

APPENDIX 10.13

OBSERVATIONS FROM THE RUNCORN GAP OF BIRD MOVEMENTS IN 2005 BETWEEN THE MIDDLE MERSEY ESTUARY (SPA) AND THE UPPER MERSEY ESTUARY (LOCAL WILDLIFE SITE)

Observations

- 1.1 Although individual gulls could not be identified at the start of the morning influx, it was possible to determine, with confidence, that the majority of the first birds to fly up the Estuary were Black-headed Gulls followed between 10-15 minutes later by the larger gulls, namely Herring Gull, Lesser Black-backed Gull and Greater Black-backed Gull.
- 1.2 The approximate numbers of each species are 10,000 Black-headed Gulls, 10,000 Herring Gulls, 8,000 Lesser Black-backed Gulls and several hundred Greater Black-backed Gulls. The immature gulls are the last to fly up the Estuary.
- 1.3 The gulls observed flying up or down the Estuary at the beginning and end of each day flew between 20 and 100 metres above the road level on the bridge. When flying up the Estuary in the morning, up to 90% of gulls flew along the northern bank, and when flying out at dusk up to 80% flew along the southern bank and up to 1 kilometre inland.
- 1.4 Only when the resident pair of Peregrine Falcons was hunting near the bridges did the gulls scatter along the whole width of the Estuary. Almost all the gulls flew over the lowest section of the bridge and rarely at its highest point.
- 1.5 Only small numbers of Common Gulls flew up the Estuary past the bridge, several hundred at the most. It was possible to observe that most of the Common Gulls roosted on the large sandbank in the Middle Mersey Estuary below the bridge. Only small numbers of Common Gulls have been recorded in the Upper Mersey Estuary during the surveys carried out over the four years preceding the surveys.
- 1.6 The number of gulls flying up the Estuary past the bridge in the morning was always lower than the number flying out in the evening. It is probable that thousands of gulls fly up the Estuary over land on both sides of the bridge. The number of gulls flying up the Estuary in the morning ranged from between 15,000 to 20,000 whilst the number of gulls flying out of the Estuary in the evening ranged from between 25,000 to 33,000.
- 1.7 During the previous four years of surveying the Upper Mersey Estuary there has never been more than 15,000 gulls counted within this part of the Estuary. It is known that many thousands fly east past the Upper Mersey Estuary to feed on a landfill site five kilometres to the east at Moore (Arpley Landfill Site) on the southern fringes of Warrington. A preliminary survey of this site in December 2005 by ERA Partnership revealed around 15,000 to 30,000 gulls feeding and flying over and around the site in the late afternoon, prior to leaving for their roosts and flying in the direction of the Runcorn Gap.
- 1.8 Up to 250,000 gulls roost within the Middle Mersey Estuary and the surrounding coastline, and approximately 10% of these fly up and down the Estuary past the bridge. The numbers of gulls flying up and down the Estuary are not influenced by the status of the tide or even the weather, although this may change during extreme weather conditions.
- 1.9 The large sandbank in the Middle Mersey Estuary about one kilometre below the bridge usually holds between 2,000 and 3,000 gulls. If the tide submerges the sandbank in the

morning, approximately half of the gulls roosting there fly up the Estuary past the bridge but if it is covered by the tide in the afternoon all the gulls fly down to the Middle Mersey Estuary. If the incoming tide is relatively low many birds retreat to the inner bend of the sandbank which is almost permanently dry.

- 1.10 When the lower sandbank was covered by the tide in the morning there did not appear to be any greater number of birds flying up the Estuary. When the sandbank was exposed in the afternoon there were only slightly lower numbers of birds roosting on the sandbank, suggesting there is little mixing of birds between the Upper Mersey Estuary and the Middle Mersey Estuary. The numbers and species composition of gulls on the sandbank appears to be stable regardless of the time of day it is exposed, except in the late afternoon when the birds are flying towards their roosting areas.
- 1.11 Other species observed to be using the sandbank include Lapwing (2000+), Curlew (40+), Cormorant (10+), Dunlin (20+), Shelduck (30+) and singles of Oystercatcher, Heron and Redshank. None of these species flies up the Estuary when the sandbank is covered by the tide, whatever the time of day.
- 1.12 Large numbers of Lapwing, Golden Plover and Teal roost and feed within the Upper Mersey Estuary but no large-scale movement of birds was observed past the bridge during the survey. The largest flocks were 250+ Lapwing and 40+ Teal flying up the river from the Middle Mersey Estuary.
- 1.13 Other species recorded flying past the bridge included Dunlin (40+), Greylag Goose (23), Shelduck (30+), Redshank (4+), Cormorant (30+), Heron (6+), Tufted Duck (20+) and Mallard (20+). There does not appear to be much interaction between the individual populations of these bird species which use the Upper Mersey Estuary and the Middle Mersey Estuary.
- 1.14 The mudflats along the northern bank below the bridge provide feeding habitat for occasional Redshank, Heron, Cormorant and very low numbers of Black-headed Gulls and Mallard. No other species was recorded feeding on the mudflats during the entire survey.
- 1.15 The only birds that fly beneath the bridges are Black-headed Gull, Heron, Cormorant, Mallard, Dunlin and Redshank. However only single birds or very small flocks were observed flying beneath the bridges.
- 1.16 Throughout the October and November surveys there was intermittent passage of low numbers of migrating Fieldfare, Redwing and small passerines flying high over the river in a north-south direction. Flock sizes ranged from between 10 to 50+ individual birds and some of these were mixed. They were unaffected by the present road and rail bridges.

Conclusions

- 1.17 With the exception of the mass movement of gulls up and down the Estuary at dawn and dusk, there appears to be little interaction between the populations of birds in the Upper Mersey Estuary and the Middle Mersey Estuary (SPA). It is concluded from the current observations that the bird populations of the Upper Mersey Estuary and the Middle Mersey Estuary are separate populations with only very small numbers of individuals of each species passing the two existing bridges.
- 1.18 The bridges are probably not an obstruction or deterrent to the different bird species because the open habitat of the Middle Mersey Estuary is a more suitable environment than the Upper Mersey Estuary for the roosting flocks of birds.
- 1.19 It is likely that when the Arpley Landfill Site higher up the Estuary closes, the number of gulls using the Upper Mersey Estuary in the winter will fall dramatically, possibly by as much as 50% or more. This number is calculated by subtracting the average numbers of gulls recorded within the Upper Mersey Estuary during the previous four years of surveying from the number of gulls passing the bridge at dawn and dusk.

