



Project part-financed by the
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The Interreg IVB
North Sea Region
Programme



‘South Humber Gateway Roosting Mitigation’

Measure analysis 36
in the framework of the Interreg IVB project TIDE

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Part 1: Measure description

Estuary: Humber

Measure category: Biology/Ecology

Salinity zone: polyhaline

Pressure: Habitat loss and degradation during the last about 100 years: Intertidal

Country: United Kingdom



Figure 1: South Humber bank Ecological Survey Area (South Humber Gateway Ecology Group)

1.1 Description of the issue and measure

It was determined that the most effective course of action in the South Humber Gateway was to allocate large areas of land which could be used to mitigate against the loss of land from port development currently used by waders for foraging and roosting. In order to deliver strategic mitigation, a South Humber Gateway Ecology Group was formed comprising local authorities, landowners and both statutory and non-statutory conservation bodies and was tasked with producing a South Humber Gateway Delivery Plan.

Work commenced to identify the actual area of land required by wintering and migratory birds in the South Humber Gateway and, from this, a series of sites were identified which could then be managed to appropriately meet those birds' requirements. A particular challenge for this measure was that much of the land in the area already had development aspirations attached to it.



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Based on the initial analysis of data obtained thorough monitoring and survey work, together with discussions with various stakeholders in the area, an approach centred around a series of sites which became known as 'stepping stones' across the South Humber Gateway, along with land adjacent to it, was adopted. These sites needed to be large enough to accommodate the birds' preference for roosting areas with long clear site lines. The management of the sites also needed to be tailored to the birds' requirements for short vegetation swards, with wet grassland considered as optimal habitat.

The South Humber Gateway Delivery Plan hoped to provide the necessary framework to fulfil one of the more complex nature conservation requirements of the Humber Estuary Designation, specifically addressing mitigation needs arising from direct land take from development within the South Humber Bank Employment Allocation.

The Delivery Plan was also hoped to provide clarity and confidence that the impact of direct land take from within the South Humber Gateway could be mitigated both inside and outside the South Humber Gateway. Such an approach would enable the allocation of this area for future estuary related activity and identify a clear framework for potential investors. The Delivery Plan was hoped to work towards a strategic approach across the two unitary authorities, in place of an ad hoc site-by-site approach to mitigation, which would be better for both developers and for conservation.

1.2 Status of the measure

In late 2006, Humber INCA was approached by North Lincolnshire Council and asked to commence a programme of wintering bird surveys in the North Lincolnshire section of the South Humber Gateway. The funds allocated were then used as match funding for a funding bid to Yorkshire Forward to allow the area of coverage to include the North East Lincolnshire section of the allocated land. Once the survey project was underway, further contributions of funds were received from North East Lincolnshire Council and the Environment agency. This allowed an extension of the survey area in both North and North East Lincolnshire.

The main purpose of the surveys was to identify important areas for wintering and migratory birds and hence the majority of survey effort has concentrated on these. There have, however, been surveys carried out for breeding birds and other protected species as well as a broad scale habitat survey. This monitoring and survey work was commenced in 2007 and Figure 1 displays the survey area.



