

South East Trunk Road Unit



A985 Kincardine Bridge – Maintenance Schemes (Initial Marine Licence)

Habitats Regulations Appraisal

Appendix B: Bird Data

December 2021

Prepared for BEAR Scotland by **Jacobs**

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1 Bird Data

1.1 Introduction

1.1.1 This appendix includes the data used in the Habitats Regulations Appraisal (HRA) for the Kincardine Bridge Maintenance Schemes (Initial Marine Licence). This comprises data from the British Trust for Ornithology's (BTO) Wetland Bird Surveys (WeBS) and data from the Kincardine Bridge Refurbishment: Piled Viaduct Replacement scheme.

2 BTO WeBS Data

2.1.1 Data from BTO WeBS was received for the Forth Grangemouth to Kincardine Bridge (Skinflats) sector for the survey years 2015/2016 to 2019/2020. The sector encompasses the estuary from the Clackmannanshire Bridge in the west to Skinflats at Grangemouth in the east.

2.1.2 The WeBS data is presented as annual peak counts and monthly peak counts over the five years for each species recorded (Table 1 and Table 2). Note that the WeBS counting year runs from July to June, so for example, the year 2018/19 includes data from July 2018 to June 2019 inclusive. For this WeBS sector no counts were undertaken in April-August each year, with focus evidently on the winter season.

Table 1: Five-year annual peak counts for species within the Forth Grangemouth to Kincardine Bridge (Skinflats) sector

Species	Annual Peak Counts and Month Recorded*					Mean Peak
	2015/16	2016/17	2017/18	2018/19	2019/20	
Barnacle goose	22 (OCT)	0	0	0	15 (NOV)	7
Bar-tailed godwit * ^	0	26 (OCT)	8 (DEC)	2 (SEP)	1 (OCT)	7
Black-headed gull	280 (FEB)	1020 (FEB)	1780 (JAN)	651 (DEC)	2400 (NOV)	1226
Black-tailed godwit	3 (OCT)	104 (OCT)	226 (SEP)	350 (NOV)	34 (SEP)	143
Canada goose	77 (SEP)	58 (SEP)	189 (OCT)	205 (SEP)	6 (DEC)	107
Common gull	67 (OCT)	45 (OCT)	227 (OCT)	90 (OCT)	400 (NOV)	166
Common tern	0	0	6 (SEP)	1 (SEP)	0	1
Coot	26 (FEB)	24 (JAN)	9 (DEC)	39 (SEP)	111 (SEP)	42

Species	Annual Peak Counts and Month Recorded*					
	2015/16	2016/17	2017/18	2018/19	2019/20	Mean Peak
Cormorant*	24 (OCT)	42 (SEP)	41 (NOV)	42 (OCT)	80 (SEP)	46
Curlew*	586 (FEB)	380 (FEB)	528 (FEB)	441 (NOV)	469 (JAN)	481
Curlew sandpiper	0	0	1 (SEP)	0	0	0
Dunlin*	495 (DEC)	1480 (DEC)	1025 (OCT)	320 (FEB)	290 (JAN)	722
Eider*	6 (FEB)	0	4 (MAR)	2 (MAR)	6 (NOV)	4
Gadwall	6 (JAN)	3 (SEP)	3 (DEC)	1 (SEP)	32 (OCT)	9
Golden plover*	1 (OCT)	61 (OCT)	0	0	0	12
Goldeneye*^	12 (FEB)	1 (JAN)	7 (MAR)	6 (MAR)	11 (MAR)	7
Goosander	13 (SEP)	8 (OCT)	11 (OCT)	47 (SEP)	7 (OCT)	17
Great black-backed gull	1 (SEP)	6 (JAN)	7 (NOV)	9 (DEC)	7 (DEC)	6
Great crested grebe*	2 (MAR)	2 (SEP)	2 (DEC)	8 (DEC)	1 (MAR)	3
Greenshank	1 (JAN)	1 (SEP)	3 (SEP)	1 (OCT)	1 (OCT)	1
Grey heron	26 (OCT)	32 (SEP)	37 (SEP)	39 (SEP)	30 (SEP)	33
Grey plover*	0	16 (OCT)	0	0	7 (OCT)	5
Greylag goose (British/Irish)	1 (SEP)	2 (SEP)	1 (SEP)	50 (SEP)	0	11
Greylag goose (Icelandic)	73 (DEC)	65 (DEC)	12 (JAN)	7 (NOV)	34 (JAN)	38
Herring gull	123 (FEB)	650 (SEP)	910 (NOV)	850 (SEP)	400 (NOV)	587
Knot*^	3 (MAR)	455 (OCT)	0	1 (OCT)	0	92
Lapwing*	490 (DEC)	435 (NOV)	475 (OCT)	523 (NOV)	415 (OCT)	468
Lesser black-backed gull	35 (SEP)	70 (SEP)	34 (OCT)	31 (SEP)	20 (OCT)	38

