White Cross Offshore Wind Farm ES Addendum

Appendix A: The Applicant's Response to Comments from Natural England

Document Code:	WHX001-FLO-CON-ENV-RPT-0003	
Contractor Document Number:	PC2978-RHD-ZZ-XX-RP-Z-0750	
Version Number:	00	
Date:	Issue Date 01/07/2024	
Prepared by:	TM	*Electronic Signature*
Checked by:	PT	*Electronic Signature*
Owned by:	CB	*Electronic Signature*
Approved by Client :	OG	*Electronic Signature*

Version Number	**Reason for Issue / Major Changes**	**Date of Change**
00	For Issue	01/07/2024

Table of Contents

1. Introduction ... 1

2. Natural England's Structure / Framework of/for Natural England advice in relation to attributing risk and potential to resolve ... 35

3. Response to Comments relating to Marine and Coastal Processes ... 37

4. Response to Comments relating to Terrestrial Ecology ... 74

5. Response to Comments relating to Marine Mammals ... 119

5.1 Natural England's Advice and Recommendations ... 119

6. Response to Comments relating to Ornithology (Offshore) ... 127

6.1 Natural England's Advice and Recommendations ... 127

7. Response to Comments relating to Benthic and Intertidal ... 136

8. Response to Comments relating to SLVIA and LVIA ... 147

9. Response to Comments relating to Designated Site Assessment ... 150

9.1 Natural England's Advice and Recommendations ... 150

10. Response to Comments relating to Coastal Habitats ... 184

11. References ... 195

Annex 1: Bathymetry and seabed features ... 197

Annex 2: Hydrogeology Note ... 199

1 Introduction ... 199

2 Baseline ... 199

3 Assessment ... 200

4 Summary ... 204

Annex 3: Notable Plant Species (including Petalwort) Locations ... 205

Annex 4: High Tide Roost Locations ... 207

Annex 5: Chapter 20 Figures Omitted in Error from Offshore ES ... 211

Annex 6: Onshore Designated Sites and Main Environmental Constraints ... 213

Annex 7: National Vegetation Classification at Saunton Sands ... 215

Annex 8: Southwest England Ornithological and Marine Mammal Aerial Survey Results ... 216

Annex 9: Designated Sites ... 217

Annex 10: Report to Inform Appropriate Assessment Note ... 219

1 Introduction ... 219

2 Braunton Burrows SAC ... 219

3 Annex II Migratory Fish ... 219

4 Offshore Ornithology ... 220

5 Petalwort ... 220

Table of Tables

Table 1 Natural England's main concerns and the Applicant's response................................2
Table 2 Natural England's framework of/for Natural England advice in relation to attributing risk and potential to resolve pre-application 35
Table 3 Summary of Key Issues Identified by Natural England – Marine and Coastal Processes (Onshore) 38
Table 4 Natural England's Key Advice and Recommendations – Marine and Coastal Processes (Onshore) 42
Table 5 Summary of Natural England's Key Issues – Terrestrial Ecology 75
Table 6 Natural England's Key Advice and Recommendations – Coastal Habitats 85
Table 7 Natural England's Key Advice and Recommendations – Terrestrial Ecology...............98
Table 8 Natural England's Key Advice and Recommendations – Soils................................102
Table 9 Natural England's Key Advice and Recommendations – Bats 109
Table 10 Natural England's Key Advice and Recommendations – Biodiversity Net Gain........117
Table 11 Natural England's Summary of Key Issues – Marine Mammals............................120
Table 12 Natural England's Key Advice and Recommendations – Marine Mammals 121
Table 13 Natural England's Summary of Key Issues – Offshore Ornithology 128
Table 14 Natural England's Key Advice and Recommendations – Offshore Ornithology........130
Table 15 Natural England's Key Advice and Recommendations – Benthic and Intertidal 136
Table 16 Applicant's response to Natural England's comments on SLIVA and LVIA.............148
Table 17 Natural England's Summary of Key Issues– Coastal Habitats..............................151
Table 18 Natural England's Key Advice and Recommendations – Designated Sites Assessments 158
Table 19 Summary of Key Issues – Coastal Habitats 184
Table 20 Natural England's Key Advice and Recommendations – Coastal Habitats 185

