

Whitby Harbour: Seabird and Shorebird use of structures and environments.



Report for Scarborough Borough Council

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1. EXECUTIVE SUMMARY

This report details the main findings of bird and surveys conducted from October 2016-April 2017 overwintering period in the vicinity of Whitby harbour. The surveys were commissioned as a precursor to an environmental assessment being undertaken to support a marine licence application to the Marine Management Organisation (MMO) for the proposed refurbishment works to the East and West Pier at Whitby Harbour. The report outlines the main sites used by birds and the main areas selected by Fulmars for breeding as they arrive at breeding sites earlier than most seabirds. The report also reviews the conservation status of the species identified during the surveys.

Overall, shorebird diversity and numbers remained quite low over the survey period, with Oystercatchers being the most abundant species observed, predominantly feeding on the rocky shore outside the main harbour area on the exposed rocky shore platform. This was also the main roost site at low tide for Gulls. The proposed repair works are likely to have a temporary disturbance effect on shorebirds feeding in the immediate vicinity of the works in the harbour. However, this should have minimum impact upon the shorebird populations overwintering in the area as alternative feeding sites are available and, during current surveys, birds regularly moved between the different feeding areas in the harbour after disturbance by walkers. If the works are timetabled so that one of the two beaches within the harbour area remain relatively undisturbed at all times, birds can use this as a feeding/roosting area if disturbed from other sites. Fulmars returning to their nesting areas on the cliffs during December will be far enough away from the main works to remain undisturbed.

2. INTRODUCTION

Scarborough Borough Council commissioned Dr Susan Hull from Centre for Environmental and Marine Sciences (CEMS), University of Hull, to undertake a survey of shorebird and seabird use of the structures and intertidal areas in Whitby harbour during winter 2016/2017 prior to the proposed refurbishment works on the East and West piers. This report outlines the methods employed, the main findings of the surveys, how the data was recorded and subsequent presentation of the findings and analysis. In addition to recording bird use of beaches, exposed intertidal areas at low tide, the pier structures and harbour frontage near the Lifeboat house and Fish market, areas of seawall in need of repair were also surveyed in order to determine if they were used as feeding or roosting sites. Further surveys were also taken from further afield to determine if the birds used additional areas for roosting at high water.

3. METHODS

3.1 Site choice and description

Thirteen sites were selected across the intertidal areas, cliffs near to the harbour and infrastructure as described in Table 3.1 and illustrated in Figure 3.1. Sites were chosen to ensure the survey included natural beaches and rocky outcrops, areas of exposed seawall or harbour construction at the base of piers, cliffs and the harbour infrastructure. Multiple sites were selected to determine if all were equally accessible to the birds and whether or not all sites were used as feeding areas. All sites were surveyed in order to determine if particular species used certain areas, whether this varied over time or with sea conditions and whether there was any likely disturbance to nesting birds (cliff areas). Photographs of each site surveyed are provided in Appendix 1.

Figure 3.1. Map of Whitby harbour showing location of sites in Table 3.1 (yellow squares denote approximate survey point for each site).

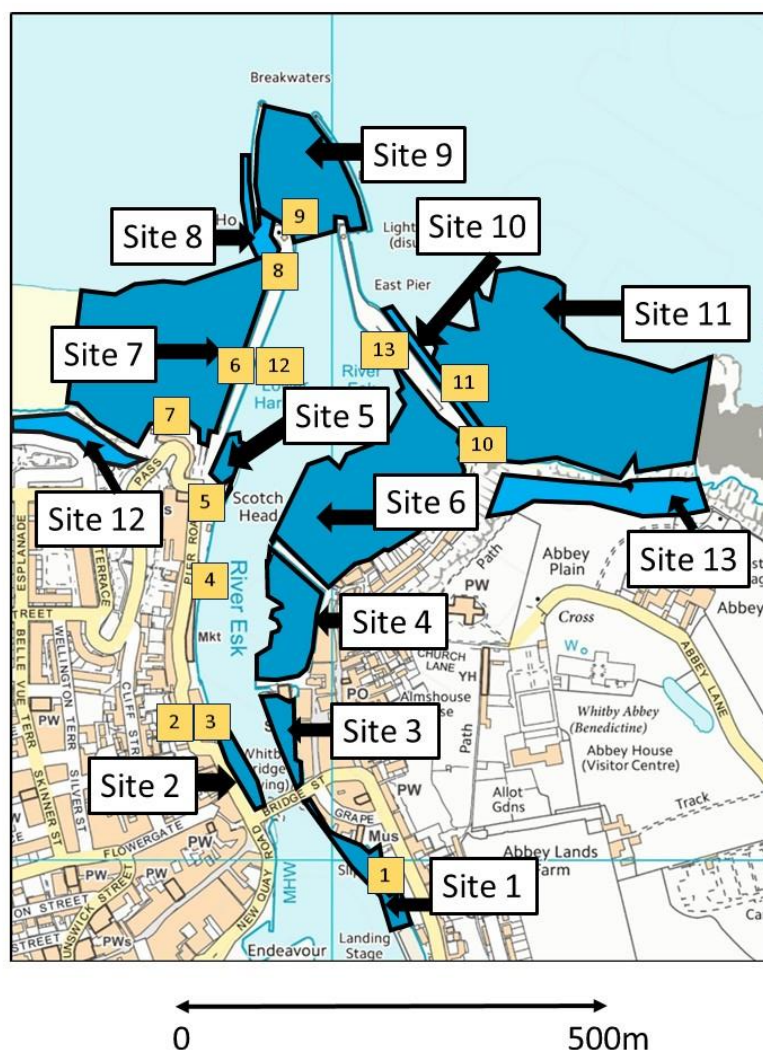


Table 3.1: Ordnance Survey grid references of the sites surveyed for shorebird and seabird habitat use from October 2016 until April 2017.

