



# An impact assessment for new facilities on Spurn Peninsula and suggested mitigation



John Underhill-Day

An impact assessment for new facilities on  
Spurn Peninsula and suggested mitigation

An impact assessment for new facilities on  
Spurn Peninsula and suggested mitigation



Date: May 2013

Version: Final

Recommended Citation: Underhill-Day, J. C. (2013). An impact assessment for new facilities on Spurn Peninsula and suggested mitigation

## Contents

<b>Contents .....</b>	<b>4</b>
<b>Acknowledgements .....</b>	<b>4</b>
<b>1. Introduction .....</b>	<b>6</b>
Overview .....	6
The Spurn Peninsula: Background .....	6
Project Proposal .....	8
<b>The Lighthouse – Heritage centre .....</b>	<b>8</b>
<b>The Gun Store – Public lavatories .....</b>	<b>9</b>
Review of the designations and wildlife conservation features of the Spurn Peninsula .....	10
<b>Humber SAC .....</b>	<b>10</b>
<b>The Humber Estuary SPA and RAMSAR site .....</b>	<b>12</b>
<b>Humber Estuary SSSI .....</b>	<b>14</b>
<b>Birds and the Spurn Peninsula .....</b>	<b>15</b>
<b>Vascular plants and the Spurn Peninsula .....</b>	<b>15</b>
<b>Invertebrates and the Spurn Peninsula .....</b>	<b>16</b>
<b>National and international designated habitats .....</b>	<b>16</b>
<b>2. Potential Impacts .....</b>	<b>18</b>
Overview .....	18
Potential impacts during construction .....	18
Potential impacts associated with the use of new facilities .....	19
<b>3. References .....</b>	<b>24</b>
<b>4. Appendix 1 .....</b>	<b>25</b>

## Acknowledgements

This report was commissioned by Yorkshire Wildlife Trust and our thanks go to Harry Watkins and Andy Gibson for an informative site visit and their steer on the project.

# An impact assessment for new facilities on Spurn Peninsula and suggested mitigation

## Summary

This report was commissioned by Yorkshire Wildlife Trust following proposals at their reserve on the Spurn Peninsula for the conversion of the main lighthouse to a heritage centre and the provision of toilets and the construction of safety railing and steps to a former gun emplacement. The proposals include improvements and increased maintenance of existing car parks, the creation of mown paths with sections of boardwalk, disabled access to the toilets, and improved interpretation to the gun emplacement. The purpose of the report is to assess the potential impacts from construction and use of these facilities on the wildlife of the peninsula and suggest mitigation measures.

Visitor numbers have been estimated as between about 40-70,000 annually but dogs are not permitted. Visitors include tourists, bird watchers, fishermen and educational parties.

The Spurn peninsula is part of the internationally designated Humber Estuary for its estuarine and sub-maritime habitats and its breeding, wintering and passage birds, and is also part of the Humber Estuary SSSI. It is a national Nature Reserve and is part of the Humberside Heritage Coast. The reserve contains a number of rare and threatened plants and invertebrates.

The potential impacts of the project are from construction work and subsequent use and could impact on the sand dune and salt marsh vegetation and the wintering, passage and breeding birds.

The main potential impacts from construction are increased traffic, with air pollution, noise and light from vehicles and construction work, the storage of materials, spillages, pollutions and the activities of associated personnel causing disturbance, lighting fires, littering and accidentally introducing invasive species.

Mitigation for all these potential impacts can be implemented by tight conditions on vehicle numbers, speeds and emissions, by containing personnel and vehicles within limited areas and setting aside areas for storage of materials and fuel with appropriate safeguards and on-site toilet facilities. Construction noise and dust emission from construction will be managed, there will be no night time working and storage and vehicle parking areas will be checked for introductions.

From the available data it is not possible to predict what increase, if any, the provision of the proposed facilities will have on visitor numbers, although it is expected that visitors will stay longer. It will be necessary to continue to monitor visitor numbers and activity and to put in place a long term visitor strategy to guard against possible changes resulting in unacceptable impacts.

Potential impacts include trampling to sensitive vegetation, disturbance to nesting, feeding and roosting birds, littering, noise, increased fire risk and encouragement of predators through discarded food. At particular risk are saltmarsh, fore dune and mobile dune communities from visitor trampling and disturbance to breeding birds of wet areas, reedbed and scrub. There is a risk of disturbance to feeding wintering and passage waders and wildfowl and roosting waders.

Mitigation includes control of visitor numbers where these breach agreed limits, introduction of a local permit system for fishermen and bait diggers, active path management within a path management strategy, car park management, improved public information and enforcement of speed limits, a no fires and no litter policy backed up by wardening. Support for the current temporary signage and electric fences for beach breeding little terns, and removal of some areas of concrete to re-create dune habitat will also enhance the existing biodiversity interest.

## 1. Introduction

### Overview

- 1.1 The Yorkshire Wildlife Trust has produced proposals for the conversion of the main lighthouse to a heritage centre on their reserve on the Spurn Peninsula, together with the provision of toilets in a redundant ammunition storage building and the provision of safety railing and steps to the main former gun emplacement.
- 1.2 They have commissioned Footprint Ecology to design and analyse a visitor survey and as a separate report to carry out an assessment of the potential impacts from construction and use of these facilities on the wildlife of the peninsula with suggested mitigation. The visitor report is contained in a separate document (Fearnley 2013).
- 1.3 The information made available for the preparation of this report included the reserve management plan, The Environmental Statements and planning details for the three proposals. The relevant wildlife designations were also consulted and verbal information was supplied by Harry Watkins and Andrew Gibson on a visit to the peninsula<sup>1</sup>.

### The Spurn Peninsula: Background

- 1.4 The main peninsula of Spurn and a substantial area of inter-tidal sand and mud were purchased by the Trust in 1960. Further purchases include areas of rough and semi improved grassland) plots to the north of the peninsula, within Kilnsea. The peninsula extends from the north for some 5km in a southerly direction into the mouth of the Humber curving in a south westerly direction and thickening at the tip. Spurn consists of a sand and gravel spit overlying the glacial boulder clay of Holderness that has been created by erosion of the boulder clay cliffs to the north and the process of long shore drift. This together with the draining of a fifth of England through the Humber creates and maintains this landform.
- 1.5 The site has a long history of human activity, the most visible signs of which are the redundant sea defences, most obviously on the seaward side, and the remains of gun emplacements, searchlight batteries, tank traps, and various accommodation and storage buildings scattered around the reserve, largely stemming from military occupation during the two world wars. The road running the length of the peninsula has also been rebuilt on a number of occasions following damage by tides and wind and the remains of former roads are visible in a number of places. On the point a number of buildings are tenanted by RNLi Humber who maintains an operational lifeboat facility on the point which includes residential houses, crew room, garages, generators and potable water tank. Associated British Ports (ABP) also has mess facilities, vessel tracking, personnel accommodation, operational offices and a VTS tower on the point. There are mains electricity and water supplies to the point.

