3FMProject

Bringing
Dublin Port
To 2040

Environmental Impact Assessment Report

Appendix 7.5

Volume 3 Part 3

COMHLACHT CHALAFORT ÁTHA CLIATH
DUBLIN PORT COMPANY

rps
A TETRA TECH COMPANY

Third & Final
Masterplan
Project

Contents

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7.5.1a BTO Species Codes

BTO SPECIES CODES

AC	Arctic Skua	GA	Gadwall	LE	Long-eared Owl	SM	Sand Martin
AE	Arctic Tern	GX	Gannet	LT	Long-tailed Tit	SS	Sanderling
AV	Avocet	GW	Garden Warbler	MG	Magpie	TE	Sandwich Tern
BO	Barn Owl	GY	Garganey	MA	Mallard	VI	Savi's Warbler
BY	Barnacle Goose	GC	Goldcrest	MN	Mandarin Duck	SQ	Scarlet Rosefinch
BA	Bar-tailed Godwit	EA	Golden Eagle	MX	Manx Shearwater	SP	Scaup
BR	Bearded Tit	OL	Golden Oriole	MR	Marsh Harrier	CY	Scottish Crossbill
BS	Berwick's Swan	GF	Golden Pheasant	MT	Marsh Tit	SW	Sedge Warbler
BI	Bittern	GP	Golden Plover	MW	Marsh Warbler	NS	Serin
BK	Black Grouse	GN	Goldeneye	MP	Meadow Pipit	SA	Shag
TY	Black Guillemot	GO	Goldfinch	MU	Mediterranean Gull	SU	Shelduck
BX	Black Redstart	GD	Goosander	ML	Merlin	SX	Shorelark
BJ	Black Tern	GI	Goshawk	M.	Mistle Thrush	SE	Short-eared Owl
B.	Blackbird	GH	Grasshopper Warbler	MO	Montagu's Harrier	SV	Shoveler
BC	Blackcap	GB	Great Black-backed Gull	MH	Moorhen	SK	Siskin
BH	Black-headed Gull	GG	Great Crested Grebe	MS	Mute Swan	S.	Skylark
BN	Black-necked Grebe	ND	Great Northern Diver	N.	Nightingale	SZ	Slavonian Grebe
BW	Black-tailed Godwit	NX	Great Skua	NJ	Nightjar	SN	Snipe
BV	Black-throated Diver	GS	Great Spotted Woodpecker	NH	Nuthatch	SB	Snow Bunting
BT	Blue Tit	GT	Great Tit	OP	Osprey	ST	Song Thrush
BU	Bluethroat	GE	Green Sandpiper	OC	Oystercatcher	SH	Sparrowhawk
BL	Brambling	G.	Green Woodpecker	PX	Peafowl/Peacock	AK	Spotted Crake
BG	Brent Goose	GR	Greenfinch	PE	Peregrine	SF	Spotted Flycatcher
BF	Bullfinch	GK	Greenshank	PH	Pheasant	DR	Spotted Redshank
BZ	Buzzard	H.	Grey Heron	PF	Pied Flycatcher	SG	Starling
CG	Canada Goose	P.	Grey Partridge	PW	Pied Wagtail	SD	Stock Dove
CP	Capercaillie	GV	Grey Plover	PG	Pink-footed Goose	SC	Stonechat
C.	Carrion Crow	GL	Grey Wagtail	PT	Pintail	TN	Stone-curlew
CW	Cetti's Warbler	GJ	Greylag Goose	PO	Pochard	TM	Storm Petrel
CH	Chaffinch	GU	Guillemot	PM	Ptarmigan	SL	Swallow
CC	Chiffchaff	FW	Guineafowl (Helmeted)	PU	Puffin	SI	Swift
CF	Chough	HF	Hawfinch	PS	Purple Sandpiper	TO	Tawny Owl
CL	Cirl Bunting	HH	Hen Harrier	Q.	Quail	T.	Teal
CT	Coal Tit	HG	Herring Gull	RN	Raven	TK	Temminck's Stint
CD	Collared Dove	HY	Hobby	RA	Razorbill	TP	Tree Pipit
CM	Common Gull	HZ	Honey Buzzard	RG	Red Grouse	TS	Tree Sparrow
CS	Common Sandpiper	HC	Hooded Crow	KT	Red Kite	TC	Treecreeper
CX	Common Scoter	HP	Hoopoe	ED	Red-backed Shrike	TU	Tufted Duck
CN	Common Tern	HM	House Martin	RM	Red-breasted Merganser	TT	Turnstone
CO	Coot	HS	House Sparrow	RQ	Red-crested Pochard	TD	Turtle Dove
CA	Cormorant	JD	Jackdaw	FV	Red-footed Falcon	TW	Twite
CB	Corn Bunting	J.	Jay	RL	Red-legged Partridge	WA	Water Rail
CE	Corncrake	K.	Kestrel	NK	Red-necked Phalarope	W.	Wheatear
CI	Crested Tit	KF	Kingfisher	LR	Redpoll (Lesser)	WM	Whimbrel
CR	Crossbill (Common)	KI	Kittiwake	RK	Redshank	WC	Whinchat
CK	Cuckoo	KN	Knot	RT	Redstart	WG	White-fronted Goose
CU	Curlew	LM	Lady Amherst's Pheasant	RH	Red-throated Diver	WH	Whitethroat
DW	Dartford Warbler	LA	Lapland Bunting	RE	Redwing	WS	Whooper Swan
DI	Dipper	L.	Lapwing	RB	Reed Bunting	WN	Wigeon
DO	Dotterel	TL	Leach's Petrel	RW	Reed Warbler	WT	Willow Tit
DN	Dunlin	LB	Lesser Black-backed Gull	RZ	Ring Ouzel	WW	Willow Warbler
D.	Dunnock	LS	Lesser Spotted Woodpecker	RP	Ringed Plover	OD	Wood Sandpiper
EG	Egyptian Goose	LW	Lesser Whitethroat	RI	Ring-necked Parakeet	WO	Wood Warbler
E.	Eider	LI	Linnet	R.	Robin	WK	Woodcock
FP	Feral Pigeon	ET	Little Egret	DV	Rock Dove (not feral)	WL	Woodlark
ZL	Feral/hybrid goose	LG	Little Grebe	RC	Rock Pipit	WP	Woodpigeon
ZF	Feral/hybrid mallard type	LU	Little Gull	RO	Rook	WR	Wren
FF	Fieldfare	LO	Little Owl	RS	Roseate Tern	WY	Wryneck
FC	Firecrest	LP	Little Ringed Plover	RY	Ruddy Duck	YW	Yellow Wagtail
F.	Fulmar	AF	Little Tern	RU	Ruff	Y.	Yellowhammer

7.5.1b BTO Breeding Status Codes

Breeding Status Codes

Non-breeding	
F	**F**lying over
M	Species observed but suspected to be still on **M**igration
U	Species observed but suspected to be s**U**mmering non-breeder
Possible breeder	
H	Species observed in breeding season in suitable nesting **H**abitat
S	**S**inging male present (or breeding calls heard) in breeding season in suitable breeding habitat
Probable breeding	
P	**P**air observed in suitable nesting habitat in breeding season
T	Permanent **T**erritory presumed through registration of territorial behaviour (song etc) on at least two different days a week or more part at the same place or many individuals on one day
D	Courtship and **D**isplay (judged to be in or near potential breeding habitat; be cautious with wildfowl)
N	Visiting probable **N**est site
A	**A**gitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby
I	Brood patch on adult examined in the hand, suggesting **I**ncubation
B	Nest **B**uilding or excavating nest-hole
Confirmed breeding	
DD	**D**istraction-**D**isplay or injury feigning
UN	**U**sed **N**est or eggshells found (occupied or laid within period of survey)
FL	Recently **FL**edged young (nidicolous species) or downy young (nidifugous species). Careful consideration should be given to the likely provenance of any fledged juvenile capable of significant geographical movement. Evidence of dependency on adults (e.g. feeding) is helpful. Be cautious, even if the record comes from suitable habitat.
ON	Adults entering or leaving nest-site in circumstances indicating **O**ccupied **N**est (including high nests or nest holes, the contents of which can not be seem) or adults seen incubating
FF	Adult carrying **F**aecal sac or **F**ood for young
NE	**N**est containing **E**ggs
NY	**N**est with **Y**oung seen or heard

7.5.1c Qualifying Interests SPAs

South Dublin Bay and River Tolka Estary SPA

- Light-bellied Brent Goose (Branta bernicla hrota) [A046]
- Oystercatcher (Haematopus ostralegus) [A130]
- Ringed Plover (Charadrius hiaticula) [A137]
- Grey Plover (Pluvialis squatarola) [A141]
- Knot (Calidris canutus) [A143]
- Sanderling (Calidris alba) [A144]
- Dunlin (Calidris alpina) [A149]
- Bar-tailed Godwit (Limosa lapponica) [A157]
- Redshank (Tringa totanus) [A162]
- Black-headed Gull (Chroicocephalus ridibundus) [A179]
- Roseate Tern (Sterna dougallii) [A192]
- Common Tern (Sterna hirundo) [A193]
- Arctic Tern (Sterna paradisaea) [A194]
- Wetland and Waterbirds [A999]

North Bull Island SPA

- Light-bellied Brent Goose (Branta bernicla hrota) [A046]
- Shelduck (Tadorna tadorna) [A048]
- Teal (Anas crecca) [A052]
- Pintail (Anas acuta) [A054]
- Shoveler (Anas clypeata) [A056]
- Oystercatcher (Haematopus ostralegus) [A130]
- Golden Plover (Pluvialis apricaria) [A140]
- Grey Plover (Pluvialis squatarola) [A141]
- Knot (Calidris canutus) [A143]
- Sanderling (Calidris alba) [A144]
- Dunlin (Calidris alpina) [A149]

- Black-tailed Godwit (Limosa limosa) [A156]
- Bar-tailed Godwit (Limosa lapponica) [A157]
- Curlew (Numenius arquata) [A160]
- Redshank (Tringa totanus) [A162]
- Turnstone (Arenaria interpres) [A169]
- Black-headed Gull (Chroicocephalus ridibundus) [A179]
- Wetland and Waterbirds [A999]

Baldoyle Bay SPA

- Light-bellied Brent Goose (Branta bernicla hrota) [A046]
- Shelduck (Tadorna tadorna) [A048]
- Ringed Plover (Charadrius hiaticula) [A137]
- Golden Plover (Pluvialis apricaria) [A140]
- Grey Plover (Pluvialis squatarola) [A141]
- Bar-tailed Godwit (Limosa lapponica) [A157]
- Wetland and Waterbirds [A999]

Dalkey Islands SPA

- Roseate Tern (Sterna dougallii) [A192]
- Common Tern (Sterna hirundo) [A193]
- Arctic Tern (Sterna paradisaea) [A194]

Howth Head SPA

- Kittiwake (Rissa tridactyla) [A188]

Ireland's Eye SPA

- Cormorant (Phalacrocorax carbo) [A017]
- Herring Gull (Larus argentatus) [A184]

- Kittiwake (Rissa tridactyla) [A188]
- Guillemot (Uria aalge) [A199]
- Razorbill (Alca torda) [A200]

Malahide Estuary SPA

- Great Crested Grebe (Podiceps cristatus) [A005]
- Light-bellied Brent Goose (Branta bernicla hrota) [A046]
- Shelduck (Tadorna tadorna) [A048]
- Pintail (Anas acuta) [A054]
- Goldeneye (Bucephala clangula) [A067]
- Red-breasted Merganser (Mergus serrator) [A069]
- Oystercatcher (Haematopus ostralegus) [A130]
- Golden Plover (Pluvialis apricaria) [A140]
- Grey Plover (Pluvialis squatarola) [A141]
- Knot (Calidris canutus) [A143]
- Dunlin (Calidris alpina) [A149]
- Black-tailed Godwit (Limosa limosa) [A156]
- Bar-tailed Godwit (Limosa lapponica) [A157]
- Redshank (Tringa totanus) [A162]
- Wetland and Waterbirds [A999]

7.5.1d Vantage Point Survey

Date	Species	Number	Height band
30/09/2022	Herring Gull	2	B
30/09/2022	Herring Gull	4	B
30/09/2022	Black-headed Gull	6	B
30/09/2022	Herring Gull	11	C
30/09/2022	Herring Gull	4	C
30/09/2022	Black-headed Gull	2	B
30/09/2022	Herring Gull	5	C
30/09/2022	Black-headed Gull	2	B
30/09/2022	Black-headed Gull	2	C
30/09/2022	Herring Gull	7	C
30/09/2022	Black-headed Gull	4	C
30/09/2022	Herring Gull	12	C
30/09/2022	Herring Gull	7	C
30/09/2022	Black-headed Gull	4	A
30/09/2022	Buzzard	1	C
30/09/2022	Herring Gull	7	B
30/09/2022	Black-headed Gull	6	A
30/09/2022	Herring Gull	13	C
30/09/2022	Herring Gull	7	C
30/09/2022	Black-headed Gull	5	A
30/09/2022	Herring Gull	14	B
26/10/2022	Herring Gull	9	A
26/10/2022	Herring Gull	6	B
26/10/2022	Black-headed Gull	7	B
26/10/2022	Common Gull	3	B
26/10/2022	Mediterranean Gull	1	A
26/10/2022	Black-headed Gull	9	A
26/10/2022	Herring Gull	6	B
26/10/2022	Herring Gull	11	B
26/10/2022	Common Gull	4	A
28/11/2022	Black-headed Gull	7	C
28/11/2022	Herring Gull	8	B
28/11/2022	Herring Gull	3	B
28/11/2022	Black-headed Gull	11	B
28/11/2022	Mallard	6	C

Date	Species	Number	Height band
28/11/2022	Black-headed Gull	17	C
28/11/2022	Herring Gull	14	C
28/11/2022	Cormorant	1	C
28/11/2022	Cormorant	2	C
28/11/2022	Herring Gull	22	C
28/11/2022	Black-headed Gull	19	B
28/11/2022	Black-headed Gull	11	B
28/11/2022	Black-headed Gull	3	B
28/11/2022	Black-headed Gull	7	B
13/12/2022	Herring Gull	7	B
13/12/2022	Black-headed Gull	3	B
13/12/2022	Herring Gull	9	C
13/12/2022	Herring Gull	3	B
13/12/2022	Black-headed Gull	3	B
13/12/2022	Black-headed Gull	11	C
13/12/2022	Shag	2	C
13/12/2022	Herring Gull	19	B
13/12/2022	Great Black-backed Gull	1	C
13/12/2022	Herring Gull	6	C
13/12/2022	Herring Gull	3	B
13/12/2022	Mediterranean Gull	1	A
21/12/2022	Herring Gull	7	B
21/12/2022	Herring Gull	9	C
21/12/2022	Black-headed Gull	2	C
21/12/2022	Black-headed Gull	3	C
21/12/2022	Black-headed Gull	17	C
21/12/2022	Herring Gull	8	B
21/12/2022	Mediterranean Gull	2	B
21/12/2022	Black-headed Gull	2	C
21/12/2022	Herring Gull	7	B
21/12/2022	Shag	1	C
21/12/2022	Black-headed Gull	1	B
21/12/2022	Herring Gull	3	B
21/12/2022	Herring Gull	1	C
21/12/2022	Black-headed Gull	11	C
21/12/2022	Herring Gull	16	B
21/12/2022	Sparrowhawk	1	C

Date	Species	Number	Height band
26/01/2023	Herring Gull	3	C
26/01/2023	Herring Gull	7	B
26/01/2023	Herring Gull	1	B
26/01/2023	Black-headed Gull	7	B
26/01/2023	Herring Gull	9	B
26/01/2023	Great Black-backed Gull	1	B
26/01/2023	Black-headed Gull	1	B
26/01/2023	Black-headed Gull	7	B
26/01/2023	Common Gull	2	B
26/01/2023	Black-headed Gull	11	B
26/01/2023	Common Gull	3	C
17/01/2023	Herring Gull	3	B
17/01/2023	Black-headed Gull	2	B
17/01/2023	Brent Goose	7	C
17/01/2023	Black-headed Gull	3	B
17/01/2023	Grey Heron	1	B
17/01/2023	Herring Gull	9	C
17/01/2023	Cormorant	1	C
17/01/2023	Mallard	2	C
02/02/2023	Black-headed Gull	11	B
02/02/2023	Black-headed Gull	6	B
02/02/2023	Common Gull	3	B
02/02/2023	Great Black-backed Gull	2	B
02/02/2023	Herring Gull	7	C
02/02/2023	Herring Gull	7	A
02/02/2023	Lesser Black-backed Gull	1	B
02/02/2023	Herring Gull	2	C
02/02/2023	Lesser Black-backed Gull	1	B
02/02/2023	Herring Gull	1	B
02/02/2023	Black-headed Gull	19	C
02/02/2023	Mallard	3	C
02/02/2023	Herring Gull	3	C
02/02/2023	Great Black-backed Gull	1	C
11/02/2023	Herring Gull	27	C
11/02/2023	Black-headed Gull	19	B
11/02/2023	Lesser Black-backed Gull	1	B
11/02/2023	Lesser Black-backed Gull	2	B

