Otter Estuary Bird Disturbance Monitoring late October 2022 - mid March 2023

Undertaken as part of the Promoting Adaptation to Changing Coasts (PACCo) initiative



The Otter Estuary, Budleigh Salterton in East Devon







Introduction

The Otter Estuary is a SSSI and is important for some breeding birds and perhaps more significantly, a number of wintering and migrant birds that rely on the greater estuary area to feed and rest before moving on to breeding or wintering grounds. These include important wintering species such as Blacktailed Godwit, Brent Goose, Wigeon and Teal.

Significant changes to the estuary are being carried out through the Lower Otter Estuary Restoration Project (LORP), a managed realignment scheme on the adjacent land that will reconnect it to the estuary and create 28ha of mudflats and 27ha of transitional marsh and salt marsh.

A key part of LORP sets out to create compensatory habitat to mitigate for coastal defence work carried out on the Exe Estuary SPA and the consequent overall reduction in the amount of inter-tidal habitat as a result of coastal squeeze. Therefore, the Otter Estuary should become an outlier of the Exe Estuary SPA and should be linked with the Exe in its international protection for birds.

An important measure of LORP's success will be the number of birds that are attracted to this new habitat for feeding and resting and its ability to provide a safe refuge. During the last few years numerous ad hoc reports of disturbance to birds using the estuary have been received, varying from dogs off leads to inappropriate recreational kite surfing and paddle boarding. This clearly showed the need to record such disturbance events in a more structured way, with the resulting data being valuable for informing the approach to future visitor management in relation to LORP and to help provide evidence for the recreational impact on birds using the site.

This study was set up to test this using snapshot counts, similar to those undertaken as part of recreational disturbance studies on the Exe Estuary.

Method

Fifteen minute 'snapshot' vantage point counts were carried out between October 2022 and March 2023. The same set Vantage Point (VP) was used for each survey, situated near the mouth of the estuary, looking north. From this VP a wide expanse of the estuary was scanned with binoculars and telescope to a distance of around 440 metres.

The survey area boundary is illustrated on the recording form map shown on **appendix 1**.

The Vantage Point location and scanning area is shown on **map 1** overleaf.



MAP 1: location of vantage point

All waterbirds using the site were counted and recorded. In addition to the bird counts, all people, dogs and recreational activities within the survey area were mapped on the recording form for any potential disturbance events.

The response of the birds to any such disturbance events was recorded using the following codes:

Alert: A

Walk/Swim: W or S

Short Flight (less than 50m): SF

Major Flight: MF

Visits were conducted over a range tidal states and weather conditions and across different days of the week. Other information in relation to tide and weather was also recorded and is included in the appendices.

Results

A total of 45 visits were made between the 30th October 2022 and 16th March 2023, equating to 11.25 hours of observation. (December and January counts were fewer compared to other months due to the unavailability of the surveyor.)

Full details of each 15 minute count can be seen in a table (appendix II)

Recreational use of the site

- The most commonly recorded activities were walking and dog walking which took place along the edge of the survey area, mostly along the footpath below the shingle ridge just below the VP. This was also the footpath from where most dogs entered the survey area.
- On 11 of the survey visits, people entered the survey area. This amounted to 49 people, of which all but three were on foot. These three relate to two paddle boarders and a kite surfer See below.
- On 19 of the survey visits, dogs off leads, or on long leads, entered the survey area. This amounted to 41 dogs in total across all visits.
- On two survey visits in March, people were observed within the survey area walking or present on the salt marsh and included a dog off a lead on one occasion.
- Kite surfing and paddle boarding were recorded on single dates, both Sundays, in October and February respectively.
- No other recreational activity was recorded during the VP surveys.



