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Proposed re-alignment of the Welsh Coastal Path for the purpose of walking and cycling

Flint/Oakenholt Marsh, Dee Estuary

Winter Bird Survey 2018-2019

Produced for Sustrans

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1. Introduction

1.1 Aims of the project

Sustrans is investigating the possibility of upgrading and partly re-aligning the all-Wales Coastal Path between Oakenholt and Flint, Flintshire, North Wales for the purpose of recreational cycling.

The existing path runs along the edge of the Dee Estuary, a designated Site of Special Scientific Interest (SSSI) and European site, both a Special Protection Area (SPA) and Special Area of Conservation (SAC).

The existing path, between Oakenholt and Flint, consists of roadside pavement, footpath across the North Wales railway line (Chester to Holyhead) and then goes across approximately one kilometre of saltmarsh/grassland. The saltmarsh/grassland path is currently unsuitable for the purpose of cycling.

Due to the proximity of the proposed path to the Dee Estuary, an Environmental Assessment will be required before the planned improvements can be formally approved by the local authority, Flintshire County Council.

It is unknown as to how important this particular section of the Dee Estuary is for birdlife. This project aims to survey the birdlife along the proposed route during the months of December to March. This is a period when the estuary is most important for wildfowl and wading bird species.

1.2 Scope of the Report

- All bird surveys were conducted from the line of the existing Coastal Path or on the estuary side of that line.
- The aim of the surveys was to establish the presence of and count the birds within the zone of the estuary to the Coastal Path and to some extent within 25m of the landward side of the path.
- The surveys were undertaken according to advice from Jim Whiteford (Sustrans), Amanda Davies (Ecologist – Flintshire County Council) and Neil Smith (Natural Resources Wales).
- Additional information was supplied by local birdwatchers, RSPB staff and Wetland Bird Survey (WeBS) data.
- Potential constraints to the proposed development have been identified.
- Recommendations for further surveys have been made.
- Detailed information, maps and photographs are supplied in the Appendices.

1.3 Personnel

Anne Brenchley is a highly experienced ornithologist specialising in bird survey and bird survey evaluation.

Until 2011, Anne worked as a conservation manager/adviser for Natural England and its predecessors. Since then she has undertaken a range of bird survey consultancy work for the British Trust for Ornithology (BTO) and private landowners.

In a voluntary capacity, Anne has been a Regional Representative for the BTO in NE Wales since 2000. In this role, she has organised and undertaken a variety of bird surveys, notably the Breeding Bird Survey, single species surveys, Winter Farmland Bird Survey and Wetland Bird Survey. Anne was the project manager and the main editor for 'The Breeding Birds of North Wales', published by Liverpool University Press in 2013. Anne has also been a member of the BTO Council, the RSPB's Advisory Committee for Wales and the Council of the Welsh Ornithological Society.

Anne has been a full member of the Chartered Institute for Ecology and Environmental Managers (CIEEM) since 2011.

2. Site Description

The section of the Coast Path to be surveyed is a 1.2km long part of the Dee Estuary (SJ257719 to SJ251731) from Oakenholt to just south of Flint Castle, known as Flint Marsh.

2.1 Location

The existing Coast Path runs from SJ257719 along the A548 to SJ254723 and then heads towards the estuary crossing the main railway at SJ255724. The path then heads directly towards the estuary before turning west around the Dwr Cymru water treatment works, along the upper saltmarsh towards Flint Castle. The Coast Path is completely unpaved between the railway crossing and Flint Marsh Park, where a paved public walkway and cycle path to Flint Castle begins.

The proposed cycle path runs from SJ257719 offroad on pastureland to SJ257722 where a new crossing over the railway is proposed. The path then turns westwards to meet to existing Coast Path at SJ255724.

A map showing the route of the proposed re-alignment and the existing Coast Path is given below.

2.2 Site Designations

2.2.1 Special Protection Area (SPA)

The Dee Estuary was first designated as an SPA on 30 January 1996 and revised and amended on 10 December 2009 by The National Assembly of Wales under the Conservation

(Natural Habitats & c.) Regulations 1994 (SI 1994 No. 2716). The map in Appendix 1 shows the extent of estuary coastline surveyed relative to the size of the estuary as a whole.

The Dee Estuary is designated for three main reasons:

- Species Listed in Annex 1 of the Directive (Article 4.1)
- Regularly Occurring Migratory Species (Article 4.2)
- Assemblage of at least 20,000 Waterfowl or Seabirds in any season (Article 4.2)

Species listed in Annex 1 of the Directive include breeding terns, terns on passage and over wintering Bar-tailed Godwit (*Limosa lapponica*). This part of the Directive is not likely to be relevant to this survey as the survey was conducted outside the breeding season and in recent years Bar-tailed Godwit numbers have reduced on the estuary.
Regularly Occurring Migratory Species specifically mentioned in the Dee Estuary citation and the number of individuals (based on a 5-year average in the years immediately preceding 2009) are shown in the table below.

Species	**Time of Year**	**Number**
Redshank (*Tringa totanus*)	On passage	8795
Black-tailed Godwit (*Limosa limosa*)	Over Winter	1747
Curlew (*Numenius arquata*)	Over Winter	3899
Dunlin (*Calidris alpina*)	Over Winter	27769
Grey Plover (*Pluvialis squatarola*)	Over Winter	1643
Knot (*Calidris canutus islandica*)	Over Winter	12394
Oystercatcher (*Haematopus ostralegus*)	Over Winter	22677
Pintail (*Anas acuta*)	Over Winter	5407
Redshank (*Tringa totanus*)	Over Winter	5293
Shelduck (*Tadorna tadorna*)	Over Winter	7725
Teal (*Anas crecca*)	Over Winter	5251

It is likely that most of these species will be encountered during this survey.

Assemblage of at least 20,000 Waterfowl in any season: over winter the Dee Estuary regularly supports 120,726 individual waterfowl including the following species:

Great crested Grebe (*Podiceps cristatus*)
Cormorant (*Phalacrocorax carbo*)
Shelduck (*Tadorna tadorna*)
Wigeon (*Mareca penelope*)
Teal (*Anas crecca*)
Pintail (*Anas acuta*)
Oystercatcher (*Haematopus ostralegus)*
Grey Plover (*Pluvialis squatarola*)
Lapwing *(Vanellus vanellus*)
Knot (*Calidris canutus*)
Sanderling (*Calidris alba*)

Dunlin (*Calidris alpina*)
Black-tailed Godwit (*Limosa limosa*)
Bar-tailed Godwit (*Limosa lapponica*)
Curlew (*Numenius arquata*)
Redshank (*Tringa totanus*)

It would be expected that most of these species would be encountered during this survey.

N.B. It should be noted that bird populations can change over time, both in overall numbers but also vary between sites as patterns of usage change and some sites are vacated and other sites become more favoured. Every year the BTO, RSPB and JNCC in association with the WWT produce population estimates of wintering waterbirds in Great Britain published as annual reports of the Wetland Bird Survey (WeBS). Some information from Frost, T.M. (2019) is used in the Discussion section of this report.

2.2.2. Special Area of Conservation (SAC)

The Dee Estuary was designated as an SAC on 10 December 2009 by The National Assembly of Wales under the Conservation (Natural Habitats & c.) Regulations 1994 (SI 1994 No. 2716).

The SAC has primarily been designated for botanical/habitat reasons and for the presence of Sea Lamprey and River Lamprey. The boundary of the SAC in the vicinity of this proposal are identical to that of the SPA.