Species	Annual Peak Counts and Month Recorded*					
	2015/16	2016/17	2017/18	2018/19	2019/20	Mean Peak
Little egret	2 (FEB)	2 (OCT)	4 (NOV)	2 (SEP)	1 (NOV)	2
Little grebe	3 (SEP)	5 (SEP)	4 (NOV)	5 (SEP)	18 (SEP)	7
Long-tailed duck*	0	1 (OCT)	0	1 (NOV)	0	0
Mallard*	107 (JAN)	148 (JAN)	86 (DEC)	102 (DEC)	68 (SEP)	102
Moorhen	20 (NOV)	16 (NOV)	8 (SEP)	22 (OCT)	24 (OCT)	18
Mute swan	67 (DEC)	38 (NOV)	13 (DEC)	6 (SEP)	23 (NOV)	29
Oystercatcher*	120 (DEC)	136 (MAR)	153 (NOV)	117 (FEB)	195 (FEB)	144
Pink-footed Goose*^	5750 (NOV)	3300 (OCT)	1950 (OCT)	2400 (MAR)	3800 (FEB)	3440
Pintail	128 (FEB)	165 (MAR)	201 (MAR)	134 (DEC)	108 (MAR)	147
Pochard	3 (JAN)	0	1 (SEP)	0	12 (FEB)	3
Red-breasted merganser*	19 (FEB)	20 (DEC)	15 (FEB)	35 (DEC)	27 (NOV)	23
Redshank*^	967 (NOV)	1210 (DEC)	1381 (DEC)	1284 (NOV)	1522 (DEC)	1273
Red-throated diver*	0	1 (FEB)	1 (JAN)	0	3 (NOV)	1
Ringed plover*	2 (OCT)	0	2 (SEP)	0	0	1
Ruff	0	4 (SEP)	40 (OCT)	1 (SEP)	0	9
Sandwich tern*^	1 (SEP)	0	15 (SEP)	0	13 (SEP)	6
Scaup*	0	1 (FEB)	2 (OCT)	0	0	1
Shelduck*^	958 (SEP)	954 (SEP)	511 (SEP)	1444 (SEP)	659 (SEP)	905
Shoveler	2 (OCT)	11 (JAN)	11 (SEP)	3 (SEP)	1 (SEP)	6
Slavonian grebe*^	0	0	0	0	1 (SEP)	0

Species	Annual Peak Counts and Month Recorded*					
	2015/16	2016/17	2017/18	2018/19	2019/20	Mean Peak
Snipe	0	5 (OCT)	0	0	9 (NOV)	3
Spoonbill	0	0	0	0	1 (OCT)	0
Teal	480 (DEC)	683 (NOV)	479 (DEC)	551 (JAN)	693 (JAN)	577
Tufted duck	23 (MAR)	48 (FEB)	29 (FEB)	62 (OCT)	121 (OCT)	57
Turnstone*^	1 (JAN)	4 (DEC)	1 (JAN)	2 (SEP)	5 (FEB)	3
Water rail	0	0	0	0	1 (OCT)	0
Whooper swan	5 (DEC)	33 (OCT)	1 (OCT)	26 (OCT)	126 (NOV)	38
Wigeon*^	204 (DEC)	196 (JAN)	241 (DEC)	237 (FEB)	225 (JAN)	221

