

Annex 11.4

South Humber Channel
Marine Studies:
Ornithological Monitoring
Spring Passage & Breeding
Bird Survey April to August
2010
(IECS)

the
INSTITUTE
of
ESTUARINE
and
COASTAL
STUDIES



**South Humber Channel Marine Studies:
Ornithological Monitoring**

**Spring Passage & Breeding Bird Survey
April to August 2010**

Report to Yorkshire Forward

Institute of Estuarine and Coastal Studies
University of Hull

25th August 2010

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Report: ZBB752B-D-2010

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THE UNIVERSITY OF HULL

Institute of Estuarine and Coastal Studies (IECS)


Yorkshire Forward

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For and on behalf of the Institute of Estuarine and Coastal Studies	
Approved by:	Nick Cutts
Signed:	
Position:	Deputy Director, IECS
Date:	25 th August 2010

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1. INTRODUCTION

Yorkshire Forward is currently investigating the feasibility of a potential commercial development in the Humber Estuary between the Humber Sea Terminal and Immingham Port (Figure 1). This area may provide a suitable location for a variety of developments e.g. multi-user marine facility or tidal power generating farm. However, in order for any such development to take place a host of studies relating to the planning and design of the marine elements of the development are required.

The Institute of Estuarine & Coastal Studies was commissioned in association with Roger Tym & Partner to undertake an ornithological survey in the vicinity of the potential development area. The aim of the survey was to assess the avifauna in the area and to allow the impacts of any potential development to be addressed in respect to the integrity of the Humber Estuary European Marine Site (EMS). In this way, any mitigation strategies could be assessed and implemented if required.

The potential development area is fronted by mudflats which form part of the Humber Estuary designations as a Special Protection Area (SPA), Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) & RAMSAR site. Adjacent to the area are the saline lagoons of North Killingholme Haven Pits which also form part of these designations. In addition, the site comprises large areas of industrial land with smaller areas of agricultural land adjacent to Station Road.

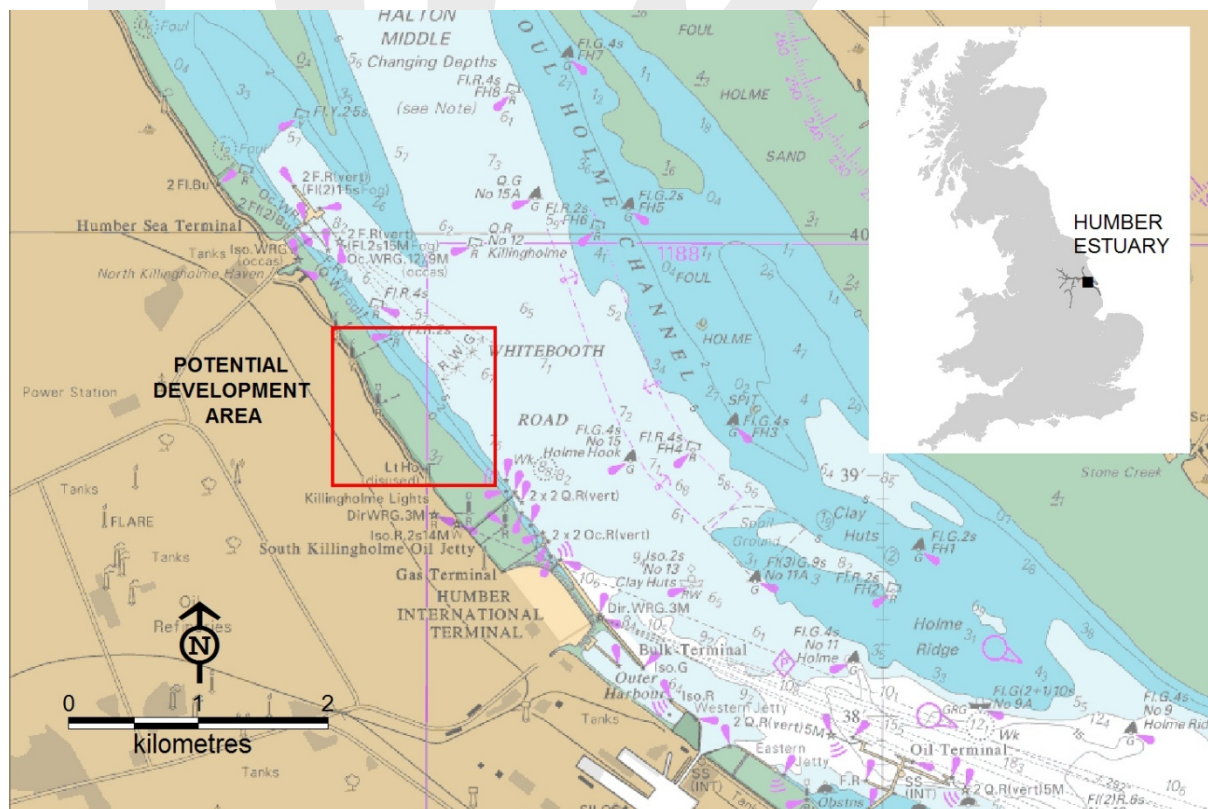


Figure 1. Potential development area in the Humber estuary

2. METHODOLOGY

In order to effectively monitor the avifauna of the area, a combination of two survey techniques/methodologies were required. To monitor the usage of the intertidal mudflat fronting the site a modified Wetland Bird Survey (WeBS) methodology was used. However, to monitor the terrestrial avian assemblage, four Breeding Bird Surveys (BBS) were undertaken.

2.1 The Wetland Bird Survey (WeBS)

The WeBS surveys consisted of hourly point counts across the tidal cycle from either high to low water or low to high water. Initially, between April to June 2010 these surveys included four count sectors (Zones A-D) located on the intertidal area, with a subsequent fifth sector (Zone E) being added from July onwards (Figure 2). During each count, bird numbers (for each species) were noted along with activities taking place, e.g. whether or not they were foraging. The Black-tailed Godwit were of particular interest due to the lagoons being an important roost site - several thousand being noted previously during peak counts. As such, usage of the frontage by these birds was of particular note.

Vantage points for the counts were located along the flood bank and accessed by car from Station Road in order to reduce potential disturbance to the birds. The first vantage point was located at the boundary between Zones A & B, denoted by a rocky aggregation on the foreshore. From this point, Zone A and the majority of Zone B could easily be surveyed.

The second vantage point was positioned at the boundary to Zones B & C. This was delineated by the boundary of the car park and fields inland of the viewpoint at a bend on the flood bank. From this point the remainder of Zone B could be surveyed along with Zone C as far as the creek.

The third and final viewpoint for the initial set of surveys (April to June) was located at the end of Station Road at the boundary to Zones C & D where Zone D and the remainder of Zone C could be surveyed.

The viewpoint for Zone E from July onwards was located adjacent to the jetty which delineates the boundary between Zones D & E.

In addition to the main avifaunal counts, changes in habitat usage together with reaction to disturbance events were noted throughout the survey period with the degree of impact being assessed using a response scale (i.e. numerical magnitude association). The following disturbance level criterion established by Cutts & Allen (1999) were used:

- **Level 1:** No impact
- **Level 2:** Behavioural change (alarm calls, head up, change in feeding/roosting activity)
- **Level 3:** Movement within zone
- **Level 4:** Movement out of zone but remaining on-site
- **Level 5:** Movement off-site

To check for roost usage by wetland birds, two additional areas were surveyed at high tide - the fields inshore of Zone C and North Killingholme Haven Pits which also helped to identify any breeding birds on the pits. Behaviour was not noted in these areas due to them being roost sites.

2.2 Breeding Bird Surveys (BBS)

The Breeding Bird Surveys (BBS) were undertaken as two line transects (Transects A & B) along the port access road and Station Road (Figure 2). The transects were selected on the basis that they represented the two areas of easiest access around the site and were also the most representative of the marginal areas of the site which encompassed the best breeding habitats for terrestrial birds. In addition, they also allowed the breeding birds of North Killingholme Haven to be surveyed.

Each transect was divided into five sectors and along each sector, avifaunal presence and number were recorded either by sightings of individuals, or by song. Birds in flight were discounted unless actively using the site, e.g. feeding Swallows. Juveniles were also discounted from the survey.

Within each sector, the highest level of breeding evidence was additionally recorded using one of the following classifications:

- Non-breeding (e.g. birds on migration, summering non-breeder);
- Possible Breeder (e.g. species in suitable habitat, singing in suitable habitat);
- Probable Breeder (e.g. pair in suitable habitat, permanent territory, display, visiting a nest, agitated behaviour, nest building);
- Confirmed Breeder (e.g. distraction display, used nest, recently fledged young, occupied nest, adult carrying food or faecal sac, nest with eggs or young).

To survey singing birds and identify potential breeding activity, initial transects were undertaken prior to 08:30.

An Opticron ES 65 telescope with an 18-54x zoom eye piece and Opticron Explorer BGA 8x42 binoculars were the main pieces of equipment used.

