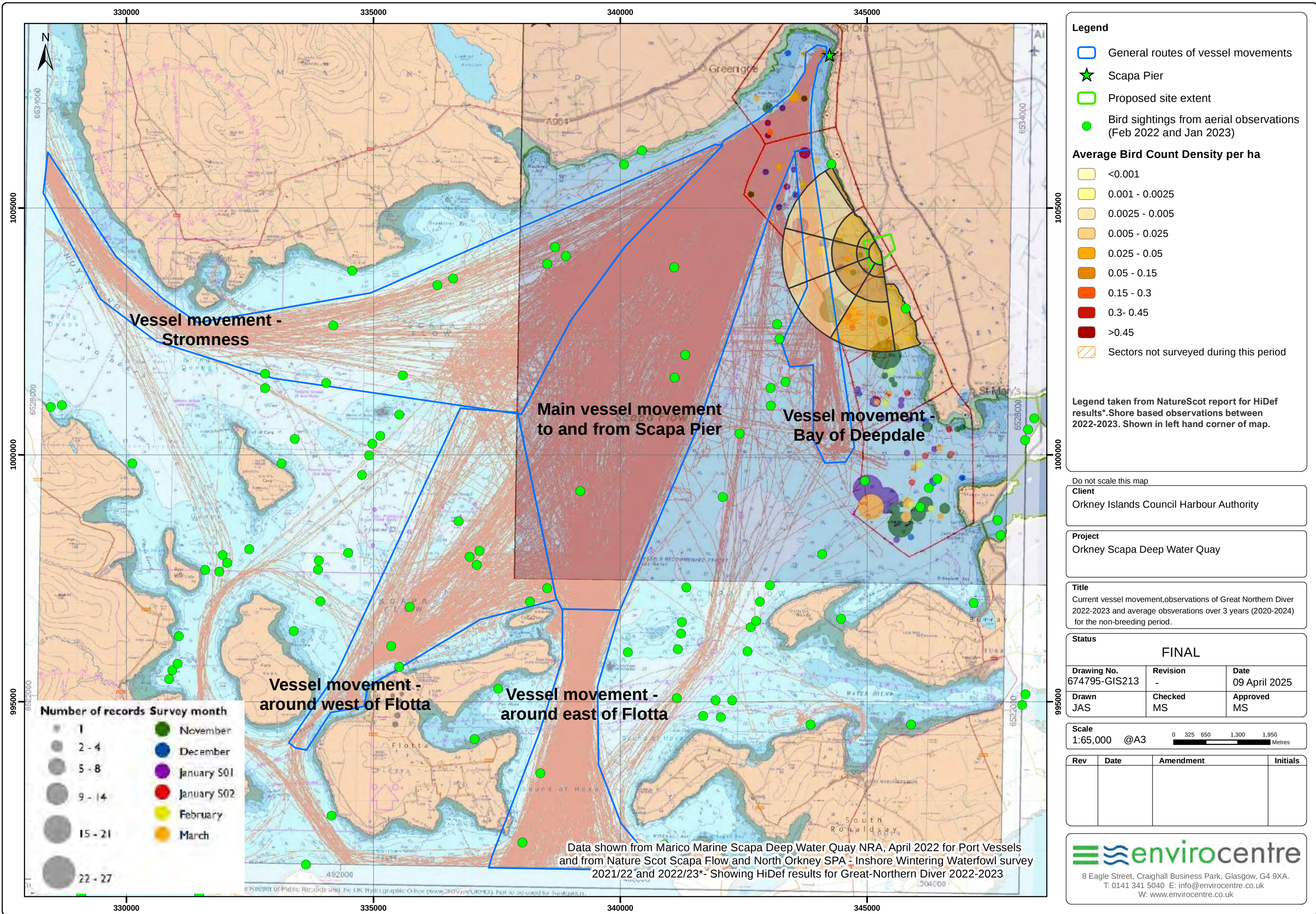
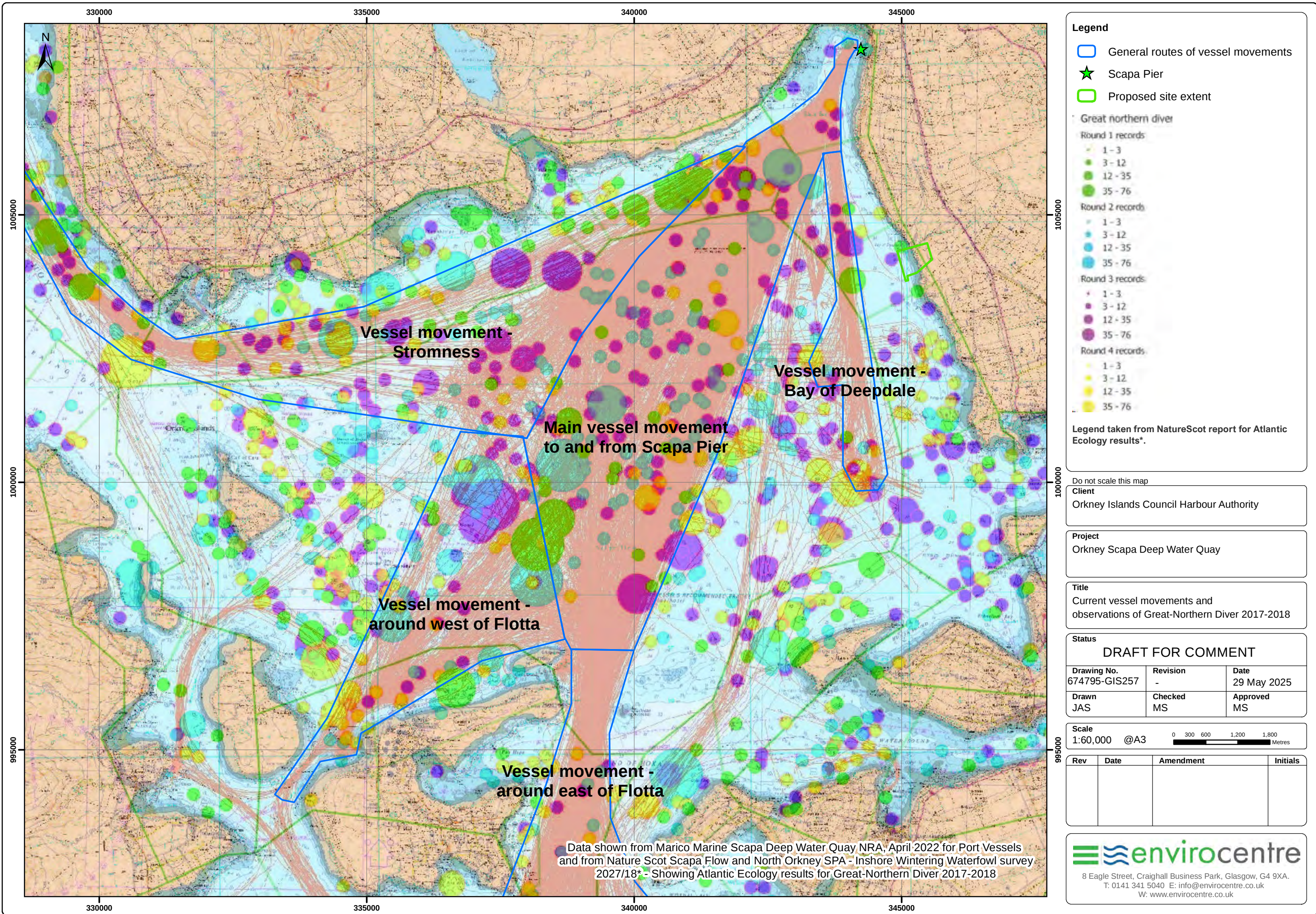
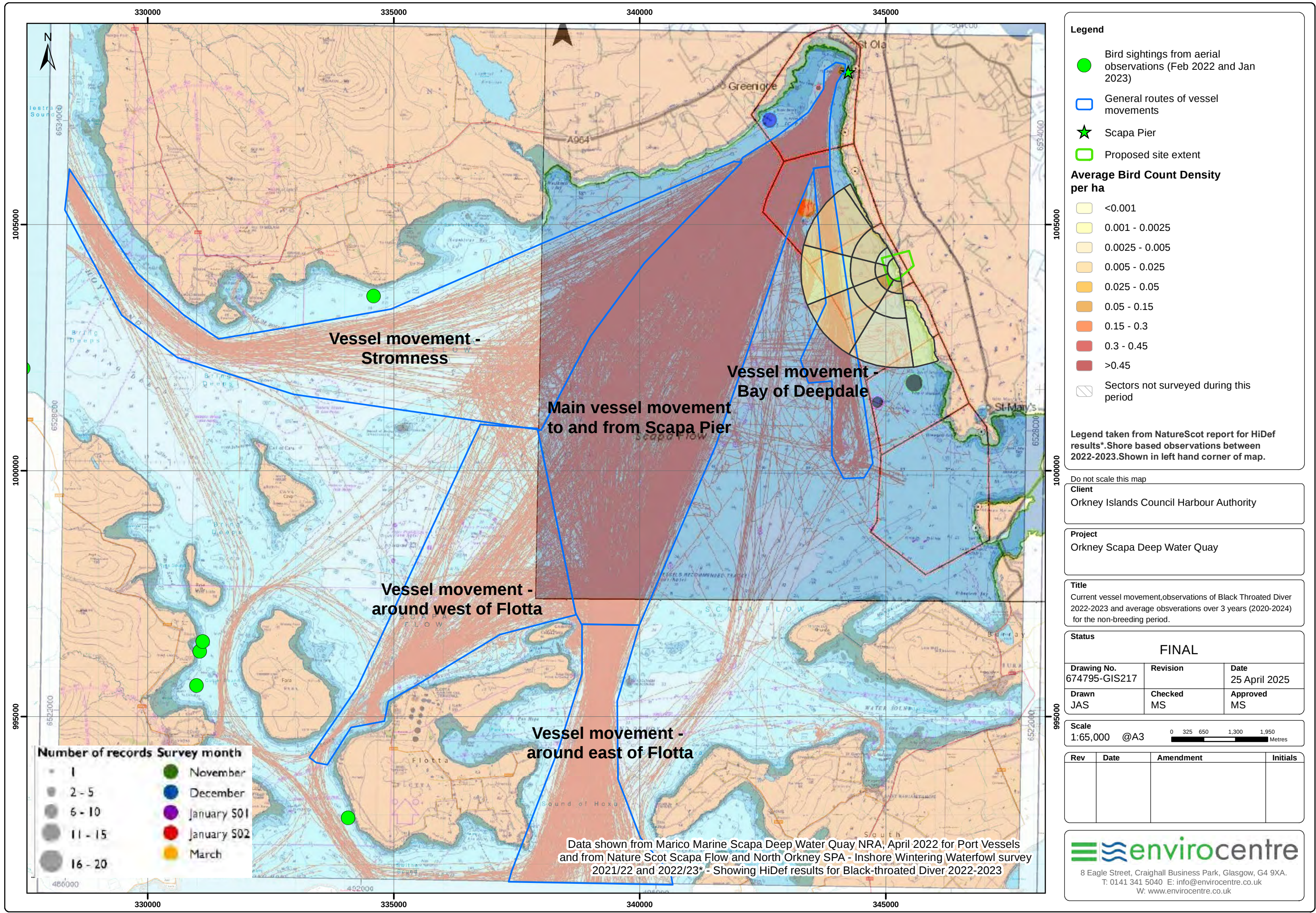