---

<sup>1</sup> Site visit undertaken on 8<sup>th</sup> May 2013

An impact assessment for new facilities on  
Spurn Peninsula and suggested mitigation

- 1.6 There are two redundant lighthouses, both scheduled ancient monuments, the smaller of the two, built in 1852 is on the foreshore to the west of the peninsula, and the larger, known as the Mathews lighthouse (after it's builder) constructed within the dune system in 1893-5 has six stories and a height of 36 metres.
- 1.7 The road is currently maintained by ABP as it is an important link to their pilot station and jetty at the end of the peninsula. Such maintenance includes the replacement of sections of road if these get washed away in winter storms. At such times, the peninsula is only accessible by four wheel drive vehicles
- 1.8 At other times, members of the public can access the peninsula by car (via a manned access point), and can use one of a number of parks towards the end of the peninsula, or a small number of car spaces available along the road itself. There are no other facilities for visitors on the peninsula. The site is visited by local rod and line fishermen, day trippers from nearby towns some of whom come to enjoy the sandy beaches, walkers, bird watchers and educational parties. Dogs are not permitted on the reserve. In total the reserve wardens believe the site is visited by about 70,000 people each year and Fearnley (2013) estimates the number of visitors to the site between 9am and 5pm to lie between 38,743 and 65,695 (dependent on the figure used to scale up car park counts based on vehicle occupancy).
- 1.9 The site contains inter-tidal habitats internationally important for their wintering birds, together with important dune and maritime scrub communities.
- 1.10 The high ground of glacial till ends in the steep bank of the Warren, near the foot of which stands Warren Cottage. South of this area the peninsula narrows and flattens to form a low neck about 30m wide between high water marks rising to 9m O.D. This section has been much modified by human intervention. The distal end of the peninsula is a bulbous shape with higher dunes much modified in part by old military buildings, excavations and imported material. The fact that many of the structures are now wholly or partly covered with sand and vegetation is testimony to the level of vertical accretion in this area.
- 1.11 The Spurn dunes are fed with wind-borne sands principally from landward by the dominantly westerly winds blowing across the sand flats of the Humber Estuary and Spurn Bight. The dunes on the point are clearly accreting more rapidly in a band around the rim inside the strandline forming a marked basin effect.
- 1.12 There is no evidence of any substantial defence works prior to the 19th century. However, following the commercial removal of gravel from the neck of the peninsula over a period of many years, major breaches in the neck of Spurn occurred in the mid-19th century. In response to these breaches, groynes were constructed along the east shore in the 1860s and revetments were added about 1884. Blocks of chalk were dumped to plug the breach of December 1849 which attained a width of 460m and a depth of 5m at high water before it was closed in 1855. The irregular estuary margin consists of the remains of a bank which closed the 1849 breach. In 1855 another straighter Chalk Bank was built further inland. Between the two, an area of saltmarsh

formed connected to the Humber by a tidal creek at the north end. Dune growth was stimulated by the sowing of seeds of marram grass and by thatching. The dune surface was re-graded and probably raised higher still when the Spurn-Kilnsea railway was built by the military about 1915.

- 1.13 The artificial raising of the dune field may well have exacerbated the dysfunctionality of wash-over processes. A sustained programme of groyne building on the east shore between 1864 and 1926 resulted in rapid accretion and an abrupt halt to the natural westward movement of the neck. The west side of the peninsula was strengthened by concrete revetments from 1942 in a bid to maintain Spurn's alignment in the face of inevitable erosion pressure. A wall in front of the Lighthouse was constructed during the 1970's.

## Project Proposal

### The Lighthouse – Heritage centre

- 1.14 The Mathews lighthouse will be converted to a Heritage Centre, acting as the focus for the Trust's activities on Spurn Point and providing space to interpret different elements of the lighthouse's history, context and future. The building will be used principally for education, but will also function as an exhibition space and a visitor centre. The building's scale and size will provide excellent opportunities for visitors to understand Spurn's coastal location, geological landform and habitat matrix, and will form a key element in the interpretation. The floor areas within the building and the internal layout of rooms and stair cases will not change. The building work will be sensitively planned and carried out, however, because the lighthouse is Grade II Listed and is of a unique design, it would be unrealistic to provide disabled access within the building. The Trust has established a Lighthouse Steering Group to guide the proposals for the building restoration and use, and to ensure that the use of the building supports the reserve's designations and landscape character.
- 1.15 Two existing car parks to the north of the lighthouse currently provide informal parking for visitors. Maintenance of these car parks is currently sporadic with verges becoming overgrown, litter accreting, and pedestrian access to and from the car parks ad-hoc as paths are only sporadically maintained. Moreover, at times of high pressure on the peninsula, parking in the car parks is haphazard, leading to an inefficient use of space.
- 1.16 Existing paths will be used to direct pedestrians away from the road and to provide a safe access for all users to the lighthouse. The paths will be mown regularly to form a short sward, and as part of this process small and intermittent boardwalk sections may be needed to provide DDA access.
- 1.17 Active management of the existing paths between the car parks and the lighthouse and their environs will ensure that visitors are encouraged to respect the surrounding habitat and that pressure on the surrounding environment is minimised. Timber bollards will identify the access points and the route to the lighthouse and away from sensitive habitats. The two car parks will be retained, and an improved maintenance programme will be created to ensure that the verges are mown regularly. More regular



litter picking is preferred to the installation of litter bins as a means of controlling waste on site, as this encourages visitors to take more responsibility for their waste.