2.2.3 Ramsar site

The Dee Estuary is designated under the Ramsar Convention on Wetlands of International Importance especially as waterfowl habitat.

This Ramsar site was first designated on 17 July 1985. The boundaries and features were revised on 10 December 2009. The boundary of the Ramsar site, in the vicinity of this proposal, is identical to that of the SPA/SAC.

The reasons for this designation are broadly similar to that of the above two European designations.

2.2.4 Site of Special Scientific Interest (SSSI)

The SSSI boundary equates to that for the international sites. The interest features encompass the full range of habitats and some specific invertebrate interest as well as the wintering, passage and breeding bird species. In addition to the internationally important bird species mentioned in 2.2.1, Wigeon (*Mareca penelope*) are noted as being present in winter in nationally important numbers.

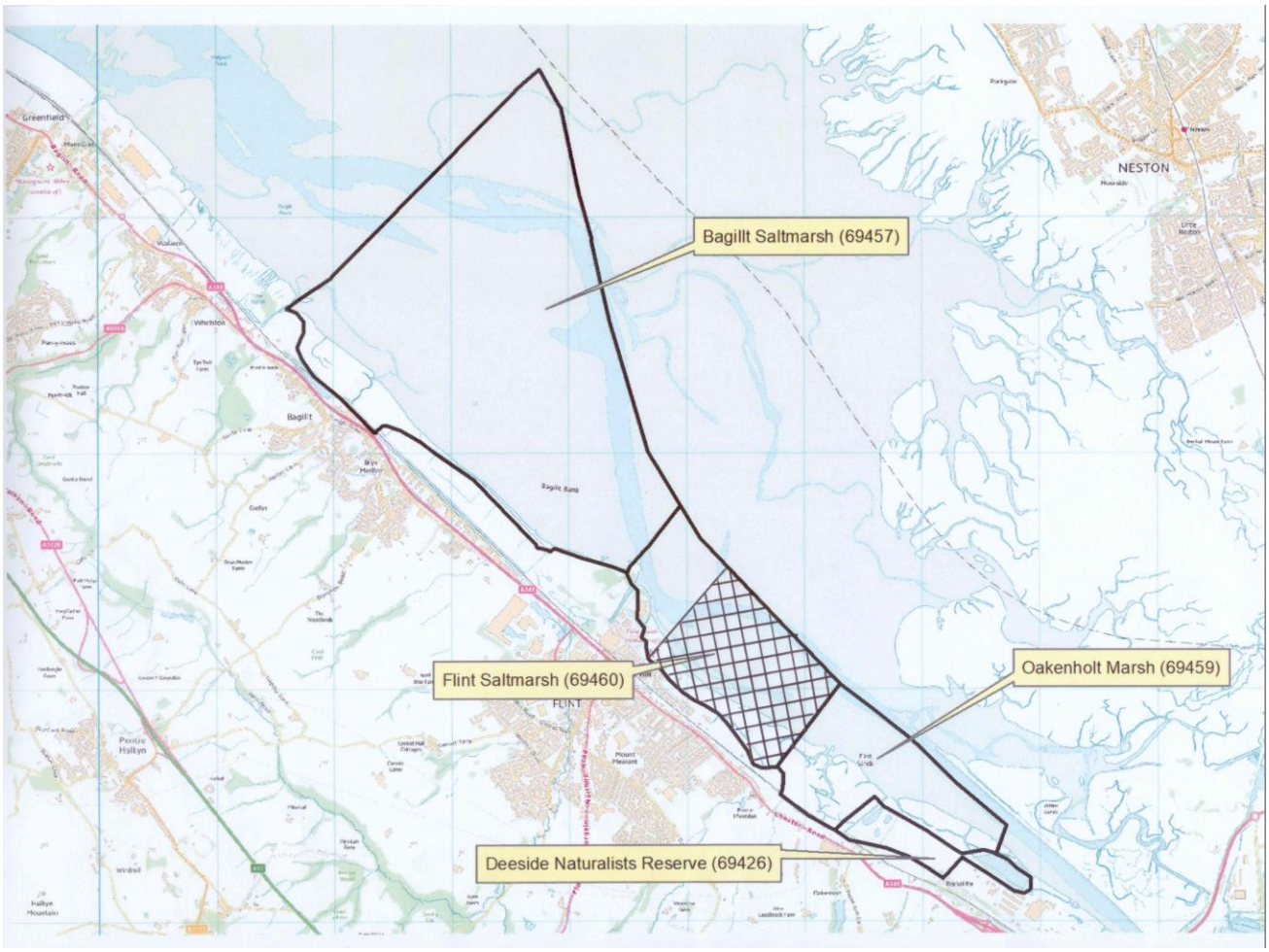
3. Methodology

3.1 Desk Study

Contact was made with Jim Whiteford and Amanda Davies to establish the main methodology, timing and frequency of surveys and additional sources of supporting data.

3.1.1 Wetland Bird Survey (WeBS) data

WeBS data for the years 13/14 to 17/18 were provided by the British Trust for Ornithology and were used to give context to the data collected during the current project. Data were given for the four WeBS sectors immediately adjacent to and including the project area. These four sectors were Bagillt Saltmarsh, Flint Saltmarsh, Oakenholt Marsh and Deeside Naturalists Reserve. These sectors are shown on the map below along with the project area in crosshatching.



3.1.2 Contact with local birdwatchers etc.

Inquiries were made with local birdwatchers, local RSPB staff and Wetland Bird Survey (WeBS) organisers/surveyors to establish information on key wader/wildfowl roosts in the vicinity of Flint Marsh.

3.2 Equipment

Counts were made with the use of Leica Ultravid binoculars 10x42 and a Kowa Prominar telescope (15x45 zoom).

3.3 Survey Methods

3.3.1 Frequency and timing

Initially three to four surveys were required between mid-December 2018 and mid-February 2019 but this was later extended to include three further surveys taking the survey period to the end of March. Surveys were to be undertaken as close to high tide as possible as this was the time when the most possible disturbance to feeding/roosting birds was thought to be likely to take place.

3.3.2 Transects

Initially it was suggested that the surveys were to be conducted as per the standardised Breeding Bird Survey methods (British Trust for Ornithology). This would involve establishing a transect route along the line of the proposed path and recording birds within 200m sectors. Birds within each sector would then be recorded within three distance width bands either side of the transect, with an emphasis on the estuary side of the transect. This was the method used.

The path between Oakenholt and Flint was divided into six sectors. Sector 1 being at the Oakenholt end of the path. The three distance width bands are as follows:

a) 0-25m
b) 25-100m
c) Over 100m

The initial reconnaissance visit established that the first 200m of the western end of the path was on private land adjacent to the A548 and was not accessible. Also this land is to the south-west side of the main railway and crossing the railway at SJ257722 is not currently possible. This land is semi-improved pasture, grazed by sheep and is not visible from the estuary. Lack of access to this part of the transect resulted in this land not being surveyed as part of this project. Therefore, the transect route consisted of five 200m sectors numbered 2 – 6. The transect route is marked on the map in Appendix 2.

3.3.3 Point Counts

Following a site meeting involving Sustrans staff, Amanda Davies from Flintshire County Council and Neil Smith (Natural Resources Wales), which took place on 22 January 2019, the survey methodology was revised to place greater emphasis on counts from vantage points between the hour before and hour after high tide. Each month, one visit around the highest tide heights was recommended.