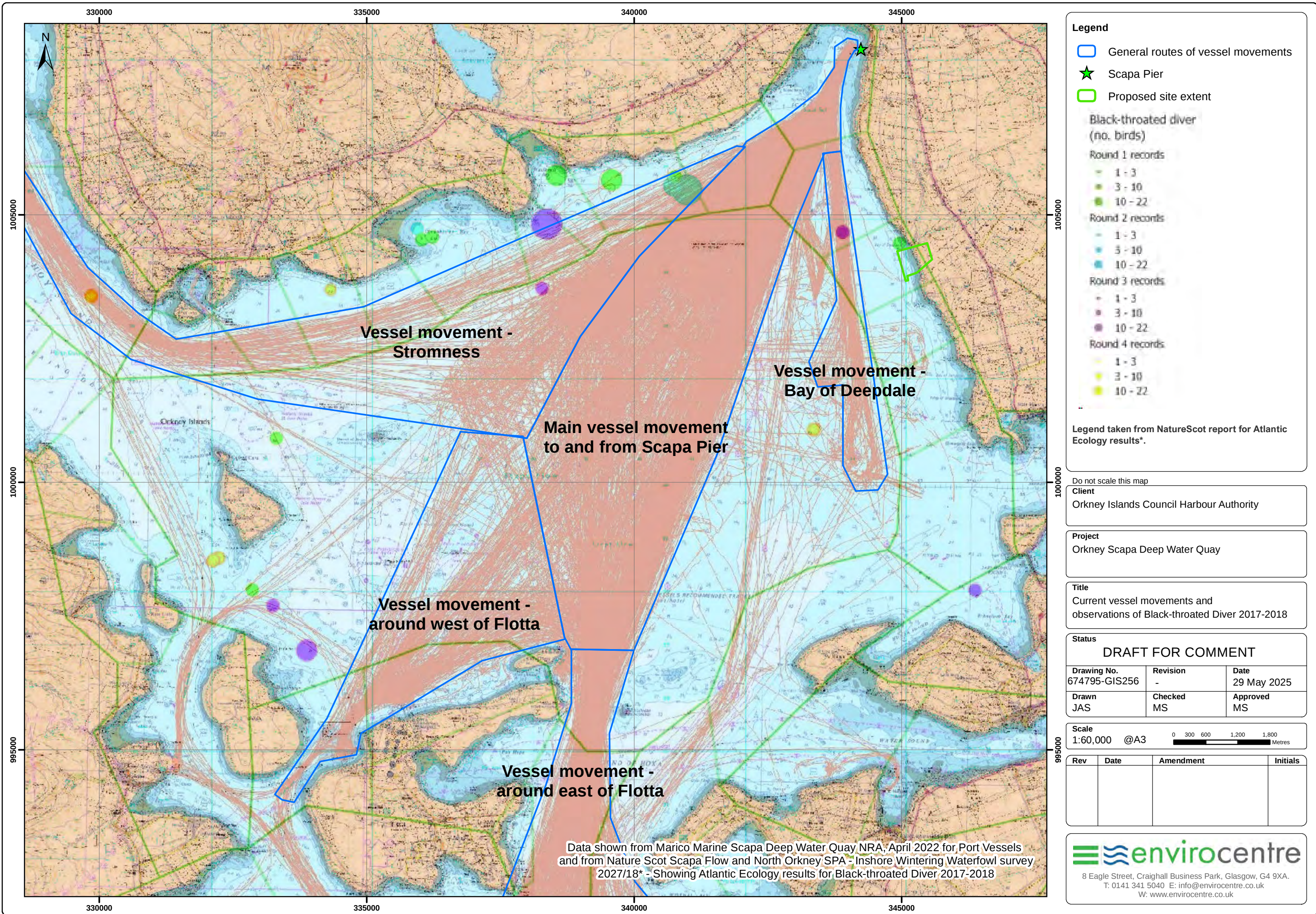
APPENDICES

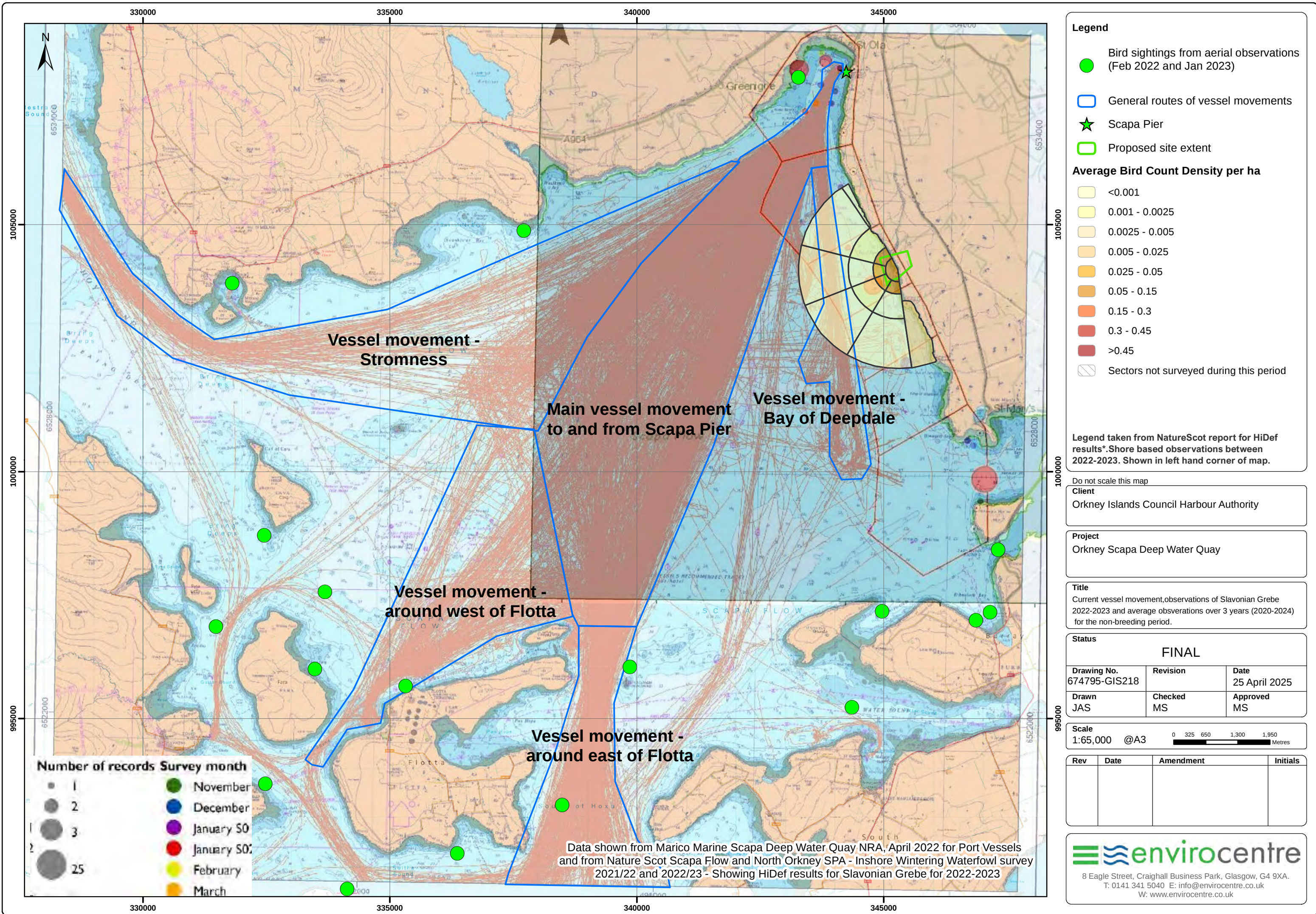
A HEAT MAPS AND HIDEF SURVEY DATA COMBINED

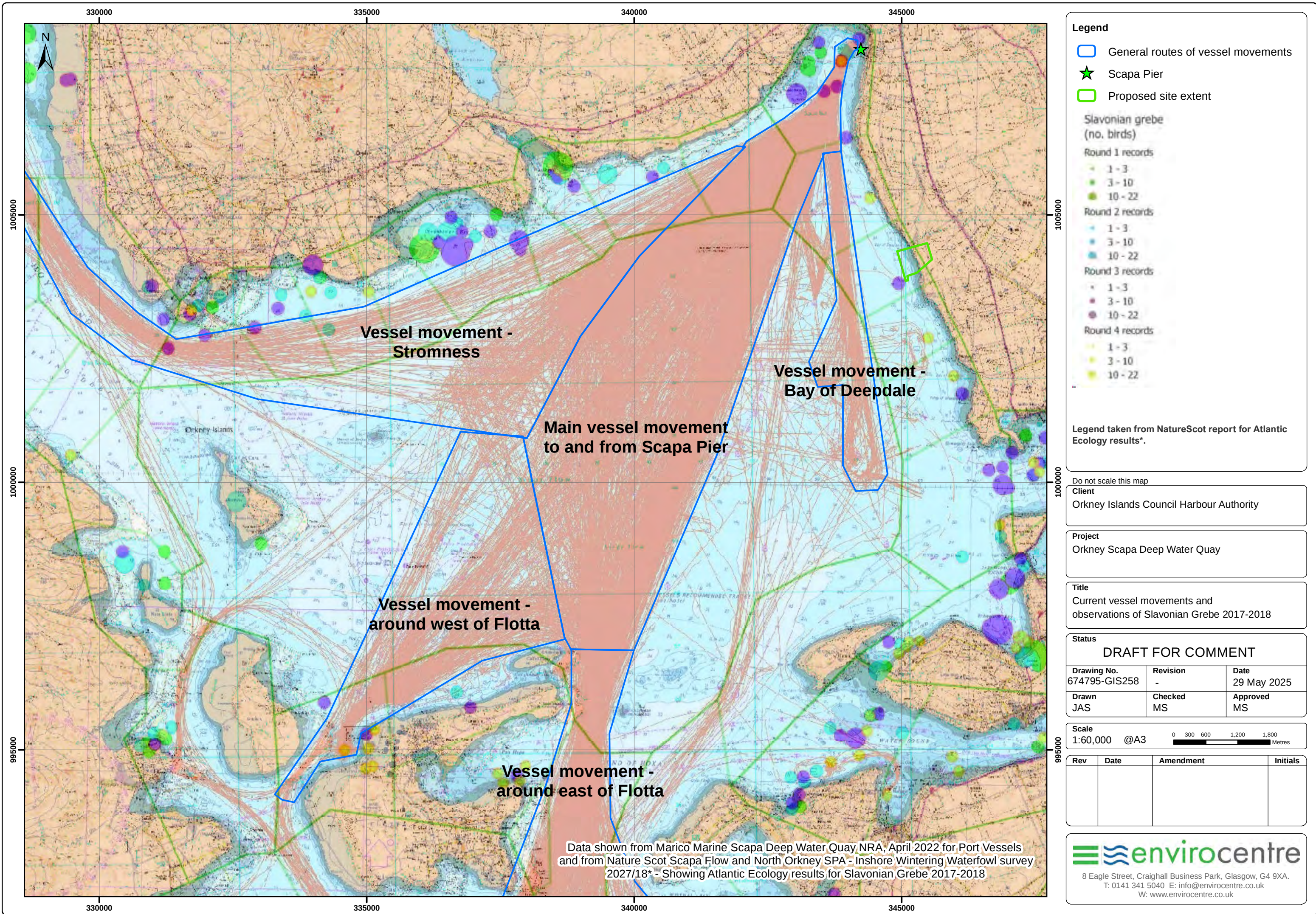












Legend

- General routes of vessel movements
- Scapa Pier
- Proposed site extent

Slavonian grebe (no. birds)

Round 1 records

- 1 - 3
- 3 - 10
- 10 - 22

Round 2 records

- 1 - 3
- 3 - 10
- 10 - 22

Round 3 records

- 1 - 3
- 3 - 10
- 10 - 22

Round 4 records

- 1 - 3
- 3 - 10
- 10 - 22

Legend taken from NatureScot report for Atlantic Ecology results*.

Do not scale this map

Client

Orkney Islands Council Harbour Authority

Project

Orkney Scapa Deep Water Quay

Title

Current vessel movements and observations of Slavonian Grebe 2017-2018

Status		
DRAFT FOR COMMENT		
Drawing No.	Revision	Date
674795-GIS258	-	29 May 2025
Drawn	Checked	Approved
JAS	MS	MS

Scale

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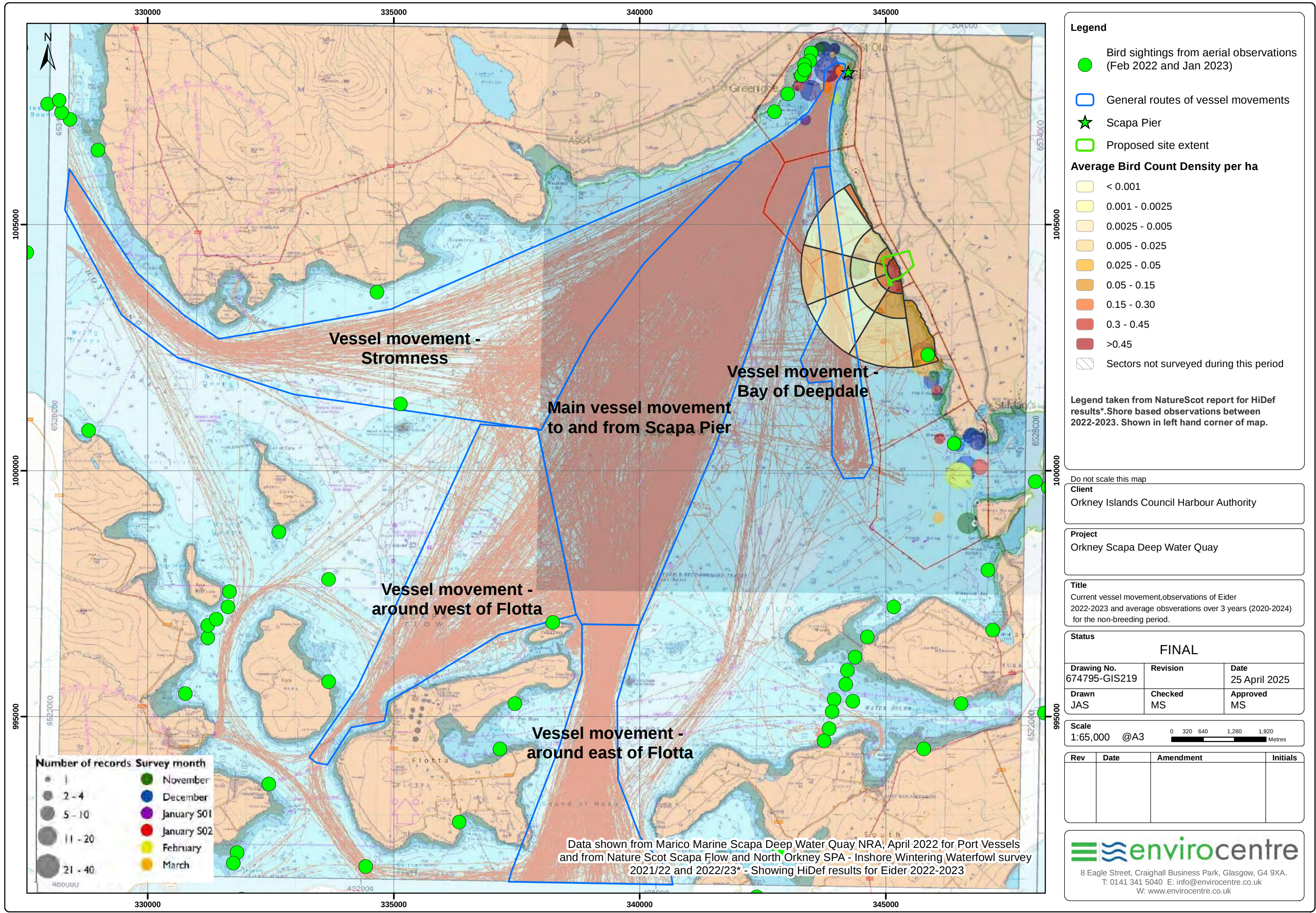
0 300 600 1,200 1,800 Metres