Kite surfer in estuary 30th October 2022 by Chris Townend

Birds' use of the site

- Within the defined survey area, an overall total of 4,784 birds were recorded across all 45 watches, made up of 28 species.
- Of the 28 species recorded, 10 species in particular were considered to be most at risk from disturbance events. This is based on the frequency of sightings and the feeding/ roosting areas recorded during the surveys, as well as from personal observations by the surveyor over the last few years. These 10 species are: Brent Goose, Shelduck, Wigeon, Teal, Little Grebe, Black-tailed Godwit, Curlew, Dunlin, Ringed Plover and Redshank.
- The most commonly recorded species recorded during the survey was Wigeon with a total of 1,942 recorded over the 45 visits and a peak count of 164 birds present on the 12.03.23.
- The second most numerous species was Herring Gull, with a total 954 across the 45 counts and a peak count of 200 on 05.01.23. Black-headed Gull was the third most numerous with a total of 585 birds across all counts and a peak count of 170 on 10.02.23.
- The least common species were Common Gull, Mediterranean Gull, Kittiwake, Kingfisher, Snipe, Golden Plover, Pintail and Grey Heron, each with an overall total of less than five birds across all watches.
- On any single visit, the maximum count of birds present in the survey area was 381 on 05.01.23. The watch with the lowest number of birds was the first visit on 30.10.22 which coincided with a kite surfer on the site.



Wigeon using the estuary 12th March 2023 by Chris Townend

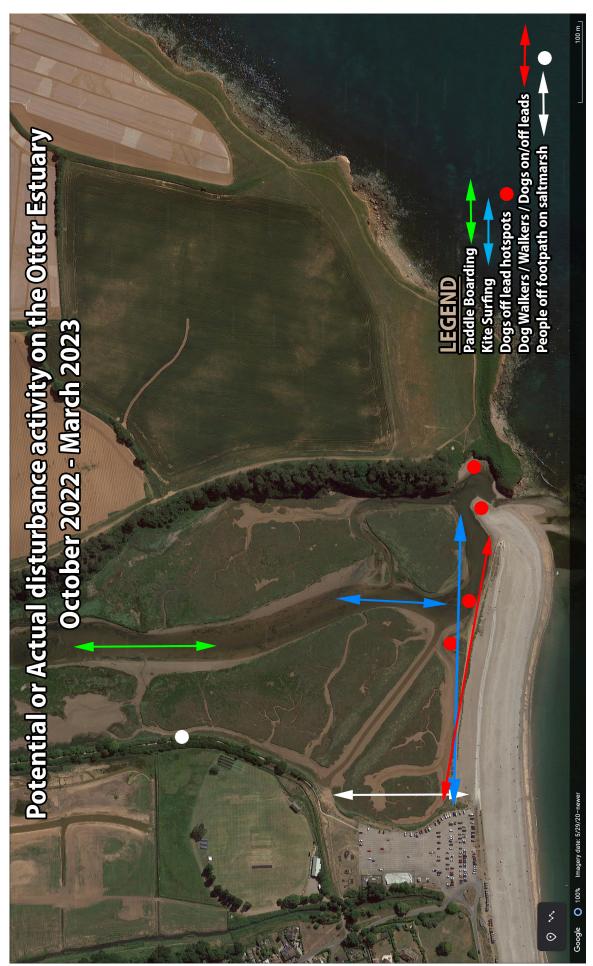
Disturbance events

- Out of the 45 survey visits a total of 271 birds were disturbed. From the total of 4,784 birds recorded, this amounted to a disturbance response from 5.7% of all birds.
- 14 Vantage Point surveys resulted in a total of 271 birds being disturbed.
- There were another 13 surveys which did not result in disturbance and although there were incursions into the survey area and birds were often present nearby, no disturbance was recorded.
- On six occasions birds were disturbed by people and/or dogs simply on the footpath below the shingle ridge that did not venture into the survey area.
- The most common cause of a disturbance response was dogs off leads, which caused a disturbance response during 12 of the 45 watches, most often resulting in a short flight response, though walking/swimming and major flights were also recorded.
- A single kite surfer was present on the first survey visit on 30.10.22. The kite surfer was already present within the site at the start of the watch and remained for the whole 15 minutes. There were just six birds present in the survey area at this time, four of which were flushed, three of them taking a major flight. It was observed that shortly after the 15 minute survey, the kite surfer left the site and groups of wigeon and teal immediately arrived onto the estuary. During the watch, three dunlin were flushed by the kite surfer and were also flushed separately by a dog walker and dog off the lead.
- Two paddle boarders, paddling together, were observed on a single watch on 12.02.23. A total of 111 of the 116 birds present (96%) were disturbed and resulted in a major flight response.