- 1.20 The power station lagoons provide shelter within the Upper Mersey Estuary when there is adverse and severe weather or when there are raptors hunting over the Upper Mersey Estuary. Although the lagoons are man-made and are in constant use, large numbers of birds have been observed there, sheltering from harsh weather and from hunting birds of prey.
- 1.21 The lagoons also provide feeding habitat for large numbers of Lapwing, Golden Plover and Teal. Other species using the lagoons for breeding and feeding include Grey Plover, Ruff, Ringed Plover, Little Ringed Plover, Snipe, Jack Snipe, Redshank, Greenshank, Common Sandpiper, Green Sandpiper, Tufted Duck, Wigeon, Shoveller, Gadwall, Pochard and Pintail, and many summer breeding visitors and passerines.
- 1.22 The ungrazed saltmarsh between the existing Silver Jubilee Bridge and the power station lagoons is a very important breeding habitat for Skylark, Meadow Pipit and Redshank. Most of the saltmarsh in the north-west of Britain is grazed by both sheep and cattle, and is therefore unsuitable, unfavourable or less favourable breeding habitat for these species, which prefer to nest in tussocky grassland which provides protection from predators.
- 1.23 The ungrazed salt-marsh also contains good population of small mammals that provide food for rare winter visiting raptors such as Marsh Harrier, Hen Harrier and Merlin.

APPENDIX M: RAW DATA

Key to Abbreviations: Bird Species:-

GB = Great Black-backed Gull
 LB = Lesser Black-backed Gull
 HG = Herring Gull
 CM = Common Gull
 BH = Black-headed Gull
 CA = Cormorant
 CU = Curlew
 SU = Shelduck
 DN = Dunlin
 MA = Mallard
 OC = Oystercatcher
 FF = Fieldfare
 RE = Redwing
 RK = Redshank
 H = Heron
 PW = Pied Wagtail

Key to Abbreviations: Bird Flight Behaviour:-

fu = Flying up the Estuary
 fd = Flying down the Estuary
 20m arl = 20 metres above the road level of the bridge
 30m arl = 30 metres above the road level of the bridge etc

Individual gulls were not recorded during the dawn and dusk influxes. The numbers of gulls flying within these times are recorded on the histograms.

Survey 1 – Day 1: 25-10-2005

Weather: Overcast, occasional heavy showers

Temp: 16°C

Wind speed: 20-25 mph SW

High Water: 05.00 and 17.21 hours

Low Water: 11.14 hours

Tide: high at start of survey

Time	Bird presence and movements	Other observations
9.26	PW	Feeding below bridge on north bank
9.28	FF x 40+ flying NW-SE 40m arl	Lower sandbank becoming exposed
9.35	FF x 30+ flying NW-SE 100m arl	
9.45	BH	Feeding below both bridges
9.55	Teal x 20+	Feeding 200m arl
10.02	FF x 2 flying NW-SE 100m arl	
10.03	RK x 2	Feeding on north bank mudflats below bridge
10.08	FF x 3 flying N-S 40m arl	
10.41	CA	Fishing below bridge
10.53	Pair of MA	Swimming under bridges
11.06	CA x 2	Feeding below bridge
11.07	LB	Flying 10m arl
11.12 -11.30	1 gull every 2 minutes flying upstream	
11.34	LB x 4	Flying 20m arl
11.36	LB x 2	Flying 30m arl
11.37	LB x 2	Flying 20m arl
11.59	FF x 15 flying N-S 80m arl	
12.00	CM x 4 fu 25m arl	
12.05	LB x 2 fu 20m arl	
12.07	BH x 2 fu below bridge	Tide fully out
12.08	LB x 11 fu 25m arl	
12.13	BH x 8	Feeding below bridge
12.15	LB fu 20m arl	
12.16	HG x 3 fu 50m arl	
12.25	LB x 4 fu 20m arl	
12.33	CM x2 fd 30m arl	Landed on sandbank 0.5km west of bridge
12.34	BH x 16 landed on water	Feeding 100m downstream of bridge
12.36	LB x 3 fu 20m arl	
12.36	LB fu 40m arl	
12.37	HG fu 40m arl	
12.42	LB fu 20m arl	
12.45	CM x 4 fd	Landed on mudflats of north bank 150m downstream of bridge
12.46	HG fu 30m arl	
12.51	LB x 4 fu 20m arl	
12.53	LB x 2 and CM fd 20m arl	
12.57	HG fu 20m arl	
12.58	HG x 4 fu 20m arl	
13.02	BH x 6 fu under bridge	
13.06	LB fu 30m arl	
13.10	LB x 2 fu 30m arl	
13.12	HG x 2 fu 30m arl	
13.13	HG x 7 fu 40m arl	
13.14	BH x 5	Feeding under bridge
13.16	LB x 6 fu 40m arl	
13.19	BH x 20+ fu 20m arl	
13.19	LB fu 20m arl	

13.21	GB fu 10m arl	
13.24	BH x 2 fu 20m arl	
13.31	BH x 2	Feeding under south side of bridge
13.35	CM fu 20m arl	
13.36	BH x 2 fu 30m arl	
13.39	HG x 2 fu 20m arl	
13.44	LB fu 30m arl	
14.01	BH x 2 fd 10m arl	
14.13	BH x 4 fu under bridge	
14.17	HG fu 20m arl	
14.33	BH fd 10m arl	
14.44	BH x 2 fu 20m arl	
14.45	BH x 4	Feeding below south side of bridge
14.47	BH	Feeding below bridge
14.50	BH fu 10m arl	
14.55	BH fu 40m arl	
14.58	Peregrine Falcon	Hunting along western side of railway viaduct
15.16	SU x 4 fu under S section of bridge	Wind gusting up to 30mph
15.18	LB x 2 fd 30m arl	
15.23	BH x 7	Feeding below southern part of bridge
15.25	BH fd 10m arl	Landed on N mudflats 120m west of bridge
15.28	BH x 4 fd 10m arl	Landed on N mudflats 120m west of bridge
15.29	BH	Feeding under bridge
		Incoming tide reaches the bridge
15.39	BH x 5 fu 20m arl	
15.43	CA fu under centre of bridge	
15.45	HG fu 30m arl	
16.07	Pair of Peregrine Falcons	Hunting along railway viaduct
16.18		Large sandbank W of bridge fully covered but no birds disturbed from it flew up the Estuary
16.36	Hundreds of Starlings	Start to roost on bridge
17.12	SU x 5 fd 70m arl	
17.29	1,000s of Starlings	Starlings landing on the bridge

Survey 1 – Day 2: 26-10-05

Weather: Sunny, scattered cloud am, cloudy occasional rain in pm.