*The value reported represents the highest count obtained between July and June for the year in question and the species in question

* SPA Qualifying Interest

^ Ramsar Qualifying Interest

Table 2: Five-year peak monthly counts for species within the Forth Grangemouth to Kincardine Bridge (Skinflats) sector

Species	Monthly Peak Counts and Month Recorded+						
	SEPT	OCT	NOV	DEC	JAN	FEB	MAR
Barnacle Goose	0	22	15	0	1	0	1
Bar-tailed godwit*^	2	26	5	8	0	1	0
Black-headed Gull	164	240	2400	651	1780	1020	65
Black-tailed Godwit	226	225	350	2	31	19	35
Canada Goose	205	189	25	27	26	2	2
Common Gull	90	227	400	32	55	17	8
Common Tern	6	0	0	0	0	0	0

Species	Monthly Peak Counts and Month Recorded ⁺						
	SEPT	OCT	NOV	DEC	JAN	FEB	MAR
Coot	111	99	57	32	29	26	13
Cormorant*	80	48	41	39	30	24	34
Curlew*	283	429	441	436	469	586	354
Curlew Sandpiper	1	0	0	0	0	0	0
Dunlin*	226	1025	928	1480	331	470	111
Eider*	0	0	6	0	2	6	4
Gadwall	10	32	2	13	6	0	2
Golden plover*	2	61	0	0	0	0	0
Goldeneye* [^]	0	0	2	4	3	12	11
Goosander	47	11	5	6	6	1	4
Great black-backed gull	2	3	7	9	6	6	1
Great crested grebe*	2	0	0	8	1	1	2
Greenshank	3	1	1	1	2	2	1
Grey heron	39	34	24	14	16	6	4
Grey plover*	0	16	10	0	0	8	4
Greylag goose (British/Irish)	50	0	0	0	0	0	0
Greylag goose (Icelandic)	0	2	21	73	34	14	21
Herring gull	850	600	910	400	670	550	130
Knot* [^]	1	455	0	0	2	1	3
Lapwing*	407	475	523	490	120	140	29

Species	Monthly Peak Counts and Month Recorded ⁺						
	SEPT	OCT	NOV	DEC	JAN	FEB	MAR
Lesser black-backed gull	70	34	9	4	3	5	9
Little egret	2	2	4	2	1	2	2
Little grebe	18	13	8	4	3	5	4
Long-tailed duck*	0	1	1	0	0	0	0
Mallard*	102	80	97	102	148	60	35
Moorhen	22	24	20	12	7	12	7
Mute Swan	15	33	39	67	33	12	19
Oystercatcher*	84	102	153	153	152	195	136
Pink-footed goose* [^]	1	3300	5750	1720	2170	3800	2400
Pintail	22	68	133	134	106	145	201
Pochard	1	11	1	10	10	12	0
Red-breasted merganser*	7	9	27	35	17	19	25
Redshank* [^]	1196	1240	1369	1522	1317	1284	1200
Red-throated diver*	0	0	3	0	1	1	1
Ringed plover*	2	2	0	0	0	0	0
Ruff	25	40	0	0	0	0	0
Sandwich tern* [^]	15	0	0	0	0	0	0
Scaup*	0	2	0	0	0	1	0
Shelduck* [^]	1444	878	388	229	142	210	253
Shoveler	11	2	1	4	11	3	3

