

## **Appendix R**

### **Report on Bird Counts for Proposed Dublin Port Extension**

# Report on Bird Counts for Proposed Dublin Port Extension



*Early morning view of the proposed port extension area at low tide looking towards Bull Wall*

**For: Posford Haskoning Ltd.  
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# Table of Contents

<b>1</b>	<b>SUMMARY .....</b>	<b>iv</b>
<b>2</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>3</b>	<b>SITE DESCRIPTION &amp; METHODS .....</b>	<b>1</b>
3.1	SITE DESCRIPTION.....	1
3.1.1	<i>The Proposed Extension (the “site”).....</i>	<i>1</i>
3.1.2	<i>The Tern Colony.....</i>	<i>3</i>
3.1.3	<i>Area 3 .....</i>	<i>5</i>
3.1.4	<i>Conservation Designations on the Liffey Estuary .....</i>	<i>5</i>
3.2	METHODS .....	5
3.2.1	<i>Fieldwork.....</i>	<i>5</i>
3.2.2	<i>Data analysis .....</i>	<i>7</i>
<b>4</b>	<b>RESULTS .....</b>	<b>9</b>
4.1	PEAK COUNTS OF SPECIES .....	9
4.2	ANALYSIS OF THE MORE NUMEROUS SPECIES.....	9
4.2.1	<i>Oystercatcher (Charts 1 &amp; 5) .....</i>	<i>9</i>
4.2.2	<i>Bar-tailed Godwit .....</i>	<i>11</i>
4.2.3	<i>Curlew (Charts 2 &amp; 5).....</i>	<i>12</i>
4.2.4	<i>Turnstone (Charts 3 &amp; 5).....</i>	<i>12</i>
4.2.5	<i>Black-headed Gull (Chart 5) .....</i>	<i>13</i>
4.2.6	<i>Common Gull (Chart 5).....</i>	<i>13</i>
4.2.7	<i>Herring Gull (Chart 5) .....</i>	<i>14</i>
4.2.8	<i>Common Tern (Charts 4 &amp; 5).....</i>	<i>14</i>
4.3	OVERALL ASSESSMENT OF THE SITE.....	16
<b>5</b>	<b>DISCUSSION AND RECOMMENDATIONS.....</b>	<b>17</b>
<b>6</b>	<b>REFERENCES .....</b>	<b>19</b>
<b>7</b>	<b>ACKNOWLEDGEMENTS .....</b>	<b>19</b>

# 1 Summary

Dublin Port is preparing an Environmental Impact Statement (EIS) for a proposed 21 ha reclamation to the east of the existing north port area. Up to one third of this area is exposed at spring low tides (less than +0.35m above lowest astronomical tide) and the usage of this area in February, March, July, August & September 2001 by waders, gulls and terns is reported on. The area itself is outside nearby EU & national areas designated for bird and nature conservation. However, the waders and gulls that use the site come from these areas.

Bird counts were done of the entire Liffey Estuary (i.e. the intertidal areas between the Bull & South Walls) and more detailed counts were done of the site. Additional visits were made on non-spring low tides to assess the tern feeding usage of the area. Count data was analysed in the context of Liffey Estuary counts done for an earlier EIS on the proposal, which was prepared in 1997. Data were also compared with total bird numbers for Dublin Bay obtained from the ecological monitoring results of the Dublin Bay Project. The relative importance of individual species and of the site in Liffey Estuary and Dublin Bay contexts was assessed by converting bird numbers to bird units – a bird unit equals 1% of the international population of the species.

A total of 26 waterfowl species were recorded on site in 2001 but 18 of these occurred in very low numbers and were immediately judged to be insignificant. Oystercatcher was the most numerous species and up to 450 of these fed actively on the site in high densities. Turnstone was the next most important species even though they occurred almost entirely in the spring. However, their use of the area was much less regular than oystercatcher. Curlew was the third most important wader species but the site comprised only about 10% of its use of the Liffey Estuary at spring low tides. A flock of 200 bar-tailed godwits in February was an isolated occurrence. Common gull was the most important of the gulls but again it was mainly confined to the springtime. Black-headed gulls were more numerous and regular but of less importance in bird unit terms because of their much higher international population. Up to 100 or so common terns, or 20% of the nearby tern colony, fed actively but briefly over the site as it became exposed – but only at spring low tides. Their normal feeding activity appeared to be in the wake of ships going in and out of the Port.

After taking account of the low number of tides when it was exposed (24 out of 680 annually), the site accounts for about 0.35% of the combined cumulative use of the Bay by oystercatcher, curlew and turnstone in an area that occupies about 0.25% of the intertidal habitat in the Bay. It is also a subsidiary feeding area for the tern colony. The loss of this area was judged not to be a significant adverse impact on the conservation objectives of neighbouring areas designated under the EU Birds Directive or the tern colony.

Notwithstanding the lack of significant adverse impacts, it is recommended that previously proposed mitigation measures to increase the amount of adjacent muddy intertidal habitat should be proceeded with and monitored for effectiveness

## 2 Introduction

Dublin Port intends to apply to the Minister for the Marine & Natural Resources for consent to reclaim 21 ha of foreshore within the Port area for use as a freight handling facility. Posford Haskoning Ltd. was commissioned to prepare an Environmental Impact Statement (EIS). They in turn commissioned Coveney Wildlife Consulting Ltd. to assist with the assessment of the bird use of the reclamation area as reported here.

## 3 Site Description & Methods

### 3.1 Site Description

#### 3.1.1 The Proposed Extension (the “site”)

The 21ha site is located to the east of the northern part of the existing Dublin Port Area, just north of the shipping channel. The Port is in the part of Dublin Bay enclosed by the Bull and South Walls that is known as the Liffey Estuary (Fig. 1).

The six count area divisions (numbered 1 to 6) of the Liffey Estuary that were previously defined in 1996/97 were again used here to allow data comparison (Fig. 3.3.12 of an earlier EIS prepared for this proposal - the 1997 EIS – Dublin Port 1997).

In this report, the site is referred to as 1S because it is the part of count area 1 covered by the site. At the lowest spring low tides, i.e. 0.0m LAT, up to a third of 1S is exposed as one contiguous area (LAT = Lowest Astronomical Tide as per Dublin Port's 2001 Tide Tables). This in turn is contiguous with intertidal ground in the rest of area 1 (Fig. 3.3.4.4 of the 1997 EIS).