Rev	Date	Amendment	Initials

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Data shown from Marico Marine Scapa Deep Water Quay NRA, April 2022 for Port Vessels and from Nature Scot Scapa Flow and North Orkney SPA - Inshore Wintering Waterfowl survey 2027/18* - Showing Atlantic Ecology results for Slavonian Grebe 2017-2018



Legend

- Bird sightings from aerial observations (Feb 2022 and Jan 2023)
- General routes of vessel movements
- Scapa Pier
- Proposed site extent

Average Bird Count Density per ha

- < 0.001
- 0.001 - 0.0025
- 0.0025 - 0.005
- 0.005 - 0.025
- 0.025 - 0.05
- 0.05 - 0.15
- 0.15 - 0.30
- 0.3 - 0.45
- >0.45
- Sectors not surveyed during this period

Legend taken from NatureScot report for HiDef results*. Shore based observations between 2022-2023. Shown in left hand corner of map.

Do not scale this map
Client
Orkney Islands Council Harbour Authority

Project
Orkney Scapa Deep Water Quay

Title
Current vessel movement, observations of Eider 2022-2023 and average observations over 3 years (2020-2024) for the non-breeding period.

Status		
FINAL		
Drawing No. 674795-GIS219	Revision	Date 25 April 2025
Drawn JAS	Checked MS	Approved MS

Scale
1:65,000 @A3

Rev	Date	Amendment	Initials

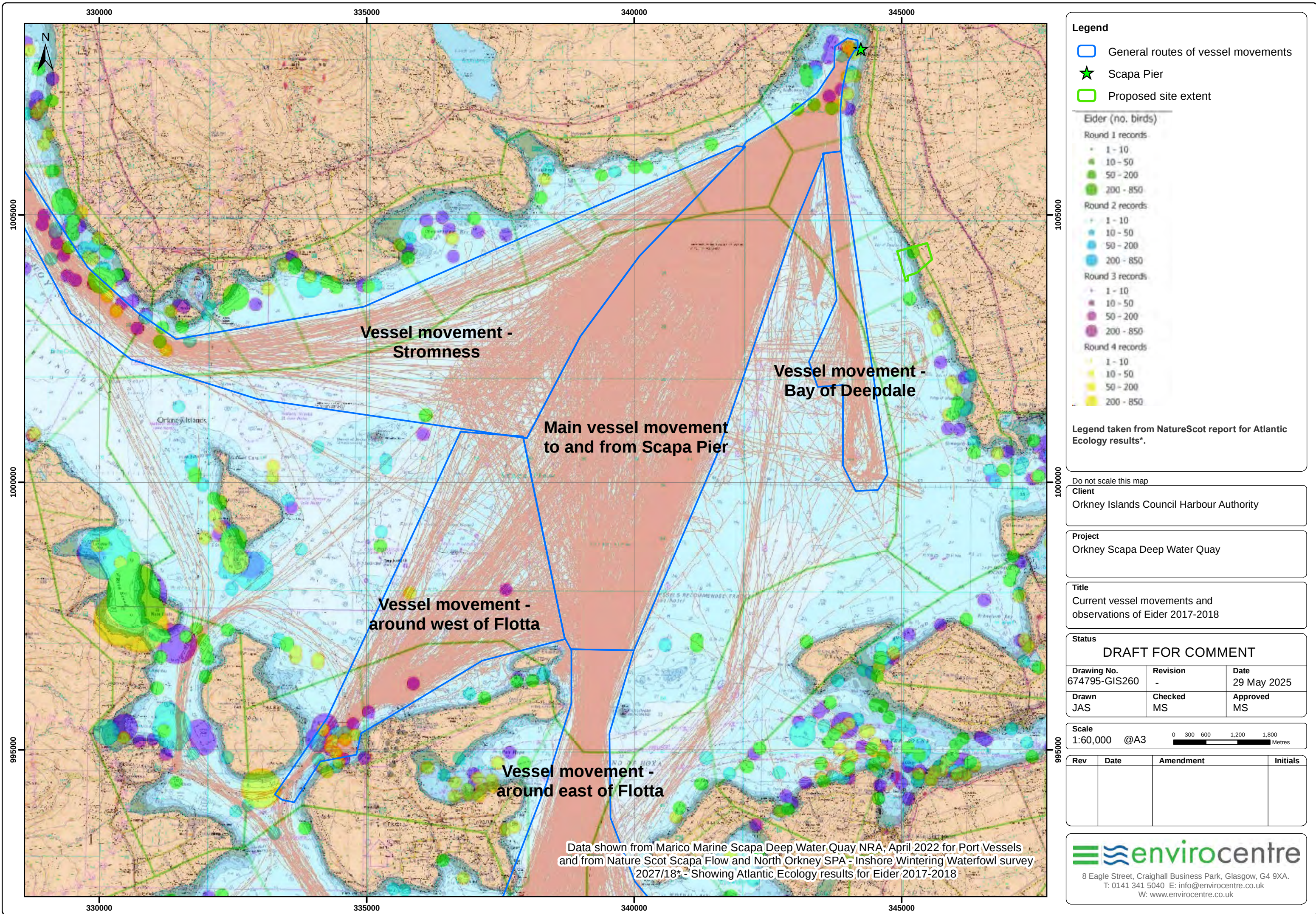
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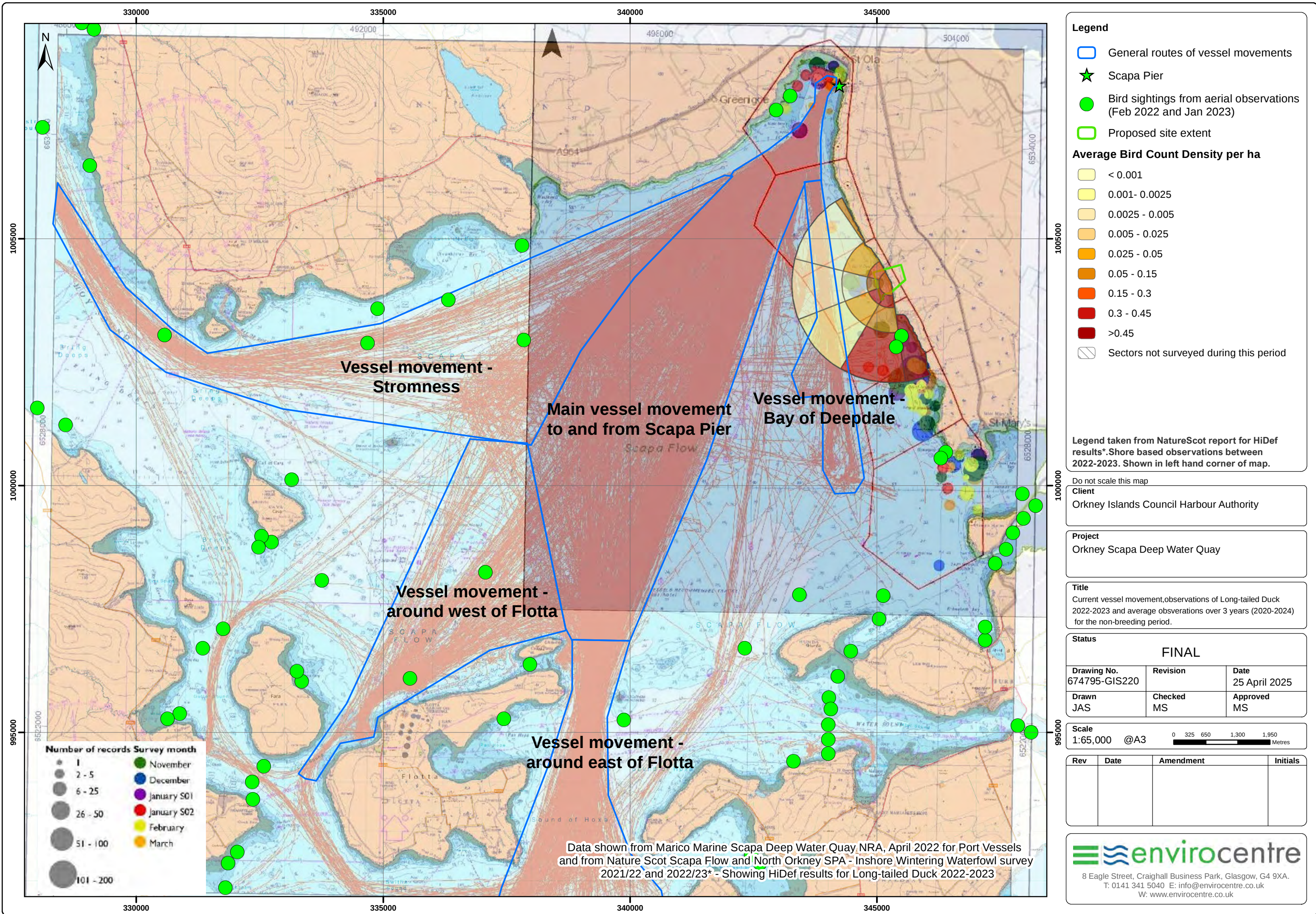
8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk

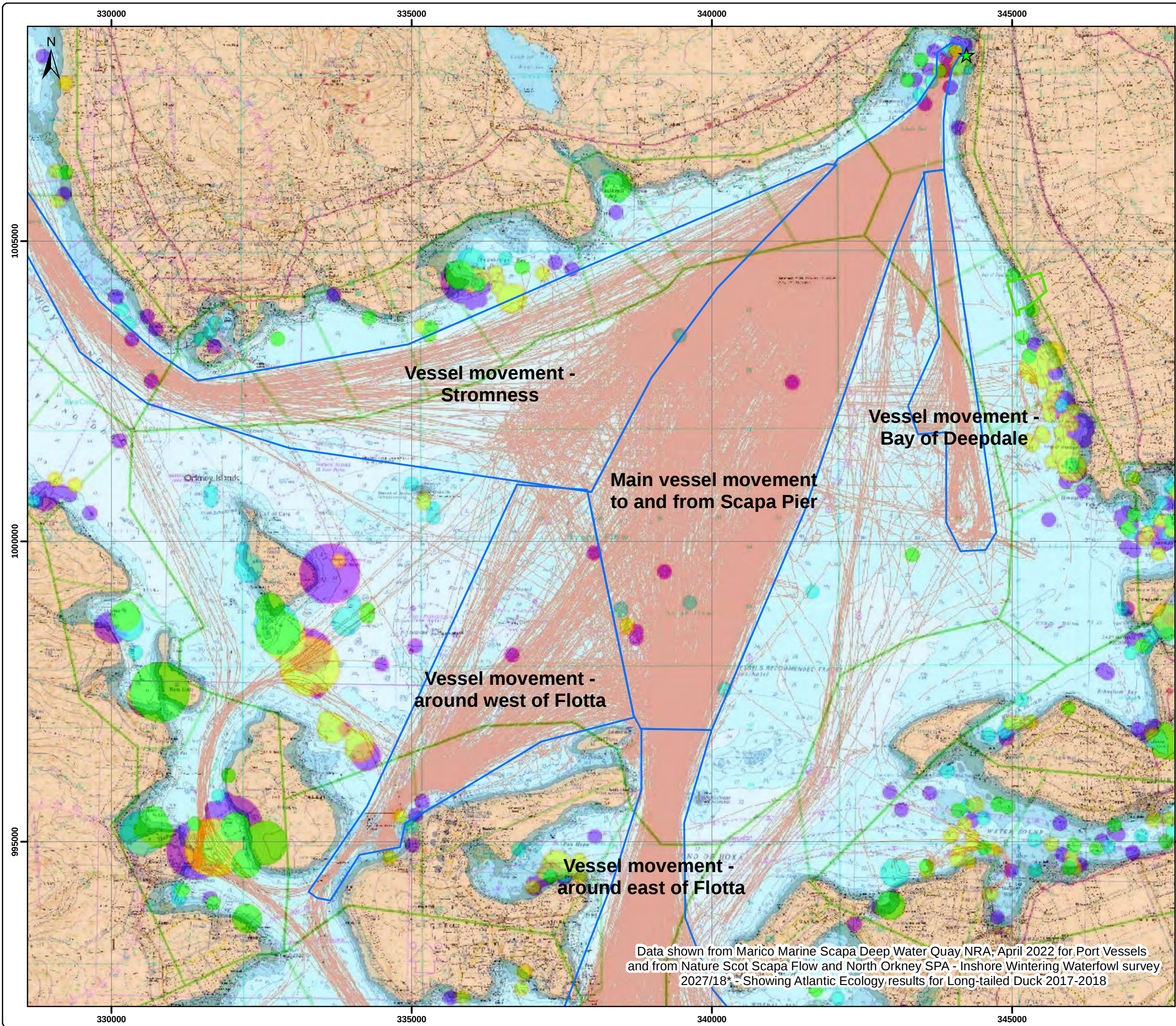
Number of records Survey month

1	November
2 - 4	December
5 - 10	January S01
11 - 20	January S02
21 - 40	February
	March

Data shown from Marico Marine Scapa Deep Water Quay NRA, April 2022 for Port Vessels and from Nature Scot Scapa Flow and North Orkney SPA - Inshore Wintering Waterfowl survey 2021/22 and 2022/23* - Showing HiDef results for Eider 2022-2023







Legend

- General routes of vessel movements
- Scapa Pier
- Proposed site extent

Long-tailed duck

Round 1 records

- 1 - 10
- 10 - 50
- 50 - 200
- 200 - 850

Round 2 records

- 1 - 10
- 10 - 50
- 50 - 200
- 200 - 580

Round 3 records

- 1 - 10
- 10 - 50
- 50 - 200
- 200 - 580

Round 4 records

- 1 - 10
- 10 - 50
- 50 - 200
- 200 - 580

Legend taken from NatureScot report for Atlantic Ecology results*.