The two main vantage points were on a ridge of land between Flint Marsh and Oakenholt Marsh at SJ257725 to the south of the survey area and the lookout point over Flint Marsh at SJ251731 at the northern end of the survey area. These are marked on the map at Appendix 2.

3.3.4 Bird Recording

All bird species were recorded during these surveys although greater emphasis was placed on the birds on the estuary side of the transect.

3.4 Disturbance observations etc.

During the bird surveys, records were kept of any walkers with or without dogs. If any obvious bird disturbance occurrences were observed these were recorded and the distance between the walkers/dogs and the birds estimated.

4. Results

Most of the key species were observed during the survey counts with the exception of Grey Plover, Knot and Pintail. Other waders and waterfowl recorded were Wigeon, Mallard, Little Egret, Cormorant, Snipe, several species of geese and gulls. On the landward side of the transect route, hedgerow bushes rough grassland vegetation provide suitable feeding and breeding habitat for a variety of songbirds. The complete list of species observed and counted is provided in Appendix 3.

4.1 Survey Visits

In total nine survey visits were made to the Flint Marsh site. One initial reconnaissance visit was undertaken prior to formal surveys commenced on 11 December 2018 and an additional site visit with personnel from Sustrans, Flintshire County Council and Natural Resources Wales was made on 22 January 2019.

The details of the survey dates, time periods, tide times and heights are given in Table 1 below.

Table 1. Dates, survey times and tide times and heights for visit sessions in 2019

Survey Dates	Time of survey (Hrs)	High Tide Times at Connah's Quay	Tide Height (m)
11 December 2018	09:45 – 11:30	13:15	8.4
22 December 2018	10:10 – 12:15	11:36	9.2
15 January 2019	14:15 – 16:15	17:35	7.7
22 January 2019	10.00 – 12:00	11:58	9.9
5 February 2019	10:00 – 12:30	11:46	9.1
22 February 2019	11:55 – 14:15	13:14	10.1
8 March 2019	11:25 – 12:30	12:26	9.2
11 March 2019	13:00 – 14:05	13:58	8.9
21 March 2019	10:30 – 12:45	11:36	10.0

4.2 Bird Counts

4.2.1 Transect Results

Transects were undertaken on the first three survey dates: 22 December 2018, 15 January 2019 and 5 February 2019. The detailed counts from these transect counts are provided in Appendix 4.

The majority of birds during these visits were seen over 100m from the route of the path. At this distance the birds appeared to be unconcerned by walkers with or without dogs. The edge of the estuary is well over 100m from the path and it is quite possible that some feeding and roosting birds were beyond sight of the path.

4.2.2. Vantage Point Counts

Vantage point counts were undertaken on 22 February, 8 March, 11 March and 21 March. Counts on the 8 March were suspended at peak high tide due to adverse weather conditions. Counts were resumed on 11 March. Maximum counts of birds were recorded one hour prior to and one hour after peak high tide. The summary of these counts for all species encountered is provided in Appendix 4.

Overall the summary of counts for key (SPA) species are given in Table 2. Many other species were recorded during the count periods

Table 2. Summary of maximum counts of key species for which the Dee Estuary SPA is internationally important

	Date (2018-2019)						
Species	22/12	15/01	5/02	22/02	8/03	11/03	21/03
Shelduck	0	13	7	4	5	5	4
Wigeon	0	0	0	0	0	0	5
Teal	42	22	14	10	62	12	23
Cormorant	2	0	8	1	0	0	0
Oystercatcher	161	0	20	0	52	11	15
Lapwing	24	0	94	0	0	0	0
Curlew	4	11	7	17	1	38	1
Black-tailed Godwit	0	5	0	0	1	0	0
Dunlin	80	0	800	18	0	0	0
Redshank	67	72	103	29	131	74	26

Finally, a summary of all species encountered on both transect counts and point counts is provided in Appendix 5.

4.3 WeBS data analysis

Data for the five year period, autumn 2013 to spring 2018, were provided by the BTO. The data covered the four sectors of the Welsh side of the Dee Estuary: Bagillt Saltmarsh, Flint Saltmarsh, Oakenholt Marsh and Deeside Naturalist's Reserve. Note that the Flint Saltmarsh sector is slightly larger than the project area as shown on the map in 3.1.1.

4.3.1 Total Counts – All Species Combined

The data show that Oakenholt Marsh is the most important area overall in terms of bird numbers, with the Deeside Naturalist's reserve second, Flint Saltmarsh third and Bagillt saltmarsh least important of the four sectors. At Oakenholt, autumn peak numbers ranged from 5,424 in 2015/2016 to 14,192 in 2017/2018. Winter peak numbers ranged from 6,932 in 2015/2016 to 16,021 in 2017/2019 and spring peak numbers were far less, ranging from 1,037 in 2013/2014 to 2,630 in 2016/2017. Flint Saltmarsh in comparison only once held more than two thousand birds during the whole of this period and this was 2,733 in the autumn peak of 2015/2016. Over the whole period 2013 to 2018, mean autumn peak

numbers at Flint were 1,640, mean winter peak numbers were 1,742 and the mean spring peak numbers only 490.

4.3.2 Five-year average monthly counts for each species

Over the five-year period, Oakenholt Marsh had records for 51 species, Deeside Naturalist's Reserve 48 species, Flint Saltmarsh 29 species and Bagillt Saltmarsh 16 species.

Of the ten Regularly Occurring Migratory Species specifically mentioned in the Dee Estuary SPA citation, eight of these are regularly reported from Flint Saltmarsh. These are Shelduck, Teal, Oystercatcher, Knot, Dunlin, Black-tailed Godwit, Curlew and Redshank.

In addition to this, four other species mentioned in the Assemblage of at least 20,000 Waterfowl in any season part of the SPA citation, are also regularly reported from Flint Saltmarsh. These are Great crested Grebe, Cormorant, Wigeon and Lapwing.

Table 3. Average monthly counts from WeBS data for key Dee Estuary SPA species 2013/2018.

Species	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**
Shelduck	18	62	47	28	22	9	19	33
Wigeon	0	0	0	1	0	0	0	2
Teal	0	6	9	32	99	62	69	64
Great crested Grebe	0	1	1	1	0	1	0	0
Cormorant	10	14	14	10	6	8	8	10
Oystercatcher	108	82	150	89	34	27	15	33
Lapwing	9	1	22	84	116	96	65	0
Knot	0	0	4	0	0	0	0	0
Dunlin	10	2	30	100	103	31	79	65
Black-tailed Godwit	130	62	100	93	18	20	65	62
Curlew	14	17	18	17	18	16	20	15
Redshank	309	349	97	112	97	149	123	178

In general, the months April to August are quite quiet for waterfowl on the estuary and large numbers are not reported. Shelduck are present all year round as they are a breeding bird on the estuary. Reasonable numbers of Oystercatchers and Redshank are reported in most months of the year although May and June are the quietest months as most of the birds move off to breeding grounds elsewhere.

Comparison of the five-year averages and those counts recorded as part of this project (Table 2 and Appendix 5) show many similarities although numbers of Shelduck and Black-tailed Godwit were lower during December 2018 to March 2019 than might be expected.

4.3.3 Five-year peak monthly counts for each species at Flint Saltmarsh

Table 4. Peak monthly counts from WeBS data for key Dee Estuary SPA species 2013/2018.