Species	Monthly Peak Counts and Month Recorded ⁺						
	SEPT	OCT	NOV	DEC	JAN	FEB	MAR
Slavonian grebe ^{*^}	1	0	0	0	0	0	0
Snipe	0	5	9	0	0	0	0
Spoonbill	0	1	0	0	0	0	0
Teal	161	435	683	513	693	419	431
Tufted duck	32	121	31	27	28	48	43
Turnstone ^{*^}	2	0	2	4	3	5	0
Water rail	0	1	0	0	0	0	0
Whooper swan	0	43	126	23	6	8	24
Wigeon ^{*^}	56	99	133	241	225	237	149

⁺The value reported represents the highest count obtained over the five-year period during the month in question and the species in question

* SPA Qualifying Interest

[^] Ramsar Qualifying Interest

3 Previous Studies

3.1.1 Through The Tide Count (TTTC) surveys, based on the WeBS core counts, were undertaken by Jacobs between April 2017 and April 2018 inclusive to inform the A985 Kincardine Bridge Refurbishment: Piled Viaduct Replacement Habitats Regulations Appraisal (Transport Scotland, 2020). The surveys recorded the numbers, distribution and behaviour of all estuarine water birds (including all qualifying interests of the Firth of Forth SPA and Ramsar sites) present in the Forth Estuary (the shoreline, intertidal and open water areas) in the vicinity of the proposed scheme. The information gathered during these surveys enabled identification of areas which are particularly important for overwintering and migratory bird assemblages. Additional goose roost surveys were undertaken in September 2017 to March 2018 (inclusive). Full details of these surveys, including figures, are published as part of the A985 Kincardine Bridge Refurbishment: Piled Viaduct Replacement Habitats Regulations Appraisal (Transport Scotland, 2020).

3.1.2 Analysis of the TTTC data was undertaken to estimate the peak counts and distribution of waterbirds within the survey area (as defined in Transport Scotland, 2020) over the year.

- 3.1.3 An assessment was undertaken to compare the results of the surveys with WeBS data to confirm whether the counts from a single year were in context with the longer-term trends for the area. This report was submitted to SNH (now NatureScot) and concluded that the data collected was broadly in keeping with WeBS data, taking into account inter-year variation and difference in size of survey areas.

TTTC Survey Results

- 3.1.4 A total of 39 species of waterbirds birds (including gulls, terns, cormorants and kingfisher) were recorded during the TTTC surveys between April 2017 and April 2018, of which 19 species were qualifying interests of the Firth of Forth SPA and Ramsar sites. Table 3 presents the monthly peak counts of qualifying interests recorded during the TTTC surveys.

Table 3: Monthly Peak Counts of Qualifying Interests Recorded during TTTC Surveys for the Full Survey Period April 2017 to April 2018

Species	Apr 2017 (1)	May 2017 (3)	Jun 2017 (2)	Jul 2017 (2)	Aug 2017 (2)	Sept 2017 (2)	Oct 2017 (2)	Nov 2017 (2)	Dec 2017 (2)	Jan 2018 (1)	Feb 2018 (3)	Mar 2018 (2)	Apr 2018 (2)	Monthly Peak	Monthly Mean Peak	Winter Peak	Winter Mean Peak
Bar-tailed godwit * ^	0	0	0	0	0	4	0	17	2	0	4	0	0	17	2.08	17	3.86
Common scoter *	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0.08	1	0.14
Cormorant *	2	3	1	8	23	9	31	26	19	16	29	10	5	31	14.00	31	20
Curlew *	3	4	3	83	56	84	117	26	40	74	290	98	64	290	72.46	290	104.14
Dunlin *	0	1	0	0	0	10	5	25	0	0	0	0	0	25	3.15	27	5.71
Eider *	4	3	2	1	0	0	0	0	0	0	0	0	0	4	0.77	0	0
Golden plover *	0	0	0	0	0	0	65	25	0	0	0	0	0	65	6.92	65	12.86
Goldeneye * ^	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0.15	1	0.29
Knot * ^	0	0	0	0	0	0	0	0	0	0	1	7	0	7	0.62	7	1.14
Lapwing *	1	0	0	0	0	0	29	0	0	0	0	3	0	29	2.54	29	4.57
Mallard *	6	26	18	32	22	90	66	37	62	32	50	10	16	90	35.92	90	49.57
Oystercatcher *	61	20	9	20	16	46	43	61	72	27	113	42	35	113	43.46	113	57.71