Do not scale this map
Client
Orkney Islands Council Harbour Authority

Project
Orkney Scapa Deep Water Quay

Title
Current vessel movements and observations of Long-tailed Duck 2017-2018

Status
DRAFT FOR COMMENT

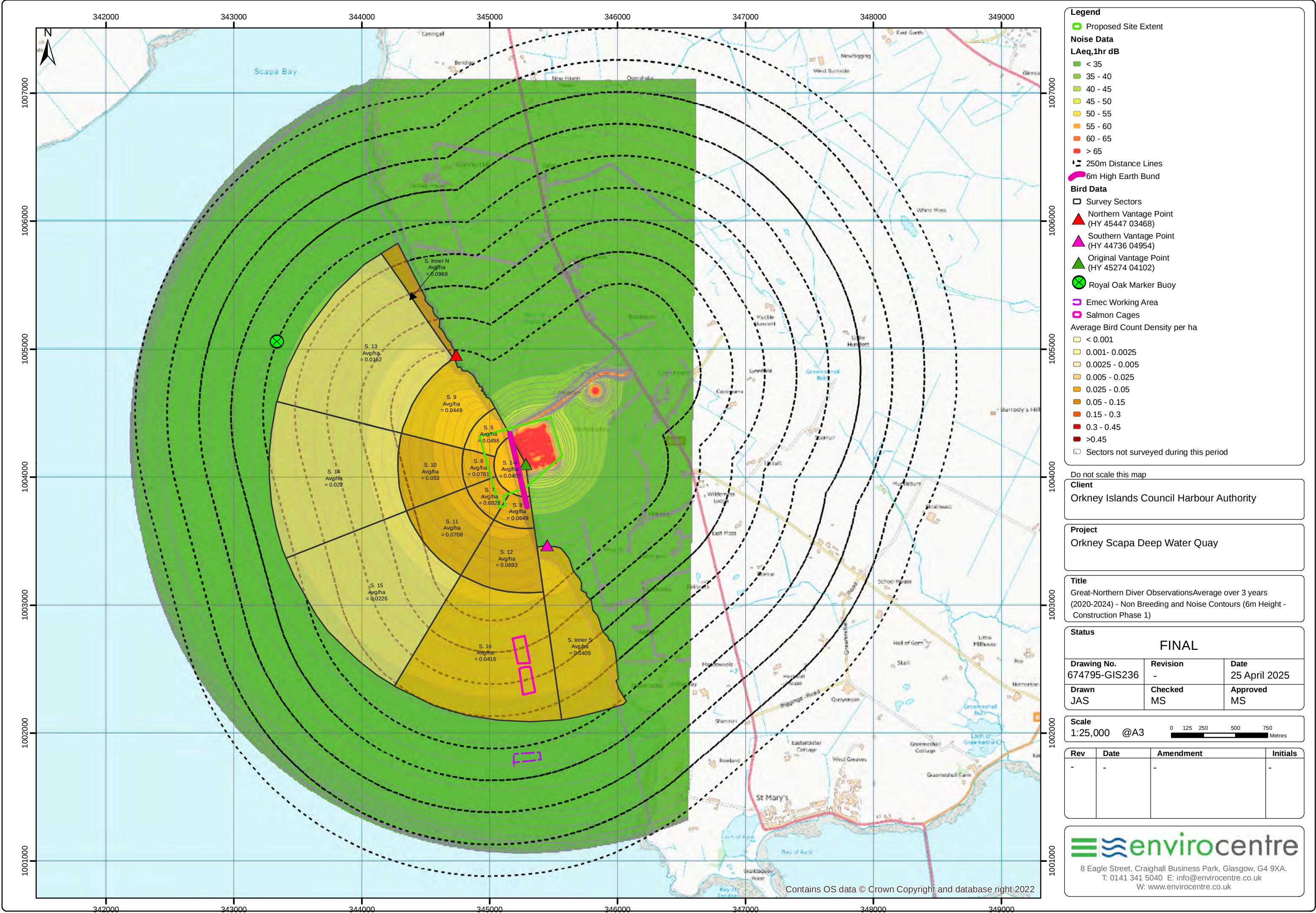
Drawing No. 674795-GIS259	Revision -	Date 29 May 2025
Drawn JAS	Checked MS	Approved MS

Scale
1:60,000 @A3

Rev	Date	Amendment	Initials

Data shown from Marico Marine Scapa Deep Water Quay NRA, April 2022 for Port Vessels and from Nature Scot Scapa Flow and North Orkney SPA - Inshore Wintering Waterfowl survey 2027/18* - Showing Atlantic Ecology results for Long-tailed Duck 2017-2018

B BIRD HEAT MAPS AND NOISE CONTOUR MAPS



Legend

Noise Data
L_{Aeq},1hr dB

- < 35
- 35 - 40
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- > 65

250m Distance Lines
6m High Earth Bund

Bird Data

- Survey Sectors
- Northern Vantage Point (HY 45447 03468)
- Southern Vantage Point (HY 44736 04954)
- Original Vantage Point (HY 45274 04102)
- Royal Oak Marker Buoy
- Emec Working Area
- Salmon Cages

Average Bird Count Density per ha

- < 0.001
- 0.001 - 0.0025
- 0.0025 - 0.005
- 0.005 - 0.025
- 0.025 - 0.05
- 0.05 - 0.15
- 0.15 - 0.3
- 0.3 - 0.45
- > 0.45
- Sectors not surveyed during this period

Do not scale this map

Client
Orkney Islands Council Harbour Authority

Project
Orkney Scapa Deep Water Quay

Title
Great-Northern Diver ObservationsAverage over 3 years (2020-2024) - Non Breeding and Noise Contours (6m Height - Construction Phase 1)

Status		
FINAL		
Drawing No. 674795-GIS236	Revision -	Date 25 April 2025
Drawn JAS	Checked MS	Approved MS

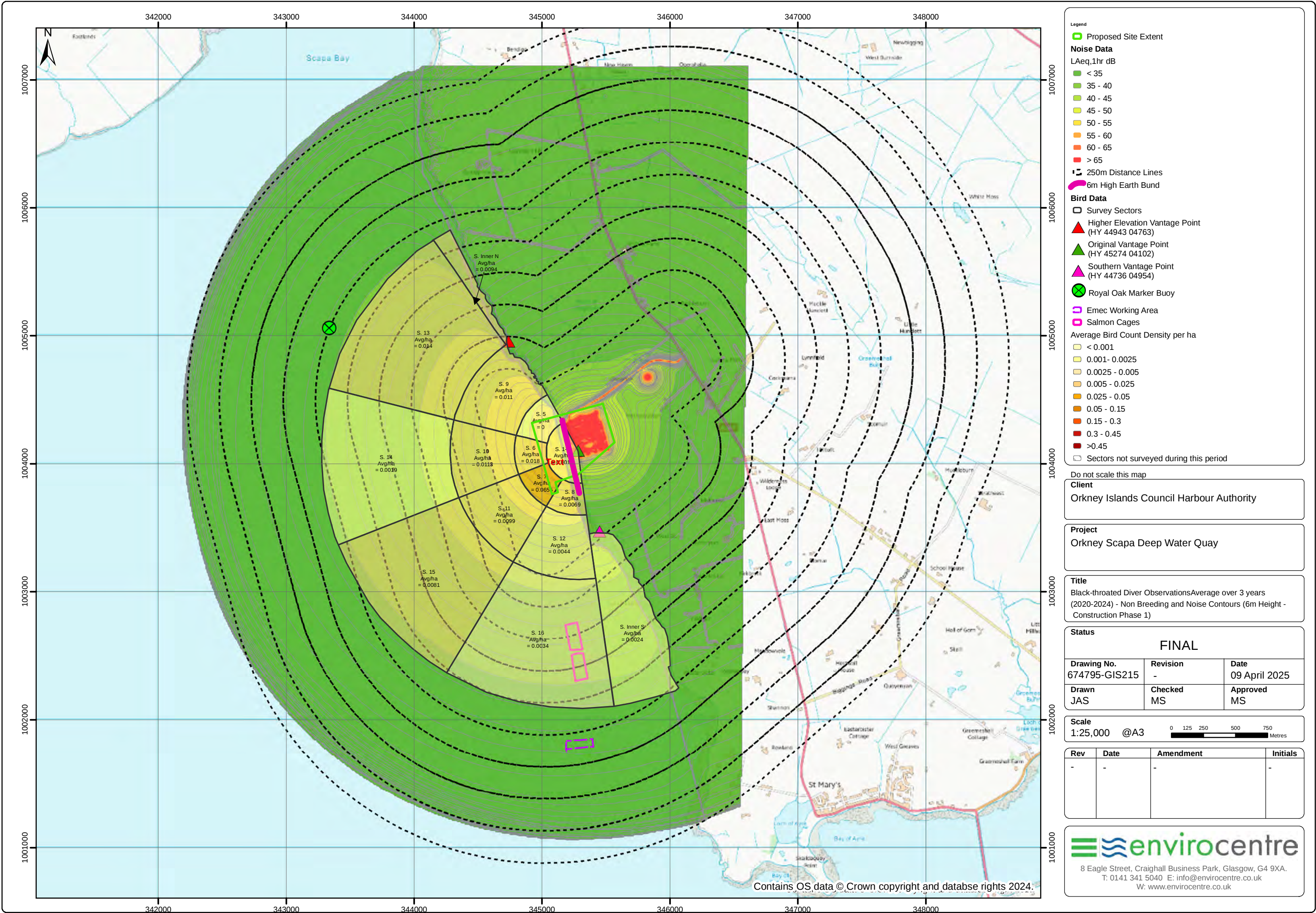
Scale
1:25,000 @A3

0 125 250 500 750 Metres

Rev	Date	Amendment	Initials
-	-	-	-

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Legend

Noise Data

LAeq,1hr dB

- < 35
- 35 - 40
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- > 65

250m Distance Lines

6m High Earth Bund

Bird Data

- Survey Sectors
- Higher Elevation Vantage Point (HY 44943 04763)
- Original Vantage Point (HY 45274 04102)
- Southern Vantage Point (HY 44736 04954)
- Royal Oak Marker Buoy
- Emec Working Area
- Salmon Cages

Average Bird Count Density per ha

- < 0.001
- 0.001 - 0.0025
- 0.0025 - 0.005
- 0.005 - 0.025
- 0.025 - 0.05
- 0.05 - 0.15
- 0.15 - 0.3
- 0.3 - 0.45
- > 0.45
- Sectors not surveyed during this period

Do not scale this map

Client

Orkney Islands Council Harbour Authority

Project

Orkney Scapa Deep Water Quay

Title

Black-throated Diver Observations Average over 3 years (2020-2024) - Non Breeding and Noise Contours (6m Height - Construction Phase 1)

Status		
FINAL		
Drawing No. 674795-GIS215	Revision -	Date 09 April 2025
Drawn JAS	Checked MS	Approved MS

