

Environmental Statement
CHAPTER 10 – Ornithology

Langstone FCERM Scheme

February 2025

Langstone FCERM Scheme Environmental Statement

Chapter 10

Ornithology

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10. Ornithology

10.1 Introduction

This section provides an impact assessment of the proposed scheme on Ornithology. The impact assessment also details necessary mitigation and residual impacts to demonstrate the environmental acceptability of the scheme.

10.2 Key Legislation, Policy and Guidance Considerations

The ornithology impact assessment has been undertaken within the context of relevant planning, legislation and government policies and these are summarised in chapter 6.

10.3 Methodology and Approach to EIA

The 'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine' (CIEEM, 2018) have been used as a basis for the ornithology impact assessment. In accordance with these guidelines the key elements of the Ecological Impact Assessment (EclA) process are as follows:

- **Establishing the baseline** – Collecting information and describing the ornithological interest in the absence of the proposed scheme, to inform the assessment of impacts.
- **Identifying important ecological features** – Identifying important ornithological features (habitats, species and ecosystems) that may be affected, with reference to a geographical context in which they are considered important.
- **Impact assessment** – An assessment of whether important ornithological features will be subject to impacts from all relevant phases of the proposed scheme (e.g. construction and operation), and the characterisation of these impacts and their effects.
- **Mitigation, compensation and enhancement** – Incorporation of measures to avoid, prevent, reduce and compensate potential negative ornithological impacts and their effects, and the provision of ornithological enhancements to ensure biodiversity net gain. Review of mitigation and assessment of the significance of residual effects, including cumulative effects.
- **Implications for decision making** – Consideration of the legal and policy framework throughout the process.

10.3.1 Establishing the baseline

A desk-based study was undertaken to describe the existing ornithology of the Langstone FCERM Scheme. This included a review of information available on the habitats and species present within the study area using the following sources:

- Langstone FCERM Scheme Environmental Scoping Report (Coastal Partners, 2020);
- The Scoping Opinions from Havant Borough Council (HBC) and the associated consultee responses;
- Langstone FCERM Scheme Preliminary Ecological Appraisal (PEA) (Coastal Partners, 2020);
- Phase 2 surveys for over-wintering and breeding birds;

- Solent Waders and Brent Goose Strategy data (2020);
- Seabird Monitoring Programme (JNCC) (2023)
- Birds of Conservation Concern (BOCC5) (2021)
- Natural England information on the Designated Sites System, including the Multi-Agency Geographic Information for the Countryside (MAGIC) map and website (www.magic.gov.uk); and
- Hampshire Biodiversity Information Centre (HBIC) biological records to summarise information on existing notable and protected species records within and surrounding (2km buffer zone) the project area.

10.3.2 Determination of important ornithological receptors

In order to determine the potential significance of an ecological impact, it is first necessary to identify whether an ecological receptor within the zone of influence is sufficiently ‘important’ for a significant impact upon it to be material in decision making. This information is summarised in **Section 8.3.2** and **Table 8.1 (Chapter 8 – Marine Ecology)**. The results of the ornithological valuation process for the Langstone FCERM Scheme are presented in **Section 10.6** and **Section 10.7**.

10.3.3 Assessment criteria and assignment of significance

Potential ornithological impacts arising as a result of the proposed development are described in **Section 10.6** and **Section 10.7** for all features of ecological importance with reference to characteristics such as the likelihood, extent, magnitude, duration, frequency, timing and reversibility. The definitions of magnitude used within this chapter of the ES are defined in **Table 8.2 (Chapter 8 – Marine Ecology)**.

The interaction of the magnitude of an impact with the value (which mirrors the importance categories) (**Chapter 8 – Marine Ecology**) and the sensitivity of the receptor determines the significance of effects. The value and sensitivity of a receptor must therefore first be combined. The matrix used to combine these categories is shown in **Table 8.3 (Chapter 8 – Marine Ecology)**. In order to ensure that the worst-case scenario is assessed, where the sensitivity of a habitat or species varies due to different effects from a single impact/activity, the highest level of sensitivity will be applied within the matrix.

The value-sensitivity category has then been applied to the matrix in **Table 8.4 (Chapter 8 – Marine Ecology)** to be used for the assessment of significance. For the purposes of the ornithological impact assessment, an effect that is of major or moderate significance is considered to be significant in EIA terms whether adverse or beneficial. Any effect that is assessed as minor or negligible is not significant.

10.4 Baseline Conditions

The coastal environment in Chichester and Langstone Harbour provides supporting habitat for a number of important species of bird. Habitats include extensive mudflats, sandflats and associated saltmarshes, eelgrass beds, coastal grazing marsh and shingle ridges and islands. These habitats support internationally and nationally important numbers of overwintering and breeding bird species.

10.4.1 International and national importance

Chichester and Langstone Harbours SPA covers the full extent of Chichester Harbour and lies adjacent to or within close proximity to the Langstone FCERM Scheme frontages (**Figure 10.1**). During the breeding season, the area regularly supports Little Tern (*Sterna albifrons*), Common Tern (*Sterna hirundo*) and Sandwich Tern (*Sterna sandvicensis*). Over winter, the area frequently supports Bar-tailed Godwit (*Limosa lapponica*) Pintail (*Anas acuta*), Shoveler (*Anas clypeata*), Teal (*Anas crecca*), Wigeon (*Anas penelope*), Turnstone (*Arenaria interpres*), Sanderling (*Calidris alba*), Dunlin (*Calidris alpina*), Ringed plover (*Charadrius hiaticula*), Red-breasted Merganser (*Mergus serrator*), Curlew (*Numenius arquata*), Grey Plover (*Pluvialis squatarola*), Shelduck (*Tadorna tadorna*), Redshank (*Tringa tetanus*), Black-tailed godwit (*Limosa limosa*) and Dark-bellied Brent goose (*Branta bernicla bernicla*). This SPA is also a designated Ramsar site due to the wetland habitats within the boundary and the significant large number of waterbirds and overwintering birds it supports. The eelgrass beds (consisting of both *Zostera noltii* and *Zostera marina*) cover more than 300 ha of the Chichester and Langstone Harbours SPA and Ramsar site. These eelgrass beds are an important food source for dark-bellied Brent geese (*Branta bernicla bernicla*), (Marsden and Chesworth, 2014).

The Chichester and Langstone Harbours IBA covers the same area, an **Important Bird and Biodiversity Area (IBA)** is an area identified using an internationally agreed set of criteria as being globally important for the conservation of bird populations.

The Solent and Dorset Coast SPA (which lies 4.7km to the West and 6km to the South of the Langstone FCERM Scheme) is approximately 89,078 ha and extends from the Isle of Purbeck in the West to Bognor Regis in the East. The site encompasses shallow coastal waters that are important foraging areas for breeding terns from colonies within the adjacent, existing SPAs (i.e. Poole Harbour SPA, Solent and Southampton Water SPA, Chichester and Langstone Harbours SPA and Pagham Harbour SPA). The qualifying bird species of the SPA are Common Tern (*Sterna hirundo*) Little Tern (*Sternula albifrons*) and Sandwich Tern (*Sterna sandvicensis*).

Portsmouth Harbour SPA covers the extent of Portsmouth Harbour and lies 6.5km to the west to the Langstone FCERM frontage. It supports internationally important populations of overwintering Dark-bellied Brent Goose (*Branta bernicla bernicla*), Red-breasted Merganser (*Mergus serrator*), Black-tailed Godwit (*Limosa limosa islandica*) and Dunlin (*Calidris alpina*). This area is also designated as a Ramsar site, due to the numbers of birds it supports and an Important Bird Area (IBA). Dark-bellied Brent geese are also known to feed in surrounding fields and agricultural areas.

Chichester Harbour SSSI's intertidal mudflats are the feeding grounds of ringed plover, grey plover, redshank, black-tailed godwit, dunlin, sanderling, curlew and greenshank. Amongst the wildfowl, shelduck, teal and dark-bellied brent goose are present with the latter constituting 5% or more of the world population. Areas of unimproved permanent pasture (coastal grazing marsh) behind the sea wall provides alternative feeding sites for the geese and major high tide wader roosts.

Langstone Harbour SSSI supports overwintering Dunlin (*Calidris alpina*), Dark-bellied Brent Goose (*Branta bernicla bernicla*) and Shelduck (*Tadorna tadorna*) and on-passage Grey

Plover (*Pluvialis squatarola*), Black-tailed Godwit (*Limosa limosa*), Redshank (*Tringa totanus*) and Ringed plover (*Charadrius hiaticula*). This covers the general area of the Chichester and Langstone Harbours SPA.

Portsmouth Harbour SSSI supports a number of wetland birds, particularly waders and wildfowl. These include Dark-bellied Brent Goose (*Branta bernicla bernicla*), Wigeon (*Anas penelope*), Grey Plover (*Pluvialis squatarola*), Black-tailed Godwit (*Limosa limosa*) and Dunlin (*Calidris alpina*). The total numbers of waders and wildfowl present has at times exceeded 20,000. This covers the same general area as the Portsmouth Harbour SPA



Figure 10.1: International and European designated sites within and adjacent to the Langstone FCERM scheme.

10.4.2 Overwintering bird surveys

Table 10.1 presents total numbers of waterbirds counted during WeBS Core counts (monthly counts during the high water period) counted within each of the harbours (Chichester Harbour,

Langstone Harbour and Portsmouth Harbour) from 2017/18 to 2021/22. These counts were undertaken within the harbours as part of the Wetland Bird Survey (WeBS). Numbers at all three harbours have broadly fluctuated over this period.

Table 10.1: Total number of waterbirds at SPAs from 2017/18 to 2021/22

Site	17/18	18/19	19/20	20/21	21/22	5 yr Av
Chichester Harbour	47,601	39,062	33,858	33,134	36,941	38,079
Langstone Harbour	25,775	24,324	25,745	22,907	26,429	25,113
Portsmouth Harbour	6,318	11,025	7,872	13,642	13,668	10,505

10.4.3 Daytime Over-wintering bird surveys

Field surveys were conducted every month from September to March in 2020-21 and 2021-22 at both high and low tides, although no low tide count took place in March 2021. Surveyors walked a repeated transect along the shore on the north and south sides of the Langstone Road bridge onto Hayling Island. Surveyors recorded species present, number of individuals, behaviour, and plotted the approximate location of each flock on a map (see **Figure 10.2**). In addition, seven nocturnal visits were made over the two winters. All surveyors were experienced ornithologists.

In total, forty-one species were recorded at the study site. This included a number of species as well as 13 wildfowl, 13 waders and six gulls species. Two species (Mandarin and Coot) were only recorded on the Mill Pond. Twenty-eight of these are Birds of Conservation Concern (BoCC4) and are listed below in **Table 10.2**.

Table 10.2: Species observed during surveys and BoCC4 status

Species	BoCC4 status
Lapwing	Red
Whimbrel	Red
Curlew	Red
Ringed Plover	Red
Herring Gull	Red
Mute Swan	Amber
Brent Goose	Amber
Shelduck	Amber
Wigeon	Amber
Gadwall	Amber
Teal	Amber
Mallard	Amber
Pintail	Amber
Goldeneye	Amber
Avocet	Amber
Oystercatcher	Amber
Grey Plover	Amber
Turnstone	Amber
Knot	Amber
Dunlin	Amber
Greenshank	Amber
Redshank	Amber

Species	BoCC4 status
Black-headed Gull	Amber
Mediterranean Gull	Amber
Common Gull	Amber
Lesser Black-backed Gull	Amber
Greater Black-backed Gull	Amber
Kingfisher	Amber

Survey area and transect route for over-wintering birds surveys

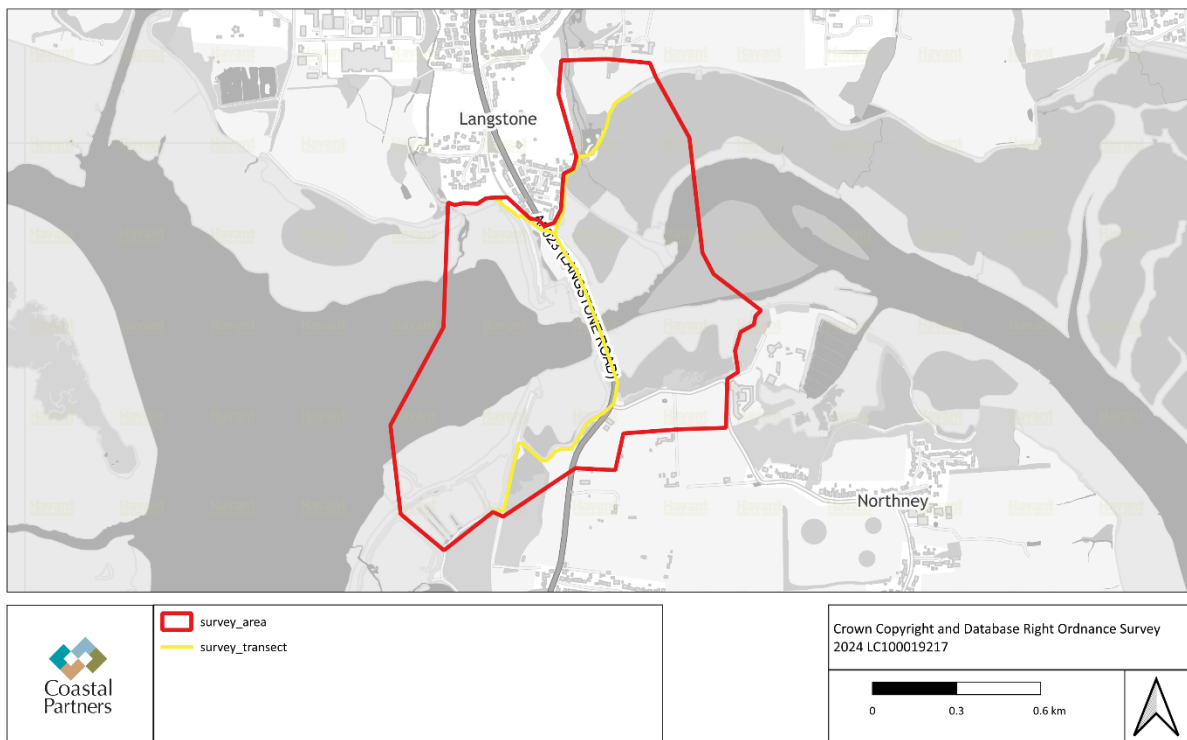


Figure 10.2: Survey area for daytime over-wintering bird surveys

The survey area for open areas extends out to approximately 500m which is considered the range that most relevant bird species will be identifiable by a competent ornithologist with suitable equipment. The transect route is approximate, surveyors were free to move off the route to enable a better vantage point to observe the survey area.

For wildfowl species, most records referred to birds feeding (71%) with 24% recorded as loafing or swimming (the remaining were generally not recorded). At both high and low tide, Brent Goose was the most numerous wildfowl and the only species to register three-figure counts on more than two dates.

For wader species, most records were of feeding birds (89%) with 11% recorded as roosting. Of the roosting records, 89% were high tide and 11% low. Dunlin was the most numerous species with six three-figure counts between Dec and Feb 2020-21 (peak 530, Jan '21 low tide) and eight between Nov and Mar 2021-22 (peak 1390, Feb low tide). There were also three-figure counts for Oystercatcher, Grey Plover and Redshank

Data from the daytime surveys has been analysed against distance buffers from the proposed works, with buffers set at 25m out to 100m, 100m out to 300m and a final buffer out to 500m, where there is unlikely to be a realistic mechanism for disturbance from the proposed works. This approach was adopted to better understand the proximity of birds to the working area and to calculate the potential overlap with noise contours (see **Section 10.6.1**) that will be generated by the construction programme. The ‘heatmaps’ show total bird numbers recorded in each buffer across the survey series.