Species	Apr 2017 (1)	May 2017 (3)	Jun 2017 (2)	Jul 2017 (2)	Aug 2017 (2)	Sept 2017 (2)	Oct 2017 (2)	Nov 2017 (2)	Dec 2017 (2)	Jan 2018 (1)	Feb 2018 (3)	Mar 2018 (2)	Apr 2018 (2)	Monthly Peak	Monthly Mean Peak	Winter Peak	Winter Mean Peak
Pink-footed goose * ^	9	0	1	6	4	20	997	583	204	500	702	1,021	256	1,021	331.00	1,021	575.29
Red-breasted merganser *	2	1	2	6	1	0	0	4	3	1	6	1	6	6	2.54	6	2.14
Redshank * ^	0	2	0	0	2	26	120	114	16	2	39	9	2	120	25.54	120	46.57
Ringed plover *	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0.08	0	0
Sandwich tern * ^	0	0	0	1	45	1	0	0	0	0	0	0	0	45	3.62	1	0.14
Shelduck * ^	3	8	25	680	46	31	18	2	9	3	5	6	16	680	65.54	31	10.57
Wigeon *	0	0	1	0	0	1	20	77	103	42	136	58	0	136	33.69	136	62.43

(n) is the number of individual surveys in the month

* = SPA Qualifying Interest ^ = Ramsar Qualifying Interest

3.2 Goose Roost Surveys

Methods

- 3.2.1 The habitat surrounding Kincardine Bridge is known to provide suitable habitat for roosting geese and in order to identify potential impacts on geese, goose roost surveys were undertaken. Starting in September 2017, goose roost surveys, focussing specifically on the pink-footed goose (a qualifying interests of the Firth of Forth SPA and Ramsar sites), were undertaken once every two weeks until the end of March 2018. Survey methodology followed Gilbert et al. (1998).
- 3.2.2 The number (and species) of geese roosting in the survey sectors was recorded and their spatial locations marked on a paper map. Additionally, the number of geese flying over, landing in the survey sectors from another site or taking off from the survey sectors to another site was noted.
- 3.2.3 Analysis of the goose survey data was undertaken to estimate the population size and distribution of geese within the survey area over winter.

Goose Survey Results

- 3.2.4 Pink-footed geese roosted overnight within the survey area, with a peak of 1,285 roosting birds recorded on 20 October 2017. All observations, with the exception of four observations (a total of 16 birds), were recorded roosting on the saltmarsh habitat on the south of the estuary, to the east of the Kincardine Bridge. No geese were observed on the north side of the estuary in the survey area.
- 3.2.5 A total of 46 flyovers (totalling 4,055 individual geese) were recorded during the survey period, with flocks ranging from single birds to a peak of 1,200 (recorded in October 2017).
- 3.2.6 Table 4 presents the monthly peak counts of pink-footed geese recorded. The counts include all individuals recorded, including birds recorded as flying or loafing, with specific peak roost counts presented separately.

Table 4: Monthly Peak Counts of Pink-footed Geese

Data Method	Sept 2017	Oct 2017	Nov 2017	Dec 2017	Jan 2018	Feb 2018	Mar 2018	Winter Peak Count	Winter Mean Peak Count
Monthly Peak Counts	7	3,249	824	225	2,739	1,594	2,206	3,249	1,549
Peak Number Roosting	0	1,285 (20-Oct)	758 (07-Nov)	18 (21-Dec)	1,498 (17-Jan)	502 (16-Feb)	1,755 (08-Mar)	1,755 (08-Mar)	829.6

(dd-month) = date of record, if applicable.