During the 2001 visits, the lowest tides went down to +0.14m LAT (Table 1) and the ground exposed in 1S was in three main parts. These were designated 1S1, 1S2 and 1S3 (Figs. 1 - 3). Area 1S1 was the biggest and had a small satellite area. Area 1S2 was smaller than 1S1. Both the satellite area and 1S2 joined with 1S1 at the lowest 2001 tides i.e. less than +0.2m LAT, approximately. Area 1S3 is in the corner of the site around the northeastern windsock. Unlike areas 1S1 and 1S2, at low tides it was contiguous with intertidal ground in the rest of Area 1. 1S3 was not observed to join with 1S1 and 1S2 but at the lowest 2001 tides the water separating them was so shallow that curlews waded through it. Additional small areas of the site were briefly exposed south of the disused dredging pipe in the southwestern section of the site (Fig.4) but the only the odd oystercatcher and gull used these.

On 20 September at 06.30 GMT (+0.29 LAT), the site was viewed from a point on the Bull Island end of the Wooden Bridge that is on a straight line with the two wind socks at the northeastern and the southeastern corners of 1S. This showed that the eastern half, approximately, of 1S2 was outside the site. However, the eastern part of 1S2 appears to be largely or entirely within the proposed -9.0m LAT channel on the eastern side of the site. It was, therefore, counted in its entirety as part of 1S.

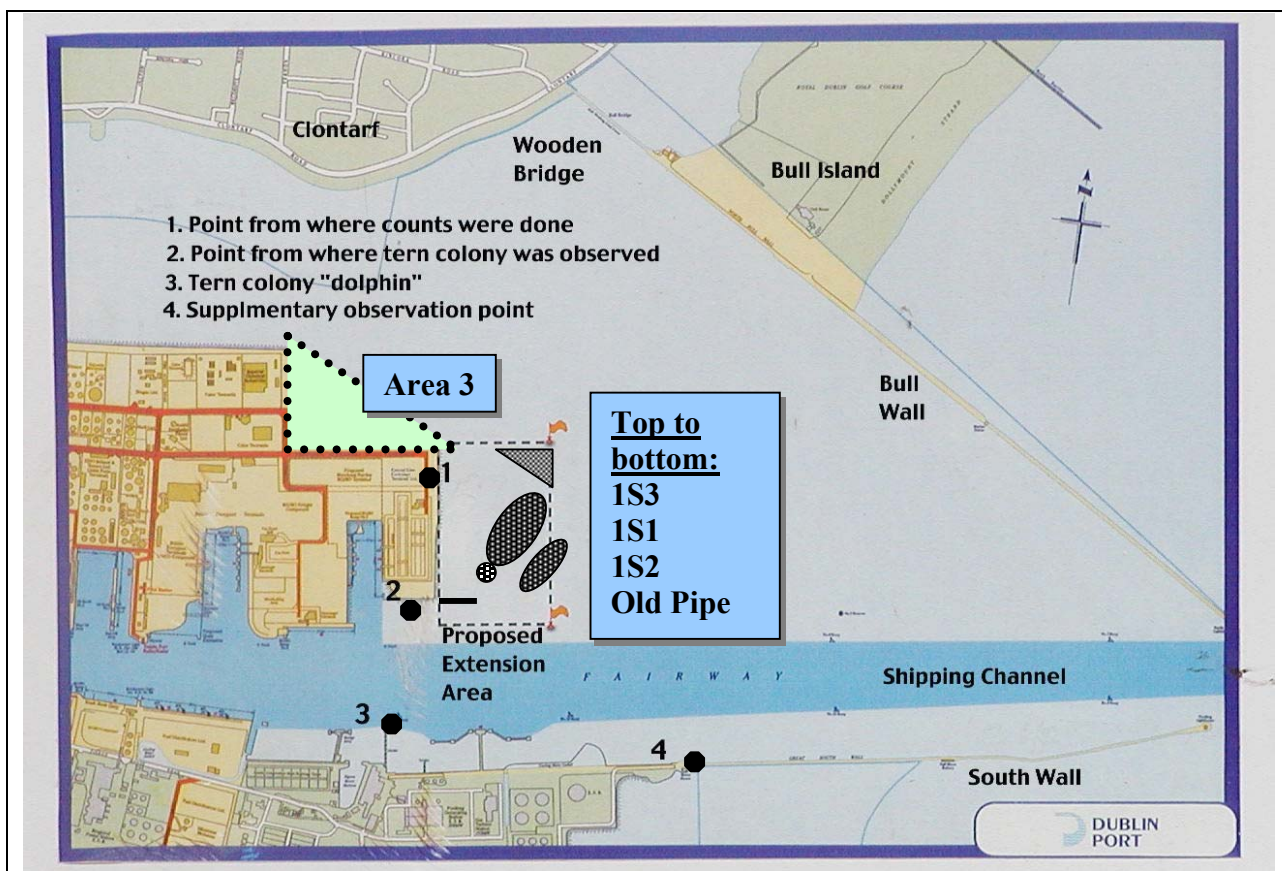


Figure 1. Map of Dublin Port showing proposed extension area (IS) within the dashed line. Approximate areas exposed at LAT +0.2m are designated 1S1, 1S2 (both stony) and 1S3 (sandy).

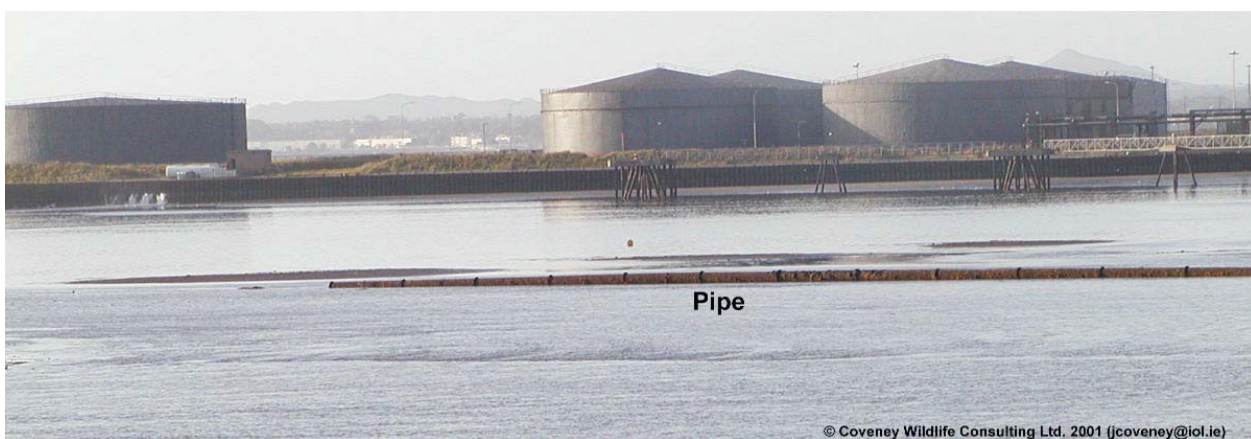


Figure 2. View of extension area on 23 July 2001 at low tide (LAT +0.23m). Note the satellite portion of 1S1 at the right hand side. The southeastern windsock at the corner of the site is just visible to the left of the oil tank.