Site	Name	OS Grid Coordinates top of shore	Notes
1	Slipway and harbour	NZ 90038 10987	Slipway and 5m of exposed shores at low water just beyond swing bridge
2	Small sandy / muddy beach adjacent to bridge	NZ89903 11087	Sandy beach adjacent to west side of harbour wall
3	Seawall / pontoon on East side of harbour near lifeboat station	NZ89949 11135	Seawall (predominantly concrete, covered in Bladderwrack) and pontoon.
4	Small beach	NZ89968 11269	Small beach, sand/cobbles in low shore. Seawall at top covered in algae.
5	Small rocky beach exposed at low water adjacent to Scotch head	NZ89887 11466	Large boulders covered predominantly in Egg Wrack and Bladder Wrack adjacent to harbour structures, rocky platform with sediment in places.
6	Collier Hope beach adjacent to East Pier	NZ90062 11432	Sandy beach with cobbles/algae in low shore, sea defences/harbour walls covered in algae.
7	Sandy beach adjacent to West Pier	NZ89754 11630	Medium grained sandy beach beyond pier structure and backed by West Cliff
8	Base of West Pier and apron, large boulders in front of pier.	NZ 89918 11731	Concrete pier structure containing ledge and apron covered in barnacles and algal turf, with large algae covered boulders <i>in situ</i> .
9	Between piers – ledges and structures associated with pier construction.	NZ 89951 11845	Ledges that form part of inner structures of East and West piers covered in barnacles and algal turf.
10	Base of East Pier	NZ90093 11591	Ledges on East Pier exposed at low water covered in barnacles and algal turf.
11	First Bight / Grand Bight	NZ 90274 11504	Barnacle dominated, flat mudstone rocky platform accessible between 3-6hrs after high water.
12	West cliff	NZ89748 11482	Sandstone blocks in vertical cliffs, grass cover on shallower slopes.
13	East Cliff	NZ90168 11448	Sandstone outcrops in mudstone dominated cliffs.

3.2 Literature review of conservation status.

A thorough literature review of bird use of harbours and the conservation status of the species found in such areas was conducted to provide background information and context to the study.

3.3 Survey methods.

A survey of the birds using the areas outlined above was conducted monthly from October 2016 until late March 2017 to take into account the movement of migratory birds through the area. The method used was that outlined by the BTO (British Trust for Ornithology) for their low tide Wetland Bird Survey counts (BTO 2014). All sites were visited twice monthly; once with low tide falling during daylight hours and again with high tide during daylight. Two separate counts were made at each site during each sampling occasion. Sites 1-11 were surveyed from a fixed point overlooking the site providing excellent visibility. The Site 13 (East cliff) was surveyed from half way along East Pier, and Site 12 (West cliff) was examined from half-way along West Pier (See Figure 3.1 for survey points). The fixed points were chosen to minimise disturbance to any birds in the vicinity and provided a clear view of the site in question. All birds were identified to species and their numbers counted, noting which area of the shore they were using for feeding and which for roosting. Each count took approximately 5-10 minutes of scanning the area (depending on size of area surveyed) in order to locate all individuals using the area. In addition, the number of individuals of each species (not necessarily shorebirds) using the harbour infrastructure were also recorded. For brevity, the maximum number of birds observed during the two counts made at each site during each monthly survey are presented in the tables in the results rather than the replicate count values. Dates given in tables are for low water counts; the high water counts were made 5 days earlier or later within the same month.

4. RESULTS

4.1 Conservation status of species observed.

In terms of overall protection, all birds, their nests and eggs are protected by law unless there are approved exceptions or licences granted by Natural England or the appropriate authority according to the Wildlife and Countryside Act 1981, (RPSB, 2010). In addition, within the Act it is an offence to intentionally or recklessly disturb species given Schedule 1 status under the provision of the Act. Only two Schedule 1 species were recorded during the current survey period, Purple Sandpiper (*Calidris maritima*) and the Common Scoter (*Melanitta nigra*). Both of these species over-winter in the general area but do not breed in the vicinity of the proposed works.