Dark-bellied Brent Geese using the estuary 13th March 2023 by Chris Townend

Map 2: Locations of all potential and/or actual disturbance events



Conclusions

People generally kept to footpaths, though on two occasions people were seen on or walking onto the salt marsh.

Most of the disturbance incidents were a result of dogs off leads running into habitat from the lower path that runs below the shingle ridge. The response by the birds was generally a short flight or walking/swimming away.

Kite surfing, while only present on a single watch, was associated with a lack of birds in the estuary, with birds returning after the activity had ended. It is assumed that the arrival of the kite surfer had displaced birds away from the estuary prior to the survey starting. Birds later returned when the kite surfing activity ended. Therefore, while this activity was not frequently recorded, when it did occur, it resulted in a very high disturbance event.

There was also just one incident involving paddle boarders, but nearly all the birds present responded with a major flight, again, suggesting that when this activity does occur, it creates a very high level of disturbance.

Both these highly disturbing activities occurred at the weekend.

Recommendations

Further disturbance monitoring would certainly be worthwhile during the summer months on the estuary when recreational activity increases. Although wintering birds such as Wigeon and Teal will be absent from the site during this period, other species such as Shelduck do breed nearby and use the site. It is during this time when Shelduck are very susceptible to disturbance events as they bring very young chicks to the estuary to feed. Disturbance events from recreation at this time become more critical if adults are flushed and the chicks can then be predated on by gulls.

Any future monitoring of disturbance must also include the newly created habitat areas from the Lower Otter Restoration Project.



Shelduck family on the Otter estuary, May 2019 by Chris Townend

Chris Townend, Freelance Ornithologist, March 2023

APPENDIX I: Recording Form (Front)

				A	ppendix I				
Name			Da	te		Time			
Temp		Cloud	Wi	nd speed		Wind direction			
Rain	none	light/	drizzle	steady		Entire area visible	Υ	N	
Tide	Low (pler	nty expo	osed mud)	Rising (mud s	still exposed)	Falling (mud still exposed)	High		
	condition								
Potential	disturbar	ice eve	nt? Y	N		Record on map as dots craft. Use activity			
	7 0)			WO ANA		_	/	/=
				Samuel		- Sery	A THE STATE OF THE		
			Vales						
8					740	Estrucio Flori (Tito	5		
Note spe	cies count	50 and dis	100	ode if relevant	200 Meters		arter Post		3
Brent Go				le Egret		Black-tailed Godwit			
Canada G			Sha			Turnstone			
Barnacle				rmorant		Dunlin			
Mute Swa				ter Rail		Snipe			
Shelduck				orhen		Common Sandpiper			
Shoveler			Co			Redshank			
Wigeon				stercatcher		Black-headed Gull			
Mallard				wing		Great B backed Gull			
Teal			_	ged Plover		Herring Gull			
Little Gre	be			imbrel		Lesser B backed Gull			
Grey Her				rlew		Sandwich Tern			
3. cy 11c1									

APPENDIX I: Recording Form (Back)