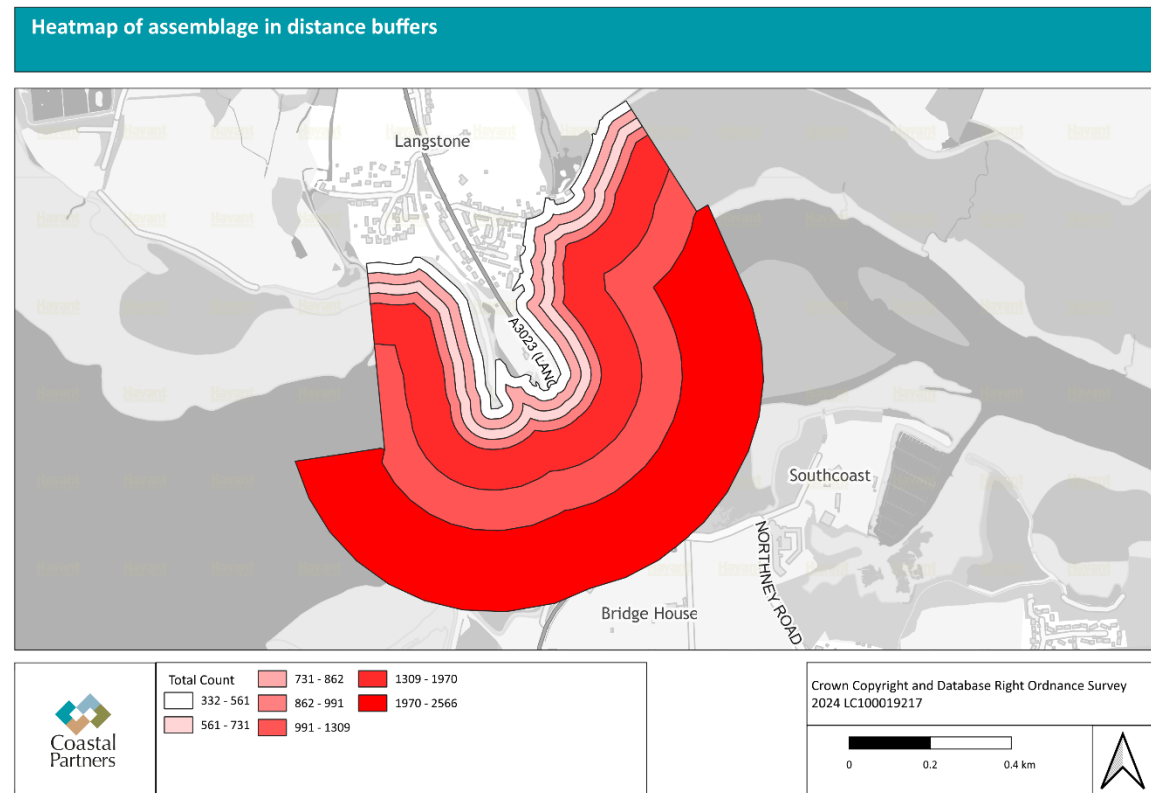


Figure 10.3: Heat map of SPA assemblage birds across survey period to distance buffers

As can be seen in **Figure 10.3**, whilst birds do use areas within 100m of the works, there are significantly lower numbers then further out. This is probably due to existing disturbance from the footpath network and additionally a high proportion of the 25m buffer zone on the eastern side of the scheme is not high quality foraging habitat, mostly being made up of coarse sediment used for vehicular access. This pattern is stronger for wader species (**Figure 10.4**) with a graduation of increasing use as you move away from the existing coastline.

Heatmap of wader species in distance buffers

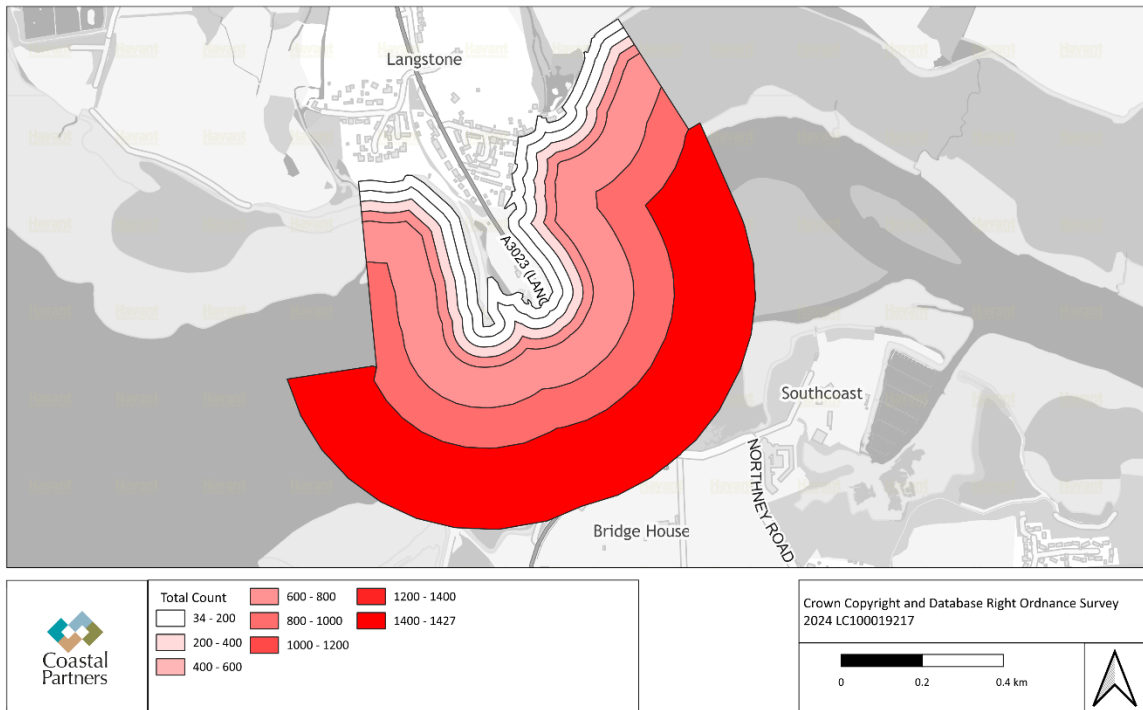


Figure 10.4: Heat map of SPA waders across survey period to distance buffers.

The pattern for SPA wildfowl species is a little different (**Figure 10.5**), whilst still showing reduced activity in the first 100m compared to further out, there are larger numbers of birds in the 25-50m buffer than might be expected. This is due to the propensity for brent geese and mute swans to tolerate closer encounters with human disturbance and these birds were regularly observed roosting at high tide and loafing/feeding at low tide in these close shore areas.

Heatmap of wildfowl species in distance buffers

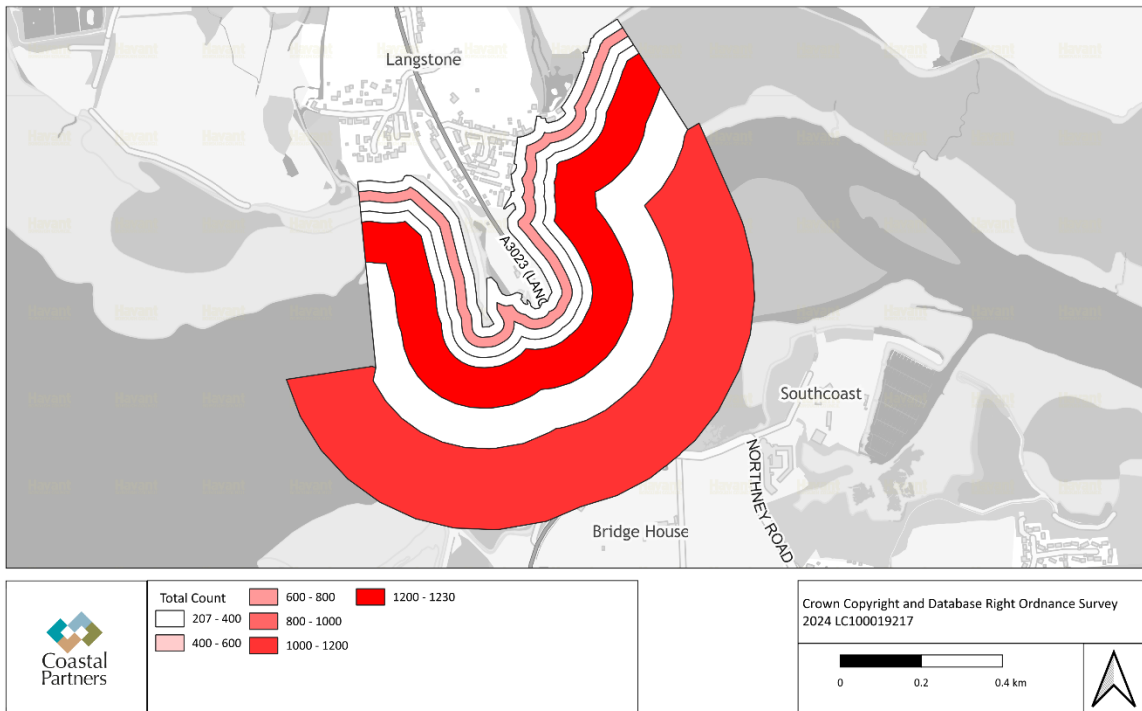


Figure 10.5: Heat map of SPA wildfowl across survey period to distance buffers.

There were similar numbers of birds observed at high and low tide across the survey area, with similar total numbers of birds seen at either tidal state (see **Figure 10.6**). The only significant difference being that at high tide states, more wildfowl species were present. This is due to the limited extent of suitable high-level wader roost areas within the study area and especially within the zone of influence of the proposal.

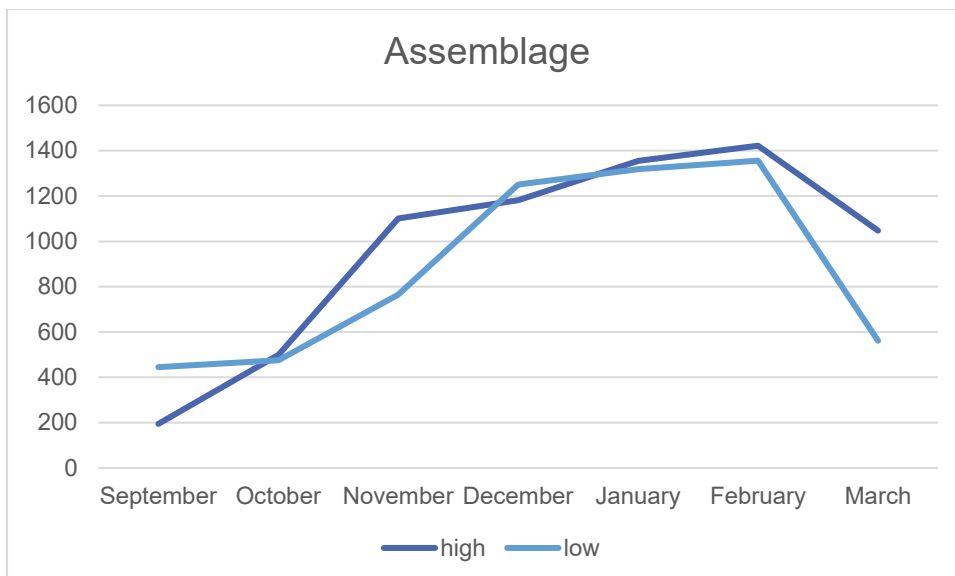


Figure 10.6: Graph of bird numbers in relation to month and tide state.

Seasonally, bird numbers in both years followed the expected pattern, with relatively low numbers observed in September and October, numbers increasing and remaining fairly stable through the winter and then rapidly dropping off in March.

10.4.4 Night-time Over-wintering bird surveys

To compliment the daytime surveys, a series of night surveys were undertaken in the winters of 2020-21 and 2021-22 (see **Table 10.3** and **Table 10.4**). The surveys were undertaken in pairs of low and high tide counts, undertaken in the early winter (November-December) and repeated in the late winter (February-March). Surveys covered a similar survey area to the daytime surveys (see **Figure 10.2**). Surveys were undertaken using a thermal imaging scope (Pulsar Helion XP50), with personnel experienced in undertaking nocturnal bird surveys using this equipment. There are limitations in observation distance and ability to distinguish species using this technology, however, all birds/heat-sources within range and line of sight of the observer will be detected, where possible unidentified birds/heat sources were approached closer to attempt to secure a positive identification. For an experienced observer and using calls and other behaviour it is often possible to identify birds to species level. Using this technology, detection efficiency will vary between species, with larger species detectable at longer distances and thereby skewing the results. Wildfowl species are in general larger than wader species and may therefore be disproportionately represented in the data set.

Table 10.3: Night surveys dates and weather metrics

Date	Start Time	End Time	Temp. Start (°C)	Temp. End (°C)	Cloud Cover (%)	Wind Direction	Wind Strength (KN)	Tide state
09/12/2020	18:00	19:00	7	7	40	SE	8	High
16/12/2020	17:00	18:00	10	10	80	S	16	Low
07/01/2021	17:30	18:30	1	0.5	100	N	5	High
01/03/2021	19:00	20:00	7.5	6.5	0	NE	9	Low
08/11/2021	18:30	19:30	12	12	80	SW	5	Low
29/11/2021	18:30	19:30	5	5	90	W	10	High
26/01/2022	17:30	18:30	7	7	0	W	12	High
02/02/2022	18:15	19:15	9	9	80	W	14	Low

The purpose of nighttime surveys is to compare the results with day surveys, gross differences in the numbers and species composition can indicate factors that are more or less prevalent in the day compared to the night. For example, this could include high levels of disturbance during the day, diurnal predators such as birds of prey or conspecific competition from diurnal species such as corvids.

Table 10.4: Night surveys combined totals

Survey	Assemblage	Wildfowl	Waders	Tide
Dec-20	540	475	48	high
Dec-20	279	139	101	low
Jan-21	273	233	10	high
Mar-21	224	206	4	low
Nov-21	294	252	12	high

Survey	Assemblage	Wildfowl	Waders	Tide
Nov-21	194	33	122	low
Jan-22	305	160	107	high
Feb-22	453	80	333	low

Results are broadly similar to daytime surveys with 15 species of bird identified, including 6 wader species and 6 wildfowl species. Some observations could only be identified to group level e.g. medium sized duck and small waders, it is however considered that these observations are likely to represent species identified during the survey.

The only species to be observed on all surveys was Little Egret which is due to the presence of a roost at Langstone Mill Pond, with peak of 34 observed. The most common species observed were Brent Geese with a peak of 400, the highest peak of waders was of 300 birds not positively identified but believed to be Black-tailed Godwits. Other frequently occurring species with reasonable numbers recorded include Wigeon with a peak of 20 and Dunlin with a peak of 50.

Lower numbers of waders were observed at high tide, as noted in the daytime surveys this is due to limited roosting opportunities for waders in the study area. There was no real pattern identified for the low tide counts in terms of numbers, however there was greater species diversity of wader species at low tide. Three species of waders, Oystercatcher, Curlew and Redshank were observed only at low tide, of which Redshank was observed on all four low tide counts.

On the whole the results are considered to mirror the findings of the daytime surveys and most differences can largely be explained by species or species groups behaviour rather than differences in certain factors between night and day, for example;

- Most wader species feed and roost based on tidal state rather than light level. Although species that rely on sight for foraging may have lower feeding efficiency at night. So moonlight and ambient light level will also affect activity levels.
- Some wildfowl species e.g. Brent Geese, tend to feed during the day and roost at night on open water.
- Other wildfowl species e.g. Wigeon, tend to feed at night and roost in the day, but will also be affected by tidal state.
- Some assemblage species are principally diurnal e.g. Little Egret, so tend to roost at night and feed during the day.

Artificial lighting from the village and Langstone Bridge appeared to be facilitating foraging or enhanced foraging for some species, but equally some species may be deterred by artificial lighting. No nocturnal predators were noted during the survey series.

In conclusion, it is considered that nocturnal and diurnal site use patterns are broadly similar and it does not raise concerns regarding differentials in disturbance levels, etc during the day compared to night.

10.4.5 Supporting habitat/functionally linked habitat and supporting features

Areas of habitat, otherwise known as supporting habitat or functionally linked land, exist outside of the Chichester and Langstone Harbours SPAs within and adjacent to the Langstone FCERM scheme. Although not designated, these areas support Brent Geese and wading birds throughout the overwintering period as roost or inland feeding sites.