Date	Species	Number	Height band
11/02/2023	Black-headed Gull	11	B
11/02/2023	Great Black-backed Gull	1	B
11/02/2023	Herring Gull	6	C
11/02/2023	Black-headed Gull	7	C
11/02/2023	Mediterranean Gull	1	B
11/03/2023	Black-headed Gull	7	C
11/03/2023	Herring Gull	2	C
11/03/2023	Herring Gull	9	C
11/03/2023	Herring Gull	2	B
11/03/2023	Herring Gull	3	B
11/03/2023	Brent Goose	3	C
11/03/2023	Herring Gull	4	C
11/03/2023	Brent Goose	11	C
11/03/2023	Herring Gull	9	C
11/03/2023	Black-headed Gull	1	C
11/03/2023	Black-headed Gull	6	A
11/03/2023	Common Gull	7	B
11/03/2023	Common Gull	3	A
11/03/2023	Lesser Black-backed Gull	2	C
25/03/2023	Herring Gull	7	B
25/03/2023	Black-headed Gull	11	C
25/03/2023	Herring Gull	3	C
25/03/2023	Herring Gull	9	B
25/03/2023	Herring Gull	7	C
25/03/2023	Herring Gull	7	C
25/03/2023	Sparrowhawk	1	A
25/03/2023	Black-headed Gull	4	C
02/02/2024	Cormorant	1	B
02/02/2024	Brent Goose	9	B
02/02/2024	Herring Gull	5	B
02/02/2024	Herring Gull	2	A
02/02/2024	Black Guillemot	1	A
02/02/2024	Black-headed Gull	7	A
02/02/2024	Black-headed Gull	3	B
02/02/2024	Mallard	4	B
02/02/2024	Cormorant	1	B

Date	Species	Number	Height band
02/02/2024	Brent Goose	5	A
02/02/2024	Herring Gull	6	B
02/02/2024	Common Gull	3	B
02/02/2024	Black-headed Gull	11	B
02/02/2024	Cormorant	1	A
02/02/2024	Oystercatcher	2	B
02/02/2024	Black-headed Gull	6	A
02/02/2024	Black-headed Gull	3	B
02/02/2024	Black Guillemot	1	A
02/02/2024	Black-headed Gull	9	A
02/02/2024	Common Gull	2	A
02/02/2024	Great Black-backed Gull	2	B
02/02/2024	Herring Gull	4	B
27/02/2024	Brent Goose	9	B
27/02/2024	Herring Gull	4	B
27/02/2024	Brent Goose	11	B
27/02/2024	Black-headed Gull	2	A
27/02/2024	Black-headed Gull	6	B
27/02/2024	Black-headed Gull	14	A
27/02/2024	Cormorant	1	A
27/02/2024	Common Gull	3	B
27/02/2024	Great Black-backed Gull	2	B
27/02/2024	Mallard	1	A
27/02/2024	Black-headed Gull	2	B
27/02/2024	Herring Gull	4	C
27/02/2024	Black-headed Gull	6	A
27/02/2024	Common Gull	1	B
27/02/2024	Black-headed Gull	3	B
27/02/2024	Black-headed Gull	9	B
27/02/2024	Black-headed Gull	27	C
05/03/2024	Black Guillemot	1	A
05/03/2024	Black Guillemot	2	A
05/03/2024	Oystercatcher	2	B
05/03/2024	Herring Gull	5	C
05/03/2024	Common Gull	3	C
05/03/2024	Black-headed Gull	3	B
05/03/2024	Brent Goose	22	B

Date	Species	Number	Height band
05/03/2024	Little Egret	1	B
05/03/2024	Cormorant	1	B
05/03/2024	Grey Heron	1	A
05/03/2024	Oystercatcher	2	B
05/03/2024	Black Guillemot	2	A
05/03/2024	Mallard	2	A
05/03/2024	Black Guillemot	2	A
05/03/2024	Herring Gull	4	C
05/03/2024	Redshank	2	A
05/03/2024	Mallard	2	B
05/03/2024	Mute Swan	2	B
05/03/2024	Great Black-backed Gull	2	C
05/03/2024	Mallard	6	B
05/03/2024	Black Guillemot	1	A
05/03/2024	Herring Gull	3	C
05/03/2024	Brent Goose	7	C
05/03/2024	Little Egret	2	B
05/03/2024	Black-headed Gull	2	C

7.5.1e TTTCC Survey

SPECIES	April		May		June		July		August		September		October		November		December		January		February		March	
	HT	LT	HT	LT	LT	HT	LT	HT	LT	HT	LT	HT	LT	HT	HT	LT	HT	LT	HT	LT	HT	LT	HT	LT
	20/04	26/04	13/05	22/05	04/06	30/06	10/07	17/07	05/08	18/08	12/09	23/09	03/10	27/10	03/11	29/11	13/12	21/12	23/01	16/01	11/02	02/02	08/03	21/03
Arctic Tern	0	0	0	0	30	30	33	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black Guillemot	8	10	13	4	28	35	17	17	0	8	7	6	3	2	10	10	5	6	2	8	1	4	6	0
Black-headed Gull	264	270	0	6	16	0	354	200	244	0	185	323	255	450	193	688	616	781	541	786	670	712	892	678
Black-tailed Godwit	0	0	0	0	0	0	14	0	0	0	0	0	11	0	0	0	0	10	0	11	9	19	0	11
Common Guillemot	0	0	0	0	0	0	0	0	0	0	6	9	0	7	3	2	2	2	2	0	2	4	0	7
Common Gull	8	19	0	0	0	0	12	117	1	11	0	0	0	2	110	29	112	60	100	11	0	221	87	0
Common Tern	0	0	42	50	40	52	40	39	22	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cormorant	7	9	12	7	24	29	18	19	16	112	36	25	39	70	57	13	26	28	10	32	20	14	13	9
Curlew	0	0	0	4	0	0	4	0	14	0	17	11	7	0	0	27	0	0	0	0	0	0	0	0
Dunlin	0	0	0	0	0	0	0	0	12	0	113	0	0	0	0	111	0	0	0	9	100	330	2	0
Gannet	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great black-backed Gull	0	0	2	7	19	4	0	3	2	4	3	1	3	1	6	2	2	3	0	0	0	2	0	2
Great Northern Diver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Great-crested Grebe	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	3	0	2	1	0	0	1	0
Greenshank	0	3	0	0	0	0	0	0	3	4	4	0	2	0	2	3	0	0	0	1	4	3	0	1
Grey Heron	0	0	0	0	0	1	1	0	2	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0
Herring Gull	105	123	34	100	215	2250	54	447	499	550	72	87	11	38	0	19	50	111	61	17	70	20	11	45
Lesser black-backed Gull	3	11	4	19	14	39	0	19	4	17	7	2	0	2	0	0	0	0	0	1	0	0	2	0
Little Egret	0	2	1	6	5	0	3	0	4	2	0	0	0	2	0	7	0	0	0	1	2	4	0	0
Little Grebe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Little Tern	0	0	19	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
Mallard	0	7	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mediterranean Gull	7	0	0	0	1	0	0	0	3	7	0	4	11	0	0	0	0	3	9	0	0	0	0	0
Oystercatcher	0	0	0	20	0	0	44	0	0	0	0	0	0	0	0	0	0	0	3	0	80	1500	0	0
Razorbill	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	2	0	3	0	0	0	4	2
Red-breasted Merganser	0	0	0	0	0	0	0	0	0	0	3	2	0	1	0	0	13	7	6	3	0	0	2	0
Redshank	4	7	2	3	0	0	11	0	22	17	220	0	18	0	18	44	0	11	17	2	49	66	5	17
Ringed Plover	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0
Sanderling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
Sandwich Tern	0	0	0	0	0	0	3	6	4	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shag	0	0	3	4	0	2	0	0	3	2	2	5	2	2	2	1	0	1	0	0	0	0	1	0
Shelduck	0	0	2	6	0	0	0	3	2	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0
Teal	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	6	4	0	0	3	4	0

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Turnstone	0	6	0	0	0	0	0	0	0	6	17	7	0	17	4	7	0	2	0	8	1	7	0	0

7.5.1f Co-ordinated TTTCC Survey

BULL ISLAND	Oct-23												Nov-23												Dec-23											
Time	Hr1		Hr2		Hr3		Hr4		Hr5		Hr6		Hr1		Hr2		Hr3		Hr4		Hr5		Hr6		Hr1		Hr2		Hr3		Hr4		Hr5		Hr6	
Foraging / Roosting	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R
Bar-tailed Godwit	0	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0
Black-headed Gull	45	0	100	52	185	120	0	50	0	0	0	0	6	60	16	18	36	0	51	26	105	0	50	0	26	0	52	0	60	25	36	0	10	155	11	128
Black-tailed Godwit	0	0	0	0	88	550	72	155	0	40	0	0	59	260	162	0	40	0	0	0	1	0	11	0	73	0	40	0	22	4	31	0	67	60	107	19
Common Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0	1	40	2	4
Common sandpiper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cormorant	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Curlew	0	0	12	0	10	0	0	12	0	0	0	0	5	0	2	0	10	0	1	0	1	0	1	0	15	0	12	0	9	0	5	0	4	0	3	0
Dunlin	0	0	0	0	0	0	0	0	0	0	0	0	187	0	153	130	20	0	0	0	0	0	10	0	805	0	162	0	67	0	193	0	388	200	559	70
Golden plover	0	0	0	151	0	100	0	0	0	0	0	0	0	0	0	45	0	0	0	0	0	0	0	0	0	50	0	75	0	70	45	0	0	0	10	6
Great Black-backed Gull	0	0	0	0	1	2	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Greenshank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grey Heron	0	0	2	0	2	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Grey Plover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0
Herring Gull	6	0	6	0	25	0	0	0	0	8	0	0	0	29	24	2	17	0	11	6	25	0	21	0	14	12	32	0	56	8	4	0	0	16	0	28
Knot	0	0	0	0	250	0	157	900	0	200	0	0	600	6525	20	1220	2	0	0	50	6	60	1	0	0	5000	0	5030	2	0	0	0	250	650	930	730
Lapwing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser black-backed gull	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	8	0	1	0	0	0	1	0	1	0	0	2	0	1
Light-bellied Brent goose	0	0	120	0	166	0	20	4	20	0	0	0	329	152	69	45	212	0	144	26	339	0	259	0	100	25	0	0	0	0	0	0	0	1	0	10
Little egret	14	0	49	10	23	0	0	0	0	0	0	0	1	0	0	20	1	0	4	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Little grebe	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0
Mallard	0	0	21	0	20	0	0	0	0	8	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oystercatcher	11	0	72	0	370	63	250	0	0	150	0	0	283	80	6	133	112	0	82	0	74	0	141	0	157	10	135	0	148	31	213	0	226	125	162	40
Red-breasted merganser	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0
Redshank	11	0	122	112	145	0	42	100	20	20	0	0	110	35	51	25	87	0	94	0	63	0	113	0	133	0	90	0	56	0	37	0	30	0	77	0
Ringed Plover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0
Shelduck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Teal	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	45	0	2	0	0	0	0	0	0	0	0	0
Turnstone	0	0	12	0	20	0	35	0	0	0	0	0	9	0	0	0	0	0	0	0	2	0	21	0	7	0	0	0	9	0	0	0	1	0	2	0
Wigeon	4	0	9	0	0	0	0	0	0	0	0	0	0	0	10	0	24	0	43	0	34	0	6	0	0	0	0	0	0	0	33	0	5	14	22	12
TOTAL	92	0	525	325	1305	835	576	1247	43	426	4	1	1602	7146	514	1640	565	0	431	109	652	60	647	0	1380	5097	525	5105	434	138	603	0	988	1263	1891	1048

APPENDIX 7.5.1

BULL ISLAND	Jan-24												Feb-24												Mar-24											
Time	Hr1		Hr2		Hr3		Hr4		Hr5		Hr6		Hr1		Hr2		Hr3		Hr4		Hr5		Hr6		Hr1		Hr2		Hr3		Hr4		Hr5		Hr6	
Foraging / Roosting	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R
Bar-tailed Godwit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-headed Gull	13	59	15	133	119	215	85	50	90	71	35	211	0	0	0	25	0	12	0	76	0	0	0	200	12	5	0	0	94	0	91	0	4	19	34	0
Black-tailed Godwit	0	0	11	0	18	116	55	180	19	5	14	1	36	80	0	0	0	0	0	0	22	0	0	0	14	0	12	0	67	0	125	0	187	0	67	0
Common Gull	6	63	0	151	194	387	48	51	11	21	14	68	0	50	0	180	0	0	0	86	0	10	0	663	48	6	90	0	312	0	183	0	101	133	40	0
Common sandpiper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0
Cormorant	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Curlew	0	0	0	0	12	7	10	3	8	4	14	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	10	0	5	0
Dunlin	34	0	193	230	734	350	541	71	70	55	34	0	86	200	0	120	0	0	0	0	0	0	0	0	0	0	42	0	173	0	168	0	102	0	14	0
Golden plover	0	0	0	0	0	95	0	95	0	145	0	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greenshank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grey Heron	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	3	0
Grey Plover	0	0	0	0	0	0	0	1	0	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	12	25	14	0	7	38	8	19	1	16	4	6	0	0	0	0	0	0	0	0	0	31	0	140	9	0	6	0	105	0	56	0	31	24	12	0
Knot	0	0	1	0	200	650	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	75	26	0
Lapwing	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser black-backed gull	0	0	1	0	0	0	0	2	0	3	0	7	0	0	0	0	0	0	0	0	0	0	0	80	0	0	2	0	30	0	4	0	4	0	0	0
Light-bellied Brent goose	1	0	1	0	0	0	0	0	44	8	3	0	98	300	9	263	220	0	180	0	220	0	140	6	69	15	106	13	231	0	76	20	175	0	34	0
Little egret	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0
Little grebe	0	0	0	0	1	0	0	0	0	0	9	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mallard	0	0	2	0	0	0	0	0	8	0	8	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oystercatcher	0	0	26	37	235	82	172	36	104	49	120	38	60	460	82	0	0	0	200	100	207	0	0	0	0	33	0	0	24	0	76	0	85	0	31	0
Red-breasted merganser	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Redshank	5	0	102	55	56	7	43	8	27	14	87	12	40	0	25	0	0	0	0	0	0	0	31	0	12	26	95	5	247	0	182	0	87	0	51	0
Ringed Plover	0	7	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shelduck	0	14	48	0	0	0	3	0	0	0	6	0	2	0	2	0	0	2	2	0	0	0	0	0	0	4	0	0	8	0	20	0	12	0	12	0
Teal	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0	8	0	0	0	0	0	0	16	0	0	0
Turnstone	4	0	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	14	60	123	67	0	0	0	0	0	6	0
Wigeon	6	0	7	0	64	4	9	0	10	0	10	0	0	0	10	6	0	0	0	0	4	0	3	0	4	12	0	0	4	0	27	0	19	3	10	0
TOTAL	90	168	438	606	1640	1951	983	516	393	408	359	496	328	1090	128	594	222	14	384	262	453	41	180	1089	169	123	413	141	1362	1	1019	20	867	256	345	0

APPENDIX 7.5.1

POOLBEG OUTFALL	Oct-23												Nov-23												Dec-23											
Time	Hr1		Hr2		Hr3		Hr4		Hr5		Hr6		Hr1		Hr2		Hr3		Hr4		Hr5		Hr6		Hr1		Hr2		Hr3		Hr4		Hr5		Hr6	
Foraging / Roosting	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R
Bar-tailed godwit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	2	0
Black-headed gull	332	0	277	59	309	5	300	90	326	87	321	152	641	12	465	25	609	0	598	0	556	90	513	84	584	49	428	59	756	13	518	82	403	219	732	175
Black-tailed godwit	213	0	10	15	3	42	0	0	0	0	0	0	3	0	19	0	2	3	1	0	2	0	1	0	33	14	21	4	24	3	4	0	11	0	0	0
Black guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common gull	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Cormorant	0	6	0	9	5	24	3	24	2	22	3	34	1	0	0	2	1	7	2	0	0	0	0	6	7	0	3	6	1	6	3	0	5	14	2	14
Curlew	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dunlin	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
Great black-backed gull	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	1	0
Grey heron	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Guillemot	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring gull	113	0	7	3	12	0	0	3	4	0	6	0	0	0	0	1	8	0	10	2	0	11	1	3	7	0	19	3	30	0	8	1	0	0	0	7
Knot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser black-backed gull	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light-bellied brent goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mallard	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mediterranean gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oystercatcher	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Redshank	24	0	3	18	2	3	0	4	0	0	0	0	14	2	19	0	19	2	21	10	38	0	19	0	15	0	14	5	5	1	9	0	5	3	3	0
Ringed plover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sanderling	25	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	7	52	89	0	170	4	83	0	68	0	15	0	75	0	127	0	78	0	6	0
Shag	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Teal	15	0	12	0	28	0	14	0	0	0	0	0	168	13	126	0	117	20	41	40	58	40	78	56	223	133	231	98	289	89	242	68	147	30	154	35
Turnstone	11	0	14	0	8	0	0	0	0	0	0	0	10	5	25	91	31	0	34	0	36	1	15	0	26	0	29	4	21	0	6	0	21	4	14	0
Wigeon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	1	1	0	1	0	3	0	0	0
TOTAL	739	6	324	105	369	81	319	121	332	109	330	186	845	33	654	120	796	85	797	52	867	146	712	149	975	196	765	180	1203	113	919	151	675	270	915	231