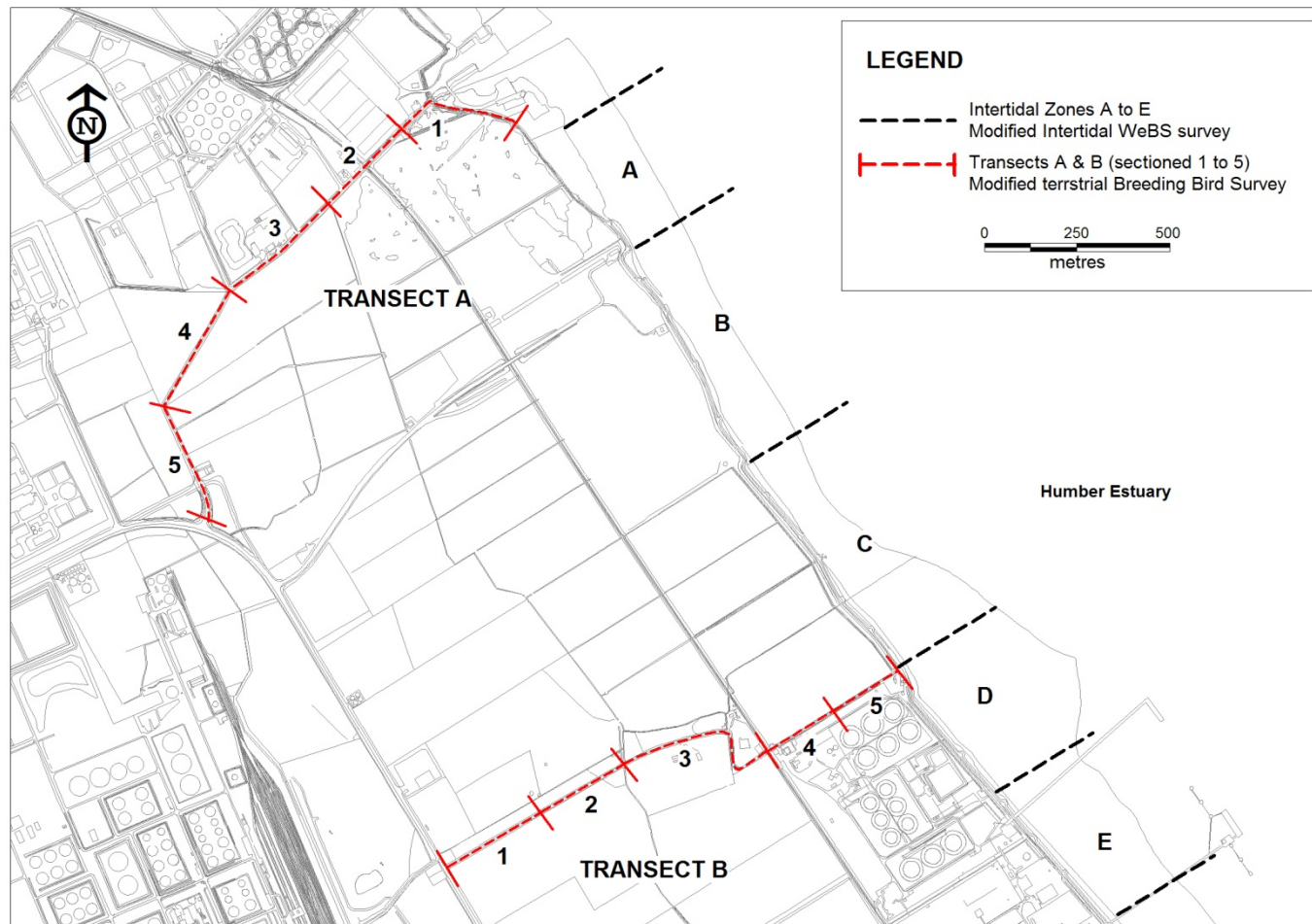


Figure 2: Survey area showing modified WeBS intertidal survey count sectors (Zones A - E) and modified terrestrial Breeding Bird Survey Transects (A & B) - each transect being subdivided into 5 sectors (Sectors 1 - 5).

3. SURVEY LOG: APRIL TO AUGUST 2010

Six surveys were undertaken between April and August 2010. The initial four surveys were a combination of WeBS & BBS, whilst the latter two were solely WeBS. Survey dates and high water times/heights are given in Table 1 with the survey area shown in Figure 2.

Table 1: Survey Log

Survey Number	Date	Time of High Water (HW) - British Summer Time (BST)	Tidal Height (High Water)
1	22/04/10	12:24	5.9m above Chart Datum
2	07/05/10	13:22	5.6m above Chart Datum
3	07/06/10	14:27	5.8m above Chart datum
4	05/07/10	12:22	5.9m above Chart Datum
5	09/07/10	16:50	6.3m above Chart Datum
6	02/08/10	10:45	6.4m above Chart Datum

3.1 Survey #1: 22/04/10

Weather during April 2010 was particularly mild with survey conditions being sunny with a very light breeze of variable direction. Visibility exceeded 10km throughout the day. The WeBS count was undertaken on a falling tide with HW at 12:24 (British Summer Time).

3.1.1 WETLAND BIRD SURVEY

As expected, a moderate number of passage waders were observed along the foreshore with peak maxima of 250 Black-tailed Godwit, 55 Redshank & 26 Curlew noted. At high water very few waders were present on the foreshore with numbers rapidly increasing as the tide receded. Redshank numbers peaked mid-tide subsequently dropping to a lower level indicating a through passage of birds onto other foraging areas.

The high tide roost at North Killingholme Haven had a total of 537 birds including 500 Black-tailed Godwit & 17 Redshank. The Black-tailed Godwit appeared to move quickly through the site once they moved from the roost onto the foreshore with a regular turnover of birds. The peak count was reached at low tide.

Curlew appeared at the site soon after low tide and numbers were relatively stable across the tidal cycle indicating the same birds were using the foreshore throughout. Shelduck which peaked at 20 birds followed a similar pattern to Curlew also indicating the same individuals were also using the area throughout the survey.

A small group of Ringed Plover were present mid-shore in Zone B throughout the latter part of the survey peaking at 9 birds with one or two individuals present in other areas. Total peak count for this species was 10 birds across the foreshore.

Very few gulls were recorded with peak counts of 2 Black-headed Gulls and 2 Great Black-backed Gulls.

In general, very few birds were recorded within Zones A & B. These areas are largely inundated at high tide but remain poorly used throughout with peak bird counts recorded at 5 and 20 respectively.

The Black-tailed Godwit moved from the roost area at North Killingholme Haven to the water's edge along Zones C & D before leaving the site to the southeast. Curlew and Redshank were spread across the lower foreshore within Zones C & D whilst Shelduck were dispersed across the water with little sign of fidelity to the southeast of the site. Third party activity on the flood bank resulted in some low level bird disturbance but with only minor evidence of stress to the birds noted.

3.1.2 BREEDING BIRD SURVEY

The survey commenced at 08.30 and concluded at 09.59 with a 16 minute break between 09.08 & 09.24 to walk between transects.

Transect A

Sector 1 along the flood bank to the turning for the hide had a small number of Woodpigeons in suitable breeding habitat along with two singing Robins and single singing Blackbird, Sedge Warbler and Greenfinch. A single Pheasant was additionally noted.

Sector 2 again held a number of Woodpigeons (7) plus singing Chaffinch, Wren & Blackbird. Other potential breeders were Collared Dove and Rock Dove.

The only singing birds in Sector 3 were part of a party of 4 Goldfinches. Potential breeders noted were Dunnock and Swallow.

A number of aerial birds were observed using Sector 4 to hunt/forage with Swallow, Kestrel and Carrion Crow recorded. However, the only singing birds were a pair of Collared Doves.

In the final sector (Sector 5) located adjacent to woodland, a number of woodland birds were noted singing including Chiffchaff, Great Tit, Blackbird, Wren & Goldcrest.

Transect B

Five Yellow Wagtails were noted along the first sector of Transect 2 including 3 singing males. This area is located alongside pasture and grazing land for horses and appears to be good breeding habitat for this species. Other species singing were Skylark, Willow Warbler (2), Chaffinch (6) & Wren.

Sector 2 had singing Skylark, Blackbird & 7 Chaffinch, with Sector 3 having similar 'common' species with a singing Great Tit and a further Skylark noted.

Sectors 4 & 5 are located between a water treatment works and a field with some scrub fringing the track. A Mistle Thrush was singing from high in a tree on Sector 4 along with Yellowhammer, Dunnock, Robin & Skylark. A further 4 Skylarks were recorded singing in Sector 5. Also of note were small groups of Linnets and Meadow Pipits, singing House Sparrow & a pair of Stock Dove.

3.2 Survey #2: 07/05/10

Weather conditions: dry & cool with cloud and a northerly breeze throughout (Force 1 rising to Force 3 by the end of the survey). Visibility exceeded 10km throughout the day. The WeBS count was undertaken on a rising tide with LW at 06:56 (BST).

3.2.1 WETLAND BIRD SURVEY

As expected, the number of birds had decreased markedly from the previous survey in April with only late returning breeding birds (probably from the northern extent of species ranges) together with non-breeding & local breeding species remaining. A peak of 164 birds was noted showing a decline of 56% from the previous month.

A total of 64 Black-tailed Godwit seen feeding on the shoreline in Zone D quickly moved onto the pits where they subsequently roosted until high tide leaving only 1 individual continuing to forage in Zone A. Curlew numbers peaked at 40 with the majority of birds (except for 2 individuals) foraging in Zone D, the main flock frequently moving between this area to the foreshore just to the southeast of the survey site. Only small numbers were seen in other areas and the near absence of birds in Zones A & B continued with maxima of 4 Curlew in Zone A and 9 Curlew in Zone B. However, a group of 11 Ringed Plover were observed foraging in Zone D after low tide before moving off the site.

Numbers of Shelduck were similar to the previous month due to the resident breeding birds and their broods. From low to mid tide, small groups of Common Gull were noted foraging on the shoreline with a peak count of 14 birds.

The high tide roost was considerably smaller than the April count with only the 64 Black-tailed Godwit recorded on the foreshore from a total of 78 birds.

3.2.2 BREEDING BIRD SURVEY

The survey commenced at 05:05 and concluded at 06:55 with a 13 minute break between transects.

Transect A

Sector 1 had six singing species (Garden Warbler, 2 Reed Warbler, 7 Woodpigeon, Blackbird, Great Tit & Wren) plus a Pheasant on the flood bank.

Within Sector 2, five singing Whitethroats were recorded in the scrub together with singing Blackbird, Dunnock and Wren. Other singing birds of note were 12 Woodpigeons. Birds recorded in suitable breeding habitat included 3 Goldfinch & 1 Collared Dove.

A single singing Reed Warbler was present at the south west of the pits complex in Sector 3 and in the same area, singing Willow Warbler (1), Wren (1), Blackbird (2) & Chaffinch were also recorded. In suitable breeding habitat were Rock Dove (possibly breeding on the port buildings), Blue Tit, Swallow and Linnet.

Sector 4 held fewer birds with singing Whitethroat (2) plus commoner species and a single Mallard on a pond to the west of the road, whilst Sector 5 held a singing Sedge Warbler (in hedgerow) alongside a Whitethroat in song. A number of woodland birds were additionally noted in voice to the south of the site with Song Thrush, Chiffchaff, Robin, Chaffinch & Wren

recorded. A pair of Buzzards took off from roosting within the woodland and exhibited territorial behaviour & calling before moving southeast to forage.

Transect B

Yellow Wagtail was again noted in song within Sector 1 with a single male present. An additional 10 species were also recorded in song - most notable were 3 Long-tailed Tit & 2 Skylark.

Sector 2 is most similar in habitat to Sector 1 but with more pasture and some industrial usage thereby providing more of a mosaic habitat type. In this sector, six species were singing with Yellowhammer, 13 Goldfinch, Whitethroat & Skylark the most notable. Of those species present but not singing only Grey Wagtail was of note being a possible breeder with freshwater (standing & running) in the vicinity.

On Sector 3, 6 Shelduck and 2 Mallard were recorded in the fields, all of which were thought to be looking for suitable nest sites. Six species were noted singing on this sector including 7 Great Tit, 3 Swallow and a single Yellowhammer. For the second survey in succession House Sparrow (4) were also present in this sector on the final straight of Station Road. A single Stock Dove was additionally noted in appropriate breeding habitat.

Sectors 4 & 5 (similar in habitat type with water works to the east and fallow field to the west) were typified by singing Skylark (2 in Sector 4 & 1 in Sector 5), Linnet (10 in Sector 4 & 10 in Sector 5) & Meadow Pipit (3 singing in Sector 5). A single Kestrel was observed hunting over the scrub of Sector 5.