Using the SWBGS 2022 data, there are 23 Solent Waders and Brent Goose Strategy (SWBGS) (Whitfield, 2020) sites within 1 km of the scheme, including 1 core site and 4 sites of primary importance (see **Figure 10.7**). The SWBGS identifies sites outside of the SPA that are of importance (functionally linked land) to the over-wintering wader and brent goose populations. Solent Bird Studies (see **Figure 10.8**) data identifies 29 sites within 1km of the proposed works which includes 6 sites identified as critical to the network.

To provide a coordinated approach for conserving these sites and populations outside of SPA boundaries, a partnership was formed. The partnership includes the Hampshire and Isle of Wight Wildlife Trust (H&IoWWT), Natural England (NE), the Royal Society for the Protection of Birds (RSPB), Hampshire County Council (HCC) and Coastal Partners (CP). The partnership has developed the Solent Waders and Brent Goose Strategy, which aims to provide an agreed dataset of sites that are important for Brent Geese and wading birds outside the SPAs.

The first Strategy was published in 2002 and focused on Brent Geese in the eastern Solent harbours; in 2010 a new Solent-wide Strategy was published, covering both wading birds and Brent Geese. The latest 2020 strategy focuses on understanding bird movements from the SPA areas to inland sites and between inland sites. Three years of movement surveys have been carried out, the results have been analysed and used to update the current use mapping.

The strategy provides an evidence base for use in decision-making processes that may impact on the ecological network of sites used by these birds. The underlying principle of the strategy is to wherever possible conserve existing sites, and to create new sites, enhancing the quality and extent of the feeding and roosting resource.

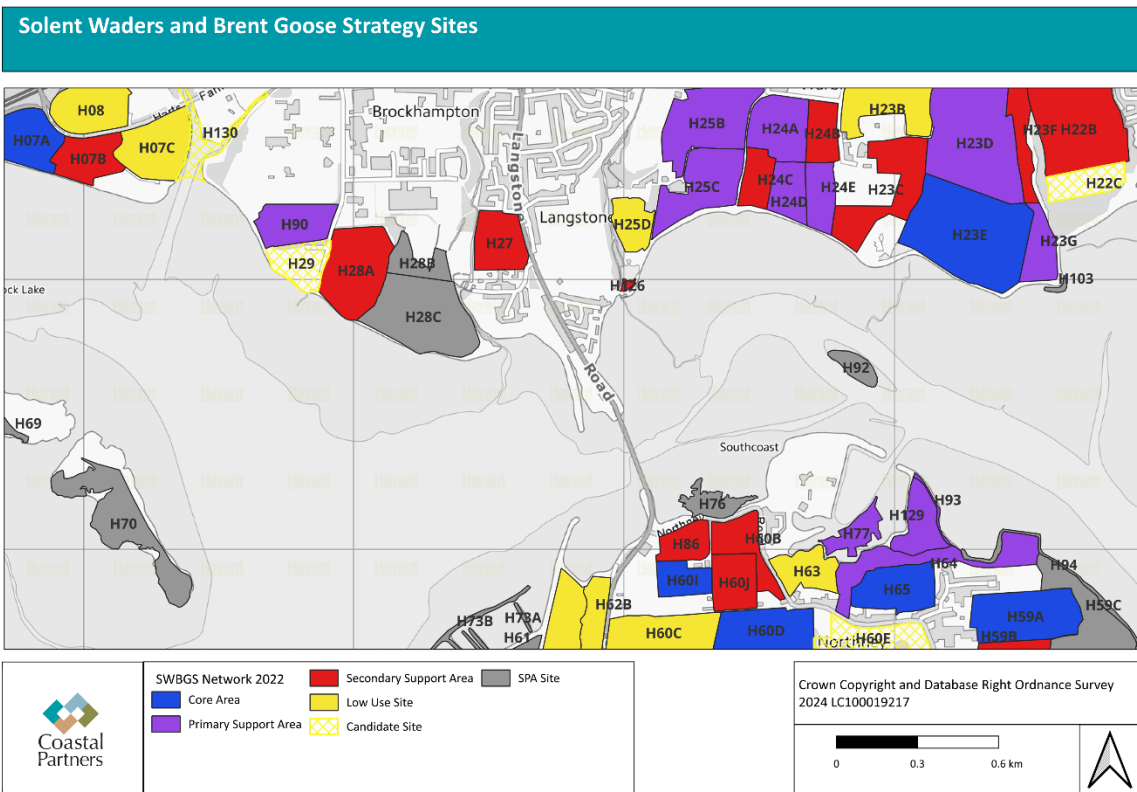


Figure 10.7: Solent Waders and Brent Goose sites in the vicinity of the proposed scheme.

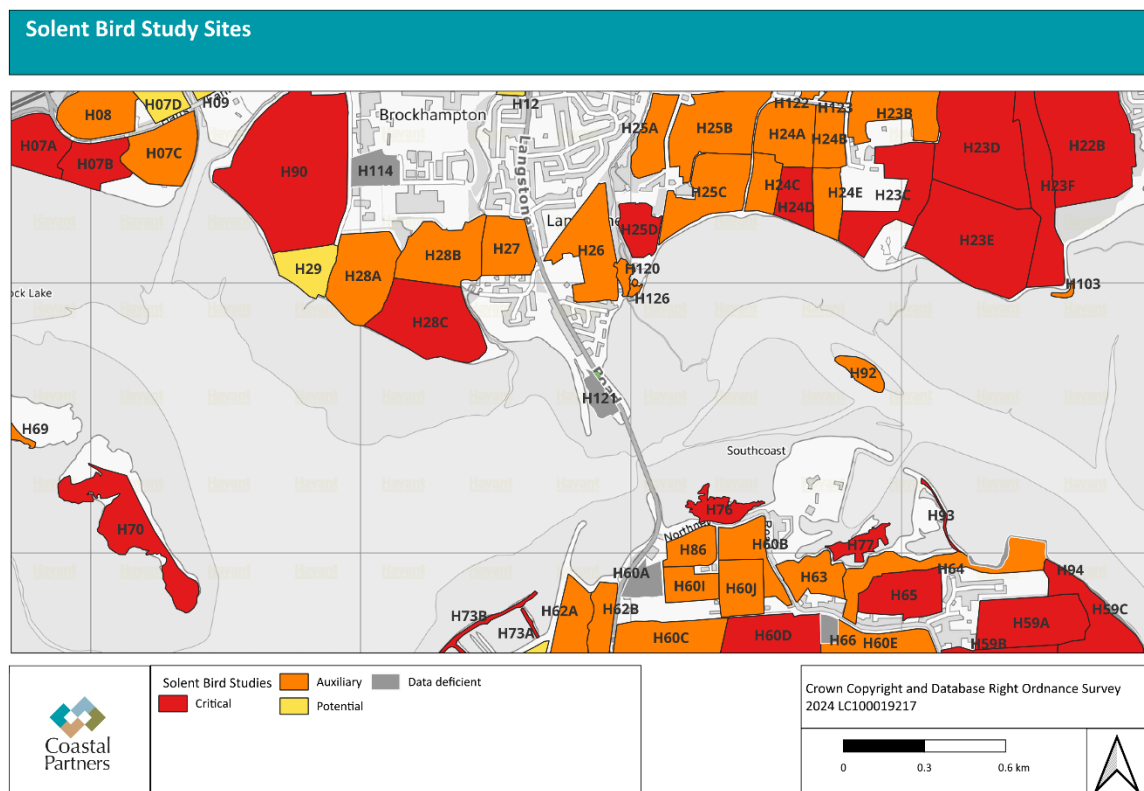


Figure 10.8: Solent Bird Studies sites in the vicinity of the proposed scheme.

The North Solent Shoreline Management Plan (SMP) Action Plan (NFDC, 2010) identified that further work was required to understand the impact of future coastal management needs on the internationally important bird populations of the Solent. It also recognised that understanding both the importance of individual sites to birds and the connection between sites and related bird movements are of vital importance for ensuring we do not lose essential sites or break essential links, that could have a negative effect on the internationally important species we are legally obliged to protect. The Solent Bird Studies were commissioned with the aim of addressing these concerns.

This report is the result of two projects; 'The Coastal Network Study' and 'The Bird Movement Study', jointly known as the Solent Bird Studies. It was the culmination of four years' work including two full field seasons of bird surveys in the winters of 2015/16 and 2016/17, the collection of over 17,000 records and the analysis of over 40,000 bird records. The studies have;

- Developed a firm understanding of relative site importance and a robust methodology and analysis framework for gaining this understanding for sites with insufficient data and/or in the future.
- Created a methodology for undertaking bird movement studies that can be delivered at the scheme level.
- Gained an understanding of bird movements and the functioning of the network through the novel use of network analysis statistics.
- Established how this relates to the importance of an individual site within a network of bird sites.
- To provide a firm basis for taking forward current and future FCERM schemes.

The findings of the SWBGS and Solent Bird Studies were applied to the Langstone FCERM scheme in terms of the surveys undertaken and any effect on the functionally linked land in relation to their ranked importance.

10.4.6 Seabird colonies and breeding assemblage

As well as over-wintering interest, the site encompasses shallow coastal waters that are important foraging areas for breeding terns from colonies within the adjacent Chichester and Langstone Harbours SPA. The qualifying bird species of this SPA are Common tern (*Sterna hirundo*) Little tern (*Sternula albifrons*) and Sandwich tern (*Sterna sandvicensis*). In addition, the Schedule 1 species Mediterranean Gull and significant numbers breed within Langstone Harbour.

The nearest breeding colonies for these species are at the West Hayling Nature Reserve/ Hayling Oysterbeds (approximately 1.1km south of the scheme) and Round Nap Island (approximately 1.5km west of the scheme). In 2023 the Langstone Harbour nesting colonies islands including Round Nap and West Hayling Nature reserve supported breeding colonies of 2,183 Apparently On Nest (AON) of Mediterranean Gulls, 4,096 AON of Black-headed Gulls, 217 AON of Sandwich Terns, 93 AON of Common Tern and 13 AON of Little Tern.

10.4.7 Breeding birds

The woodland, hedgerows, linear treelines and scrub provide suitable habitat for nesting birds within and adjacent to the site boundary, which could be used by a variety of nesting species. A Preliminary Ecological Appraisal was undertaken in 2018 (**Appendix L1**) for the Scheme.

This included a review of Hampshire Biodiversity Information Centre (HBIC) records within 2 km. This identified 50 red list (Birds of Conservation Concern 4th edition (BoCC4)), 23 s41 species and a number of species provided with special protection under Schedule 1 of the Wildlife and Countryside Act. These include Cetti's warbler (*Cettia cetti*). These birds were also noted during the field visit, two singing male Cetti's warblers and a number of little egrets were observed at Langstone Mill Pond. Langstone Mill Pond is an established site for breeding little egret and is believed to be the only location in the UK where egrets breed outside of an existing heronry, although Grey Heron (*Ardea cinerea*) and more recently Cattle Egret (*Bubulcus ibis*) also breed within the colony.

10.4.8 Breeding bird survey

A breeding bird survey was undertaken by Coastal Partners in 2021 (**Appendix L9**). The survey methodology broadly followed the 'Common Bird Census' (CBC) devised by the British Trust for Ornithology (BTO), (Marchant, 1983). This technique records the location and breeding evidence of individual birds present within a defined survey area and over the three surveys, probable territories can be mapped. Three visits were undertaken within the bird breeding season (March - August inclusive), in the months of April, May and June in suitable weather conditions.

In total 45 species were recorded during the three surveys. Breeding evidence was collected for 36 species including confirmed breeding for seven species, probable breeding for 19 species and possible breeding for 10 species. The species list and statuses are set out in **Table 10.5** below.

Table 10.5: Birds recorded with breeding and conservation status.

Species	Taxon name	BTO code	April	May	June	Breeding	Status
Pheasant	<i>Phasianus colchicus</i>	PH	✓	✓		Confirmed	
Mandarin Duck	<i>Aix galericulata</i>	MN	✓			Present	
Gadwall	<i>Mareca strepera</i>	GA	✓			Present	BoCC Amber list
Mallard	<i>Anas platyrhynchos</i>	MA	✓	✓	✓	Probable	BoCC Amber list
Teal	<i>Anas crecca</i>	T	✓			Present	BoCC Amber list
Tufted Duck	<i>Aythya fuligula</i>	TU	✓	✓	✓	Present	
Stock Dove	<i>Columba oenas</i>	SD	✓	✓	✓	Probable	BoCC Amber list
Woodpigeon	<i>Columba palumbus</i>	WP	✓	✓	✓	Probable	
Collared Dove	<i>Streptopelia decaocto</i>	CD	✓	✓	✓	Probable	
Water Rail	<i>Rallus aquaticus</i>	WA	✓			Present	
Moorhen	<i>Gallinula chlorops</i>	MH	✓	✓	✓	Probable	
Coot	<i>Fulica atra</i>	CO	✓	✓	✓	Probable	
Cattle Egret	<i>Bulbulcus ibis</i>			✓	✓	Confirmed	
Grey Heron	<i>Ardea cinerea</i>	H	✓	✓	✓	Confirmed	

Species	Taxon name	BTO code	April	May	June	Breeding	Status
Little Egret	<i>Egretta garzetta</i>	ET	✓	✓	✓	Confirmed	
Sparrowhawk	<i>Accipiter nisus</i>	SH	✓		✓	Present	
Kingfisher	<i>Alcedo atthis</i>	KF	✓			Present	BoCC Amber list
Great Spotted Woodpecker	<i>Dendrocopos major</i>	GS	✓	✓	✓	Probable	
Green Woodpecker	<i>Picus viridis</i>	G		✓	✓	Possible	
Kestrel	<i>Falco tinnunculus</i>	K	✓		✓	Present	BoCC Amber list
Magpie	<i>Pica pica</i>	MG	✓	✓	✓	Possible	
Carrion Crow	<i>Corvus corone</i>	C	✓	✓	✓	Possible	
Blue Tit	<i>Cyanistes caeruleus</i>	BT	✓	✓	✓	Probable	
Great Tit	<i>Parus major</i>	GT	✓	✓	✓	Probable	
Swallow	<i>Hirundo rustica</i>	SL		✓	✓	Possible	
Cetti's Warbler	<i>Cettia cetti</i>	CW	✓	✓	✓	Probable	W & C Act Sch 1
Long-tailed Tit	<i>Aegithalos caudatus</i>	LT			✓	Possible	
Chiffchaff	<i>Phylloscopus collybita</i>	CC	✓	✓	✓	Probable	
Reed Warbler	<i>Acrocephalus scirpaceus</i>	RW		✓	✓	Probable	
Blackcap	<i>Sylvia atricapilla</i>	BC	✓	✓	✓	Probable	
Lesser Whitethroat	<i>Curruca curruca</i>	LW			✓	Possible	
Whitethroat	<i>Curruca communis</i>	WH		✓	✓	Probable	
Goldcrest	<i>Regulus regulus</i>	GC	✓		✓	Possible	
Wren	<i>Troglodytes troglodytes</i>	WR	✓	✓	✓	Probable	
Starling	<i>Sturnus vulgaris</i>	SG	✓	✓	✓	Possible	BoCC Red list; NERC S41
Blackbird	<i>Turdus merula</i>	B	✓	✓	✓	Probable	
Song Thrush	<i>Turdus philomelos</i>	ST	✓	✓	✓	Confirmed	BoCC Red list; NERC S41
Mistle Thrush	<i>Turdus viscivorus</i>	M			✓	Present	BoCC Red list;
Robin	<i>Erithacus rubecula</i>	R	✓	✓	✓	Probable	
House Sparrow	<i>Passer domesticus</i>	HS	✓	✓	✓	Confirmed	BoCC Red list; NERC S41

Species	Taxon name	BTO code	April	May	June	Breeding	Status
Dunnock	<i>Prunella modularis</i>	D	✓	✓	✓	Confirmed	BoCC Amber list; NERC S41
Chaffinch	<i>Fringilla coelebs</i>	CH			✓	Possible	
Greenfinch	<i>Chloris chloris</i>	GR	✓	✓		Possible	
Goldfinch	<i>Carduelis carduelis</i>	GO	✓	✓	✓	Probable	
Reed Bunting	<i>Emberiza schoeniclus</i>	RB	✓	✓	✓	Probable	BoCC Amber list; NERC S41

Of the 36 species, eight are considered of conservation concern including: one Wildlife and Countryside Act Schedule 1, five NERC Act S41 Species of Principle Importance, three BoCC4 Red List and four BoCC4 Amber list. It is considered that the scrub and woodland habitat provide nesting opportunities for a range of common and widespread species of breeding bird. Therefore, overall, the site is considered to exhibit high potential for supporting breeding birds.