All bar one of the wader species observed during this period (Purple Sandpiper (*Calidris maritima*), Turnstone (*Arenaria interpres*), Red Knot (*Calidris canutus*), Redshank (*Tringa*

tetanus) and Oystercatcher (*Haematopus ostragalus*) are currently on the UK amber list (Eaton *et al.*, 2015; Austin *et al.*, 2014) due to marked declines in both their breeding and winter numbers and contraction of range. Whilst only regarded as an amber listed bird in the UK, the Oystercatcher is regarded as Vulnerable at European level and the decline in numbers is of conservation concern. In addition, Curlew (*Numenius arquata*) is also a Priority species on the UK Biodiversity Action Plan, and is regarded as Vulnerable at European level and was red-listed in 2015 due to marked breeding declines (BTO, 2017).

Concern also exists about the decline in gull populations (Eaton *et al.*, 2015; Austin *et al.*, 2014) as Black-headed gulls (*Chroicocephalus ridibundus*), Lesser Black-backed Gulls (*Larus fuscus*) and Great Black-backed Gulls (*Larus marinus*) are all currently amber listed in the UK (Eaton *et al.*, 2015). The Herring Gull (*Larus argentatus*) is a Priority species on the UK Biodiversity Action Plan and has been red listed due to the concern about large scale decline in numbers (Austin *et al.*, 2014; Eaton *et al.*, 2015). The Herring Gull is also regarded as being at Near Threatened level in Europe. Whilst only regarded as an amber listed species in the UK, the Fulmar, (*Fulmarus glacialis*), is regarded as Endangered at European level (BTO, 2017). Sea ducks have also joined the UK amber list (Easton *et al.*, 2015; BTO, 2017), with both Wigeon (*Anas penelope*) and Eider (*Somateria mollissima*) and the Eider highlighted as being Vulnerable at European level (BTO, 2017). Of particular concern and red-listed in the UK is the Schedule 1 bird the Common Scoter (*Melanitta nigra*), however this species is ranked as least concern at European level. Mallard (*Anas platyrhynchos*), whilst regarded as one of the commonest duck species in the UK is nevertheless amber listed due to recent declines in numbers.

Species less associated with the maritime environment can also be found using the harbour area during the winter months. The amber listed Meadow Pipit (*Anthus pratensis*) is regarded as near threatened in Europe and can be found feeding on seaweed flies on beaches alongside the green listed Pied Wagtail (*Motacilla alba*) and Rock Pipit (*Anthus petrosus*). Starlings (*Sternus vulgaris*) are red-listed in the UK (Eaton *et al.*, 2015) and will search for invertebrates in gaps in harbour walls and amongst seaweed deposited on the beach. Kingfishers (*Alcedo atthis*) have classified as Vulnerable at European level and amber listed in the UK, and like Grey Herons (*Ardea cinera*), take advantage of estuarine areas for feeding.

Previous studies have shown that disturbance by man's activities can force foraging waders to seek alternative feeding areas (Mathers and 2000). Sustained disturbance, such as the 11 year long term construction project within Cardiff Bay reduced numbers of waterbirds in the vicinity of the works (Burton *et al.*, 2002). However, in most instances research indicates

that short term disturbance has not been shown to have a major detrimental long-term effect on populations (Hill et al., 1997). Most shorebirds or waders show site fidelity, returning to the same over-wintering areas year after year (Catry *et al.*, 2004). In addition, some authors have shown that feeding in urban marine areas may actually benefit shorebirds due to the increased intake rates available despite the more frequent disturbance of their activities (McKinney *et al.*, 2010). Whilst severe prolonged disturbance certainly appears to reduce bird numbers and diversity (McKinney et al., 2010), the consensus appears to be that other factors are more important agents of mortality than short term disturbance activities.

4.2 Bird survey results

4.2.1 Site 1.

A total of 10 species were recorded at Site 1 beyond the bridge, with some species more associated with freshwater environments such as Mallard and Kingfisher (Table 4.1). Numbers remained low at the site, and a particular observation of note was the Great Black-backed Gull feeding on a salmon carcass during the December survey after heavy rainfall. Little bird activity was observed during high water counts with the occasional Turnstone or gull roosting at the top of the slipway.

Table 4.1 Maximum number of each species observed on low and high tide counts at Site 1 over time. *Conservation status of each species indicated as presented in Eaton *et al.*, (2015) *Birds of Conservation Concern 4 (BOCC4)*. Box colours reflect conservation concern with *Least concern*, *conservation concern*, *conservation priority*, *urgent action required*.

Common Name	Scientific name	BOCC4 Status*	28.10.2016	16.11.2016	13.12.2016	14.1.2017	1.2.2017	6.3.2017	31.3.2017
SITE 1 LOW WATER									
Herring gull	<i>Larus argentatus</i>	Least concern	3	4	-	4	-	4	1
Great Black-backed Gull	<i>Larus marinus</i>	Conservation concern	-	-	1	-	-	-	-
Cormorant	<i>Phalacrocorax carbo</i>	Conservation priority	2	1	-	2	-	-	-
Mallard	<i>Anas platyrhynchos</i>	Conservation concern	-	2	-	-	-	-	-
Redshank	<i>Tringa totanus</i>	Conservation concern	-	1	-	-	1	1	1
Turnstone	<i>Arenaria interpres</i>	Conservation concern	10	2	1	4	1	1	3
Meadow Pipit	<i>Anthus pratensis</i>	Conservation concern	-	-	-	1	-	-	-
Grey Heron	<i>Ardea cinerea</i>	Conservation priority	1	-	-	-	-	-	-
Carrion Crow	<i>Corvus corone</i>	Conservation priority	-	1	-	-	-	-	-
Kingfisher	<i>Alcedo atthis</i>	Conservation concern	2	-	-	-	-	-	-
SITE 1 HIGH WATER									
Herring gull	<i>Larus argentatus</i>	Least concern	1	-	-	2	1	-	-
Turnstone	<i>Arenaria interpres</i>	Conservation concern	2	-	1	-	1	1	2