Scale

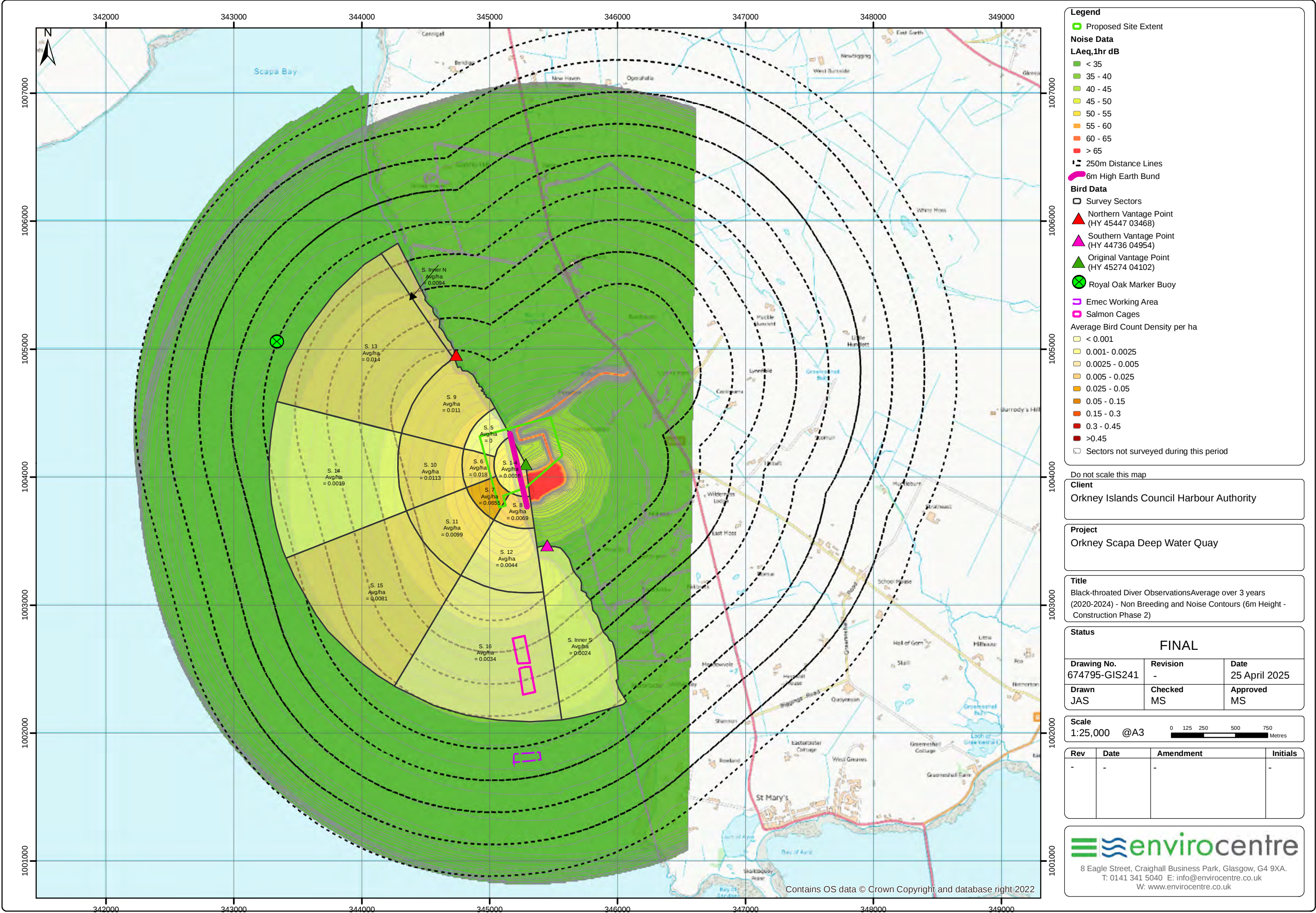
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0 125 250 500 750 Metres

Rev	Date	Amendment	Initials
-	-	-	-

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Legend

Noise Data
LAeq,1hr dB

- < 35
- 35 - 40
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- > 65

250m Distance Lines
6m High Earth Bund

Bird Data

- Survey Sectors
- Northern Vantage Point (HY 45447 03468)
- Southern Vantage Point (HY 44736 04954)
- Original Vantage Point (HY 45274 04102)
- Royal Oak Marker Buoy
- Emec Working Area
- Salmon Cages

Average Bird Count Density per ha

- < 0.001
- 0.001- 0.0025
- 0.0025 - 0.005
- 0.005 - 0.025
- 0.025 - 0.05
- 0.05 - 0.15
- 0.15 - 0.3
- 0.3 - 0.45
- >0.45
- Sectors not surveyed during this period

Do not scale this map

Client
Orkney Islands Council Harbour Authority

Project
Orkney Scapa Deep Water Quay

Title
Black-throated Diver ObservationsAverage over 3 years (2020-2024) - Non Breeding and Noise Contours (6m Height - Construction Phase 2)

Status		
FINAL		
Drawing No. 674795-GIS241	Revision -	Date 25 April 2025
Drawn JAS	Checked MS	Approved MS

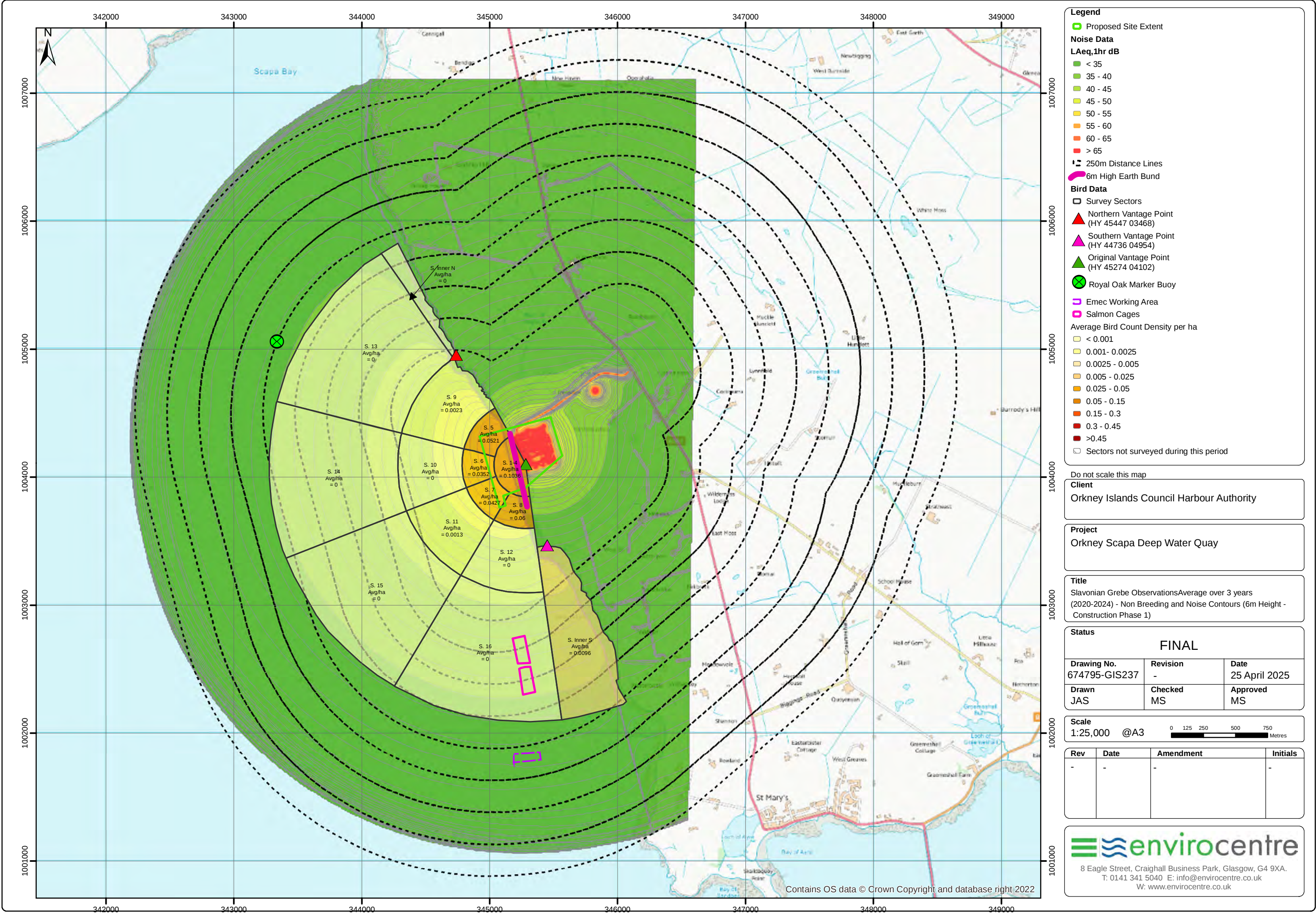
Scale
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0 125 250 500 750 Metres

Rev	Date	Amendment	Initials
-	-	-	-

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Legend

Noise Data
L_{Aeq,1hr} dB

- < 35
- 35 - 40
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- > 65

250m Distance Lines
6m High Earth Bund

Bird Data

- Survey Sectors
- Northern Vantage Point (HY 45447 03468)
- Southern Vantage Point (HY 44736 04954)
- Original Vantage Point (HY 45274 04102)
- Royal Oak Marker Buoy
- Emec Working Area
- Salmon Cages

Average Bird Count Density per ha

- < 0.001
- 0.001 - 0.0025
- 0.0025 - 0.005
- 0.005 - 0.025
- 0.025 - 0.05
- 0.05 - 0.15
- 0.15 - 0.3
- 0.3 - 0.45
- > 0.45
- Sectors not surveyed during this period

Do not scale this map

Client
Orkney Islands Council Harbour Authority

Project
Orkney Scapa Deep Water Quay

Title
Slavonian Grebe Observations Average over 3 years (2020-2024) - Non Breeding and Noise Contours (6m Height - Construction Phase 1)

Status		
FINAL		
Drawing No. 674795-GIS237	Revision -	Date 25 April 2025
Drawn JAS	Checked MS	Approved MS