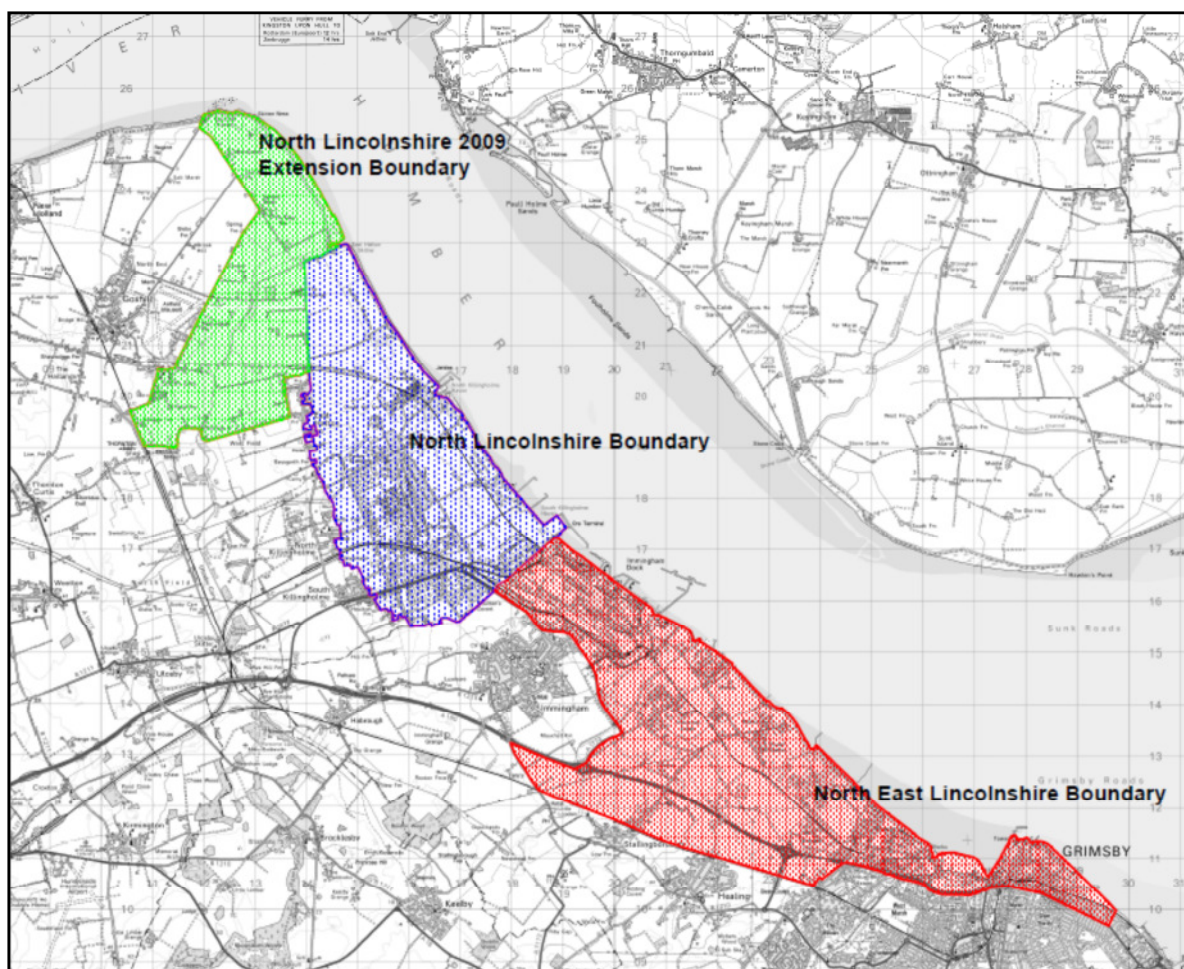


Figure 2: Split Ecological Survey Area

1.3 Monitoring results

1.3.1 Wintering and migratory bird survey work

North Lincs (allocated land): January 07 - March 07: Weekly surveys on a field by field basis by Graham Catley from Nyctea. Attached to this there were further targeted surveys during April 07 and May 07 to identify field usage by passage curlew, ruff and whimbrel.

North Lincs (allocated land): July 07 - March 08: Weekly surveys on a field by fields basis by Graham Catley from Nyctea.

North East Lincs (allocated land plus additional area both North and South of A180): November 2007 - March 2007: Weekly surveys on a field by fields basis by IECS.

North East Lincs (allocated land plus additional land both North and South of A180): Late July 2008 - November 2008: Weekly surveys on a field by field basis by Graham Catley from Nyctea.

North Lincs (north and west of East Halton Skitter): Jan 2009 - Mar 2009: Weekly surveys on a field by fields basis by Graham Catley from Nyctea.



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North Lincs (north and west of East Halton Skitter): August 2009 - Ongoing to March 2010: Weekly surveys on a field by field basis by Graham Catley from Nyctea.

Entire area (allocated land within North and North East Lincs and area north and west of east Halton Skitter): August 2010 - March 2011: Weekly surveys on a field by field basis by Nyctea Consultants.

1.3.2 Breeding bird survey work

Breeding bird surveys based on a modified (5 visit) methodology were carried out in the **allocated land only**. These surveys took place in North Lincs in summer 2007 and in summer 2008 in North East Lincs.

1.3.3 Habitat surveys

A phase 1 habitat survey using aerial photograph interpretation was been carried out for the **allocated land only**.

1.3.4 Mammal surveys

- 2 Badger and water vole surveys were carried out during Summer 2009 on undeveloped land within the **allocated land only**.