4.2.2 Sites 2 and 3

Both Site 2 and Site 3 supported few birds throughout the survey period, with Turnstones occasionally feeding on the small beach at Site 2 at low water and the pontoon at Site 3 used predominantly by roosting Cormorants and gulls irrespective of tidal state. Turnstones also roosted on the pontoon at high water (Table 4.2). No birds were observed at Site 2 at high water.

Table 4.2. Maximum number of each species observed on low and high tide counts at Sites 2 and 3 over time. *Conservation status of each species indicated as presented in Eaton et al., (2015) Birds of Conservation Concern 4 (BOCC4). Box colours reflect conservation concern with *Least concern*, *conservation concern*, *conservation priority*, *urgent action required*.

Common Name	Scientific name	BOCC4 Status*	28.10.2016	16.11.2016	13.12.2016	14.1.2017	1.2.2017	6.3.2017	31.3.2017
SITE 2 LOW WATER									
Herring gull	<i>Larus argentatus</i>	Least concern	-	-	1	4	2	-	-
Great Black-backed Gull	<i>Larus marinus</i>	Least concern	1	-	-	-	-	-	-
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Least concern	-	-	1	-	1	-	-
Cormorant	<i>Phalacrocorax carbo</i>	Conservation concern	-	-	-	3	4	-	-
Redshank	<i>Tringa totanus</i>	Least concern	1	1	-	-	-	-	-
Turnstone	<i>Arenaria interpres</i>	Least concern	5	-	1	-	1	-	-
Meadow Pipit	<i>Anthus pratensis</i>	Least concern	1	1	-	-	-	-	-
SITE 2 HIGH WATER no birds observed during survey									
SITE 3 LOW WATER									
Herring gull	<i>Larus argentatus</i>	Least concern	1	-	2	6	-	3	6
Great Black-backed Gull	<i>Larus marinus</i>	Least concern	-	-	-	2	-	-	-
Cormorant	<i>Phalacrocorax carbo</i>	Conservation concern	1	5	2	10	-	5	2
Redshank	<i>Tringa totanus</i>	Least concern	-	-	1	-	-	-	-
Turnstone	<i>Arenaria interpres</i>	Least concern	-	-	1	2	-	14	-
Mallard	<i>Anas platyrhynchos</i>	Least concern	-	-	-	-	-	-	2
Meadow Pipit	<i>Anthus pratensis</i>	Least concern	-	1	-	-	-	-	-
Pied Wagtail	<i>Motacilla alba</i>	Least concern	-	1	-	-	-	-	-
SITE 3 HIGH WATER									
Herring gull	<i>Larus argentatus</i>	Least concern	4	3	6	-	2	2	3
Cormorant	<i>Phalacrocorax carbo</i>	Conservation concern	6	5	2	5	2	3	-
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Least concern	2	-	1	-	1	1	-
Turnstone	<i>Arenaria interpres</i>	Least concern	3	2	-	3	-	-	-
Mallard	<i>Anas platyrhynchos</i>	Least concern	-	-	-	-	2	2	-

4.2.3 Site 4

The small harbour beach at Site 4 was predominantly used as a roosting site for Herring Gulls with Turnstones occasionally feeding at low tide, and Pied Wagtails and Meadow Pipits feeding on insects attracted to seaweed debris when present. Only gulls and foraging Cormorants were observed in the area at high water once the main beach was covered.

Table 4.3 Maximum number of each species observed on low and high tide counts at Site 4 over time. *Conservation status of each species indicated as presented in Eaton et al., (2015) Birds of Conservation Concern 4 (BOCC4). Box colours reflect conservation concern with *Least concern*, *conservation concern*, *conservation priority*, *urgent action required*.