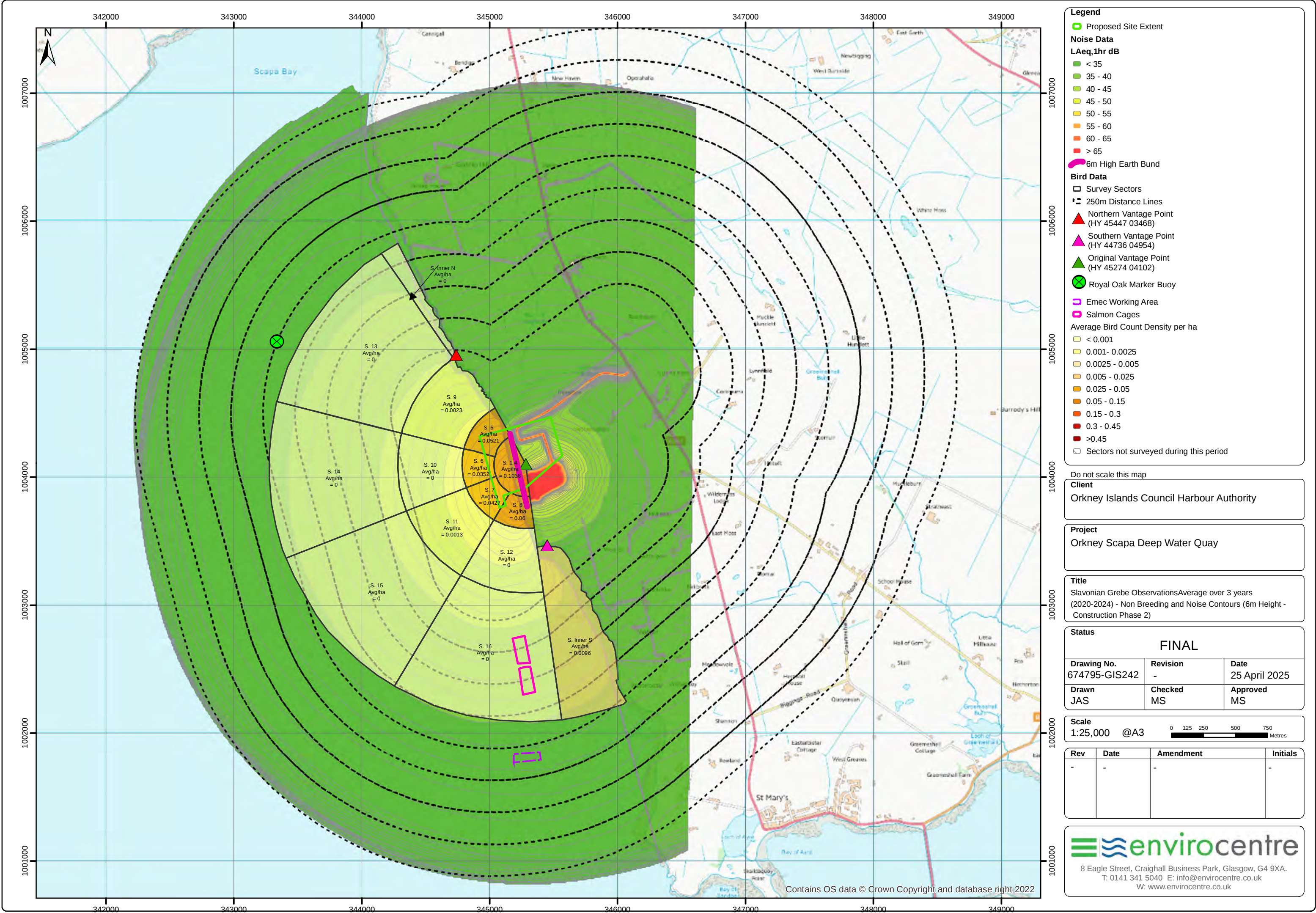
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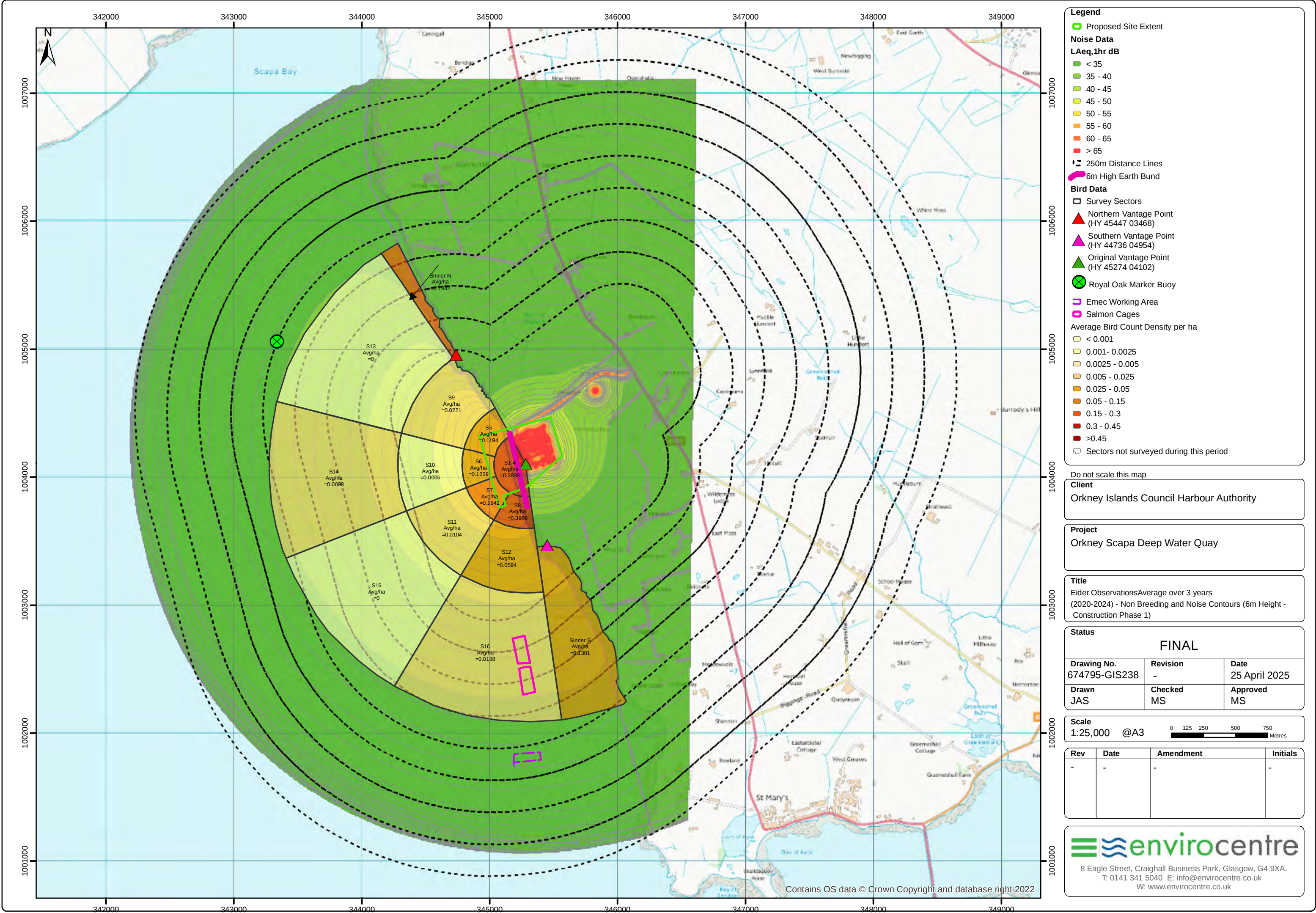
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Rev	Date	Amendment	Initials
-	-	-	-

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Legend

Proposed Site Extent

Noise Data
LAeq,1hr dB

< 35

35 - 40

40 - 45

45 - 50

50 - 55

55 - 60

60 - 65

> 65

250m Distance Lines

6m High Earth Bund

Bird Data

Survey Sectors

Northern Vantage Point (HY 45447 03468)

Southern Vantage Point (HY 44736 04954)

Original Vantage Point (HY 45274 04102)

Royal Oak Marker Buoy

Emec Working Area

Salmon Cages

Average Bird Count Density per ha

< 0.001

0.001- 0.0025

0.0025 - 0.005

0.005 - 0.025

0.025 - 0.05

0.05 - 0.15

0.15 - 0.3

0.3 - 0.45

>0.45

Sectors not surveyed during this period

Do not scale this map

Client
Orkney Islands Council Harbour Authority

Project
Orkney Scapa Deep Water Quay

Title
Eider Observations Average over 3 years
(2020-2024) - Non Breeding and Noise Contours (6m Height - Construction Phase 1)

Status		
FINAL		
Drawing No. 674795-GIS238	Revision -	Date 25 April 2025
Drawn JAS	Checked MS	Approved MS

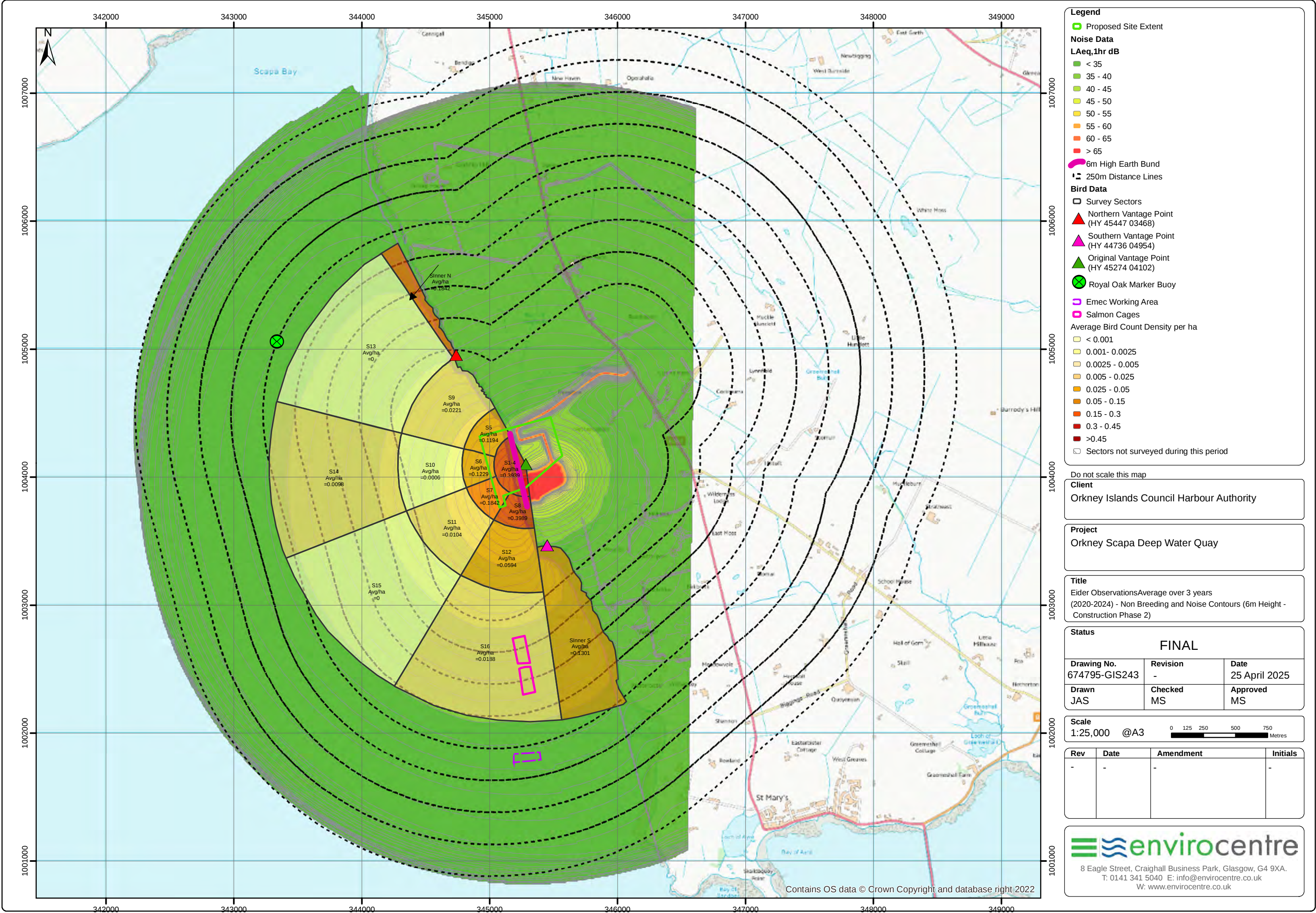
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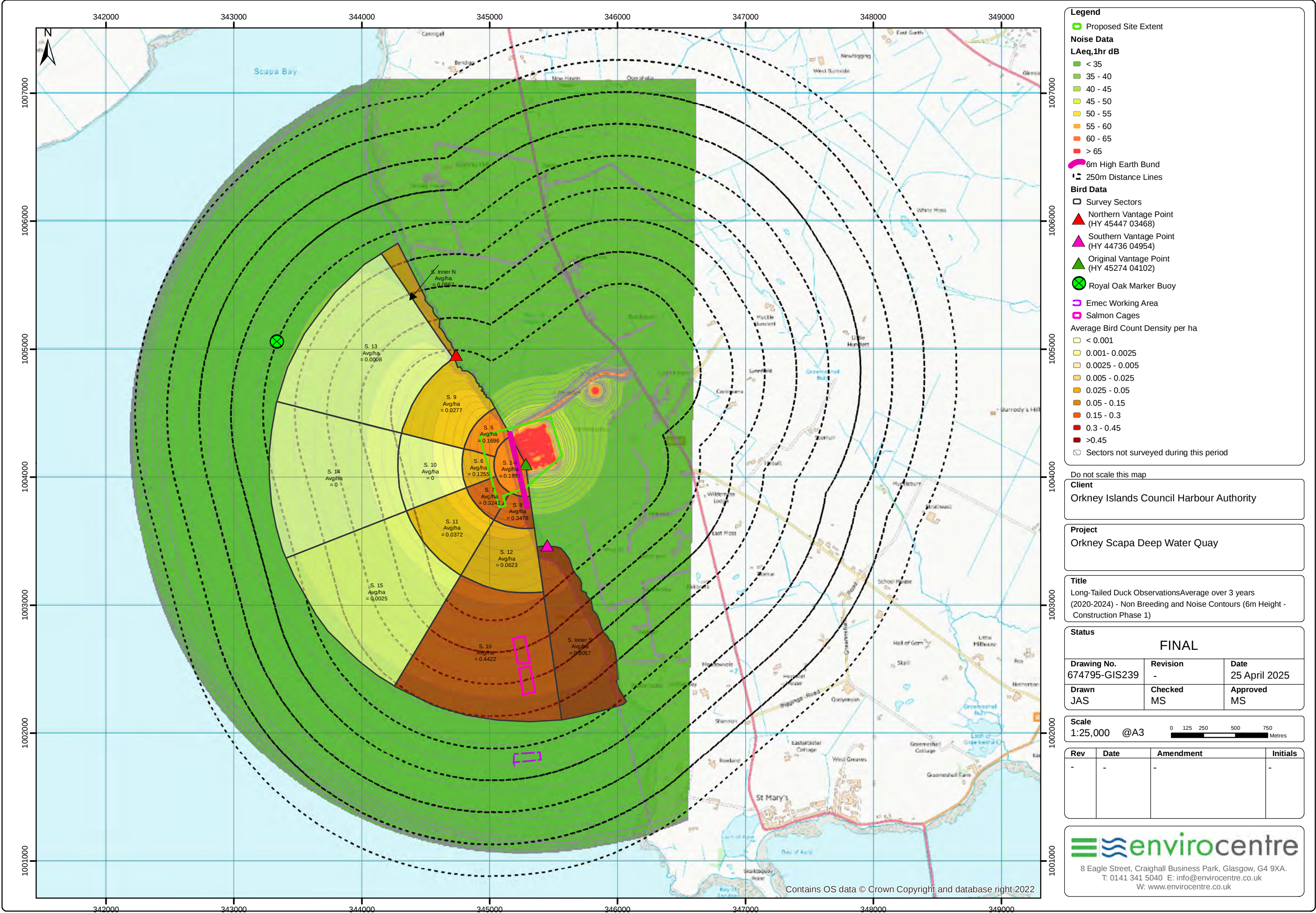
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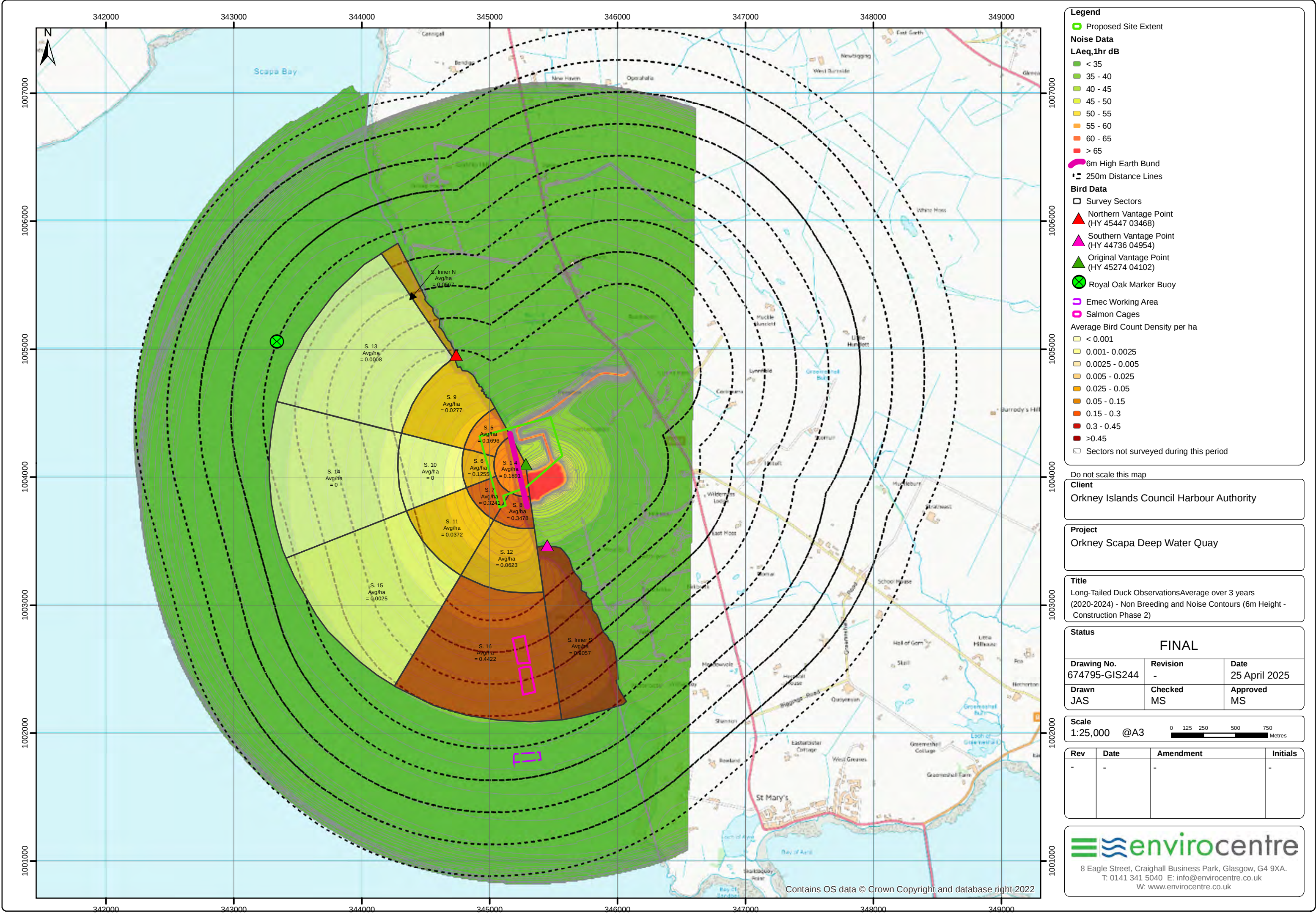
Metres