APPENDIX 7.5.1

POOLBEG OUTFALL	Jan-24												Feb-24												Mar-24											
Time	Hr1		Hr2		Hr3		Hr4		Hr5		Hr6		Hr1		Hr2		Hr3		Hr4		Hr5		Hr6		Hr1		Hr2		Hr3		Hr4		Hr5		Hr6	
Foraging / Roosting	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R
Bar-tailed godwit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-headed gull	638	13	724	16	906	59	1050	226	979	21	597	26	146	23	320	37	382	82	468	168	663	33	415	3	250	26	290	29	303	16	350	69	335	70	235	111
Black-tailed godwit	0	0	0	0	28	0	28	0	318	9	246	198	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	16	87	45	110
Black guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	8	0	3	0
Common gull	15	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	33	1	116	3	34	0	128	0	4	12	32	60	161	5	216	2	190	0	160	0
Cormorant	2	0	1	0	0	0	0	0	0	0	0	0	3	2	0	2	2	0	1	0	2	0	2	0	1	9	0	12	1	10	1	16	1	10	0	6
Curlew	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Dunlin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great black-backed gull	0	0	2	2	0	0	2	0	2	0	0	0	1	3	3	6	0	0	0	0	0	0	0	1	0	0	0	2	0	2	0	2	0	2	0	0
Grey heron	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Guillemot	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring gull	0	0	5	0	193	0	302	32	526	24	707	39	0	0	0	0	0	0	0	0	0	1	12	18	39	3	49	0	60	33	41	48	41	23	49	45
Knot	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser black-backed gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light-bellied brent goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	14	0
Mallard	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4	0
Mediterranean gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0
Oystercatcher	0	9	0	4	0	0	0	0	0	0	0	0	0	0	0	2	0	6	0	6	0	6	0	6	0	3	0	2	0	0	1	0	3	0	1	0
Razorbill	0	0	0	0	0	0	0	0	0	0	0	0													0	0	0	0	0	0	0	0	0	0	0	0
Redshank	0	3	0	3	15	1	27	2	18	0	18	0	0	7	4	9	0	9	0	9	0	9	0	5	0	2	0	8	0	10	7	0	8	0	18	0
Ringed plover	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sanderling	0	0	0	0	15	0	45	0	64	0	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Shag	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Teal	16	168	124	137	154	0	156	33	276	20	162	20	164	42	214	66	98	164	94	154	104	104	78	119	101	53	123	28	32	103	118	18	52	43	38	82
Turnstone	7	0	13	0	43	0	39	0	47	0	12	0	0	0	7	6	24	18	8	2	12	13	3	8	0	26	14	4	4	16	14	0	18	0	20	0
Wigeon	0	18	6	4	0	6	12	0	9	4	8	0	18	0	14	14	16	19	18	23	21	18	22	6	4	0	4	0	0	0	0	0	0	0	0	0

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SHELLYBANKS	Oct-23												Nov-23												Dec-23											
Time	Hr1		Hr2		Hr3		Hr4		Hr5		Hr6		Hr1		Hr2		Hr3		Hr4		Hr5		Hr6		Hr1		Hr2		Hr3		Hr4		Hr5		Hr6	
Foraging / Roosting	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R
Bar-tailed Godwit	0	0	18	0	23	0	0	0	3	0	0	0	0	0	49	0	16	29	9	14	11	0	0	0	594	0	426	0	483	0	423	0	460	0	561	0
Black-headed Gull	16	18	27	16	82	8	58	0	31	6	0	32	0	0	108	0	15	68	9	23	11	0	0	9	62	0	91	9	103	0	145	0	149	82	184	180
Black-tailed Godwit	0	0	136	4	156	0	67	0	28	0	0	0	0	0	34	0	15	7	0	0	35	0	0	0	38	0	148	0	181	0	369	0	270	0	201	0
Black guillemot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brent Goose	0	0	0	0	4	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	7	0	14	0	0	0	16	0	0	0
Common Gull	0	0	0	1	7	0	7	0	0	0	0	0	0	16	8	0	2	5	0	3	0	12	2	7	3	11	0	6	20	0	0	0	2	9	1	2
Cormorant	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	1	2	1	0	0	0	0	0	0	2	2	1	0	2	2	0	2	0	3	0
Curlew	3	0	3	0	16	0	26	0	12	0	0	3	2	5	21	0	14	0	4	1	2	1	27	0	9	2	18	1	24	0	25	0	20	0	28	2
Dunlin	0	0	6	0	17	0	34	0	6	0	0	0	0	0	17	0	52	0	8	0	0	0	104	0	32	0	54	0	59	0	45	0	88	0	0	0
Gannet	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Black-backed Gull	0	0	4	2	8	0	5	2	0	0	0	3	4	9	14	0	13	6	0	2	0	2	1	3	9	3	9	4	11	0	6	8	14	11	9	5
Great-crested Grebe	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greenshank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0
Grey Heron	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	2	1	1	0	0	0	0	0
Grey Plover	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3	1	2	0	0	0	0	4	14	0	2	0	2	0	0	0	1	0	3	3	0
Herring Gull	2	3	11	9	23	0	23	11	12	9	0	8	3	22	34	0	10	22	0	0	0	16	0	0	28	6	25	0	42	0	37	18	47	23	51	14
Knot	0	0	0	4	6	0	16	0	0	0	0	0	0	10	12	0	19	0	0	9	0	0	27	0	0	0	18	0	51	0	62	0	41	0	11	0
Lesser Black-backed Gull	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	1	0	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Light-bellied Brent Goose	0	0	0	0	0	0	0	0	0	0	0	0	11	0	16	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Egret	0	0	0	0	1	0	0	0	0	0	0	0	1	0	2	0	2	0	1	0	3	0	0	0	2	0	0	0	3	0	2	0	2	0	0	0
Mallard	0	0	0	0	2	0	0	0	0	0	0	0	0	0	7	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mediterranean Gull	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Oystercatcher	0	0	18	0	37	0	55	0	32	0	0	11	3	14	19	0	0	0	11	2	7	9	0	0	44	16	66	5	73	0	60	0	164	0	140	16
Red-breasted Merganser	0	0	0	0	0	0	6	0	1	0	2	0	4	0	0	0	0	0	2	0	0	0	0	0	6	0	8	0	0	0	4	0	6	0	11	0
Red-throated diver																									0	0	0	0	0	0	0	0	0	0	0	0
Redshank	2	0	6	0	12	0	10	0	12	0	0	0	12	0	17	0	12	0	8	0	5	0	9	0	17	0	5	0	16	0	7	0	9	0	0	0
Ringed Plover	0	0	0	0	8	11	0	8	0	0	0	0	0	0	11	0	9	0	0	7	8	0	0	0	0	0	4	9	0	0	9	0	0	0	0	0
Sanderling	0	0	4	0	24	0	39	0	14	0	0	0	38	0	26	0	46	0	12	0	26	0	31	0	73	0	85	0	114	0	102	0	148	0	67	0
Shag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shelduck	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	11	0	2	0	4	0	0	0
Turnstone	0	0	6	0	3	0	19	0	10	0	0	0	0	0	0	0	0	0	4	0	3	0	0	0	4	0	2	0	0	0	27	0	30	0	0	0
TOTAL	23	21	239	37	432	20	377	26	162	15	2	57	81	76	400	3	232	141	70	63	121	41	205	34	934	42	968	38	1207	3	1330	27	1472	128	1270	219

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SHELLYBANKS	Jan-24												Feb-24												Mar-24											
Time	Hr1		Hr2		Hr3		Hr4		Hr5		Hr6		Hr1		Hr2		Hr3		Hr4		Hr5		Hr6		Hr1		Hr2		Hr3		Hr4		Hr5		Hr6	
Foraging / Roosting	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R	F	R
Bar-tailed Godwit	0	0	15	16	16	11	31	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	0	95	0	12	0	0	0
Black-headed Gull	112	3000	3052	222	3500	196	3500	182	2000	87	7	42	96	0	141	0	0	0	85	0	164	0	378	9	0	14	0	41	102	0	28	68	0	33	0	0
Black-tailed Godwit	0	108	45	92	37	91	305	0	134	0	16	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	273	0	117	0	85	32	0	0
Black guillemot	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Brent Goose	9	0	11	0	0	0	0	0	0	0	0	0	23	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common Gull	0	18	31	16	0	0	0	23	5	11	2	0	6	0	16	0	0	0	0	0	14	4	24	0	0	1	0	6	11	4	4	10	0	2	0	0
Cormorant	2	0	2	0	1	2	2	1	0	0	0	0	0	0	0	0	5	0	0	0	0	0	2	0	0	0	3	0	2	0	2	2	0	2	0	0
Curlew	0	0	0	0	2	4	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	16	0	17	3	5	0
Dunlin	0	0	18	0	28	0	31	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	0	0	0	0	9	0	26	0	16	0	0	0
Gannet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Black-backed Gull	4	12	8	9	9	11	0	0	3	11	8	12	4	0	0	0	0	6	0	2	5	2	37	18	0	0	0	0	26	5	52	4	0	4	0	0
Great-crested Grebe	2	0	5	0	4	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Greenshank	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grey Heron	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grey Plover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring Gull	1	76	148	61	24	47	9	80	6	42	0	76	23	0	11	0	0	11	0	4	45	0	128	66	0	2	0	11	75	3	134	8	32	34	0	0
Knot	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lesser Black-backed Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	0	2	4	0	0	0	0
Light-bellied Brent Goose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	12	0	0	0
Little Egret	0	0	0	0	0	2	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0
Mallard	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mediterranean Gull	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0
Oystercatcher	34	0	49	12	56	22	58	12	18	52	12	170	23	9	26	0	0	0	0	0	18	0	37	11	3	0	7	0	26	0	29	0	56	17	11	0
Red-breasted Merganser	2	0	6	0	6	0	0	0	0	0	0	0	5	0	0	0	4	0	0	0	0	0	4	0	0	0	0	0	4	0	4	0	0	0	0	0
Red-throated diver	1	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Redshank	16	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	16	0	0	0	0	0	17	0	11	0	10	0	0	0
Ringed Plover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sanderling	0	0	61	0	74	0	27	0	29	0	9	0	0	0	0	0	0	0	0	0	29	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0
Shag	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Shelduck	4	0	0	0	0	0	0	0	2	0	0	0	8	0	2	0	0	0	0	0	0	0	6	0	0	0	0	4	4	0	2	0	0	6	0	0
Turnstone	12	0	15	0	5	0	11	0	0	0	0	0	4	0	0	0	7	0	4	0	3	0	0	0	0	0	0	0	27	0	0	0	5	0	0	0
TOTAL	206	3214	3481	428	3762	386	3981	298	2215	207	59	335	194	9	219	0	23	17	92	6	290	6	714	104	3	17	10	62	635	12	527	97	245	134	16	0

7.5.1g Disturbance Survey

Date	Disturbance Type	Time of event	Species affected	Number disturbed	Reaction	Distance to disturbance (m)	Duration of disturbance (min)	Notes
14-Oct	Other powered boat	08:10	Lesser Black-backed Gull	42	Short flight <50m	100	4	Irish Ferry
14-Oct	Other powered boat	08:10	Black-headed Gull	100	Short flight <50m	100	4	Irish Ferry
14-Oct	Other powered boat	08:15	Cormorant	2	Short flight <50m	70	3	Irish Ferry
14-Oct	Other powered boat	08:15	Black-headed Gull	16	Short flight <50m	70	3	Irish Ferry
14-Oct	Other powered boat	08:23	Black-headed Gull	65	Short flight <50m	100	3	Irish Ferry
14-Oct	Other powered boat	08:25	Black-headed Gull	20	Short flight <50m	150	3	Irish Ferry
14-Oct	Other powered boat	09:20	Black-headed Gull	100	Short flight <50m	50	2	Tug/pilot boat
14-Oct	Other powered boat	09:22	Grey Heron	1	Long flight >50m	100	1	Tug/pilot boat
14-Oct	Other powered boat	09:50	Black-headed Gull	26	Short flight <50m	100	4	Container ship
14-Oct	Other powered boat	09:50	Cormorant	2	Walk/ Swim/Dive away	100	4	Container ship
14-Oct	Other powered boat	09:53	Black-headed Gull	65	Short flight <50m	100	1	Speed boat
14-Oct	Other powered boat	09:53	Lesser Black-backed Gull	16	Short flight <50m	100	1	Speed boat
14-Oct	Other powered boat	09:53	Guillemot	6	Walk/ Swim/Dive away	100	1	Speed boat
14-Oct	Other powered boat	10:00	Guillemot	3	Walk/ Swim/Dive away	100	5	Seatruck
14-Oct	Other powered boat	10:00	Black-headed Gull	120	Short flight <50m	100	5	Seatruck
14-Oct	Other powered boat	10:08	Black-headed Gull	20	Short flight <50m	75	3	Seatruck
14-Oct	Other powered boat	10:10	Black-headed Gull	50	Short flight <50m	50	1	Speed boat
14-Oct	Other powered boat	10:15	Black-headed Gull	20	Short flight <50m	100	1	Speed boat
14-Oct	Other powered boat	10:15	Cormorant	1	Short flight <50m	100	1	Speed boat
14-Oct	Other powered boat	10:37	Cormorant	1	Long flight >50m	100	1	Speed boat
14-Oct	Other powered boat	10:37	Black-headed Gull	32	Short flight <50m	100	1	Speed boat
14-Oct	Other powered boat	11:20	Black-headed Gull	40	Short flight <50m	100	3	Irish Ferry
14-Oct	Other powered boat	11:20	Cormorant	1	Long flight >50m	100	1	Irish Ferry
14-Oct	Other powered boat	12:00	Black-headed Gull	10	Short flight <50m	100	4	Stena
14-Oct	Other powered boat	12:02	Black-headed Gull	22	Short flight <50m	100	3	Stena
14-Oct	Other powered boat	12:08	Black-headed Gull	2	Walk/ Swim/Dive away	50	1	Seatruck
14-Oct	Other powered boat	12:11	Cormorant	2	Long flight >50m	50	1	Seatruck
14-Oct	Other powered boat	12:14	Black-headed Gull	10	Walk/ Swim/Dive away	100	1	Seatruck
14-Oct	Other powered boat	12:14	Black-headed Gull	30	Walk/ Swim/Dive away	100	1	Seatruck
14-Oct	Helicopter	12:15	Turnstone	25	Long flight >50m	>100	2	Helicopter
18-Oct	Drone	13:25	Black-headed Gull	22	Long flight >50m	-	3	

Date	Disturbance Type	Time of event	Species affected	Number disturbed	Reaction	Distance to disturbance (m)	Duration of disturbance (min)	Notes
18-Oct	Drone	13:25	Herring Gull	19	Long flight >50m	-	3	
18-Oct	Drone	13:25	Redshank	2	Long flight >50m	-	3	
18-Oct	GI Vessel	14:10	Black-headed Gull	220	Short flight <50m	150	2	
18-Oct	Drone	14:33	Black-headed Gull	44	Walk/ Swim/Dive away	150	1	
18-Oct	GI Vessel	14:40	Cormorant	19	Walk/ Swim/Dive away	200	1	
18-Oct	GI Vessel	15:09	Black-headed Gull	17	Alert	130	1	
18-Oct	GI Vessel	15:50	Black-headed Gull	30	Alert	200	1	
18-Oct	GI Vessel	15:54	Black-headed Gull	47	Alert	150	1	
18-Oct	GI Vessel	15:57	Black-headed Gull	22	Alert	150	1	
18-Oct	Walkers	16:15	Turnstone	12	Alert	100	1	
25-Oct	GI Vessel	10:11	Black-headed Gull	48	Short flight <50m	150	1	
25-Oct	Walkers	10:13	Turnstone	16	Short flight <50m	100	1	
25-Oct	GI Vessel	10:57	Black-headed Gull	48	Short flight <50m	200	1	
25-Oct	GI Vessel	11:18	Guillemot	3	Walk/ Swim/Dive away	200		
25-Oct	GI Vessel	11:18	Black-headed Gull	25	Short flight <50m	200		
25-Oct	Other powered boat	11:33	Black-headed Gull	15	Short flight <50m	150		
25-Oct	Other powered boat	11:37	Black-headed Gull	3	Short flight <50m	130		
25-Oct	Other powered boat	11:37	Cormorant	1	Walk/ Swim/Dive away	130		
25-Oct	Other powered boat	12:14	Cormorant	25	Long flight >50m	150		
25-Oct	Other powered boat	12:14	Black-headed Gull	65	Short flight <50m	150		
25-Oct	GI Vessel	13:27	Black-headed Gull	48	Short flight <50m	200	1	
25-Oct	GI Vessel	13:27	Mediterranean Gull	1	Short flight <50m	200	1	
25-Oct	GI Vessel	13:33	Mediterranean Gull	1	Short flight <50m	250	1	
25-Oct	GI Vessel	13:33	Black-headed Gull	20	Short flight <50m	250	1	
25-Oct	GI Vessel	13:33	Common Gull	1	Short flight <50m	250	1	
25-Oct	GI Vessel	13:37	Black-headed Gull	15	Short flight <50m	250	1	
25-Oct	Predator (i.e. BOP)	13:40	Black-headed Gull	320	Long flight >50m	200	2	Buzzard
25-Oct	GI Vessel	13:51	Black-headed Gull	22	Short flight <50m	300	1	
25-Oct	GI Vessel	13:54	Black-headed Gull	29	Short flight <50m	250	1	
25-Oct	GI Vessel	13:54	Common Gull	1	Short flight <50m	250	1	
25-Oct	GI Vessel	14:05	Black-headed Gull	25	Short flight <50m	250	1	
25-Oct	Other powered boat	14:15	Black-headed Gull	56	Short flight <50m	200	1	
25-Oct	Other powered boat	14:23	Black-headed Gull	27	Short flight <50m	200	1	