- 1.18 Natural stone setts will be installed in the existing concrete to sensitively but clearly delineate parking spaces for cars- these are preferred to painting white lines and bays, and is considered to be more in keeping with the landscape character of the peninsular

#### **The Gun Store – Public lavatories**

- 1.19 The need for public lavatories has long been recognised as a necessary facility both locally and by visitors to Spurn. It is proposed to convert the old gun store to provide for this need. The Gun Store was built in 1914 as part of the War Office’s defence strategy for Spurn, and was used to store the firing pin, sights and other sensitive and removable elements of the gun which it served. The building has been vacant since the War Office sold the site to the Yorkshire Wildlife Trust in 1959 and is now derelict. The building is currently in a poor state of repair so this restoration and re-use proposal offers an opportunity to enhance an important example of military heritage and to re-use an existing building avoiding negatively impacting the landscape by creating a new building footprint. The visitor survey undertaken in April 2013 received a number of responses from visitor groups who were interested in the military history of the areas and would like to see this subject feature in the Lighthouse Heritage Centre project (Fearnley 2013). The floor areas within the building will remain unchanged and no increase is proposed. Restoration work to the building’s structure will be on a like-for-like basis. Internally, the building will be fitted out
- 1.20 The building will be converted to provide a clean and easy to maintain public lavatory in line with Building Regulations with separate male and female facilities, both of which will be fitted out to accommodate disabled users. There will also be wash basin facilities.
- 1.21 The existing steps to the building from the road will be used as the principal access, whilst DDA access can be provided by relaying, and re-grading in places the existing tarmac path. An interpretation panel will be located by the entrance to the building to communicate the building’s wartime function and military heritage.
- 1.22 Public Parking is provided at the Point Car Park, located a few metres to the north of the Gun Store. Due to the existing tenancy agreements and the imperative of maintaining constant access for the RNLI and ABP, no parking can be provided adjacent to the building. A pair of swallows are known to breed in the Gun Store, and a replacement habitat will be constructed on the roof to provide alternative habitat and roosting for up to four pairs.
- 1.23 The Yorkshire Wildlife Trust hopes to provide better and safer access to a gun emplacement at Spurn Point. Visitors currently already access the gun emplacement at the end of the peninsula, but in a haphazard manner with Health and Safety risks, as well as potential disturbance to important habitats nearby. The proposal is to formalise this access, to make it safer and better defined and to highlight this important piece of military history and tie it into a wider context of natural and maritime history on the

Humber. The proposal will provide improved access to the gun emplacement with open mesh galvanised steel steps and a mesh walkway taking visitors from the tarmac path at the north east, up to the low level roof, then round the inside of the gun emplacement, and then back down to the existing path to the south. Steel railings will be installed around the edge of the roofs (with a fall height varying between 1-2.5m), and ventilation chutes in the roof would be capped by galvanised steel. Visitors and naturalists would be able to access the roofs of the gun emplacement, and obtain exceptional views over the Humber and the surrounding habitat without impacting upon it. Railing would be provided so that access is safe. Whilst the walkway and steps will have an area of 18m<sup>2</sup>, the impact on the existing ground plan will be limited due to the open nature of the mesh to be used, because the walkway will be elevated 2m above ground and because there will only need to be eight footings installed to support the constructions. Each footing will take up approximately 0.5m<sup>2</sup>. Existing paths will be used to manage visitors and to provide a safe access for all users to the gun emplacement.

### Review of the designations and wildlife conservation features of the Spurn Peninsula

#### Humber SAC

- 1.24 The Spurn Peninsula is part of the Humber Estuary Special Protection Area (SAC), the boundary of which runs across the peninsula just north of the Bird Observatory and down to the end of the peninsula. Table 1 shows the primary and additional qualifying features of the Humber Estuary SAC and those features present on the YWT Reserve at Spurn Point. (Map 1)
- 1.25 The YWT reserve includes parts of the estuary and comprises intertidal mud and sand flats, together with dune communities and areas of saltmarsh (Table 1).
- 1.26 Also, there are three UK Biodiversity Action Plan (BAP) habitats included within the SAC features: coastal saltmarsh, coastal sand dunes and mudflats. To the north of the National Nature Reserve boundary are habitats of coastal grassland containing primarily fresh water ponds and scrapes, salinity may increase in these water bodies in the event of tidal wash over or at time of low precipitation and high sea spray levels. The saline lagoons are also a BAP habitat, but are outside the YWT's ownership (within the boundary of land managed by the Environment Agency).

# Map 1: International designation boundaries over Spurn Peninsula



**Table 1: SAC primary and additional qualifying features of the Humber Estuary SAC together with those features found on the YWT Spun Point Reserve and the NVC communities present on the peninsula under each feature**

Humber Estuary SAC-Primary Annex I Habitats	Habitats on Spurn peninsula	NVC Communities on Spurn <sup>2</sup>
Estuaries	YWT reserve includes part of estuary	
Inter-tidal mudflats and sandflats	Present on YWT reserve	
Humber Estuary SAC-Additional Qualifying features	Habitats on Spurn peninsula	NVC Communities on Spurn
Sandbanks slightly covered by sea water all the time	Zostera beds	SM1
Coastal lagoons	Not present of YWT reserve	
<i>Salicornia</i> and other annuals colonising mud and sand	Annual <i>Salicornia</i>	SM8
Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> )	Salt marshes	SM 6, SM10, SM11, SM 12, SM 13, SM14, SM15,SM 16, SM 24, SM 28
Embryonic shifting dunes	Foredunes	SD 2, SD4,
Shifting dunes along the shoreline with European marram grass ( <i>Ammophila arenaria</i> )	Mobile dunes	SD5, SD6
Fixed dunes with herbaceous vegetation	Fixed dunes	SD7, SD8, SD9, SD10
Dunes with <i>Hippophae rhamnoides</i>	Sea Buckthorn scrub	SD 18
Humber Estuary SAC-Annex II species	Habitats on Spurn peninsula	NVC Communities on Spurn
Sea lamprey ( <i>Petromyzon marinus</i> )	Not recorded	
River lamprey ( <i>Lampetra fluviatilis</i> )	Not recorded	
Grey seal ( <i>Halichoerus grypus</i> )	Not recorded	

#### The Humber Estuary SPA and RAMSAR site

- 1.27 The Humber Estuary has also been declared a Special Protection Area (SPA) under the European Birds Directive and was designated on 31/08/2007 under the RAMSAR convention. Details of the featured bird species under the SPA/RAMSAR are given in Table 2 and other species featured in the RAMSAR notification as noteworthy species are given in Table 3.
- 1.28 The RAMSAR designation also supports the SAC criteria for estuarine and sub-maritime habitats including the dune systems and dune slacks, intertidal sand and mud flats, saltmarshes and brackish/saline lagoons, the grey seal colony at Donna Nook and the importance of the estuary for sea and river lampreys (Table 1).