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2.1.1 Monitoring results

In 2007, the following breeding birds were noted on the site at North Lincs:

Table 1: Breeding Birds in 2007

Species			Territories / pairs
Barn Owl <i>Tyto alba</i>	Schedule 1	Red Listed	3
Garganey <i>Anas querquedula</i>	Schedule 1	Amber Listed	
Marsh Harrier <i>Circus aeruginosus</i>	Schedule 1	Amber Listed	
Avocet <i>Recurvirostra avosetta</i>	Schedule 1	Amber Listed	8
Hobby <i>Falco subbuteo</i>	Schedule 1		
Little Ringed Plover <i>Charadrius dubius</i>	Schedule 1		1
Grey Partridge <i>Perdix perdix</i>		Red Listed	18
Turtle Dove <i>Streptopelia turtur</i>		Red Listed	5
Skylark <i>Alauda arvensis</i>		Red Listed	243
Song Thrush <i>Turdus philomelos</i>		Red Listed	39
Grasshopper Warbler <i>Locustella naevia</i>		Red Listed	2
Spotted Flycatcher <i>Muscicapa striata</i>		Red Listed	
Willow Tit <i>Poecile montanus</i>		Red Listed	5
Starling <i>Sturnus vulgaris</i>		Red Listed	33
House Sparrow <i>Passer domesticus</i>		Red Listed	17 colonies
Tree Sparrow <i>Passer montanus</i>		Red Listed	29 colonies
Linnet <i>Carduelis cannabina</i>		Red Listed	99+
Bullfinch <i>Pyrrhula pyrrhula</i>		Red Listed	12
Yellowhammer <i>Emberiza citrinella</i>		Red Listed	72
Reed Bunting <i>Emberiza schoeniclus</i>		Red Listed	69
Mute Swan <i>Cygnus olor</i>		Amber Listed	3
Shelduck <i>Tadorna tadorna</i>		Amber Listed	20 females
Gadwall <i>Anas strepera</i>		Amber Listed	3 females
Shoveler <i>Anas clypeata</i>		Amber Listed	3 females
Pochard <i>Aythya ferina</i>		Amber Listed	6+ females 8 nests /
Kestrel <i>Falco tinnunculus</i>		Amber Listed	territories
Water Rail <i>Rallus aquaticus</i>		Amber Listed	5 territories
Oystercatcher <i>Haematopus ostralegus</i>		Amber Listed	1
Lapwing <i>Vanellus vanellus</i>		Amber Listed	11 pairs / nests
Redshank <i>Tringa totanus</i>		Amber Listed	1 pair
Stock Dove <i>Columba oenas</i>		Amber Listed	22
Cuckoo <i>Cuculus canorus</i>		Amber Listed	5 males
Swallow <i>Hirundo rustica</i>		Amber Listed	19
Meadow Pipit <i>Anthus pratensis</i>		Amber Listed	64
Yellow Wagtail <i>Montacilla flava</i>		Amber Listed	22
Dunnock <i>Prunella modularis</i>		Amber Listed	170
Mistle Thrush <i>Turdus viscivorus</i>		Amber Listed	15
Willow Warbler <i>Phylloscopus trochilus</i>		Amber Listed	42
Goldcrest <i>Regulus regulus</i>		Amber Listed	4



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In 2008, the following breeding birds were noted on the site at North East Lincs:

Table 2: Breeding birds in 2008

Species	Code			Red Listed	Amber Listed
Quail <i>Coturnix coturnix</i>	Q	Schedule 1		Red Listed	
Bittern <i>Botaurus stellaris</i>	BI	Schedule 1	BAP	Red Listed	
Black-tailed Godwit <i>Limosa limosa</i>	BW	Schedule 1		Red Listed	
Barn Owl <i>Tyto alba</i>	BO	Schedule 1		Red Listed	
Garganey <i>Anas querquedula</i>	GY	Schedule 1			Amber Listed
Little Egret <i>Egretta garzetta</i>	ET	Schedule 1			Amber Listed
Red Kite <i>Milvus milvus</i>	KT	Schedule 1			Amber Listed
Marsh Harrier <i>Circus aeruginosus</i>	MR	Schedule 1			Amber Listed
Montagu's Harrier <i>Circus pygargus</i>	MO	Schedule 1			Amber Listed
Peregrine Falcon <i>Falco peregrinus</i>	PE	Schedule 1			Amber Listed
Avocet <i>Recurvirostra avosetta</i>	AV	Schedule 1			Amber Listed
Ruff <i>Philomachus pugnax</i>	RU	Schedule 1			Amber Listed
Mediterranean Gull <i>Larus melanocephalus</i>	MU	Schedule 1			Amber Listed
Kingfisher <i>Alcedo atthis</i>	KF	Schedule 1			Amber Listed
Black Redstart <i>Phoenicurus ochruros</i>	BX	Schedule 1			Amber Listed
Bearded Tit <i>Panurus biarmicus</i>	BR	Schedule 1			Amber Listed
Hobby <i>Falco subbuteo</i>	HY	Schedule 1			
Little Ringed Plover <i>Charadrius dubius</i>	LP	Schedule 1			
Cetti's Warbler <i>Cettia cetti</i>	CW	Schedule 1			
Grey Partridge <i>Perdix perdix</i>	P		BAP	Red Listed	
Turtle Dove <i>Streptopelia turtur</i>	TD		BAP	Red Listed	
Lesser Spotted Woodpecker <i>Dendrocopos minor</i>	LS			Red Listed	
Skylark <i>Alauda arvensis</i>	S		BAP	Red Listed	
Song Thrush <i>Turdus philomelos</i>	ST		BAP	Red Listed	
Grasshopper Warbler <i>Locustella naevia</i>	GH		BAP	Red Listed	
Spotted Flycatcher <i>Muscicapa striata</i>	SF		BAP	Red Listed	
Willow Tit <i>Poecile montanus</i>	WT		BAP	Red Listed	
Starling <i>Sturnus vulgaris</i>	SG		BAP	Red Listed	
House Sparrow <i>Passer domesticus</i>	HS		BAP	Red Listed	
Tree Sparrow <i>Passer montanus</i>	TS		BAP	Red Listed	
Linnet <i>Carduelis cannabina</i>	LI		BAP	Red Listed	
Bullfinch <i>Pyrrhula pyrrhula</i>	BF		BAP	Red Listed	
Yellowhammer <i>Emberiza citrinella</i>	Y		BAP	Red Listed	
Reed Bunting <i>Emberiza schoenioides</i>	RB		BAP	Red Listed	
Corn Bunting <i>Emberiza calandra</i>	CB		BAP	Red Listed	
Mute Swan <i>Cygnus olor</i>	MS				Amber Listed
Greylag Goose <i>Anser anser</i>	GJ				Amber Listed
Shelduck <i>Tadorna tadorna</i>	SU				Amber Listed
Gadwall <i>Anas strepera</i>	GA				Amber Listed
Teal <i>Anas crecca</i>	T				Amber Listed
Shoveler <i>Anas clypeata</i>	SV				Amber Listed
Poachard <i>Aythya ferina</i>	PO				Amber Listed
Kestrel <i>Falco tinnunculus</i>	K				Amber Listed
Water Rail <i>Rallus aquaticus</i>	WA				Amber Listed
Oystercatcher <i>Haematopus ostralegus</i>	OC				Amber Listed
Ringed Plover <i>Charadrius hiaticula</i>	RP				Amber Listed
Lapwing <i>Vanellus vanellus</i>	L		BAP		Amber Listed
Snipe <i>Gallinago gallinago</i>	SN				Amber Listed
Woodcock <i>Scolopax rusticola</i>	WK				Amber Listed
Curlew <i>Numenius arquata</i>	CU		BAP		Amber Listed
Redshank <i>Tringa totanus</i>	RK				Amber Listed

Black-headed Gull <i>Larus ridibundus</i>	BH				Amber Listed
Lesser Black-backed Gull <i>Larus fuscus</i>	LB				Amber Listed
Stock Dove <i>Columba oenas</i>	SD				Amber Listed
Cuckoo <i>Cuculus canorus</i>	CK		BAP		Amber Listed
Short-eared Owl <i>Asio flammeus</i>	SE				Amber Listed
Green Woodpecker <i>Picus viridis</i>	G				Amber Listed
Swallow <i>Hirundo rustica</i>	SL				Amber Listed
House Martin <i>Delichon urbicum</i>	HM				Amber Listed
Meadow Pipit <i>Anthus pratensis</i>	MP				Amber Listed
Yellow Wagtail <i>Montacilla flava</i>	YW		BAP		Amber Listed
Grey Wagtail <i>Montacilla cinerea</i>	GL				Amber Listed
Duncock <i>Prunella modularis</i>	D		BAP		Amber Listed
Nightingale <i>Luscinia megarhynchos</i>	N				Amber Listed
Redstart <i>Phoenicurus phoenicurus</i>	RT				Amber Listed
Mistle Thrush <i>Turdus viscivorus</i>	M				Amber Listed
Willow Warbler <i>Phylloscopus trochilus</i>	WW				Amber Listed
Goldcrest <i>Regulus regulus</i>	GC				Amber Listed
Lesser Redpoll <i>Carduelis cabaret</i>	LR		BAP		Amber Listed
Long-eared Owl <i>Asio otus</i>	LE				



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The following wintering birds were noted on the site at North Lincs between January and March 2007.