Temp: 16 °C

Wind speed: 10-15 mph SW

High Water: 06.31 and 19.02

Low Water: 12.59

High tide at start of survey

Time	Bird presence and movements	Other observations
7.58	SU x 2 fu 30m arl	
8.00	FF x 4 flying N-S 80m arl	
8.05	MA x 2 fu below bridge	
8.08	CA fu 40m arl	
8.11	Flock of 50+ mixed finches	Flying N-S 40m arl
8.18		Only a small part of the sandbank downstream of bridge is exposed
8.22	FF x 50+ flying N-S 40m arl	
8.24	MA x 4 swimming downstream	Swimming west under bridge
8.30	L x 250+ fu 100m arl	
8.32	FF x 40+ flying N-S 100m arl	
8.32	L x 100+ fu 80m arl	
8.43	TU x 4 fu 50m arl	
8.45	L x 60+ fu 60m arl	

8.46	SU x 4 fu 50m arl	
8.48	WP x 500+ flying NE-SW 80m arl	
9.09	FF x 35+ flying N-S 60m arl	
9.09		Sandbank down river of bridge fully exposed
9.10	Peregrine Falcon	Hunting along viaduct
9.13	FF x 30+ flying N-S 50m arl	
9.20	WP x 100+ flying NE-SW 100m arl	
9.21	Small mixed flock of finches (20+) flying N-S 30m arl	
9.35	PW x 2	Feeding on northern mudflats below bridge
9.36		Sandbar down river now fully exposed
9.58	FF x 25+ flying N-S 100m arl	
10.04	H fd under bridge	
10.07	Pair of Linnet flying N-S 20m arl	
10.23	Mixed flock of FF and RE (50+) flying NW-SE 60m arl	
10.39	SU fu 20m arl	99% of gulls flying up the Estuary fly over the northern bank
11.02	LB x 4 and GB fu 30m arl	
11.02	LB fu 20m arl	
11.05	LB x 2 fu 20m arl	
11.06	BH x 8 fd 10m arl	
11.06	LB fu 20m arl	
11.07	GB and LB fu 10m arl	
11.07	LB fu 20m arl	
11.09	BH fu 20m arl	
11.11	HG fu 20m arl	
11.11	LB x 2 fu 50m arl	
11.14	LB fu 30m arl	
11.16	LB x 2 fu 20m arl	
11.19	LB x 2 and GB fu 30m arl	
11.24	LB fu 30m arl	
11.28	Greylag Geese x 18	Feeding on the south bank grass verge 250m up river of the bridge
11.29	LB fu 30m arl	
11.31	LB fd 10m arl	
11.32	BH x 2 fu 20m arl	
11.35	LB x 2 fu 30m arl	
11.37	LB x 4 fu 20m arl	
11.38	LB x 2 and HG x 2 fu 25m arl	
11.42	BH x 3 fu 10m arl	
11.46	GB x 2 and LB x 2 fu 20m arl	
11.50	LB x 6 fu 20m arl	
11.59	LB x 5 fu 20m arl	
12.00	CA	Feeding below bridges
12.03	LB and BH x 2 fu 20m arl	
12.05	BH x 2 fu 20m arl	
12.06	CM fu 15m arl	
12.07	BH fu 40m arl	
12.07	RE x 4 fu 50m arl	
12.10	HG x 4 fu 30m arl	
12.11	HG fu 20m arl	
12.25	BH fu 20m arl	
12.31	LB x 2 fu 20m arl	
12.32	LB fu 30m arl	
12.34	LB fu 25m arl	
12.36	LB and HG fu 25m arl	
12.36	RE x 12 flew N-S 30m arl	
12.37	LB x 2 fu 30m arl	
12.46	LB fu 30m arl	

12.47	LB fu 25m arl	
12.52	BH fd 10m arl	
12.52	LB x 2 fu 20m arl	
12.53	LB fu 25m arl	
12.55	LB x 4 fu 30m arl	
12.55	RE x 6 Flying N-S 40m arl	Low tide
13.03	LB x 3 fu 20m arl	
13.03	RE x 26 flying NW-SE 40m arl	
13.04	FF x 4 flying NW-SE 40m arl	
13.08	HG x 3 fu 20m arl	
13.09	Carrion Crow x 3 fd 10m arl	
13.10	RE x 21 flying NW-SE 40m arl	
13.10	GB x 2 fu 20m arl	
13.11	BH x 2 and HG fu 30m arl	
13.12	CM fu 20m arl	
13.13	HG x 2 fu 25m arl	
13.16		Hovercraft taking samples from large sandbank downstream of bridge. All disturbed birds flew down the Estuary.
13.19	LB x 2 fu 20m arl	
13.22	LB x4, HG x 2 and BH x 10+ fu 20m arl	– probably disturbed by hovercraft.
13.27		Hovercraft moved upstream below bridges
13.29	BH x 2 fu 20m arl	
13.32	LB fu 20m arl	
13.33	LB and HG fu 20m arl	
13.38	LB x 2 fu 30m arl	
13.39	BH x 4 fd under bridges	
13.47	BH x 2 fu 20m arl	
13.48	LB x 3 fu 20m arl	
13.53	LB x 2 fu 20m arl	
13.59	HG x 20+ fd 40m arl	
14.02	LB fu 20m arl	
14.07	RE x 33 flying NW-SE 50m arl	
14.08	LB x 2 fu 20m arl	
14.09	BH x 3 fd 10m arl	
14.12	HG fu 20m arl	
14.13	GB x 2 fu 30m arl	
14.15	LB x 3 fu 30m arl	
14.18	BH x 5 fu 20m arl	
14.19	LB fd 10m arl	
14.23		H feeding on sandbank 200m downstream of bridge
14.24	BH x 3 and CM x 2	Feeding on north bank mudflats 150m downstream of bridge
14.31	LB fu 10m arl	
14.32	HG x 8 fu 20m arl	
14.32	LB x 4 fu 10m arl	
14.35	CM x 4 and BH x 2 fu 20m arl	
14.37	RK x 2 fu	Flew 1 metre above water level under bridge
14.38	MA x 2 swam downstream under bridges	
14.40	LB x 11 fu 20m arl	
14.42	LB x 3 fu 20m arl	
14.47	FF x 12 fu 40m arl	
14.48	CM x 6 and BH x 2 fu 20m arl	
14.53	LB x 8 fu 20m arl	
14.54	BH x 20+ fd 30m arl	
14.58	LB fu 20m arl	
14.59	LB x 2 fu 30m arl	
15.01	LB	Feeding under both bridges

15.02	CA	fishing mid-channel under both bridges
15.06	LB and BH fd 20m arl	
15.07	HG fd 20m arl	
15.13	BH fd 20m arl	
15.15	LB fd 20m arl	
15.21	Mixed flock of FF and RE (28) flying NW-SE 40m arl	
15.22	LB x 4 fu 20m arl	
15.27	CU fu 30m arl	
15.44	BH fu 20m arl	
15.45	FF x 16 flying N-S 25m arl	
15.50	CA	Fishing in water under north side of bridge
15.54	LB x 2 fd 20m arl	
15.59	BH fd 20m arl	
16.00	BH x 2 fd 30m arl	
16.04	CA	Fishing under bridge
16.15	CA fu	Flew 10m above water under both bridges
16.18	FF x 2 flying NW-SE 40m arl	
16.50	Starlings	Starting to roost on the bridge
17.46	RK x 2 fu under north side of bridge	
18.20	SU x 10 fd 30m arl	

Survey 1 – Day 3: 27-10-2005

Weather: Sunny, occasional hazy high cloud.