---

<sup>2</sup> The NVC communities are taken from Martin Hammond's 2001 survey, as this is the most site-specific, recent, and descriptive list of NVC communities

**Table 2: Designated species in the Humber estuary SPA and RAMSAR site, with regularly occurring numbers and percentages of GB and international populations, and date of survey data used**

SPA & RAMSAR featured species	Numbers & (% of GB or International population)	Survey Date
<b>Article 4.1 qualification<sup>3</sup></b>		
<b>During the breeding season the area regularly supports</b>		
Bittern ( <i>Botaurus stellaris</i> )	2 pairs (10.5 GB)	2000-2002
Marsh Harrier ( <i>Circus aeruginosus</i> )	10 females (6.3 GB)	1998-2002
Avocet ( <i>Recurvirostra avosetta</i> )	64 pairs (8.6 GB)	1998-2002
Little tern ( <i>Sterna albifrons</i> )	51 pairs (2.1 GB)	1998-2002
<b>Over winter the area regularly supports</b>		
Bittern ( <i>Botaurus stellaris</i> )	4 individuals (4.0 GB)	1998/9-2002/3
Hen harrier ( <i>Circus cyaneus</i> )	8 individuals (1.1 GB)	1997/8-2001/2
Bar-tailed godwit ( <i>Limosa lapponica</i> )	SPA (4.4 GB), RAMSAR 2752 individuals (2.3 Int)	1996/7-2000/1
Golden plover ( <i>Pluvialis apricaria</i> )	SPA (12.3 GB), RAMSAR 30,709 individuals (3.8 Int)	1996/7-2000/1
Avocet ( <i>Recurvirostra avosetta</i> )	59 individuals (1.7 GB)	1996/7-2000/1
<b>On passage the area regularly supports</b>		
Ruff ( <i>Philomachus pugnax</i> )	128 individuals - (1.4 GB)	1996-2000
<b>Article 4.2 qualification<sup>4</sup></b>		
<b>Over winter the area regularly supports</b>		
Dunlin ( <i>Calidris alpina alpina</i> )	22,222 individuals (1.7 of flyway)	1996/7-2000/1
Knot ( <i>Calidris canutus</i> )	28,165 individuals (6.3 of flyway)	1996/7-2000/1
Black-tailed godwit ( <i>Limosa limosa islandica</i> )	1,113 individuals (3.2 of Iceland breeding)	1996/7-2000/1
Shelduck ( <i>Tadorna tadorna</i> )	4,464 individuals (1.5 of N-W European breeding)	1996/7-2000/1
Redshank ( <i>Tringa tetanus</i> )	4632 individuals (3.6 of Eastern Atlantic wintering)	1996/7-2000/1
<b>On passage the area regularly supports</b>		
Dunlin ( <i>Calidris alpina alpina</i> )	20,269 individuals (1.5 flyway)	1996-2000
Knot ( <i>Calidris canutus</i> )	18,500 individuals (4.1 flyway)	1996-2000
Black-tailed godwit ( <i>Limosa limosa Islandica</i> )	915 individuals (2.6 of Iceland breeding)	
Redshank ( <i>Tringa tetanus</i> )	7,462 individuals (5.7 of E Atlantic wintering)	1996-2000
Golden plover ( <i>Pluvialis apricaria</i> )	Ramsar 17886 individuals (2.2 Int)	
<b>International assemblage</b>		
<b>In the non-breeding season the area regularly supports a five year peak mean</b>	<b>153,934 wildfowl and waders</b>	<b>1996/7-2000/1</b>

<sup>3</sup> Article 4.1 of the Birds Directive requires that “the species mentioned in Annex I shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution”

<sup>4</sup> Article 4.2 of the Birds Directive requires that “Member states shall take similar measures for regularly occurring migratory species not listed in Annex I, bearing in mind their need for protection in the geographical sea and land area where this Directive applies, as regards their breeding, moulting and wintering areas and staging posts along their migration routes”.

**Table 3: Noteworthy passage and wintering bird species noted under the RAMSAR notification for the Humber Estuary together with numbers, percentages of GB population and dates of survey.**

Noteworthy species	Number & (% of GB population)	Date of survey data
<b>Wintering species</b>		
Dark-bellied Brent goose	2098 individuals (2.1)	1996/7-2000/01
Eurasian wigeon	5044 individuals (1.2)	1996/7-2000/01
Common Teal	2322 individuals (1.2)	1996/7-2000/01
Common Pochard	719 individuals (1.2)	1996/7-2000/01
Greater Scaup	127 individuals (1.7)	1996/7-2000/01
Common goldeneye	467 individuals (1.9)	1996/7-2000/01
Eurasian oystercatcher	3503 individuals (1.1)	1996/7-2000/01
Great ringed plover	403 individuals (1.2)	1996/7-2000/01
Grey plover	1704 individuals (3.2)	1996/7-2000/01
Northern Lapwing	22,765 individuals (1.1)	1996/7-2000/01
Sanderling	486 individuals (2.3)	1996/7-2000/01
Curlew	3253 individuals (2.3)	1996/7-2000/01
Ruddy turnstone	629 individuals (1.3)	1996/7-2000/01
<b>Passage species</b>		
Great ringed plover	1766 individuals (5.9)	1996-2000
Grey plover	1590 individuals (2.3)	1996-2000
Sanderling	818 individuals (2.7)	1996-2000
Ruff	128 individuals (1.4)	1996-2000
Whimbrel	113 individuals (2.3)	1996-2000
Common greenshank	77 individuals (5.5)	1996-2000

#### Humber Estuary SSSI

- 1.29 The Spurn peninsula is also part of the 37,000.59 ha Humber Estuary SSSI, notified on 03/02/2004. The reasons for notification are summarised as:

“The Humber Estuary is a nationally important site with a series of nationally important habitats. These are the estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh) and the associated saline lagoons, sand dunes and standing waters. The site is also of national importance for the geological interest at South Ferriby Cliff (Late Pleistocene sediments) and for the coastal geomorphology of Spurn. The estuary supports nationally important numbers of 22 wintering waterfowl and nine passage waders, and a nationally important assemblage of breeding birds of lowland open waters and their margins. It is also nationally important for a breeding colony of grey seals (*Halichoerus grypus*), river lamprey (*Lampetra fluviatilis*) and sea lamprey (*Petromyzon marinus*), a vascular plant assemblage and an invertebrate assemblage”.