Common Name	Scientific name	BOCC4 Status*	28.10.2016	16.11.2016	13.12.2016	14.1.2017	1.2.2017	6.3.2017	31.3.2017
SITE 4 LOW WATER									
Herring gull	<i>Larus argentatus</i>		25	7	18	-	19	15	22
Cormorant	<i>Phalacrocorax carbo</i>		6	5	2	-	-	-	-
Black-headed Gull	<i>Chroicocephalus ridibundus</i>		-	-	-	-	8	1	-
Oystercatcher	<i>Haematopus ostragalus</i>		-	-	1	-	-	-	-
Redshank	<i>Tringa totanus</i>		-	1	-	-	-	-	-
Carrion crow	<i>Corvus corone</i>		-	-	-	-	-	2	-
Turnstone	<i>Arenaria interpres</i>		3	2	-	3	-	-	-
Mallard	<i>Anas platyrhynchos</i>		-	-	-	-	-	2	-
Meadow Pipit	<i>Anthus pratensis</i>		-	1	-	-	1	-	-
Pied Wagtail	<i>Motacilla alba</i>		2	1	-	-	-	2	-
SITE 4 HIGH WATER									
Herring gull	<i>Larus argentatus</i>		5	2	3	4	-	-	2
Cormorant	<i>Phalacrocorax carbo</i>		2	1	2	-	-	-	1

4.2.4 Sites 5 and 6

Within the harbour area, Site 5 (Scotch head) was again predominantly used by roosting gulls at high water with Turnstones occasionally feeding around the exposed cobbles at low water (Table 4.4). Meadow pipits fed on seaweed flies on the boulders at low water. In addition, Turnstones and Herring gulls also foraged on top of the fish quay itself at both high and low tide. Birds flew across the river to forage on the large beach of Site 6 at low water (Table 4.4.).

A small number of Oystercatchers were recorded feeding at Site 6 on all occasions and this large flat beach and cobble area was used by Black-headed Gulls and Herring Gulls as a roosting site at low water (Table 4.4). A total of 11 different species were recorded using this area. During storms, Purple Sandpipers and Turnstones moved into this more sheltered harbour area to forage when rough seas surged over the Site 8 apron and boulders at their usual foraging site (Site 8). At high tide, Cormorants foraged over the area and Gulls sat at the top of the beach. Meadow pipits continued to forage above high water mark in the boulder field at the top of the beach.

Table 4.4 Maximum number of each species observed on low and high tide counts at Sites 5 and 6 over time.

*Conservation status of each species indicated as presented in Eaton et al., (2015) Birds of Conservation Concern 4 (BOCC4). Box colours reflect conservation concern with *Least concern*, *conservation concern*, *conservation priority*, *urgent action required*.

Common Name	Scientific name	BOCC4 Status*	28.10.2016	16.11.2016	13.12.2016	14.1.2017	1.2.2017	6.3.2017	31.3.2017
SITE 5 LOW WATER									
Herring gull	<i>Larus argentatus</i>		-	7	8	-	10	-	6
Great Black-backed Gull	<i>Larus marinus</i>		-	1	1	-	-	-	-
Black-headed gull	<i>Chroicocephalus ridibundus</i>		-	-	1	-	-	-	-
Oystercatcher	<i>Haematopus ostralagus</i>		-	-	2	-	3	-	4
Redshank	<i>Tringa totanus</i>		-	-	-	-	1	-	-
Turnstone	<i>Arenaria interpres</i>		-	3	-	2	-	4	-
Meadow Pipit	<i>Anthus pratensis</i>		-	2	2	1	1	-	-
Starling	<i>Sturnus vulgaris</i>		-	6	-	-	-	-	-
SITE 5 HIGH WATER									
Herring gull	<i>Larus argentatus</i>		4	2	1	3	2	3	4
Great Black-backed Gull	<i>Larus marinus</i>		-	1	-	-	-	-	-
Turnstone	<i>Arenaria interpres</i>		3	3	2	6	4	4	5
SITE 6 LOW WATER									
Black-headed gull	<i>Chroicocephalus ridibundus</i>		21	9	45	14	3	3	2
Herring Gull	<i>Larus argentatus</i>		23	8	12	14	3	4	-
Great Black-backed Gull	<i>Larus marinus</i>		-	3	1	-	-	-	-
Oystercatcher	<i>Haematopus ostralagus</i>		4	4	5	2	2	2	3
Cormorant	<i>Phalacrocorax carbo</i>		-	-	-	2	-	-	-
Redshank	<i>Tringa totanus</i>		-	1	-	-	-	-	4
Turnstone	<i>Arenaria interpres</i>		-	-	-	15	1	-	-
Purple sandpiper	<i>Calidris maritimus</i>		-	-	-	4	-	-	-
Meadow Pipit	<i>Anthus pratensis</i>		-	-	2	8	1	-	-
Grey Heron	<i>Ardea cinerea</i>		1	-	-	-	-	-	-
Carrion Crow	<i>Corvus corone</i>		2	-	7	-	-	-	2
Pied Wagtail	<i>Motacilla alba</i>		-	-	2	-	-	-	1
SITE 6 HIGH WATER									
Herring Gull	<i>Larus argentatus</i>		2	1	-	1	3	1	4
Cormorant	<i>Phalacrocorax carbo</i>		-	-	-	2	-	-	-
Meadow Pipit	<i>Anthus pratensis</i>		-	-	2	4	1	-	-

4.2.5 Sites 7 and 8

Whilst the Purple Sandpipers and Turnstones were mostly observed feeding on the apron, pier ledges and boulders at the base of the northern side of the West Pier (Site 8; Table 4.5), they were not seen feeding on the open sandy beach unless there was algae deposited on it (Site 7; Figure 4.1). Site 8 was the only site where Purple Sandpipers were regularly recorded (apart from at high water and during very heavy seas). No birds were recorded at high water on both sites.