3.3 Survey #3: 07/06/2010

Weather conditions: initially warm and cloudy with a light westerly breeze (Force 1). However, a change in wind direction to the North-East (Force 3) for the last 2 hours of the survey led to a rapid drop in temperature and extremely heavy rain. LW was 08:15 (BST) and the WeBS survey was undertaken on a rising tide. Visibility exceeded 10km throughout the day.

3.3.1 WETLAND BIRD SURVEY

Numbers continued to decline in June with only 141 birds present. However, the assemblage was found to be substantially different to the April and May surveys. Only a single Black-tailed Godwit was recorded although a peak of 63 Black-headed Gull were noted on the shoreline with approximately 63% foraging. Numbers declined slowly with the rising tide, although 27 birds were still remained at high tide. Small numbers of non-breeding waders were particularly evident as a mixed flock of Bar-tailed Godwit (16 individuals) & Knot (2 individuals) foraged at the water's edge around mid-tide. A second mixed flock of Ringed Plover (11 individuals) & a single Dunlin were also present in Zone C.

Usage of zones A & B remained particularly low with peak maxima of 2 and 4 birds respectively. Small numbers of Shelduck and Curlew remained, the latter non-breeding birds whilst the former are the resident breeding birds and their offspring.

No evidence of a high tide wader roost was observed during the survey with only Little Egret and Grey Heron possibly displaced by the tide.

3.3.2 BREEDING BIRD SURVEY

The survey commenced at 06:33 and concluded at 08:29 with a 14 minute break to walk between transects. In comparison to the May survey, fewer birds were singing although confirmed breeding was observed on a number of occasions.

Transect A

A peak number of 3 Wrens were recorded singing in Sector 1 together with 3 Sedge Warblers & a single Reed Warbler. Possible breeding non-singers included Whitethroat & Woodpigeon.

Sector 2 held singing Blackbird & Wren plus Sedge Warbler & Swallow. Possible breeders included 13 Woodpigeon, 3 Tree Sparrow, Chaffinch & Greenfinch.

The first fledged young of the year were noted in Sector 3 with 3 juvenile Pied Wagtails foraging on the verge. Two Woodpigeon were showing pair-bonding behaviour in suitable breeding habitat and in the same area, 2 Swallows were displaying near to a possible nest site. A colony of Tree Sparrow were also nearby with singing males among the 8 birds recorded. Other singing birds present were 3 Blackbirds & a Wren.

Within Sector 4, the only singing bird noted was a Wren although a Song Thrush was also observed carrying food along with a Coot seen attending young on a pond.

On Sector 5 (which encompasses the woodland edge to the south of the site) 8 species were noted singing including Chiffchaff, Song Thrush, Whitethroat, Great Tit & Robin.

Transect B

Sector 1 of Transect B had singing Tree Sparrow, Chaffinch (5), Great Tit, Wren, Greenfinch & Skylark, although there was no sign of Yellow Wagtail on this survey.

A pair of Great Tits were showing agitated behaviour indicative of a nest site in close proximity within Sector 2. Singing birds within this sector included a group of 10 Goldfinch and a single Song Thrush together with singing Skylark and 2 singing Robin. A group of 7 Shelduck were also observed in suitable breeding habitat in pastures adjacent to Station Road.

Recently fledged Great Tit were amongst a small tit flock in Sector 3 and Blue Tit were seen attending a probable nest site on a warehouse in the same general area. Singing birds noted in the sector were Goldfinch, Skylark, Chaffinch, Whitethroat & Woodpigeon.

As previously mentioned, Sectors 4 & 5 are a continuous habitat and as such, should be considered in combination. Of note here were House Sparrow carrying faecal sacks from concealed young together with recently fledged Magpie. A flock of 35 Linnet were mobile across the whole area and could have contained young birds but this was difficult to ascertain with any certainty. Across the general area, 5 singing Skylark were noted as well as Whitethroat, Meadow Pipit (2), Blackbird & Yellowhammer in song.

3.4 Survey #4: 05/07/10

Weather conditions: Initially hot & sunny with a light south-westerly breeze (Force 1). However, as the survey progressed cloud cover increased to 7/8 (oktas) with the wind also increasing to Force 3. LW was at 06:13 (BST) with the survey being undertaken on a rising tide. Visibility exceeded 10km throughout the day.

An additional survey sector (Zone E) was added to the modified WeBS methodology for this survey (and subsequent surveys).

3.4.1 WETLAND BIRD SURVEY

An increase in wader numbers was expected for this survey with failed breeding birds returning to the estuary to summer - particularly Black-tailed Godwit. As anticipated, the total number of birds observed increased to 467 - a rise of 331% which can be attributed to an increase in Black-tailed Godwit (88), Curlew (126) & Black-headed Gull (163) numbers. The Black-tailed Godwit roost also returned with 270 birds present together with 4 Redshank, 2 Oystercatcher & a Common Sandpiper. Black-headed Gull were spread in foraging parties along the shoreline with particular concentrations in Zones B & C until with the rising tide they moved to a roost in Zone E. A small number of large gulls were also associated with the Black-headed Gull roost.

Distribution of waders on the foreshore was similar to previous surveys with Curlew spread across Zones C & D together with significant aggregations in Zone E. The godwits were found as a mixed species flock with small numbers of Bar-tailed Godwit at the water's edge in Zone D. Observations of note were single roosting Golden Plover and Cormorant on the foreshore of Zones B & D respectively.

3.4.2 BREEDING BIRD SURVEY

The survey commenced at 06:50 and concluded at 08:13 with a 14 minute break between transects. Very little singing was heard due to it being very late in the breeding season.

Transect A

Sector 1 held singing Reed Warbler, Whitethroat, Greenfinch & House Sparrow along with possible breeding Sedge Warbler, Woodpigeon & Blackbird. A number of other species were recorded but thought to be unlikely breeders.

Sector 2 held no singing birds although a Mistle Thrush was observed within the sector - not a species previously seen on the transect although a potential breeder as it is an early nester and may have passed undetected.

Sector 3 had some singing birds including Reed Warbler, Yellowhammer & Whitethroat centred around the ponds to the north west of the road. A high count of 12 Mallard were seen on the pond and these may constitute breeding birds.

Sector 4 held few birds with only a Skylark singing. A Reed Bunting was noteworthy but likely to be a dispersive post-breeding bird rather than a local breeder. Sector 5 was again quiet (on previous visits the wood to the south held several singing species) with the only singing birds being Wren.

Transect B

Transect B was in general also very quiet although Sector 1 held a large number of Long-tailed Tits including fledged young. At least 25 birds were noted but there may have been up to 50 in the party with accurate numbers being difficult to record. It was also not possible to categorise individuals into adults and juveniles due to the number, movement & habitat involved but at least 14 were recorded as adults. Associated with the Long-tailed Tits were a family party of Great Tits including 2 fledged juveniles. The only singing bird noted in Sector 1 was a single Blackcap.

Sector 2 held singing Swallow and Goldfinch (although the finches were thought to be transient), and a roving family of Blue Tits with juveniles appeared to be local breeders.

A large group of Goldfinches in Sector 3 appeared to have only adults but did include two singing males. Other singers in Sector 3 were territorial Skylark and Whitethroat.

Sectors 4 & 5 held large numbers of Skylark including several singing birds and family parties including juvenile birds. Ascertaining accurate numbers proved difficult due to the mobility of birds and the long vegetation in the field however a minimum of 6 adults were seen along with 5 juveniles. Sector 4 held a singing Meadow Pipit along with the 'usual' colonies of Tree & House Sparrow with true numbers present again difficult to accurately assess. Linnets were again present in the fields and on the telegraph wires. Sector 5 also held singing Meadow Pipit along with Skylark and a Whitethroat (thought to be the same one on territory as observed on the previous survey although it wasn't singing on this occasion).

3.5 Survey #5: 09/07/2010

Weather conditions: Extremely hot and sunny (maximum temperatures of 32°C) with a light south-westerly breeze.

Only a WeBS survey count was undertaken as the breeding season had finished. However, despite this, a newly fledged Yellow Wagtail was seen in the vicinity of Station Road and seems likely to be the progeny of the displaying males observed earlier in the season. Few birds were seen due to the absence of most migratory waders with only failed-breeders and non-breeders present. A large number of post-breeding Black-headed Gull were also noted.

The survey was undertaken on a rising tide with LW at 10:40 (BST). Visibility exceeded 10km throughout the day.

3.5.1 WETLAND BIRD SURVEY

The fifth survey was undertaken only 4 days after the fourth so the small increase in birds from 467 individuals to 473 was not unexpected.

Changes in species composition were quite pronounced with the dispersal of the Shelduck and Mallard broods leading to low counts of both species. Black-tailed Godwit numbers increased as expected to a maximum of 100 birds together with a small increase in the number of Bar-tailed Godwit present (55 birds). Gull numbers remained largely static (total of 177 down from 185) and comprised similar species although a single Yellow-legged Gull (*Larus michahellis*) was additionally noted.

An increased number of Oystercatcher (11 birds) was recorded the majority present in Zone E which may normally hold higher numbers as it appeared that at least one pair had bred here. A single Common Sandpiper in Zone C & Whimbrel in Zone B were also recorded.

In general, birds were distributed much as they were during Survey #4 with the largest concentrations of godwit on the shoreline in Zones C & D. Unusually, there was little change in numbers and usage across the tide. Black-headed Gulls typically foraged along the shoreline until mid-tide when they moved into the gull roost in Zone E. Curlew foraged across the foreshore although the largest concentrations were in Zones C & D (and to a lesser extent Zone E) with a maximum foraging group of 52 birds in Zone D at low tide. With the rising tide a greater number of birds exhibited roosting behaviour with only 14% foraging at this time.

3.6 Survey #6: 02/08/2010

Weather conditions: mild & overcast with a light to moderate breeze fluctuating between westerly and north-westerly. Visibility remained greater than 10km throughout the survey.

The survey was undertaken on a falling tide with HW at 10:45 BST. As with the previous survey, only a WeBS count was undertaken.

3.6.1 WETLAND BIRD SURVEY

The final survey showed a large increase in bird numbers with a total count of 1,532 individuals. This increase was underpinned by four dominant species - Black-tailed Godwit (818 birds), Redshank (183), Black-headed Gull (252) & Curlew (141) as birds returned to the estuary after breeding. Common Gull & Great Black-backed Gull numbers increased to 17 & 13 respectively, and Shelduck reached a survey peak of 68 birds as they gathered on the estuary prior to moulting. Six Dunlin were associated with the larger groups of waders and 2 Whimbrel were noted roosting on the flood bank. A pair of Mediterranean Gulls were also noted throughout the survey at the south-eastern end of the survey area, moulting out of breeding plumage. The high tide roost reached a high of 2,441 birds including 2,200 Black-tailed Godwit and 205 Redshank. Low levels of disturbance were noted on the jetty between Zones D & E with no effect on the birds.