Territory mapping undertaken for the breeding birds survey (**Figure 10.9**) indicates that there are approximately three Starling colonies, seven House Sparrow Colonies and four Song Thrush territories within the immediate surroundings of the proposed scheme. During the formal survey only one territory of Cetti's Warbler was identified, however, visits to the site for other surveys has indicated regular activity around the reedbeds to the north of the millpond and this has been included as an ad hoc record indicating a further territory.

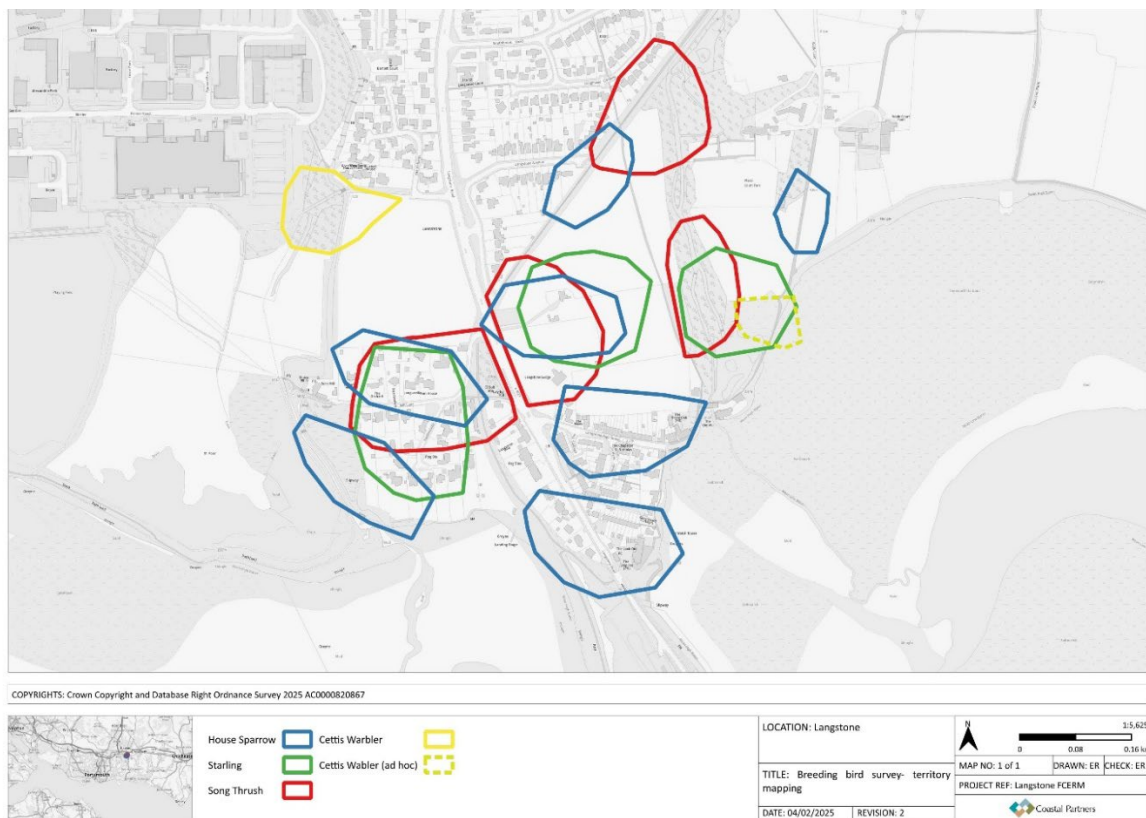


Figure 10.9: Territory mapping of breeding birds in the vicinity of the proposed scheme.

A heronry, which was originally solely a Little Egret breeding colony but is also now a breeding location for Grey Heron and Cattle Egret is located in close proximity to the proposal. The number of Apparently Occupied Nests (AON) was recorded during the three surveys in 2021 and is presented in **Table 10.6** below.

Table 10.6: Heronry count records 2021 at Langstone Mill Pond

Species	April	May	June
Little Egret	5 AON	26 AON	25 AON
Cattle Egret		2 AON	4 AON
Grey Heron	4 AON	5 AON	4 AON

An update on the use of the heronry by egrets in 2023 has been derived from data from the Hampshire Ornithological Society (HOS). Peak counts for Little Egret where no breeding code was provided are recorded in **Table 10.7** below. Data where breeding evidence was recorded is somewhat ambiguous with data for Little Egret showing confirmed breeding evidence with a May peak of 26 nests containing eggs, but also a record of occupied nests peak at 15 also in May. Data from the same source relating to Cattle Egret has not been submitted during the core breeding season due to the protection of rare breeding species but records a peak count of 15 birds in August and 14 in September and records confirmed breeding of 14 nests with young and 5 recently fledged young. It is unclear if this data for Cattle Egrets has been recorded as nests or individual young, but based on the entirety of the evidence it is estimated that currently 7 pairs are breeding or attempting to breed in this location.

Table 10.7: Heronry count peak counts 2023 at Langstone Mill Pond from HOS

Species	April	May	June
Little Egret	49	28	60

Whilst there is some variation in the data it would be safe to conclude that the heronry is currently fairly stable for Little Egret with 26 occupied nests recorded in both 2021 and 2023, but that the Cattle Egret population is expanding from 4 occupied nests in 2021 to potentially 7 in 2023.

10.5 Identification of Effect Pathways

The scope of the ornithology impact assessment has been informed by the EIA Scoping Report produced for the scheme (Coastal Partners, 2020) and the associated Scoping Opinions received from Natural England and Hampshire County Council's County Ecologist in February 2021 and June 2021 respectively (see **Appendix A**). **Table 10.8** below provides a summary of the potential impact pathways scoped in and out of the assessment with respect to ornithological receptors.

Table 10.8: Potential Ornithology impact pathways

Impact pathway(s)	Scoped in/out?	Justification
Noise from construction works on site displacing birds in the local area (construction)	Scoped in	Disturbance from construction works including truck movements, piling, earthworks and re-pointing has the potential to displace birds that may be feeding, roosting or breeding in the area.
Visual disturbance from construction works on site displacing birds in the local area (construction)	Scoped in	Birds can be affected by the visual presence of people and vehicles in an area which can lead to displacement from feeding and roosting areas.
Physical disturbance of upper intertidal habitats during construction leading to a reduction in feeding area for birds (construction)	Scoped in	Most of the works will be undertaken behind the existing sea defence however where works require access from the foreshore, there may be a temporary reduction in available feeding area for birds due to temporary disturbance of the foreshore for birds feeding at low tide and/or increased turbidity of the water column for birds feeding at high tide.
Disturbance to nesting birds (construction)	Scoped in	Vegetation clearance has the potential to disturb breeding birds and has therefore been scoped in for further assessment.
Loss of feeding areas for birds through permanent loss of intertidal habitat from scheme footprint and coastal squeeze (operation)	Scoped in	The design limits any encroachment into the existing intertidal area and is unlikely to lead to a significant loss of feeding habitat. However, loss of feeding area can have a disproportional effect on some bird populations.
Disturbance/displacement of birds during any maintenance and repair work required during the lifetime of the sea defence (operation)	Scoped in	Ongoing maintenance of the sea defence could lead to disturbance of birds using this area.

10.6 Potential Impacts During Construction

The effects of the construction of the Langstone FCERM Scheme on ornithology within the study area has been assessed. A description of the significance of effect upon ornithology potentially caused by each identified impact is provided below. Appropriate mitigation measures to avoid / reduce the negative impacts are also provided below, which will be implemented within the CEMP for these works.

10.6.1 Noise from construction works on site displacing bird populations

Site clearance and construction activities can generate noise levels that can have a disturbance and displacement effect on local bird populations. The effect of noise on birds can arise from a number of mechanisms (see below);

- Ear damage and hearing loss.
- Elevated stress hormone levels.
- Interference with or masking of acoustic signals (e.g. territorial bird song and alarm calls) affecting pair bonding and territoriality.
- Reduced detectability of prey and predators.
- Increased vigilance, thus reducing food intake rates.
- Increased energy expenditure if sudden noises result in flight.
- Increased susceptibility to disturbance by other stimuli (i.e. visual).
- Displacement from otherwise suitable habitat and reduced population density.

The effect of noise on bird populations can be difficult to predict, but it is clear that it can lead to population level effects and potentially affect site integrity of SPAs. Numerous studies have attempted to quantify the effect and determine threshold levels for harmful effects, including the Waterbird Disturbance Mitigation Toolkit (IECS 2013). For the purposes of this assessment an Lmax 69dB at the receptor has been considered the threshold above which significant disturbance is expected. Although not specifically developed for breeding birds the same thresholds and the application of expert opinion has been used to consider noise impacts for these receptors.

In addition to aerial transmission of sound waves, sound energy will also propagate through water and can reach levels that are harmful and even fatal to organisms within the area of influence of the source. Unfortunately, in the case of birds, very little research has been undertaken into the effects of underwater noise on birds. However, a number of potential mechanisms can be envisaged that could lead to harmful effects; i) fatal or sub lethal damage caused by exposure to underwater sound energy, ii) displacement of birds caused by underwater noise, iii) displacement or reduction of prey items. Birds that dive underwater such as (diving ducks, grebes, divers, cormorants and terns) are most likely to be affected.

Piling has generally been identified as the activity most likely to propagate harmful noise levels into the water column, the effect will be most pronounced when the piling is in contact with the water. When not in contact with the water, noise propagation will be negligible. The shore profile at Langstone means that piling for construction of the new sea defences will be mostly undertaken in the 'dry', either at low tide or above the tidal range. There will only be a very short 'window' when sound could be propagated into the water body. A summary of piling locations is given in **Table 8.14** in **Chapter 8 (Marine Ecology)**

The likely short duration of significant underwater noise, generated by the small amount of vibro piling proposed, and the relatively low numbers of species using the site that are sensitive to this type of noise impact and the incorporated mitigation that piling will only be undertaken in the 'dry', removes the potential impact pathway for underwater noise.

There are a number of potential receptors in terms of bird populations that may be affected by site clearance and construction noise. These include; non-breeding SPA/Ramsar birds (e.g.

over-wintering and passage migrant populations), non-breeding SPA/Ramsar birds using functional linked land, SPA breeding seabird populations and breeding terrestrial birds.

Frontage 1A

The majority of the work to this frontage is fairly low key and is unlikely to cause impacts upon SPA/Ramsar bird species. However, the 69dB contour (**see Figure 10.10**) for using a wacker plate at the closest point may encroach up to 120m into the Chichester and Langstone Harbours SPA and Ramsar site.

Some aspects of work (use of a wacker plate) in this location, if unmitigated, has the potential for impacts that would be **major adverse** to non-breeding/over-wintering birds. No significant impacts are predicted for non-breeding SPA/Ramsar birds using functional linked land, breeding SPA birds or breeding terrestrial birds.

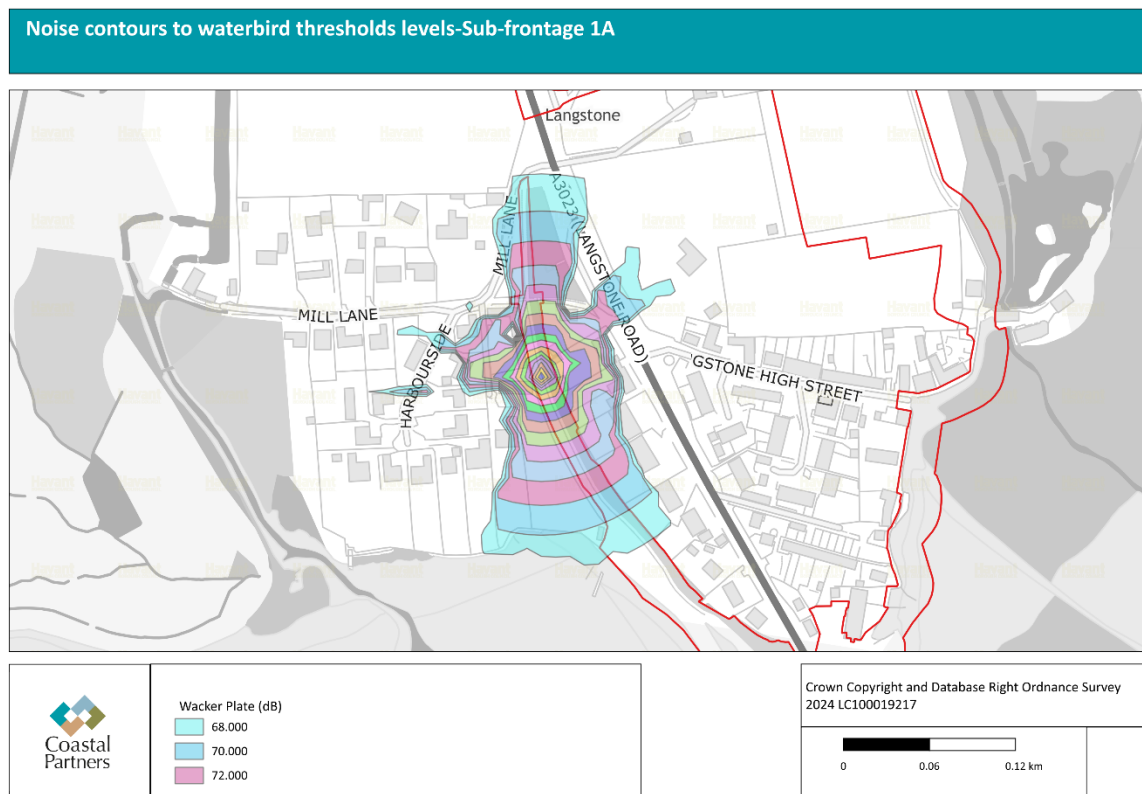


Figure 10.10: Modelled noise impact contours for Frontage 1A for use of a plate compactor, only sound levels above the 69dB level are noted in the key

Frontage 2

The work to this frontage involves the creation of a sheet pile wall in close proximity to the Chichester and Langstone Harbour SPA and Ramsar. The 69dB contour (**see Figure 10.11**) for using a vibro piling rig will encroach up to 70m into the Chichester and Langstone Harbours SPA and Ramsar site along most of the work area. Other construction work noise impacts are predicted for the use of plant such as bulldozers and wacker plates undertaken on this alignment, this will cause a similar 70m encroachment into Chichester and Langstone Harbour SPA and Ramsar site.

Some species of diving duck mainly red-breasted merganser were observed in areas adjacent to this frontage. The birds are associated with the deeper water at the mouth of Langbrook Stream, and about 120m from nearest piling activity. The piling in this location will be undertaken in the 'dry' and therefore it is unlikely that any risk from underwater noise levels exists. Likewise tern species that may forage in adjacent areas can only do so at higher tidal states and also unlikely to be affected by underwater noise propagation.

The majority of work on this frontage including piling and use of other plant if unmitigated will cause major adverse impacts to non-breeding/over-wintering SPA/Ramsar birds, no noise impacts are predicted for non-breeding SPA/Ramsar birds using functional linked land, breeding SPA birds or breeding terrestrial birds.