Rev	Date	Amendment	Initials
-	-	-	-

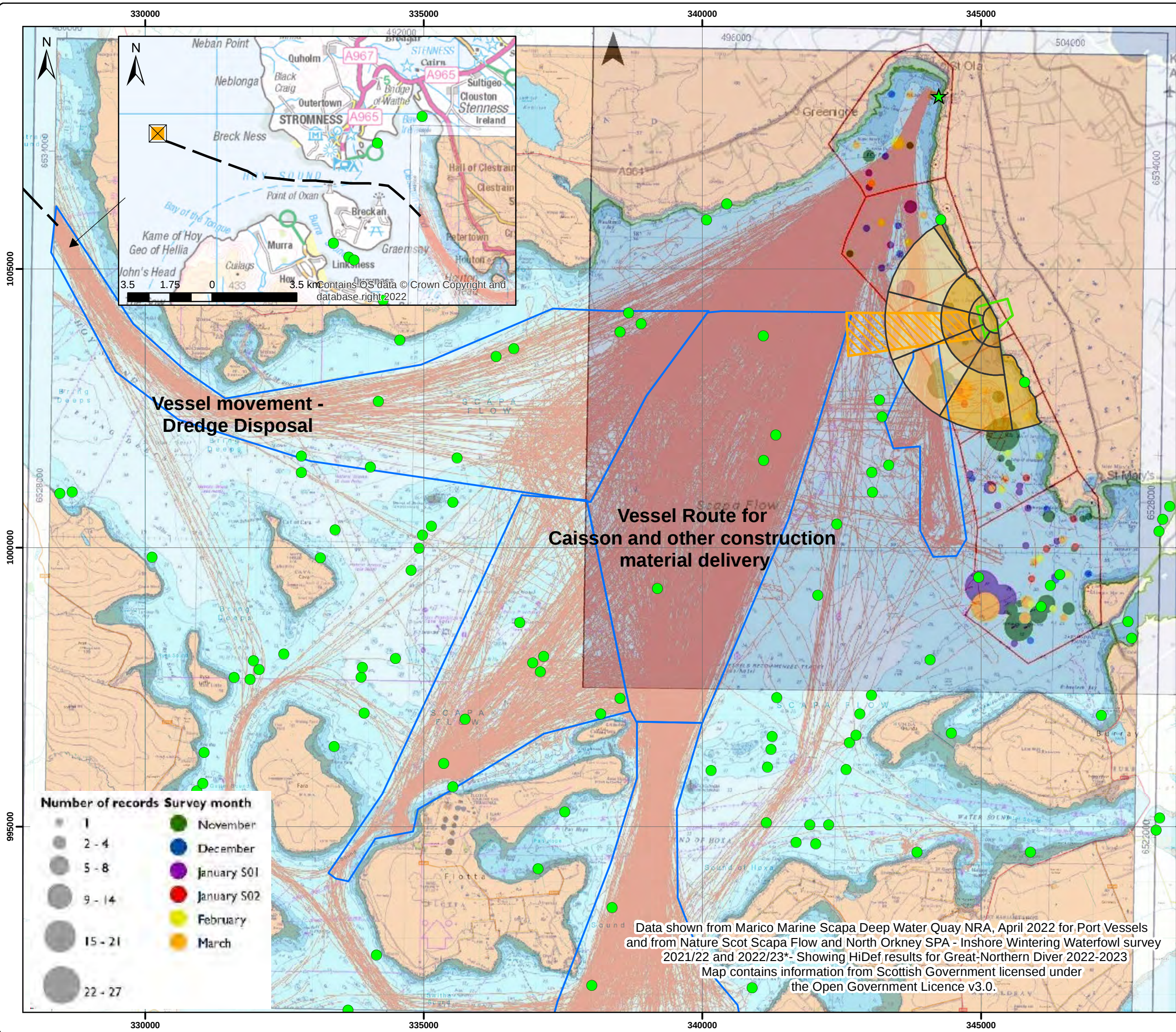
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C BIRD HEAT MAPS AND HIDEF DATA COMBINED WITH CONSTRUCTION VESSEL ROUTES



Legend

- Proposed routes of vessel movements - Construction Phase
- New vessels route to Scapa Deep Water Quay
- Route to Dredge Disposal Site
- Dredge Disposal Site
- Scapa Pier
- Proposed site extent
- Bird sightings from aerial observations (Feb 2022 and Jan 2023)

Average Bird Count Density per ha

<0.001
0.001 - 0.0025
0.0025 - 0.005
0.005 - 0.025
0.025 - 0.05
0.05 - 0.15
0.15 - 0.3
0.3 - 0.45
>0.45

Sectors not surveyed during this period

Legend taken from NatureScot report for HiDef results*. Shore based observations between 2022-2023. Shown in left hand corner of map.

Do not scale this map

Client
Orkney Islands Council Harbour Authority

Project
Orkney Scapa Deep Water Quay

Title
Construction phase vessel movements, observations of Great Northern Diver 2022-2023 and average observations over 3 years (2020-2024) for the non-breeding period.

Status
FINAL

Drawing No. 674795-GIS251	Revision A	Date 09 May 2025
Drawn JAS	Checked MS	Approved MS