Although birds were predominantly centred on Zones C & D there was significant usage of Zone A for the first time as birds leaving the high tide roost found the foreshore already heavily used and therefore moved onto more marginal areas. As previously noted, birds tended to move out of the roost area in a south-easterly direction and onto Zones C & D before leaving the site.

The largest aggregations were 400 Black-tailed Godwit in Zone D at low water, 85% of which were foraging. Redshank, Curlew and Black-tailed Godwit were largely absent from the foreshore until 3 hours after high water when numbers began to increase peaking at low tide. Shelduck numbers increased rapidly as the tide initially receded but then declined again as low water approached. This is presumably to make use of the newly exposed resource until they are satiated and it is likely that a similar pattern would have occurred on the rising tide as the feeding areas are inundated. The gull roost in Zone E remained with 91 birds although unusually this was at low tide.

4. SPECIES ACCOUNTS & TRENDS

4.1 Pattern of Usage during Spring & Summer

The site holds similar species to other areas in the middle estuary such as Paull Holme Strays & Patrington Haven (IECS, 2002a & 2002b) which is to be expected given that these sites are opposite North Killingholme Haven on the north bank of the Humber.

The monitoring programme undertaken at Paull Holme Strays from 2002 onwards has provided an extensive data set of usage for Paull Holme Strays site, and although subject to some inherent variation (largely in total numbers), it has been possible to derive some seasonal trends in avifaunal usage for the middle estuary.

Although wildfowl numbers decline throughout the period with dispersal to breeding sites, in general, wader numbers exhibit a small increase during this period with the arrival of passage flocks in late March and April. However, the extent and duration of this increase in numbers depends on weather conditions, both during the initial passage to the UK and within the Humber region. The period is characterised by fluctuations in relative flock usage with a greater diversity of species using the mudflats. In particular, Curlew, Redshank and Dunlin may be present in relatively high numbers during the initial period, with Ringed Plover also occurring in relatively large flocks towards the end of passage in May and early June.

Following a very low level of usage in June, an increase in usage by waders in the middle estuary is generally observed in July with the arrival of returning adult birds to the estuary, this increase continuing into August and often September as juveniles move through the area. Black-tailed Godwit in particular can be relatively numerous in late July with several thousand present, numbers continuing to increase into August prior to a dip in usage before the Autumn arrivals.

Curlew and Redshank also increase in numbers during the late summer period with birds returning from breeding grounds. Other species including Ringed Plover, Bar-tailed Godwit and Knot are also often present in relatively large flocks passing through the middle estuary.

In general, wildfowl usage remains low across the north bank of the middle estuary during July although small numbers of Shelduck and Mallard are often present.

4.2 Overall Site Usage April to August 2010

Figure 3 illustrates the decrease in usage between April and June 2010 before numbers subsequently increased throughout July & August. The overall peak for the season occurred in August with a maximum of 1,532 birds using the site (summed species maxima), with Black-tailed Godwit comprising 53% of the total number.

A dip in usage was experienced in May & June due to the absence of Black-tailed Godwit, Redshank & Curlew. During this period, small numbers of Knot & Bar-tailed Godwit were noted, thought to be immature, non-breeding birds summering to the south of their breeding range. Numbers of Black-headed Gull began to increase from early June as failed breeders returned to the estuary, numbers increasing as successful birds and juveniles dispersed from colonies.

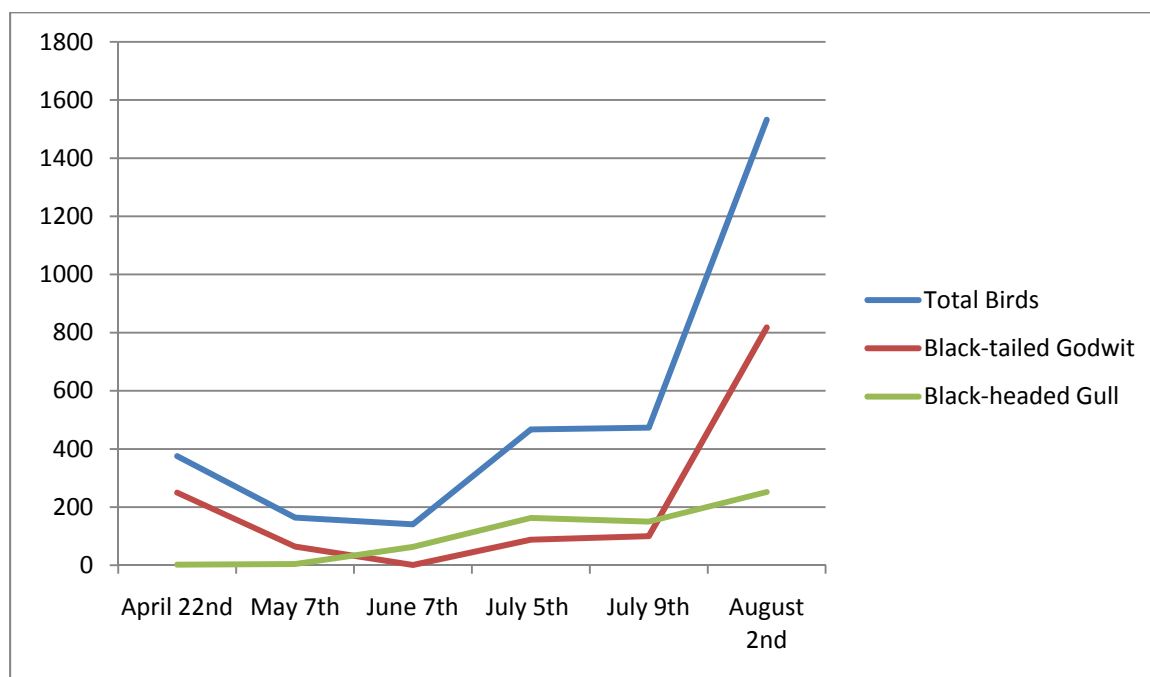


Figure 3: Usage of North Killingholme Foreshore: April - August 2010

4.3 Species Account

The following sections include species accounts for birds recorded in high volumes in the survey areas, or those which have conservation priority status e.g. Red List birds (Eaton *et al.* 2009).

4.3.1 SHELDUCK (*TADORNA TADORNA*)

Shelduck numbers remained stable from April until July as local breeding birds utilised the foreshore to feed with their broods with numbers dipping in July as birds started to move to moulting areas. Numbers increased during August as birds breeding on outside areas moved into the estuary to moult. The Humber Estuary has only recently become a major moulting ground for Shelduck with birds previously making short moult migrations to the Waddensea. More recently, Cherry Cobb Sands has become an established moult site (Cutts, 1999; Tasker & Milsom, 1979).

During the breeding bird surveys small parties of adults were seen prospecting for nest sites on local pasture land. Small numbers of birds were also observed using the high tide roost at Killingholme Haven on occasion with a peak count of 9 birds during May.

4.3.2 OYSTERCATCHER (*HAEMATOPUS OSTRALEGUS*)

Small numbers of Oystercatcher were spread across the foreshore throughout the survey period. An increase in the maximum count in July and August may not indicate a genuine increase in site usage as a pair bred in zone E (only surveyed from July onward), and this area is a favoured roost site. Little change in usage was noted across the survey period. Small numbers occurred in the high tide roost with a maximum of 2 birds in April with only

single records in July & August. These are likely to be migrant birds as they roosted amongst the larger gatherings of passage waders.

4.3.3 AVOCET (*RECURVIROSTRA AVOSETTA*)

Avocet were not recorded on the foreshore during the survey period. Small numbers were observed amongst passage waders in the high tide roost on Killingholme Haven in April & August with a maximum of 3 birds. No breeding behaviour was observed.

4.3.4 DUNLIN (*CALIDRIS ALPINA*)

In general, Dunlin were scarce on the foreshore throughout the survey period with a single non-breeding bird present with Ringed Plover in June, and 6 birds associated with a larger number of Black-tailed Godwit and Redshank during August. These birds were also seen in the high tide roost on Killingholme Haven. In addition, a single Dunlin was noted in the high tide roost during April.

4.3.5 BLACK-TAILED GODWIT (*LIMOSA LIMOSA*)

Killingholme Haven is an established Black-tailed Godwit roost with previously recorded post-breeding maxima of several thousand birds (G. Catley, pers. comms). Good numbers were observed on the foreshore during April declining rapidly during May as birds moved to breeding areas in Iceland (shown by a ringing recovery of a colour marked bird during the April survey). A low count on the foreshore of a single non-breeding bird was recorded in June before the first failed breeders in July proved the vanguard for the larger flocks of August with a maximum of 818 birds on the foreshore. A similar pattern can be seen with the high tide roost counts with a maximum of 2,200 birds in August and no birds present in June.

4.3.6 BAR-TAILED GODWIT (*LIMOSA LAPPONICA*)

Bar-tailed Godwit were present in moderate numbers during June & July and rather than representing failed breeders are more likely to be non-breeding birds (as only a single was present in August). The only Bar-tailed Godwit present within the high tide roost was during August - this being an individual and recorded with Black-tailed Godwit.

4.3.7 CURLEW (*NUMENIUS ARQUATA*)

Curlew were present on the mudflat during Spring passage with a peak of 40 recorded in May. High counts in July are likely to relate to failed breeding birds with the increase in August including returning successful breeders undergoing post-nuptial moult.

A small number of Curlew use the high tide roost at Killingholme haven with a peak count of 6 recorded for the second July survey. A single individual was observed roosting on the fields during the July survey - the only bird to do so across the roosting period.

4.3.8 BLACK-HEADED GULL (*CHROICOCEPHALUS RIDIBUNDUS*)

Although virtually absent at the start of the survey period, Black-headed Gull numbers increased with each survey as first failed breeders began using the mudflats to feed, these being joined in later surveys by post breeding flocks and finally, juvenile birds (counts peaking at 252 in August). Small numbers utilised the high tide roost in July & August with a maximum number of 16 observed during the second July survey.

4.3.9 SKYLARK (*ALAUDA ARVENSIS*)

A red list breeding bird, several singing males were recorded on Transect B during the breeding bird surveys. Although distributed throughout the agricultural areas, the largest concentrations were noted in the fields immediately behind the flood bank with several fledged birds being seen in this area during the final breeding bird survey in June. The highest number of singing birds recorded was 8 during both April and June.

4.3.10 YELLOW WAGTAIL (*MOTACILLA FLAVA*)

Small numbers of this species were noted at the southern end of Station Road along Transect B of the breeding bird survey during April (5 individuals recorded) & May (1 individual recorded). This species is included due to it being a red listed breeding species. The singing birds were all present in the first sector of Transect B and although breeding in the survey area could not be identified with certainty, a very young juvenile was noted in July on nearby grassland.