Table 3: Wintering birds in 2007

Species	BTO code	Schedule 1	BAP	Red list 2002-2007	Amber Listed 2002-2007	GB qualifying WeBS	International qualifying WeBS	Humber 00-01	Humber 5yr 96-97 to 01-02	Humber status National- International
Little Grebe <i>Tachybaptus ruficollis</i>	LG					30				
Great Crested Grebe <i>Podiceps cristatus</i>	GC									
Cormorant <i>Phalacrocorax carbo</i>	CA					130	1200	185	143	N
Little Egret <i>Egretta garzetta</i>	ET	S1								
Grey Heron <i>Ardea cinerea</i>	H									
Mute Swan <i>Cygnus olor</i>	MS					260	2400	303	275	N
Greylag Goose <i>Anser anser</i>	GJ									
Canada Goose <i>Branta canadensis</i>	CG									
Shelduck <i>Tadorna tadorna</i>	SU					750	3000	6918	5400	I
Wigeon <i>Anas penelope</i>	WN					2800	12500	3969	5039	N
Gadwall <i>Anas strepera</i>	GA					80	300			
Teal <i>Anas crecca</i>	T					1400	4000	3370	2275	N
Mallard <i>Anas platyrhynchos</i>	MA					5000	20000			
Shoveler <i>Anas clypeata</i>	SV					100	400			
Pochard <i>Aythya ferina</i>	PO					440	3500	216	713	N
Tufted Duck <i>Aythya fuligula</i>	TU					600	10000			
Goldeneye <i>Bucephala clangula</i>	GN	S1				170	3000	498	467	N
Smew <i>Mergellus albellus</i>	SY									
Ruddy Duck <i>Oxyura jamaicensis</i>	RY									
Marsh Harrier <i>Circus aeruginosus</i>	MR	S1								
Sparrowhawk <i>Accipiter nisus</i>	SH									
Kestrel <i>Falco tinnunculus</i>	K									
Merlin <i>Falco columbarius</i>	ML	S1								
Red-legged Partridge <i>Alectoris rufa</i>	RL									
Grey Partridge <i>Perdix perdix</i>	P		B							
Pheasant <i>Phasianus colchicus</i>	PH									
Water Rail <i>Rallus aquaticus</i>	WA									
Moorhen <i>Gallinula chloropus</i>	MH									
Coot <i>Fulica atra</i>	CO					1100	15000			
Oystercatcher <i>Haematopus ostralegus</i>	OC					3600	9000			
Avocet <i>Recurvirostra avosetta</i>	AV	S1				10	700	126	59	N
Ringed Plover <i>Charadrius hiaticula</i>	RP					290	500	409	403	N
Golden Plover <i>Pluvialis apricaria</i>	GP					2500	18000	25133	30709	I
Lapwing <i>Vanellus vanellus</i>	L					20000	20000	16870	22765	I
Knot <i>Calidris canutus</i>	KN					2900	3500	34888	28165	I
Dunlin <i>Calidris alpina</i>	DN					5300	14000	18502	22222	I
Ruff <i>Philomachus pugnax</i>	RU	S1				7	10000	4	14	N
Snipe <i>Gallinago gallinago</i>	SN						10000			

The following wintering birds were noted on the site at North Lincs between April and May 2007.



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Woodcock <i>Scolopax rusticola</i>	WK								
Black-tailed Godwit <i>Limosa limosa</i>	BW	S1			70	700	545	1064	I
Curlew <i>Numenius arquata</i>	CU				1200	3500	4044	3253	N
Redshank <i>Tringa totanus</i>	RK				1100	1500	4990	4632	I
Turnstone <i>Arenaria interpres</i>	TT				640	700			
Black-headed Gull <i>Larus ridibundus</i>	BH								
Common Gull <i>Larus canus</i>	CM								
Herring Gull <i>Larus argentatus</i>	HG								
Great Black-backed Gull <i>Larus marinus</i>	GB								
Stock Dove <i>Columba oenas</i>	SD								
Woodpigeon <i>Columba palumbus</i>	WP								
Collared Dove <i>Sireptopelia decaocto</i>	CD								
Barn Owl <i>Tyto alba</i>	BO	S1							
Short-eared Owl <i>Asio flammeus</i>	SE								
Kingfisher <i>Alcedo atthis</i>	KF	S1							
Great Spotted Woodpecker <i>Dendrocopos major</i>	GS								
Skylark <i>Alauda arvensis</i>	S	B							
Meadow Pipit <i>Anthus pratensis</i>	MP								
Rock Pipit <i>Anthus petrosus</i>	RC								
Water Pipit <i>Anthus spinolena</i>	WI								
Pied Wagtail <i>Montacilla alba</i>	PW								
Wren <i>Troglodytes troglodytes</i>	WR								
Dunnock <i>Prunella modularis</i>	D								
Robin <i>Erithacus rubecula</i>	R								
Stonechat <i>Saxicola torquatus</i>	SC								
Blackbird <i>Turdus merula</i>	B								
Fieldfare <i>Turdus pilaris</i>	FF	S1							
Song Thrush <i>Turdus philomelus</i>	ST	B							
Redwing <i>Turdus iliacus</i>	RE	S1							
Mistle Thrush <i>Turdus viscivorus</i>	M								
Chiffchaff <i>Phylloscopus collybita</i>	CC								
Goldcrest <i>Regulus regulus</i>	GC								
Long-tailed Tit <i>Aegithalos caudatus</i>	LT								
Willow Tit <i>Parus montanus</i>	WT								
Blue Tit <i>Parus caeruleus</i>	BT								
Great Tit <i>Parus major</i>	GT								
Magpie <i>Pica pica</i>	MG								
Jackdaw <i>Corvus monedula</i>	JD								
Rook <i>Corvus frugilegus</i>	RO								
Carrion Crow <i>Corvus corone</i>	C								
Starling <i>Sturnus vulgaris</i>	SG								
House Sparrow <i>Passer domesticus</i>	HS								
Tree Sparrow <i>Passer montanus</i>	TS	B							
Chaffinch <i>Fringilla coelebs</i>	CH								
Greenfinch <i>Carduelis chloris</i>	GR								
Goldfinch <i>Carduelis carduelis</i>	GO								
Linnet <i>Carduelis cannabina</i>	LI	B							
Bullfinch <i>Pyrrhula pyrrhula</i>	BF	B							
Yellowhammer <i>Emberiza citrinella</i>	Y								
Reed Bunting <i>Emberiza schoeniclus</i>	RB	B							