A CTI (177)		endix I Contin	iucu	DICTION	VICE CO	
ACTIVITY (DISTURBA	NCE CODE	
	Dog on lead	DI		Alert		A
	Dog off lead	Dx		Walk/Swim		W or S
	Dog walker	DW		Short flight	SF	
	Jogger	J		Major fligh	MF	
ntertidal a	=	F		No respons	NR	
	Walker (without dog)	W				
	Kids playing	KP				
	Picnic/sitting on beach/bench	Р				
	Bird/wildlife watcher	BR				
	Wind surfer on water	WS				
	Rowing boat	Rb				
	Kite surfer on water	Ks				
vater baset	Canoe/kayak on water	Ca				
	Stand Up Paddle board on water	SUP				
	Swimmer	Sw				
Please not	te details of any other activities as rele	evant.				
Please rec	ord the number of each - e.g. 3DW, 20	Ox, 1Dl				
(3 dog wa	lkers with 2 dogs off lead and 1 dog o	n lead)				
DISTURBA and occure	NCE EVENT - Y if activity coincides with ed within 200m of birds; or there was VER: measured on an eight point scal covered in cloud, and so on up to 8 O	a behavioural res	ponse reco	orded for bird	ds	
DISTURBA and occure CLOUD CO of the sky	ed within 200m of birds; or there was OVER: measured on an eight point scal covered in cloud, and so on up to 8 O	a behavioural res	ponse reco	orded for bird	ds	
DISTURBA and occure CLOUD CO of the sky	ed within 200m of birds; or there was OVER: measured on an eight point scal covered in cloud, and so on up to 8 O	a behavioural res	ponse reco clear sky , o overcast.	orded for bird one Octa beir	ds ng 1 /8	on
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DISTURBA and occure CLOUD CO of the sky WIND SPE Force 0 1 2 3 4 5 6 7	DVER: measured on an eight point scal covered in cloud, and so on up to 8 O Description Calm Light Air Light Breeze Gentle Breeze Moderate Breeze Fresh Breeze Strong Breeze Near Gale	a behavioural res le, 0 Oktas being c ktas - completely Speed km <1 1-5 6-11 12-19 20-28 29-38 38-49 50-61	knots 1-3 4-6 7-10 11-16 17-21	Smoke rise Direction s but not wir Wind felt o wind vane Leaves and motion; lig Raises dust branches m Small trees wavelets fo Large branc Whole tree walking aga	Specifications of the second s	moke drift ves rustle; gs in constar tended paper; sma ay; crested and water otion on; difficult
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Appendix II: Otter Estuary Disturbance Monitoring