4.3.11 SONG THRUSH (*TURDUS PHILOMELOS*)

Included due to its conservation status (red list species), Song Thrush was only noted during the June breeding bird survey. However, despite this, breeding was confirmed with an adult observed carrying food in Sector 4 of Transect A. A singing male was additionally noted in Sector 5 of Transect A during the same survey.

4.3.12 HOUSE SPARROW (*PASSER DOMESTICUS*)

Included due to severe declines of its urban population, House Sparrows appeared to be flourishing in the survey area with suspected breeding in two small colonies (both associated with buildings). The first colony (only noted in July) appeared to be nesting on a building located in Sector 2 of Transect A. A second colony was located in Sector 4 of Transect B with birds usually noted loafing in a bush in Sector 3. These were recorded throughout all surveys although precise numbers were hard to ascertain. Evidence of breeding was scant although the established territory makes breeding likely.

4.3.13 TREE SPARROW (*PASSER MONTANUS*)

Another passerine species of conservation concern is the Tree Sparrow (red list) which is locally common around the Humber Estuary. Small numbers were noted on both Transects A & B during the survey period and this species only went unrecorded during May (possibly as females were sat on eggs or brooding young). The species was quite transient in

Transect A without evidence of definite breeding but the repeated observations suggest it may have taken place. During June and July a colony appeared to be breeding in Transect B on the boundary of Sectors 3 & 4 with birds seen either side of the railway which demarks the boundary. Due to the birds dispersing into bushes on approach of the surveyor it was not possible to age individuals or confirm breeding although it is highly likely that this breeding was taking place.

4.3.14 LINNET (*CARDUELIS CANNABINA*)

No singing birds were observed in the breeding survey area although small flocks were noted during each survey in Sectors 4/5 of Transect B (maximum flock size of 35 birds). These were thought to be post-breeding flocks as Linnets are able to fledge young relatively early in the breeding season. It is likely that these birds bred in the vicinity of the breeding survey area. The lower numbers in July are thought to relate to birds dispersing away from their natal area.

4.3.15 YELLOWHAMMER (*EMBERIZA CITRINELLA*)

Small numbers of singing birds were seen throughout April to August. A single individual was noted singing in Transect A during July although all other records noted were within Transect B. Peak count occurred during the May survey with 3 singing males recorded. Breeding is thought to have taken place as the number of singing males decreased with progression of the breeding season. However, although several males were seen in suitable habitat, no females were recorded and so breeding cannot be confirmed.

5. SUMMARY

- A series of monthly monitoring surveys have been initiated at the North Killingholme site on behalf of Yorkshire Forward as part of a potential multi-user terminal development. The surveys were designed to assess the current usage of the area by waterfowl & breeding birds as well as allowing the potential impacts of a multi-user terminal on these groups to be assessed (and if necessary, mitigated for). In particular, usage is assessed against the integrity and favourable condition of the key interest features of the European Marine Site.
- The current reporting period covers spring and early summer 2010. This period is characterised by waterfowl dispersing to breeding sites with waders exhibiting an early peak followed by virtual absence until post-breeding flocks return in early summer. Inland, resident breeding birds are typically well into their breeding regime with migrants arriving and displaying before settling into their regimes later in the spring. By early summer the majority of these birds are in post-breeding moult as monitoring stops.
- Very little disturbance was noted throughout the survey period with third-parties walking on the flood defences or workers on the jetties around Zone E. Birds were seen feeding on the foreshore at the time of these disturbances and only one instance was noted of a third party causing birds to move from within the zone they were foraging in.
- In general, total usage was as expected for the time of year. The presence of high numbers of Black-tailed Godwit on the foreshore was expected and these flocks were of international importance during August showing the importance of the site as a post-breeding roost area. The presence of flocks of national importance during April emphasises the importance of site during the spring period for passage flocks. No other bird aggregations were of national or international importance.
- The site held several breeding birds which are on the Red List (Eaton *et al.*, 2009). Breeding of Skylark & Song Thrush was proven. Yellowhammer, Yellow Wagtail, House Sparrow, Tree Sparrow & Linnet were all probable breeders. There was no evidence of breeding from any other Red List birds.

6. REFERENCES

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7. APPENDICES

6.1 Appendix 1: April Survey, 22/04/10

Breeding Birds Survey

A			
Start:0830 End:0908			
Sector	Species	Number	Breeding Code
1	SEDWA	1	S
	BLABI	1	S
	GREFI	1	S
	WOOPI	4	H
	ROBIN	2	S
	PHEAS	1	
2	BLABI	2	S
	WOOPI	7	H
	ROCDO	2	H
	WREN	1	S
	CHAFI	3	S
	COLDO	2	H
3	WOOPI	2	
	STODO	2	
	DUNNO	1	H
	GOLFI	4	S
4	SWALL	1	H
4	WOOPI	1	
	COLDO	2	S
	MOORH	1	
	GOLFI	3	
	LINNE	2	
	CARCR	2	
	KESTR	1	
	SWALL	2	
	TRESP	2	
5	GRETI	2	S
	WOOPI	3	H
	BLABI	3	S
	ROBIN	1	S
	WREN	1	S
	CHAFI	1	S
	GOLFI	3	H
	CARCR	1	
	GOLCR	1	S
	CHICH	1	S

B				
Start:0924 End:0959				
Sector	Species	Number	Breeding Code	
1	WILWA	2	S	
	CHAFI	6	S	
	GOLFI	3	H	
	WREN	1	S	
	GREFI	1	H	
	SKYLA	1	S	
	YELWA	5	S	
2	RELPA	2	H	
	CHAFI	7	S	
	BLABI	1	S	
	LOTTI	1	H	
	ROBIN	1	S	
	SKYLA	1	S	
3	WOOPI	4	H	
3	CHAFI	3	S	
	GOLFI	2		
	WREN	1	S	
	SKYLA	1	S	
	BLABI	1	S	
	WOOPI	3	H	
	CARCR	1		
	PHEAS	4		
4	KESTR	1	H	
	GRETI	2	S	
	MISTH	2	S	
	CHAFI	3	H	
	GOLFI	2	H	
4	SKYLA	1	S	
	ROBIN	1	S	
	WOOPI	2	H	
	MOORH	1		
	DUNNO	2	S	
	YELHA	1	S	
	BLUTI	1	H	
	5	CHAFI	1	
		SKYLA	4	S
BLUTI		1		
HOUSP		2	S	
MEAPI		3		
PIEWA		1		
STODO		2		
LINNE		3		

Wetland Bird Survey

High Tide time: 12:24:00
Tide State: High Tide
Weather conditions: Sunny
Wind: SE F1
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start:1124	End:1125	Start:1123	End:1124	Start:1132	End:1134	Start:1133	End:1135
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck								
Wigeon								
Teal								
Mallard								
Pintail								
Oystercatcher			1		3		1	
Avocet						1		
Ringed Plover								
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G								
Bar-tailed G								
Curlew					1		4	
Redshank								
Turnstone								
Common Gull							1	
B.h Gull								

High Tide time: 12:24:00
Tide State: +1
Weather conditions: Sunny
Wind: N F1
Rainfall:
Ice cover:

Area	A		B		C		D	
Time	Start:1223 End:1223		Start:1225 End:1230		Start:1252 End:1254		Start:1251 End:1252	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck			2					
Wigeon								
Teal								
Mallard		1		2		2		
Pintail								
Oystercatcher						2		
Avocet								
Ringed Plover								
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G								
Bar-tailed G								
Curlew						10	1	
Redshank								
Turnstone								
Common Gull								
B.h Gull								

Area	Disturbance Level	Activity / Raptors
D	low	car leaving the site

High Tide time: 12:24:00
Tide State: +2
Weather conditions: Sunny
Wind: N F1
Rainfall:
Ice cover:

Area	A		B		C		D	
Time	Start: 1323 End: 1324		Start:1325 End:1326		Start: 1335 End: 1338		Start: 1340 End: 1351	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck			2		2			
Wigeon								
Teal								
Mallard		3						
Pintail								
Oystercatcher								
Avocet								
Ringed Plover								
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G							93	16
Bar-tailed G								
Curlew					14		9	
Redshank					28		27	
Turnstone								
Common Gull								
B.h Gull								

Area	Disturbance Level	Activity / Raptors
C	Low	Walker

High Tide time: 12:24:00
Tide State: +3
Weather conditions: Sunny
Wind: N F1
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start: 1446 End: 1448		Start: 1441 End: 1445		Start: 1423 End: 1428		Start: 1429 End: 1434	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck				2	2			
Wigeon								
Teal								
Mallard	2	2						
Pintail								
Oystercatcher			2					
Avocet								
Ringed Plover			2					
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G					85		21	
Bar-tailed G								
Curlew					9		10	2
Redshank					4		6	
Turnstone								
Common Gull								
B.h Gull					1			

High Tide time: 12:24:00
Tide State: +4
Weather conditions: Sunny
Wind: N1
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start: 1520 End: 1524		Start: 1526 End: 1528		Start:1530 End: 1540		Start: 1542 End: 1550	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck					3	3	9	3
Wigeon								
Teal								
Mallard	4							
Pintail								
Oystercatcher				2		2		
Avocet								
Ringed Plover						7		2
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G							29	
Bar-tailed G								
Curlew				1	1		24	
Redshank					18			
Turnstone								
Common Gull								
B.h Gull					2			

High Tide time: 12:24:00
Tide State: +5
Weather conditions: Sunny
Wind: N F1
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start: 1640 End: 1641		Start: 1636 End: 1640		Start: 1631 End: 1635		Start: 1623 End: 1631	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck				2	6	1	9	2
Wigeon								
Teal								
Mallard		2						
Pintail								
Oystercatcher					2			
Avocet								
Ringed Plover			7				2	
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G							35	
Bar-tailed G								
Curlew			1		4	2	16	
Redshank	1				26			
Turnstone								
Common Gull								
B.h Gull			2					

High Tide time: 12:24:00
Tide State: +6
Weather conditions: Sunny
Wind: N F1
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start: 1723 End: 1725		Start: 1726 End: 1735		Start: 1736 End: 1746		Start: 1747 End: 1755	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck			2		3		13	
Wigeon								
Teal								
Mallard								
Pintail								
Oystercatcher				2				
Avocet								
Ringed Plover				9				1
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G							150	100
Bar-tailed G								
Curlew				2	4		20	
Redshank			3		23			
Turnstone								
Common Gull								
B.h Gull								
GBB Gull				2				