Glossary of Acronyms

Acronym	Definition
ADD	Acoustic Deterrence Device
AEoI	Adverse Effect on Integrity
AfL	Agreement for Lease
AONB	Area of Outstanding Natural Beauty
BAS	Burial Assessment Study
BDMPS	biologically defined minimum population scale
BEIS	Department for Business, Energy and Industrial Strategy
BGS	British Geological Society
CBRA	Cable Burial Risk Assessment
CEMP	Construction Environmental Management Plan
CEA	Cumulative Effect Assessment
CIEEM	Chartered Institute of Ecology and Environmental Management
CSIP	Cable Specification and Installation Plan
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
ECoW	Ecological Clerk of Works
eDNA	Environmental DNA
EIA	Environmental Impact Assessment
EMF	Electromagnetic Frequency
EPS	European Protect Species
ES	Environmental Statement
ETG	Expert Topic Group
FLOW	Floating Offshore Wind
GCN	Great Crested Newt
ha	Hectare
HDD	Horizontal Directional Drilling
HRA	Habitats Regulation Assessment
IAMMWG	Inter-Agency Marine Mammal Working Group
IEMA	Institute of Environmental Management and Assessment
INNS	Invasive Non-Native Species
JNCC	Joint Nature Conservancy Council
km	Kilometre
Km^2	Square kilometre
LPA	Local Planning Authority
LSE	Likely Significant Effect
m	Metre
MCZ	Marine Conservation Zone
MMO	Marine Management Organisation
MHWS	Mean High Water Spring
MoD	Ministry of Defence

Acronym	Definition
MU	Management Unit
MW	Megawatts
NVC	National Vegetation Classification
NE	Natural England
nm	Nautical Mile
OECC	Offshore Export Cable Corridor
OFTO	Offshore Transmission Owner (OFTO)
OMIPCP	Outline Marine and Intertidal Pollution Contingency Plan
OUNMP	Outline Underwater Noise Monitoring Plan
OSP	Offshore Substation Platform
RIAA	Report to Inform an Appropriate Assessment
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SLVIA	Seascape, Landscape and Visual Impact Assessment
SNCB	Statutory Nature Conservation Body
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TCE	The Crown Estate
TJB	Transition Joint Bay
TTS	Temporary Threshold Shift
UK	United Kingdom
UWN	Underwater Noise
UXO	Unexploded Ordnance
WCOWL	White Cross Offshore Windfarm Limited
WCS	Worst Case Scenario
WTG	Wind Turbine Generator
ZoI	Zone of Influence

Glossary of Terminology

Defined Term	Description
Agreement for Lease	An Agreement for Lease (AfL) is a non-binding agreement between a landlord and prospective tenant to grant and/or to accept a lease in the future. The AfL only gives the option to investigate a site for potential development. There is no obligation on the developer to execute a lease if they do not wish to.
Applicant	Offshore Wind Limited
Cumulative effects	The effect of the Project taken together with similar effects from a number of different projects, on the same single receptor/resource. Cumulative Effects are those that result from changes caused by other past, present or reasonably foreseeable actions together with the Project.
Department for Business, Energy and Industrial Strategy (BEIS)	Government department that is responsible for business, industrial strategy, science and innovation and energy and climate change policy and consent under Section 36 of the Electricity Act.
Engineer, Procure, Construct and Install	A common form of contracting for offshore construction. The contractor takes responsibility for a wide scope and delivers via own and subcontract resources.
Environmental Impact Assessment (EIA)	Assessment of the potential impact of the proposed Project on the physical, biological and human environment during construction, operation and decommissioning.
Export Cable Corridor	The area in which the export cables will be laid, either from the Offshore Substation or the inter-array cable junction box (if no offshore substation), to the NG Onshore Substation comprising both the Offshore Export Cable Corridor and Onshore Export Cable Corridor.
Front end engineering and design	Front-end engineering and design (FEED) studies address areas of windfarm system design and develop the concept of the windfarm in advance of procurement, contracting and construction.
Generation Assets	The infrastructure of the Project related to the generation of electricity within the windfarm site, including wind turbine generators, substructures, mooring lines, seabed anchors and inter-array cables
High Voltage Alternating Current	High voltage alternating current is the bulk transmission of electricity by alternating current (AC), whereby the flow of electric charge periodically reverses direction.
High Voltage Direct Current	High voltage direct current is the bulk transmission of electricity by direct current (DC), whereby the flow of electric charge is in one direction.
In-combination effects	In-combination effects are those effects that may arise from the development proposed in combination with other plans and projects proposed/consented but not yet built and operational.
Jointing bay	Underground structures constructed at regular intervals along the Onshore Export Cable Corridor to join sections of cable and facilitate installation of the cables into the buried ducts