														F	Peak coun	t of specie	es (BTO (Code)							Type & Number o otential Disturban Activities	nce	No. of Birds Response to Disturbance	Numbe	rs of Birds	Numbers of entering the	People/ Dogs survey area	
# DATE DAY	COUNT		CLOUD OKTAS		WIND RADRN VIS		STATE OF TIDE	Time of HT or LT	BG CG	G MS SU	J WN	MA T.	PN LC	6 H. E	T CA K	MH RE	PCUI	BW DN	SN R	GP E	BH GB	СМ М	HG LI	KI DI	Dx DW W Ks	Pb A	W/S SF MF	Total No. recorded	Total No. disturbed	Total people	Total Dogs	Notes in relation to disturbance
1 30/10/22 SUN	09.55 - 10	.10 15	5/8	6	SSW	None	High no mud exposed	9.25 HT	0 0	2 0	0	0 0	0 0	0 0	0 0	0 0	0	0 3	0 0	0	1 0	0 0	0 0	0	1 1 1		1 3	6	4	1	0	Single Kite Surfer within red area flushed 3 DN and 1 BH. Present throughout whole 15 minute session. Kite Surfer departed shortly after survey period and 55+ Wigeon and 15+ Teal appeared within the survey area. 1 DW and 1Dx on footpath below shingle ridge and both flushed 3 DN too.
2 31/10/22 MON	15.43 - 15	.58 15	8/8	5		onstant - eavy	_ow plenty of mud exposed	16.13 LT	0 90	0 0	40	0 5	0 4	0 1	2 0	0 0	2	0 0	0 1	0	0 11	0 0	2 0	0	1 1		1	158	1	0	0	1 DW and 1Dx on footpath below shingle ridge caused 1 ET to fly a short distance.
			8/8	6	SSW No		Rising mud still exposed	12.34 HT	0 0	0 0	26	0 0	0 1	0 2	! 1 0	0 3	0	0 0	0 2	0	0 21		25 0	-				81	0	0	0	No potential disturbance activity recorded in survey area.
4 06/11/22 SUN			8/8				_ow plenty of mud exposed	10.54 LT	0 0	0 0	22	2											18 7					123	0	0	0	2 DW and 1 DI and 2 W on footpath below shingle ridge. No disturbance recorded. Footpath below shingle ridge: 3 Dx (2 of these Dx enter survey area) 4 DW and 1 DI.
5 06/11/22 SUN	15.00 - 15	.15 12	5/8	4	SW No	one F	Rising mud still exposed	17.05 HT	0 0	0 0	27	0 0	0 0	0 1	0 0	0 0	0	0 0	0 0	0	0 0	0 0	0 0	0	2			28	0	0	2	Ball thrown into water and dog enters but no birds nearby.
6 09/11/22 WED	08.36 - 08	.51 10	3/8	4	WSW No	one F	Falling mud still exposed	06.52 HT	0 0	0 0	75	5 0	0 0	2 7	0 0	0 0	0	0 0	1 1	0	4 1	0 0	14 0	0	1		8	110	8	0	1	1 Dx inside survey area & 1 DW on path below shingle ridge associated with the Dx. 8 Wigeon swim away.
7 10/11/22 THUR	15.39 - 15	.54 13	8/8	5	SSW No	one F	Rising mud still exposed	13.39 LT	0 0	0 0	99	4 0	0 3	0 3	2 0	0 0	2	0 0	0 3	0	1 16	0 0	2 0	0	2			135	0	0	2	2 Dx enter survey area into water off path below shingle ridge, but no disturbance recorded. Also on footpath 1 W, 3 DW, and 1 DI
8 12/11/22 SAT	15.25 - 15	.40 15	2/8	3	SSE No	one L	_ow plenty of mud exposed	14.33 LT	0 0	0 0	56	5 7	0 2	0 1	1 0	0 4	1	0 0	0 4	0	2 2	0 0	1 0	0	1		1	86	1	0	1	1 Dx inside survey area. 1 Curlew walked away. Plus 1 DW on footpath below shingle ridge associated with the Dx.
9 13/11/22 SUN	15.20 - 15	.35 15	3/8	3	E No	one L	_ow plenty of mud exposed	14.57 LT	0 0	0 0	12	9 40	0 2	0 0	3 0	0 2	2	0 0	0 3	0 4	40 0	0 0	4 0	0 1	3 1			117	0	1	4	1 DW and 1 DI into survey area and 3 Dx in survey area too, but no disturbance recorded. Also 4 DW on footpath below shingle ridge. Plus 13 W on footpath below ridge.
10 16/11/22 WED	12.05 - 12	.20 10	8/8	3	SW No	one F	Falling mud still exposed	10.44 HT	0 0	0 1	25	0 4	0 1	0 2	0 0	0 0	1	0 0	0 2	0	3 7	0 0	22 0	0	4 2 2		1	68	1	4	4	3 Dx enter survey area involved in flushing 1 Egret. Another Dx and 2 DW also enter survey area at mouth of Estuary but no birds present at that location. Also 2 LORP workmen enter survey area but no birds nearby. In addition to this, 1 DL and 1 DW and 4 W on footpath below shingle ridge.