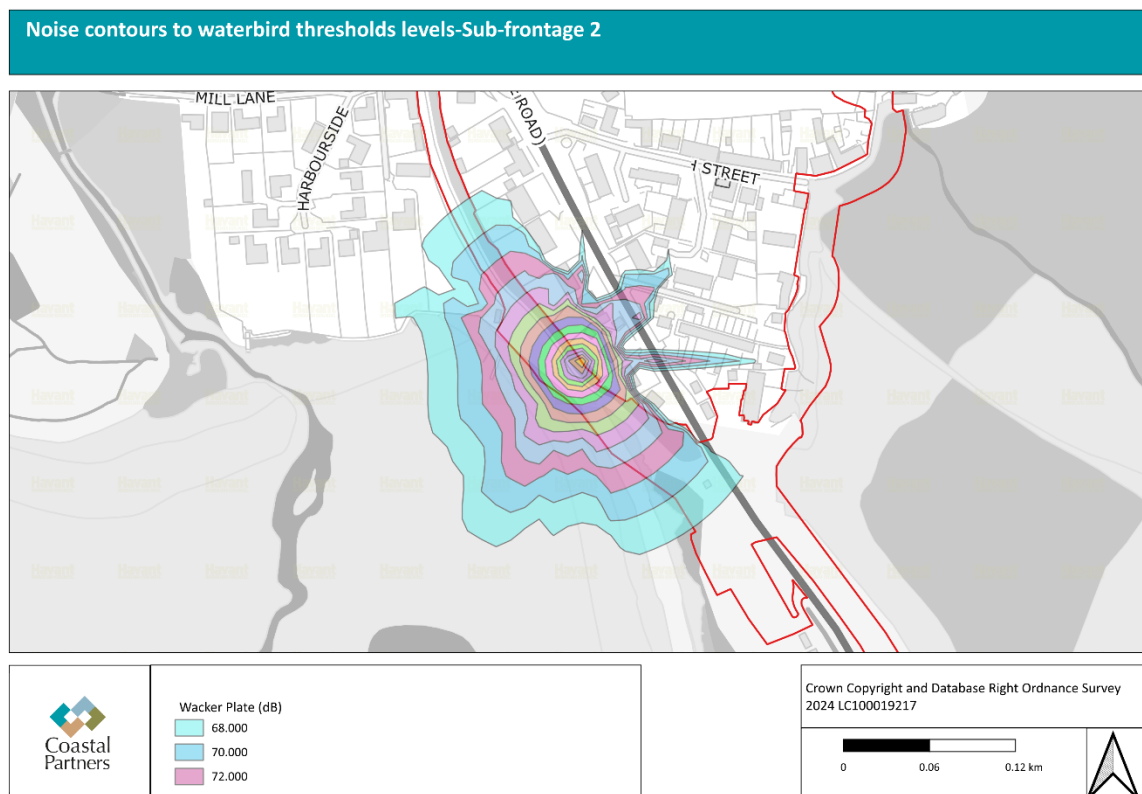


Figure 10.11: Modelled noise impact contours for Frontage 2 for use of a plate compactor, only sound levels above the 69dB level are noted in the key

Frontage 3

The work to this frontage is predominately inland and on the whole involves plant that is unlikely to propagate noise levels that will encroach into the Chichester and Langstone Harbour SPA and Ramsar. However, work to chainage 0-66 requires the installation of a sheet pile wall along the edge of the A3023 and in front of the Ship Inn and Annex (Ch100-152) which will be in close proximity to the Chichester and Langstone Harbour SPA and Ramsar. The 69dB contour (see Figure 10.12) for using a vibro piling rig will encroach up to 100m into the Chichester and Langstone Harbours SPA and Ramsar site along most of the work area, percussive piling would encroach in the region of 300m into the SPA/Ramsar site at the 69dB threshold level. Other construction work noise impacts are predicted to be minimal for all other

plant on this alignment and will not significantly encroach into Chichester and Langstone Harbour SPA and Ramsar site.

Some species of diving duck mainly red-breasted merganser were observed in areas adjacent to this frontage. The birds are associated with the deeper water under Langstone Bridge, and about 320m from nearest piling activity. The piling in this location will be undertaken in the 'dry' and therefore it is unlikely that any risk from underwater noise levels exists. Likewise, tern species that may forage in adjacent areas can only do so at higher tidal states and also unlikely to be affected by underwater noise propagation.

It is considered that the majority of work on this frontage has limited potential for encroachment through noise effects. However, piling the wall section along the A3023 and in front of the Ship Inn and Annex (Ch100-152) has the potential for **major adverse** impacts to non-breeding/over-wintering SPA/Ramsar birds and possibly breeding SPA birds if unmitigated. No significant noise impacts are predicted for non-breeding SPA/Ramsar birds using functional linked land or breeding terrestrial birds.

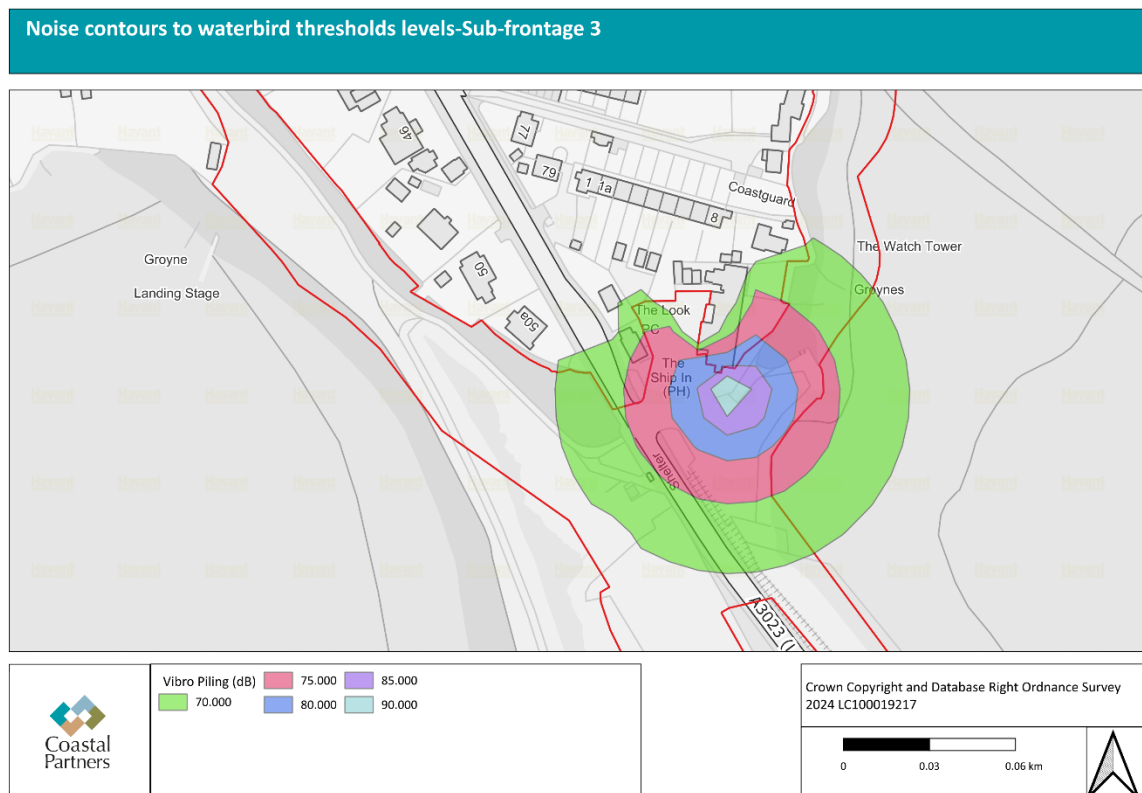


Figure 10.12: Modelled noise impact contours for Frontage 3 for use of a vibro piling rig, only sound levels above the 69dB level are noted in the key

Frontage 4

The work to this frontage involves the creation of an in-situ cast wall with a sheet pile toe, both of which will be constructed within the Chichester and Langstone Harbour SPA and Ramsar. The 69dB contour (**see Figure 10.13**) for using a vibro piling rig will encroach up to 75m (percussive piling is predicted to encroach up to 320m) into the Chichester and Langstone

Harbours SPA and Ramsar site along the entire work area. Other construction work noise impacts are predicted for the use of plant such as excavators and the delivery of materials undertaken on this alignment, this will cause a similar 90-100m encroachment into Chichester and Langstone Harbour SPA and Ramsar site.

Some species of diving duck mainly red-breasted merganser were observed in areas adjacent to this frontage. The birds are associated with the deeper water under Langstone Bridge, and about 320m from the nearest piling activity and in the deeper water channels off Wade Court about 275m from nearest piling activity. The piling in this location is within the intertidal and could therefore be undertaken in the 'wet' and therefore there may be a risk from underwater noise levels. Likewise, tern species that may forage in adjacent areas can only do so at higher tidal states and may also be affected by underwater noise propagation.

The majority of work on this frontage including piling and use of other plant if unmitigated has the potential to be of **major adverse significance** to non-breeding/over-wintering SPA/Ramsar birds and breeding SPA birds. No significant noise impacts are predicted for non-breeding SPA/Ramsar birds using functional linked land or breeding terrestrial birds.

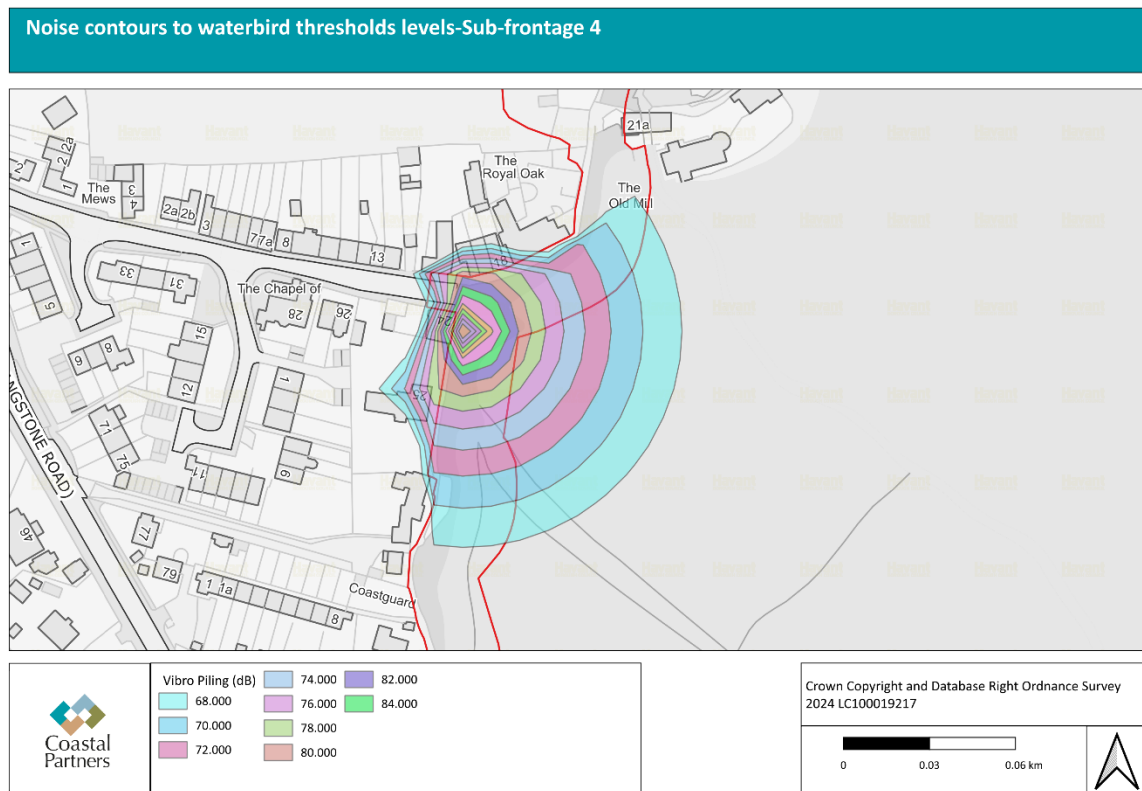


Figure 10.13: Modelled noise impact contours for Frontage 4 for use of a vibro piling rig, only sound levels above the 69bD level are noted in the key

Frontage 5

The work to this frontage involves the construction of a pad for flood gates installed for the High Street, between chainage 0-10 and the creation of an in-situ cast wall with a sheet pile toe between chainages 10-95, both of which will be constructed within the Chichester and

Langstone Harbour SPA and Ramsar. Between chainages 109-185 trench sheets will be installed in-land as a seepage cut-off. From chainage 185 to the end of the frontage, an earth embankment will be created tying into higher ground.

The 69dB contour (**see Figure 10.14**) for using vibro piling rig (where sheet piles or trench sheets are required) will encroach up to 75m (percussive piling is predicted to encroach up to 400m) into the Chichester and Langstone Harbours SPA and Ramsar site along the entire work area. Use of a wacker plate is predicted to encroach up to 140m into the Chichester and Langstone Harbours SPA and Ramsar site at the 69dB threshold level (**Figure 10.14**). Other construction work noise impacts are predicted for the use of plant such as excavators, dump trucks and delivery of materials undertaken on this alignment, this will cause a similar 20-60m encroachment into Chichester and Langstone Harbour SPA and Ramsar site.

In terms of non-breeding SPA/Ramsar birds using functional linked land these noise levels will encroach across the entirety of SWBGS secondary support site H126 and to some extent SBS auxiliary sites H120 and H26, but should not affect low use site H25D. H120 is an area of wet woodland that is used potentially all year as a night roost by little egret and grey heron, SBS data has a 2017 record of 4 grey herons, over-wintering bird surveys in 2020-21 and 2021-22 observed regular use of the site with a peak of 21 little egret in September (probably associated with post breeding), with more normal winter numbers of up to 3-4 little egrets and 4-7 grey heron during the daytime, the night survey indicated a peak of 31 birds (probably little egrets but may include cattle egret and grey heron). Noise impacts if not mitigated could have a significant impact on roosting egrets using H120. Due to low numbers observed using the site and that it will be largely unavailable due to be using as a compound it is not considered that noise will be a particular impact on SBS site H26.

Some species of diving duck mainly red-breasted merganser) were observed in areas adjacent to this frontage. The birds are associated with the deeper water under Langstone Bridge, and about 575m from nearest piling activity and in the deeper water channels off Wade Court about 200m from nearest piling activity. The piling in this location is within the intertidal, therefore could be undertaken in the 'wet' and therefore there may be a risk from underwater noise levels. Likewise, tern species that may forage in adjacent areas can only do so at higher tidal states and may also be affected by underwater noise propagation.

It is considered that the majority of work on this frontage, including piling and use of other plant, could, if unmitigated, have **major adverse** noise impacts to non-breeding/over-wintering SPA/Ramsar birds, SPA breeding seabirds and to a nesting colony of little egrets, grey herons and cattle egret, through noise effects. However, some tasks such as construction of the allotment wall (ch 96-109), footpath wall (ch 112-185) and earth embankment (ch 185-221), excluding the elements requiring piling, are unlikely to cause significant impacts to non-breeding/over-wintering SPA/Ramsar birds or SPA breeding seabirds. No significant noise impacts are predicted for breeding terrestrial birds, excepting the egret colony.

Noise contours to waterbird thresholds levels-Sub-frontage 5

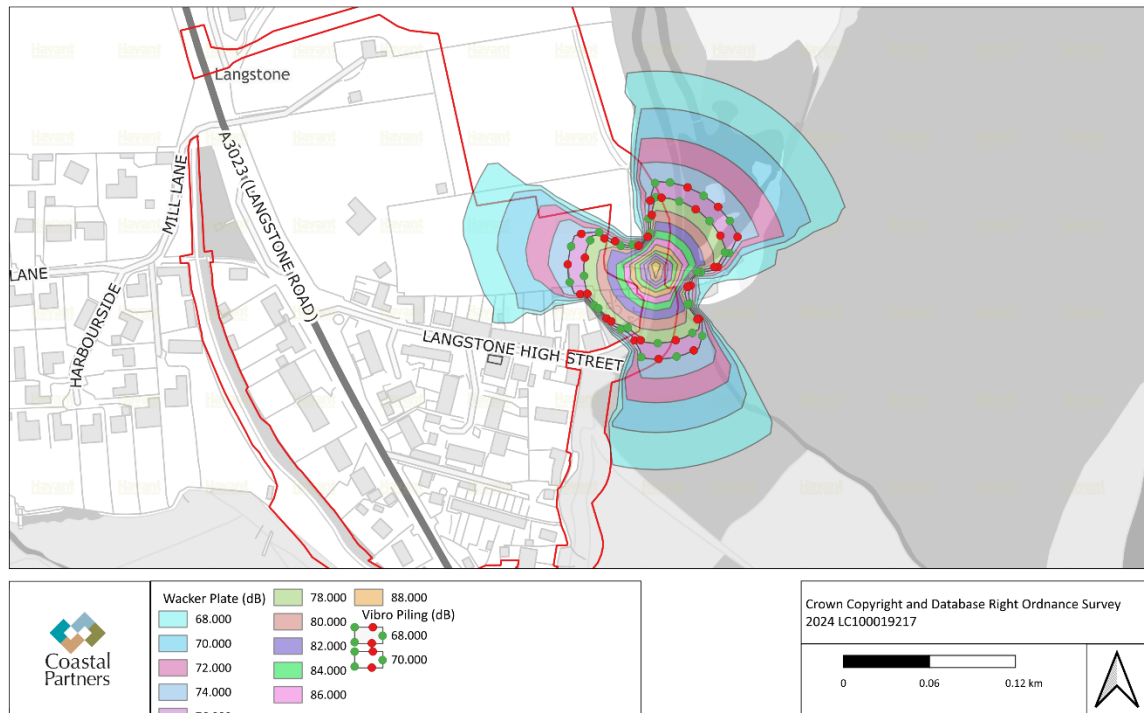


Figure 10.14: Modelled noise impact contours for Frontage 5 for use of a plate compactor and vibro piling rig. only sound levels above the 69bD level are noted in the key, vibro piling 69db level shown with dotted lines

Mitigation

Frontage 1A

- Wacker plate or compacting plant with a similar noise profile not to be used between chainage 120-188 during the overwintering bird period October-March inclusive.