Defined Term	Description
Landfall	Where the offshore export cables come ashore
Link boxes	Underground chambers or above ground cabinets next to the cable trench housing electrical earthing links
Mean high water springs	The average tidal height throughout the year of two successive high waters during those periods of 24 hours when the range of the tide is at its greatest.
Mean low water springs	The average tidal height throughout a year of two successive low waters during those periods of 24 hours when the range of the tide is at its greatest.
Mean sea level	The average tidal height over a long period of time.
Mitigation	Mitigation measures have been proposed where the assessment identifies that an aspect of the development is likely to give rise to significant environmental impacts and discussed with the relevant authorities and stakeholders in order to avoid, prevent or reduce impacts to acceptable levels. For the purposes of the EIA, two types of mitigation are defined: • Embedded mitigation: consisting of mitigation measures that are identified and adopted as part of the evolution of the project design, and form part of the project design that is assessed in the EIA • Additional mitigation: consisting of mitigation measures that are identified during the EIA process specifically to reduce or eliminate any predicted significant impacts. Additional mitigation is therefore subsequently adopted by OWL as the EIA process progresses.
National Grid Onshore Substation	Part of an electrical transmission and distribution system. Substations transform voltage from high to low, or the reverse by means of the electrical transformers.
National Grid Connection Point	The point at which the White Cross Offshore Windfarm connects into the distribution network at East Yelland substation and the distributed electricity network. From East Yelland substation electricity is transmitted to Alverdiscott where it enters the national transmission network.
Offshore Development Area	The Windfarm Site (including wind turbine generators, substructures, mooring lines, seabed anchors, inter-array cables and Offshore Substation Platform (as applicable)) and Offshore Export Cable Corridor to MHWS at the Landfall. This encompasses the part of the project that is the focus of this application and Environmental Statement and the parts of the project consented under Section 36 of the Electricity Act and the Marine and Coastal Access Act 2009
Offshore Export Cables	The cables which bring electricity from the Offshore Substation Platform or the inter-array cables junction box to the Landfall
Offshore Export Cable Corridor	The proposed offshore area in which the export cables will be laid, from Offshore Substation Platform or the inter-array cable junction box to the Landfall
Offshore Infrastructure	All of the offshore infrastructure including wind turbine generators, substructures, mooring lines, seabed anchors, Offshore Substation

