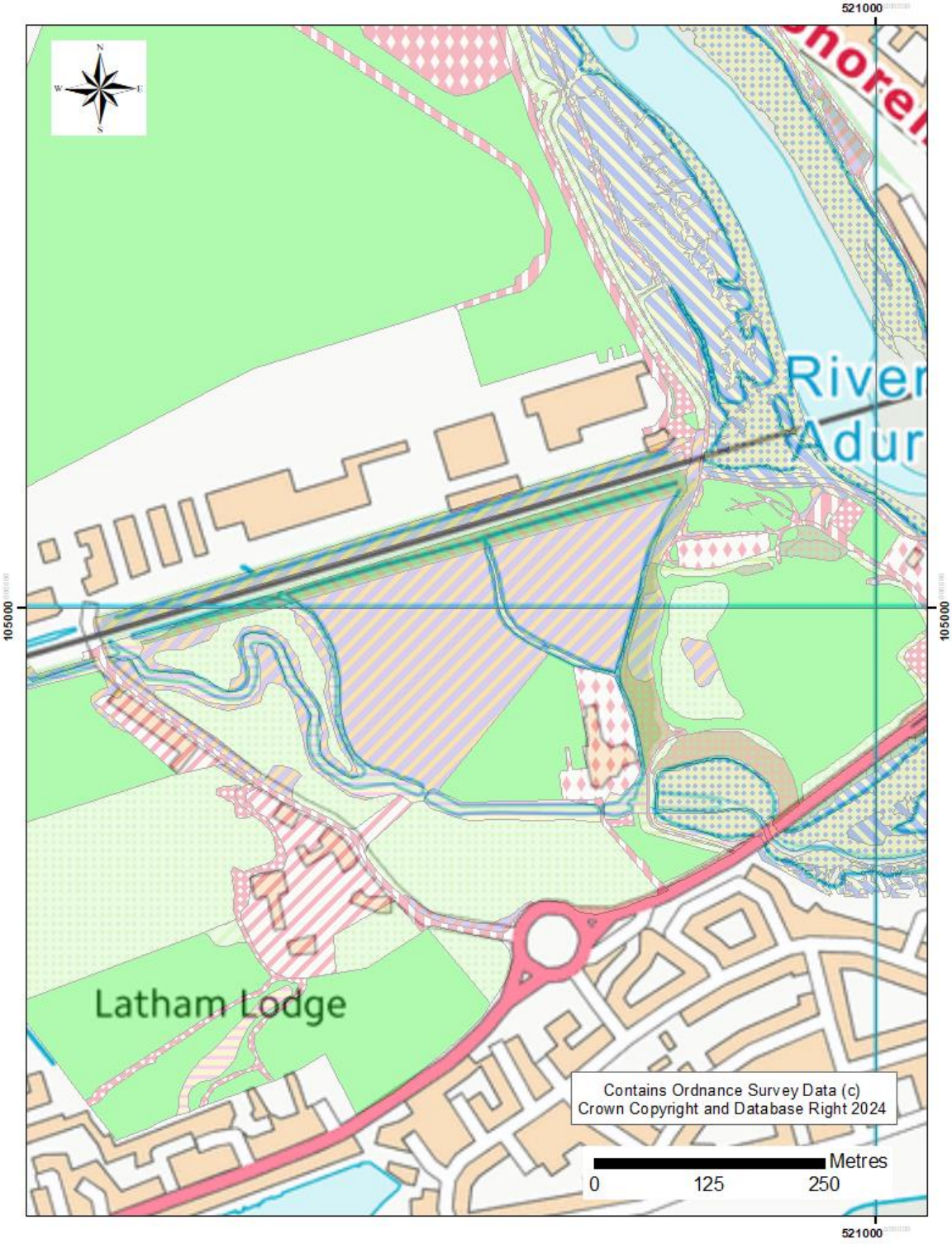
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