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April 2nd - 8th 2007:

- Two Curlew main flocks were both found feeding avidly on permanent pastures; the northern flock minimum 95 birds concentrated in field number 14 where there were 92 birds with three in field 30 which had been used by more birds earlier in the day. From field 14 some birds moved into fairly dry fields of oilseed rape for periods, possibly to loaf. The southern flock, 91 birds, were again all on field 88 where they were found in week 13 of the winter surveys.
- The Ruff flock, nine birds, was on the permanent pastures at East Halton pits with 2 roosting at North Killingholme Haven pits.
- Breeding Bird Survey (BBS) walking of field number 24, over-wintered stubbles, revealed the presence of 18 Common Snipe.
- A high spring tide count at North Killingholme Haven pits revealed the presence of 282 Icelandic Black-tailed Godwits with 28 Avocets and 64 Redshank as the most numerous species. There were reports of up to 68 Avocets in the pits in the previous week.

April 9th - 15th 2007:

- Curlew were highly concentrated with the northern flock on permanent pastures south of the East Halton railway tracks in fields 30 and 41; the latter field had not been used during the winter; this same field also held a flock of 10 Ruff presumably the wintering birds. The southern Curlew flock were mainly feeding in permanent pastures in fields 88 and 89 but 32 birds were found in field 98 another field which had not been used during the winter period.
- Neap tides at North Killingholme Haven pits produced low counts of most species but 25 Avocets were of note as they showed many signs of attempted nesting.

April 16th - 21st 2007:

- The majority of the wintering waders appeared to have departed between the end of the previous week and this survey with just 18 Curlew being located in total. Of these three birds were in the permanent pasture in field 30 where display had been evident in the previous week, a single bird was in field 64 (permanent pasture) and 14 birds were commuting between the permanent pasture in field 88 and the shallow eastern end of the Rosper Road wetland site.
- A total of six Lapwing on the grassland at East Halton pits appeared to be local breeding or failed breeding birds from adjacent fields.
- North Killingholme Haven pits held a good total of waders on the high spring tides with peak counts of 74 Black-tailed Godwits, all Icelandic birds in breeding plumage, 19 Redshank, 10 Lapwing, 17 Avocets and eight Ruff. The Ruff were the birds from the wintering flock which had been noted in the various fields at East Halton as well as on the inter-tidal and at North Killingholme Haven pits. Two of the Avocets appeared to be incubating on an island in the largest of the pits at North Killingholme Haven.

April 23rd - 28th 2007:

- Specific areas were again targeted but more waders were encountered on breeding bird survey visits.