Species	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Shelduck	37	250	185	70	86	16	30	60
Wigeon	0	0	0	7	0	0	0	8
Teal	0	12	20	60	170	120	135	85
Great crested Grebe	1	2	2	4	0	5	1	2
Cormorant	24	18	19	17	10	14	13	14
Oystercatcher	400	170	400	400	112	90	35	77
Lapwing	20	2	70	150	200	240	300	0
Knot	0	0	18	0	0	0	0	0
Dunlin	30	11	150	500	500	100	200	180
Black-tailed Godwit	650	200	500	450	80	100	260	160
Curlew	26	28	30	24	32	20	30	24
Redshank	950	900	180	360	120	360	170	340
TOTAL NO.	**2088**	**1593**	**1574**	**2042**	**1310**	**1065**	**1174**	**950**

These figures show that numbers of each species vary quite considerably between years and peak numbers do not consistently occur in the same months. However, the one exception to this is the numbers of passage Redshank when numbers consistently peak in the migratory months of April, August and September.

Frost *et al.* (2019) identifies the Dee Estuary to be the fifth most important site in the UK for non-breeding waterbirds as provided by WeBS counts. The numbers of birds involved in the years 2013 to 2018 are shown in the table below:

Table 5. Total number of non-breeding waterbirds present on the Dee Estuary in the years 2013/14 to 2017/18.

Site	2013/14	2014/15	2015/16	2016/17	2017/2018	5-year mean
Dee Estuary	124,605	136,506	146,276	166,403	177,588	150,275

These overall numbers, which clearly involve more species than are internationally important on the Dee Estuary, provide some context for the numbers found on Flint Saltmarsh as shown in Table 4.

4.3.4 National and International importance of the site (Flint Saltmarsh sector) for each species.

With the exception of Canada Goose (not an important species in terms of this project), Flint Saltmarsh has not held nationally or internationally important numbers (1% significance

level) of key species during WeBS counts from 2013 to 2018. In comparison, Oakenholt Marsh has held nationally important numbers of Shelduck during the spring. Black-tailed Godwit occurred in nationally important numbers at Oakenholt in autumn (July to October) and winter (November to March) and internationally important numbers in winter. Redshank numbers were very close to being of national importance in winter. Redshank were, however, of national importance in autumn at the Deeside Naturalists Reserve.

This shows that whilst Flint Saltmarsh is an important feeding and roosting sector of the Dee Estuary for a range of species, its significance is far less than that of the two adjacent sectors of the Welsh side of the estuary at Oakenholt and the Deeside Naturalists Reserve.

4.4 Observations from local sources

The local WeBS counter, David Winnard responded to my enquiries about the main locations of wader and wildfowl roosts on the Welsh side of the estuary with the following comments:

'The saltmarsh around Flint Castle does not really get anything roosting (too disturbed with dog walkers and nowhere for the birds to go). There are a good number of birds feeding about an hour before high tide (assuming around 9m) and the hour after high tide'.

'The nearest roosts would be down on Oakenholt Marsh (mainly Dunlin and godwits these days). In general, the area around Flint Point is not suitable for roosting waders, there is no margin, too close to the path and better feeding/roosting a mile up or down from there. However, a small roost of Turnstones roost on the rocks and the buoys at Flint Point with occasional Ringed Plover'. Note that the roost sites mentioned above are outside the project survey area.

'The biggest roosts by far are towards Greenfield. On the very high tides the birds roost just behind the recycling centre, otherwise on most days the birds are on the edge of the marsh slightly down from the recycling centre but before Bagillt (SJ218761). In January 2019 there were 2000 Dunlin, 200 Oystercatcher plus some Ringed Plover and Turnstone'.

The RSPB have an interest in this proposal as they are the owners of the adjacent saltmarsh at Oakenholt. RSPB staff are also involved in undertaking some of the WeBS counts (mainly on the English side of the estuary) where the organisation manages a reserve at Burton Mere Wetlands. Colin Wells, a former RSPB site manager is the Dee Estuary WeBS coordinator. Email communication with Neil Friswell, one of the WeBS counters and RSPB volunteer, clearly indicate that the RSPB are concerned about any increased access on the Oakenholt part of the estuary and increased disturbance occurrences of internationally important bird species. The RSPB are keen to be involved in any discussions that would involve this proposed path re-alignment.

4.5 Disturbance observations etc.

In general, very few people were encountered during the surveys. This may have been because all the surveys were undertaken during the middle of the day on weekdays and

more people may use the path early in the morning and in the evening before and after work hours or at weekends.

The paved path at the Flint end of the survey area is heavily used by walkers both with and without dogs. However, most of pedestrians walk from the car park to the end of the railed section of path at SJ251731 and back or do the short circuit around the park, all of which is paved.

A couple of regular birdwatchers were encountered at the Flint Marsh vantage point but these people did not walk out onto the marsh itself.

Several dogwalkers were seen walking across the railway crossing and walking east along Sector 2 of the transect to the Tidal Outfall structure and back again but few of these ventured towards Flint along the saltmarsh path.

Pedestrians with or without dogs seen or encountered along the path between Sectors 3 and 6 during the survey periods are recorded in Table 3.

Table 6. Counts of pedestrians, with or without dogs, between Sectors 3 and 6 on all survey dates.

	Date							
Type	11/12	22/12	15/01	5/02	22/02	8/05	11/03	21/03
Pedestrians only	0	2	0	2	0	0	0	0
Pedestrians with dogs	1	5	0	0	1	1	0	1

Most dogs were observed off leads but well under control. No dogs were observed roaming on the marsh although there was nothing to stop this activity.

4.6 Limitations

This survey was only undertaken for a relatively short period and did not encompass a complete winter as the contract was not awarded until December 2018. The project would benefit from further surveys in autumn 2019 to cover the month of September, October, November and early December.

Below peak high tide not all the land is visible from either the Coast Path or the viewpoints. Therefore, not all birds could be counted at these times. However, this land is at least 200m from the path and so any birds feeding or roosting are highly unlikely to be disturbed or affected by human traffic on the Coast Path or proposed cycle way.

4.7 Photographs

Photographs of the proposed path realignment and conditions during high tides were taken on most visits and these are provided in Appendix 6.

5. Discussion and Recommendations

5.1 Impact of proposal on birds

During this survey period relatively few birds were encountered. Only three species were recorded in numbers exceeding 100. These were 800+ Dunlin, on 5 February, seen roosting on the edge of the estuary but eventually flying off as the tide rose, 161 Oystercatchers counted roosting at the edge of the estuary on 22 December at least 200m from the path and 131 Redshank seen feeding and roosting around the Oakenholt vantage point just prior to high tide on 8 March.

These numbers equate to 2.9% of the estuary population of Dunlin, 0.7% of the estuary population of Oystercatcher and 2.4% of the estuary population of Redshank. These numbers are not of national or international significance, i.e. less than 1%.

Within 100m of the path, birds were temporarily disturbed by human activity (walking, birdwatching and my survey activities) but in all cases the birds flew a short distance and then continued to feed or roost.

The results of this survey combined with local information and the five-year WeBS counts 2013-2018 would indicate that the largest wildfowl and wader roosts do not occur on this section of the estuary but in other less disturbed or less accessible locations.

5.2 Location of Coastal Path realignment

The proposed re-alignment of the path between the roundabout at Oakenholt and the railway crossing by the Dwr Cymru water treatment works makes a lot of logistic sense. This path would take pedestrian and cycle traffic away from a busy road without having any impact on the Dee Estuary SPA in terms of bird disturbance.