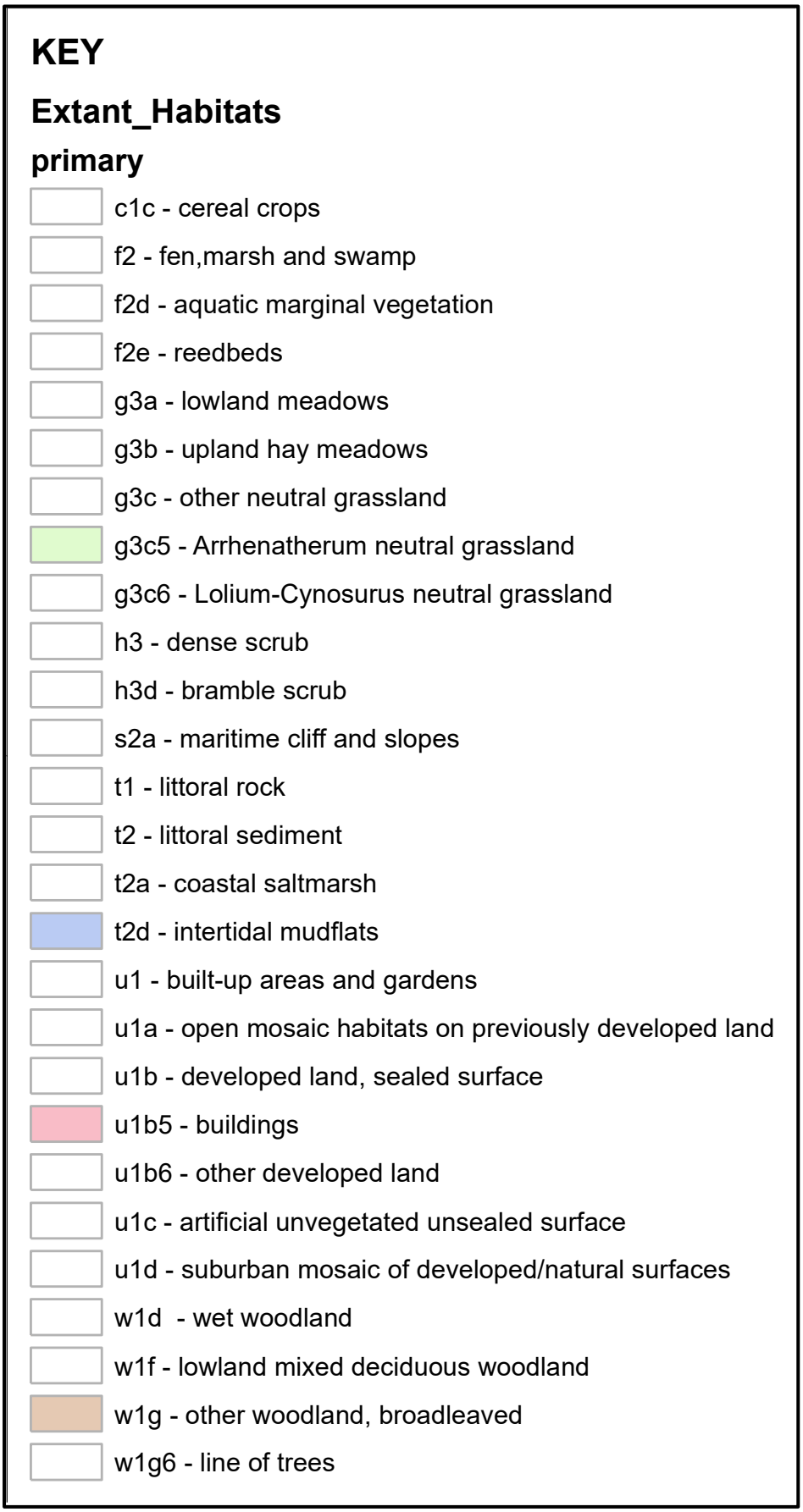
B.1 UKHabs Map Key



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