Defined Term	Description
	Platform and all cable types (export and inter-array). This encompasses the infrastructure that is the focus of this application and Environmental Statement and the parts of the project consented under Section 36 of the Electricity Act and the Marine and Coastal Access Act 2009
the Offshore Project	The Offshore Project for the offshore Section 36 and Marine Licence application includes all elements offshore of MHWS. This includes the infrastructure within the windfarm site (e.g. wind turbine generators, substructures, mooring lines, seabed anchors, inter-array cables and Offshore Substation Platform (as applicable)) and all infrastructure associated with the export cable route and landfall (up to MHWS) including the cables and associated cable protection (if required).
Offshore Substation Platform	A fixed structure located within the Windfarm Site, containing electrical equipment to aggregate the power from the wind turbines and convert it into a more suitable form for export to shore
Offshore Transmission Assets	The aspects of the project related to the transmission of electricity from the generation assets including the Offshore Substation Platform (as applicable)) or offshore junction box, Offshore Cable Corridor to MHWS at the landfall
Offshore Transmission Owner	An OFTO, appointed in UK by Ofgem (Office of Gas and Electricity Markets), has ownership and responsibility for the transmission assets of an offshore windfarm.
Onshore Development Area	The onshore area above MLWS including the underground onshore export cables connecting to the White Cross Onshore Substation and onward to the NG grid connection point at East Yelland. The onshore development area will form part of a separate Planning application to the Local Planning Authority (LPA) under the Town and Country Planning Act 1990.
Onshore Export Cables	The cables which bring electricity from MLWS at the Landfall to the White Cross Onshore Substation and onward to the NG grid connection point at East Yelland.
Onshore Export Cable Corridor	The proposed onshore area in which the export cables will be laid, from MLWS at the Landfall to the White Cross Onshore Substation and onward to the NG grid connection point at East Yelland.
Onshore Infrastructure	The combined name for all infrastructure associated with the Project from MLWS at the Landfall to the NG grid connection point at East Yelland. The onshore infrastructure will form part of a separate Planning application to the Local Planning Authority (LPA) under the Town and Country Planning Act 1990
Onshore Transmission Assets	The aspects of the project related to the transmission of electricity from MLWS at the Landfall to the NG grid connection point at East Yelland including the Onshore Export Cable, the White Cross Onshore Substation and onward connection to the NG grid connection point at East Yelland.
the Onshore Project	The Onshore Project for the onshore TCPA application includes all elements onshore of MLWS. This includes the infrastructure associated with the offshore export cable (from MLWS), landfall, onshore export cable and associated infrastructure and new onshore substation (if required).

Defined Term	Description
Offshore Wind Limited	Offshore Wind Ltd (OWL) is a joint venture between Cobra Instalaciones Servicios, S.A., and Flotation Energy Ltd.
the Project	the Project is a proposed floating offshore windfarm called White Cross located in the Celtic Sea with a capacity of up to 100MW. It encompasses the project as a whole, i.e. all onshore and offshore infrastructure and activities associated with the Project.
Project Design Envelope	A description of the range of possible elements that make up the Project design options under consideration. The Project Design Envelope, or 'Rochdale Envelope' is used to define the Project for Environmental Impact Assessment (EIA) purposes when the exact parameters are not yet known but a bounded range of parameters are known for each key project aspect.
Safety zones	A marine zone outlined for the purposes of safety around a possibly hazardous installation or works / construction area
Service operation vessel	A vessel that provides accommodation, workshops and equipment for the transfer of personnel to turbine during OMS. Vessels in service today are typically up to 85m long with accommodation for about 60 people.
Transition joint bay	Underground structures at the Landfall that house the joints between the offshore export cables and the onshore export cables
Transition piece	The transition piece includes various functionalities such as access for maintenance, cable connection for the energy of the turbine and the corrosion protection of the entire foundation
White Cross Offshore Windfarm	100MW capacity offshore windfarm including associated onshore and offshore infrastructure
White Cross Onshore Substation	A new substation built specifically for the White Cross project. It is required to ensure electrical power produced by the offshore windfarm is compliant with NG electrical requirements at the grid connection point at East Yelland.
Wind Turbine Generators (WTG)	The wind turbine generators convert wind energy into electrical power. Key components include the rotor blades, nacelle (housing for electrical generator and other electrical and control equipment) and tower. The final selection of project wind turbine model will be made post-consent application
Windfarm Site	The area within which the wind turbines, Offshore Substation Platform and inter-array cables will be present
Works completion date	Date at which construction works are deemed to be complete and the windfarm is handed to the operations team. In reality, this may take place over a period of time.

1. Introduction

1. This document provides the Applicant's response to Natural England's comments as set out in **Sections 3** to **9.**

2. **Table 1** addresses the summary of main concerns raised by Natural England.