- 1.30 It has already been noted that the Spurn Peninsula contributes to the habitats and ornithological importance of the Humber Estuary SAC, SPA and RAMSAR designations and that information will not be repeated here for the SSSI. However, the SSSI designation specifically mentions Spurn in connection with the sand dune systems and sea buckthorn scrub habitats. Spurn is also noted as an outstanding example of a dynamic spit system, very unusual if not unique in Europe, in that the massive supply of sediment resulting from the erosion of the Holderness coast to the north, has enabled it to extend across the mouth of a macro-tidal estuary.

- 1.31 The SSSI notification notes that the nationally rare species suffocated clover (*Trifolium suffocatum*) occurs within the SSSI as well as the ground beetle (*Amara lucida*), the water beetle (*Helophorus fulgidicollis*) and the white colon moth (*Sideridis albicolon*), shore wainscot moth (*Mythimna litoralis*) and the silky wainscot moth (*Chilodes maritimus*), all of which might be present at Spurn.

#### Birds and the Spurn Peninsula

- 1.32 The birds of the Spurn Peninsula and where available their numbers are summarised Appendix 1 - Table 7. There are some minor discrepancies in the figures (possibly because the autumn passage figures are reported rather than spring counts) but generally the figures show that Spurn is particularly important for Knot, with most of the Humber population both wintering and passage at Spurn, and that the peninsula area holds over half the oystercatchers, over 30% of the grey plover, about 20% of the sanderling, ringed plover, bar-tailed godwit and dunlin and over 10% of the golden plover and curlew present on the Humber Estuary over winter. The Spurn area also holds between 40-60% of the redshank, dunlin and sanderling, over 30% of the ringed plover and about 20% of the golden plover and grey plover passing through on autumn passage. It is clear that the high tide wader roosts at Spurn are of particular importance.
- 1.33 The Humber Estuary supports a breeding bird assemblage of lowland open waters and their margins, including nationally important numbers. The following species also contribute to the assemblage: little grebe (*Tachybaptus ruficollis*), mute swan (*Cygnus olor*), cuckoo (*Cuculus canorus*), yellow wagtail (*Motacilla flava*), grasshopper warbler (*Locustella naevia*), sedge warbler (*Acrocephalus schoenobaenus*), reed warbler (*Acrocephalus scirpaceus*), and reed bunting (*Emberiza schoeniclus*). Breeding birds at Spurn include small numbers of oystercatchers and ringed plovers, up to five pairs of little tern and a number of passerines (Table 7).
- 1.34 In addition, the position of Spurn on the eastern seaboard of Britain means that it is a frequent landfall site of migrants travelling across the North Sea. Resting birds may be found anywhere along the peninsula. The mosaic of habitats provides food and shelter for grounded birds. Records for migratory species are retained by YWT. The activities of Spurn Bird Observatory Trust and their use of three fixed Heligoland traps and mist nets results in an extensive recording of migratory birds.

#### Vascular plants and the Spurn Peninsula

- 1.35 The Spurn Management plan (Yorkshire Wildlife Trust in press) notes that in addition, the following are regionally scarce vascular plant species (recorded in 2001):

Plant species
Sea mouse-ear ( <i>Cerastium diffusum</i> )
Sea fern-grass ( <i>Catapodium marinum</i> )
Sea bind-weed ( <i>Calystegia soldanella</i> )
Sea holly ( <i>Eryngium maritimum</i> )
Narrow-leaved birdsfoot trefoil ( <i>Lotus glaber</i> )
Sand catstail ( <i>Phleum arenarium</i> )
Intermediate polypody ( <i>Polypodium interjectum</i> )
Sea pearlwort ( <i>Sagina maritima</i> Vasu)

Knotted clover (*Trifolium striatum*)

Smooth tare (*Vicia tetrasperma*)

Heath dog violet (*Viola canina*)

#### Invertebrates and the Spurn Peninsula

- 1.36 The management plan (Yorkshire Wildlife Trust in press) notes that there are a large number of old records of rare or scarce invertebrates but that few of these have been confirmed as still present on the reserve. Species which have been recorded in recent years are the short-tongued bee (*Colletes halophilus*), three notable spider species, *Baryphyma maritimum* (a money spider), which occurs among young marram, at the seaward edge of yellow dunes, *Crustulina sticta* (a comb-footed spider), which occurs amongst marram on dunes and shingle and *Marpissa nivoyi* (a jumping spider), occurring on dunes among marram.
- 1.37 A *Diptera* Survey carried out by R. Crossley in 2001 found one nationally rare species: *Salticella fasciata*, which occurred only along the road together with two uncommon species: *Poeciobothrus principalis*, and *Empis picipes*. A further survey by Andy Godfrey, also in 2001 using pitfall traps, found one nationally notable species: *Geomyza apicalis*. Two species that do not yet have status ascribed by JNCC were also found, and the author states that they may in time qualify for Red Data Book status: *Minettia desmometopa* and *Pelomyia occidentalis*.
- 1.38 A recent (2001) survey of Coleoptera found no Red Data Book species but recorded nine nationally scarce species many of which were associated with sand dunes, these included:
- *Panahaeus bipustulatus*
  - *Mycetoporus piceolus*
  - *Lamprinodes saginatus*
  - *Scaphidema metallicum*
- 1.39 There are ten species of breeding dragonfly and damselfly on the reserve.

#### National and international designated habitats

- 1.40 The following features at Spurn are noted in the Management Plan as being part of the national and international designated habitats of the wider Humber Estuary:

1. Salt marsh (Atlantic Salt Meadows)
2. Intertidal mudflats
3. Breeding, wintering and migratory birds
4. Geomorphology.
5. Estuary
6. Strand line and embryonic dunes
7. Mobile dunes
8. Fixed dunes with associated herbaceous vegetation
9. Dunes with Sea buckthorn (*Hippophae rhamnoides*).
10. Vascular plants



11. Invertebrates

- 1.41 The plan also notes the presence of neutral grassland and ditches and ponds with the former supporting feeding and roosting waders (redshank, whimbrel, curlew, and lapwing) and breeding skylark and the latter supporting a population of water voles.
- 1.42 None of the official designations includes Spun Peninsula as a landfall and setting off point for terrestrial migrant birds, but this is clearly important as it has resulted in the siting of a bird observatory on the peninsula and attracts birdwatchers from a wide area.
- 1.43 The Spurn Peninsula has also been declared as a National Nature Reserve and part of the Humberside Heritage Coast.