The first part of the path is not within the SPA boundary and from the proposed new railway crossing to the existing crossing, the land is too far away from the estuary to have any impact on the birds.

From survey sectors three to six (Dwr Cymru water treatment works to Flint marsh) the path has potential to impact on bird activity whether feeding or roosting. However, the bird survey results, undertaken as part of this contract, would so far indicate that the numbers of birds disturbed would be low in relation to the wintering wildfowl and waders present on the estuary as a whole.

In order to minimise the disturbance, the path should be kept as close to the boundary fence as possible. Better still, where access permission could be granted, the path could be moved to outside the SPA boundary to just within the semi-improved grazing fields bounding the SPA. Any path improvement in this SPA boundary area would benefit from screening such as hedgerow planting. There is limited hedge/scrub vegetation in this location at present and may have to be removed as part of the improvement works. This of course would have to be undertaken

outside the bird breeding season (March to August inclusive) but new screening would help to provide habitat replacement.

5.3 Timing of path re-alignment works

There is potential for disturbance to birds during any construction works. During the winter months this disturbance will mostly affect waterbirds (wildfowl, waders, gulls etc). As these are the birds with the more significant conservation status then it is recommended that construction works take place outside the window of September to March inclusive.

Clearly the weather conditions are more conducive to these works during the warmer and drier months of the year. However, there could be disturbance to breeding birds. This is outside the remit of the current survey but avoidance or mitigation measures would need to be taken in the breeding season March to August.

5.4 Further recommendations

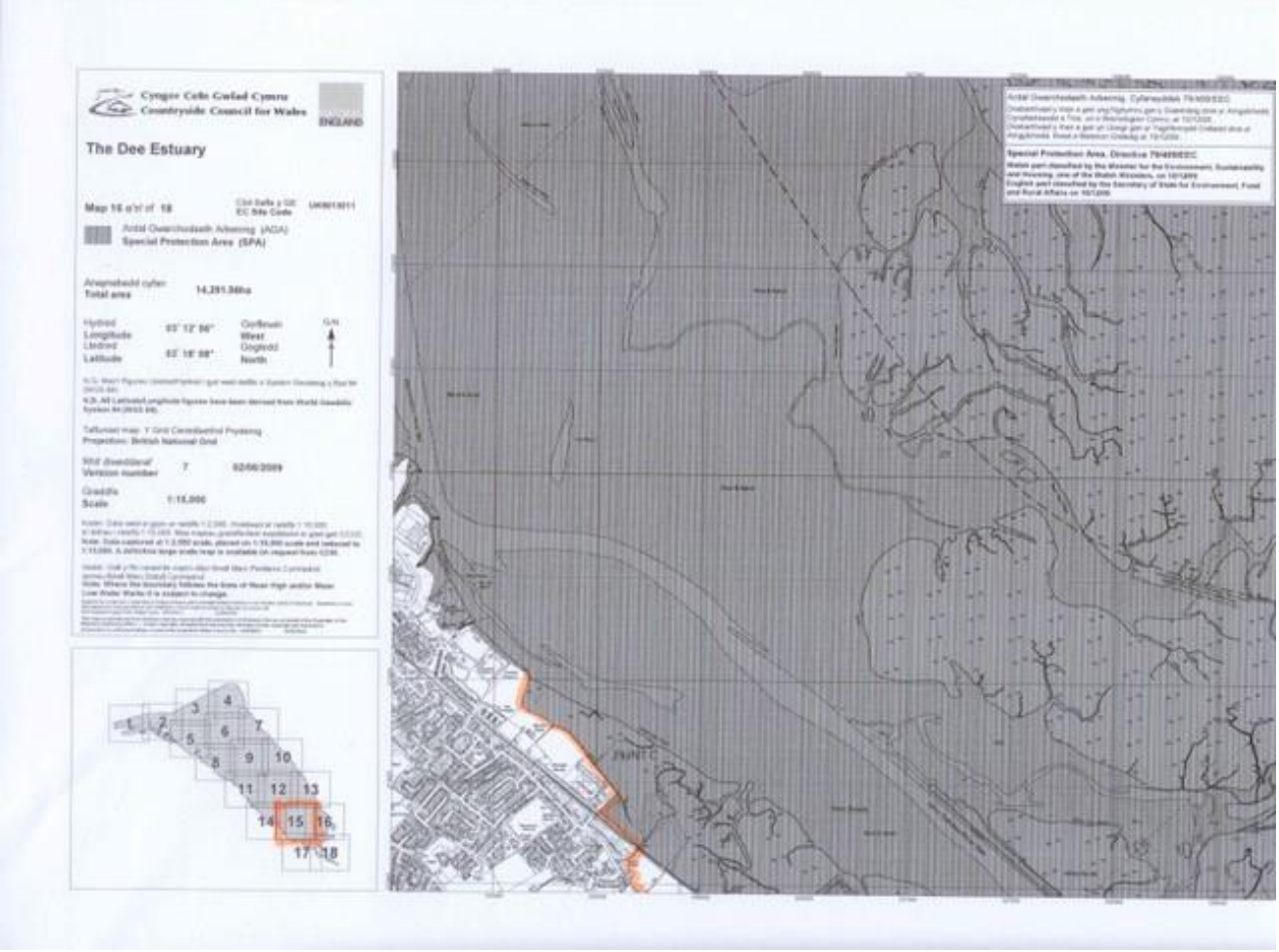
5.4.1 Further winter bird survey work is recommended so that the winter picture is complete. This would involve two surveys per month from September to early December 2019.

5.4.2 Any path improvement and re-alignment is likely to encourage greater usage of the path between Oakenholt and Flint Marsh. However, there is no baseline information on the current usage of the path. The bird surveys undertaken during this contract were done during the middle of the day on weekdays only. It is quite likely that there is a higher usage of the path by pedestrians and dogwalkers prior to and after working hours when daylight permits and also at weekends. It may be useful to Sustrans and other parties to have a better understanding of the current use of the path and take into account views of the local community.