Table 4.5 Maximum number of each species observed on low and high tide counts at Sites 7 and 8 over time.

*Conservation status of each species indicated as presented in Eaton et al., (2015) Birds of Conservation Concern 4 (BOCC4). Box colours reflect conservation concern with *Least concern*, *conservation concern*, *conservation priority*, *urgent action required*.

Common Name	Scientific name	BOCC4 Status*	28.10.2016	16.11.2016	13.12.2016	14.1.2017	1.2.2017	6.3.2017	31.3.2017
SITE 7 LOW WATER									
Herring Gull	<i>Larus argentatus</i>		-	3	-	6	12	22	2
Turnstone	<i>Arenaria interpres</i>		-	-	8	-	-	-	-
Purple Sandpiper	<i>Calidris maritima</i>		-	-	3	-	-	-	-
SITE 7 HIGH WATER – no birds observed during survey									
SITE 8 – LOW WATER									
Herring gull	<i>Larus argentatus</i>		2	1	6	-	12	-	4
Great Black-backed Gull	<i>Larus marinus</i>		-	-	1	-	-	-	-
Turnstone	<i>Arenaria interpres</i>		6	4	16	-	8	-	1
Purple Sandpiper	<i>Calidris maritima</i>		8	2	6	-	6	-	2
Meadow Pipit	<i>Anthus pratensis</i>		-	-	5	-	1	-	-
SITE 8 HIGH WATER – no birds observed during survey									

4.2.6 Sites 9 and 10

The inner ledges of the pier structures were not used by waders, whereas the East pier railings and pier structures at Site 9 were used by two species; Cormorants and Herring Gulls predominantly as a roosting or preening site (Site 9; Table 4.6; Figure 4.2). They were observed using this area at both high and low tide, but numbers declined over the sampling period.

Table 4.6 Maximum number of each species observed on low and high tide counts at Sites 9 and 10 over time.

*Conservation status of each species indicated as presented in Eaton et al., (2015) Birds of Conservation Concern 4 (BOCC4). Box colours reflect conservation concern with *Least concern*, *conservation concern*, *conservation priority*, *urgent action required*.

Common Name	Scientific name	BOCC4 Status*	28.10.2016	16.11.2016	13.12.2016	14.1.2017	1.2.2017	6.3.2017	31.3.2017
SITE 9 LOW WATER									
Cormorant	<i>Phalacrocorax carbo</i>		23	14	15	8	-	3	3
Herring Gull	<i>Larus argentatus</i>		2	3	7	-	-	4	4
SITE 9 HIGH WATER									
Cormorant	<i>Phalacrocorax carbo</i>		15	19	12	4	-	1	2
Herring Gull	<i>Larus argentatus</i>		12	9	6	-	2	2	2
SITE 10 LOW WATER									
Turnstone	<i>Arenaria interpres</i>		-	-	-	-	2	-	-
SITE 10 HIGH WATER no birds observed during survey									

Whilst the ledges of the outer edges of the West pier were used as foraging sites for waders they were never observed on the inner ledges of both piers in the harbour mouth during the observation period, and only Turnstones were seen on one occasion at Site 10 (Table 4.6).

4.2.7 Site 11

The natural rocky shore beyond and to the south of the East pier (Site 11; Table 4.7) was where the greatest number of roosting gulls was observed and some good high counts of Oystercatchers as they fed on the rocky reefs (Figure 4.2). This large expanse of flat bedrock provided ideal roosting and foraging areas at low tide and, during periods of heavy seas, sea ducks (Eider and Common Scoter) were observed inshore just beyond the breakers. At high water, sea ducks and Gulls remained in the area roosting on the sea (Table 4.7). Birds disturbed in the harbour area often flew out on to these scars. As the incoming tide flushed Oystercatchers off the bedrock, these flew north beyond the West Pier and up to 48 were observed feeding on the Golf Course or short sward pasture to the north of Whitby. This flock was occasionally joined by small numbers of Redshanks. This indicates that, for Oystercatcher and Redshank, areas other than the harbour were used for both roosting and foraging, a strategy that enables them to maximise food intake (Furnell & Hull, 2014). Turnstones were observed feeding and roosting on the harbour structures including the piers themselves, areas in front of the Fish Market and Lifeboat house.

Figure 4.2. Great Black-backed and Herring gulls roosting at low water and Oystercatchers feeding at Site 11.



Table 4.7. Maximum number of each species observed on low tide counts at Site 11 over time. *Conservation status of each species indicated as presented in Eaton et al., (2015) Birds of Conservation Concern 4 (BOCC4). Box colours reflect conservation concern with *Least concern*, *conservation concern*, *conservation priority*, *urgent action required*.