Temp: 20°C

Wind speed: 5-10 MPH S

High Water: 08.03 and 20.25

Low Water: 14.31

High tide at start of survey

Time	Bird presence and movements	Other observations
8.18	CA fishing mid-channel under bridge	
8.26	Large mixed flock of FF and RE (200+) flying NW-SE 40m arl	
8.35	MA x 2 swimming down river under bridge on north bank	
8.37	FF x 3 flying NW-SE 20m arl	
8.44	Large mixed flock of FF and RE (50+) flying NW-SE 40m arl	
8.50	SU fu 60m arl	
8.54	Peregrine Falcon	Struck Feral Pigeon that drowned in the river
9.48	RE x 40+ flying N-S 150m arl	
9.54	FF	Feeding on northern bank between bridges
10.06		Large sandbank below bridges just become visible. Number and species composition of birds very similar to previous surveys.
10.26	CA	Feeding under bridges
10.36	RE x 20+ flying NW-SE 40m arl	
11.00 to 11.25	5-10 gulls per minute fu	
11.08	Mixed flock of finches (60+) flying N-S 25m arl	
11.26	LB x 4 fu 30m arl	
11.27	BH fd 10m arl	
11.29	LB fu 30m arl	
11.30	LB x 2 fu 20m arl	
11.33	Mute Swan fu	Flew 10m above water level under both bridges
11.33	BH fd 20m arl	

11.34	LB x 5 fu 30m arl	
11.40	LB x 2 fu 20m arl	
11.44	GB fu 10m arl	
11.45	2 Peregrine Falcons	Hunting along the railway viaduct
11.45	HG x 4 fu 30m arl	
11.45	RE x 4 flying NW-SE 40m arl	
11.46	RE x 6 flying NW-SE 50m arl	
11.47	LB x 2 fu 30m arl	
11.48	HG fu 30m arl	
11.52	LB fu 30m arl	
11.52	CA	Fishing in northern channel under bridges
11.57	LB x 4 fu 40m arl	
12.00	GB fu 30m arl	
12.01	MA x 2 fu 20m arl	
12.01	LB fu 30m arl	
12.02	LB fu 30m arl	
12.04	LB fu 40m arl	
12.05	GB fu 40m arl	
12.07	LB x 4 fu 30m arl	
12.09	Small flock of Dunlin (12) fu	Flew 3m above water on N side of bridge
12.15	BH fd 20m arl	
12.16	Mixed flock of finches (20+) flying NW-SE 40m arl	
12.17	LB x 3 fu 30m arl	
12.18	HG x 2 fu 30m arl	
12.19	HG and BH fu 20m arl	
12.19	LB x 4 fu 30m arl	
12.20	BH x 20+	Feeding under both bridges
12.23	CM x 2 and BH	Feeding on north bank mudflats 100m downstream of the bridge
12.30	LB x 2 fu 30m arl	
12.32	LB x 2 fu 40m arl	
12.33	LB x 3 fu 50m arl	
12.35	BH x 2 and HG fu 20m arl	
12.37	LB x 8 fu 30m arl	
12.44	LB x 6 fu 50m arl	
12.46	LB x 2 fu 30m arl	
12.49	BH x 2 fu 20m arl	
12.51	LB x 3 and HG x 2 fu 40m arl	
12.53	LB x 2 fu 30m arl	
12.57	LB x 2 fu 30m arl	
12.58		Large sandbank downstream of bridge fully exposed
13.04	LB x 3 fu 20m arl	
13.08	BH x 20+ fu under both bridges	
13.12	Kestrel	Hunting along N bank 100m downstream of railway viaduct
13.14	LB x 8 fu 30m arl	

NOTE: The constant stream of gulls flying up the Middle Estuary are coming from the lower reaches of the Middle Estuary and not the large sandbank, which can be observed up to 3km from the observation point under the bridge.

13.19	GB and BH fu 30m arl	
13.27	LB x 6 fu 70m arl	
13.30	BH	Feeding under both bridges
13.32	GB x 2 and HG x 3 fu 30m arl	
13.36	BH x 2 fd 20m arl	
13.37	LB x 2 fd 40m arl	
13.38	GB x 2 and LB x 6 fu 80m arl	

13.42	GB x 2 fu 30m arl	
13.43	HG x 3 and GB fu 30m arl	
13.47	BH x 3 fu 10m arl	
13.54	LB x 2 fu 40m arl	
14.00	LB x 4 fu 30m arl	
14.05	HG x 5 fu 30m arl	
14.06	HG x 2 fu 40m arl	
14.11	LB x 3 fu 30m arl	
14.14	BH x 4 fd 10m arl	
14.15	LB x 2 fu 30m arl	
14.23	LB x 8 fu 30m arl	
14.27	LB x 2 fu 20m arl	
14.31	GB and LB fu 20m arl	Tide now at low ebb
14.34	LB fu 30m arl	
14.34	HG fd 20m arl	
14.39	GB and LB fd 40m arl	
14.40	LB x 2 fu 30m arl	
14.40	HG fd 30m arl	
14.41	LB fu 30m arl	
14.42	LB x 2 fu 30m arl	
14.43	BH x 2 fd 10m arl	
14.48	BH x 6	Feeding on N shore 50m downstream from bridge
14.52	CA	Feeding under both bridges
14.57	LB x 2 fu 40m arl	
15.10	GB fd 40m arl	
15.11	BH fd 10m arl	Landed on north bank 100m downstream of viaduct
15.13	GB fu 20m arl	
15.15	Mistle Thrush flew S-N along viaduct	
15.16	HG fu 20m arl	
15.21	GB x 2 fd 50m arl	
15.22	BH x 4 fu 20m arl	
15.24	LB fu 30m arl	
15.25	HG x 3 fu 30m arl	
15.26	BH x 20+ fd 50m arl	
15.29	HG fu 30m arl	
15.33	BH x 2	Feeding mid-channel below bridges
15.40	LB x 2 fu 30m arl	
15.47	LB x 4 fu 20m arl	
15.49	LB fd 20m arl	
15.50	GB fd 40m arl	
15.52	GB and LB x 2 fd 40m arl	
15.52	CA	Feeding under bridges
15.54	GB x 2 and LB x 3 fd 60m arl	
15.55	Mixed flock of FF and RE (40+) flying N-S 10m arl	
15.56	LB x 3 fd 80m arl	
15.59	Small numbers of gulls beginning to fly down the Estuary	
16.18	RK fu below bridges	
16.22	CA	Feeding below bridges
16.42		Starlings starting to arrive on bridge to roost

NOTE: Due to the light winds the gulls are searching for thermals to gain altitude before flying over the bridges

Survey 1 – Day 4: 31-10-2005

Weather: Sunny, scattered cloud.