REFERENCES

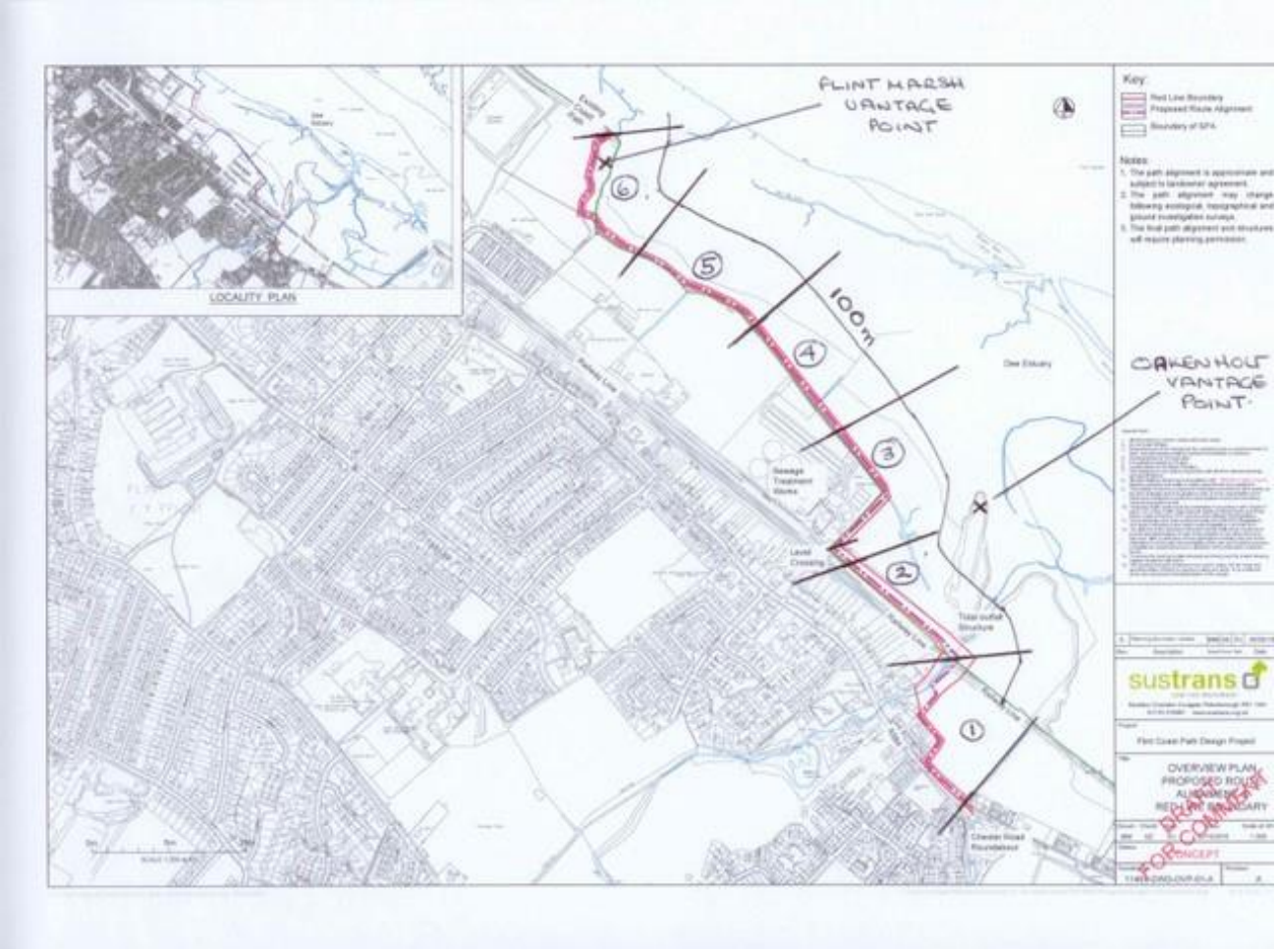
Frost, T.M., Austin, G.E., Calbrade, N.A., Mellan, H.J., Hearn, R.D., Robinson, A.E., Stroud, D.A., Wotton, S.R. & Balmer, D.E. 2019. *Waterbirds in the UK 2017/2018: The Wetland Bird Survey.* BTO, RSPB and JNCC, in association with WWT. British Trust for Ornithology, Thetford.

Appendix 1. Map showing the proposed development site in relation to the Dee Estuary Special Protection Area (SPA).



This map shows the Section 15 of the whole Dee Estuary SPA and the orange line marks the proposed development route.

Appendix 2. Map showing the bird survey transect route, the six sectors to be surveyed (including the 100m distance band) and the two vantage points at Flint Marsh and Oakenholt.



Appendix 3 Transect counts from first three surveys (22 December to 5 February)

Note that the distance categories are 1 – 0-25m, 2 – 25-100m, 3 – over 100m and F = Flying

Observer Name:		**Anne Brenchley**	
Location:	**Flint/Oakenholt Marsh SJ2572**		
Visit date:	**22 December 2018**	**Tide Time and Height:**	**11:36hrs 9.2m**
Weather:	**Cloud: 50% cover**	**Wind: 2 (Breezy)**	**Rain: None**
Start Time:	**10:00hrs**	**Finish Time:**	**12:00hrs**

Species Code and Name	Distance Category	Number of birds recorded in each transect section					
PW		1	2	3	4	5	6
	1						
Pied Wagtail	2						
	3						
	F		1	1			
S.	1						
	2		1				
Skylark	3					5	
	F				1		
BT	1		1				
	2		1				
Blue Tit	3						
	F						
OC	1						
	2						
Oystercatcher	3		160		1		
	F						
GB	1						
	2						
Great black-backed Gull	3				1		
	F		2				
T.	1						
	2						
Teal	3		42				
	F						
CU	1						
	2				1		1
Curlew	3		1			1	
	F						
BH	1						
	2			50+			
Black-headed Gull	3		5	26	81		41
	F						
CG	1						

Canada Goose	2						
	3		237			11	
	F						
R. Robin	1		1				
	2						
	3						
	F						
MG Magpie	1		2				
	2			2	1		
	3						
	F						
B. Blackbird	1			2			
	2						
	3						
	F						
SG Starling	1						
	2						
	3						
	F		1			3	18
WR Wren	1			1		1	
	2						
	3						
	F						
ET Little Egret	1						
	2			2		1	
	3						
	F						
RK Redshank	1						
	2			4			
	3				8		55
	F						
C. Carrion Crow	1			1			
	2						
	3						
	F						
CA Cormorant	1						
	2			1			
	3				1		
	F						
HG Herring Gull	1						
	2						
	3				4		2
	F						
D. Dunnock	1				1		
	2						
	3						
	F						
WP Woodpigeon	1						1
	2						
	3						
	F						
L. Lapwing	1						
	2						
	3						8
	F						16
DN Dunlin	1						
	2						
	3						
	F						80
MP	1						

Meadow Pipit	2						
	3						5
	F						
LB Lesser black-backed Gull	1						
	2						
	3						1
	F						

Observer Name:		**Anne Brenchley**	
Location:	**Flint/Oakenholt Marsh SJ2572**		
Visit date:	**15 January 2019**	**Tide Time and Height:**	**17:25hrs 7.7m**
Weather:	**Cloud: 0 - 33% cover**	**Wind: 1 (Light)**	**Rain: None**
Start Time:	**14:15hrs**	**Finish Time:**	**16:15hrs**

Species Code and Name	Distance Category	Number of birds recorded in each transect section					
PW		1	2	3	4	5	6
	1			2			
Pied Wagtail	2			56			
	3						
	F						
S.	1						25
	2						
Skylark	3						
	F						
RB	1				2		
	2						
Reed Bunting	3						
	F						
SU	1						
	2						
Shelduck	3						13
	F						
BW	1						
	2						
Black-tailed Godwit	3						5
	F						
T.	1						22
	2						
Teal	3						
	F						
CU	1						1
	2						1
Curlew	3						9
	F						
BH	1						
	2			100			
Black-headed Gull	3						
	F						
CG	1						
	2			1		550	
Canada Goose	3						
	F						

MG	**1**			**1**			
	2						
Magpie	**3**			**1**			
	F						
B.	**1**			**1**			
	2						
Blackbird	**3**						
	F						
SG	**1**			**28**			
	2						
Starling	**3**						
	F						
ET	**1**						
	2						**1**
Little Egret	**3**						
	F						
RK	**1**						**21**
	2				**2**	**6**	
Redshank	**3**						**43**
	F						
C.	**1**						
	2						**1**
Carrion Crow	**3**						
	F						

Observer Name:		**Anne Brenchley**	
Location:	**Flint/Oakenholt Marsh SJ2572**		
Visit date:	**5 February 2019**	**Tide Time and Height:**	**11:36 9.1m**
Weather:	**Cloud: 33-66% cover**	**Wind: 2 (Breezy)**	**Rain: None**
Start Time:	**10:15hrs**	**Finish Time:**	**12:30hrs**