Date	Disturbance Type	Time of event	Species affected	Number disturbed	Reaction	Distance to disturbance (m)	Duration of disturbance (min)	Notes
28-Oct	Other powered boat	08:20	Black-headed Gull	33	Short flight <50m	200	1	
28-Oct	Other powered boat	08:25	Cormorant	13	Short flight <50m	150	1	
28-Oct	Other powered boat	08:44	Turnstone	12	Short flight <50m	150	1	
28-Oct	Other powered boat	08:51	Black-headed Gull	59	Long flight >50m	200	2	
28-Oct	GI Vessel	09:10	Guillemot	3	Short flight <50m	200	1	
28-Oct	Other powered boat	09:33	Guillemot	7	Walk/ Swim/Dive away	200	1	
28-Oct	Other powered boat	09:44	Black Guillemot	4	Walk/ Swim/ Dive away	200	1	
28-Oct	Other powered boat	11:19	Black-headed Gull	29	Short flight <50m	200	1	
28-Oct	GI Vessel	11:33	Black-headed Gull	37	Short flight <50m	200	2	
28-Oct	GI Vessel	11:49	Cormorant	4	Walk/ Swim/ Dive away	130	1	
28-Oct	GI Vessel	11:54	Black-headed Gull	44	Short flight <50m	150	3	
28-Oct	GI Vessel	12:00	Black-headed Gull	37	Walk/ Swim/Dive away	200	2	
28-Oct	Other powered boat	12:05	Guillemot	8	Walk/ Swim/Dive away	200	1	
28-Oct	GI Vessel	12:07	Cormorant	17	Short flight <50m	150	1	
28-Oct	GI Vessel	12:50	Black-headed Gull	53	Short flight <50m	200	2	
28-Oct	Other powered boat	13:11	Cormorant	19	Walk/ Swim/Dive away	200	2	
28-Oct	Other powered boat	13:27	Guillemot	7	Walk/ Swim/Dive away	150	1	
28-Oct	GI Vessel	13:33	Black-headed Gull	33	Walk/ Swim/Dive away	130	1	
28-Oct	GI Vessel	13:55	Mediterranean Gull	7	Walk/ Swim/Dive away	200	1	
28-Oct	GI Vessel	14:01	Black-headed Gull	110	Long flight >50m	150	3	
02-Nov	Other powered boat	08:43	Cormorant	22	Short flight <50m	150	2	
02-Nov	GI Vessel	08:52	Black-headed Gull	44	Short flight <50m	150	2	
02-Nov	GI Vessel	08:59	Black-headed Gull	63	Long flight >50m	200	3	
02-Nov	GI Vessel	09:00	Common Gull	16	Short flight <50m	130	1	
02-Nov	Other powered boat	10:00	Mediterranean Gull	11	Short flight <50m	150	1	
02-Nov	Other powered boat	11:20	Cormorant	13	Alert	150	1	
02-Nov	Other powered boat	11:33	Herring Gull	33	Short flight <50m	150	1	
02-Nov	GI Vessel	11:37	Black-headed Gull	47	Short flight <50m	200	2	
02-Nov	GI Vessel	11:57	Black-headed Gull	57	Short flight <50m	200	3	
02-Nov	GI Vessel	12:00	Black-headed Gull	33	Short flight <50m	150	3	
02-Nov	Other powered boat	13:07	Black-headed Gull	59	Short flight <50m	150	1	
02-Nov	GI Vessel	13:10	Black-headed Gull	77	Long flight >50m	200	1	
02-Nov	Other powered boat	13:20	Herring Gull	14	Short flight <50m	130	1	

Date	Disturbance Type	Time of event	Species affected	Number disturbed	Reaction	Distance to disturbance (m)	Duration of disturbance (min)	Notes
02-Nov	Other powered boat	13:21	Cormorant	19	Walk/ Swim/Dive away	200	1	
02-Nov	Other powered boat	13:27	Black-headed Gull	66	Short flight <50m	200	1	
02-Nov	GI Vessel	13:55	Black-headed Gull	60	Short flight <50m	150	2	
02-Nov	GI Vessel	14:00	Cormorant	35	Short flight <50m	200	1	
05-Nov	GI Vessel	08:20	Black-headed Gull	39	Alert	200	1	
05-Nov	GI Vessel	08:33	Cormorant	17	Alert	150	1	
05-Nov	Other powered boat	09:00	Black-headed Gull	30	Alert	150	1	
05-Nov	Unpowered Boat	09:21	Guillemot	5	Alert	130	1	
05-Nov	Other powered boat	10:03	Black-headed Gull	20	Alert	150	1	
05-Nov	Other powered boat	10:10	Cormorant	29	Alert	150	1	
05-Nov	GI Vessel	11:04	Black-headed Gull	55	Walk/ Swim/Dive away	150	1	
05-Nov	Other powered boat	11:15	Black-headed Gull	67	Walk/ Swim/Dive away	200	2	
05-Nov	Other powered boat	11:12	Black-headed Gull	50	Alert	200	1	
05-Nov	Unpowered Boat	11:19	Black-headed Gull	59	Walk/ Swim/Dive away	200	1	
05-Nov	Other powered boat	11:50	Black Guillemot	7	Alert	150	1	
05-Nov	Other powered boat	12:00	Black-headed Gull	41	Alert	150	1	
11-Nov	Other powered boat	10:03	Black-headed Gull	47	Alert	150	1	
11-Nov	Other powered boat	10:57	Black-headed Gull	29	Alert	150	1	
11-Nov	Other powered boat	11:10	Guillemot	4	Alert	200	1	
11-Nov	Other powered boat	12:02	Black-headed Gull	50	Walk/ Swim/Dive away	200	2	
11-Nov	GI Vessel	12:11	Common Gull	13	Alert	200	1	
11-Nov	GI Vessel	12:14	Cormorant	17	Alert	150	1	
11-Nov	GI Vessel	12:40	Black-headed Gull	61	Walk/ Swim/Dive away	150	2	
11-Nov	Other powered boat	12:47	Mediterranean Gull	11	Alert	200	1	
11-Nov	Other powered boat	12:50	Black-headed Gull	41	Walk/ Swim/Dive away	200	1	
11-Nov	Other powered boat	14:11	Black-headed Gull	27	Alert	200	1	
11-Nov	GI Vessel	14:33	Razorbill	6	Alert	200	1	
11-Nov	Other powered boat	14:50	Great Black-backed Gull	4	Alert	150	1	
11-Nov	Other powered boat	15:15	Herring Gull	39	Alert	200	2	
14-Nov	GI Vessel	08:19	Black-headed Gull	111	Short flight <50m	150	1	
14-Nov	Other powered boat	08:22	Teal	7	Alert	150	1	
14-Nov	Other powered boat	08:33	Cormorant	7	Walk/ Swim/Dive away	130	1	
14-Nov	Other powered boat	08:40	Black Guillemot	9	Walk/ Swim/Dive away	130	1	

Date	Disturbance Type	Time of event	Species affected	Number disturbed	Reaction	Distance to disturbance (m)	Duration of disturbance (min)	Notes
14-Nov	GI Vessel	09:01	Herring Gull	7	Walk/ Swim/Dive away	200	1	
14-Nov	GI Vessel	09:11	Cormorant	7	Walk/ Swim/Dive away	200	2	
14-Nov	Birdwatchers/photographers	10:30	Turnstone	29	Long flight >50m	120	2	
14-Nov	Helicopter	10:53	Cormorant	30	Long flight >50m	500	3	
14-Nov	Helicopter	10:53	Black-headed Gull	220	Long flight >50m	500	3	
14-Nov	GI Vessel	11:10	Razorbill	4	Alert	200	1	
14-Nov	GI Vessel	12:19	Black-headed Gull	47	Walk/ Swim/Dive away	200	1	
14-Nov	GI Vessel	12:44	Black-headed Gull	53	Walk/ Swim/Dive away	150	2	
14-Nov	Other powered boat	12:50	Cormorant	6	Alert	150	1	
14-Nov	GI Vessel	12:57	Cormorant	11	Alert	200	1	
14-Nov	Other powered boat	13:00	Black-headed Gull	33	Alert	150	1	
17-Nov	Other powered boat	08:07	Black-headed Gull	47	Alert	200	1	
17-Nov	Other powered boat	08:51	Black-headed Gull	66	Alert	200	2	
17-Nov	Helicopter	09:01	Black-headed Gull	60	Alert	200	2	
17-Nov	Other powered boat	09:13	Cormorant	16	Alert	150	1	
17-Nov	Helicopter	10:03	Black-headed Gull	70	Alert	200	1	
17-Nov	Other powered boat	10:14	Cormorant	11	Alert	200	1	
17-Nov	Other powered boat	10:44	Black-headed Gull	27	Alert	200	1	
17-Nov	Other powered boat	10:47	Black-headed Gull	49	Alert	150	2	
17-Nov	Other powered boat	10:50	Black-headed Gull	660	Short flight <50m	300	5	
17-Nov	Other powered boat	12:17	Black-headed Gull	60	Walk/ Swim/Dive away	200	2	
17-Nov	Other powered boat	12:22	Black-headed Gull	41	Alert	150	1	
17-Nov	Predator (i.e. BOP)	12:37	Cormorant	12	Alert	200	1	
17-Nov	Other powered boat	13:10	Teal	7	Walk/ Swim/Dive away	200	4	
18-Nov	GI Vessel	11:15	Black-headed Gull	47	Alert	200	1	
18-Nov	Other powered boat	11:33	Common Gull	50	Walk/ Swim/Dive away	200	1	
18-Nov	Other powered boat	11:40	Black-headed Gull	30	Alert	200	1	
18-Nov	Other powered boat	11:57	Herring Gull	2	Alert	200	2	
18-Nov	Other powered boat	12:12	Common Gull	110	Short flight <50m	200	3	
18-Nov	Other powered boat	13:01	Black-headed Gull	20	Alert	200	1	
18-Nov	Other powered boat	13:57	Cormorant	11	Alert	200	2	
18-Nov	Other powered boat	14:00	Black-headed Gull	72	Walk/ Swim/Dive away	150	3	
18-Nov	Other powered boat	15:15	Black-headed Gull	60	Walk/ Swim/Dive away	200	2	

Date	Disturbance Type	Time of event	Species affected	Number disturbed	Reaction	Distance to disturbance (m)	Duration of disturbance (min)	Notes
18-Nov	Other powered boat	15:22	Black-headed Gull	17	Alert	200	1	
18-Nov	Walkers	15:40	Turnstone	17	Alert	130	1	
18-Nov	Walkers	15:43	Turnstone	20	Alert	120	1	
18-Nov	Other powered boat	15:50	Black-headed Gull	40	Alert	150	1	
18-Nov	Walkers	16:02	Black-headed Gull	53	Walk/ Swim/Dive away	130	2	
21-Nov	Other powered boat	10:17	Black-headed Gull	47	Alert	200	1	
21-Nov	Other powered boat	10:37	Black-headed Gull	35	Alert	500	2	
21-Nov	Other powered boat	11:01	Common Gull	50	Walk/ Swim/Dive away	200	1	
21-Nov	Helicopter	11:04	Teal	7	Alert	500	2	
21-Nov	Other powered boat	12:03	Black-headed Gull	27	Alert	200	1	
21-Nov	Other powered boat	12:09	Herring Gull	40	Alert	200	1	
21-Nov	Other powered boat	12:40	Black-headed Gull	31	Alert	200	1	
21-Nov	Walkers	12:53	Black-headed Gull	40	Alert	130	1	
21-Nov	Walkers	13:11	Cormorant	11	Alert	150	2	
21-Nov	Other powered boat	14:14	Common Gull	100	Long flight >50m	200	2	
21-Nov	Other powered boat	14:17	Common Gull	27	Alert	200	1	
21-Nov	Other powered boat	14:40	Black-headed Gull	30	Alert	130	1	
21-Nov	Other powered boat	15:00	Black-headed Gull	40	Alert	150	1	
21-Nov	Helicopter	15:01	Turnstone	22	Alert	130	1	
23-Nov	Other powered boat	08:42	Black-headed Gull	47	Alert	200	1	
23-Nov	GI Vessel	08:44	Cormorant	23	Alert	200	1	
23-Nov	GI Vessel	08:51	Black-headed Gull	50	Alert	200	2	
23-Nov	Other powered boat	09:07	Herring Gull	17	Alert	200	1	
23-Nov	Other powered boat	10:43	Black-headed Gull	66	Walk/ Swim/Dive away	200	3	
23-Nov	Other powered boat	10:47	Black-headed Gull	49	Walk/ Swim/Dive away	200	2	
23-Nov	Other powered boat	10:52	Teal	11	Alert	200	1	
23-Nov	Other powered boat	11:01	Turnstone	13	Alert	150	1	
23-Nov	Other powered boat	11:22	Guillemot	12	Alert	200	1	
23-Nov	GI Vessel	11:53	Black-headed Gull	60	Walk/ Swim/Dive away	200	3	
23-Nov	Other powered boat	12:40	Black-headed Gull	41	Alert	150	1	
23-Nov	Other powered boat	12:53	Cormorant	19	Alert	150	1	
23-Nov	Other powered boat	13:15	Black-headed Gull	27	Alert	200	1	
23-Nov	GI Vessel	13:30	Black-headed Gull	39	Alert	150	1	

7.5.1h Black Guillemot Management Plan

MAKING COMPLEX EASY

A TETRA TECH COMPANY

BLACK GUILLEMOT MANAGEMENT PLAN 2023-2030

DUBLIN PORT COMPANY

NI2541 Dublin Port
Black Guillemot Management Plan
D02
March 2024

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Document Status

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1 INTRODUCTION

Black Guillemots are small seabirds, members of the auk family that are related to Puffins. They generally nest in crevices in rocky cliffs but, where such sites are not available, they readily adapt to nesting in holes in quay walls and other artificial structures in ports and harbours. They are found in many harbours around the Irish coast and are very tolerant of port activity and human presence. They form loose colonies and readily adapt to breeding in nest boxes provided that these are correctly sited (Figure 1.1).

The Irish population of Black Guillemots is included on the Amber List of Birds of Conservation Concern in Ireland (Gilbert et al. 2021). This means that it is of medium conservation concern. It is a species for which the global population is concentrated in Europe.

The breeding population of Black Guillemots in Dublin Port has been monitored annually by Natura Consultants, on behalf of Dublin Port Company (DPC), since 2013 (with the exception of 2020 due to the pandemic restrictions). The surveys covered all quay walls, jetties and other structures from Poolbeg Power Station to Talbot Bridge in the River Liffey.

This gives an overall trend in population and usage of different sections of the port. This programme is part of the monitoring plan for DPC's ABR project and has been reported annually to the planning authority.

Figure 1.1 Black Guillemots in ramp (top left), quay wall (bottom left) and nest box (right) in Dublin Port

1.1 Objectives

The planning authority has set conditions for DPC's MP2 Project Foreshore consent. Condition 2(b) requires the preparation of a Dublin Port Black Guillemot Conservation Plan, incorporating a schedule and map or diagram of the recently known black guillemot nesting sites within the port, the current status of these nesting sites, their potential to be retained into the future and any measures required to secure or repair them.

This plan is also to include the location of nest boxes to be installed in the port area to compensate for any recent losses of black guillemot nest sites in the port or to be lost as a result of the MP2 Project (*Reason: To conserve populations of bird species occurring in Dublin Port and adjacent areas*).

The conservation plan outlined below provides information on the location of currently available breeding sites. It also identifies sites where new artificial nesting sites (including nest boxes) may be located within the area being redeveloped for the MP2 Project and the proposed 3FM Project.

2 REVIEW OF EXISTING DATA FROM PAST SURVEYS

The population of Black Guillemots breeding in Dublin Port has fluctuated markedly since 2013. The most recent count of Black Guillemots in 2023 recorded 87 birds. This is well above the average number of 65 over the ten years of available survey records (Figure 2.1). Numbers of birds were lower from 2018 to 2021, but recent counts suggest a substantial increase, and indicate that the population has recovered to pre-ABR Project levels.

While the surveys record all birds present it is not always possible to allocate individuals to particular nest sites. The sites are mainly inside old drainage pipes, some in the vertical face of quay walls and some in metal ramps. A few are in wooden nest boxes installed in 2015. The nests are not accessible due to height above water and it is not therefore possible to inspect the contents in the interior of nest sites.