Common Name	Scientific name	BOCC4 Status*	28.10.2016	16.11.2016	13.12.2016	14.1.2017	1.2.2017	6.3.2017	31.3.2017
SITE 11 LOW WATER									
Lesser Black-backed Gull	<i>Larus fuscus</i>		1	2	-	-	-	-	-
Herring gull	<i>Larus argentatus</i>		43	106	136	7	3	12	17
Great Black-backed Gull	<i>Larus marinus</i>		2	5	4	-	-	-	1
Cormorant	<i>Phalacrocorax carbo</i>		-	2	-	8	-	-	-
Grey Heron	<i>Ardea cinerea</i>		-	-	18	-	-	-	-
Oystercatcher	<i>Haematopus ostralagus</i>		38	51	29	22	-	-	1
Red Knot	<i>Calidris canutus</i>		2	4	-	-	-	-	-
Redshank	<i>Tringa totanus</i>		2	3	-	2	-	-	-
Turnstone	<i>Arenaria interpres</i>		-	-	4	-	-	-	1
Curlew	<i>Numenius arquata</i>		1	-	-	-	-	-	-
Meadow Pipit	<i>Anthus pratensis</i>		-	8	3	-	-	-	-
Rock Pipit	<i>Anthus petrosus</i>		-	-	2	-	-	-	1
Carrion Crow	<i>Corvus corone</i>		-	-	1	-	-	-	-
Eider	<i>Somateria mollissima</i>		-	-	3	-	2	-	-
Common Scoter	<i>Melanitta nigra</i>		-	-	37	23	34	-	2
Wigeon	<i>Anas penelope</i>		-	-	8	-	6	-	-
Great Northern Diver	<i>Gavia immer</i>		-	-	1	-	-	-	-
SITE 11 HIGH WATER									
Herring gull	<i>Larus argentatus</i>		13	4	23	17	23	10	3
Great Black-backed Gull	<i>Larus marinus</i>		1	1	-	-	-	-	-
Cormorant	<i>Phalacrocorax carbo</i>		-	2	1	3	2	1	-
Eider	<i>Somateria mollissima</i>		-	-	3	-	2	-	-
Common Scoter	<i>Melanitta nigra</i>		-	-	27	29	31	-	-
Wigeon	<i>Anas penelope</i>		-	-	6	-	-	-	-

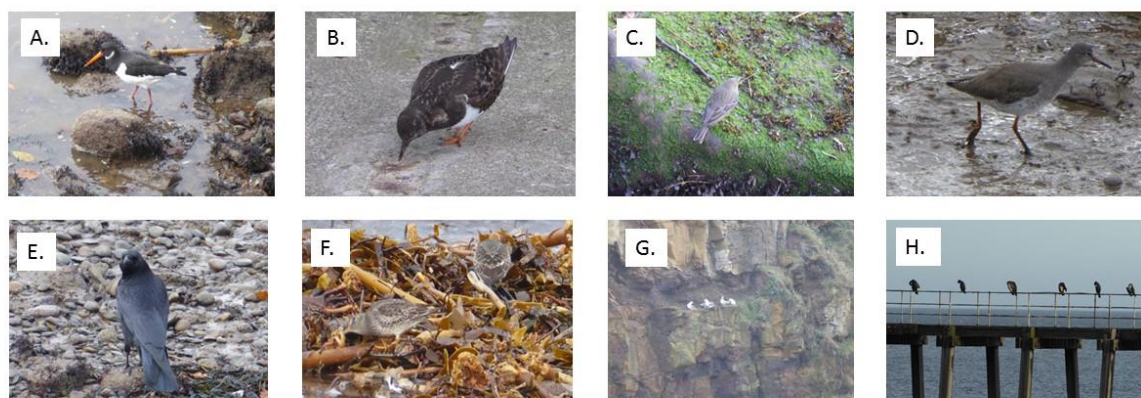
4.2.8 Sites 12 and 13

Fulmars returned to potential nesting sites on the cliffs during December and numbers increased towards the end of January. Larger numbers were recorded at Site 13 (up to 18 birds) than at the Site 12 (up to 10 birds; Table 4.8). Fulmars forage offshore between August and November but tend to regularly return to their specific breeding sites and nest ledges during winter, but do not commence egg laying until May (Strom, 2011).

Table 4.8 Maximum number of each species observed on low and high tide counts on the West cliff (Site 12) and East cliff (Site 13) over time. *Conservation status of each species indicated as presented in Eaton et al., (2015) Birds of Conservation Concern 4 (BOCC4). Box colours reflect conservation concern with **Least concern**, **conservation concern**, **conservation priority**, **urgent action required**.

Common Name	Scientific name	BOCC4 Status*	28.10.2016	16.11.2016	13.12.2016	14.1.2017	1.2.2017	6.3.2017	31.3.2017
SITE 12 LOW WATER									
Herring Gull	<i>Larus argentatus</i>	-	-	-	-	16	2	4	2
Fulmar	<i>Fulmarus glacialis</i>	-	-	-	8	10	6	8	11
SITE 12 HIGH WATER									
Herring Gull	<i>Larus argentatus</i>	-	-	-	-	2	1	2	2
Fulmar	<i>Fulmarus glacialis</i>	-	-	-	5	12	3	9	7
SITE 13 LOW WATER									
Herring Gull	<i>Larus argentatus</i>	-	-	-	-	4	3	-	3
Fulmar	<i>Fulmarus glacialis</i>	-	-	-	12	12	18	10	17
Meadow Pipit	<i>Anthus pratensis</i>	-	-	4	-	-	2	-	-
SITE 13 HIGH WATER									
Herring Gull	<i>Larus argentatus</i>	2	2	1	2	1	3	4	2
Fulmar	<i>Fulmarus glacialis</i>	-	-	-	9	11	9	6	5

Figure 4.1. Images of birds utilising the harbour area. A. Oystercatcher at Site 6; B. Turnstone on pier; C. Meadow Pipit on boulders Site 5; D. Redshank at Site 1; E. Carrion Crow at Site 6; F. Purple Sandpipers on algal wrack at Site 7; G. Fulmars on West Cliff; H. Cormorants on railings of East pier.