Species Code and Name	Distance Category	Number of birds recorded in each transect section					
SN		1	2	3	4	5	6
	1						16
Snipe	2						
	3						
	F					1	
S.	1						
	2						24
Skylark	3						
	F						
ST	1						
	2		1				
Song Thrush	3						
	F						
SU	1						
	2			4			
Shelduck	3					2	1
	F						
GR	1						
	2					1	
Greenfinch	3						
	F						
T.	1						3
	2						
Teal	3						
	F						
CU	1						
	2						5
Curlew	3			2			
	F						
BH	1			6	8		
	2					2	
Black-headed Gull	3						
	F			1			
MG	1			1			
	2				1		
Magpie	3						
	F						
B.	1		1	2			

Blackbird	2						
	3						
	F						
SG	1				30		
	2						
Starling	3						
	F						
ET	1						
	2					1	
Little Egret	3						
	F						
RK	1						
	2				17	2	41
Redshank	3					43	
	F						
C.	1						
	2						
Carrion Crow	3				1	1	
	F						1
BT	1		1	3	1	2	
	2						
Blue Tit	3						
	F						
R.	1			1			
	2						
Robin	3						
	F						
WR	1			1			
	2						
Wren	3						
	F						
LI	1						
	2						
Linnet	3						
	F			1			
DN	1						
	2						
Dunlin	3			400			
	F						
WP	1				2		
	2						
Woodpigeon	3						
	F						
HG	1						
	2				1		
Herring Gull	3						
	F						
OC	1						
	2				20		
Oystercatcher	3						
	F						
GB	1						
	2						
Great black-backed Gull	3				1		
	F						
MP	1					2	
	2						
Meadow Pipit	3						
	F						
LB	1						

Lesser black-backed Gull	**2**					**1**	
	3						
	F						
MA	**1**						**3**
	2						
Mallard	**3**						**2**
	F						
D.	**1**						**1**
	2						
Dunnock	**3**						
	F						
CH	**1**						**1**
	2						
Chaffinch	**3**						
	F						
GO	**1**						**3**
	2						
Goldfinch	**3**						
	F						
L.	**1**						
	2						
Lapwing	**3**						**25**
	F						
TW	**1**						**9**
	2						
Twite	**3**						
	F						

Appendix 4 Summary of Vantage Point Count surveys between 5 February and 21 March 2019.

5 February 2019 – Birds seen from Oakenholt viewpoint SJ257725
High Tide: 11:46hrs
Tide Height: 9.1m
Weather – Cloudy and breezy but dry
Site visit: 10.00 – 12.30hrs

10:15-10:30hrs
Sheep with lambs. All birds on edge over 100m away. One birdwatcher and one pedestrian. No disturbance. Black headed Gull 7, Cormorant 8, Great black-backed Gull 2, Carrion Crow 2, Lapwing 68, Oystercatcher 8, Dunlin 205, Redshank 1, Magpie 1, Starling 1, Pied Wagtail 4 flying and Mallard 1. Then walked transect to Flint Marsh.

5 February 2019 – Birds seen from Flint Marsh Viewpoint SJ251731

11:41 – 12:30hrs.
Skylark 24, Snipe 4, Curlew 3, Dunlin 800 moving off from edge of estuary and flying downstream as the tide height increased, Teal 14, Mallard 1, Black headed Gull 1, Redshank 28, Lapwing 94.

22 February 2019 – Birds seen from Flint Marsh Viewpoint SJ251731
High Tide: 13:14hrs
Tide Height 10.1m
Weather – Sunny, bright blue sky, little cloud, on shore breeze.
Site Visit: 11:55 – 14:15hrs

11:55hrs. No significant bird movements on the estuary. Cormorant flew by. Curlew 17, Redshank 12, Black headed Gull 31 (more far offshore), Shelduck 4, Mallard 4, Snipe 11, Teal 10, Little Egret 2, Greenfinch (heard), Linnet (heard) and Starling 5. More birds apparently on Oakenholt Marsh in the distance but by 12:15hrs this land was almost completely inundated.

18 Dunlin flew past at 12:34hrs. At 12:39hrs, one person and two small dogs walking from Oakenholt to Flint. Put off 17 Redshank from Sector 4. Put off 8 Snipe from Sector 5 at 12:43hrs. Sector 6 Herring Gull 2, Common Gull 4, Little Egret flushed and Snipe 1. At peak high tide, line of existing path only navigable with wellington boots. No birds around. All moved off by high tide.

22 February 2019 – Birds seen from Oakenholt Viewpoint SJ257725

Walking to Oakenholt viewpoint not an option so drove to parking area by roundabout and walked to site which took 20 minutes. 13:35hrs – a few birds seen on Oakenholt Marsh on small patches of grass not inundated by tide. Mainly Redshank 12, Dunlin 27 and 2 Cormorant. Viewpoint virtually surrounded by water. Estuary very quiet with a few gulls in the water or flying up and down the estuary. Some Teal roosting in the gully between Oakenholt Marsh and the Oakenholt viewpoint. Survey completed 14:15hrs.

8 March 2019 – Birds seen from Oakenholt viewpoint SJ257725
High Tide: 12:26
Tide Height: 9.2m
Weather – totally overcast, slight drizzle, light breeze
Site visit 11:25 – 12:30hrs

Little Egret 2, Mallard 4, Curlew 1, Redshank 54, Teal 62, Shelduck 5, Carrion Crow 1, Black headed Gull 171, Oystercatcher 52, Lesser black-backed Gull 1, Common Gull 14, Great black-backed Gull 2, Pied Wagtail 3, Black-tailed Godwit 1, Starling 3.
Birds too far away to be disturbed by me. No other walkers etc. 11:53hrs birds still over 100m away. Redshank and gulls were still feeding. Redshank 131 feeding at 12:11 still over 100m away. 12:15hrs one dogwalker and one dog not in disturbance zone. At peak high tide land still free of water 100m away at least as far as Sectors 3 and 4.
Persistent rain started at 12:15 and so after high tide abandoned survey for the day.

11 March 2019 – Birds seen from Flint Marsh viewpoint SJ251731
High Tide: 13:58
Tide Height: 8.9m
Weather – bright and sunny with slight onshore breeze
Site visit 13:00 – 14:05hrs

45 Canada Geese within 100m of Sector 4. 1 Curlew in Sector 2. Sheep and lambs within 25m of path.
13:00 – 13:15 counts: Oystercatcher, Redshank, Common Gull 21, Herring Gull 1, Black-headed Gull 57, Lesser black-backed Gull 2, Shelduck 5, Great black-backed Gull 2. Curlew roosting at water's edge over 100m away. Could see many, many more geese and gulls on Oakenholt marsh in the distance.
13:25 – 13:35 counts: at edge of estuary waders roosting: Curlew 15, Oystercatcher 11 and Redshank 21. Mallard 2 (pair), Little Egret in Sector 6 within 25m of path, Meadow Pipit 1, Blackbird, Greenfinch (S), Long tailed Tit, Robin, Dunnock and Blue Tit. 21 Redshank flew in at 13:30hrs.
13:40 – 13:50hrs: birds at water's edge: Teal 12, Curlew 23, Redshank 66, Shelduck 1, Mallard 1, and Oystercatcher 1. 4 Jackdaw and 2 Carrion Crow.
14:05 – 14:15hrs counts: Redshank 74, Oystercatcher 2, Teal 6, Curlew 38, Shelduck 2 and Great black-backed Gull 1.
No people on Marsh path.