Species Accounts from TTTC surveys and Goose Roost Surveys

3.2.7 Overall, 19 qualifying interests of the Firth of Forth SPA and Ramsar sites were recorded within the survey area. Full species accounts are provided in Table 5.

Table 5: Wader and Wildfowl Species Accounts

Species	Species Accounts	Species Habitat Use with Relevance to Study Area (SNH, 2016)
Bar-tailed godwit * ^	Bar-tailed godwit was recorded on sixteen occasions during the TTTC all on the mudflats on the southern side of the bridge. A peak of 17 bar-tailed godwit was recorded in November 2017. This represents the winter peak and monthly peak count for bar-tailed godwit. Bar-tailed godwit were recorded feeding, roosting and loafing throughout all tidal states during the survey period.	Intertidal mud Saltmarsh
Common scoter *	Common scoter was recorded once during the surveys, loafing in the estuary on the southern side of the bridge. This single record indicates that common scoter rarely utilise the estuary near Kincardine.	Open water Intertidal mud
Cormorant *	Cormorant was recorded regularly over the survey period with a total of 243 records pertaining to 584 individual birds. Of these records only 32 were made in the northern sectors; a distinct preference for the southern side of the bridge was noted in the survey area. A monthly peak count of 31 cormorants was recorded in October 2017. This peak count also represents the winter peak count for this species. Cormorants fish within the estuary and were	Open water Intertidal mud

Species	Species Accounts	Species Habitat Use with Relevance to Study Area (SNH, 2016)
	frequently recorded in groups loafing on the saltmarsh and mudflats drying their wings.	
Curlew *	A total of 535 records of curlew were made during the TTTC surveys with a monthly peak count of 290 on 1 February 2018. This count also represents the winter peak count for this species. Curlew was recorded in larger numbers over the winter, as with other species showing preference for the mudflats and estuarine habitats within the southern survey sectors.	Intertidal mud Saltmarsh
Dunlin *	A small number of records of dunlin were made during the TTTC surveys, all within 2017. A monthly peak count of 25 dunlin was recorded on 7 November 2017, loafing on mudflats south of the bridge. This peak count also represents the winter peak count for this species.	Intertidal mud Saltmarsh
Eider *	Records of eider were made in summer 2017 on both sides of the bridge. A monthly peak count of four eider was made in April 2017. All individuals were recorded during high tide. No winter observations of eider were made during the surveys.	Open water Intertidal mud
Golden plover * ^	Only recorded in the southern sectors, golden plovers were recorded on two occasions during the TTTC surveys. A monthly peak count of 65 golden plover was made in October 2017, all of which were roosting on the saltmarsh. This represents the winter peak count for this species. Golden plover was only recorded in October and November 2017.	Intertidal mud Saltmarsh
Goldeneye *	Goldeneye was only recorded during the winter surveys in December 2017 and January 2018. A peak count of one over the winter indicates that the area around the Kincardine Bridge is not important in supporting this species over winter.	Open water Intertidal mud
Knot * ^	A peak count of seven knot were recorded on 20 March 2018. This count also represents the winter peak count for this species. Knot were only recorded in February and March 2018 within the survey area and likely use the mudflats within the survey area sporadically for foraging over-winter, likely favouring more coastal areas.	Intertidal mud Saltmarsh
Lapwing *	Lapwing was recorded only to the south of the bridge. A peak count of 27 flying lapwing was recorded on 12	Intertidal mud Saltmarsh