*Figure 3. View of northeastern part of the site (IS3) uncovered at low tide on 18 September 2001 (LAT +0.18m)*



*Figure 4. View of SW part of IS at low tide on 22 August 2001 (LAT +0.20m). Note the muddy areas that were briefly exposed behind the pipe.*

### 3.1.2 The Tern Colony

A tern colony (Figs. 5 & 6) uses an isolated ESB dolphin across the shipping channel, approximately 1km from the site. The colony has increased from 34 nesting pairs in 1995 to 222 in 2001. These are almost all common terns with a few Arctic terns. At its 2001 size, the common tern colony is the fifth largest in the country and holds 7.3% of the 1995 all-Ireland population of some 3,050 pairs (Hannon et al. 1997). It is considered very likely that the 1995 all-Ireland population is similar to the 2001 population.



*Figure 5. The tern colony across the channel on an isolated ESB “dolphin”. Taken on 23 July 2001*



*Figure 6. Closer view of the tern colony with terns in flight over it. Taken on 23 July 2001*

The colony is monitored annually and boards were fitted around the edges to prevent the loss of chicks. Internal divisions were also fitted as these allow a higher density of terns to nest. Birds are not aggressive to neighbours they cannot see on the other side of divisions whereas they require bigger gaps from visible neighbours. The ESB and Dublin Port support the tern conservation and monitoring programme.



### 3.1.3 Area 3

Area 3 is a muddy area adjacent to 1S, which is also exposed on the lowest tides (Figs. 1 & 7). It was mainly used by black-tailed godwits. An increase in the size of Area 3 was proposed as a mitigation measure in the 1997 EIS (Fig. 3.3.4.5).



*Figure 7. Area 3 showing the exposed muddy area (left of line) on 21 August 2001 (+0.14m LAT)*

### 3.1.4 Conservation Designations on the Liffey Estuary

All of the intertidal parts of the Liffey Estuary, with the exception of the site and the lowest parts of Area 1, have been designated (SI 367 of 1999) as a Special Protection Area (SPA) under the EU Birds Directive (79/409). The designated area is also a proposed Natural Heritage Area, which will be protected nationally as the 2000 Wildlife Amendment Act is brought into force.

## 3.2 **Methods**

### 3.2.1 Fieldwork

The basic aim was to perform a series of counts on dates in each month when the site was uncovered (i.e.  $\leq 0.35\text{m LAT}$ ) during daylight hours and when significant numbers of birds were likely to be present (Table 1). Initially it was intended to count only waders but counts of gulls were done from March onwards as they were amongst the more numerous species on site.

Counts were of two types. The first was a full count of the Liffey Estuary as defined in the 1997 EIS. This was done by a team of three or four experienced observers. These counts also included detailed counts of the site every 15 to 20 minutes while it was exposed. Two of these were done in each of February, March and September and one was done in August. The second count type was of the site only and the adjacent Area 3, by a single observer. These counts were done in March (1), July (1), August (2) and September (1). When flocks of terns were observed feeding over the site on 23 July, the program was modified by making additional visits in July (3),

## Bird Counts for Dublin Port Extension EIS

August (4) and September (2) at approximately weekly intervals to establish the tern usage of the area.

Counts of the site were normally made from near its northwestern corner in the Coastal Lines container terminal (Point 1 in Fig. 1 – Grid Ref. O 2066 3483). One count on 10 August was made from the Poolbeg end of the South Wall. Observations of the tern colony were made from the southern side of the Coastal Lines terminal (Point 2 in Fig. 1 – Grid Ref. O 2063 3431). Area 1 was counted from various points along the Bull Wall. Areas 2, 4, 5 and 6 were counted from the footpath on the northern edge of the estuary. Area 3 was counted from the northern edge of Coastal Lines property. All counts were done in good weather and good visibility, except on 19 September 19 when fog hampered parts of the count. Winds on most days were light but stronger winds from the south east on 21 August 21 meant the tide did not drop quite as low as expected.

All observers used good quality binoculars (7 – 10x) and telescopes (20 – 60x). Photographs were taken with a digital zoom camera (1-10x, 2.1 million pixels). Contact was maintained between observers on team counts using mobile phones to coordinate start times and to minimise duplication or omission of birds.

**Table 1. Counts dates, tide times and tide heights**

Date	Time (GMT) of Low Water	Tide Height (m above LAT) <sup>1,2</sup>	Time (GMT) of Sunset or Sunrise	Counts Done & Notes
<b>January</b>				
11.01.01	18.13	0.28	16.31	None – too dark
12.01.01	19.05	0.30	16.32	None – too dark
<b>February</b>				
08.02.01	17.16	0.29	17.22	Liffey Estuary & Site
09.02.01	18.02	0.19	17.24	Liffey Estuary & Site
10.02.01	18.50	0.21	17.26	None – too dark
11.02.01	19.36	0.34	17.28	None – too dark
<b>March</b>				
09.03.01	17.03	0.25	18.18	Liffey Estuary & Site
10.03.01	17.47	0.19	18.20	Liffey Estuary & Site
11.03.01	18.29	0.24	18.22	Site only
<b>April</b>				
07.04.01	16.46	0.31	19.11	None
08.04.01	17.27	0.30	19.13	None
<b>May</b>				No tides < 0.35m
<b>June</b>				No tides < 0.35m

## Bird Counts for Dublin Port Extension EIS

<b>July</b>				
22.07.01	05.51	0.31	04.26	None
<b>23.07.01</b>	<b>06.41</b>	<b>0.23</b>	<b>04.27</b>	<b>Site only &amp; terns</b>
<b>24.07.01</b>	<b>07.32</b>	<b>0.25</b>	<b>04.29</b>	<b>Site only &amp; terns</b>
24.07.01	19.43	0.71*	20.33	Terns
25.07.01	08.26	0.37*	04.30	Terns
<b>August</b>				
03.08.01	16.49	1.05*	20.17	Terns
10.08.01	08.47	1.01*	04.56	Terns
14.08.01	12.30	1.40*	19.53	Terns
<b>20.08.01</b>	<b>05.40</b>	<b>0.20</b>	<b>05.14</b>	<b>None</b>
<b>21.08.01</b>	<b>06.25</b>	<b>0.14</b>	<b>05.15</b>	<b>Site only</b>
<b>22.08.01</b>	<b>07.11</b>	<b>0.20</b>	<b>05.17</b>	<b>Liffey Estuary &amp; Site</b>
23.08.01	07.59	0.38	05.19	Site only
29.08.01	13.48	1.51*	19.21	Terns
<b>September</b>				
05.09.01	06.32	0.78*	0.541	Terns
12.09.01	12.05	1.54*	18.48	Terns
17.09.01	04.38	0.31	06.02	None
<b>18.09.01</b>	<b>05.23</b>	<b>0.18</b>	<b>06.04</b>	<b>Site</b>
<b>19.09.01</b>	<b>06.05</b>	<b>0.17</b>	<b>06.05</b>	<b>Liffey Estuary &amp; Site</b>
20.09.01	06.47	0.29	06.07	Liffey Estuary & Site
<b>October</b>				
16.10.01	04.21`	0.33	06.54	None – too dark
<b>17.10.01</b>	<b>05.03</b>	<b>0.28</b>	<b>06.55</b>	<b>None – too dark</b>
18.10.01	05.42	0.33	06.57	None – too dark
<b>November</b>				No tides < 0.35m
<b>December</b>				No tides < 0.35m