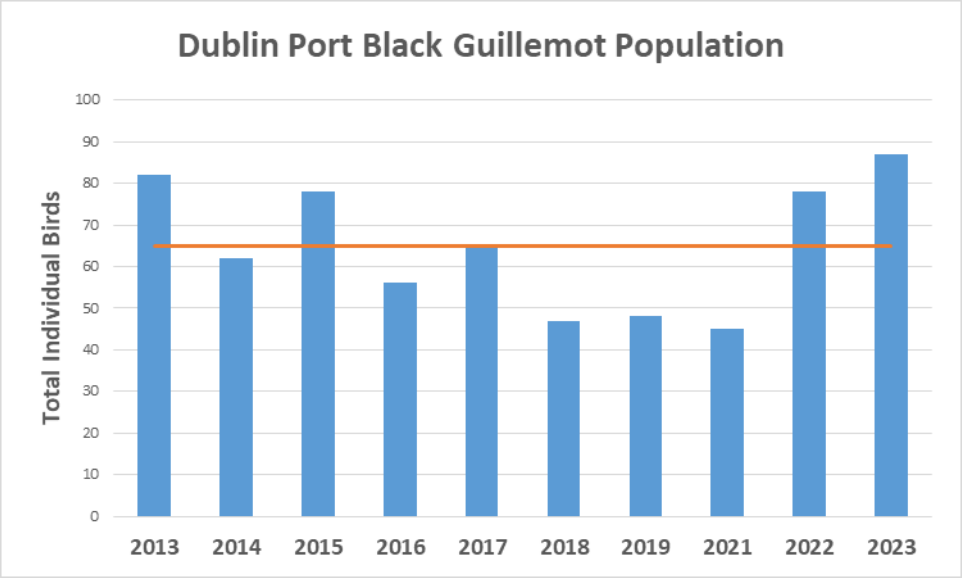

Figure 2.1 Total population of Black Guillemots breeding in Dublin Port 2013-2023. Red line shows overall mean.

3 CURRENT STATUS OF ALL POTENTIAL NESTING SITES

In September 2021 an inspection of all current and potential nest sites in the Port was undertaken from an inflatable boat. In Table 3.1 summarises the result, along with the location by shipping berth number and their status (Figure 3.1).

Table 3.1 Results of Black Guillemot breeding census 2021

Port section	Nest site no.	Berth no.	Type of nest site	Status since 2019	Potential to be retained
North Wall Extension	1	18	Drainage hole	Unoccupied	Yes
	2	18	Drainage hole	Unoccupied	Yes
Alexandra Basin West	3	23	Drainage hole	Occupied	Yes
	4	23	Drainage hole	Occupied	Yes
	5	24	Drainage hole	Unoccupied/ Grill	Yes
	6	24	Drainage hole	Occupied	Yes
	7	25	Drainage hole	Occupied	Yes
	8	25?	Drainage hole	Occupied	Yes
	9	25?	Drainage hole	Occupied	Yes
	10	30	Drainage hole	Unoccupied	No
	11	31	Drainage hole	Unoccupied	No
Alexandra Basin East	12	38	Ro/Ro Ramp no. 2	Occupied	Yes
	13	38	Ro/Ro Ramp no. 2	Occupied	Yes
East Oil Jetty	14		13 nestboxes	3 Occupied	No
Berths 51 and 51A	15	51	Ro/Ro Ramp no. 1	Occupied	Yes
	16	51	Ro/Ro Ramp no. 1	Occupied	Yes
	17	51A	Ro/Ro Ramp no. 9	Occupied	Yes
	18	51A	Ro/Ro Ramp no. 9	Occupied	Yes
Berths 52 and 53	19	52	Ro/Ro Ramp no. 7	Occupied	No
	20	53	Ro/Ro Ramp no. 6	Occupied	No
Pigeon House	21		East of Pigeon House Hbr	Occupied	No
	22		West of Pigeon House Hbr	Occupied	No
South Bank Quay	23	46	Drainage hole	Occupied	Yes
	24	45	Drainage hole	Occupied	Yes
Marine Terminals	25	42	Drainage hole	Occupied	Yes
	26	41	Drainage hole	Occupied	Yes

Black Guillemot Census 2021

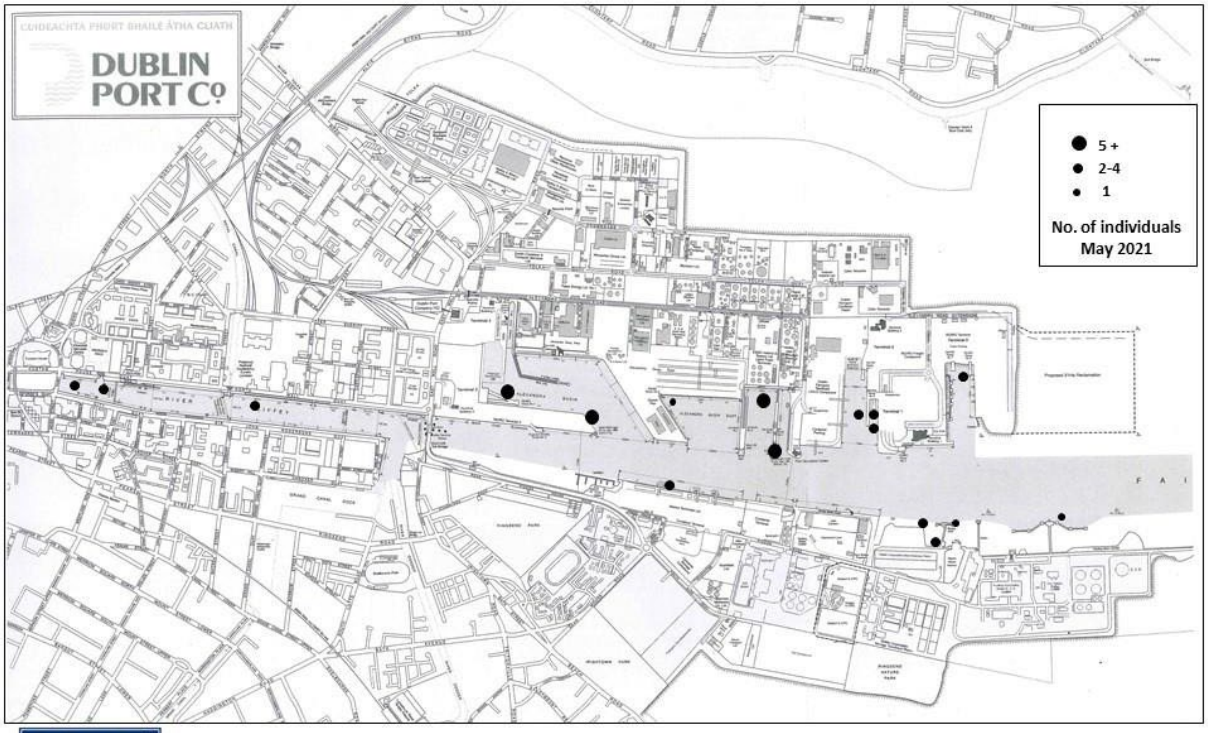

Figure 3.1 Results of Black Guillemot breeding census 2021

4 POTENTIAL OF NEST SITES TO BE RETAINED AND MEASURES REQUIRED

The table above shows that there are up to 26 potential nest sites in existing structures within Dublin Port (east of the Tom Clarke Bridge), a proportion of which have been occupied in recent years. The adult population of Black Guillemots in the port (2022-2023) is currently around 80 birds and this is supplemented by juveniles in the summer period.

From the table it is evident that the majority of currently used nest sites are in drainage holes in quay structures or ramps that will not be altered under the consented ABR Project and MP2 Project nor under the proposed 3FM Project. No additional measures are required to retain these sites other than the removal of a grill from site number 5 in Berth 24.

The potential nest sites that will be impacted by current and proposed developments are in Berths 30, 31, East Oil Jetty, Berths 52, 53 on the north side of the port and either side of the Pigeon House Harbour on the south side.

It is well established that Black Guillemots will readily nest in custom-made nest boxes that mimic the type of enclosed sites they select in quays and ramps. Large numbers of such nest boxes have been successfully deployed at Bangor Harbour, Co. Down (Greenwood 2002), Rockabill, Co. Dublin and Greenore Port, Co. Louth. It is important that the nest boxes are robust and durable in the harsh marine environment. They also need to be sited:

a) Where they will not interfere with shipping or other uses of the port;

b) Where they will remain dry and not become flooded by rainfall;

c) Where they cannot be reached by egg scavengers such as rats;

d) Where the birds can drop directly into the sea below.

The most appropriate sites are underneath open structures such as jetties. The sites should be distributed around the port to avoid concentrating large numbers in one area. The best locations have been identified in Figure 4.1 and as follows:

4.1 Phase 1: MP2 Project

1. ***RoRo Jetty in Alexandra Basin West:*** This structure comprises nine individual reinforced concrete dolphin pile caps supported on vertical tubular steel bearing piles and is already constructed under the ABR project. A total of 6 nest boxes are proposed.
2. ***Proposed Berth 53 at eastern end of the port:*** This will be an open pile structure. A total of 6 nest boxes are proposed.

4.2 Phase 2: 3FM Project

3. ***Proposed dolphins and walkways in Area N:*** This proposed new jetty at the at east end of Area N will be built as part of the 3FM project which has yet to be granted planning permission. This will be an open pile structure. A total of 8 nest boxes are proposed.

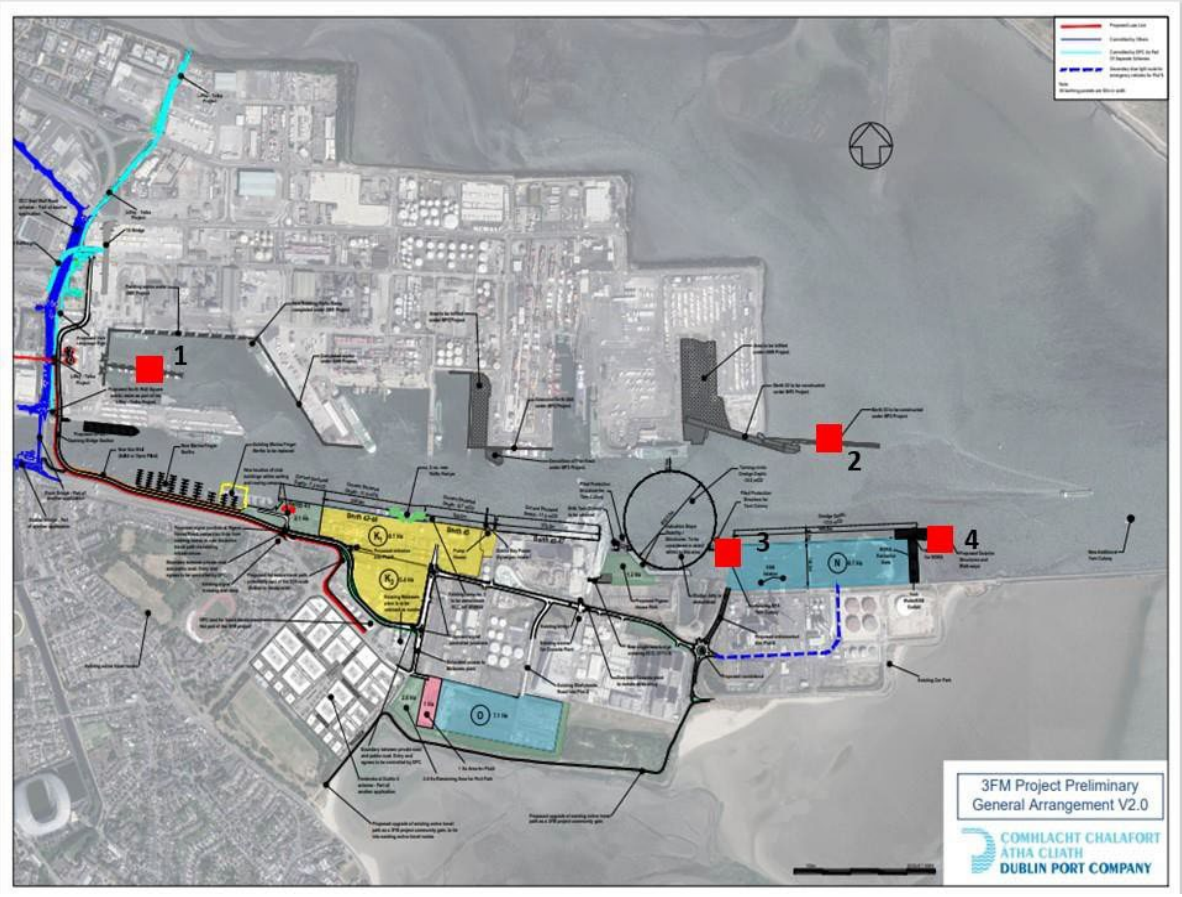

Figure 4.1 Proposed locations for groups of Black Guillemot next boxes

5 NEST BOX CONSTRUCTION

Custom-made nest boxes are available from Genesis Nest Boxes in Killarney. These are constructed to standard dimensions, defined by the British Trust for Ornithology (du Feu 1993). The material used is ResCom® Cellular Magnesia Cement board, which is held together with stainless steel and aluminium fixings and fittings. It is primarily a board produced for waterproofing and its fireproof qualities, rated Class 1A fireproof. It is waterproof, fire rated for 2.5 hours, mould resistant and rodent proof. It has been used for silt traps on farmland where it has been submerged in streams, exposed to rain, hail, sleet, sunshine, and frost deterioration. The materials are guaranteed for up to 30 years (Figure 5.1).

Figure 5.1 Nest box design

6 MONITORING

Annual monitoring of the use of all nest sites, including new nest boxes, will continue to be undertaken with two complete surveys by boat to all parts of the port in the period late April-early May. While this survey will record the occupation of nest sites it is unable to assess breeding success due to lack of access to the inside of the nest cavities.

7 REFERENCES

Du Feu, C. (1993). *Nestboxes.* BTO Guide 23, British Trust for Ornithology. Thetford.

Gilbert, G., Stanbury, A. & Lewis, L. (2021). Birds of Conservation Concern in Ireland 4: 2020–2026 *Irish Birds* 43, 1-22.

Greenwood, J.G. (2002). Nesting cavity choice by Black Guillemots *Cepphus grille. Atlantic Seabirds* 4: 119-122.

7.5.11 Tern Colony Management Plan

MAKING COMPLEX EASY

A TETRA TECH COMPANY

TERN COLONY MANAGEMENT PLAN 2023-2030

DUBLIN PORT COMPANY

NI2541 Dublin Port
Tern Colony Management Plan
D06
March 2024

www.rpsgroup.com

Document Status

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Contents

Appendices

1 INTRODUCTION

The purpose of this Management Plan is to assist Dublin Port Company (DPC) and key stakeholders in forward planning for the future management of an internationally important colony of breeding terns that, each summer, reside within Dublin Port.

DPC recognises the importance of the breeding tern colony within Dublin Port, and their own role both as a leading stakeholder in the Port and in the stewardship of Dublin Bay's rich biodiversity. They are keen to promote and facilitate a sustainable breeding tern population in Dublin Port and Dublin Bay alongside their core remit as a commercial multi-modal port.

In an Irish context, terns are migratory seabirds that overwinter around the coast of the African continent, returning each spring to nest along Irish coasts and large, inland lakes (Hume, 1993).

All species of tern which breed in Ireland are fully protected under Irish and European law and two of the sub-colonies within Dublin Port are covered by statutory designations.

Any management or changes to the environment within which these sub-colonies breed each year should be carried out in consultation with National Parks and Wildlife Service (NPWS), the statutory nature conservation agency in Ireland and part of the Department of Housing, Local Government and Heritage. In that regard, the measures outlined here are 'proposed measures' and will be subject to consultation and approval by NPWS, particularly with respect to works proposed within, or potentially impacting on designated adjacent sites of European interest. All these works will be subject to screening for appropriate assessment as required by the Habitats Directive (92/43/EEC) prior to commencement.

Alexander (2008) sets out the functions of a comprehensive management plan for a nature conservation site, including:

- Help resolve both internal and external conflicts,
- Ensure continuity of effective management,
- Be used to demonstrate that management is appropriate, i.e., effective and efficient,
- Be used to bid for resources, and
- Encourage and enable communication between managers and stakeholders, and within and between sites and organisations.

The provisions of Article 6 of the EU Habitats Directive state that the necessary conservation measures can involve "appropriate management plans specifically designed for sites or integrated into other development plans" (EC, 2000; EC, 2019).

The tern colonies in Dublin Port have arisen directly as a consequence of interventions by DPC and demonstrate that the Port, as a busy commercial port, can co-exist alongside a thriving and dynamic natural environment. The success of the Tern Colonies in Dublin Port demonstrates that economic progress and development can be achieved in concert with the protection of the natural environment.

2 LEGISLATION AND POLICY

2.1 EU Birds Directive

EU Directive 2009/147/EC on the conservation of wild birds, often referred to as the 'Birds Directive', recognised that bird conservation needed to be addressed at an international scale. Member States are obliged to take special action for a range of species, which are listed on Annex 1 of the Directive, including the designation of Special Protection Areas (SPAs).

All five species of tern which regularly breed in Ireland are listed on Annex 1 to the Directive.

Article 3 requires Member States to preserve, maintain and re-establish sufficient diversity and area of habitats for all wild birds. This should primarily (but not exclusively) involve the creation of protected areas and recognising the historic losses of wildlife, Article 3 also calls for the appropriate management of habitats both inside and outside protected areas, the re-establishment of destroyed habitats, as well as the creation of new habitats (Williams *et al*, 2005).

2.2 Birds and Natural Habitats Regulations

The European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) transpose the provisions of the EU Habitats and Birds Directives into Irish law.

The Birds and Habitats Directives had previously been transposed into Irish law through *inter alia* the Wildlife Act 1976 and the European Communities (Natural Habitats) Regulations, 1997. The Court of Justice of the EU (CJEU) found, however, that Ireland had not adequately transposed the two Directives. Therefore, the 2011 Regulations consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats; Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in CJEU judgments (NPWS, 2021).