6.2 Appendix 2: May survey, 07/05/10

Breeding Bird Survey

A			
Start:0505 End:0602			
Sector	Species	Number	Breeding Code
1	REEWA	2	S
	GRETI	1	S
	WOOPI	7	S
	PHEAS	2	
	GARWA	1	S
	BLABI	1	S
	WREN	1	S
2	WHITH	5	S
	WOOPI	12	S
	GOLFI	3	
	CARCR	2	
	COLDO	1	
	BLABI	1	S
	DUNNO	1	S
2	WREN	2	S
	MAGPI	1	
3	REEWA	1	S
	WOOPI	5	H
	ROCDO	1	H
	BLABI	2	S
	WILWA	1	S
	PIEWA	2	
	BLUTI	2	
	GOLFI	2	
	SWALL	2	
	CARCR	3	
	CHAFI	1	S
	MALLA	3	
	LINNE	2	
	STARL	1	
	WREN	1	S
4	MALLA	1	
	WHITH	2	S
	BLABI	1	S
	WREN	1	S
	WOOPI	1	
5	SEDWA	1	S
	BLABI	2	
	WHITH	2	S
	MOORH	1	
	TUFDU	2	
	SHEDU	1	
	WOOPI	20	H
	CARCR	2	
	WREN	2	S
	BUZZA	2	H
	ROBIN	1	S
	CHAFI	3	S
	MAGPI	1	
	BLUTI	2	N
	SONTH	1	S
CHICH	1	S	

B			
Start:0615 End:0655			
Sector	Species	Number	Breeding Code
1	SKYLA	2	S
	CHAFI	5	S
	BLABI	1	S
	GOLFI	3	S
	GRETI	2	S
	WHITH	3	S
	CARCR	2	
	WOOPI	5	S
	WREN	2	S
	GRETI	1	S
	LOTTI	3	S
1	YELWA	1	S
	WOOPI	10	
2	SKYLA	1	S
	CHAFI	2	S
	PHEAS	1	H
	SWALL	1	H
	WHITH	1	S
	WREN	3	S
	YELHA	2	S
	GOLFI	13	S
	GREWA	1	
3	GRETI	7	S
	YELHA	1	S
	MALLA	2	H
	GOLFI	10	S
	BLABI	1	H
	WOOPI	7	H
	CHAFI	2	S
	WREN	1	S
	SWALL	3	S
	SHEDU	6	
	3	STODO	1
WHITH		1	
HOUSP		4	
SKYLA		2	
4	WOOPI	7	
	PHEAS	1	
	LINNE	10	
	GOLFI	1	
5	SKYLA	1	S
	MEAPI	3	S
	LINNE	10	
	CARCR	1	
	KESTR	1	

Wetland bird survey

Low Tide time: 06:56
Tide State: Low Tide
Weather conditions: Cloud 6/8
Wind: N F1
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start:0729 End:0730		Start:0726 End:0728		Start:0731 End:0732		Start:0733 End:0738	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck					2	2		
Wigeon								
Teal								
Mallard								
Pintail								
Oystercatcher			2					
Avocet								
Ringed Plover								
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G								
Bar-tailed G								
Curlew			1		1		38	
Redshank								
Turnstone								
Common Gull					6			
B.h Gull								

Low Tide time: 06:56
Tide State: +1
Weather conditions: Cloudy 6/8
Wind: N F1
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start:0803 End:0804		Start:0801 End:0803		Start:0754 End:0755		Start:0749 End:0753	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck			2		3	1	2	
Wigeon								
Teal								
Mallard						1		
Pintail								
Oystercatcher		2				2		
Avocet								
Ringed Plover							11	
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G							64	
Bar-tailed G								
Curlew			3		2		1	
Redshank								
Turnstone								
Common Gull			2		1	1		
B.h Gull	2		2					

Low Tide time: 06:56
Tide State: +2
Weather conditions: Cloudy 7/8
Wind: N F1
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start:0849 End:0850		Start:0850 End:0851		Start:0855 End:0903		Start:0904 End:0908	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck			2		10		2	1
Wigeon								
Teal								
Mallard					1			
Pintail								
Oystercatcher								
Avocet								
Ringed Plover								
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G	1							
Bar-tailed G								
Curlew					17			
Redshank								
Turnstone								
Common Gull					2		13	
B.h Gull								
GBB Gull							1	2
Herring Gull							1	

Low Tide time: 06:56
Tide State: +3
Weather conditions: Cloudy 8/8
Wind: N F3
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start:0959 End:1004		Start:0958 End:0959		Start:0953 End:0958		Start:0949 End:0953	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck				2	2		8	
Wigeon								
Teal								
Mallard	1					1		
Pintail								
Oystercatcher						2		
Avocet								
Ringed Plover								
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G								
Bar-tailed G								
Curlew							23	
Redshank								
Turnstone								
Common Gull					1		9	2
B.h Gull					1			

Low Tide time: 06:56
Tide State: +4
Weather conditions: Cloudy 4/8
Wind: N F2
Rainfall:
Ice cover:

Area	A		B		C		D	
Time	Start:1057 End:1059		Start:1100 End:1101		Start:1102 End:1107		Start:1107 End:1111	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck			1	1	6	2	6	2
Wigeon								
Teal								
Mallard	2							
Pintail								
Oystercatcher								
Avocet								
Ringed Plover								
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G	1							
Bar-tailed G								
Curlew								
Redshank								
Turnstone								
Common Gull							1	
B.h Gull								1

Area	Disturbance Level	Activity / Raptors
B	Low	Dog Walker

Low Tide time: 06:56
Tide State: +5
Weather conditions: Cloudy 5/8
Wind: N F2
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start:1200 End:1202		Start:1156 End:1200		Start:1153 End:1156		Start:1149 End:1153	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck			2		6	2	6	1
Wigeon								
Teal								
Mallard	1	1				1		
Pintail								
Oystercatcher								2
Avocet								
Ringed Plover								
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G	1							
Bar-tailed G								
Curlew							2	
Redshank								
Turnstone								
Common Gull			1					
B.h Gull				1				

Low Tide time: 06:56
Tide State: +6
Weather conditions: Sunny 4/8
Wind: N F3
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start:1249 End:1251		Start:1251 End:1255		Start:1256 End:1300		Start:1300 End:1302	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck		1	2	1	2	4	2	7
Wigeon								
Teal								
Mallard	2					1		
Pintail								
Oystercatcher								
Avocet								
Ringed Plover								
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G	1							
Bar-tailed G								
Curlew								1
Redshank								
Turnstone								
Common Gull								
B.h Gull				2				
Herring gull						1		
GBB Gull						1		

6.3 Appendix 3: June Survey, 07/06/10

Breeding Bird Survey

A			
Start:0633 End:0726			
Sector	Species	Number	Breeding Code
1	WREN	3	S
	SEDWA	3	S
	GOLFI	2	H
	WOOP	4	H
	SWALL	2	H
	REEWA	1	S
	WHITH	1	H
2	WOOP	13	H
	BLABI	2	S
	TRESP	3	H
	BLUTI	1	H
	CHAFI	2	H
	WREN	2	S
	SEDWA	1	S
	CARCR	2	
	SWALL	1	S
GREFI	1	H	
MAGPI	1	H	
3	WOOP	10	P
	SWALL	2	D
	TRESP	8	S
	BLABI	3	S
	WREN	1	S
	PIEWA	3	FL
	MOOHE	1	H
4	WREN	1	S
	TRESP	2	H
	SWALL	4	
	SHEDU	2	
	SONTH	2	FF
	COOT	3	FL
	GREHE	1	
	BLABI	1	
	SWIFT	50	
	WOOP	3	H
CARCR	1	H	
5	WOOP	7	H
	CHAFI	3	S
	GRETI	1	S
	ROBIN	2	S
	BLABI	1	S
	SWIFT	10	
	PIEWA	1	H
	WHITH	1	S
	PHEAS	1	S
	SONTH	1	S
	CHICH	1	S

B			
Start:0740 End:0829			
Sector	Species	Number	Breeding Code
1	CHAFI	5	S
	GRETI	1	S
	TRESP	3	S
	WREN	2	S
	GREFI	1	S
	GOLFI	4	H
	WOOP	3	H
	SKYLA	1	S
	CARCR	1	
2	PHEAS	2	
	ROBIN	2	S
	GRETI	2	A
	SHEDU	7	H
	CHAFI	1	H
	GOLFI	10	S
	SONTH	1	S
	WOOP	5	H
	SKYLA	1	S
	3	MALLA	2
GOLFI		10	S
WOOP		7	S
GRETI		4	FF
KESTR		1	H
BLABI		1	H
SKYLA		1	S
SWALL		2	
CHAFI		3	S
MAGPI		2	H
BLUTI		2	N
LOTTI	1	H	
TRESP	3	H	
PHEAS	2	H	
WHITH	2	S	
4	MAGPI	2	H
	CARCR	1	
	WOOP	5	H
	GOLFI	2	
	HOUSP	2	FF
	GREFI	2	
	PHEAS	1	H
	LINNE	35	
	SKYLA	2	S
	TRESP	1	H
WHITH	1	S	
BLABI	2		
5	SKYLA	3	S
	SWALL	4	
	WOOP	3	
	MEAPI	2	S
	BLABI	1	S
	YELHA	1	S
	MAGPI	3	FF
	LINNE	2	

Wetland Bird Survey

Low Tide time: 08:13:00
Tide State: Low Tide
Weather conditions: Cloud 8/8
Wind: W1
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start:0905	End:0907	Start:0908	End:0911	Start:0912	End:0915	Start:0916	End:0925
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck		1			10		1	2
Wigeon								
Teal								
Mallard					2		2	
Pintail								
Oystercatcher					2			
Avocet								
Ringed Plover								
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G								
Bar-tailed G								
Curlew							14	
Redshank								
Turnstone								
Common Gull								
B.h Gull					1		39	23
Herring gull								
GBB Gull			1					

Low Tide time: 08:13:00
Tide State: +1
Weather conditions: Cloudy 6/8
Wind: W1
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start:1013 End:1015		Start:1015 End:1018		Start:1019 End:1027		Start:1028 End:1032	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck			2		3	10		
Wigeon								
Teal								
Mallard					2			
Pintail								
Oystercatcher							1	
Avocet								
Ringed Plover								
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot								
Black-tailed G								
Bar-tailed G								
Curlew			1				5	9
Redshank								
Turnstone								
Common Gull							1	
B.h Gull					1		6	
Herring gull								
GBB Gull			1					1

Low Tide time: 08:13:00
Tide State: +2
Weather conditions: Bright 6/8
Wind: W1
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start:1113 End:1117		Start:1117 End:1120		Start:1120 End:1132		Start:1132 End:1136	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck		2	2		11	2	3	
Wigeon								
Teal								
Mallard					2			
Pintail								
Oystercatcher								
Avocet								
Ringed Plover					9			
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot					2			
Black-tailed G								
Bar-tailed G					15			
Curlew					6			1
Redshank								
Turnstone								
Common Gull								
B.h Gull							34	
GBB Gull								
Herring Gull								