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- At least 37 Curlew were located with concentrations of birds in permanent pastures in fields 30 and 64 while five birds were still feeding in field 88 and commuting onto the eastern end of Rosper Road. A party of six Curlew found on field 76 were the first such occurrence during these surveys as was a single bird on field 107; the latter field is set aside with a two wet areas in the middle of the field where the bird was feeding.
- The first passage Whimbrel occurred but in permanent pastures where they have not been encountered in the past. The change of frequented areas may well be due to the baking of the soil in many of the other fields in the survey area which has left them rock solid with deep cracks appearing in the clay and clearly not suitable for long billed probing waders. The minimum number of Whimbrel was 16 with the flock of five moving between two fields and the two in fields 40 and 41 being assumed to be part of the flock in field 64.
- Lapwing nests were found on spring sown cereals in fields 27, 28 and 100 with two in the latter field. There were also two nests on chalk at the southern end of the East Halton pits pastures, field 29, and one in field 107. A pair were in field 88 and moved between there and Rosper Road.
- Four Ruff were feeding on the inter-tidal south of North Killingholme Haven with two different birds in the North Killingholme Haven pits and a single bird was feeding on the permanent pastures at East Halton pits, field 29.
- Up to 25 Avocets remained in North Killingholme Haven pits where they were fighting over nest sites. Although there are numerous islands in the pit most are covered in vegetation and are thus unsuitable. The two bare islands held 4 active nests. It would be a rather simple task to produce a large number of nest sites by vegetation removal on some of the larger islands. A total of 90 Icelandic Black-tailed Godwits roosted at North Killingholme on the spring tides at the start of the week.

April 29th - May 5th 2007:

- With the continuing drought conditions most of the fields in the area became parched and extremely dry with the clay soils baked hard and cracked making them unsuitable for surface probing waders.
- The pairs of Lapwing noted in the previous weeks report remained on the spring cereal fields. At Rosper Road the effects of the continuing lack of rainfall became particularly obvious as levels fell exposing muddy areas at the eastern end of the site where two pairs of Lapwing quickly established territories.
- Two Curlew were still using the pasture in field 88 and commuting between there and Rosper Road in addition to which five birds were feeding in field number 30, with two in field 64, again in permanent pasture but in general there was a final departure of wintering birds with a scatter of non-breeders remaining in the area.
- Spring tides at North Killingholme Haven pits failed to produce any sign of a high tide roost, this being the first week without a record of Black-tailed Godwit in the area. The breeding Avocets remained with seven active nests being defended against the two resident pairs of Carrion Crows.



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- Four male Ruff remained from the wintering flock, gaining summer plumage, in addition to which single pairs of Oystercatcher, Lapwing and Redshank were also present. Two passage Common Sandpipers were also present on the survey date along with a lingering Snipe.
- A single Common Sandpiper was also noted at East Halton pits.
- Three Whimbrel were feeding in field 64 with two Curlew.

May 6th - 13th 2007:

- The small number of waders still present in the survey area appear to be either breeding or nonbreeding summering individuals. Most of these birds are now located around the wetland sites with the permanent pasture fields holding only the odd bird. This could be largely due to the extreme desiccation of the fields which has been evident in recent weeks.
- During this survey period a single Curlew was found in field 88/ Rosper Road where there were also two Lapwing. Two Lapwing in the pasture adjacent to East Halton pits were also probably local breeding birds.
- All of the other waders located were found at North Killingholme Haven pits. The breeding colony of Avocets was decimated by the local Carrion Crows with just three active nests remaining. Also in the pits were single Lapwing, Redshank and a Bar-tailed Godwit which had joined a flock of 36 first-summer Black-tailed Godwits. This flock held the celebrated colour ringed individual which was first seen at Waters' Edge in November 2006 and subsequently wintered in the East Halton Killingholme area during January - April 2007.
- Given the very low level of wader presence now apparent in the fields this will be the final spring survey before autumn counts recommence in July 2007. Any significant observations of waders in the intervening period which are recorded during BBS visits will be logged and noted in the BBS report at the end of the summer.

The results of the protected species survey that was undertaken in 2009 by Golder Associates are noted below:

Badgers

A mixture of 22 inactive and active badger setts was recorded within the study area. One day nest and various latrines were also noted.

Water voles

Watercourse and waterbodies identified as having moderate or high potential to support water vole were surveyed in detail to determine potential water vole population densities. Watercourses and waterbodies that were classified as having low potential that were connected to, or adjacent to, watercourses or waterbodies classified as having a moderate or high potential were also surveyed.

The results of the water vole survey displayed various results over the study area, with low, medium and high population densities noted, along with areas where there was a complete absence of water vole.



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Incidental Records of other species

Otter prints were recorded crossing a ditch, but no other evidence of otters, or mink, were recorded during the surveys.



Part 2: Execution of main effectiveness criteria

2.1 Effectiveness according to development targets of measure

2.1.1 Bird Usage

The main purpose of the South Humber Gateway was to allocate large areas of land which could be used to mitigate against the loss of land currently used by waders for foraging and roosting. The results of the breeding bird and over wintering surveys has shown that the site is being well utilised by wintering and migratory birds.