- Regulation 18 brings the SPA designation cycle into line with that of Special Areas of Conservation (SACs) to ensure that they are subject to the same legal form.
- Regulation 27 reflects an overarching obligation on all agencies of the State, including Local Authorities, to comply with and uphold the requirements of those Directives.
- Regulations 28 and 29 provide for the Minister to prohibit any operation or activity liable to damage a European site and provide for Ministerial Directions requiring a person to take such action or to refrain from taking such action as the Minister considers necessary to prevent damage to a site.

2.3 Wildlife Acts

The Wildlife Act of 1976 has been amended a number of times subsequently, to include for -

- Wildlife Act 1976
- Wildlife (Amendment) Act 2000
- Wildlife (Amendment) Act 2010
- Wildlife (Amendment) Act 2012

- Heritage Act 2018
- Planning and Development, Heritage and Broadcasting (Amendment) Act 2021

All wild birds in the Republic of Ireland are afforded protected status under the Wildlife Act, 1976 (as amended) which states that:

> *Wild birds and their nests and eggs, other than wild birds of the species mentioned in the Third Schedule to this Act, shall be protected.*

2.4 Nature Conservation Policy

2.4.1 National Biodiversity Action Plan 2023-2030

Ireland's 4th National Biodiversity Action Plan (NBAP) was published on 25th January 2024. It sets the national biodiversity agenda for the period 2023-2030 and aims to deliver the transformative changes required to the ways in which we value and protect nature. The NBAP will implement actions within the framework of five strategic objectives, while addressing new and emerging issues:

- Objective 1 - Adopt a Whole of Government, Whole of Society Approach to Biodiversity
- Objective 2 - Meet Urgent Conservation and Restoration Needs
- Objective 3 - Secure Nature's Contribution to People
- Objective 4 - Enhance the Evidence Base for Action on Biodiversity
- Objective 5 - Strengthen Ireland's Contribution to International Biodiversity Initiatives

2.4.2 Dublin City Biodiversity Action Plan 2021-2025

The Dublin City Biodiversity Action Plan 2021-2025 (DCBAP) forms the basis for the policy of the local authority on nature conservation within the jurisdiction and administrative boundaries of Dublin City Council.

The plan includes an objective to "*Protect designated sites for nature conservation in accordance with the Conservation Management objectives for Natura 2000 sites and proposed Natural Heritage Areas in Dublin City"* (DCC, 2021).

Action 2.1 of the above states "*Implement the Conservation Management objectives for the following Natura 2000 sites in Dublin City Council lands: North Bull Island SAC, North Bull Island SPA, South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay SAC"* (DCC, 2021).

2.4.3 Dublin Port Company Masterplan

The Dublin Port Masterplan 2040 – Reviewed 2018 contains a series of commitments made by DPC to ensure the protection of the natural environment and ecological receptors which could be impacted by the development and land use initiatives set out with in their Masterplan (DPC, 2018).

3 TERNS IN IRELAND

3.1 Status

In an Irish context, terns are migratory seabirds which return to Ireland each spring to breed before migrating south in early autumn and spending the winter months off the coast of West Africa or further afield in the Southern Hemisphere (Hume, 1993). There are over 45 species of tern worldwide (Thomas *et al.,* 2004), of which five breed in Ireland, Arctic Tern *Sterna paradisaea*, Common Tern *S. hirundo*, Little Tern *S. albifrons*, Roseate Tern *S. dougallii* and Sandwich Tern *S. sandvicensis* (Mitchell *et al.,* 2004).

All five species of Irish tern are amber-listed in the most recent Birds of Conservation Concern Ireland (BoCCI), a joint publication produced by BirdWatch Ireland and RSPB NI (Gilbert *et al*, 2021).

3.1.1 Arctic Tern

Although considered a coastal species, Arctic Terns are also known to breed on freshwater lakes in Counties Galway and Mayo. More colonies are found on the west coast with Co. Wexford, Co. Kerry, Co. Mayo and Co. Donegal having the largest number of birds (BirdWatch Ireland, 2022a).

This species breeds at Dublin Port.

3.1.2 Common Tern

Colonial nesting species, with largest colonies found in Counties Dublin, Wexford and Galway. Also breeds on islands in freshwater lakes in Counties Galway and Mayo (BirdWatch Ireland, 2022b).

This species breeds at Dublin Port.

Common tern with chick © John Fox

3.1.3 Little Tern

The smallest species of breeding tern in Ireland, Little Terns are exclusively coastal, usually nesting on beaches where their eggs are so well camouflaged, they are almost invisible (Robinson, 2005).

The species is a rare breeder in Ireland, with breeding concentrated on the east coast (Burke *et al*., 2020a).

This species does not breed within Dublin Port.

3.1.4 Roseate Tern

Rockabill, off Skerries in Co. Dublin, is the most important Roseate Tern colony in Europe, holding almost 60% of the breeding population (Piec and Dunn, 2021). Whilst the species does not currently breed within Dublin Port, the recently published International (East Atlantic) Species Action Plan for the Conservation of the roseate tern *Sterna dougallii* (2021-2030) has identified the need to provide safe nesting conditions at large Common Tern colonies to aid Roseate Tern population expansion, either through the growth of the NW European metapopulation or dispersal caused by deterioration of one of the key extant colonies (Piec and Dunn, 2021).

Roseate Terns nest colonially on the ground, Nests are generally hidden in long vegetation, among boulders, in rabbit burrows and in nest boxes, with the Rockabill colony primarily nesting in open nests (698 nesting in boxes, 856 in open nests in June 2019 (Birdwatch Ireland 2019). Therefore, given the proximity of the Dublin Port tern colony to the Roseate Tern colony at Rockabill, and successful open nest breeding records, there is the potential for Dublin Port to attract nesting Roseate Tern, with the provision of adequate nesting sites and suitable protection from predation.

This species does not currently, but has the potential to, breed at Dublin Port.

3.1.5 Sandwich Tern

The largest of the tern species breeding in Ireland, is the Sandwich Tern, which exhibits the widest but patchiest breeding distribution in the British and Irish Isles, preferring low-lying offshore islands or islets in bays and brackish lagoons.

The species does not breed within Dublin Port.

4 TERNS IN DUBLIN BAY

Dublin Bay is of international importance for terns during both the breeding and post-breeding season with Dublin Port supporting a breeding colony of Common Terns *Sterna hirundo,* and Arctic Terns *S. paradisaea* (Boland *et al*, 2021), and in late summer Dublin Bay, and in particular Sandymount Strand, holds the largest concentration of post-breeding terns in Ireland.

Attracting birds from colonies, not only in Ireland but also further afield, Dublin Bay may be the most important tern staging site in north-west Europe (Burke, 2020).

4.1 History of tern colony at Dublin Port

Common and Arctic Terns are known to breed in the Dublin Port area since the late 1940s (Merne, 2004).

The Seabirds of Britain and Ireland (Cramp *et al,* 1974), which presented the findings of the first census of all coastal breeding seabirds in Britain and Ireland in 1969-70, reported that the Dublin Port area supported a small colony of 32 pairs of Common and 6 pairs of Artic Terns.

The All-Ireland Tern Survey in 1984 recorded an increase to 61 pairs of Common Terns and 30 pairs of Arctic Terns at Dublin Port (Whilde, 1985). During that survey, it was noted that terns were nesting at three locations: the oil terminal jetty at the North Wall, on reclaimed land on the East Wall and on a mooring dolphin at Poolbeg.

There is little or no quantitative information on the Dublin Port tern colony between the 1984 survey and the commencement of the NPWS conservation and research project in the Dublin Port area which began in 1994 (Merne, 2004). Since 2015, Birdwatch Ireland have led monitoring efforts of the Dublin Port tern colony, funded by Dublin Port Company.

Common terns © John Fox

4.2 Current nesting sites

As of 2023, the Dublin Port tern colony breeds on four man-made structures within the Port: two mooring dolphins; the Coal Distribution Limited (CDL) Dolphin and the ESB Dolphin, and also on two specially made nesting platforms; the Tolka Estuary Pontoon and the Great South Wall (GSW) Pontoon.

The CDL Dolphin and the ESB Dolphin are designated as proposed Natural Heritage Areas (pNHAs) and the ESB Dolphin is designated as part of the South Dublin Bay and Tolka Estuary SPA under the EU Birds Directive (and as such we refer to it in this report as the SPA Platform).

4.2.1 CDL Dolphin

The only structure in Dublin Port to currently host nesting Arctic Tern, the CDL Dolphin is retained as a mooring dolphin outside the breeding season. The large, concrete structure is owned by Dublin Port Company and is not sub-divided into compartments, although a wooden perimeter board was erected in 2016 to prevent chicks from falling into the water before they are fully fledged.

4.2.2 SPA Platform

Also referred to as the ESB dolphin in previous reports. It is owned and maintained by ESB who replaced the nesting platform in 2017 with an entirely new and improved structure. The new platform is subdivided into 34 compartments to facilitate monitoring and to minimise disturbance to chicks when the structure is accessed. High perimeter boards have been installed to prevent chicks entering the water before fledging. It is accessed through a hatch door from underneath.

ESB Dolphin in 2004 © Richard Nairn

4.2.3 Tolka Pontoon

The Tolka Pontoon, also referred to as DPC Clontarf Raft and Pontoon No. 1. It was first deployed in the Tolka Estuary by DPC in 2013. It is separated in to three large compartments and has perimeter boards to prevent chicks entering the water before fledging. A metal skirt was fixed to each end of the pontoon in advance of the 2021 season to prevent rats being able to access the structure.

4.2.4 GSW Pontoon

Originally launched at the base of the Great South Wall by DPC in 2015, this structure is also referred to as Pontoon No. 2. The pontoon is subdivided into 18 compartments.

In 2016, the structure was moved adjacent to the SPA Platform to help accommodate any potentially displaced terns from it during its upgrade works.

Following consultation with National Parks and Wildlife Service (NPWS), once works were completed, the pontoon was re-located away from the SPA Platform. It was felt that it had served its purpose in that location and that moving it elsewhere would prevent it from compromising the qualifying interests of the SPA.

In 2018 DPC relocated this pontoon to a suitable location south of the buoyed channel approximately 120m on the north side of the Great South Wall, and approximately 750m east of the base of the GSW.

4.3 Population changes

As set out in Section 4.1 above, the breeding tern population of Dublin Port has been closely monitored for over 25 years, initially by the late Oscar Mearne and subsequently by BirdWatch Ireland. Table 4.1 below sets out the changes in the breeding tern population at Dublin Port since 1995 based on apparently occupied nest counts. The data are also plotted in Figure 4.1.

Common tern chick © John Fox

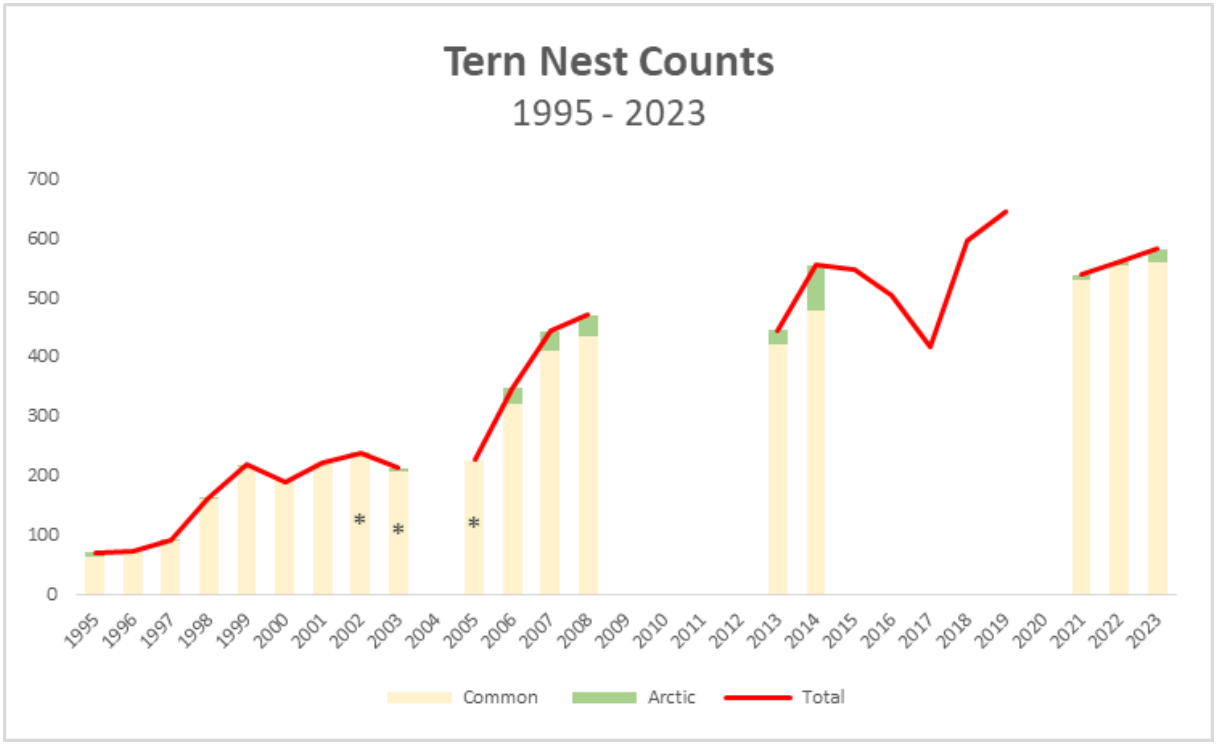
Table 4.1 Total number of Common and Arctic Tern nests at each of the breeding structures in Dublin Port between 1995 and 2023 (*)

Year	SPA Dolphin		CDL Dolphin		1Tolka Pontoon (**)		GSW Pontoon (***)		Colony Total		
	Comm	Arcti	Comm	Arcti	Comm	Arcti	Comm	Arcti	**Comm**	**Arcti**	**Total**
1995	48	1	14	8	-	-	-	-	62	9	**71**
1996	58	0	14		-	-	-	-	72	0	**72**
1997	75	3	15		-	-	-	-	90	3	**93**
1998	140	2	20		-	-	-	-	160	2	**162**
1999	194	2	22		-	-	-	-	216	2	**218**
2000	172	0	18		-	-	-	-	190	0	**190**
2001	205	0	18		-	-	-	-	223	0	**223**
2002	>238	1	*Unknown*		-	-	-	-	>238	>1	**>239**
2003	>207	6	*Unknown*		-	-	-	-	>207	>6	**>213**
2004	*No visits*				-	-	-	-	*No visits*		
2005	227	0	*No visits*		-		-	-	>227	0	**>227**
2006	320	0	0	27	-	-	-	-	320	27	**347**
2007	410	0	0	33	-	-	-	-	410	33	**443**
2008	435	0	0	36	-	-	-	-	435	36	**471**
2009	*Data unavailable*				-	-	-	-	*Unknown*		
2010	*Data unavailable*				-	-	-	-	*Unknown*		
2011	*Data unavailable*				-	-	-	-	*Unknown*		
2012	*Data unavailable*				-	-	-	-	*Unknown*		
2013	418	0	1	25	1	0	-	-	420	25	**445**
2014	427	1	1	76	50	0	-	-	478	77	**555**
2015	416		58		73		1		*Unknown*		**548**
2016	382		0		7		114		*Unknown*		**503**
2017	(****)		24		84		308		*Unknown*		**416**
2018	156		105		132		203		*Unknown*		**596**
2019	261		97		83		204		*Unknown*		**645**
2020	*No visits (COVID-19)*										
2021	182	0	33	10	103	0	210	0	528	10	**538**

(*) Since 2015, data on breeding tern populations has been collected by BirdWatch Ireland as part of the Dublin Bay Birds Project which is funded by DPC
(**) Tolka Pontoon first deployed in 2013
(***) GSW Pontoon first deployed in 2015
(****) ESB Structure replaced in 2017 and no data was gathered from here

Year	SPA Dolphin		CDL Dolphin		1Tolka Pontoon (**)		GSW Pontoon (***)		Colony Total		
	Comm	Arcti	Comm	Arcti	Comm	Arcti	Comm	Arcti	**Comm**	**Arcti**	**Total**
2022	138	0	0	5	169	0	248	0	555	5	**560**
2023	119	0	62	21	151	0	228	0	560	21	**581**

Figure 4.1 Counts of Common and ArcticTern nests at Dublin Port Tern Colony 1995-2023. Note that years 2002, 2003 and 2005 (marked with *) are minimum number estimates. In years 2015 to 2019 only total number of nests were counted.



The Common Tern population has shown an increase over the past three decades, benefitting from increased conservation efforts (including the Roseate Tern colony management plan at Rockabill), nesting habitat creation (tern breeding structures), and habitat protection. However, as with all tern species productivity fluctuates year on year, facing pressures from predation, habitat change, prey availability, disease, and disturbance.

The likely causes of decline in the Arctic Tern populations in Ireland are via acts of predation (raptors taking adults, chicks and eggs; corvids taking chicks and eggs; rats preying on chicks and eggs), and unseasonable weather conditions (increased periods of rainfall leading to nest site flooding), and reduced availability of prey. As above, maintaining and increasing the tern population levels depends on continued conservation management programmes at the breeding sites.

In 2023 avian influenza severely impacted the Dublin Port tern colony, resulting in deaths of adults, fledglings and chicks on all nesting platforms. Between the 4th July and the 3rd August 2023 a total of 195

adult and 358 juvenile carcasses were discovered at the platforms. These represent minimum mortalities, and therefore avian flu resulted in greatly reduced tern colony productivity in 2023.