11 19/11/22 SAT	08.55 - 09	.10 0		2	NW No	one F	High no mud exposed	08.06 LT	0 0	0 0	73	0 0	0 0	0 0	2 0	0 2	3	0 1	0 3	0	15 3	0 0	5 0	0	2		8 4 2	107	14	0	2	2 Dx enter survey area and 1 DW on footpath. 2 RP Major flight and WN some (8) walked and some (4) Short flight.
12 21/11/22 MON				4	W No		High no mud exposed	16.25 HT												0	0 0							29	0	0	0	All on footpath below shingle ridge: 2 DI, 2 DW, 2 W
13 26/11/22 SAT 14 27/11/22 SUN			6/8 8/8	4	S No		Falling mud still exposed Low plenty of mud exposed	14.06 LT 14.46 LT	0 0	0 0		0 0	0 0			0 2		-		0	1 0		2 0 5 0		1 1		2	22	2	0	0	 1 Dx and 1 DW on footpath but caused 2 RP to flush. 1 Dx enters survey area, but no disturbance recorded. Also 4 W and 2 DW and 1 Dx on footpath.
15 30/11/22 WED			7/8	2			Falling mud still exposed	11.09 HT	0 0	0 0						0 1							26 2	-	1 1		21	111	21	0	0	1 DW and 1 Dx on footpath but caused 1 ET and 20 WN to flush. WN feeding right by footpath.
			7/8		NE No		Rising mud still exposed	14.39 HT	0 0	0 0	6	5 0	0 2	0 0	0 0	0 2	2	0 0	0 7				2 0					35	0	0	0	No potential disturbance activity recorded in survey area.
17 06/12/22 TUE	10.48 - 11	.03 6	7/8	2	NE No	one L	ow plenty of mud exposed	11.09 LT	0 0	0 0	52	2 12	0 4	0 0	0 0	3 1	1	0 4	0 2	0	2 0	0 0	2 0	0				85	0	0	0	No potential disturbance activity recorded in survey area.
18 08/12/22 THUR			6/8	2			_ow plenty of mud exposed	06.24 HT	1 0	0 0									0 7	0	2 0		6 0					76	0	0	0	No potential disturbance activity recorded in survey area.
19 09/12/22 FRI20 10/12/22 SAT	15.12 - 15		1/8 5/8	1	N No		Rising mud still exposed Low plenty of mud exposed	13.15 LT 13.50 LT	0 0	0 0		14 57	- '		0 0		0	0 -	0 4	0	3 0	0 0						171 154	0	0	0	1 Dx 1Dl 1 DW and 1 W all on footpath below shingle ridge and no disturbance recorded.No potential disturbance activity recorded in survey area.
				_																								68	4	0	4	1 Dx briefly into survey area and caused 2 T and 2 WN to flush. 1 DW and 1 W also on footpath below
21 11/12/22 SUN			8/8			007	Falling mud still exposed		0 4																1		2 2		4	0	1	shingle ridge. Some Fog further up estuary but not affecting much of survey area.
22 12/12/22 MON 23 12/12/22 TUE			8/8	2	ENE No		High no mud exposed Low plenty of mud exposed	08.30 HT 14.44 LT	0 0	0 2		10 44											22 0		1		30	121 175	30	0	0	No potential disturbance activity recorded in survey area. 1 X W on footpath below shingle ridge flushed 30 WN feeding right by footpath.
24 14/12/22 THUR			8/8	2	N No		_ow plenty of mud exposed		0 0	0 0						2 0							3 0					188	0	0	0	No potential disturbance activity recorded in survey area.
25 26/12/22 MON	15.21 - 15	.36 6	1/8	2	W No	one L	_ow plenty of mud exposed	14.46 LT	0 0	0 0	0	0 0	0 2	0 1	0 1	1 2	1	0 1	0 3	0	5 0	0 0	4 0	0	4 11			21	0	11	4	10W and 2 Dx enter survey area around estuary mouth but no birds in that location. 1 Dx in bay opposite estuary mouth and another 1 Dx and 1 W, but no birds at location. Plus 1 DW and 1 Dx and 5W on footpath below shingle ridge.