Frontage 2

- No construction work to be undertaken during the overwintering bird period October-March inclusive.

Frontage 3

- Piling work between chainage 0-66 and all construction work between 100-152 will not be undertaken during the overwintering bird period October-March inclusive.

Frontage 4

- No construction work to be undertaken during the overwintering bird period October-March inclusive.

Frontage 5

- No construction work to be undertaken between chainage 0-95 or piling / trench sheet installation work between chainage 96-185 during the overwintering bird period October-March inclusive.
- To minimise risk of disturbance to egret and heron roost, no night working and particularly no artificial lighting between chainage 112-221.
- An appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts to nesting egrets and herons at Langstone Millpond during the nesting period March to August inclusive. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g., a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance on nesting birds in this colony will be implemented until nesting attempts have been completed. Details of this watching brief will be set out within the final CEMP.

All Frontages

- Installation of piles will be undertaken using vibro piling techniques as standard. Percussive piling will only be used when necessary to achieve the required design depth. If percussive piling is required, a soft start procedure will be implemented for a minimum of 20 minutes. Should piling cease for a period greater than 10 minutes, then the soft start procedure will be repeated.
- To avoid the transmission of impulsive noise into the water column, piling on the foreshore will only be undertaken in the dry (when the surface of the substrate is above the current tide level).
- For any work proposed within the over-wintering bird period, October-March inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g., a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance to the over-wintering birds. Details of this watching brief will be provided within the final CEMP, which will be submitted for approval by the LPA / Natural England prior to the commencement of construction activities.
- In the event of severe weather, defined as frozen ground conditions reported by over half of the meteorological stations in England/Wales, after 7 consecutive days (allowing for short (24-48 hours) periods of thaw) an expert review will be undertaken by the project ecologist and, if necessary, work may be restricted or halted. After 14 consecutive days of frozen ground conditions and if a statutory suspension is announced, all works will cease during the suspension period. Details of this process will be laid out within the final CEMP.

With the seasonal and spatial mitigation proposals outlined above and the short-term and relatively localised effects of noise disturbance on SPA/Ramsar non-breeding/overwintering birds it is considered impacts would be **minor adverse**.

With the seasonal and spatial mitigation proposals outlined above and the short-term and relatively localised effects of noise disturbance on non-breeding SPA/Ramsar birds using functionally linked land it is considered it will result in impacts of **minor adverse significance**.

Due to the distance to known breeding colonies of SPA breeding seabirds it is considered that noise effects would be **negligible** and not significant.

Potential impacts on the nesting colonies of little egret, grey heron and cattle egret are more difficult to accurately predict due to limited research on these species, however, anecdotally they are considered of low sensitivity to disturbance. Delivery of the above mitigation and particularly the robust application of an ornithological watching brief should ameliorate adverse effects to **minor adverse significance**. Noise disturbance to the wider population of terrestrial breeding birds is considered to be of **negligible**. This will be addressed more fully in disturbance to nesting birds in **Section 10.6.4**.

10.6.2 Visual disturbance from construction works on site displacing bird populations

Visual disturbance to birds can be caused by the movement of plant and personnel in proximity to habitats used by birds. This can be in the form of movement, shadow, reflection and light flicker, causing responses in birds for example, flushing, moving away from the stimuli, reduced feeding activity and increased stress. Frequent exposure to this pressure can cause avoidance and displacement behaviour in bird populations. It is likely that such effects work in concert with noise effects. Work for the Solent Disturbance and Mitigation Project (2012) showed that intertidally feeding birds tend to tolerate movement by people and vehicles if using defined routes. Disturbance events were normally triggered when humans and/or their dogs encroached into the intertidal area. In addition, ornithological watching briefs have been undertaken by Coastal Partners across a range of projects over the past 8 years, analysis of this data indicates that on the whole birds are remarkably tolerant of visual disturbance (unless allied with noise effects) and most disturbance appears to be triggered by activity encroaching into areas birds are using, rather than visual disturbance per se.

It is, however, considered that the works at Langstone will on some frontages encroach into areas used by SPA/Ramsar non-breeding/overwintering bird populations and could in combination with noise effects displace birds using these habitats within the Chichester and Langstone Harbours SPA and Ramsar site, and the same bird populations using functionally linked land. The nearest seabird breeding colonies to the proposal are 1.3km away with a busy road passing through the working areas, therefore it seems unlikely that breeding tern species, notified as interest features within the Chichester and Langstone Harbours SPA will be directly impacted by this activity. Foraging seabirds associated with this breeding colony do use the area of the proposed development, it is, however, considered that the partly commensal habits of these tern species make them less likely to be susceptible to this type of disturbance whilst foraging and this is echoed by the NE advice on operations that foraging terns have low sensitivity to visual disturbance. Therefore, no specific mitigation is considered necessary for this impact pathway.

Frontage 1A

The majority of the work to this frontage is fairly low key and largely shielded from the SPA/Ramsar site by existing vegetation and areas of functionally linked land and unlikely to cause impacts upon SPA/Ramsar bird species.

Frontage 2

The work to this frontage involves the creation of a sheet pile wall which will require the use of relatively large plant in close proximity to the Chichester and Langstone Harbours SPA and Ramsar site but will not encroach into SPA/Ramsar or functionally linked habitats. It is considered that any effects on the SPA/Ramsar will be largely noise based and the contribution of visual disturbance will be minimal.

Frontage 3

The work to this frontage whilst predominately inland will encroach into the Chichester and Langstone Harbour SPA and Ramsar in front of the Ship Inn and Annex. It is considered that visual disturbance may occur on the SPA/Ramsar in the area of encroachment and this will, in combination with noise effects, displace non-breeding/overwintering birds and has the potential for **major adverse** impact.

Frontage 4

The work to this frontage involves encroachment into the Chichester and Langstone Harbours SPA and Ramsar site along the entire work area and this will, in combination with noise effects, displace non-breeding/overwintering birds and could cause a **major adverse** impact. Due to distance and landscape screening, no visual disturbance impacts are predicted for non-breeding SPA birds using functional linked land.

Frontage 5

The work to this frontage involves encroachment into the Chichester and Langstone Harbours SPA and Ramsar site at the High Street and in front of the Royal Oak (chainage 0-95) and this will, in combination with noise effects, displace non-breeding/overwintering birds and could cause a **major adverse** impact. Visual disturbance impacts in combination with noise effects are also predicted for non-breeding SPA/Ramsar birds using functional linked land, but this will be limited to SWBGS secondary support site H126 and SBS auxiliary sites H26 and H120. Due to habitat screening, visual disturbance is considered unlikely to the nesting colony of egrets and heron at the Mill Pond, and noise impacts are considered more relevant. However, pre-commencement works such as vegetation clearance in close proximity to nesting colonies could cause disturbance.

Mitigation

Frontage 3&4

- No construction work to be undertaken during the overwintering bird period October-March inclusive.

Frontage 5

- No construction work to be undertaken between ch 0-110 during the overwintering bird period October-March (inclusive).
- All vegetation clearance should be undertaken outside of the bird nesting season March-August inclusive, to avoid disturbance of the egret/heron nesting colony.
- No site personnel to enter the woodland area around the egret/heron nesting colony during the bird breeding season March-August inclusive.

All frontages

- For any work proposed within the over-wintering bird period, October- March inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g., a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of screening barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance to the over-wintering birds. Details of this watching brief will be included within the final CEMP, to be confirmed once a contractor has been appointed.
- In the event of severe weather, defined as frozen ground conditions reported by over half of the meteorological stations in England/Wales, after 7 consecutive days (allowing for short (24-48 hours) periods of thaw) an expert review will be undertaken by the project ecologist and if necessary, work may be restricted or halted. After 14 consecutive days of frozen ground conditions and if a statutory suspension is announced all works will cease during the suspension period. Details of this process will be laid out within the final CEMP.

With the seasonal and spatial mitigation proposals outlined above and the short-term and relatively localised effects of visual disturbance on non-breeding/overwintering SPA/Ramsar birds, it is considered, in combination with noise effects, it could result in impacts of **minor adverse significance**.

With the seasonal and spatial mitigation proposals outlined above and the short-term and relatively localised effects of visual disturbance on non-breeding SPA/Ramsar birds using functionally linked land, it is considered in combination with noise effects it may result in impacts of **minor adverse significance**.

Due to the distance to known breeding colonies of SPA breeding seabirds it is considered that visual disturbance effects would be **negligible**.

Potential impacts on the nesting colonies of little egret, grey heron and cattle egret from visual disturbance is considered unlikely from the main construction work and delivery of the above mitigation should ameliorate most adverse effects to **minor adverse significance**. Visual disturbance to the wider population of terrestrial breeding birds is considered to be **negligible** this will be addressed more fully in disturbance to nesting birds at **Section 10.6.4**.

10.6.3 Temporary loss of habitat for birds

In order to construct the new defences, a working area will have to be created utilising an area larger than the eventual above ground footprint of the defences. This will include the toe of the

defence, much of which will be buried to current levels. In some instances, this will overlap with areas of ornithological importance. This includes areas of parts of Chichester and Langstone Harbours SPA and Ramsar site, which could generate impacts for non-breeding/overwintering birds and breeding seabirds and also habitats used by breeding terrestrial birds.

Habitat loss, even of a temporary nature, reduces or removes land areas used by birds for the duration of time between removal and reinstatement, which may include a lead in time for reestablishment of habitat. This reduction or removal could remove or reduce a functional use of a site for feeding, roosting birds or nesting birds, which could lead to population level effects if the removal significantly reduces an available resource within a given area.

Frontage 1A

There will be no temporary loss of habitat within the Chichester and Langstone Harbours SPA /Ramsar site, so no impacts will be generated. However, there will be significant areas of potential nesting habitat for terrestrial breeding birds in the form of trees and scrub that will need to be removed. Bird species using this area are considered common and widespread, but are also of conservation concern such as House Sparrow, Song Thrush and Starling all of which are listed under s41 and BoCC red listed. Which if unmitigated could result in a **moderate adverse** impact to terrestrial birds. The Environment Act (2021) introduced the concept of Biodiversity Net Gain (BNG) with a mandatory requirement for a minimum 10% gain. The scheme will be aiming to deliver these statutory requirements Landscape planting for this scheme has been designed to benefit biodiversity and will benefit the local bird population.

Frontage 2

There will be no temporary loss of habitat within the Chichester and Langstone Harbours SPA / Ramsar site, so no impacts will be generated. There will be significant areas of potential nesting habitat for terrestrial breeding birds in the form of trees and scrub that will need to be removed. Bird species using this area are considered common and widespread, but are also of conservation concern such as house sparrow, song thrush and starling all of which are listed under s41 and BoCC red listed. Which if unmitigated could result in a **moderate adverse** impact to terrestrial birds. The Environment Act (2021) introduced the concept of Biodiversity Net Gain (BNG) with a mandatory requirement for a minimum 10% gain. The scheme will be aiming to deliver these statutory requirements. Landscape planting for this scheme has been designed to benefit biodiversity and will benefit the local bird population.

Frontages 3, 4 and 5

There will be a temporary loss of intertidal habitat within the Chichester and Langstone Harbours SPA and Ramsar site, this will be within the 20m temporary working area for each frontage and will be reinstated following completion of the works for each section. With a duration of temporary loss of approximately one year for each section. In total this will amount to 0.57ha of temporary loss of which 0.40ha is comprised of coarse shingle and littoral coarse sediment and the remaining 0.17ha constitutes mudflat with small remnants of *Spartina* saltmarsh (see **Figure 8.17** in the marine ecology section), only the mudflat and *Spartina* are considered significant feeding habitat for non-breeding/overwintering bird populations. Data from the overwintering bird surveys in 2020/21 and 2021/22 indicates that of birds observed

within 500m of the proposed defences that only 4% of the SPA assemblage species were observed within 25m of the proposed alignment, this constitutes 332 birds across the entire survey series and an average of 34 birds per survey (0.09% of the Chichester Harbour 5 year average assemblage).

Although there will be no direct temporary loss of water column habitat, it could be considered the area inside the working area and silt curtain will be unavailable to birds and will reduce the available foraging area of breeding terns and gulls. The footprint of the temporary loss of intertidal has been minimised as far as possible, the area of temporary loss equates to 0.01% of the Chichester and Langstone Harbours SPA/Ramsar site. It will only be the short period at the top of the tide when the encroached area will be covered by water, and therefore for most of the tidal frame it will not be deep enough to be suitable for feeding terns. This effect will be temporary, a maximum of one breeding season per frontage, very localised and short-duration. It is considered to represent a **minor adverse** impact just for the duration of the construction. No specific mitigation is proposed for this impact pathway to these receptors, other than the foreshore working area being strictly limited to a maximum working footprint of 20m seaward of the line of the new defence. The works could also increase the turbidity of the water which could decrease foraging efficiency for these species. A silt curtain, which has been shown to be highly effective on other schemes, will be deployed along this frontage for the duration of works, which will limit any increases in turbidity to the 20m working area.

A large part of SBS auxiliary site H26 will form the main compound and will be largely unavailable to birds for the duration of the work and a thin strip of H120 will be cleared to enable the construction of Frontage 5. It should be noted that both of these sites are not classified by the SWBGS due to limited recent records for these sites. Solent Bird Studies (SBS) data for H26 shows a single record of a little egret in 2016, over-wintering bird surveys in 2020-21 and 2021-22 observed no relevant birds using this location. H120 is an area of wet woodland that is used in the winter as a night roost by little egret and grey heron, SBS data has a 2017 record of 4 grey herons, over-wintering bird surveys in 2020-21 and 2021-22 observed regular use of the site with a peak of 21 little egret in September (probably associated with post breeding), with more normal winter numbers of up to 3-4 little egrets and 4-7 grey heron during the daytime, and the night survey indicated a peak of 31 birds (probably little egrets but may include cattle egret and grey heron). However, the proposed vegetation to be removed will not directly affect areas that are used by roosting birds, therefore it is not considered to represent a serious impact.

There will be significant areas of potential nesting habitat for terrestrial breeding birds in the form of trees and scrub that will need to be removed. Bird species using this area are considered common and widespread but are also of conservation concern such as House sparrow, song thrush and starling all of which are listed under s41 and BoCC red listed. Also within this sub frontage is a colony of little egret, grey heron and cattle egret. Which if unmitigated could result in a **moderate adverse** impact to terrestrial birds. The Environment Act (2021) introduced the concept of Biodiversity Net Gain (BNG) with a mandatory requirement for a minimum 10% gain. The scheme will be aiming to deliver these statutory requirements. Landscape planting for this scheme has been designed to benefit biodiversity and will benefit the local bird population.

Mitigation

Frontages 1A, 2 and 5

- All losses of potential nesting habitat will be addressed in the BNG Plan and CEMP and will be submitted for approval prior to commencement.
- A range of nest boxes suitable for species present will be erected in adjacent habitats prior to commencement of site clearance, details will be provided within the CEMP.