Nesting pontoon, Tolka Estuary

4.4 Post-breeding aggregations

Late summer is a vital period for migratory terns. Following breeding, adults and recently fledged young must prepare for some of the longest migrations undertaken by any species (Redfern and Bevan, 2020).

The Irish post-breeding tern survey has provided information on some of the important post-breeding sites and results from the survey have identified Dublin Bay, particularly Sandymount Strand, as the most significant staging site in Ireland, and possibly in north-west Europe (Burke *et al*, 2020) for Common Tern, Roseate Tern and Arctic Tern. A peak count of 17,400 terns was recorded here in 2016 (BWI 2022).

5 DESIGNATIONS

5.1 Special Protection Area

Both the SPA Platform and the Tolka pontoon are within the boundary of South Dublin Bay and River Tolka Estuary SPA (see Appendix 1).

This is the highest level of protection available for important bird areas and provides protection under the EU Birds Directive and the European Communities (Bird and Natural Habitat) Regulations, 2011 (see section 2 above).

The Habitat Regulations place an obligation on all agencies of the State, including Local Authorities, to comply with and uphold the requirements of both the EU Birds and Habitats Directives. They also allow the Minister to regulate any operation or activity liable to damage a European site (SPA or SAC).

In addition, Schedule 4 to the European Communities (Conservation of Wild Birds (South Dublin Bay and River Tolka Estuary Special Protection Area 004024)) Regulations 2010 (S.I. No. 212/2010) lists those operations or activities that require the prior written consent of the Minister before they are undertaken.

5.2 Proposed Natural Heritage Area

In 1995, NPWS published proposals on 630 proposed NHAs (pNHAs) on a non-statutory basis, but these have not since been statutorily proposed or designated. These sites are of significance for wildlife and habitats (NPWS, 2022)

Prior to statutory designation, pNHAs are subject to limited protection, in the form of recognition of the ecological value of pNHAs by Planning and Licencing Authorities. This is confirmed by the conditions attached to a grant of planning permission to Ecocem by An Bord Pleanala (ref: PL29S.233158). This required that the applicant should "*submit to and agree in writing with the planning authority a scheme for mitigation measures against potential detriment to colonies of Terns on the adjacent offshore mooring dolphins*".

Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation.

6 PROPOSED MANAGEMENT PLAN

6.1 Objectives

The objectives of this Management Plan relate to the entire breeding tern colony made up of the various sub-colonies within Dublin Port.

European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status the species for which Special Protection Areas are designated.

The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

According to the EU Habitats Directive, favourable conservation status of a species is achieved when all of the following objectives are met:

- The size of the population is maintained or increasing
- The population must be sustainable in the long term
- The natural range of the species is neither being reduced or likely to be reduced for the foreseeable future
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis
- The factors that affect the species or it habitats must be under control.

These objectives must be met for (a) the individual species for which the SPA has been selected and (b) for the overall assemblage of breeding birds in the SPA.

Specific objectives for favourable conservation condition are set in relation to individual qualifying interests of the South Dublin Bay and River Tolka Estuary SPA (NPWS 2012 Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024. Version 1). In relation to terns these objectives are:

- No significant decline in breeding population (apparently occupied nests), or productivity rate (fledged young per breeding pair) – Common Tern
- No significant decline in passage population – Common, Arctic and Roseate Tern
- No significant decline in the number, location or area of breeding colonies – Common Tern
- No significant decline in the number, location or area of roosting areas - Common, Arctic and Roseate Tern
- No significant decline in prey biomass available - Common, Arctic and Roseate Tern
- No significant increase in barriers to connectivity - Common, Arctic and Roseate Tern
- Breeding Site: Human activities should occur at levels that do not adversely affect the breeding population – Common Tern
- Roosting Site: Human activities should occur at levels that do not adversely affect the numbers of terns among the post-breeding aggregation of terns - Common, Arctic and Roseate Tern

6.2 Existing structures

A number of issues relating to tern conservation status have been identified that are considered to warrant management interventions at the existing nesting structures in order to improve conservation prospects. These include avian and mammalian predation of terns, impacts of adverse weather, and fouling of nesting substrate.

Potential measures to address these issues and mitigate potential impacts are proposed below. All of these measures will be subject to liaison with NPWS and screening for appropriate assessment prior to implementation.

6.2.1 Avian Predators

Tern colonies can suffer massive declines as a result of predation (Hume, 1993). As well as direct predation, the mere presence of predators close to a tern colony can have a detrimental impact upon the productivity by causing adults to lift off nests, exposing eggs or young chicks to the elements (Donehower *et al,* 2007 and Palestis, 2005).

Boland *et al* (2022) report how pressure from avian predators in 2022 has resulted in the SPA Platform having its poorest season in a decade, through a combination of stress and direct predation caused by Peregrines *Falco peregrinus*, Buzzards *Buteo buteo* and gulls.

In addition, a pair of Hooded Crow *Corvus cornix,* which nested on a structure near-by, predated the sub-colony on the CDL Dolphin incessantly until their own chicks fledged, resulting in a poor, late season for terns on the dolphin (Boland *et al*, 2022).

Recent modifications to pontoons and the provision of pipe shelters on the sub-colonies have provided chicks with some protection and refuge from avian predation, and also from inclement weather (Boland *et al*, 2021). However, it is recommended that extra, purpose-built shelters to the dimensions set out in Morrison and Gurney (2007) are also provided.

These shelters, although designed as nesting boxes for Roseate Terns *Sterna dougallii*, will provide additional protection for chicks, particularly from gull and corvid predation.

Conservation management should also consider the removal of corvid nests in the immediate vicinity of tern sub-colonies that pose an active and significant threat to breeding terns. Any such measures will require appropriate consents and licences from NPWS.

Pipe shelters on tern platform, Dublin Port

6.2.2 Mammalian Predators

Sub-colonies within Dublin Port have suffered predation from both Otter *Lutra lutra* and Brown Rat *Rattus norvegicus* in recent years as confirmed by monitoring on each nesting platform using trail cameras. However, recent modifications to the sub-colony structures to prevent mammals from accessing them during the tern breeding season appear to have mitigated this predation (Boland *et al*, 2021). Mammalian predation was absent at all four breeding structures in 2023.

Vigilance and ongoing maintenance and improvements must remain at the forefront of management at the colony. DPC and relevant stakeholders should continue to monitor for mammalian predation and ensure the protection measures are adequately maintained to prevent mammals from accessing nesting structures.

Otter pictured on tern platform, Dublin Port, June 2021

6.2.3 Replacement of surface substrate

Boland *et al* (2022) have reported that fouling by tern droppings and weathering has led to surface substrate on nesting platforms becoming unsuitable, and indeed creating a dangerous environment for tern eggs and chicks due to the formation of sticky mud which damages wings and body feathers.

McGeehan and Wyllie (2012) highlight that "the provision of loose, malleable substrate that is a capable of being sculpted by the birds is crucially important".

It is recommended that the existing fouled surface substrate is removed and replaced in advance of the breeding season. McGeehan and Wyllie (2012) state that "cockleshells are ideal".

Substrate should be checked at the end of each season and, if found to be unsuitable, replaced as required.

Summary of Measures – Existing Nesting Structures

- *Provide shelters/nest boxes on platforms*
- *Control corvid nest sites in vicinity of sub-colonies that are causing significant impact*
- *Monitor platforms for mammalian predation*
- *Maintain mammalian predation mitigation features as required*
- *Replace existing surface substrate with suitable material such as cockleshells*
- *Conduct annual assessment of surface substrate and replace as required*

6.3 Provision of additional nesting structures

The Common Tern population in Dublin Port has increased over the past three decades, due in part to the provision of additional nesting habitat, and perhaps benefitting from conservation efforts at Rockabill resulting in local recruitment as indicated by ringing data. To be sustainable the size and range of tern populations should be maintained or increased, and providing new nesting habitat can support this conservation objective.

Given that the existing tern colony is largely located within and adjacent to operational areas of Ireland's busiest Tier 1 Port (DPC, 2022), the potential locations for any new nesting structure(s) are limited by operational requirements, navigational constraints and maritime safety.

6.3.1 Key Requirements

There are several factors which must be taken into consideration when selecting suitable sites for nesting terns within Dublin Port:

- They must be outside of the shipping channel and approaches, and areas used for turning or berthing ships.
- They should not be in areas that have been identified for future port development or capacity expansion.
- They should be sustainable in the long-term with minimal ongoing maintenance requirements.
- They should be surrounded by water at all stages of the tidal cycle.
- They should be far enough from land to deter terrestrial mammalian predators, such as rats, mink, foxes or cats, from gaining access.
- They should be far enough from Peregrine nesting sites on the Poolbeg peninsula to minimise disturbance and predation by these falcons.
- Where feasible and in agreement with key stakeholders and statutory agencies, they should provide opportunities for viewing from public areas.

6.3.2 Potential locations

Two potential locations for new nesting structures have been identified (Figure 6.1) that may meet all key requirements outlined above:

- within the Tolka Estuary; and
- north of the Great South Wall, outside the shipping channel

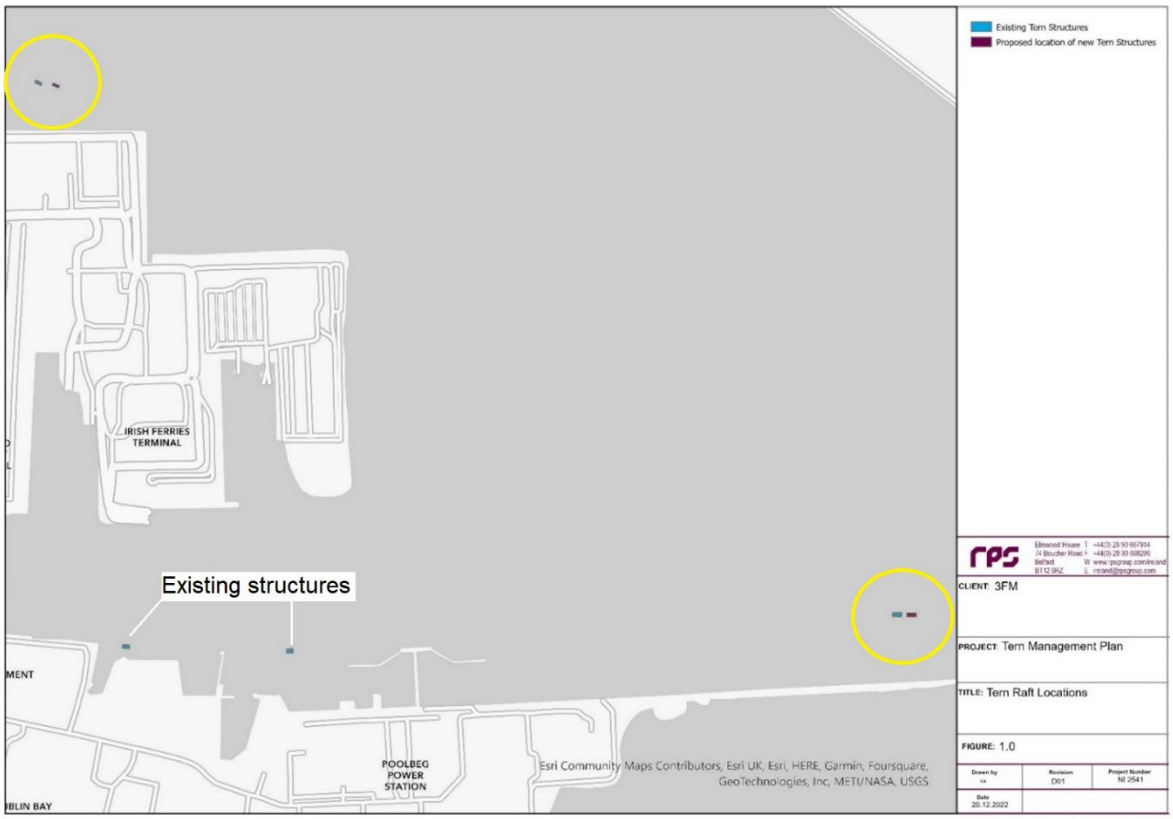


Figure 6.1 Potential locations of additional nesting structures at Dublin Port

6.3.2.1 Tolka Estuary

A pontoon for nesting terns, divided into three compartments has been deployed in the Tolka Estuary since 2013. In 2021, a second, smaller raft was attached to the Tolka pontoon to prevent the original structure from listing. This new extension to the pontoon is sub-divided into two compartments with nesting substrate, wooden perimeter boards and plastic pipe chick shelters added.

The Tolka sub-colony could potentially be increased by the addition of another suitable nesting structure to increase the potential nesting area available, in close proximity to the existing rafts. Observations that terns nested on the smaller raft, deployed to support the original pontoon, illustrates that there is potential for attracting additional birds if suitable nesting habitat is present.

This location is away from areas of main port operations and is located in view of an existing public amenity walkway and cycleway. The area available for additional pontoons is however limited because much of the Tolka Estuary dries out towards Low Water thereby making the pontoon potentially vulnerable to predators.

6.3.2.2 Great South Wall

Nairn (2015) identified this location as a potential site for a suitable nesting structure within Dublin Port Estate. Since 2015, a raft has been deployed here. In 2016 and 2017, it was temporarily relocated close to

the SPA Dolphin to facilitate nesting birds during repair and upgrade works to the permanent dolphin but since 2018, it has been located in the channel approximately 120m north of the Great South Wall, approximately 750m east of the base of the Great South Wall (Boland *et al*, 2022).

Advantages of this location include:

- It is outside the main shipping channel;
- It can be located sufficiently far from the land to make it inaccessible to ground predators;
- It is distant enough from Poolbeg Power Station to reduce the risk of disturbance and predation by nesting Peregrines;
- It is relatively close to a publicly accessible area that is already used by a large number of walkers but distant enough for disturbance not to be a concern; and
- Observers standing on the Great South Wall would have good views of the terns with favourable sunlight mainly coming from the south.

6.3.3 Suitable structures

Rafts

Terns will readily take to artificial nesting platforms (Hume, 1993) and rafts have proven to be successful at attracting nesting terns at numerous sites in Ireland and abroad, including Dublin Port, Ringaskiddy Port and inland lake locations. They are however vulnerable to both mammalian predators and storm damage due to their low height above the waterline (c.1-2m). In addition, the GSW Pontoon is also vulnerable to wash from the numerous large vessels which pass by it on approach to Dublin Port.

The principal advantage of using rafts is their low cost, straightforward construction, quick and simple deployment and if necessary, retrieval at the end of the season.

Fixed structures

Although more costly initially, due to elaborate construction and the probable requirement for statutory permissions, in the long-term fixed structures are more cost-effective, sustainable and require less maintenance than rafts.

Possible structures could comprise one or more permanent dolphins. A minimum height of +4.6m OD Malin would mitigate for increasing tidal height to 2100. A proposed area of 14mx14m of potential nesting habitat is 69% larger than the existing GSW floating pontoon (17m x 8m). Other requirements include a hide for observations and a lockable hatch to allow access for monitoring and maintenance, whilst preventing mammalian predators from accessing the platform.

Replication of the eventual design would allow addition of further nesting platforms at this location as colony expansion dictates and if available nesting habitat becomes a limiting factor.

A drawing showing construction details of a typical permanent nesting platform is shown in Appendix 3.

Summary of Measures – Additional Nesting Structures

- *Provide new nesting habitat at potential locations identified using key requirements*
- *Consider use of rafts and permanent pontoons*
- *Allow for future increase in nesting habitat to cater for expansion of tern colony*

6.4 Post-breeding aggregations

Dublin Bay is, potentially, the most important staging site for post-breeding terns in north-west Europe. The South Dublin Bay and River Tolka Estuary SPA (Site Code 004024) includes conservation objectives for the protection of terns on migration (Burke *et al*, 2020). Merne *et al*. (2008) describes the main roosting area as the exposed sand banks in south Dublin Bay primarily between the Martello Towers at Sandymount (X,Y Grid Ref: 319524, 232021) and Williamstown (X,Y Grid Ref: 320796, 229979). Although principally used as a night roost, birds begin to roost at least one hour before sunset during the period July to September with peak activity occurring between mid-August and mid-September (Merne *et al*., 2008; Merne, 2010).

6.4.1 Disturbance of Roosting Terns

Disturbance of Common, Arctic and Roseate terns at the roosting site is addressed in the conservation objectives for the South Dublin Bay and River Tolka Estuary SPA 004024 (NPWS 2012). In terms of the level of impact, human activities should occur at levels that do not adversely affect the numbers of Roseate, Common, or Arctic terns among the post-breeding aggregation of terns.

Merne (2010) recorded significant disturbance events to the roosting terns caused by people with dogs off the leash and kite surfing. Disturbance, particularly by walkers and dogs has also been highlighted as having a major adverse impact on these large roosting flocks and in some cases has resulted in abandonment of the site (Burke et al, 2020).

Whilst the opportunities for Dublin Port Company to influence the management of these areas is limited, given the significance of these sites for migrating terns, relevant stakeholder organisations (see Section 6.6 below) should take appropriate measures in an effort to minimise disturbance, particularly during the key stopover period in late summer and early autumn (August and September). The promotion of relevant measures can be progressed by relevant stakeholders through existing structures such as the Dublin Bay Biosphere Partnership.

6.4.2 Disturbance Mitigation Measures

Suggested management measures include temporary zoning of areas used for roosting to balance recreational and conservation needs (Stigner et al. 2016), and educating beach users and other recreational users of the adverse effects of disturbance on large post-breeding flocks roosting within Dublin Bay (Le Corre et al. 2013). This could be through face-to-face interaction or passive education in the form of interpretation boards at Sandymount Strand.