<sup>1</sup> The 14 lowest tides, i.e. less than + 0.29 LAT are in bold. Note that on days with a tide of +0.35m LAT or less, the other low tide was always well in excess of +0.35m LAT.

<sup>2</sup> \* Indicates a count done for tern usage on a day when the site was shallowly covered.

### 3.2.2 Data analysis

For the individual analysis of waders and gulls, the peak monthly counts of the site and the Liffey Estuary were selected. These were compared with averages of peak monthly counts of Dublin Bay as a whole for the four winter 1997/98 to 2000/01 (Environmental Consultancy Services 1998 – 2000). There are gaps in the data for the months of April to June (this report) and May to July (Dublin Bay Project), because counts were not done when wintering waterfowl numbers are largely absent. Counts of the whole Liffey Estuary were done from October 1996 to April 1997 and of the site from February 1997 to April 1997 (Dublin Port 1997).

## **Bird Counts for Dublin Port Extension EIS**

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Species data is presented on the charts as raw numbers and as “milli bird units” (mBU). A bird unit is 1% of the species’ international population as defined by Wetlands International (Colhoun 2001). Conversion of bird numbers to bird units allows comparisons to be made (i) between species, and (ii) between the aggregate bird usage of the site and of the whole of Dublin Bay.

Individual species numbers are also compared with national importance thresholds (1% of the all-Ireland population (Colhoun 2001). These are shown as black bars on the charts. However, bird units were not based on national importance thresholds because the fractions of their international populations that occur in Ireland vary from species. In contrast, bird units based on international thresholds are comparable between species and across the entire range of the species.



## 4 Results

### 4.1 Peak Counts of Species

In total, 26 waterfowl species were observed on site (Table 2). Of these, eight were considered worthy of further analysis, oystercatcher, bar-tailed godwit, curlew, turnstone, black-headed gull, common gull, herring gull and common tern. The remaining 18 species occurred in negligible numbers, at most, in relation to their national and international threshold populations. One species, dunlin (*Calidris alpina*), which occurred once on 1S in nationally important numbers in 1997, was not observed there at all in 2001.

### 4.2 Analysis of the More Numerous Species

#### 4.2.1 Oystercatcher (Charts 1& 5)

In bird unit terms, oystercatcher was just the most important species on the site. They reached about 65% of the national importance threshold in February and September. Numbers on the site in spring 2001 were broadly similar to spring 1997 but numbers on the Liffey Estuary as a whole were higher in spring 2001. They favoured the stony areas, 1S1 and 1S2, over the muddier 1S3 and fed actively on these as long as they were exposed (Fig. 8).



*Fig. 8. Oystercatchers and a few gulls on part of 1S1 on 18 September 2001 (+0.18m LAT).*