2.2 Impact on ecosystem services

Targeted Ecosystem services

The key objective of this measure was to create intertidal habitat to compensate for that lost through ABP port development. This is linked with ecosystem services 'landscape maintenance' and 'biodiversity', and also 'flood water storage' and 'dissipation of tidal and river energy'. It also provides 'opportunities for recreation and tourism' through becoming a tourist and bird watching attraction.

Table 4: Targeted ecosystem services

Measure	
Food: animals	
Water for industrial use	
Water for navigation	
Climate regulation: carbon sequestration	
Regulation extreme events or disturbance: flood water storage	X
Regulation extreme events or disturbance: water current reduction	
Regulation extreme events or disturbance: Wave reduction	
Water quantity regulation: drainage of river water	
Water quantity regulation: dissipation of tidal and river energy	X
Water quantity regulation: landscape maintenance	X
Water quantity regulation: transportation	
Water quality regulation: transport of pollutants and excess nutrients	
Water quality regulation: reduction of excess loads coming from the catchment	
Erosion and sedimentation regulation by water bodies	
Erosion and sedimentation regulation by biological mediation	
"Biodiversity"	X
Aesthetic information	
Opportunities for recreation & tourism	X
Inspiration for culture, art and design	
Information for cognitive development	

Involved habitats

Intertidal mudflat, saltmarsh and grassland were created as a result of this measure.

Quality
1 = very high quality
2 = high quality
3 = medium quality
4 = low quality
5 = very low quality



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Table 5: Ecosystem service analysis for South Humber Gateway: Indication of habitat surface and quality change; i.e. situation before and after measure implementation

MEASURE		before		after	
		surface (%)	Quality (1-5)	surface (%)	quality (1-5)
Marsh habitat	above mean high water, floods at spring tide	0	0	3.5	0
Intertidal steep habitat	floods every tide, mainly steep zones at marsh edges	0	0	0	0
Intertidal flat habitat	floods every tide, flat zones	0	0	0	0
Subtidal shallow habitat	never surfaces, less deep than 2m	0	0	0	0
Subtidal moderately deep habitat	never surfaces, 2m-5m	0	0	0	0
Subtidal deep habitat	never surfaces, deeper than 5m	0	0	0	0
ADJACENT LAND	NON FLOODED LAND	100	3	96.5	0
		100		100	

No further evaluation was taken out so far.

Part 3: Additional evaluation criteria in view of EU environmental law

3.1 Degree of synergistic effects and conflicts according to WFD aims

This measure was all about the creation of new intertidal habitat which provides a much needed habitat in the Humber Estuary to give land back, which can be utilised as natural flood defence and to provide extra space within the Estuary, which in turn can also improve water and sediment quality and reduce sedimentation in the main channel, which in turn reduces dredging requirements.

Table 6: Main pressures of the intertidal zone of the Humber estuary

Indicator	code	Main pressures intertidal zone Humber	Effect?					Description
			--	-	0	+	++	
S.I.	1.1	Habitat loss and degradation during the last about 100 years: Intertidal				X		Development of intertidal habitat.
S.I.	1.5	Gross change of the hydrographic regime during the last about 100 years				X		Opportunity for additional space along the Humber Estuary.
S.I.	3.1/3.2	Decrease of water and sediment chemical quality				X		Intertidal habitat and wetlands have the potential to improve water and sediment quality.
D.I.	1.3	Land claim during the last about 100 years				X		Land given back to the Humber Estuary.
D.I.	1.7	Relative Sea Level Rise				X		Opportunity to provide natural defence against flooding in line with increased sea level rise.
D.I.	2.4	Maintenance dredging				X		Fewer requirements for dredging as sedimentation occurring through accretionary trends in intertidal and saltmarsh habitats.

S.I. = state indicator; D.I. = driver indicator

3.2 Degree of synergistic effects according to Natura 2000 aims

This measure was all about the creation of new intertidal habitat to compensate losses elsewhere in the Humber Estuary. Therefore, it is considered that this measure contributes to the protection and conservation of intertidal wetlands within the Internationally Designated Humber Estuary.

Table 7: Conservation objectives concerning the BHD

Conservation objectives (Humber)	Specification	Effect?					Short explanation
		--	-	0	+	++	
Protected Habitats: Estuary	Intertidal wetland (brackish)				X		Newly created intertidal habitat in Internationally Designated Nature Conservation Site.

Part 4: Crux of the matter

The “crux of the matter” refers to the basic, central or critical point of an issue. For example, in this context, the main issues relating to the development and progression of the specific measure detailed within this FAS Repost represent the crux of the matter.

The site is increasingly used by breeding and overwintering birds and is starting to be utilised by other protected and notable species. Therefore, the purpose of the scheme to provide additional roosting habitat as part of a mitigation strategy is being fulfilled.



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