21 March 2019 – Birds seen from Flint Marsh viewpoint SJ251731
High Tide: 11:26hrs

Tide Height: 10.0m
Weather – overcast, calm light breeze, warm 13^{o}C.
Site visit: 10:30 – 12:30hrs

Started recording from Flint Marsh viewpoint: Snipe 3, Little Egret 1, Teal 12, Mallard 6, Wigeon 5, Black headed Gull 1, Curlew 1, Redshank 44+. Other birds recorded Chiffchaff, Dunnock, Robin, Blackbird (3), Linnet (singing), Collared Dove (2), Greenfinch (singing), Wren and Great Tit.
10:40hrs: Curlew 1, Teal 6, Snipe 1, Herring Gull 4, Common Gull 6, Mallard 2, Little Egret 1, Redshank 44+, Canada Goose 6, and Black headed Gull 6. Probably no problem at very high tides as water too high and very little exposed land for birds to use. No movement of birds either up or down estuary.
11:00hrs all birds within 25m of path: Shelduck 2, Little Egret 2, Curlew 1, Snipe 4, Teal 23, Mallard 2, Redshank 26, Black headed Gull 4.
No walkers 10:30-11:30hrs. No changes in numbers and bird species. Walked towards Oakenholt along path disturbing some of the birds above. No additional birds. Path extremely squelchy. Not possible without good boots or wellingtons.

21 March 2019 – Birds seen from Oakenholt viewpoint SJ257725

12:00hrs to 12:30hrs. Brent Goose 2, Oystercatcher 15, Magpie 2, Canada Goose 87, Little Egret 5, Skylark 2, Black-headed Gull 22, Great black-backed Gull 1, Mallard 3, Shelduck 4, Jackdaw 2, Teal 19, Redshank 2, 10 Linnet flying over, one dogwalker at 12:05hrs. 15 Jackdaw and 3 Great black-backed Gull on sheep carcass and 1 Raven on lamb carcass. 5 Oystercatcher flying west along edge of estuary at 12:26hrs.

Appendix 5 List of species (excluding key SPA species) seen with maximum counts on each survey session.

	Date (2018-2019)						
Species	22/12	15/01	5/02	22/02	8/03	11/03	21/03
Canada Goose	248	551	0	0	0	45	87
Brent Goose	0	0	0	0	0	0	2
Mallard	0	0	5	4	4	2	6
Little Egret	3	1	1	2	2	1	5
Snipe	0	0	17	11	0	0	4
Black-headed Gull	202	100	17	31	171	57	22
Common Gull	0	0	0	4	14	21	0
Great black-backed Gull	3	0	2	0	2	2	6
Herring Gull	6	0	1	2	0	1	4
Lesser black-backed Gull	1	0	1	0	1	2	0
Woodpigeon	1	0	2	0	0	0	0
Collared Dove	0	0	0	0	0	0	2
Magpie	5	2	2	0	0	0	2
Jackdaw	0	0	0	0	0	4	15
Carrion Crow	1	1	2	0	1	2	0
Raven	0	0	0	0	0	0	1
Blue Tit	2	0	7	0	0	1	0
Great Tit	0	0	0	0	0	0	1
Skylark	7	25	24	0	0	0	2
Long-tailed Tit	0	0	0	0	0	1	0
Chiffchaff	0	0	0	0	0	0	1
Wren	2	0	1	0	0	0	1
Starling	22	28	30	5	3	0	0
Blackbird	2	1	3	0	1	1	3
Song Thrush	0	0	1	0	0	0	0
Robin	1	0	1	0	0	1	1
Dunnock	1	0	1	0	0	1	1
Pied Wagtail	2	58	4	0	3	0	0
Meadow Pipit	5	0	2	0	1	0	0
Chaffinch	0	0	1	0	0	0	0
Greenfinch	0	0	1	1	0	1	1
Twite	0	0	9	0	0	0	0
Linnet	0	0	1	1	0	0	10
Goldfinch	0	0	3	0	0	0	0

Reed Bunting	0	2	0	0	0	0	0

Appendix 6. Site photographs

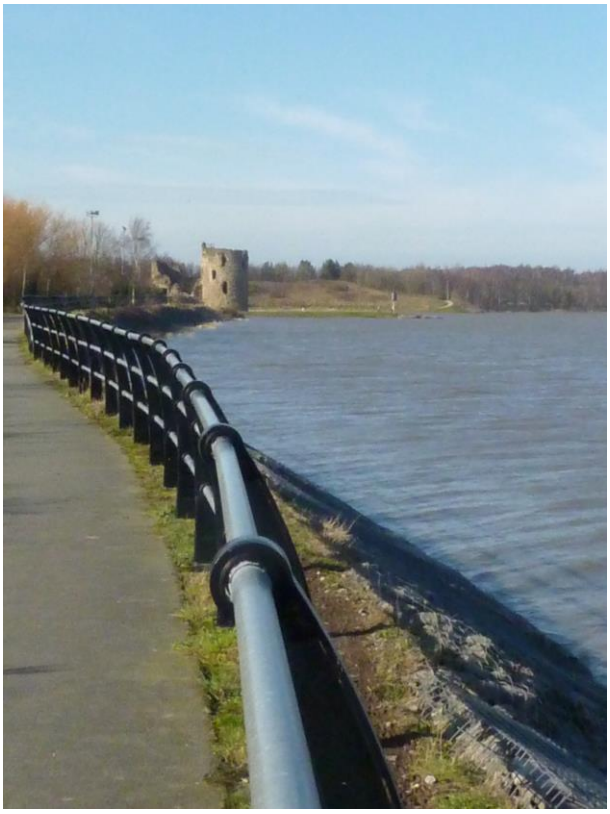
22 December 2018

1. **And 2. Views from Sector 2 back over to Sector 1 where a new railway crossing is proposed**

3. **View from Oakenholt vantage point at 10:27hrs. High tide: 11:36hrs.**
4. **View from path across to edge of saltmarsh during transect survey.**

22 February 2019

Views from Flint vantage point and along paved part of Coastal Path. Very little land available for feeding or roosting birds at peak high tide (10.0m)



View along path towards Flint Castle. All saltmarsh inundated by the tidal waters.

8 March and 11 March 2019

View from Oakenholt vantage point towards Oakenholt Marsh on 8 March – one hour before high tide.

View from Oakenholt vantage point towards Flint on 8 March – one hour before high tide.

View from Oakenholt vantage point straight across to the Wirral on 8 March – half an hour before high tide.

View from Oakenholt vantage point over to the Wirral on 8 March – ten minutes before peak high tide.

View from Oakenholt vantage point towards Flint on 8 March – five minutes before peak high tide.

View from Flint vantage point looking over Flint Saltmarsh towards Oakenholt and Connah's Quay on 11 March – 45 minutes before peak high tide.

Much the same view as the previous picture but only ten minutes before high tide.

View from Flint vantage point looking over towards the Wirral on 11 March – 20 minutes after peak high tide.

21 March 2019

View from Flint vantage point looking towards Oakenholt – taken 45 minutes before high tide.

View from Flint vantage point looking towards Oakenholt – taken 25 minutes before high tide.

View from Oakenholt vantage point – taken 15 minutes after high tide.