**Table 2. Species Recorded on the Site**

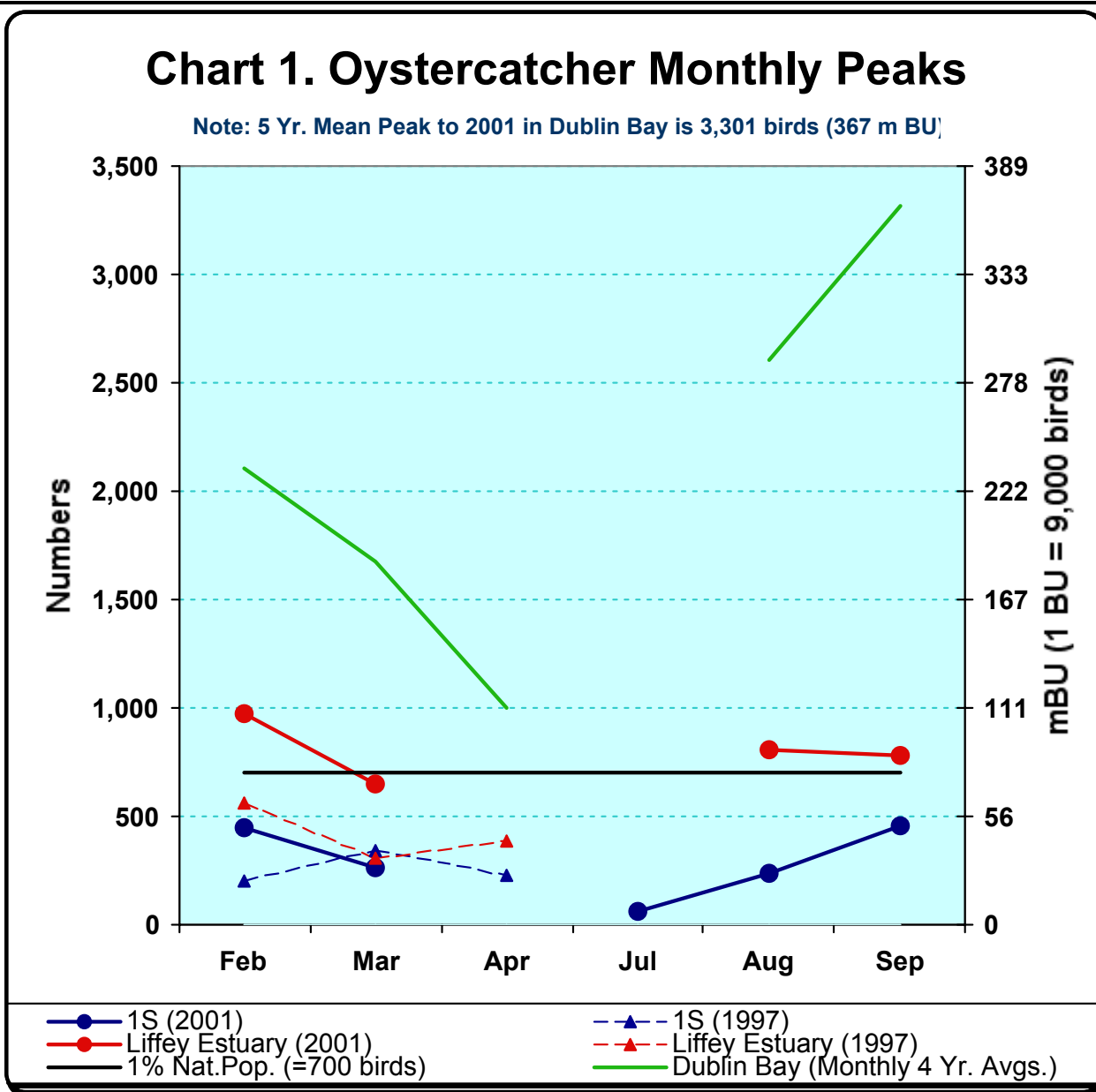
English Name <sup>1</sup>	Scientific Name <sup>1</sup>	Species Code <sup>2</sup>	2001 Peak Nos.	1% Nat. Popltn. <sup>3</sup>	Bird Unit <sup>4</sup>
Great-crested grebe	<i>Podiceps cristatus</i>	GG	9	35	N/a
Cormorant	<i>Phalacrocorax carbo</i>	CA	2	105	1,200
Grey heron	<i>Ardea cinerea</i>	H.	8	105	4,500
<b>Geese &amp; Ducks</b>					
Light-bellied brent goose	<i>Branta bernicla hrota</i>	PB	25	200	200
Shelduck	<i>Tadorna tadorna</i>	SU	10	125	3,000
Wigeon	<i>Anas penelope</i>	WN	6	1,000	12,500
Goldeneye	<i>Bucephala clangula</i>	GN	14	100	3,000
Red-breasted merganser	<i>Mergus serrator</i>	RM	2	25	1,250
<b>Waders</b>					
Oystercatcher	<i>Haematopus ostralegus</i>	OC	445	700	9,000
Ringed plover	<i>Charadrius hiaticula</i>	RP	3	100	500
Knot	<i>Calidris canutus</i>	KN	1	250	3,500
Black-tailed godwit	<i>Limosa limosa</i>	BW	1	80	700
Bar-tailed godwit	<i>Limosa lapponica</i>	BA	200	175	1,000
Curlew	<i>Numenius arquata</i>	CU	150	1,000	3,500
Redshank	<i>Tringa totanus</i>	RK	18	250	1,500
Common sandpiper	<i>Actitis hypoleucos</i>	CS	2	N/a	N/a
Turnstone	<i>Arenaria interpres</i>	TT	52	100	700
<b>Gulls</b>					
Black-headed gull	<i>Larus ridibundus</i>	BH	396	N/a	49,500
Common gull	<i>Larus canus</i>	CM	411	N/a	3,720
Lesser black-backed gull	<i>Larus fuscus</i>		2	N/a	3,720
Herring gull	<i>Larus argentatus</i>	HG	128	N/a	28,200
Great black-backed gull	<i>Larus marinus</i>		6	N/a	4,200
<b>Terns</b>					
Sandwich tern	<i>Sterna sandvicensis</i>	TE	2	88	3,960
Common tern	<i>Sterna hirundo</i>	CN	88	92	3,667
Arctic tern	<i>Sterna paradisaea</i>	AE	3	93	27,000
“commic” tern	= common/arctic tern	“CCT”	90	N/a	N/a
<b>Auks</b>					
Black guillemot	<i>Cephus grylle</i>	TY	1	N/a	78,400

<sup>1</sup> English and scientific names of bird species are from Hutchinson (1989).

<sup>2</sup> Standard species codes as used by BTO (Gilbert et al. 1998) except “CCT”.

<sup>3</sup> 1% national population figures as defined by BirdWatch Ireland (Colhoun 2001).

<sup>4</sup> A Bird Unit (BU) is defined as 1% of the species’ international populations defined by Wetlands International (Colhoun 2001). For black-headed gull, arctic tern and black guillemot, the 1% thresholds were as defined by the Seabirds at Sea Team of the Joint Nature Conservation Committee (Pollock et al. 2000).