Temp: 15°C

Wind speed: 5-10 MPH SW

High Water: 10.03

Low Water: 4.24 and 16.34

Low tide at start of survey

Time	Bird presence and movements	Other observations
7.04		Kestrel hunting on north bank near bridges
7.05	Mixed flock of finches (30+) flying N-S	
7.06	MA x 5	Feeding on mudflats 100m downstream of viaduct
7.52	Mixed flock of finches (20+) flying N-S	
8.03	BH x 20+	Flying up and down river under bridges
8.33		Incoming tide just reaches the bridge

NOTE: AT 9.35 the large sand-bank below the bridge was covered in 20 minutes. 80% of the gulls displaced flew up the Estuary over the bridge. The remaining 20% stayed on the dry inner bend of the sandbank. A large flock of Lapwing flew down the Estuary as did the Curlew and Shelduck. The Canada Geese and Mallard stayed on the inner bend.

9.42	CA x 3 swept under bridges on the incoming tide	
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NOTE: The number of gulls flying up the Estuary appears to be smaller than in the previous surveys. They probably flew inland and out of view.

11.01	LB x 6 fu 30m arl	
11.02	CA fu under bridges	
11.05	LB x 2 fu 30m arl	
11.16	BH fd 10m arl	
11.17	BH x2 fd 10m arl	
11.23	BH x 2 fu 30m arl	
11.36	LB x 10 + fu 30-50m arl	
11.41	LB x 2 fu 30m arl	
11.52	HG x 5 fu 30m arl	
12.00	LB x 6, GB x 2 and HG x 6+ fu 50m arl	
12.05	BH fu 20m arl	
12.07	LB fu 30 arl	
12.15		Tide just beginning to recede
12.18	LB fu 30m arl	
12.23	LB x 5 fu 50m arl	
12.25	GB x 2 and LB x 3 fu 40m arl	

NOTE: 12.49: There has been very little movement of gulls today during high tide. It is probably due to there not being any sandbanks and mudflats exposed near the bridges. The gulls that have been flying up the Estuary have been at a higher altitude than normal suggesting they are flying from lower down the Estuary. The weather conditions are good so this cannot be a contributing factor for low numbers passing the bridge.

12.52	MA x 2 fu under bridges	
12.59	Peregrine Falcon	Hunting along the viaduct

NOTE: 13.09 Immediately after the lower sandbank was exposed it was covered by gulls and other birds from the lower Estuary. No birds came from the upper Estuary.

13.32	BH x 2 fd 20m arl	
13.33	CM x 2 fd 30m arl	Landed on sandbank downstream of bridge
13.37	BH x 2 fd 10m arl	
13.44	BH fd 20m arl	
14.14	LB fd 40m arl	
14.34	LB fd 30m arl	
14.48	LB x 3 fd 30m arl	

NOTE: 15.00: Walked over the bridge to assess numbers of gull visible within the upper Estuary. <10,000 were observed

15.04	BH x 2 fu 30m arl	
15.06	LB x 8 and GB x 2 fd 50m arl	
15.07	LB x 2 fu 30m arl	
15.08	LB x 5 and GB x 4 fd 40m arl	
15.10	LB x 10+ and GB x 2 fd 40m arl	
15.13	Small numbers of gulls beginning to fly down the Estuary	
15.34		Starlings arrive to roost on the bridge
16.06	CA fu under bridges	
16.07	H x 2	Feeding under bridges
16.18	CA fd 30m arl	

Survey 1 – Day 5: 1-11-2005

Weather: Sunny

Temp: 14°C

Wind speed: 18 MPH SW

High Water: 10.38

Low Water: 5.00 and 17.11

Very low tide at start of survey

Time	Bird presence and movements	Other observations
6.57	CA fd 40m arl	
7.02		Starlings leaving roost on the bridge
7.02	Peregrine Falcon	Hunting around both bridges
7.11	SU fu 40m arl	
7.21	FF x 10+ flying NW-SE 50m arl	
7.24	H	Feeding under both bridges
7.36	RE x 16 flying N-S 60m arl	
7.37	RE x 14 flying N-S 60m arl	
7.40		Tide at lowest ebb
7.46		2 Peregrine Falcons attacked Jay on exposed stony ground below bridge, lying 20m high before stooping. Jay escaped.
7.56	CA x 3 fu 40m arl	
8.09	RK x 2	Feeding on north bank under bridges
8.25	H and Carrion Crow	Feeding on north bank 100m downstream of bridge
8.55		Tide started to come in below bridge

NOTE: 10.24 Only 50% of the gulls disturbed from the lower sandbank flew up the Estuary. Approximately 1,000 stayed afloat in the area. Shelduck, Lapwing and Curlew flew down the Estuary

11.00	BH x 2 fu 10m arl	
11.03	BH x 4 fu 20m arl	
11.09	LB fu 30m arl	
11.17	BH x 2 fu 20m arl	
11.21	LB x 6 fu 30m arl	
11.22	BH x 16+	Feeding under bridges

11.23	GB fu 20m arl	
11.24	K hunting along the north bank	Hunting 100m downstream of bridge
		High tide reached within 1 metre of north wall directly below the bridge
11.24	LB x 3 fd 30m arl	
11.24	GB fu 20m arl	
NOTE: 11.27: The tide started to ebb. There was only a brief 2 minutes period before the flow of water reversed despite the wind blowing up the Estuary		
11.52	BH x 3 fu below both bridges	
12.09	Canada Goose fu below both bridges	
12.10	LB x 6 fu 40m arl	
12.23	BH x 2 fu 10m arl	
12.24	GB fu 40m arl	
12.36	BH x 6 fd 20m arl	
12.40	BH x 2 fu 10m arl	
12.46	LB fu 20m arl	
12.51	GB x 2 + LB x 3 fd 50m arl	
12.57	LB x 3 fu 20m arl	
13.04	BH x6 fu below both bridges	
13.05	CA x 2 fu below both bridges	
13.09	LB fu 30m arl	
13.15	BH x 2 fd 10m arl	
13.16	LB x 6 fd 30m arl	
13.27	GB fd 50m arl	
13.31	LB x 2 fd 50m arl	
13.46	LB x 2 fd 40m arl	
13.48		Lower sandbanks just exposed along outer bend of Middle Estuary and already contain many gulls and Hx5
13.50	BH x 7 fd 10m arl	
13.57	GB x 2 fd 60m arl	
13.59	LB x 3 fd 60m arl	
14.03	LB x 7 fd 30m arl	
14.04	GB and BH x 4 fd 20m arl	
14.06	BH x 5 fd 20m arl	
14.07	BH x 6 fd 20m arl	
14.09	LB x 8 fd 30m arl	
14.10	BH x 4 fd 10m arl	
14.13	BH x 4 fd 10m arl	
14.16	LB fu 20m arl	
14. 20	LB fu 30m arl	
14.22	GB fd 10m arl	
14.24	LB x 4 fd 30m arl	
14.25	GB, LB x3 and BH x4 fd 30m arl	
14.26	GB, LB and BH x2 fd 20m arl	
14.27	LB x 2 fu 30m arl	
14.29	GB fd 50m arl	
14.30	Mixed flock of 16+ gulls fd 50m arl	
14.31	Nine gulls fd 50m arl	
14.32	Peregrine	Peregrine hunting over large sandbank 0.5 km upstream from bridge
14.34	20+ gulls	Gulls feeding in last minute. Gulls may be setting off earlier due to the head-wind
14.36	Gulls started flying down the Estuary in low numbers.	
14.49	H fu under both bridges	
15.11	CA fu under both bridges	
15.47		Starlings beginning to roost on bridge