## 2. Potential Impacts

### Overview

2.1 The features which would be impacted by the construction and use of the new facilities at Spurn are:

- Sand dune and saltmarsh vegetation
- Wintering, passage and breeding birds

### Potential impacts during construction

2.2 The potential impacts of the proposed development during construction on the nature conservation features of the site are summarised in Table 4.

2.3 Mitigation for the potential impacts of the construction work should be put in place with the contractors before work starts and it should be emphasised to the contractors, sub-contractors and their staff that the Trust as client regards compliance with these as an important part of the contract. The assistance of the architect or surveyors who will be supervising the work will also be important in ensuring compliance.

2.4 Essentially, the proposed avoidance and mitigation will rely on keeping the direct impacts from noise, dust and emissions to a minimum and setting aside areas for parking, deliveries, storage and removal of materials and fuels in the least biodiverse areas with suitable safeguards to prevent escapes or spillages.

2.5 The Trust should nominate a staff member to regularly check that the conditions are being observed, particularly with respect to sub-contractors and deliveries. Contractors should be advised that any delivery firms which breach conditions over speed limits and vehicle emissions will be banned from the site following a single warning.

**Table 4: Potential impacts and suggested mitigation from construction phase of the proposed work**

Activities from construction phase of the development	Potential impacts	Mitigation measures
Habitat loss	Loss of vegetation due to trampling, dumping, storage, parking etc.	See following sections.
Noise associated with the building work	Noise from vehicles, contractors, construction work, construction machinery	No building work to take place outside the period dawn to dusk. All construction plant to be the quietest available (e.g. electric rather than diesel cement mixers), to be well maintained and to have noise baffles where available.
Light associated with the building work	Lights from vehicles and construction work	No building work to take place at night. No security lighting to be used at night
Increased traffic from use of vehicles by contractors and from deliveries of building materials	Emissions, road verge damage, litter, fires	Use of vehicles to be kept to a minimum with spare vehicles left at the Warren car park. All vehicles to be well maintained and to observe speed limits and use passing places and otherwise to arrive and return without stopping elsewhere on peninsula. Delivery vehicles to be kept to a minimum

An impact assessment for new facilities on  
Spurn Peninsula and suggested mitigation

Storage of building materials	Damage to vegetation, litter	Storage areas for building materials to be agreed with YWT in adjoining hard surfaced area of low biodiversity interest
Potential spillages of toxic materials	Damage to vegetation, groundwater, flora and fauna	All working to be confined to agreed areas. Storage of potentially toxic materials to be in agreed areas with water and chemical proof ground protection. All spills to be removed immediately, stored in waterproof and chemical proof containers and removed off site.
Toilet facilities by contractors and others connected with building work	Eutrophication, litter	Contractors to provide temporary self-contained toilets to be removed and emptied off site at intervals as necessary and at completion of works
Storage of fuel and potential spillages	Damage to vegetation, groundwater, flora and fauna	An agreed area to be set aside for fuel storage, with protective ground membrane and bunding to contain any spillages. All spillages to be removed immediately and any contaminated materials to be removed off-site
Storage and disposal of materials and spoil from building works	Damage to vegetation from storage and dust	All spoil from building work to be stored in an agreed area and if required, removed off site. Other materials to be stored in an agreed location in covered skips and removed off-site on or before completion of works
Increased disturbance from activities of contractors and delivery personnel	Disturbance to birds and other wildlife	Contractors and delivery personnel to be confined to area of works, except by agreement
Air pollution from vehicles and site works	Emissions, particulates and dust	All vehicles and plant to be well maintained. All loose particulate materials to be delivered or removed in covered vehicles or containers. Where site works could result in significant dust, areas to be hosed down with water to reduce dust emissions.
Introduction of invasive species	Accidental Import of invasive species from delivery vehicles and building materials	All vehicles and deliveries to be in agreed areas and these to be regularly checked by site staff during twelve months following completion of works
Risk of fire to scrub communities	Accidental fires from smokers, vehicles, cooking facilities etc.	No material to be burnt on-site. Designated smoking area to be used by contractors and delivery personnel. No smoking outside these areas even in vehicles. No fires to be lit. All cooking facilities to be in agreed and designated location
Litter etc.	From all activities	No litter to be left on site. Construction staff to eat in agreed location and all waste food to be collected and removed from site.

### Potential impacts associated with the use of new facilities

2.6 The potential impacts of the proposed development during construction on the nature conservation features of the site are summarised in Table 6.

2.7 YWT have recently carried out an access audit and has also started to look at contingency plans for future operations (Gelder & Kitchen 2013). Recently a dedicated visitor survey was commissioned which considers the type of visitors to Spurn, their visit motivations, their behaviour on site on their response to the Lighthouse Heritage Centre proposal (Fearnley 2013).

- 2.8 The Trust needs to put in place a long term strategy on visitor numbers and activities to cover the possibility that numbers will rise, visitors will extend their stay and an unacceptable level of impact could arise. It will be important to be able to recognise when visiting levels are reaching saturation point or impacts are becoming unacceptable and to have in place a pre-determined strategy to deal with such a situation. On many sites such a situation can creep up almost unnoticed and action tends to be taken retrospectively rather than pro-actively. At Spurn, with relatively constant visiting levels in the past and regular monitoring of those visiting, at least by car, the situation should be easy to monitor and addressed if it becomes necessary. The provision of a focal point (the Lighthouse Heritage Centre) and car parking at the Point car park should lead to greater control of general visitors but other users such as birders, those visiting to go on the beach and particularly fishermen, many of whom will be regular visitors, will need special consideration.
- 2.9 Better information on activities and behaviour that could unknowingly cause disturbance, or lead to damage to vegetation should be given to visitors, with an explanation as to the potential problems. Where necessary areas could be set aside for regular visitors (i.e. fisherman's car park). Control of path use by encouragement to use the least sensitive paths and discouragement of more sensitive paths will require the co-operation of regular users who are most likely to frustrate efforts to close or divert paths; the recent visitor survey found that 79% of visitor groups leave the paths and their routes taken them onto the open beach or dunes (Fearnley 2013). The removal of old areas of concrete to provide new areas of bare sand habitat for eventual colonisation by dune species would be a useful mitigation for increased trampling from more visitors.
- 2.10 Table 5 details the NVC communities found in locations with higher visitor pressure around the Blue Bell car park and Chalk Bank hide (Fearnley 2013) and details of specific impacts of increased visitor numbers on the communities listed are in Table 6.