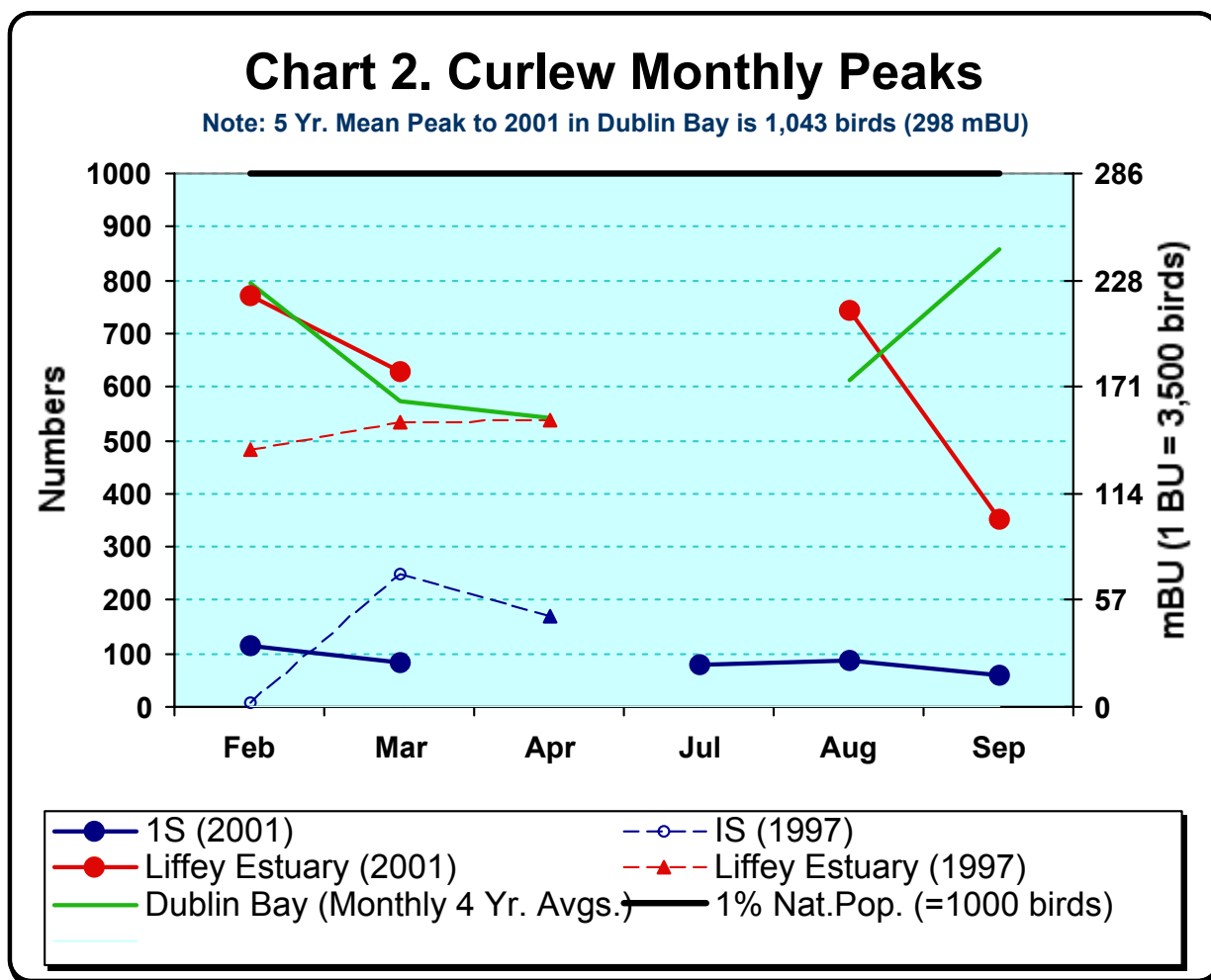


#### 4.2.2 Bar-tailed Godwit

With one exception, bar-tailed godwit virtually avoided the site with only zero to three birds normally occurring. The exception was a flock of 200 that landed on the site at dusk on 8 February. If they had been included in the cumulative analysis (Chart 5) they would have taken third place just ahead of common gull. However, it was considered that this isolated occurrence on unsuitable feeding habitat was not significant.

### 4.2.3 Curlew (Charts 2 & 5)

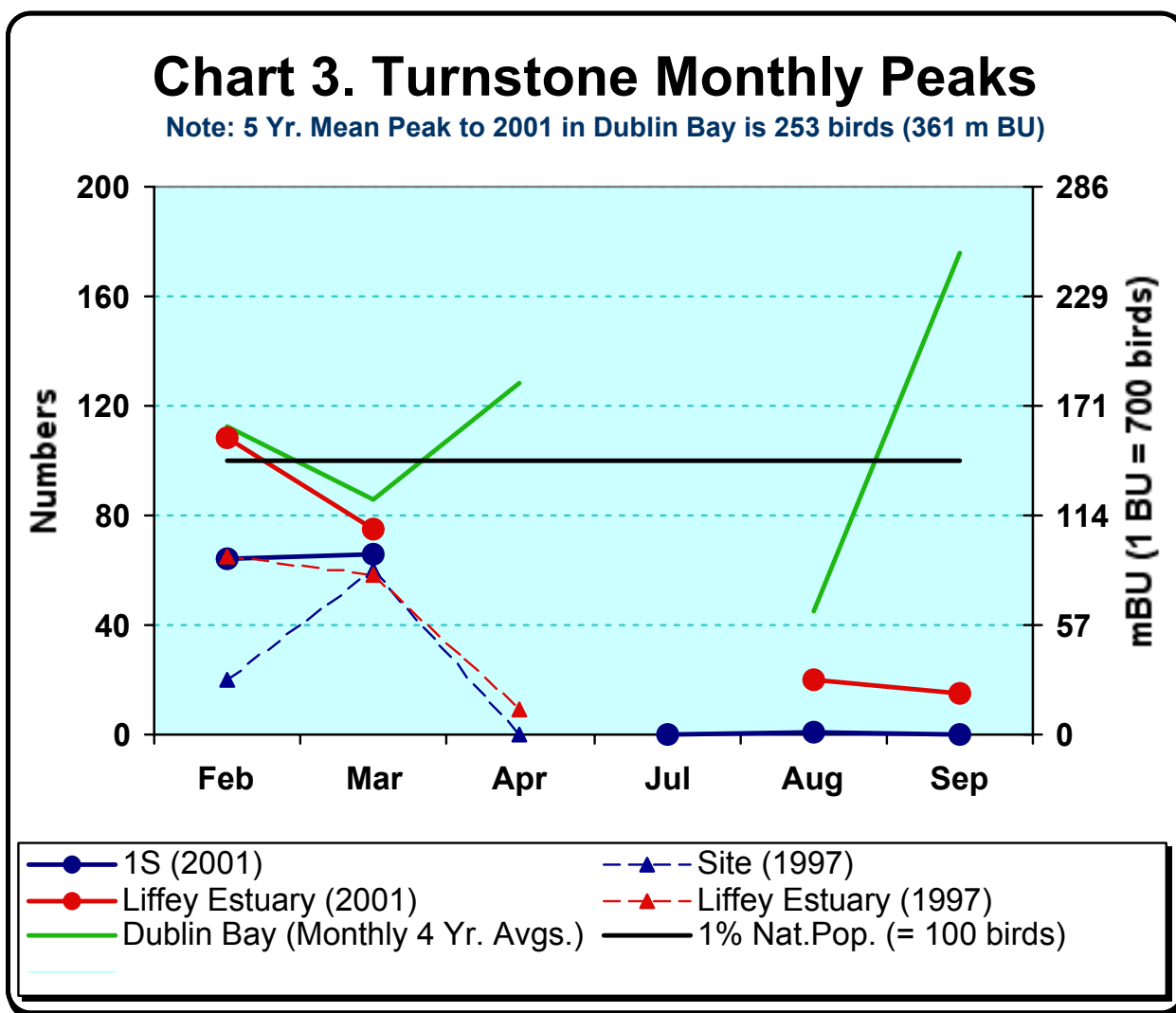
Curlew was the fourth most significant species on the site. However, they only reached about 11% of the national importance threshold. Numbers on the site in spring 2001 were clearly lower than in spring 1997. Within the site, they favoured the muddier 1S3 and adjoining shallow uncovered areas. Numbers often fluctuated while the site was exposed. It is clear from Chart 5 that the site was not a very significant part of the Liffey Estuary for curlews.



### 4.2.4 Turnstone (Charts 3 & 5)

Despite its virtual absence in the autumn, turnstone was the second most significant species on the site. This is because only 700 birds are required for a bird unit in contrast with 9,000 for oystercatcher. Unlike oystercatcher, however, turnstones tended not to stay long on the site when it was exposed. Therefore, their status on Chart 5 is probably overstates the real importance of the site to them. They favoured the stony areas 1S1 and 1S2.





#### 4.2.5 Black-headed Gull (Chart 5)

With a spring peak on the site of 396 in March and an autumn peak of 235 in July, black-headed gulls were nearly as numerous as oystercatcher. However, this was much less significant because black-headed gulls have a higher bird unit threshold of 49,500. Normally, they fed actively in flight over shallow water just below the tideline in a similar manner to the much larger numbers on the rest of the Liffey Estuary.