26 01/01/23 SUN	15.55 - 16	.10 9	8/8	2	SW No	one F	Falling mud still exposed	13.46 HT	0 0	0 0	1	0 0	0 0	0 0	0 0	1 0	0	0 1	0 1	0	0 0	0 0	16 0	0	1			20	0	0	1	1 Dx enters survey area but no disturbance recorded. DW on shingle ridge above
27 03/01/23 TUE	10.57 - 11	.02 7	1/8	1	NW No	one F	Rising mud still exposed	14.53 HT	0 0	0 0	5	0 0	0 1	0 0	0 0	1 2	0	0 3	1 1	0 2	25 0	0 0	10 0	0	4 3 6			49	0	9	4	1 DW and 1 Dx enter survey area area briefly below shingle ridge, but no disturbance recorded. Plus 2 DW and 2 Dx running across survey area on salt marsh below ridge, but no birds present. In addition 6W and 1Dx enter survey area at mouth of estuary but no birds at location. Plus 6W and 2Dx along path below ridge
28 05/01/23 THUR			8/8		SW No		_ow plenty of mud exposed	11.32 LT	4 0	0 1	40	10 0											200 1					381	0	0	0	No potential disturbance activity recorded in survey area.
29 11/01/23 WED	09.27 - 09	.42 8	3/8	3	SW No	one F	High no mud exposed	08.56 HT	5 0	0 2	110	4 35	0 0	0 1	0 0	0 0	0	0 0	0 0	0	0 0	0 0	0 0	0	3		2 3	157	5	0	3	5 BG swam away from 1 Dx in survey area and later 3 of the 5 were chased by 2 Dx in survey area.
30 13/01/23 FRI	16.23 - 16	.38 7	7/8	3	SW No	one L	Low plenty of mud exposed	15.59 LT	0 0	0 0	1	4 3	0 0	0 0	0 0	1 0	2	0 0	0 2	0	0 5	0 0	180 0	0	1 1			198	0	1	1	 1 DW and 1 Dx enter survey on saltmarsh area below shingle ridge and onto estuary mouth spit but no disturbance recorded. Plus 2 Dx and 1 DW on footpath below ridge. No disturbance. 1 DW and 1 Dx on footpath below shingle ridge flush 5 DN, 1 RP and 60 WN. Dog and owner remained
31 25/01/23 WED	16.00 - 16	.15 7	1	1	NW No	one L	_ow plenty of mud exposed	15.19 LT	0 0	0 0	92	13 20	0 1	0 0	0 0	0 1	1	0 5	0 4	0 1	10 0	2 1	6 0	0	1 1		66	256	66	0	0	on footpath.
32 10/02/23 FRI	16.14 - 16	.29 10	1	1	W No	one L	_ow plenty of mud exposed	15.10 LT	0 0	0 0	33	2 6	0 0	0 0	0 0	5 1	1	0 0	0 6	0 1	70 0	0 1	5 0	0				230	0	0	0	No potential disturbance activity recorded in survey area.
33 12/02/23 SUN	13.33 - 13	.48 9	1	3	ESE No	one F	Falling mud still exposed	16.05 LT	0 0	2 0	8	1 11	0 0	0 0	0 0	4 1	1	0 1	0 3	0	8 1	0 0	75 0	0		2	1 110	116	111	2	0	Two paddle boarders travelling south from the north end of estuary. As approached the survey section, the following birds responded by an MF 5 T, 1 RK, 75 HG and 1MS. Plus 28 WN not previously visible during count. A second MS also swam away rather than took flight.
34 02/03/23 FRI	17.53 - 18	.07 5	2/8	2	N No	one L	_ow plenty of mud exposed	14.57 HT	0 0	0 2	37	2 3	0 0	0 0	0 0	1 0	1	0 0	0 7	0	1 0	0 0	105 4	0				163	0	0	0	No potential disturbance activity recorded in survey area.
35 04/03/23 SAT	12.45 - 13	.00 6	8/8	2	ENE No	one L	_ow plenty of mud exposed	11.00 LT	0 0	0 0	19	0 1	0 0	1 0	0 0	4 0	0	0 0	0 5	0	5 0	0 0	4 0	0	2 6			39	0	6	2	1 DW and 1 Dx on marsh just south of viewing platform but no birds nearby. 1 W on footpath below shingle ridge. 1 W in survey area of small bay opposite mouth of estuary, plus 1 DW and 1 Dx in survey area at mouth of estuary plus 3 W, but no birds present at location.
36 04/03/23 SAT	16.45 - 17	.00 6	8/8	1	ENE No	one F	Rising mud still exposed	17.03 HT	16 0	0 1	18	2 2	0 1	0 0	0 0	2 0	0	0 0	0 5	0	2 0	0 0	16 1	0 2				66	0	0	2	<u>2 DW on footpath</u> below shingle ridge and <u>2DI on but on very long leads enter water into survey area but no disturbance recorded. Also 1 W, 1 DW and 1 Dx on footpath below shingle ridge. 2 W on spit by mouth of estuary.</u>