Low Tide time: 08:13:00
Tide State: +3
Weather conditions: Bright 7/8
Wind: W1
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start:1214 End:1215		Start:1215 End:1220		Start:1220 End:1233		Start:1233 End:1238	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck	2		2	1	11		3	
Wigeon								
Teal								
Mallard					2			
Pintail								
Oystercatcher							1	
Avocet								
Ringed Plover					11			
Golden Plover								
Grey Plover								
Lapwing								
Dunlin								
Knot					2			
Black-tailed G								
Bar-tailed G					16			
Curlew					6		1	
Redshank								
Turnstone								
Common Gull								
B.h Gull					1		25	4

Low Tide time: 08:13:00
Tide State: +4
Weather conditions: Cloudy 8/8
Wind: W1
Rainfall:
Ice cover:

Area	A		B		C		D	
	Start:1326 End:1327		Start:1320 End:1325		Start:1312 End:1320		Start:1305 End:1312	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck					2	9	5	
Wigeon								
Teal								
Mallard							2	
Pintail								
Oystercatcher			2					
Avocet								
Ringed Plover			1		10			
Golden Plover								
Grey Plover								
Lapwing								
Dunlin					1			
Knot								
Black-tailed G								
Bar-tailed G								
Curlew							1	3
Redshank								
Turnstone								
Common Gull								3
B.h Gull						1	17	11

Low Tide time: 08:13:00
Tide State: +5
Weather conditions: Cloudy 8/8
Wind: NE3
Rainfall: moderate
Ice cover:

Area	A		B		C		D	
	Start:1407 End:1408		Start:1408 End:1414		Start:1415 End:1424		Start:1425 End:1428	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck				3		9	8	
Wigeon								
Teal								
Mallard							2	
Pintail								
Oystercatcher								
Avocet								
Ringed Plover			1		11			
Golden Plover								
Grey Plover								
Lapwing								
Dunlin					1			
Knot								
Black-tailed G					1			
Bar-tailed G								
Curlew						1	3	
Redshank								
Turnstone								
Common Gull							24	
B.h Gull					1			5

Low Tide time: 08:13:00
Tide State: +6
Weather conditions: Cloudy 8/8
Wind: N F3
Rainfall: Heavy
Ice cover:

Area	A		B		C		D	
	Start:1505 End:1509		Start:1509 End:1514		Start:1514 End:1519		Start:1519 End:1525	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck			1	2		9	4	2
Wigeon								
Teal								
Mallard							2	
Pintail								
Oystercatcher								
Avocet								
Ringed Plover					11			
Golden Plover								
Grey Plover								
Lapwing								
Dunlin					1			
Knot								
Black-tailed G					1			
Bar-tailed G								
Curlew							5	
Redshank								
Turnstone								
Common Gull								
B.h Gull					6		20	1
Herring gull								
GBB Gull						1		

6.4 Appendix 4: July Survey (1), 05/07/10

Breeding Bird Survey

A				
Start:0650 End:0725				
Sector	Species	Number	Breeding Code	
1	WHITH	2	S	
	GREFI	1	S	
	REEWA	3	S	
	WOOPI	3		
	TRESP	2		
	MAGPI	2	S	
	HOUSP	2		
	BLABI	2		
	LINNE	5		
	CHAFI	2		
	SEDWA	3		
	GOLFI	1		
	SWALL	1		
	2	WOOPI		2
MAGPI		2		
SWALL		3		
HOUSP		3		
GREFI		2		
BLABI		3		
WREN		2		
MISTH		1		
3	LINNE	1	S	
	REEWA	3		
	YELHA	1	S	
	MALLA	12		
	GREHE	1		
	SEDWA	1		
	WHITH	1	S	
4	GOLFI	9		
	REEBU	1		
	WOOPI	3		
	CHAFI	1		
	SKYLA	1	S	
5	BLABI	1		
	ROBIN	2		
	WREN	2	S	
	WHITH	1		

B			
Start:0739 End:0813			
Sector	Species	Number	Breeding Code
1	GOLFI	2	
	LINNE	2	
	LOTTI	14	FL
	WOOPI	3	
	GRETI	4	FL
	WILWA	1	
	BLACA	1	S
	SWALL	1	
	BLABI	1	
	PHEAS	1	
2	BLUTI	4	FL
	WOOPI	12	
	MAGPI	2	
	STODO	1	
	HOUSP	1	
	SWALL	1	S
3	BLABI	1	
	GOLFI	2	S
	WOOPI	3	
	GOLFI	11	S
	WHITH	2	S
4	YELHA	1	S
	SWALL	1	
	SKYLA	2	S
	TRESP	3	
	MAGPI	4	FL
5	SWALL	1	
	HOUSP	1	
	WHITH	1	
	WOOPI	3	
	MEAPI	1	S
	SKYLA	4	FL
	LINNE	6	
5	MEAPI	1	S
	WHITH	1	
	SKYLA	2	S
	WOOPI	2	

Wetland Bird Survey

Low Tide time: 06:14:00
Tide State: Low Tide
Weather conditions: Sunny 2/8
Wind: SW F1
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 0646 End: 0649		Start: 0640 End: 0646		Start: 0632 End: 0640		Start: 0600 End: 0611		Start: 0611 End: 0623	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck					3	9				
Wigeon										
Teal										
Mallard							12			
Pintail										
Oystercatcher						1	1			2
Avocet										
Ringed Plover										
Golden Plover										
Grey Plover										
Lapwing									1	
Dunlin										
Knot										
Black-tailed G				56				32		
Bar-tailed G							12			
Curlew	1		21		42	6	36		17	3
Redshank										
Turnstone										
Common Gull										
B.h Gull	15	16	51		37	3	16	3	4	2
L.B.b. Gull				1				1	1	
G.B.b. Gull							2	2		
GBB Gull							2	2		
Herring Gull					2	1				

Low Tide time: 06:14:00
Tide State: +1
Weather conditions: Sunny 2/8
Wind: SW F2
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 0756 End:0759		Start: 0742 End: 0754		Start: 0734 End: 0742		Start: 0713 End:0716		Start: 0724 End: 0727	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck	8	1			1	1				
Wigeon										
Teal										
Mallard							14			
Pintail										
Oystercatcher										2
Avocet										
Ringed Plover										
Golden Plover										
Grey Plover										
Lapwing										2
Dunlin										
Knot										
Black-tailed G								10		
Bar-tailed G										
Curlew	1		43	1	18	1	15	1	19	
Redshank										
Turnstone										
Common Gull										
B.h Gull	17	1	46	23	19	2	5	13	1	29
Herring gull									1	6

Low Tide time: 06:14:00
Tide State: +2
Weather conditions: Sunny 3/8
Wind: SW F2
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 0812 End: 0814		Start: 0814 End: 0818		Start: 0818 End: 0823		Start: 0825 End: 0828		Start: 0837 End: 0844	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck	8	1					2	1		
Wigeon										
Teal										
Mallard							12			
Pintail										
Oystercatcher										2
Avocet										
Ringed Plover										
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G										
Bar-tailed G								23	3	
Curlew	1		1		12	4	18		41	3
Redshank										
Turnstone										
Common Gull								1		
B.h Gull	9		59	16	8	1	2	5	6	36
Comorant								1		
Herring Gull										6

Low Tide time: 06:14:00
Tide State: +3
Weather conditions: Sunny 4/8
Wind: SW F3
Rainfall:
Ice cover:

Area	A		B		C		D		E	
Time	Start: 0940 End: 0941		Start: 0935 End: 0939		Start: 0930 End: 0934		Start: 0919 End: 0924		Start: 0914 End: 0917	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck			8							
Wigeon										
Teal								12		
Mallard										
Pintail										
Oystercatcher				1						1
Avocet										
Ringed Plover				1						
Golden Plover										
Grey Plover										
Lapwing										3
Dunlin										
Knot										
Black-tailed G							26			
Bar-tailed G									3	
Curlew	1	1	21		15			2	43	3
Redshank										
Turnstone										
Common Gull								1		
B.h Gull	6		53	5	4	3	5		9	42
Herring Gull										5

Low Tide time: 06:14:00
Tide State: +4
Weather conditions: Sunny 4/8
Wind: SW F2
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 1013 End: 1015		Start: 1016 End: 1022		Start:1312 End:1320		Start: 1026 End: 1032		Start: 1043 End: 1049	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck		1		8						
Wigeon										
Teal										
Mallard								11		
Pintail										
Oystercatcher			1				1		3	1
Avocet										
Ringed Plover			1							
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G							26			
Bar-tailed G							12		3	3
Curlew			16		5		5		40	
Redshank										
Turnstone										
Common Gull										8
B.h Gull	6	4	51		36		1			65
Herring Gull										3
G.B.b. Gull										1

Low Tide time: 06:14:00
Tide State: +5
Weather conditions: Cloudy 6/8
Wind: SW F3
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 1120 End: 1121		Start:1115 End: 1119		Start: 1111 End: 1114		Start: 1058 End: 1111		Start: 1053 End: 1056	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck				8			6			
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher			1						3	2
Avocet										
Ringed Plover										
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G							20	7		
Bar-tailed G							15		6	
Curlew	1		6	13		3			41	10
Redshank										
Turnstone										
Common Gull										8
B.h Gull			28	10	11	2	6	1		65
Herring Gull										3
G.B.b. Gull										1

Low Tide time: 06:14:00
Tide State: +6
Weather conditions: Cloudy 7/8
Wind: SW F2
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
	Start: 1218 End: 1219		Start: 1219 End: 1224		Start: 1225 End:1226		Start: 1227 End: 1231		Start: 1235 End: 1237	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck								16		
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher				1					1	
Avocet										
Ringed Plover										
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G								29		
Bar-tailed G								12	5	1
Curlew									31	14
Redshank										
Turnstone										
Common Gull									1	6
B.h Gull			26	5	9		10	7	12	60
GBB Gull										1

6.5 Appendix 5: July Survey (2), 09/07/10

Wetland Bird Survey

Low Tide time: 10:39:00
Tide State: Low Tide
Weather conditions: Sunny 2/8
Wind: SW F1
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 1032 End: 1033		Start: 1027 End: 1031		Start: 1021 End: 1025		Start: 0948 End:		Start: 1003 End: 1016	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck										1
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher			1				2		5	3
Avocet										
Ringed Plover			4							
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G								6		
Bar-tailed G						5	38	9	1	2
Curlew	1		4		21	4	52		14	2
Redshank			2							
Turnstone										
Common Gull										13
B.h Gull			9	5	21	5	7		2	20
L.B.b. Gull							3			
G.B.b. Gull										
Herring Gull			1							
Whimbrel						1				

Low Tide time: 10:39:00
Tide State: +1
Weather conditions: Sunny 2/8
Wind: SW F2
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 1038 End: 1039		Start: 1039 End: 1051		Start: 1052 End: 1113		Start: 1116 End: 1124		Start: 1126 End: 1133	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck				7						
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher							1		3	5
Avocet										
Ringed Plover										
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G					47	1	14	22		
Bar-tailed G					6	8	2	24	1	
Curlew			3		21	23	41	8	11	2
Redshank			3							
Turnstone										
Common Gull										12
B.h Gull			6	4	12	5		1	2	23
Herring Gull										2
LBB Gull					2	2	1			
Whimbrel				1						
YL Gull			1							
Com Sand					1					
GBB Gull									1	1