#### 4.2.6 Common Gull (Chart 5)

Common gulls achieved third place in the cumulative league because of their relatively low bird unit threshold of 3,720. This was due high numbers, which peaked at 411, that occurred in March. However, the autumn peak was only 22. They fed in a similar manner to black-headed gulls over the site and the estuary.

### 4.2.7 Herring Gull (Chart 5)

Herring gulls were the least significant species because of their high bird unit threshold of 28,200. Numbers were normally in the range 50 to 80 and they peaked at 128 in March. They differed from the smaller gulls in that they fed on the site largely on foot or when swimming.

### 4.2.8 Common Tern (Charts 4 & 5)

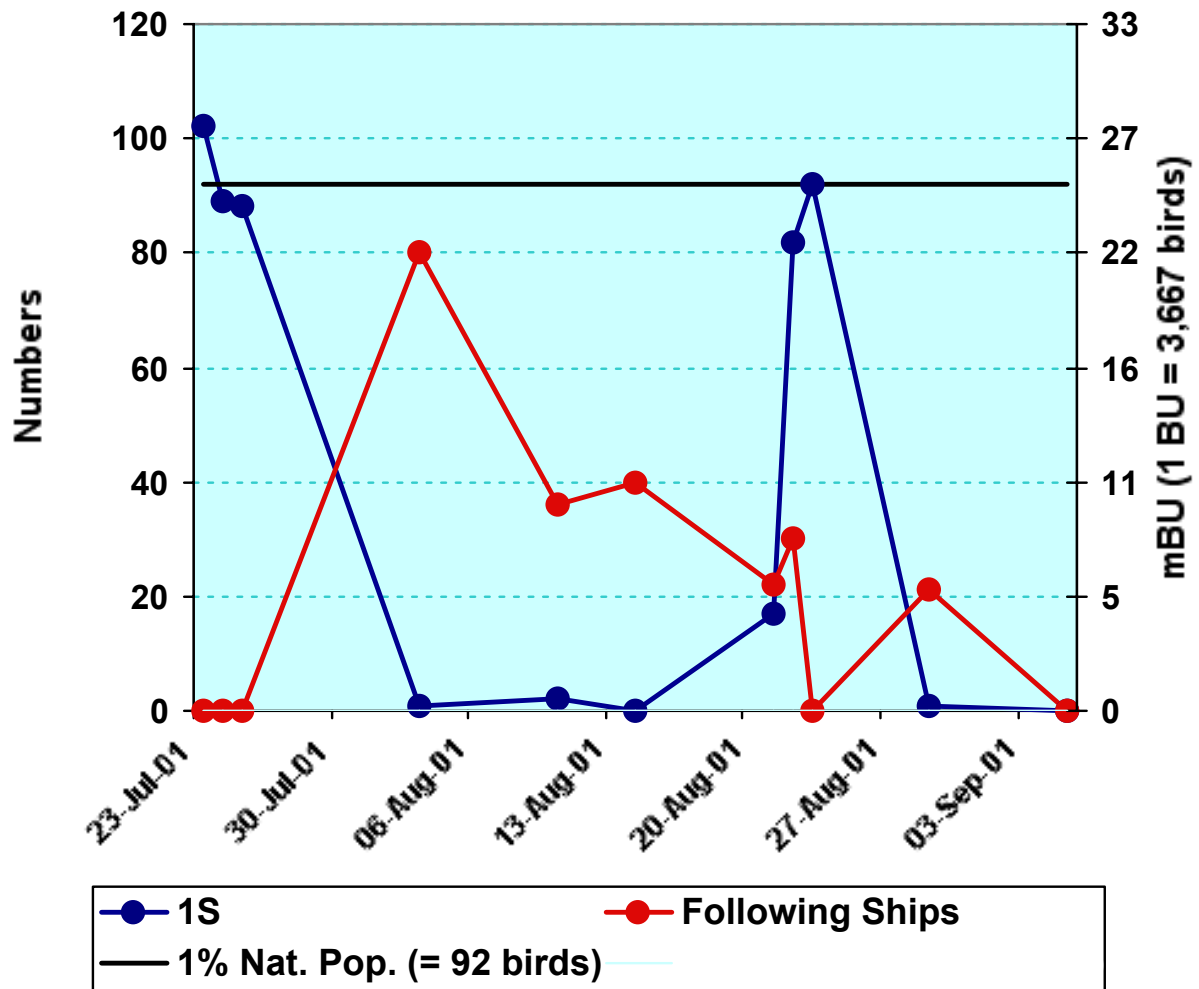
Somewhat unexpectedly, a feeding flock of 102 common terns were recorded on the site on 23 July (because of the very low numbers of arctic terns in the colony, all unidentified terns were assumed to be common terns). They fed very actively in shallow water at the edge of the exposed area for 10 to 15 minutes and then dispersed (Fig. 9). Similar brief feeding episodes were recorded on the remaining spring low tides in July and August but the birds had departed the area by early September. These episodes were either around 1S2 or near the pipe.

The initial observations on 23 July raised concerns that the terns might also be feeding over the site at low tides on days when the site was shallowly covered. Therefore, a series of weekly low tide visits were made until mid September. These visits showed that the terns used the site only on spring low tides. They also revealed that a common feeding behaviour of the terns appeared to be following ships going in and out of the harbour. Presumably, they were catching fish churned up by the propellers. Finally, the observations showed that the large flock of several thousand common, arctic and roseate terns that roost on the nearby Sandymount Strand in August and early September do not use the site or the Liffey Estuary.