Survey 2 – Day 1: 3-11-2005

Weather: Sunny periods, scattered showers

Temp: 16 °C

Wind speed: 20 MPH SW with 30MPH gusts

High Water: 11.45

Low Water: 6.13 and 18.27

Low tide at start of survey

Time	Bird presence and movements	Other observations
6.29	First gulls visible flying up the Estuary	
7.15	CA fu 10m arl	
7.25		Starlings leaving roost on the bridge
7.25	FF x 6 flying N-S 80m arl	
7.29	MA x 6, CM, BH x 3 and RK	RK feeding on the north bank mudflats 50m down river of the viaduct
NOTE: The large sandbank downstream has a smaller number of gulls on it than usual (500+). There are also no Lapwing or Curlew.		
7.47	RE x 22 flying N-S 80m arl	
7.58	Canada Goose x 7 floated downstream under both bridges	
8.04		Tide still receding
8.06	Mute Swam x 3 fd 50m arl	
8.11	RE x 3 flying NW-SE 70m arl	
8.56	Large mixed flock of FF and RE (100+) flying N-S 100m arl	
9.06	CA floated downstream under bridges	
9.16	CA x 2	Fishing in the river directly below the bridge
9.18		Tide still ebbing
9.37	CA x 4	Drying their feathers on the sandbank 100m downstream of the bridge
9.50		A Yellow-legged Gull amongst the Lesser Black-backed Gulls on the sandbank
9.55		Tide turned in a "bore-like" manner
10.15	CA x 2 fd under bridges	
11.04	BH fu 30m arl	
11.05	LB fu 30m arl	
11.08	LB x 2 fu 30m arl	
11.11	LB x 2 fu 30m arl	
11.18	L x 30+ fd 40m arl	
11.19	LB x 3 and BH x 6 fu 30m arl	
11.20	LB fu 30m arl	
11.21	GB fu 40m arl	
11.23	BH x 3 fu 10m arl	
11.28	LB x 2 fu 30m arl	
11.31	LB x 4 and BH x 2 fu 30m arl	
11.36	BH fu 10m arl	
11.38	LB fu 20m arl	
11.41	LB x 4 fu 30m arl	
11.47	BH x 2 fd 10m arl	
11.57	LB x 2 fu 20m arl	
12.02	LB fu 30m arl	
12.08		High tide reaching to sandstone part of northern bank directly below bridge
12.11	LB fu 20m arl	
12.19		Tide started to ebb

12.22	LB fu 30m arl	
12.23	GB fu 50m arl	
12.26	BH x 3 fd under both bridges	
12.29	BH x 4 fd 20m arl	
12.34	LB fd 30m arl	
12.35	CA fd under bridges	
12.42	LB x 2 fu 30m arl	
13.01	BH fu 10m arl	
13.03	LB and BH fd 20m arl	
13.06	LB x 4 fu 30m arl	
13.19	BH x 2 fd 10m arl	
13.25		Peregrine hunting along railway viaduct
13.31	LB fu 30m arl	
13.32	BH x 2 fd 10m arl	
13.37	BH fu 20m arl	
13.38	LB x 6 fu 30m arl	
13.40	LB x 3 fu 30m arl	
13.41	LB fd 40m arl	
13.42	LB fd 30m arl	
13.55	BH x 2 fd 10m arl	
14.19	LB fu 30m arl	

NOTE: Heavy rain and strong gusts of wind in the last 30 minutes. Very little movement of any birds.

14.28	LB fu 30m arl	
14.29	BH x 4 fu 30m arl	
14.33	LB x 5 fd 40m arl	
14.35		Peregrine hunting along railway viaduct
14.35	LB x 5 and BH x 9 fd 40m arl	

NOTE: From this time during the survey all movements of birds are gulls flying downstream towards their roosting sites unless stated otherwise.

14.38		Lower Estuary sand bank still covered
14.57		Starlings beginning to roost on bridge
15.40		

NOTE: Due to the strong headwind the gulls were spread out over the entire Estuary and up to 0.5km inland. To ensure accuracy of numbers they were not counted until they had passed the line of sight against the super-structure of the bridge.

Survey 2 – Day 2: 4-11-2005

Weather: Sunny intervals early morning then heavy showers

Temp: 13°C

Wind speed: 20 MPH W

High Water: 12.20

Low Water: 6.49 and 19.05

Low tide at start of survey

Time	Bird presence and movements	Other observations
6.35		First gulls visible flying upstream
7.31	RK feeding on north bank mud flats between road and rail bridge	
7.34	CA feeding mid channel below bridge	
7.36	SU fu 30m arl	
7.38		Tide still ebbing
7.41	MA x 6 feeding on north bank mud-flat 75m downstream from viaduct	

NOTE: The large sand bank downstream from bridge is almost fully exposed but only contains a low number of gulls (250+) but more are arriving. No L or SU.
7.48

NOTE: As in previous surveys gulls fly mostly over north side of bridge in large numbers, BH first then larger adult gulls followed by large immature gulls (but not exclusively)

7.53 CA x 4 drying out on sand bank 200m down river from viaduct
8.24 CA feeding directly under viaduct
9.25

NOTE: Low tide – The sand bank and mud flats are not as extensive as on previous surveys because of the high river level due to heavy overnight rain

9.30		The intensity of the wind and rain increased dramatically in the last 15 minutes
10.03		Peregrine hunting under road bridge
10.35	CA fu under both bridges	
10.36	BH x 16	Feeding on N bank mud-flats 30m downstream from viaduct
10.39		Incoming tide reached the bridge, like a bore
10.43	RK fu under both bridges 20m from north shore	Lower sand bank beginning to be covered
10.45-11.20	Influx of gulls fu 500+	Sand bank becomes covered by tide
11.13	CA fd under bridge	
11.28	LB fu 20m arl	
11.41	LB x 2 fu 20m arl	
11.53	GB, LB x 2 and CM x 3 fu 30m arl	
11.54	LB x 3 fu 30m arl	
11.57	CM x 2 fu 20m arl	
12.01	LB x 4 fu 30m arl	
12.04	LB x 4 fu 30m arl	
12.15	LB fu 30m arl	
12.26	BH fd 10m arl	
12.32	LB x 2 fu 30m arl	
12.33	BH fd 10m arl	
12.34	LB x 4 fu 50m arl	
12.38	LB fu 40m arl	