37 06/03/23 MON			8/8	3	W No		Rising mud still exposed	18.28 HT	0 0	0 0	81	2 2	0 1	0 0	0 0	3 0	0	0 0	0 7	0	8 0	0 0	0 1					105	0	0	0	1 W on footpath below shingle ridge and no disturbance recorded.
38 07/03/23 TUE			7/8	1			Rising v little mud still exposed		0 0	0 2	38	0 0	0 0	0 0	0 0	1 0	0	0 0	0 3	0	1 0	0 0						52	0	0	0	1 Dx runs down to water edge from shingle ridge but not entering water and no disturbance recorded.
39 11/03/23 SAT 40 12/03/23 SUN			8/8 7/8		SE Lig SW No		High no mud exposed High no mud exposed	08.50 HT 09.16 HT		2 3		3 0 0 12	0 0			0 0		0	0 0				13 0		1			59 202	0	1	0	No potential disturbance activity recorded in survey area. 1 W enters survey area at mouth of estuary, but no birds at location.4 W on footpath below shingle ridge.
41 12/03/23 SUN			8/8				Rising mud still exposed		0 0																3 3			45	0	3	3	2 DW, 1 W and 1 Dx on footpath below shingle ridge and 1 Dx running into survey area on salt marsh but no birds nearby to disturb. Plus 1 W, 1 DW and 1 Dx on same footpath. Then same people (3 W and 2Dx) enter survey area at mouth of estuary, but no birds at location.
42 13/03/23 MON	11.25 - 11	.40 11	8/8	6	SW No	one H	High no mud exposed	09.45 HT	3 0	0 1	43	0 0	0 0	0 0	0 0	0 0	0	0 0	0 0	0	1 0	0 0	47 0	0				95	0	0	0	No potential disturbance activity recorded in survey area.
43 14/03/23 TUE	08.40 - 08	.55 6	2/8	3	NW No		Rising v little mud still exposed	10.22 HT	0 2	0 4	11	3 2	0 0	1 0	0 0	0 0	0	0 0	0 2	0	0 0	0 0	0 0	0	2		3	25	3	0	2	3 Mallard flushed by 2 Dx and 1 DW on footpath below shingle ridge. First dog ran into salt marsh by footpath and the other was playing fetch in estuary water nearby.
44 14/03/23 TUE	17.18 - 17	.33 7	1/8	2	WNW No	one F	Rising mud still exposed	16.18 LT	0 0	0 2	107	0 2	0 0	0 0	2 0	0 0	0	0 0	0 3	0	0 0	0 0	32 0	0 1	1 9			148	0	10	1	8W crossing the salt marsh from the slipway channel to the beach. 1 DW and 1 DI and 1 W present at spit by mouth of estuary, but no birds present at location.
45 16/03/23 THUR	08.37 - 08	.52 10	8/8	4	S No	one H	High no mud exposed		0 2																			39	0	0	0	No disturbance.
									42 98	8 27	1,942	135 39	2 3 52	2 4 3	8 18 1	35 40	35	16 74	3 10	8 2 5	85 141	2 2	954 2	2 4	42 22 30 1	2 0	20 131 120	4,784	271	49	41	

LEGEND TO APPENDIX II								
BTO CODE	SPECIES							
BG	Brent Goose							
CG	Canada Goose							
MS	Mute Swan							
SU	Shelduck							
WN	Wigeon							
MA	Mallard							
T.	Teal							
PN	Pintail							
LG	Little Grebe							
H.	Grey Heron							
ET	Little Egret							
CA	Cormorant							
KF	Kingfisher							
МН	Moorhen							
RP	Ringed Plover							
CU	Curlew							
BW	Black-tailed Godwit							
DN	Dunlin							
SN	Snipe							
RK	Redshank							
GP	Golden Plover							
ВН	Black-headed Gull							
GB	Great Black-backed Gull							
СМ	Common Gull							
MU	Mediterranean Gull							
HG	Herring Gull							
LB	Lesser Black-backed Gull							
KI	Kittiwake							
	D							
Peak Species Counts in Red	Bird counts (part or all) involved in a disturbance event.							
Potential Disturbance Activities Numbers in Pink	Disturbance activity that arose from people and/or dogs remaining on public footpath and outside of red survey area.							