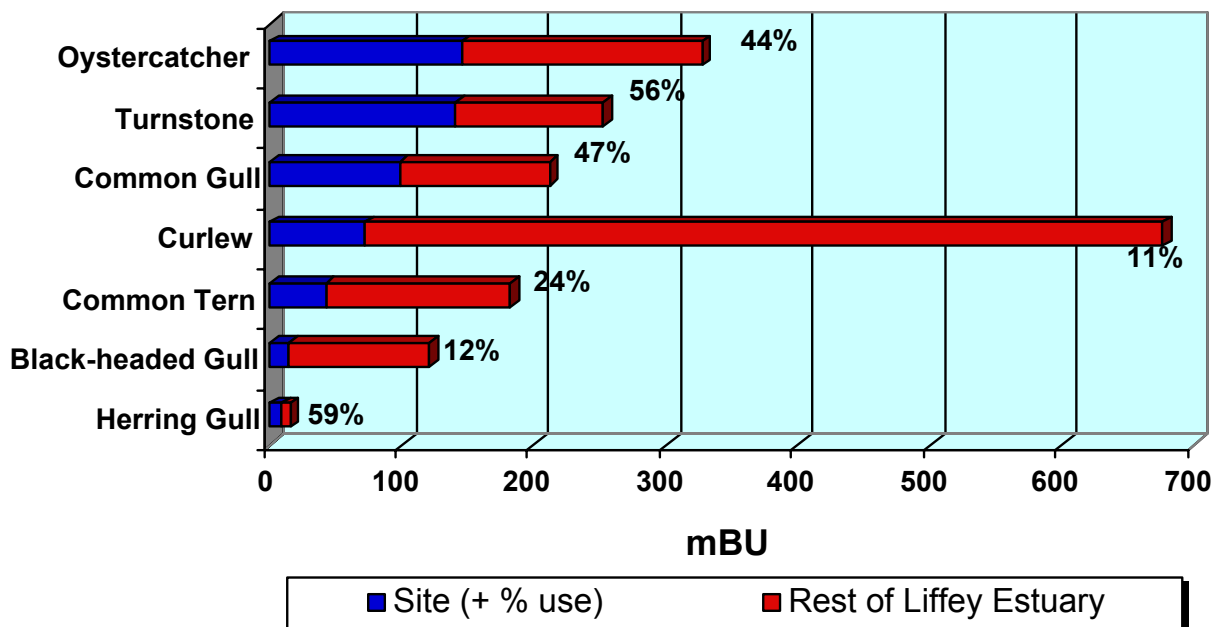
*Fig.9. Flock of common terns feeding over the site on 24 July 2001 (+0.25m LAT). The birds on water are mostly black-headed gulls. The “Half Moon” on the South Wall is in the background.*

### Chart 4. Common Tern Daily Peaks



Overall, common terns were the only species to occur on site in nationally important numbers – but only at spring low tides. However, they only achieved fifth place in the significance chart because they had only two months in which to accumulate cumulative usage. As summer visitors to Ireland, common terns would not have used the site when it was exposed in early spring. It is possible that Chart 5 understates the importance of the tern usage of the site because of “turnover”. In other words, other birds from the colony might have replaced terns travelling back to the colony with fish. However, this was not observed and the feeding flocks appeared to disperse too quickly for there to be much turnover.

### Chart 5. Species Ranking by Cumulative Site Usage



#### 4.3 Overall Assessment of the Site

The cumulative use of the site by the three wader species, oystercatcher, curlew and turnstone, amounted to 359 mBU (Chart 5). This is 13.6% of the 5,606 mBU year round cumulative usage of Dublin Bay by these three species (there is insufficient gull count data of the Bay for this analysis).

However, during 2001 the site was exposed to a significant extent during only 24 low tides of less than +0.35m LAT (Table 1). This is 3.52% of the 680 low tides that occur annually (note that on a day when one low tide is less than +0.35m LAT, the other tide is well in excess of this). The birds using it must feed elsewhere in the Bay when it is not available. When this factor is accounted for, the cumulative use of the site accounts drops to just under 0.5% of the Bay total. This, however, is a maximum figure as there were only eight low tides in 2001 when up to a quarter of 1S was exposed for up to two hours. During the remaining 14 tides of less than +0.35m LAT, progressively smaller fractions of 1S would have been exposed for less and time. In fact, there were 6 low tides in the range +0.28 to +0.21m LAT and 10 in the range +0.29 to +0.35m. When these smaller and shorter exposures are taken into account, the cumulative use of the site by these three waders was estimated at about 0.35% in about 0.25% of the intertidal area of the Bay.



## **5 Discussion and Recommendations**

The site of the proposed development is highly favoured by oystercatchers when it is uncovered on the spring low tides. These birds come from the nearby SPAs in the rest of the Liffey Estuary and the Bull Island. The species is one of the secondary species of national importance for which these SPAs were designated. The primary species, such as brent geese, bar-tailed godwit and redshank, occur on the SPAs in numbers of international importance. The site is used to a lesser extent by curlews, turnstone and common terns, the last of which is on Annex 1 of the EU Birds Directive. However, the colony from which they come has not been designated as an SPA because it has attained its current size only in the last few years.

The recommendations below were made in the context of SPAs being protected by Article 6 of the EU Habitats Directive (92/43). This Directive is implemented in Ireland by the Natural Habitats Regulations (SI 94 of 97). The EU Commission has also produced guidance notes on the interpretation of Article 6 (EU Commission 2000).

It is considered that at very most, there would be a minor adverse impact on oystercatchers and terns if the proposal goes ahead because of the low number of times in the year when it is available to them. The adverse impacts on all other species are judged to be negligible. Given the generally favourable conservation status of these two species (Newton et al 1999, Tucker & Heath 1994) and the fact that they do not occur in internationally important numbers in Dublin Bay, the adverse impact of the proposal on the integrity of the existing SPAs in Dublin and the tern colony judged to be negligible.

Proposals such as this must also be judged in combination with other projects that may impact on the SPAs in the Bay. In recent years, there have been several pipeline projects across the Bay, some of which are ongoing. None of these has yet been shown to have had a significant adverse impact but monitoring is continuing (Ecological Consultancy Service 2001). Since medieval times the shoreline of the Bay has been considerably modified as the Port has extended seawards (Dublin Port 1997). However, this has also resulted in the development of new intertidal areas, most notably the Bull Island. With current data, it is therefore not possible to say if there has been an overall decline in the extent of intertidal areas due to the Port's expansion. Taking the proposal itself and the other projects together, it is considered that the proposed extension will not result in a negative assessment of its implications for the Bay's conservation objectives.

Given this assessment, compensatory ecological measures are not required under the Habitats Directive. Nonetheless, such measures were considered in the 1997 EIS (Fig. 3.3.4.5) to mitigate even the negligible impacts the proposal will have. The best available option, therefore, would be to proceed with scheme proposed in the 1997 EIS to increase the size of the muddy intertidal part of Area 3. This would be done by raising its height to +0.75 LAT with the material dredged from the access channel to Clontarf Yacht and Boat Club. This would increase the availability of this area to black-tailed godwit and redshank. The former regularly occurs in Dublin Bay in numbers of international importance and the latter has begun to do so in the last year or so. Furthermore nationally important numbers of black-tailed godwit (> 80) were observed using Area 3 in February and March 2001 (95 and 132, respectively).

It is reasonable to predict that this scheme will succeed based on the experience of a much larger intertidal muddy area at Dunkettle in Cork Harbour. This feeding area was artificially, albeit

## **Bird Counts for Dublin Port Extension EIS**

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unintentionally, created from channel dredgings and it has attract large numbers of black-tailed godwits, redshank and other waterfowl over the last two to three decades (JC pers. obs.). However, the deliberate creation or enhancement of intertidal habitat is still at an experimental stage. Therefore, there be should ecological input at the design and construction stages and the scheme should be monitored as proposed in the 1997 EIS.

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