An impact assessment for new facilities on Spurn Peninsula and suggested mitigation

**Table 5: Summary of the area of each NVC community within cells that have high visitor pressure (those cells with 20 or more routes passing through in Map 5). \* denotes communities which are cited within the SAC designation.**

NVC community	Description of community	Area of community in cells around Blue Bell car park with high visitor pressure	Area of community in cells around Chalk Bank hides with high visitor pressure	Total area of community within cells with high visitor pressure	Total Area	As a percentage of the total area of the community on Spurn Peninsula
MC11b	<i>Festuca rubra</i> – <i>Daucus carota</i> ssp. <i>gummifer</i> maritime grassland – <i>Ononis repens</i> sub-community		0.002	0.002	1.6	0.12
MG1	<i>Arrhenatherum elatius</i> grassland	0.001		0.001	25.7	0.00
S21	<i>Scirpus maritimus</i> swamp	0.002		0.002	3.1	0.07
S26b	<i>Phragmites australis</i> – <i>Urtica dioica</i> tall-herb fen - <i>Arrhenatherum elatius</i> sub-community	0.002		0.002	0.5	0.33
S4	<i>Phragmites australis</i> swamp and reed-beds	0.000		0.000	4.4	0.01
SD18a*	<i>Hippophae rhamnoides</i> dune scrub – <i>Festuca rubra</i> sub-community		0.006	0.006	12.6	0.05
SD18b*	<i>Hippophae rhamnoides</i> dune scrub – <i>Urtica dioica</i> – <i>Arrhenatherum elatius</i> sub-community		0.003	0.003	13.7	0.02
SD4*	<i>Elymus farctus</i> ssp. <i>boreali-atlanticus</i> fore dune community	0.002		0.002	2.3	0.07
SD5b*	<i>Leymus arenarius</i> mobile dune community – <i>Elymus farctus</i> sub-community		0.004	0.004	3.2	0.13
SD6b*	<i>Ammophila arenaria</i> mobile dune community – <i>Elymus farctus</i> – <i>Leymus arenarius</i> sub-community		0.003	0.003	2.8	0.10
SD6e*	<i>Ammophila arenaria</i> mobile dune community – <i>Festuca rubra</i> sub-community		0.002	0.002	3.3	0.06
SD7d*	<i>Ammophila arenaria</i> – <i>Festuca rubra</i> semi-fixed dune community – <i>Elymus pycnanthus</i> sub-community	0.002	0.000	0.002	5.6	0.04
SM10*	Transitional low-marsh vegetation with <i>Puccinellia maritima</i> , annual <i>Salicornia</i> species and <i>Suaeda maritima</i>	0.002		0.002	10.3	0.02
SM14*	<i>Halimione portulacoides</i> salt-marsh community	0.003		0.003	34.0	0.01
SM15*	<i>Juncus maritimus</i> - <i>Triglochin maritima</i> salt-marsh community	0.000		0.000	0.1	0.19
SM24*	<i>Elymus pycnanthus</i> salt-marsh community	0.005	0.001	0.006	126.0	0.00
SM6*	<i>Spartina anglica</i> salt-marsh community	0.002	0.003	0.006	92.9	0.01

An impact assessment for new facilities on  
Spurn Peninsula and suggested mitigation

- 2.11 Monitoring of visitor numbers and use will be important but habitat monitoring would also be necessary using fixed point photography to monitor paths and path surveys using GIS to reflect the creation of new paths or desire lines. Path widths could also be measured and monitored where trampling damage through path widening is a potential problem and in soft sand, boardwalks should continue to be used (raised above the sand surface to prevent or delay burial). Aerial photography could also be a useful way of tracking changes in scrub cover.
- 2.12 With adequate monitoring in place, appropriate visitor and paths strategies and with the other measures suggested in this report, it is not anticipated that there will be any residual impacts associated with the construction and use of the new facilities.

**Table 6: Potential impacts and suggested mitigation from the user phase of the proposed work**

Activities from user phase of the development	Potential impacts	Mitigation measures
Additional visitor numbers and visitors staying longer	Damage to vegetation and disturbance to species together with indirect effects	<ul style="list-style-type: none"> <li>• Introduce long term strategy for visitors into management plan. This could include:</li> <li>• Increased monitoring by counting of visitors who access on foot via on coastal path and spatial on-site use via counters or pressure mats</li> <li>• An estimate of the point where visitor numbers become too high annually or daily (e.g. 100,000 or 500)</li> <li>• Measures to restrict numbers if this becomes necessary (see below)</li> <li>• Consideration of future facilities at northern end of peninsula</li> <li>• Contingency plan if peninsula is closed to traffic either for long period or permanently</li> </ul>
Additional visitors causing greater pressure on species	Increased disturbance to breeding, feeding and roosting birds	<ul style="list-style-type: none"> <li>• Provide information to visitors on areas to avoid and on unacceptable behaviour. Back up by wardening.</li> <li>• Undertake base line survey of visitor behaviour and site use, including automatic counting on selected paths and tracks. Carry out spot counts of car park use. Repeat surveys and counts after new facilities in place and at regular intervals thereafter. Use results to formulate and develop visitor strategy.</li> <li>• Use temporary signage to direct visitors away from breeding areas of ringed plover and little tern and support the provision of electric fencing for the latter if desirable.</li> <li>• Monitor disturbance to roosting waders and continue to agree access routes and areas of permitted activity for bait diggers.</li> <li>• Encourage visitors to avoid walking on salt marsh communities (SM 6, SM10, SM 14 and SM15) to avoid trampling damage and roost disturbance.</li> </ul>
	Increased trampling of vegetation, new paths and desire lines	<ul style="list-style-type: none"> <li>• From path survey, produce path strategy with decisions on which paths to support, which to close and which to leave open without support. Re-route paths and discourage new desire lines across wet areas with reed or <i>Scirpus maritimus</i> (NVC S26b, S21 and S4). Supported paths with signs, boardwalks</li> </ul>