On no occasion was any bird species noted using the areas requiring refurbishment (i.e. holes in the walls or piers) for foraging or roosting. Whilst Meadow Pipits and Turnstones fed amongst the granite and sandstone boulders at the top of the beaches, especially when seaweed had been deposited in those areas, they did not use the gaps in the harbour structures.

Throughout the survey period, wader numbers built through autumn into winter then declined during late winter as birds departed the area for their breeding grounds (e.g. for Oystercatchers, the uplands of the UK). Fulmars, one of the seabirds that returns to their nest sites very early in the year prior to the start of the breeding season, returned to their potential nesting ledges on the cliffs during December.

5. MAIN CONCLUSIONS AND RECOMMENDATIONS

- The main shorebird species observed in the area was the Oystercatcher with up to 51 individuals seen foraging on the natural rocky shore (Site 11) outside the main harbour structures adjacent to the East pier. The same species only occurred in small numbers within the harbour area, predominantly feeding in Site 6 at low water.
- Oystercatchers headed towards Whitby Golf Course where they supplemented their feeding or roosted as the shore flooded with an incoming tide.
- Purple Sandpipers (a Schedule 1 species) predominantly fed on the outer ledges of the East pier, only moving into the harbour when these areas were inaccessible due to very heavy seas. They were not seen in the harbour area during normal wave conditions.
- Common Scoter (Schedule 1 species) were only observed during the winter months on the sea just beyond the breakers at Site 11, especially during heavier seas and northerly winds. They never entered the harbour.
- Turnstones fed throughout the area, using all exposed intertidal areas, out edges of the East pier, harbour structures and piers. They actively foraged in areas (e.g. fish quay, pier walkways) where tourists and fishermen had dropped potential food, and readily moved to other areas to feed if disturbed.
- Birds more associated with grasslands (e.g. Meadow Pipits) also fed on the intertidal areas, especially when seaweed flies were abundant.
- Gulls used Site 11 and the beaches and pontoons in the harbour primarily as roosting sites, and readily moved to other areas if disturbed.
- The most important foraging areas were the two small beaches (Sites 4 and 6) within the harbour area, but birds readily moved to other areas beyond the piers if disturbed by walkers or dogs.
- No obvious wader roost sites occurred within the harbour, apart from the pontoon at Site 3 used by Turnstones.

- Fulmars returned during winter from foraging out at sea and had occupied potential nesting areas on the cliffs by mid- December with numbers building towards the end of January.
- Wading birds were found all throughout the survey period - but with heavy seas or strong northerly/easterly winds waders moved from foraging on the outer structures of the piers onto the small sandy beaches within the harbour.

In summary, whilst there may be disturbance to the shorebirds during the repair of the harbour infrastructure, the populations of birds involved are quite small and none of the species observed during the current surveys were dependent on one site for foraging. None of the wader species breed in the local area, and breeding seabirds on the cliffs are unlikely to be disturbed by work in the harbour area. All species observed readily fed in other areas or, in the case of the waders, moved to the exposed rocky shore platforms or Whitby golf course when disturbed by walkers.

However it might be worth considering the following recommendations when planning the work schedule,

- The two beaches within the harbour (Sites 4 and 6) are the prime feeding and roost sites for waders. A plan of works should try to ensure that one of these areas is left undisturbed to enable birds to feed and roost on one of these areas.
- Work in the vicinity of Site 6 should be restricted if the Schedule 1 species, Purple Sandpiper, moves into the harbour to shelter from heavy seas.

In conclusion, whilst there might be short-term disturbance of foraging to over-wintering waders and seabirds (which are of conservation concern) in the local vicinity of the works, there are additional feeding opportunities and roosting areas both to the north and south of the harbour that can provide resources and roosting sites for these species. If the works are to be undertaken during the summer months, it is highly unlikely that any shorebirds or species of conservation concern would be breeding in the harbour area.

However, small numbers of some species of shorebird (predominantly non-breeding Oystercatchers and Turnstones) may still feed and roost in the area as non-breeding birds remain in coastal sites.

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APPENDIX 1.

Images of sites surveyed during current survey. Site 1 = A; Site 2 = B; Site 3 = C; Site 4 = D; Site 5 = E; Site 6 = F; Site 7 & 8 = G; Site 9 = H; Site 10 = I; Site 11 = J; West Cliff = K; East Cliff=L.