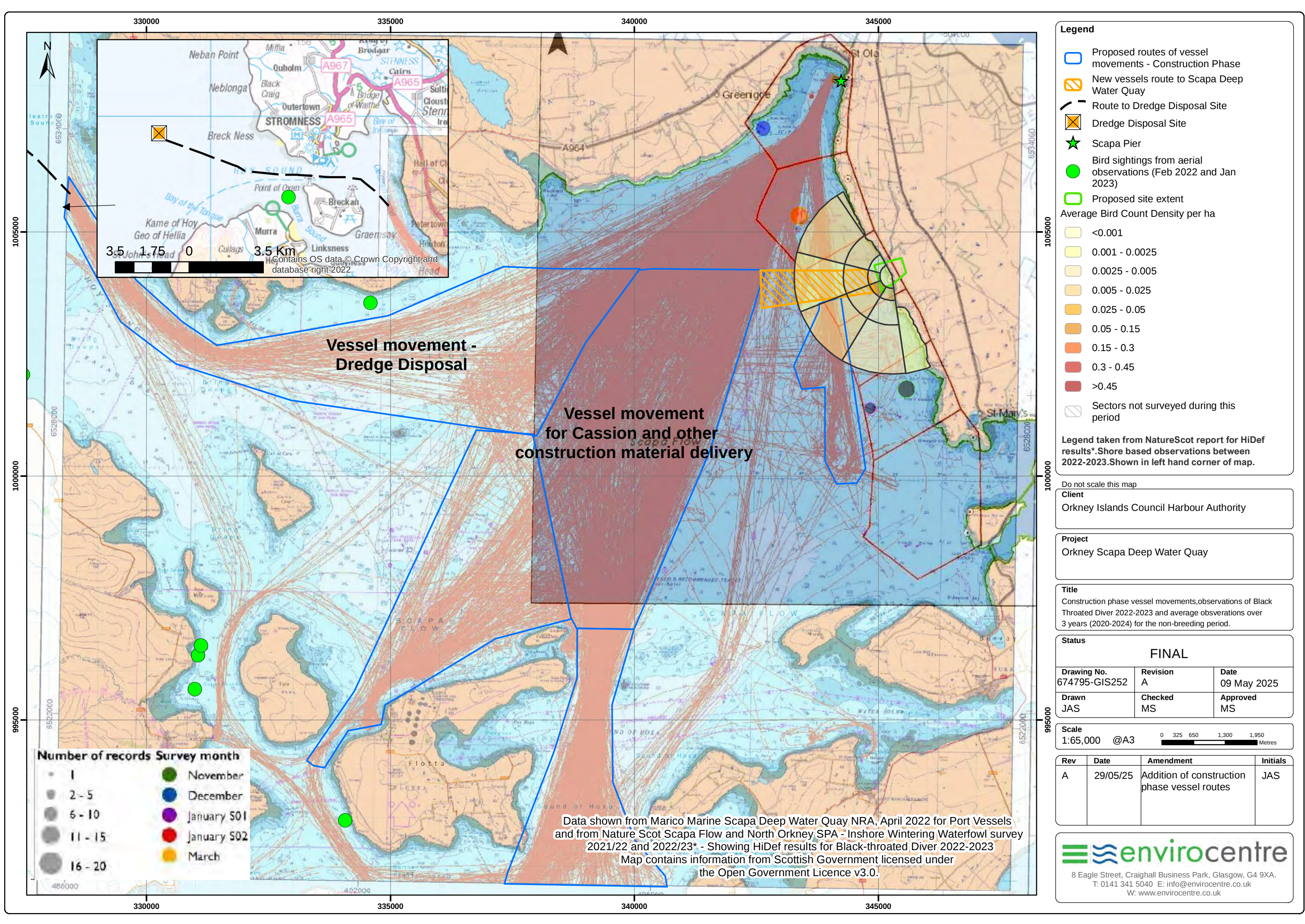
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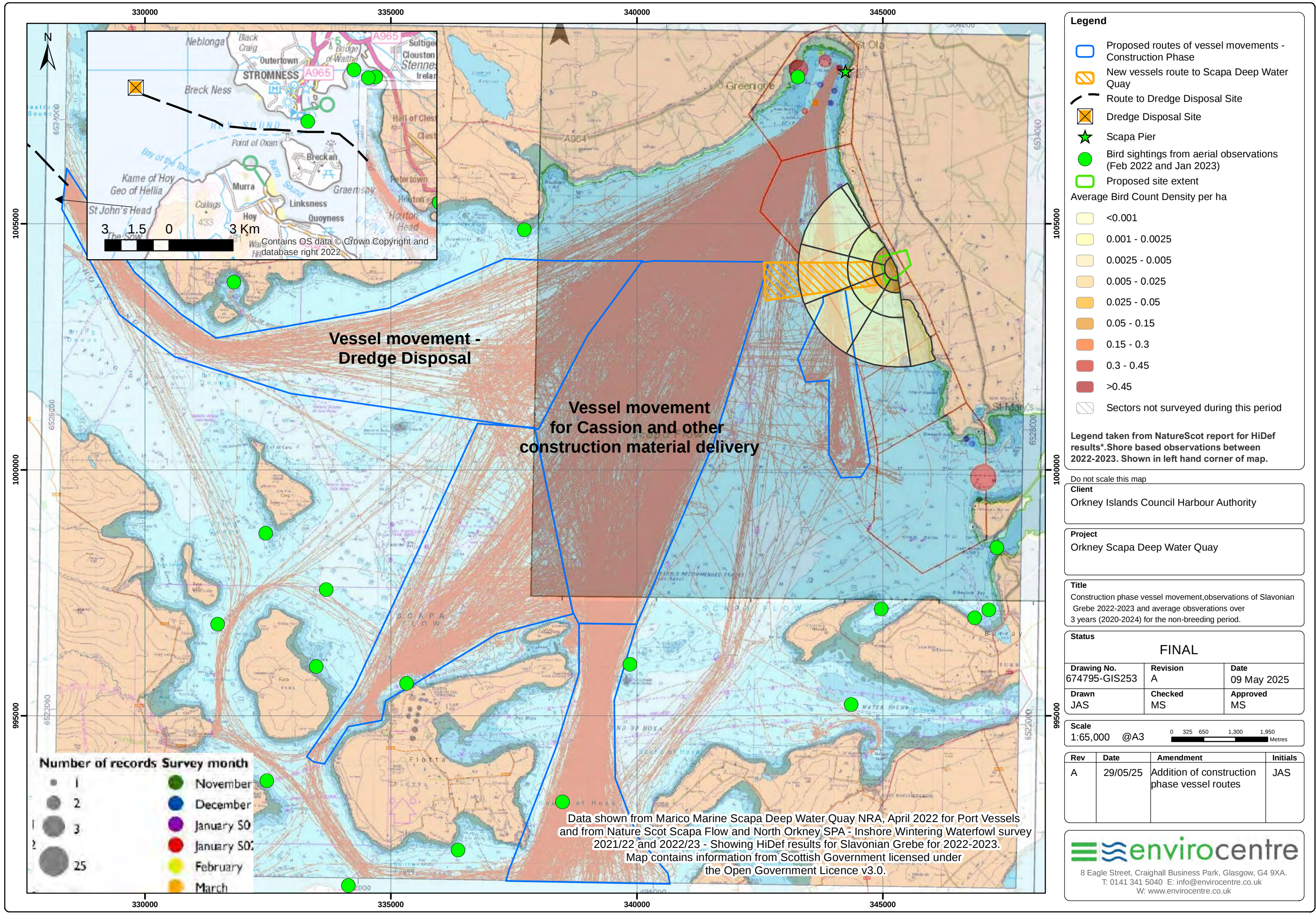
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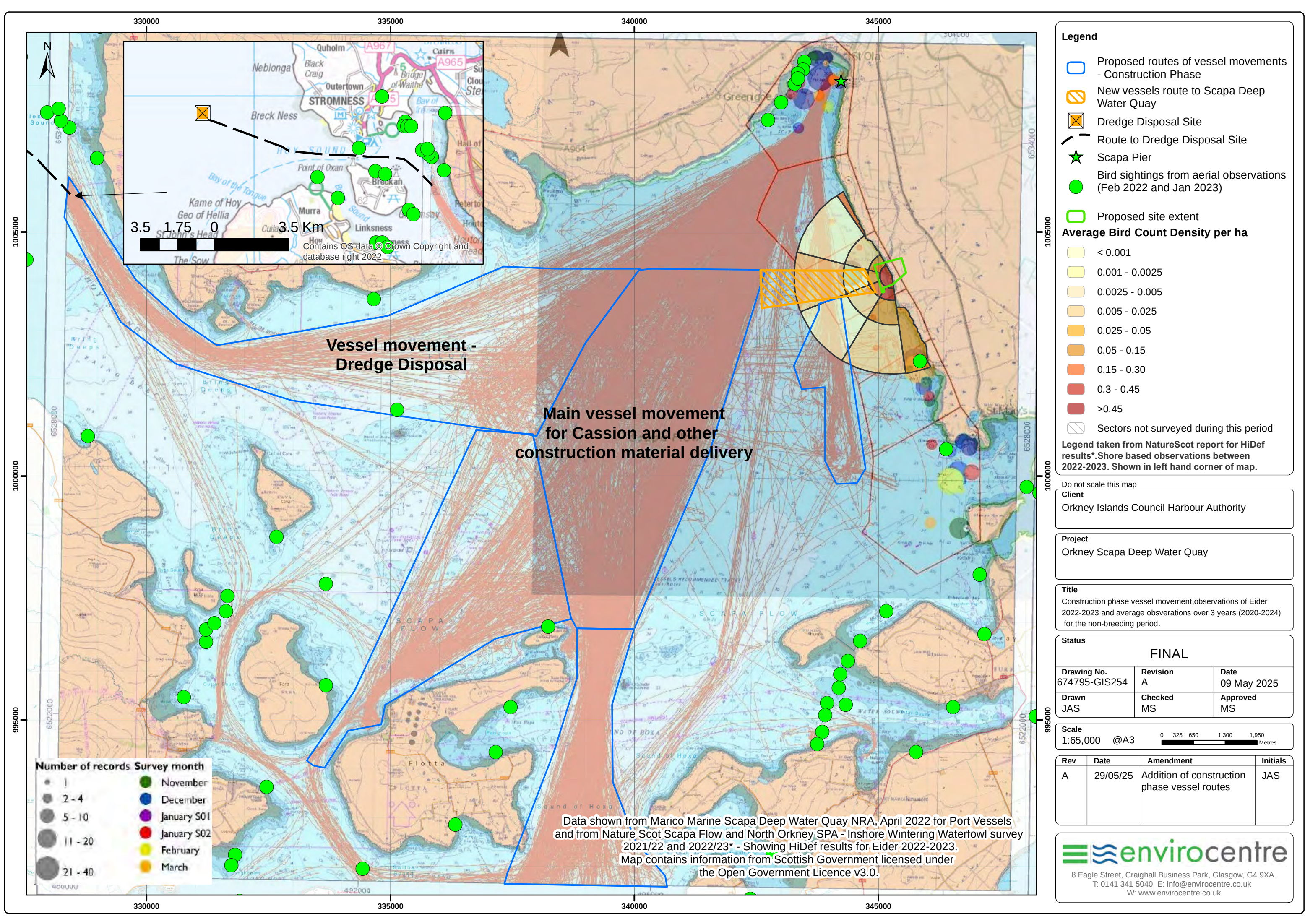
Rev	Date	Amendment	Initials
A	29/05/25	Addition of construction phase vessel routes	JAS

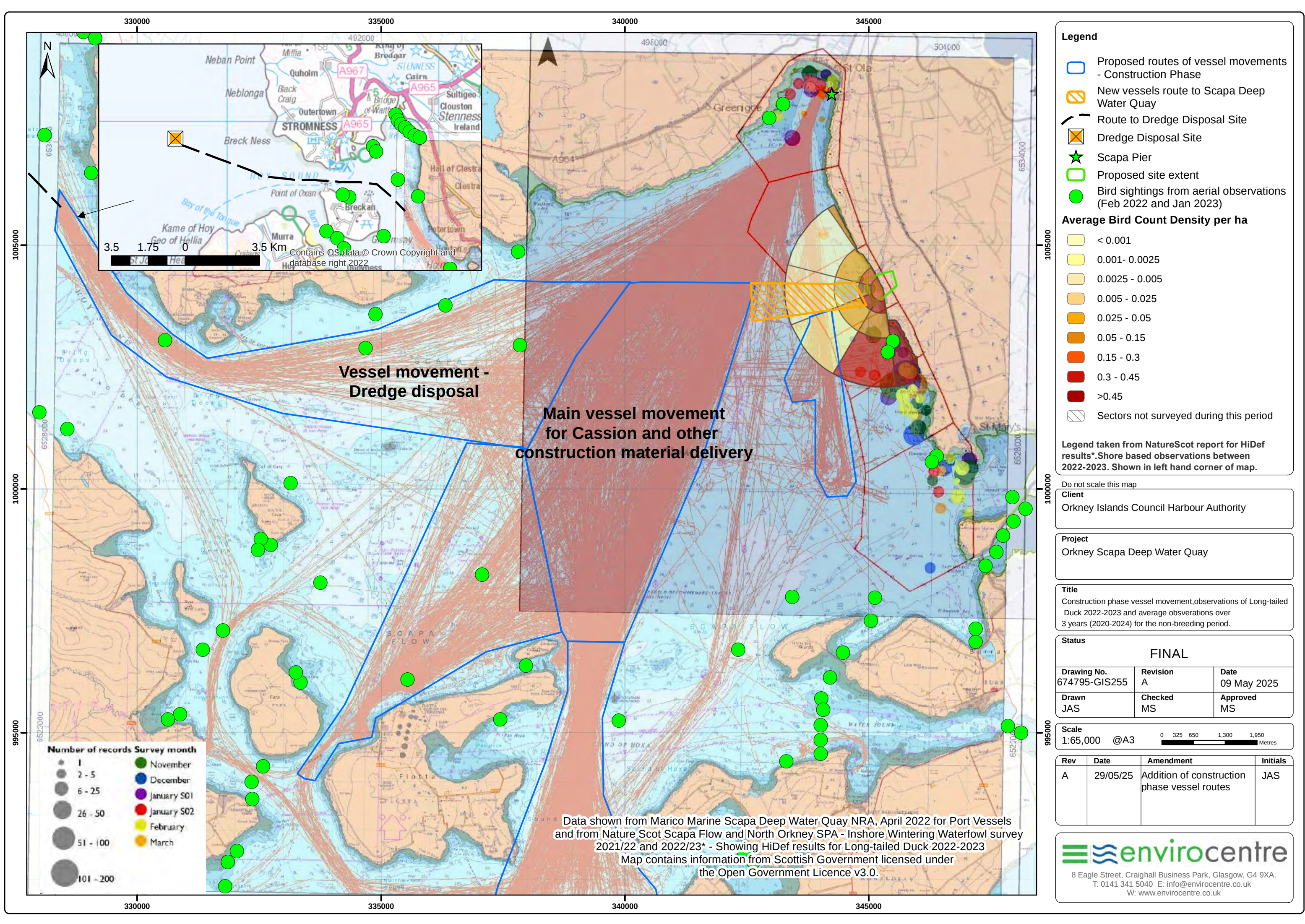
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Data shown from Marico Marine Scapa Deep Water Quay NRA, April 2022 for Port Vessels and from Nature Scot Scapa Flow and North Orkney SPA - Inshore Wintering Waterfowl survey 2021/22 and 2022/23*- Showing HiDef results for Great-Northern Diver 2022-2023
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D BLACK-THROATED DIVER MORTALITY MATRIX MODEL

Black-throated Diver Displacement and Mortality Assessment

	Mortality Level (% of displaced birds that die)																						
Displacement Level (% of all birds on site)		0%	0.1%	0.2%	0.3%	0.4%	0.5%	1%	2%	3%	4%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	100%
	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10%	0	0.0015	0.003	0.0045	0.006	0.0075	0.015	0.030	0.045	0.06	0.075	0.15	0.225	0.3	0.45	0.6	0.75	0.9	1.05	1.2	1.35	1.5
	20%	0	0.003	0.006	0.009	0.012	0.015	0.03	0.06	0.09	0.12	0.15	0.3	0.45	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3
	30%	0	0.0045	0.009	0.0135	0.018	0.0225	0.045	0.09	0.135	0.18	0.225	0.45	0.675	0.9	1.35	1.8	2.25	2.7	3.15	3.6	4.05	4.5
	40%	0	0.006	0.012	0.018	0.024	0.03	0.06	0.12	0.18	0.24	0.3	0.6	0.9	1.2	1.8	2.4	3	3.6	4.2	4.8	5.4	6
	50%	0	0.0075	0.015	0.0225	0.03	0.0375	0.075	0.15	0.225	0.3	0.375	0.75	1.125	1.5	2.25	3	3.75	4.5	5.25	6	6.75	7.5
	60%	0	0.009	0.018	0.027	0.036	0.045	0.09	0.18	0.270	0.36	0.45	0.9	1.35	1.8	2.7	3.6	4.5	5.4	6.3	7.2	8.1	9
	70%	0	0.0105	0.021	0.0315	0.042	0.0525	0.105	0.21	0.315	0.42	0.525	1.05	1.575	2.1	3.15	4.2	5.25	6.3	7.35	8.4	9.45	10.5
	80%	0	0.012	0.024	0.036	0.048	0.06	0.12	0.24	0.360	0.48	0.6	1.2	1.8	2.4	3.6	4.8	6	7.2	8.4	9.6	10.8	12
	90%	0	0.0135	0.027	0.0405	0.054	0.0675	0.135	0.27	0.405	0.54	0.675	1.35	2.025	2.7	4.05	5.4	6.75	8.1	9.45	10.8	12.15	13.5
	100%	0	0.015	0.03	0.045	0.06	0.075	0.15	0.30	0.45	0.60	0.75	1.5	2.25	3	4.5	6	7.5	9	10.5	12	13.5	15