Frontages 3, 4 and 5

- Works will be undertaken from the landward side wherever possible to minimise disturbance of the foreshore. Where foreshore working is required, this will be restricted to a maximum of 20 metres seawards of the existing defences and will be clearly demarcated by the silt curtain.
- The area excavated for construction of the buried apron of the new sea walls will be reinstated to existing foreshore levels using material retained from the excavation. Methods will be finalised once a contractor has been appointed and confirmed within the CEMP and BNG plan.
- A silt curtain will be deployed and maintained throughout construction of these frontages to avoid increased water turbidity of adjacent areas.

With the mitigation proposals outlined above and the short-term and relatively localised effects of temporary habitat loss of intertidal areas on SPA/Ramsar non-breeding/overwintering birds it is considered it would result in impacts of **minor adverse significance**.

With mitigation proposals outlined above and the scope and scale of the temporary losses in relation to the foraging resource available, the effect on breeding SPA seabirds is considered to be **negligible**.

With mitigation proposals outlined above and the short-term and localised effects of temporary habitat loss on SPA/Ramsar non-breeding/overwintering birds using functionally linked land it is considered it would result in impacts of **minor adverse significance**.

Temporary loss of habitat will have some short term and localised impacts to breeding terrestrial bird populations. In the short term, this is considered to be of **minor adverse significance** and in the medium-term, landscaping plans will deliver benefits for nesting birds.

10.6.4 Disturbance to nesting birds

Under the Wildlife and Countryside Act 1982 (as amended) it is an offence to destroy or damage the nest of birds of any species. In addition, species covered by Schedule 1 of the Act are specially protected.

Suitable habitat for nesting birds occurs within the site boundary, including trees, thick scrub, low scrub and rough grassland, which could be used by a variety of nesting species. Breeding bird surveys noted mainly common and widespread species of bird. It should, however, be noted that although house sparrow, starling and song thrush are common and widespread species they are also red list species (Birds of Conservation Concern 4 (2015)) due to recent significant declines and are also species of principle concern under s41 of the NERC Act (2006). Two territories of the Schedule 1 Cettis warbler were also noted. It is considered that

the scrub and woodland habitat provide nesting opportunities for a range of common and widespread species of breeding bird.

Although nesting colonies for SPA breeding seabirds are present locally, due to the distance (1.3km to the nearest colony), direct effect on nests are considered highly unlikely and have therefore been scoped out of this assessment. Potential indirect effects have been assessed in relevant sections.

Frontage 1A & 2

There will be significant areas of potential nesting habitat for terrestrial breeding birds in the form of trees and scrub that need to be removed to facilitate the construction of sea defences. As these could provide nesting opportunities for bird species using this area, without mitigation, potential exists for damaging or destroying birds nests and possible breaches of legislation and would represent a **moderate adverse** impact. The Environment Act (2021) introduced the concept of Biodiversity Net Gain (BNG) with a mandatory requirement for a 10% gain. The scheme will be aiming to deliver these statutory requirements. Landscape planting for this scheme has been designed to benefit biodiversity and will benefit the local bird population.

Frontage 5

There will be significant areas of potential nesting habitat for terrestrial breeding birds in the form of trees and scrub that need to be removed to facilitate the construction of sea defences. Also within close proximity of this sub frontage is a colony of little egret, grey heron and cattle egret. As these habitats could provide nesting opportunities for bird species using this area, without mitigation, potential exists for damaging or destroying birds nests and possible breaches of legislation and would represent a **moderate adverse** impact. The Environment Act (2021) introduced the concept of Biodiversity Net Gain (BNG) with a mandatory requirement for a 10% gain. The scheme will be aiming to deliver these statutory requirements. Landscape planting for this scheme has been designed to benefit biodiversity and will benefit the local bird population.

Also in close proximity to this frontage is a Cettis warbler territory, which are specially protected from disturbance. Cettis warblers locally prefer to nest in areas of reedbed with a degree of scrub encroachment and the territory identified is associated with the reedbed to the north of Millpond. No habitat in this area is being removed and it is considered that a suitable buffer exists between the works and this territory, and therefore impacting this species is considered highly unlikely.

Mitigation

Frontage 1A, 2 and 5

- All suitable bird nesting habitat within working areas to be cleared outside of the bird nesting period (no bird nesting habitat to be cleared between March to August inclusive). If this is not possible all potential habitat to be checked by a suitably experienced and qualified ecologist prior to commencement.
- All losses of potential nesting habitat losses will be addressed in the BNG Plan and CEMP and will be submitted for approval prior to commencement.

- A range of nest boxes suitable for species present will be erected in adjacent habitats prior to commencement of site clearance. Details will be provided within the CEMP.

Frontage 5

- An appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts to nesting egrets, herons and Cetti's warbler at Langstone Millpond during the nesting season. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g. a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic barriers, implementation of timing restrictions, to cessation of construction activities. If other measures are not sufficient to avoid significant disturbance on nesting birds in this colony protective measures will be implemented until nesting attempts have been completed. Details of this watching brief will be within the final CEMP.

Due to the distance to known breeding colonies of SPA breeding seabirds, it is considered that nest disturbance will have no significant impact.

De-risking by the appropriate seasonal removal of potential nesting habitat will reduce the potential of impacts on common and widespread species and due to the distance and lack of habitat directly affected for Cetti's warbler, this will be **negligible**. Potential impacts to terrestrial breeding birds and the nesting colonies of little egret, grey heron and cattle egret are more difficult to accurately predict, due to limited research on these species, however anecdotally they are considered of low sensitivity to disturbance. Delivery of the above mitigation should ameliorate most adverse effects to a residual impact of **minor adverse significance**.

10.7 Potential Impacts During Operation

The effects of the operational phase of the proposed scheme on ornithology within the study area has been assessed. An outline of the nature of the impacts and a description of the significance of effect upon ornithology is provided below.

10.7.1 Permanent habitat loss for birds

The footprint of the new sea defences will result in the loss of small areas of habitat, including supporting intertidal and terrestrial habitats and loss of water column. Loss of habitat results in a reduced area that can be used by birds and can affect site integrity. In this case the receptors are non-breeding SPA/Ramsar birds, non-breeding SPA/Ramsar birds using functionally linked lands and breeding SPA seabirds using the water column for foraging. The scheme design has minimised habitat footprint losses as far as practically possible. Areas of permanent intertidal habitat loss will occur as a result of the new concrete sea defence structures in Frontages 3, 4 and 5 and the earth embankment at Frontage 5 will sit over part of SBS site H26.

It is considered that the landscaping scheme delivered through the CEMP and BNG requirements will result in at least no net loss of bird nesting habitat across all of the frontages and are therefore not considered further in this section.

Frontage 3, 4 and 5

In Frontages 3, 4 and 5, the new defences will result in the permanent loss of a narrow ribbon of intertidal sediment habitat under the footprint of the new structures. Along the whole of this area (Frontages 3, 4 and 5), this equates to 172 m² of foreshore that will be lost under the footprint of the new structures as described in **Chapter 8 (Marine Ecology)**. The area of permanent habitat loss that will arise from the proposed Scheme has been minimised as far as technically feasible, as described in **Chapter 4 (Alternatives)** and the **Detailed Design Report (AECOM (2024))**. The proposed design for the new sea walls in Frontages 3, 4 and 5, with a buried apron, has significantly reduced the area of permanent habitat loss compared to the earlier outline design.

In total this will amount to 172m² of permanent intertidal habitat loss which is comprised of coarse shingle and littoral coarse sediment and is well compacted due its use for vehicular access and is therefore not considered significant feeding habitat for non-breeding/overwintering bird populations. Data from the overwintering bird surveys in 2020/21 and 2021/22 would indicate that of birds observed within 500m of the new defences that only 4% of the SPA assemblage species in this survey were observed within 25m of the proposed alignment, this constitutes 332 birds across the entire survey series and an average of 34 birds per survey (0.09% of the Chichester Harbour 5 year average assemblage). The area of permanent habitat loss that will result from the proposed works represents a very small footprint of effect in an intertidal habitat that is not particularly important for feeding non-breeding/overwinter SPA/Ramsar birds and is therefore considered to be of low to medium magnitude. Also in the balance of consideration is that the new sea defence whilst encroaching into the SPA/Ramsar does incorporate a handrail and/or upstand wall along most of the alignment. Which will act to constrain footpath users to the defined path and will help reduce recreational disturbance in this location. However, it should be noted the international importance (very high value) of this area as SPA/Ramsar supporting habitat, the impact is considered to be of **moderate to major adverse significance**.

A small part of SBS auxiliary site H26 will have an area of earth embankment sitting upon it, largely running alongside the existing hedgerow. It should be noted that this site is not classified by SWBGS due to limited recent records of bird use on this site. Solent Bird Studies (SBS) data for H26 shows a single record of a little egret in 2016, over-wintering bird surveys in 2020-21 and 2021-22 observed no relevant birds using this location. In total 139m² of H26 will be covered by the new embankment, which constitutes 0.2% of the total area. Data indicates that the site is infrequently used by over-wintering birds and the alignment of the feature is along an existing hedgerow, which will limit its impact. Over-wintering birds tend to avoid areas close to perceived predator threat and therefore do not use areas close to hedgerows etc. The impact of permanent loss of supporting habitat on non breeding/overwintering SPA birds using functionally linked land is considered to be **negligible**.

Although there will be a very small reduction in the area of water column at high tidal states, it will only be the short period at the top of the tide when the encroached area will be covered by water, and therefore for most of the tidal frame it will not be deep enough to be suitable for feeding terns. Tern and gull species will forage for food across the whole of the SPA and this

will reduce the available foraging area of breeding terns and gulls. The footprint of the permanent loss of intertidal has been minimised as far as possible, the area of temporary loss equates to 0.0002% of Chichester and Langstone Harbour SPA. The impact of permanent loss of water column habitat on SPA breeding seabirds, even balancing the sites close proximity to breeding colonies is considered to be **negligible**.

Opportunities for intertidal habitat creation and/or improvement to offset the footprint losses have been considered as part of the detailed design work but are extremely limited within the proposed Scheme area given the very linear and narrow nature of the Scheme and the Conservation Areas / Listed Building heritage requirements and constraints on cladding and finishes. Given that there are no opportunities to offset within the Scheme area, the footprint intertidal habitat losses from the proposed Scheme will be added to the SSD HCRP. This is described further within the Information for HRA in **Appendix C** and considered to result in a residual impact of **minor adverse** significance for the permanent loss of SPA/Ramsar habitat.

10.7.2 Disturbance during maintenance operations

It is expected that once the proposed scheme is operational, no maintenance (other than annual inspection and clearing of the drainage infrastructure) will be required for 10 years (AECOM, 2024). After that time, maintenance activities that will require access via the foreshore are likely to be limited to repairs to the concrete sea wall / cladding, maintenance of the flood gates, and maintenance of the outfalls and tidal flaps. The effect of direct disturbance and abrasion on the intertidal habitat during maintenance works will mirror that described for the construction works but will likely be of a smaller magnitude and duration than the initial capital construction works. Similar mitigation measures will be included in the methods and CEMP/RAMS for any maintenance activities required during the operational phase. Without mitigation this has the potential or **moderate adverse** effects.

Mitigation

- Where possible, apart from urgent and emergency repairs, no construction work to be undertaken during the overwintering bird period October to March inclusive.
- If urgent or emergency work is proposed within the over-wintering bird period, October to March inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g. a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance to the over-wintering birds. Details of this watching brief will be within the CEMP/RAMS.
- If any works are required in close proximity to the nesting egrets and herons at Langstone Millpond during the nesting period March to August inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g. a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in

Mitigation

place immediately to address it. Such measures could range from the installation of acoustic/visual barriers, implementation of timing restrictions to cessation of construction activities, if other measures are not sufficient to avoid significant disturbance on nesting birds in this colony protective measures will be implemented until nesting attempts have been completed. Details of this watching brief will be within the CEMP/RAMS.

As such, it is expected that there will be an impact of **minor adverse significance** for residual impacts from temporary disturbance of the intertidal habitat during maintenance activities in the operational phase of the proposed Scheme.

10.8 Cumulative Effects

The Cumulative Impacts chapter (**Chapter 16**) identified plans and projects to be considered for cumulative impacts (**Table 16.1**). The 16 other plans and projects identified have been assessed for any potential in-combination effects to terrestrial ecological receptors within the proposed Langstone FCERM Scheme.

The Langstone FCERM Scheme will work within the HBC Core strategy of the adopted Local Plan 2011 by protecting where possible and enhancing the borough's statutory and non-statutory designated habitats and features of biological interest through appropriate mitigation measures and habitat improvements.

Table 16.1 lists the plans and projects scoped into the cumulative impacts assessment for the proposed Scheme. **Table 10.9** below provides an assessment of potential cumulative effects on ornithological receptors between the following plans and projects and the proposed Scheme. The remaining plans or projects in Table 16.1 have been scoped out of the ornithology cumulative effects assessment as they have no potential for impacts on the SPA, bird habitats.

Table 10.9: Assessment of potential cumulative effects on ornithological receptors.

Plan or Project	Potential for cumulative effects from SPA habitat loss?	Potential for cumulative effects from SPA supporting habitat loss?
The North Solent Shoreline Management Plan	Yes. The proposed Scheme is delivering the SMP and PEMS policy of 'Hold the Line' (HTL) for this section of coastline. The effects of the SMP and Strategy policies on intertidal habitats was assessed within the relevant SEAs and HRAs, which both concluded a significant adverse effect on the Solent European Marine Sites due to permanent habitat loss due to coastal squeeze and are being compensated via the HCRP. The additional unforeseen footprint losses from the proposed Scheme, which are required to deliver the SMP and Strategy HTL policy, will also be added to the HCRP.	Yes. There are proposals in the NSSMP and PEMS that propose the realignment of sites that may include supporting habitat. These losses will be picked up through the RHCP or scheme level mitigations as required,
Portchester to Emsworth FCERM Strategy (PEMS)		
Hayling Island Coastal Management Strategy (HICMS)	Yes. The HICMS is still in development and has not yet been adopted by Havant Borough Council or approved by the Environment Agency. Nevertheless, the draft Strategy and its accompanying draft environmental assessments have identified that option development units where a sustain, maintain and/or improve policy is proposed will result in the loss of intertidal habitat due to coastal squeeze. However, these coastal squeeze losses have already been assessed and included in the HCRP for compensation as part of the North Solent SMP environmental assessments.	Yes. The HICMS is still in development and has not yet been adopted by Havant Borough Council or approved by the Environment Agency. Nevertheless, the draft Strategy and its accompanying draft environmental assessments have identified that option development units where a NAI or realignment is proposed will result in a change to some inland supporting habitats. However, the conclusions of the HRA indicate that the change is generally considered to be negligible or beneficial for over-wintering bird populations.
Havant Borough Local Plan – The Core Strategy (2011) and The Allocations Plan (2014)	No. There are no policies or allocations within the Local Plan that will result in the loss of intertidal habitat.	Yes. There are proposals in the local plan that propose residential development on a number of areas considered that may include supporting habitat
North Portsea Island (NPI) FCERM Scheme	Yes. The NPI Scheme will result in the permanent loss of intertidal habitat, both as a result of coastal squeeze and from direct footprint losses. However, these losses have already been assessed within the SEA and HRA for the North Solent SMP	No. Phases 1 to 4b of the NPI scheme have been completed and have therefore been considered as part of the baseline environment within this ES. Construction for Phase 5 has commenced to be completed in 2027 and therefore may be some overlap temporally