An impact assessment for new facilities on Spurn Peninsula and suggested mitigation

		<p>surfacing, cut back vegetation to encourage use by the public.</p> <ul style="list-style-type: none"> <li>• Monitor fore-dune and mobile dune communities (NVC SD4, SD5b, SD 6b and SD6e) for trampling damage and put in place exclusion fencing where this becomes unacceptable.</li> <li>• Create new habitat by removing sections of old concrete road/hard standings and restoring to open sand.</li> </ul>
	Increase in litter causing eutrophication, increased predator population (predominantly corvids and foxes)	<ul style="list-style-type: none"> <li>• Public information on take-home litter policy with emphasis on not leaving edible material. Back up by wardening, and if it becomes necessary, prosecution.</li> </ul>
	Increased risk of fire from smokers, B-B-Qs etc.	<ul style="list-style-type: none"> <li>• Enforce a no fires and encourage a no smoking policy on peninsula</li> </ul>
	Increased noise from people, radios	<ul style="list-style-type: none"> <li>• Emphasise value of quiet wilderness to visitors</li> </ul>
Additional visitor numbers leading to increased traffic.	Increased traffic, damage to road verges, increased emissions, traffic noise	<ul style="list-style-type: none"> <li>• Enforce speed limit and encourage use of passing places.</li> <li>• Warn of the possibility of a charge for towing visitor cars off soft verges. Set aside some parking for fishermen only</li> </ul>
Visitors staying longer, less experienced or countryside-aware visitors	Trampling, new paths and desire lines, increased disturbance to wildlife, litter, fires,	<ul style="list-style-type: none"> <li>• Redesign reserve leaflet to make clear to visitors what is expected of them.</li> <li>• Produce a short information sheet with a note of sensitivities and bullet points of do's and don'ts and provide to all car visitors when they pay for access and ask them to read and follow on their visit. Reinforce this with further information in the Lighthouse Heritage Centre.</li> <li>• Provide similar information on the YWT website and give greater prominence to the potential impacts of visitors on the habitats and species of the reserve here.</li> <li>• Provide some control of visitor numbers via the charging mechanism.</li> <li>• Introduce annual permits for local fishermen and bait diggers.</li> <li>• Plan for the possibility that visitor numbers may need to be limited by closing car parks or reducing parking spaces and closing access with a road sign by café when reserve is full.</li> </ul>

### **3. References**

Fearnley, H. (2013) *Results of On-site Visitor Surveys and Car Park Counts at Spurn*. Footprint Ecology.

Gelder & Kitchen. (2013) *Spurn Point - Visitor Facility Study - Draft*.

Yorkshire Wildlife Trust. (in press) *Spurn Management Plan*.



#### 4. Appendix 1

**Table 7: Numbers and presence of featured, noteworthy and important bird species found on the Yorkshire Wildlife Trust Spurn Peninsula reserve. This table is reproduced from the Spurn reserve management plan (Yorkshire Wildlife Trust in press)**

Species	Winter	Winter numbers (Baseline <sup>5</sup> - Current)	Passage	Spring numbers (Baseline - Current)	Autumn numbers (Baseline - Current)	Breeding	Breeding numbers (Baseline - Current)
<b>SSSI - 22 wintering waterfowl and nine passage waders</b>							
Dark bellied Brent goose	Yes	432 - 557.6		122 - 289.4	200 - 220.4		
Shelduck	Yes	224 - 203.2		149 - 129.8	478 - 1145.8		
Wigeon	Yes						
Teal	Yes						
Pochard	Yes						
Scaup	Yes						
Goldeneye	Yes						
Oystercatcher	Yes	1757 - 318.4		375 - 244.4	2374 - 590	Yes	
Avocet	Yes						
Ringed Plover	Yes	76 - 52	Yes	71 - 116.6	571 - 487.6	Yes	
Golden Plover	Yes	3550 - 3820		184 - 505	3397 - 2720		
Grey Plover	Yes	554 - 305.4	Yes	679 - 457	315 - 331.6		
Lapwing	Yes						
Knot	Yes	29000 - 11960		1440 - 12000	22000 - 58400		
Sanderling	Yes	96 - 77.6	Yes	369 - 549.6	456 - 583		
Dunlin	Yes	3932 - 1238.6	Yes	5530 - 3485	8600 - 7635.4		
Ruff			Yes				
Black-tailed godwit	Yes		Yes				
Bar tailed godwit	Yes	723 - 764		144 - 339.6	597 - 963		
Curlew	Yes	335 - 157.6		89 - 96.2	257 - 200.2		
Whimbrel		No data	Yes				
Redshank	Yes	1074 - 320.8	Yes	821 - 357.4	3480 - 2371.8		
Greenshank			Yes				

<sup>5</sup> Baseline is a 5 year peak count mean (5YPM) between 1998 - 2003. Current wintering is 5YPM 2005/06 - 2009. Current passage is 5YPM 2005 - 2009

An impact assessment for new facilities on Spurn Peninsula and suggested mitigation

Turnstone	Yes	52 - 38.8		52 - 68.6	107 - 108.8		
Little Grebe						Yes	
Mute Swan						Yes	
Cuckoo						Yes	
Yellow wagtail						Yes	
Grasshopper warbler						Yes	
Sedge warbler						Yes	
Reed warbler						Yes	
Reed bunting						Yes	
<b>SPA</b>							
Avocet	Yes						
Hen Harrier	Yes						
Golden Plover	Yes						
Bar tailed godwit	Yes						
Ruff			Yes				
Little Tern						Yes	5 pairs 2010
Shelduck	Yes						
Knot	Yes		Yes				
Dunlin	Yes		Yes				
Black tailed Godwit	Yes		Yes				
Redshank	Yes		Yes				
<b>RAMSAR</b>							
Shelduck	Yes						
Golden Plover	Yes		Yes				
Knot	Yes		Yes				
Dunlin	Yes		Yes				
Black tailed godwit	Yes		Yes				
Bar tailed godwit	Yes						
Redshank	Yes		Yes				
<b>Non qualifying but of interest</b>							
Hen harrier	Yes		Yes				
Little tern						Yes	5 pairs 2010