Low Tide time: 10:39:00
Tide State: +2
Weather conditions: Sunny 3/8
Wind: SW F2
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 0812 End: 0814		Start: 0814 End: 0818		Start: 0818 End: 0823		Start: 0825 End: 0828		Start: 0837 End: 0844	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck			5	3						
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher						1			3	4
Avocet										
Ringed Plover				4						
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G							80	20		
Bar-tailed G					1	6	20		1	
Curlew			5		22	9	41	7	9	3
Redshank	3					1				
Turnstone										
Common Gull										13
B.h Gull	3	2	31	8	15	6	8			21
Comorant										
Herring Gull						1				2
GBB Gull									1	

Low Tide time: 10:39:00
Tide State: +3
Weather conditions: Sunny 4/8
Wind: SW F3
Rainfall:
Ice cover:

Area	A		B		C		D		E	
Time	Start: 1255 End: 1257		Start: 1258 End: 1301		Start: 1303 End: 1315		Start: 1318 End: 1325		Start: 1327 End: 1336	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck										
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher						1		1	5	1
Avocet										
Ringed Plover	1		4							
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G					51	22				
Bar-tailed G					2	0	2	2		
Curlew			4	2			19	24	5	1
Redshank	3									
Turnstone										
Common Gull			1							7
B.h Gull	5		18	6	20	2	4	1	2	28
Herring Gull										3
GBB Gull										2

Low Tide time: 10:39:00
Tide State: +4
Weather conditions: Sunny 4/8
Wind: SW F2
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 1403 End: 1404		Start: 1358 End: 1402		Start:1350 End:1357		Start: 1346 End: 1350		Start: 1337 End: 1344	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck						9				
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher			1			1		1		6
Avocet										
Ringed Plover										
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G					33	13				
Bar-tailed G					14	1				
Curlew	1	1	1	1	10	12		14	6	7
Redshank	3				2					
Turnstone										
Common Gull										8
B.h Gull	2		14		8	5	2		2	28
Herring Gull										5
GBB Gull										2
LBB Gull					1					
Com Sand						1				

Low Tide time: 10:39:00
Tide State: +5
Weather conditions: Cloudy 6/8
Wind: SW F3
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 1435 End: 1437		Start:1438 End: 1442		Start: 1443 End: 1453		Start: 1455 End: 1457		Start: 1500 End: 1510	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck						9				
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher						1		1		3
Avocet										
Ringed Plover										
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G					19	49				
Bar-tailed G										
Curlew	1	1				1	18	46	12	5
Redshank	2	1								
Turnstone										
Common Gull										7
B.h Gull			14	3	10	2	3	6	1	102
Herring Gull										1
G.B.b. Gull										2

Area	Disturbance Level	Activity / Raptors
B	Low	Car on floodbank
E	Moderate	3 people on jetty
E	Moderate	Car on jetty

Low Tide time: 10:39:00
Tide State: +6
Weather conditions: Cloudy 7/8
Wind: SW F2
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 1551 End: 1552		Start: 1548 End: 1551		Start: 1543 End:1547		Start: 1537 End: 1539		Start: 1530 End: 1533	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck						9				
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher			1			1		1		6
Avocet										
Ringed Plover										
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G					48	20				
Bar-tailed G						2				
Curlew				3	2	1	11	33	10	11
Redshank							3			
Turnstone										
Common Gull								1		9
B.h Gull			20	12	6		4	8		100
Herring Gull										1
GBB Gull										2

6.6 Appendix 6: August Survey, 02/08/10

Wetland Bird Survey

High Tide time: 10:44:00
Tide State: High Tide
Weather conditions: Cloudy 7/8
Wind: NW2
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 1112 End: 1114		Start: 1114 End: 1119		Start: 1121 End: 1121		Start: 1125 End: 1129		Start: 1130 End: 1141	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck							20	3		1
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher							1			4
Avocet										
Ringed Plover										
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G							10			
Bar-tailed G										
Curlew								71	4	66
Redshank							1	1		
Turnstone										
Common Gull										
B.h Gull							26	15	22	16
L.B.b. Gull										
G.B.b. Gull										5
Herring Gull										
Whimbrel				2						
Mediterranean Gull							1			

Area	Disturbance Level	Activity / Raptors
E	Low	Worker on jetty

High Tide time: 10:44:00
Tide State: +1
Weather conditions: Cloudy 8/8
Wind: W2
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 1225 End:1226		Start: 1222 End: 1225		Start: 1214 End: 1222		Start: 1150 End:1201		Start: 1144 End: 1149	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck							19	6		1
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher										
Avocet										
Ringed Plover									5	
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G			1				12	1		
Bar-tailed G										
Curlew						1			5	65
Redshank			1	1			2	1		1
Turnstone										
Common Gull										
B.h Gull			19	3	12	5	27	9	30	8
Herring gull										
G.B.b. Gull										4
Mediterranean Gull							1			
L.B.b. Gull						1				

High Tide time: 10:44:00
Tide State: +2
Weather conditions: Cloudy 8/8
Wind: W F2
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 1244 End: 1244		Start: 1244 End: 1248		Start: 1250 End: 1255		Start: 1259 End: 1324		Start:1326 End: 1336	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck					11		36			1
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher										4
Avocet									9	
Ringed Plover										
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G					1		1			2
Bar-tailed G										
Curlew					1		2	1	4	70
Redshank							9		2	1
Turnstone										
Common Gull										1
B.h Gull			24	4	26		36		26	13
Comorant										
Herring Gull										
G.B.b. Gull										8
L.B.b. Gull										1

High Tide time: 10:44:00
Tide State: +3
Weather conditions: Sunny 5/8
Wind: W F2
Rainfall:
Ice cover:

Area	A		B		C		D		E	
	Start: 1437 End: 1440		Start: 1430 End:1437		Start: 1424 End: 1430		Start: 1401 End: 1414		Start: 1344 End: 1400	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck	8				15	11	17	16		1
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher										3
Avocet									13	1
Ringed Plover										
Golden Plover										
Grey Plover										
Lapwing										
Dunlin										
Knot										
Black-tailed G	2		7		15		5			
Bar-tailed G										
Curlew		2	3	1	11	3	5	28	6	4
Redshank	1				1	5	4	2	2	1
Turnstone										
Common Gull										
B.h Gull	3		15	4	24	5	27	4	42	9
Herring Gull										
G.B.b. Gull										12
L.B.b. Gull				1						1
Whimbrel						1				

High Tide time: 10:44:00
Tide State: +4
Weather conditions: Sunny 4/8
Wind: W F2
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 1452 End: 1458		Start: 1458 End: 1503		Start: 1511 End: 1533		Start: 1534 End: 1539		Start: 1539 End: 1543	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck	4	3	3	8	10		9	2		
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher										
Avocet										
Ringed Plover									12	5
Golden Plover										
Grey Plover										
Lapwing										
Dunlin									1	
Knot										
Black-tailed G	21	2	28		75	2	6	3	7	4
Bar-tailed G										
Curlew		1	2	1	17	3	75	10	7	1
Redshank	17		4		50		47	5	6	
Turnstone										
Common Gull										
B.h Gull	7		48	2	44	7	51	4	36	11
Herring Gull										
G.B.b. Gull					2					7
Whimbrel				1						

High Tide time: 10:44:00
Tide State: +5
Weather conditions: Cloudy 6/8
Wind: W F2
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 1640 End: 1643		Start: 1632 End: 1640		Start: 1627 End: 1630		Start: 1611 End: 1625		Start: 1544 End: 1610	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck	2			2			4	15		
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher										
Avocet										
Ringed Plover									20	
Golden Plover										
Grey Plover										
Lapwing										
Dunlin					5				1	
Knot										
Black-tailed G	27	2	140	10	203		16		7	2
Bar-tailed G					1					
Curlew	2	1		1	43	2	64	9	7	2
Redshank	7	1	13		93		47	6		
Turnstone										
Common Gull			1							2
B.h Gull	10		28	16	11	4	75	5	70	44
Herring Gull										1
G.B.b. Gull					5		1			7
Mediterranean Gull							1			1
L.B.b. Gull						1				2
Whimbrel						1				

High Tide time: 10:44:00
Tide State: +6
Weather conditions: Cloudy 7/8
Wind: NW F3
Rainfall: None
Ice cover: None

Area	A		B		C		D		E	
Time	Start: 1645 End: 1650		Start: 1655 End: 1702		Start: 1704 End:1725		Start: 1731 End: 1738		Start: 1739 End: 1744	
Species	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others	Foraging	Others
Shelduck	1					11	9	8		3
Wigeon										
Teal										
Mallard										
Pintail										
Oystercatcher										
Avocet										
Ringed Plover										13
Golden Plover										
Grey Plover										
Lapwing										
Dunlin							2			
Knot										
Black-tailed G	32		110	8	248	16	340	60	4	
Bar-tailed G										
Curlew	2			1	19	10	66	19	7	4
Redshank	8		5		73	2	93	2		
Turnstone										
Common Gull										17
B.h Gull	11	1	28	1	48	11	65	10	14	63
GBB Gull						3				9
Mediterranean Gull								1		
Herring Gull										1
L.B.b. Gull										1

6.7 Appendix 7: Roost Survey

Pits Roost

North Killingholme Pits Roost

Species	Numbers						Maxima	Total
	22/04/2010	07/05/2010	07/06/2010	05/07/2010	09/07/2010	02/08/2010		
Oystercatcher	2			2		2	2	6
Mallard	7	1	2	2	3		7	15
Redshank	17	1		4	10	205	205	237
Avocet	3					2	3	5
Curlew	1			1	6	4	6	12
Moorhen	2		1	4			4	7
Dunlin	1					6	6	7
Black-tailed Godwit	500	64		270	250	2200	2200	3284
Little Ringed Plover	2				1		2	3
Snipe	1						1	1
Coot		2			1		2	3
Shelduck		9			5		9	14
Grey Heron		1	1	1	3	1	3	7
Little Egret			1	1			1	2
Water Rail			2		1		2	3
Common Sandpiper				1		1	1	2
Black-headed Gull	1			3	16	15	16	35
Knot					1	3	3	4
Tufted Duck					1		1	1
Mute Swan					1		1	1
Cormorant						1	1	1
Bar-tailed Godwit						1	1	1
TOTAL	537	78	7	289	299	2441		

Field Roost

North Killingholme Field Roost

Species	Numbers						Maxima	Total
	22/04/2010	07/05/2010	07/06/2010	05/07/2010	09/07/2010	02/08/2010		
Curlew				1			1	1