Plan or Project	Potential for cumulative effects from SPA habitat loss?	Potential for cumulative effects from SPA supporting habitat loss?
	and the Portsea Island Coastal Strategy (for coastal squeeze) and within the EIA and HRA for the NPI Scheme (for footprint losses) and the losses are being compensated via the HCRP.	with the construction of the proposed Scheme. However, the NPI5 works only include a very small amount encroachment into supporting habitat and disturbance thereof. Therefore, together with the mitigation measures incorporated into the proposed Scheme works, there are unlikely to be any significant impacts on ornithological supporting habitat receptors between this project and the proposed Scheme.
King Charles III England Coast Path: Portsmouth to South Hayling Stretch	No. The Portsmouth to South Hayling (PSH) stretch of the England Coast Path (ECP) runs from Old Portsmouth to South Hayling seafront, around Langstone Harbour. The proposal for the PSH stretch of the ECP has been published (with changes submitted in May 2021) but this stretch is still being determined by the Secretary of State. The length of this stretch that overlaps spatially with the proposed Scheme is PSH-2-S061. The Access and Sensitive Features Assessment (incorporating the HRA and SSSI impacts) for the PSH stretch of the ECP did not identify any loss or disturbance of SPA habitat as a result of the proposed route. But may increase recreational disturbance. But on balance, there is limited potential for cumulative impacts from SPA habitat loss and degradation with the proposed Scheme.	No. The Portsmouth to South Hayling (PSH) stretch of the England Coast Path (ECP) runs from Old Portsmouth to South Hayling seafront, around Langstone Harbour. The proposal for the PSH stretch of the ECP has been published (with changes submitted in May 2021) but this stretch is still being determined by the Secretary of State. The length of this stretch that overlaps spatially with the proposed Scheme is PSH-2-S061. The Access and Sensitive Features Assessment (incorporating the HRA and SSSI impacts) for the PSH stretch of the ECP did not identify any loss or disturbance of intertidal habitat as a result of the proposed route. But may increase recreational disturbance. But on balance, there is limited potential for cumulative impacts from SPA supporting habitat loss and degradation with the proposed Scheme.
King Charles III England Coast Path: South Hayling to East Head Stretch	No. The South Hayling to East Head (SHE) stretch of the ECP runs from South Hayling seafront to West Wittering beach. The proposal for the SHE stretch of the ECP has been published but this stretch is still being determined by the Secretary of State. The length of this stretch that overlaps spatially with the proposed Scheme is SHE-2-S002 to SHE-2-S007. The HRA for the SHE stretch of the ECP identifies a very small (<5m ²) loss of intertidal habitat in	No. The South Hayling to East Head (SHE) stretch of the ECP runs from South Hayling seafront to West Wittering beach. The proposal for the SHE stretch of the ECP has been published but this stretch is still being determined by the Secretary of State. The length of this stretch that overlaps spatially with the proposed Scheme is SHE-2-S002 to SHE-2-S007. The route may increase recreational disturbance. But it is unlikely that there will be any significant

Plan or Project	Potential for cumulative effects from SPA habitat loss?	Potential for cumulative effects from SPA supporting habitat loss?
	Chichester Harbour due to the installation of a boardwalk (at Gutner Point) and a 20m fence (at Ella Nore). However, given the inconsequential size of this habitat loss, it is unlikely that there will be any significant cumulative effect with the proposed Scheme.	cumulative effect with the proposed Scheme.
Rook farm – development of up to 300 dwellings. APP/21/01434	No. This development does not propose any actions that could cause a direct impact upon the SPA	No. The development site sits on a site classified as core by the SWBGS. A mitigation package will be required for this proposal and due to the short-term and minimal impact the proposed scheme will have on supporting habitat it is unlikely that it will result in a cumulative impact.
Farlington Marshes Coastal Defence and Regulated Tidal Exchange (RTE) scheme (22/00006/EIASCO)	The Environment Agency is working in partnership with Portsmouth City Council (PCC) to investigate options for a sustainable solution to flood risk management at Farlington Marshes. As a result of engagement in 2019 with key stakeholders including PCC, Natural England, Coastal Partners and the Hampshire and Isle of Wight Wildlife Trust the proposed approach is currently Hold the Line with Regulated Tidal Exchange until 2060. An outline design was produced in 2022 and EIA Scoping was undertaken with PCC and the MMO. Information on the project website indicates that a planning application for the project will be submitted in early 2024. However, at the time of writing this ES (March 2024), there is insufficient information available on the timing or detailed design of the proposed works at Farlington Marshes to be able to undertake any meaningful assessment of potential cumulative effects with the proposed Langstone FCERM Scheme	
Partial Reinstatement and Repair of existing sea wall to a height of 1.4m and Creation of an inner bund with a maximum height of 2.25m to protect habitat for wintering bird populations. Northney Farm, St Peters Road, Hayling Island (APP/23/00507)	Yes. The proposed curlew mitigation at Northney Farm will result in the loss of intertidal habitat due to coastal squeeze from maintenance of the frontline sea wall. However, this application has not yet been approved and it is expected that it would need to identify and secure compensatory intertidal habitat in order to meet HRA requirements as it would have an adverse effect on the integrity of the SAC, SPA and Ramsar site alone and therefore is excluded from the in-combination / cumulative effects assessment.	No. As conceived the Northney Farm proposal will protect supporting habitat. As such, there is no potential for cumulative impacts on supporting habitat between this project and the proposed Scheme.
Land north of Oysters, Station Road, Hayling Island. Development of 29 dwellings and	No. This development does not propose any actions that could cause a direct impact upon the SPA	No. The development site sits on a site classified as secondary support by the SWBGS. A mitigation package will be required for this proposal and due to the short-term

Plan or Project	Potential for cumulative effects from SPA habitat loss?	Potential for cumulative effects from SPA supporting habitat loss?
associated highway works. APP/21/01350		and minimal impact the proposed scheme will have on supporting habitat it is unlikely that it will result in a cumulative impact.
Land south of Saltmarsh Lane, Hayling Island. Development of up to 60 dwellings and associated landscape and highway works. APP/21/01351	No. This development does not propose any actions that could cause a direct impact upon the SPA	No. The development site sits on a site classified as low use by the SWBGS. A mitigation package will be required for this proposal and due to the short-term and minimal impact the proposed scheme will have on supporting habitat it is unlikely that it will result in a cumulative impact.
Land south of the Mallards and west of Langstone Road, Havant. Development of 65 dwellings. APP/21/00647	No. This development does not propose any actions that could cause a direct impact upon the SPA	No. The development site sits on a site classified as secondary support by the SWBGS. A mitigation package will be required for this proposal and due to the short-term and minimal impact the proposed scheme will have on supporting habitat it is unlikely that it will result in a cumulative impact.

All of the potential ornithology effects identified from the proposed works at Langstone are small scale, highly localised and no effects would extend beyond the immediate area of the Langstone FCERM Scheme boundary. Therefore, it is highly unlikely that any of the identified plans or projects will have any cumulative impacts on the ornithological interest within the proposed Scheme.

10.9 Conclusions

Table 10.10 below summarises the potential impacts on ornithology that could result from delivery of the Langstone Scheme. Where impacts have been identified, appropriate mitigation has been incorporated to remove or reduce this impact. Any residual impact resulting from the delivery of the scheme, after mitigation measures have been adopted; has been presented to demonstrate environmental acceptability.

Table 10.10: Overview of potential impacts, necessary mitigation and residual impacts

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
Noise from construction works on site displacing birds in the local area (construction)	SPA/Ramsar non-breeding/overwintering birds - Major Adverse Significance	<u>Frontage 1A</u> Wacker plate or compacting plant with a similar noise profile not to be used between chainage 120-188 during the overwintering bird period October-March inclusive. <u>Frontage 2</u>

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
	SPA/Ramsar non-breeding/overwintering birds using functionally linked land - Major Adverse Significance SPA breeding seabirds – Major adverse Significance. Egret/Heron breeding colony- Major Adverse Significance Terrestrial breeding birds- negligible	- No construction work to be undertaken during the overwintering bird period October-March inclusive. <u>Frontage 3</u> - Piling work between chainage 0-66 and all construction work between 100-152 will not be undertaken during the overwintering bird period October-March inclusive. <u>Frontage 4</u> - No construction work to be undertaken during the overwintering bird period October-March inclusive. <u>Frontage 5</u> - No construction work to be undertaken between chainage 0-95 or piling / trench sheet installation work between chainage 96-185 during the overwintering bird period October-March inclusive. - To minimise risk of disturbance to egret and heron roost, no night working and particularly no artificial lighting between chainage 112-221. - An appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts to nesting egrets and herons at Langstone Millpond during the nesting period March to August inclusive. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g., a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance on nesting birds in this colony will be implemented until nesting attempts have been completed. Details of this watching brief will be set out within the final CEMP. <u>All Frontages</u> - Installation of piles will be undertaken using vibro piling techniques as standard. Percussive piling will only be used when necessary to achieve the required design depth. If percussive piling is required, a soft start procedure will be implemented for a minimum of 20 minutes. Should piling cease for a period greater than 10 minutes, then the soft start procedure will be repeated. - To avoid the transmission of impulsive noise into the water column, piling on the foreshore will only be undertaken in the dry (when the surface of the substrate is above the current tide level).

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		- For any work proposed within the over-wintering bird period, October-March inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g., a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance to the over-wintering birds. Details of this watching brief will be provided within the final CEMP, which will be submitted for approval by the LPA / Natural England prior to the commencement of construction activities. - In the event of severe weather, defined as frozen ground conditions reported by over half of the meteorological stations in England/Wales, after 7 consecutive days (allowing for short (24-48 hours) periods of thaw) an expert review will be undertaken by the project ecologist and, if necessary, work may be restricted or halted. After 14 consecutive days of frozen ground conditions and if a statutory suspension is announced, all works will cease during the suspension period. Details of this process will be laid out within the final CEMP. Delivery of the above mitigation and particularly the robust application of an ornithological watching brief should ameliorate adverse effects to minor adverse significance.
Visual disturbance from construction works on site displacing birds in the local area (construction)	SPA/Ramsar non-breeding/overwintering birds – Major Adverse Significance SPA/Ramsar non-breeding/overwintering birds using functionally linked land - Major Adverse Significance	<u>Frontage 3&4</u> - No construction work to be undertaken during the overwintering bird period October-March inclusive. <u>Frontage 5</u> - No construction work to be undertaken between ch 0-110 during the overwintering bird period October-March (inclusive). - All vegetation clearance should be undertaken outside of the bird nesting season March-August inclusive, to avoid disturbance of the egret/heron nesting colony. - No site personnel to enter the woodland area around the egret/heron nesting colony during the bird breeding season March-August inclusive. <u>All frontages</u>

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
	SPA breeding seabirds - negligible Egret/Heron breeding colony- Major Adverse Significance Terrestrial breeding birds- negligible	- For any work proposed within the over-wintering bird period, October- March inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g., a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of screening barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance to the over-wintering birds. Details of this watching brief will be included within the final CEMP, to be confirmed once a contractor has been appointed. - In the event of severe weather, defined as frozen ground conditions reported by over half of the meteorological stations in England/Wales, after 7 consecutive days (allowing for short (24-48 hours) periods of thaw) an expert review will be undertaken by the project ecologist and if necessary, work may be restricted or halted. After 14 consecutive days of frozen ground conditions and if a statutory suspension is announced all works will cease during the suspension period. Details of this process will be laid out within the final CEMP. With the mitigation above the residual impact is expected to be of minor adverse significance.
Temporary loss of bird habitats (construction)	SPA/Ramsar non-breeding/overwintering birds - Minor Adverse Significance SPA/Ramsar non-breeding/overwintering birds using functionally linked land - Minor Adverse Significance SPA breeding seabirds - negligible	<u>Frontages 1A, 2 and 5</u> - All losses of potential nesting habitat will be addressed in the BNG Plan and CEMP and will be submitted for approval prior to commencement. - A range of nest boxes suitable for species present will be erected in adjacent habitats prior to commencement of site clearance, details will be provided within the CEMP. <u>Frontages 3, 4 and 5</u> - Works will be undertaken from the landward side wherever possible to minimise disturbance of the foreshore. Where foreshore working is required, this will be restricted to a maximum of 20 metres seawards of the existing defences and will be clearly demarcated by the silt curtain. - The area excavated for construction of the buried apron of the new sea walls will be reinstated to existing foreshore levels using material retained from the excavation. Methods will be finalised once a contractor has been appointed and confirmed within the CEMP and BNG plan.

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
	Terrestrial breeding birds - Moderate Adverse Significance in short-term	A silt curtain will be deployed and maintained throughout construction of these frontages to avoid increased water turbidity of adjacent areas. With the mitigation above the residual impact is expected to be of minor adverse significance/negligible.
Disturbance to nesting birds (<i>construction</i>)	SPA breeding seabirds – Negligible/Minor adverse Egret/Heron breeding colony - Moderate Adverse Significance Terrestrial breeding birds - moderate adverse significance	<u>Frontage 1A, 2 and 5</u> - All suitable bird nesting habitat within working areas to be cleared outside of the bird nesting period (no bird nesting habitat to be cleared between March to August inclusive). If this is not possible all potential habitat to be checked by a suitably experienced and qualified ecologist prior to commencement. - All losses of potential nesting habitat losses will be addressed in the BNG Plan and CEMP and will be submitted for approval prior to commencement. - A range of nest boxes suitable for species present will be erected in adjacent habitats prior to commencement of site clearance. Details will be provided within the CEMP. <u>Frontage 5</u> An appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts to nesting egrets, herons and Cetti's warbler at Langstone Millpond during the nesting season. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g. a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic barriers, implementation of timing restrictions, to cessation of construction activities. If other measures are not sufficient to avoid significant disturbance on nesting birds in this colony protective measures will be implemented until nesting attempts have been completed. Details of this watching brief will be within the final CEMP. De-risking by the appropriate seasonal removal of potential nesting habitat will reduce the potential of impacts on common and widespread species and due to the distance and lack of habitat directly affected for Cetti's warbler, this will be negligible. Potential impacts to terrestrial breeding birds and the nesting colonies of little egret, grey heron and cattle egret are more difficult to accurately predict, due to limited research on these species, however anecdotally they are considered of low sensitivity to disturbance. Delivery of the above mitigation

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		should ameliorate most adverse effects to a residual impact of minor adverse significance .
Loss of feeding areas for birds through permanent loss of intertidal habitat from scheme footprint and coastal squeeze (operation)	Permanent loss of SPA/Ramsar - Moderate to major adverse significance Permanent loss of functionally linked land - negligible Loss of water column habitat - negligible	Opportunities for intertidal habitat creation and/or improvement to offset the footprint losses have been considered as part of the detailed design work but are extremely limited within the proposed Scheme area given the very linear and narrow nature of the Scheme and the Conservation Areas / Listed Building heritage requirements and constraints on cladding and finishes. Given that there are no opportunities to offset within the Scheme area, the footprint intertidal habitat losses from the proposed Scheme will be added to the SSD HCRP. This is described further within the Information for HRA in Appendix C and considered to result in a residual impact of minor adverse significance for the permanent loss of SPA/Ramsar habitat.
Disturbance / displacement of birds during any maintenance and repair work required during the lifetime of the sea defence (operation)	All receptors – Moderate adverse significance	- Where possible, apart from urgent and emergency repairs, no construction work to be undertaken during the overwintering bird period October to March inclusive. - If urgent or emergency work is proposed within the overwintering bird period, October to March inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g. a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance to the overwintering birds. Details of this watching brief will be within the CEMP/RAMS. - If any works are required in close proximity to the nesting egrets and herons at Langstone Millpond during the nesting period March to August inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g. a pattern of effect amounting to an

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic/visual barriers, implementation of timing restrictions to cessation of construction activities, if other measures are not sufficient to avoid significant disturbance on nesting birds in this colony protective measures will be implemented until nesting attempts have been completed. Details of this watching brief will be within the CEMP/RAMS. As such, it is expected that there will be an impact of minor adverse significance for residual impacts from temporary disturbance of the intertidal habitat during maintenance activities in the operational phase of the proposed Scheme.
Overall summary and confidence	The proposed Scheme works are considered environmentally acceptable, in terms of impacts on ornithology receptors. Confidence in this assessment is high for SPA over-wintering birds, SPA over-wintering birds using functionally linked land, SPA breeding seabirds and terrestrial breeding birds in relation to planning regulations as these areas have been informed through desk-based assessments using sources accepted as industry standards and best practice and by additional site-specific surveys by qualified and experienced ecologists. This assessment has been undertaken by an experienced senior ecologist who is proficient in undertaking ornithological impact assessments and reviewed/approved for quality assurance by a senior officer.	

10.10 References

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