NOTE: Another high tide up to sandstone part of north bank below bridge and totally covering the sandbank downstream, including the inner bend section

12.44	LB and BH fd 20m arl	
12.47	GB fd 40m arl	
12.51	LB x 2 fu 30m arl	
12.52	LB fd 10m arl	
13.01		Tide just beginning to ebb under the bridge the tidal equilibrium only lasts between 2-3 minutes
13.13	LB x 2 fu 30m arl	
13.27	BH x 4 fd 10m arl	
13.41	LB fu 30m arl	
13.42	LB x 2 fu 30m arl	
13.51	LB x 6 fu 30m arl	
13.55	BH x 2 fd 10m arl	
14.11	BH x 4 fu 10m arl	
14.17	LB x 4 fu 40m arl	
14.19	LB x 2 fu 30m arl	

14.26	BH x 2 fu below both bridges	
14.27	CA fu below both bridges	
14.36		Low bird movement probably due to very high wind speeds.
15.34		Rain eventually has stopped and sun came out but wind is still strong
17.07	Last gull flying down the Estuary	

Survey 2 – Day 3: 8-11-2005

Weather: Heavy showers then light rain

Temp: 13°C

Wind speed: 10-15 MPH S

High Water: 15.29

Low Water: 9.25 and 22.12

Ebbing tide at start of survey

Time	Bird presence and movements	Other observations
6.39	First gulls visible flying up the Estuary	
8.41	MA x 5 feeding in Estuary 100m Downstream from the bridge	
8.42		Almost all the sandbanks and mudflats now exposed
8.45	No L on lower sandbank and only very low numbers of CU and SU	
8.53	BH x 13, MA x 5 and CM x 2	Feeding on north bank mudflats 100m downstream from the railway viaduct
8.57	H	Feeding under both bridges
9.16		Both Peregrines hunting between the bridges
9.17	CA	Fishing 100m downstream of the bridge
9.25	MA x 4	Swimming downstream under bridges
10.07	FF x 20+ flying N-S 50m arl	
10.29	RK	Feeding on north bank directly below bridge
10.41		Low tide
11.06	LB x 2 fu 30m arl	
11.08	BH x 4 fd 10m arl	
11.11	LB x 3 and HG x 2 fu 30m arl	
11.14	GB fu 40m arl	
11.17	CA x 2	Feeding under bridges and landed on the sandbank 150m downstream of the bridge
11.23	LB x 3 fu 30m arl	
11.29	BH x 6 fu 10m arl	
11.37	LB x 2 fu 30m arl	Very heavy rain
12.02	BH fd 10m arl	
12.31	LB x 3 fu 30m arl	
12.32	BH fd under bridges	
12.37	BH x 3 fd 20m arl	
12.43	BH fu 20m arl	
12.51	BH x 5 fd 20m arl	
12.59	LB x 2 fu 30m arl	
13.06	BH x 4 fd 20m arl	
13.17	LB x 7 fu 30m arl	
13.24	BH x 2 fd 10m arl	
13.26	BH fd 10m arl	Tide turned and still raining heavily
13.31	LB fu 30m arl	
13.36	LB and CM fu 30m arl	
13.38	LB x 3 fu 30m arl	
13.41	LB x 5 fu 30m arl	
13.45	LB fu 30m arl	

13.47	LB x 2 and BH x 6 fu 20m arl	
13.51	LB x 3 fu 30m arl	
13.52	BH fd 20m arl	
13.55	CA	Feeding under bridges
13.56		Most of the sandbar downstream of the bridge and almost all of the displaced birds flew down the Estuary
14.15	GB fu 30m arl	The 8.1 metre tide appears to be rising at a slower rate than usual
14.18	LB x 10 fu 60m arl	
14.19	GB and LB x 3 fu 30m arl	
14.20	LB x 9 fu 30m arl	
14.21	GB x 2 fu 30m arl	
14.24	BH x 2 fu 30m arl	
14.28	LB fu 30m arl	
14.32	LB fu 30m arl	
14.37	LB x 2 and HG x 3 fu 30m arl	
14.38	LB x 3 fd 30m arl	
14.39	Mute Swan x 11	Feeding under both bridges in mid-channel
14.43	GB fu 30m arl	
14.44	BH x 2 fd 30m arl	
14.46	LB fd 30m arl	
14.49	GB fd 30m arl	
14.50		
NOTE: From this time in the survey, gulls flying downstream will be counted every minute and recorded on the histograms		
14.54		Starlings beginning to roost on the bridge
15.25		Peregrine hunting along the bridge
15.25	CA fd 40m arl	
15.26	CA fd under bridges	
15.42	CA fd 40m arl	
16.08	SU x 40+ fd 40m arl	
17.01	Visibility lost when 150 gulls per minute flying down the Estuary	

Survey 2 – Day 4: 9-11-2005

Weather: Sunny periods, scattered showers

Temp: 11 °C

Wind speed: 10-15 MPH W

High Water: 4.11 and 16.45

Low Water: 10.36

Low tide at start of survey

Time	Bird presence and movements	Other observations
6.27		First gulls become visible flying up the Estuary
8.29	Flock of 23 Greylag Geese fu 40m arl	
8.46		Peregrine hunting along viaduct
9.44		Tide still receding. Large sandbank downstream of the bridge contains between 600-700 gulls and small numbers of Curlew and Shelduck but no Lapwing
9.48	FF x 2 flying S-N along viaduct 20m arl	
10.31	Mistle Thrush flew S-N along viaduct 30m arl	
11.02	LB x 2 fu 50m arl	
11.03	C x 2 fd 20m a.r.l	
11.14	CA x 3 fd under bridges	Tide still ebbing and quite low

11.21 LB x 4 fu 50m a.r.l
 11.23 LB x 2 fu 40m a.r.l
 11.27 BH fd 10m a.r.l
 11.41 LB x 2 fd 20m a.r.l
 11.55 BH x 4 fu 10m a.r.l
 11.59 BH x 2 fu 20m a.r.l
 12.01 GB x 2 and LB x 2 fu 50m a.r.l
 12.09 LB x 2 fu 30m a.r.l
 12.11 CA fu below bridges and channel
 12.17 LB fu 20m a.r.l
 12.33 LB fu 30m a.r.l
 12.32 LB fu 30m a.r.l
 12.35 LB fu 30m a.r.l

NOTE: Tide low, weather conditions favourable, all sand bars and mudflats both upstream and downstream of the bridges, are exposed but very little bird movement

12.41 LB fd 10m a.r.l
 12.42 BH x 3 fd 10m a.r.l
 12.46 CA fu below bridges
 12.52 GB and LB x 3 fu 50m a.r.l
 13.01 LB x 4 fu 40m a.r.l
 13.09 GB fu 40m a.r.l
 13.18 LB x 2 fu 30m a.r.l