In relation to disturbance by dogs, there are currently a number of measures in place in Ireland that are aimed at ensuring all dogs are controlled appropriately (Control of Dogs Act 1986, Control of Dogs Regulations 1998, various Local Authority Bye-Laws). In a review of the Control of Dogs Acts (Department of Rural and Community Development, 2022) a number of potential measures were identified that are relevant here. These included the use of dog control notices in specific areas; improved enforcement of legislation through derogation of enforcement powers to park wardens, wildlife rangers and others; and information and educational campaigns relating to the control of dogs and responsible dog ownership.

Relevant legislative controls are already in place through the Dublin City Council Control of Dogs Bye-Laws 1998. Specifically, a person in charge of a dog in an area specified in the First Schedule, including beaches, shall keep the dog on a leash, except during specified times when the dog may be unleashed provided that it is still under the effectual control of the person-in-charge of the dog.

Summary of Measures – Post-Breeding Aggregations

- *Temporary zoning of roosting areas to reduce recreational-use related impacts*
- *Local signage and information boards near roosting sites*
- *Information and educational programmes*
- *Placement of Dog Control Notices*
- *Enhanced enforcement of existing dog control legislation and bye-laws during peak post-breeding roosting period*

Common terns in flight

6.5 Plan Implementation

This Tern Colony Management Plan identifies a series of measures that may be effective in mitigating pressures and potential impacts adversely affecting conservation conditions for terns. Actions to progress the identified measures, and stakeholders that may have a leading role in their development are suggested in Table 6.1 below. Priority of implementation is also suggested in terms of time scales. In addition to conservation needs, priority also considers the need for engagement with agencies with relevant remits, prior consultation, or securing of permits, permissions and licences.

Priority is broadly ranked as:

- Immediate: Actions that are urgently required, and that are achievable within a period of 1 to 3 years
- Short-term: Actions that are pressing but require elaboration, refinement or consultation for delivery within a period of 3 to 5 years
- Long-term: Actions that require extensive planning, assessment and permitting, and will probably take over 5 years to deliver.

Dublin Port Company will consult with the relevant stakeholders to agree measures implementation, and all measures will be subject to screening for appropriate assessment as required by the Habitats Directive (92/43/EEC).

Table 6.1 Actions required for plan implementation, agencies involved and priority for delivery

No.	Action	Agencies	Priority
1	Provide purpose-built shelters on nesting platforms and pontoons	BWI / DPC	Immediate
2	Control corvid nest sites that impact nesting terns	BWI / DPC / ESB	Immediate
3	Monitor platforms and pontoons for mammalian predation	BWI / DPC	Immediate
4	Maintain Mammalian predation mitigation features as required	DPC / BWI	Immediate
5	Replace existing substrate on nesting platforms and pontoons outside nesting season	DPC / BWI	Immediate
6	Assess condition of substrate annually and replace as required outside nesting season	DPC / BWI	Immediate
7	Confirm suitable locations for new nesting habitat	DPC / NPWS / BWI	Short-term
8	Consider use of rafts/pontoons versus permanent structures	DPC / NPWS / BWI	Short-term
9	Allow for future nesting habitat needs	DPC / NPWS / BWI	Long-term
10	Consider appropriate temporary zoning of roosting areas at Sandymount	DCC / DLR / NPWS	Long-term
11	Consider local signage and information boards near roosting areas	NPWS / DCC / DLR	Short-term
12	Consider preparation and implementation of information and educational programmes	DCC / DLR / DHLGH	Short-term to Long-term
13	Consider use of Dog Control Notices	DCC / DLR	Short-term
14	Seek enhanced enforcement of dog control legislation during peak post-breeding period	DCC / DLR	Long-term

6.6 Stakeholder organisations

Organisations listed below (Table 6.2) are stakeholders in various aspects of this Management Plan and their remits are relevant to plan implementation. It is recommended that a joint working group, with representatives of the stakeholders and any other organisations they may identify, be established to progress and oversee the implementation of this Management Plan.

Table 6.2 Stakeholders with remit relevant to the Tern Management Plan

Organisation	Involvement
Dublin Port Company (DPC)	Port Authority
National Parks and Wildlife Service (NPWS)	Statutory authority for nature conservation
Birdwatch Ireland (BWI)	NGO conservation organisation that implements relevant bird monitoring programmes
Dublin City Council (DCC)	Local Authority in the plan area and owner of land at Pigeon House Harbour
Dún Laoghaire Rathdown County Council (DLR)	Local Authority in the plan area
ESB	Owner of ESB dolphin and land adjacent to Pigeon House Harbour
Department of Housing, Local Government and Heritage (DHLGH)	Foreshore licencing authority and parent department of NPWS

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Appendices

Appendix 1: SITE SYNOPSIS FOR SPECIAL PROTECTION AREA

SITE NAME: SOUTH DUBLIN BAY AND RIVER TOLKA ESTUARY SPA

SITE CODE: 004024

The South Dublin Bay and River Tolka Estuary SPA comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, the estuary of the River Tolka to the north of the River Liffey, and Booterstown Marsh. A portion of the shallow marine waters of the bay is also included.

In the south bay, the intertidal flats extend for almost 3 km at their widest. The sediments are predominantly well-aerated sands. Several permanent channels exist, the largest being Cockle Lake. A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. The landward boundary is now almost entirely artificially embanked. There is a bed of Dwarf Eelgrass (*Zostera noltii*) below Merrion Gates which is the largest stand on the east coast. Green algae (Ulva spp.) are distributed throughout the area at a low density. The macroinvertebrate fauna is well-developed and is characterised by annelids such as Lugworm (*Arenicola marina*), Nephthys spp., Sand Mason (*Lanice conchilega*), and bivalves, especially Cockle (*Cerastoderma edule*) and Baltic Tellin (*Macoma balthica*). The small gastropod Spire Shell (*Hydrobia ulvae*) occurs on the muddy sands off Merrion Gates, along with the crustacean *Corophium volutator*. Sediments in the Tolka Estuary vary from soft thixotropic muds with a high organic content in the inner estuary to exposed, well-aerated sands off the Bull Wall. The site includes Booterstown Marsh, an enclosed area of saltmarsh and muds that is cut off from the sea by the Dublin/Wexford railway line, being linked only by a channel to the east, the Nutley stream. Sea water incursions into the marsh occur along this stream at high tide. An area of grassland at Poolbeg, north of Irishtown Nature Park, is also included in the site.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Oystercatcher, Ringed Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Redshank, Black-headed Gull, Roseate Tern, Common Tern and Arctic Tern. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of the SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The site is an important site for wintering waterfowl, being an integral part of the internationally important Dublin Bay complex – all counts for wintering waterbirds are five-year mean peaks for the period 1995/96 to 1999/2000. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there. An internationally important population of Light-bellied Brent Goose (368) occurs regularly and newly arrived birds in the autumn feed on the Eelgrass bed at Merrion. At the time of designation, the site supported nationally important numbers of a further nine species: Oystercatcher (1,145), Ringed Plover (161), Grey Plover (45), Knot (548), Sanderling (321), Dunlin (1,923), Bar-tailed Godwit (766), Redshank (260) and Black-headed Gull (3,040). Other species occurring in smaller numbers include Great Crested Grebe

(21), Curlew (127) and Turnstone (52). Little Egret, a species which has recently colonised Ireland, also occurs at this site.

South Dublin Bay is a significant site for wintering gulls, with a nationally important population of Black-headed Gull, but also Common Gull (330) and Herring Gull (348). Mediterranean Gull is also recorded from here, occurring through much of the year, but especially in late winter/spring and again in late summer into winter.

Both Common Tern and Arctic Tern breed in Dublin Docks, on a man-made mooring structure known as the E.S.B. dolphin – this is included within the site. Small numbers of Common Tern and Arctic Tern were recorded nesting on this dolphin in the 1980s. A survey in 1995 recorded nationally important numbers of Common Tern nesting here (52 pairs). The breeding population of Common Tern at this site has increased, with 216 pairs recorded in 2000. This increase was largely due to the ongoing management of the site for breeding terns. More recent data highlights this site as one of the most important Common Tern sites in the country with over 400 pairs recorded here in 2007.

South Dublin Bay is an important staging/passage site for a number of tern species in the autumn (mostly late July to September). The origin of many of the birds is likely to be the Dublin breeding sites (Rockabill and the Dublin Docks) though numbers suggest that the site is also used by birds from other sites, perhaps outside the state. This site is selected for designation for its autumn tern populations: Roseate Tern (2,000 in 1999), Common Tern (5,000 in 1999) and Arctic Tern (20,000 in 1996).

The South Dublin Bay and River Tolka Estuary SPA is of ornithological importance as it supports an internationally important population of Light-bellied Brent Goose and nationally important populations of a further nine wintering species. Furthermore, the site supports a nationally important colony of breeding Common Tern and is an internationally important passage/staging site for three tern species. It is of note that four of the species that regularly occur at this site are listed on Annex I of the E.U. Birds Directive, i.e., Bar-tailed Godwit, Common Tern, Arctic Tern and Roseate Tern. Sandymount Strand/Tolka Estuary is also a Ramsar Convention site.

30.5.2015

Appendix 2: SITE SYNOPSIS FOR PROPOSED NATURAL HERITAGE AREA

SITE NAME: DOLPHINS, DUBLIN

DOCKS SITE CODE: 000201

This tern breeding site is situated at the entrance to Dublin port just off the old sewage works at Ringsend.

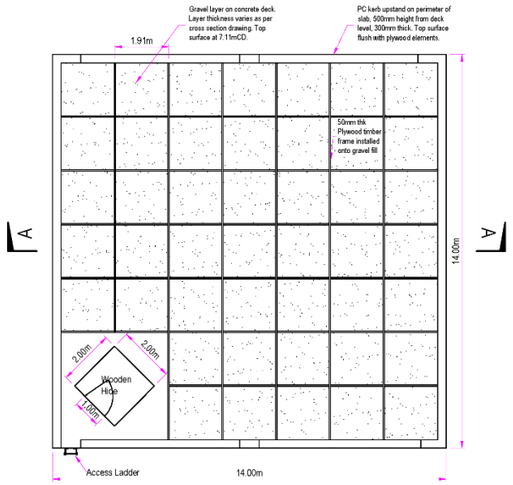
The site comprises two moorings used by Common and Arctic Terns. One of these is derelict and consists of two sections linked by a timber bridge, one section being constructed of concrete, and the other of timber. In June 1994 this dolphin contained 33 tern nests. The other dolphin, with 17 tern nests, is a modern one made entirely of concrete, the deck of which is edged with timber beams and galvanized steel railings.

This site is an important tern colony, especially for Arctic Tern which is a scarce nester on the east coast. With some management both dolphins could be enhanced to attract more terns.

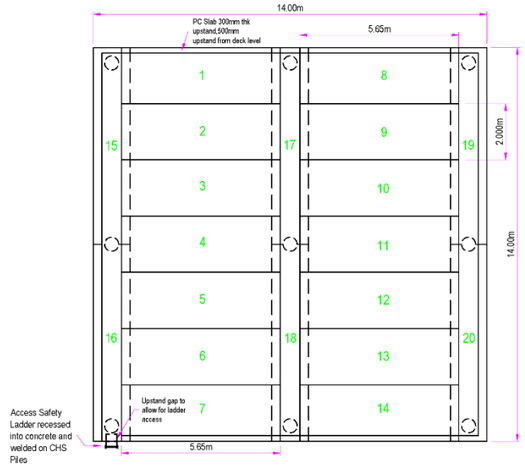
A pair of Kittiwakes attempted to nest on the derelict dolphin in 1994, and Cormorants use it as a roost.

16 February 1995

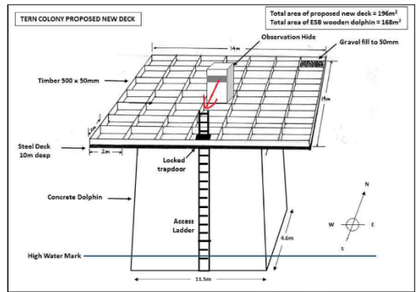
Appendix 3: DRAWING SHOWING THE PROPOSED CONSTRUCTION OF A PERMANENT TERN NESTING PLATFORM

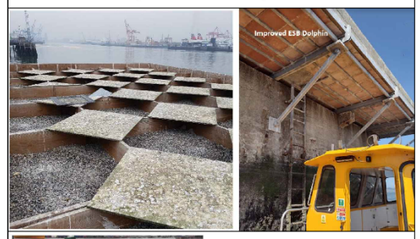


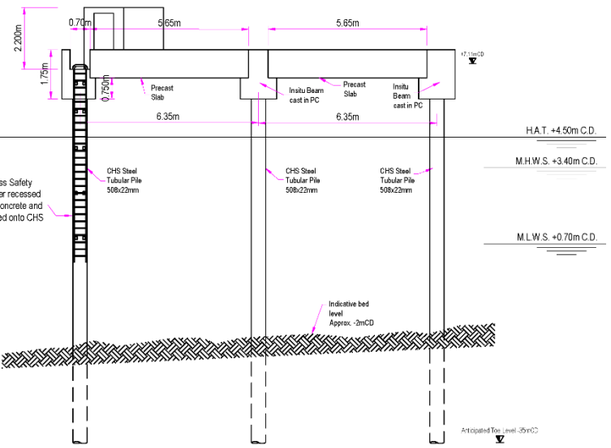
Tern Structure Plan View [1:100]



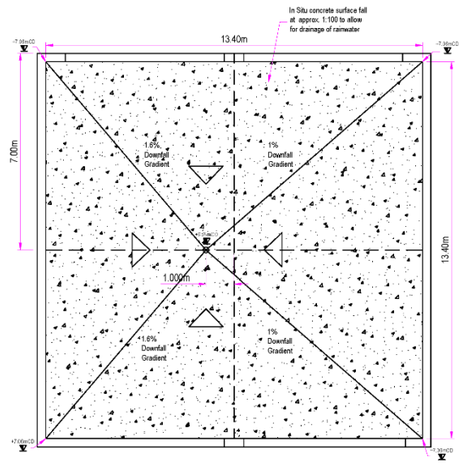
Precast Unit Arrangement Layout [1:100]



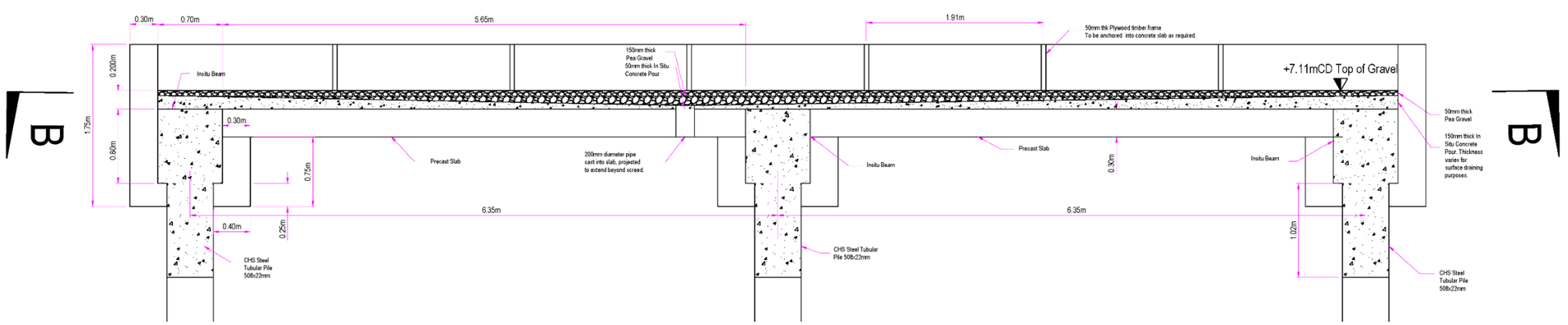




South Elevation [1:100]



Insitu Screed Drainage Levels Section BB [1:100]



Cross Section AA [1:25]

NOTES

1. Verifying Dimensions.
   The contractor shall verify dimensions against such other drawings or site conditions as pertain to this part of the work.
2. Existing Services.
   Any information concerning the location of existing services indicated on this drawing is intended for general guidance only. It shall be the responsibility of the contractor to determine and verify the exact horizontal and vertical alignment of all cables, pipes, etc. (both underground and overhead) before work commences.
3. Issue of Drawings.
   Hard copies, dwf and pdf will form a controlled issue of the drawing. All other formats (dwg, dxf etc.) are deemed to be an uncontrolled issue and any work carried out based on these files is at the recipients own risk. RPS will not accept any responsibility for any errors arising from the use of these files, either by human error by the recipient, listing of un-dimensioned measurements, compatibility issues with the recipient's software, and any errors arising when these files are used to aid the recipients drawing production, or setting out on site.
4. Datum. 7.11mCD
5.

CONCRETE	MIX TYPE	COVER	FINISH
C35/45	IIIA	Varies	Class F1

rev	amendments	check	date

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Client: Dublin Port Company

Project: Dublin 3FM Masterplan Planning

Title: Tern Observation Structure

Project Number	Sheet Size	Drawing Scale
IBM0842	A1	As Shown

Drawing Number: M0842-RPS-XX-XX-DR-C-SK01

Drawn By	Status	Revision
TM	S?	-

Checked By	Approved By	Date
EM	-	23/01/2023