Species	Species Accounts	Species Habitat Use with Relevance to Study Area (SNH, 2016)
	<p>October 2017 however this flock was not observed on land within the survey area. Lapwing on the ground were observed as individuals or in groups of two only. It is likely that lapwing use the fields within the wider area.</p>	
<p>Mallard *</p>	<p>The most frequently recorded waterfowl species within the survey area, mallard was recorded a total of 371 times over the TTTC surveys. Mallard were often observed roosting on the pipelines in the northern sector of the survey area at low tide. Mallard were recorded across the survey area and showed no obvious preference to the northern or southern survey sectors. A monthly peak count of 90 was recorded in September 2017 and this represents the winter peak count for this species.</p>	<p>Open water Intertidal mud Saltmarsh</p>
<p>Oystercatcher *</p>	<p>Oystercatcher was recorded regularly over the survey period and a total of 261 records were made. A peak count of 113 oystercatcher was recorded on 1 February 2018. This count represents the winter peak count for this species. Oystercatcher was recorded in similar numbers in the winter and during the spring/summer months, however the monthly peak counts are higher over winter. Both sides of the estuary are used by oystercatcher and they appear to show less preference for the mudflats to the south than other waders recorded during the TTTCs.</p>	<p>Intertidal mud Saltmarsh</p>
<p>Pink-footed goose * ^</p>	<p>Pink-footed goose was the most recorded goose species within the survey area, recorded in large numbers particularly over winter. A total of 190 records of pink-footed geese were made during the TTTC of which 180 records were made on the southern side of the bridge. A monthly and winter peak count during the TTTC surveys of 1,021 geese was made on 9 March 2018, however the targeted goose roost surveys returned a monthly peak count of 3,249 geese in October 2017 which represents the overall winter peak for this species. Pink-footed geese were observed roosting on the mudflats and saltmarsh to the south east of the bridge during the goose roost surveys, with many remaining to feed whilst others left the roost site.</p>	<p>Open water Intertidal mud Saltmarsh</p>

Species	Species Accounts	Species Habitat Use with Relevance to Study Area (SNH, 2016)
Red-breasted merganser *	A total of 27 records of red-breasted merganser were made during the TTTC surveys, with most records pertaining to loafing birds. A peak count of six birds was recorded in July 2017, February 2018 and April 2018. This species was more frequently recorded during the spring/summer months and more than half of the records were made in the southern sectors of the survey area. A peak winter count for red-breasted merganser of 6 birds was recorded.	Open water Intertidal mud
Redshank * ^	Redshank was recorded on most of the surveys during the TTTC survey period and were recorded throughout the tidal states. Records of redshank were made on both sides of the estuary and a monthly peak count of 120 was made on 6 October 2017. This count represents the winter peak count for this species. Notably more redshank were recorded over winter than in the spring/summer months during the TTTC surveys.	Intertidal mud Saltmarsh
Ringed plover *	One loafing ringed plover was recorded in May in survey sector S2. This record was the only observation of ringed plover over the survey period. Habitats within the survey are suitable for this species for foraging, however ringed plover generally breed in coastal habitats.	Intertidal mud Saltmarsh
Sandwich tern * ^	Sandwich terns were mostly recorded in the summer, with a monthly peak count of 45 in August 2017. The majority of records pertain to small numbers of terns flying over the survey area. All records of tern were made in on the southern side of the estuary. A winter peak count of one was recorded during the surveys. No records of Sandwich tern were made between September 2017 to March 2018.	Open water Intertidal mud
Shelduck * ^	Shelduck was recorded frequently in the spring/summer and a monthly peak count of 680 shelduck was recorded on 31 July 2017 (590 roosting, and 90 feeding, on the mudflats to the south east of the bridge). A winter peak count of 31 shelduck was recorded during the surveys.	Open water Intertidal mud Saltmarsh
Wigeon *	A total of 89 records of wigeon were made during the TTTC with all but two records from the winter months. A monthly peak count of 136 wigeon was recorded in	Open water Intertidal mud Saltmarsh

Species	Species Accounts	Species Habitat Use with Relevance to Study Area (SNH, 2016)
	February 2018. This count also represents the winter peak count for this species. Wigeon was frequently recorded in the southern sectors of the survey area, with only one record of a pair of loafing wigeon on the north side of the estuary within the survey area.	

* SPA Qualifying Interest

^ Ramsar Qualifying Interest

4 References

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