Tide turned almost imperceptibly.
 Increased wind blowing the water up

13.26 BH x 4 fd 10m a.r.l
 13.31 BH x 2 fd 20m a.r.l
 13.40 BH fd 10m a.r.l
 13.41 LB fu 30m a.r.l
 13.42 GB x 4 fd 60m a.r.l
 13.45 HG fd 20m a.r.l
 14.06 LB x 2 fd 20m a.r.l
 14.09 LB x 3 fd 60m a.r.l
 14.14 BH fu 30m a.r.l
 14.15 BH fd 30m a.r.l
 14.18 BH fd 40m a.r.l
 14.24 LB fu 30m a.r.l
 14.30 GB x 2 and LB x 4 fd 60m a.r.l
 14.34 GB fd 10m a.r.l
 14.35 GB fd 60m a.r.l
 14.41 GB x 2 fd 30m a.r.l
 14.48 LB x 4 fd 40m a.r.l
 14.50 LB x 3 and BH x 2 fd 30m a.r.l

NOTE: From this time all movement of birds recorded are of gulls flying downstream

15.01 BH x 50+ feeding on the north bank
 mudflats 70m below the viaduct

15.07 Tide just begun to turn under bridge

17.16 Last birds visible

Survey 2 – Day 5: 10-11-2005

Weather: Cloudy, sunny intervals

Temp: 14°C

Wind speed: 10-15 MPH SW

High Water: 5.35 and 18.04

Low Water: 12.12

High tide but beginning to ebb at start of survey

Time	Bird presence and movements	Other observations
6.43	First gulls flying up the Estuary	
7.21	CA x 3 fd under bridges	
8.34		Tide still high and covering sandbank below bridge
8.35	CA fu 30m arl	
8.54	RK fd	Feeding under bridges and landed on north bank mudflats 150m downstream of bridge
8.55	FF x 19 flying N-S 30m arl	
9.16		Lower sandbank now becoming exposed
9.59	MAX4	Feeding on north bank mudflats 100m below bridge
10.13	CA fd under bridges	
11.00	GB fd 40m arl	
11.03		Peregrine hunting along road bridge
11.07	LB fu 30m arl	
11.10	CA fd under bridges	
11.11	LBX2 fu 30m arl	
11.12	LB fd 20m arl	
11.18	LBX3 fu 40m arl	
11.21	CM fu 10m arl	
11.24	FF-30t flying n-s 40m arl	
11.28	LB fd 20m arl	
11.29	LBX4 fu 30m arl	
11.30	LBX3 fu 40m arl	
11.35	LBX2 fd 30m arl	
11.38	GBX2 & LBX3 fu 30m arl	
11.42	LBX6 fu 50m arl	Heavy rain sweeps in from the west
11.51	LB x 2 fu 30m arl	
11.59	BH x 4 fu 10m arl	
12.07	BH x 3 fu 20m arl	
12.16	LB x 3 fu 60m arl	
12.22	GB and LB x 2 fu 50m arl	
12.25	FF x15 flying n-s 40m arl 200m upstream of bridges	
12.33	BH x 2 fu 10m a.r.l	
12.37	CA x 2 fu under bridges	
12.38	LB x 4 fu 100m arl	
12.47	HG x 6 fu 20m arl	
12.58	BH x 6+	Feeding under bridges
13.01	LB x 3 fu 50m arl	
13.02	GB x 2 and LB x 2 fu 30m arl	
13.09	BH x 2 fu 10m arl	
13.21	BH x 3 fd 10m arl	
13.25	GB fd 60m arl	
13.31	LB x 2 fu 20m arl	Tide now low
13.33	LB fd 20m arl	
13.38	LB fd 30m arl	
13.43	LB x 3 fu 60m arl	
13.51	LB x 4 fu 50m arl	
14.00	LB x 3 and BH x 7 fu 30m arl	
14.04	GB x 2 fu 70m arl	
14.05	LB fd 20m arl	
14.06	H feeding in shallows 150m below bridge	
14.08	BH x 2 fd 10m arl	
14.11	BH x 3 fu 20m arl	
14.14	LB x 2 fu 60m arl	

14.15		Flock of Lapwing on sandbank 2km downstream of bridge
14.20	LB x 5 fu 60m arl	
14.22	CA feeding under the bridge in mid-channel	
14.24	LB x 31 fu 80m arl	
14.32	LB and BH fd 60m arl	
14.35	Small numbers of gulls beginning to Fly down Estuary.	
14.55	CA fd under bridges	
15.05	CA fd 40m arl	
15.26		Both Peregrines hunting along the bridges
15.35		Starlings starting to roost on the bridge
14.53	Last gulls visible flying down Estuary	

Survey 3; 19-12-2005

Weather: Cloudy, sunny intervals

Temp: 8°C

Wind speed: 5-10 MPH W

High Water: 13.12

Low Water: 7.25

Low tide at start of survey

Time	Bird presence and movements	Other observations
7.42	First gulls visible flying up the Estuary	
8.01	CA x 3 fu 20m arl	
8.15	RK feeding on N bank between bridges	
8.22	H feeding on N bank between bridges	
8.25	CU fu 30m arl	
8.34	Only approximately 10 gulls per minute fu for next two hours	
9.12		Exposed sandbank down river has 3,000+ gulls with several Curlew and one Oystercatcher
11.05	BH fu under bridges	
11.05	LB fu 40m arl	
11.13	LB x 3 fu 30m arl	
11.16	LB x 2 fu 30m arl	
11.19	LB x 3 fu 50m arl	
11.20	LB fu 50m arl	
11.20	BH fd 20m arl	
11.24	LB x 4 fu 40m arl	
11.25	HG x 2 fu 20m arl	
11.29	BH x 2 fu 30m arl	
11.39	CA fd under bridges	
11.48		Tide just turned
11.50	RK still feeding under bridge	
11.51	BH fu 30m arl	
11.52-12.48	NOTE:- As the incoming tide covered the lower sandbank there was a small influx of gulls flying up the Estuary (200-300). Most of the birds flew down towards the Middle Estuary	
13.01	CA fd under bridges	
13.02	BH x 2 and HG fu 20m arl	
13.11	BH x 6 fu 20m arl	
13.13	BH fd 30m arl	

NOTE: Many of the gulls on the lower sandbank stayed floating on the incoming tide. Only when they were swept upstream to within 200m of the viaduct did they take flight and head downstream.

13.20	BH x 2 fu 20m arl	
13.28	HG x 2 fd 30m arl	
13.30	GB and HG fd 30m arl	
13.31	HG fu 20m arl	
13.32	BH x 2 fu 30m arl	
13.34	GB x 3 fd 40m arl	
13.35	LB x 2 fd 30m arl	
13.36	LB fd 30m arl	
13.37	LB fd 30m arl	
13.38	LB fu 50m arl	
11.45	CA fu 40m arl	
13.48	NOTE: Gulls now recorded per minute flying down the Estuary	
14.02		Tide at full height
14.19		Tide now ebbing
16.32		Last gulls visible