Table 1 Natural England's main concerns and the Applicant's response

Applicant ID	Natural England Comment	Applicant Response
General comments		
Further data, evidence, and assessment		
1	Further data, evidence and assessment is required before we can advise on the significance of impacts to various receptors, many of which are afforded legal protection.	This document includes the further data, evidence and assessment required.
Habitats Regulations Assessment (HRA) assessment		
2	Natural England is unable to agree with the HRA conclusions because information is missing from the assessment including consideration of some designated sites and/or features. This particularly (but not exclusively) relates to the terrestrial elements from the HRA and a number of projects from in-combination assessments.	This document addresses comments relating to the HRA and in-combination assessments.
In-combination/cumulative assessment		
3	The in-combination assessments of the HRA and MCZ Assessment are missing several Offshore Wind Farm projects. The 20km buffer applied to the MCZ in-combination assessment would include Petroc and Gwynt Glas. These two sites should be included within the HRA in-combination assessment as well as the Llywelyn project and the Pembrokeshire Demonstration Zone.	This document addresses comments relating to the HRA and MCZ Assessment, including in-combination assessments.
Marine plastics		
4	Natural England notes that the 'taught' mooring system and 'combination' mooring system both use synthetic ropes which have the potential to release micro plastics/filaments into the marine environment as they degrade. Natural England seeks the regulators view on this as an issue, when compared to ecological benefits for other receptors these mooring systems would have over more traditional ones. Natural England also queries	The Applicant will engage with the Marine Management Organisation (MMO) on this matter once the detailed design of the mooring system is known.

Applicant ID	Natural England Comment	Applicant Response
	if there are known measures that could be implemented to suitable manage this risk for the White Cross project?	
Consenting phase data requirements		
5	Geotechnical investigations, as well as more Ornithological, Bat and soil survey data are required as part of the consenting phase to address many of the terrestrial issues. Without this data there remains uncertainties in relation to the technical feasibility of Horizontal Directional Drilling as a mitigation measure, and the scale and significance of any potential impacts cannot be determined with any accuracy.	The factual results of the Geotechnical Investigation are provided within **Appendix T Annex 1: Onshore Ground Investigation Factual Report**. This confirms the suitability of the trenchless technology below Braunton Burrows SAC/SSSI and Taw-Torridge SSSI. The results of the Geotechnical Investigation have also been used to update the HDD Hydrofracture Assessment submitted with the application and provided in **Appendix S: Hydrofracture Report** of this document. This confirms the previous conclusions that there is no significant risk of frac-out along the bore profiles. A updated Supplementary Bat Activity Survey Report is provided in **Appendix H: Supplementary Bat Activity Survey Report (Saunton Road)** of the ES Addendum. This now includes data from April and May 2024 in addition to June to August 2023. An **Agricultural Land Classification Survey Report** is provided in **Appendix R**.
Outline / in principal plans		
6	Various plans are also required as part of the consenting phase, which includes the in- principal monitoring plan, cable burial risk assessment, Bentonite management plan, soil management plan and various others. These are required to ensure that the level of risk is sufficiently low and that mitigation measures are fit for purpose.	An **Outline Project Environmental Management & Monitoring Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003), including an In-Principle Monitoring Plan is provided as part of the **Further Environmental Information** submission. The Applicant has also provided:

Applicant ID	Natural England Comment	Applicant Response
		• An **Outline Marine and Intertidal Pollution Contingency Plan** (OMIPCP) (WHX001-FLO-CON-ENV-PLN-0004) • An **Outline Entanglement Monitoring and Remediation Plan** (WHX001-FLO-CON-ENV-PLN-0002). • An **Outline Underwater Noise Monitoring Plan (OUNMP)** (WHX001-FLO-CON-ENV-PLN-0006). An **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-ENV-PLN-0010) is also provided as part of the Further Environmental Information submission. This includes: • An **Outline Invasive Non-Native Species (INNS) Management Plan** (WHX001-FLO-CON-ENV-PLN-0009). • The **Outline Entanglement Monitoring and Remediation Plan** (WHX001-FLO-CON-ENV-PLN-0002) (this is the same plan as the one that is included in the **Outline Project Environmental Management & Monitoring Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003)). **Appendix P: Mitigation Register** of the ES Addendum provides lists the Applicant's mitigation and monitoring measures. An **Outline Cable Specification and Installation Plan (Outline CSIP)** (WHX001-FLO-CON-ENV-PLN-

Applicant ID	Natural England Comment	Applicant Response
		0007) is provided as part of the Further Environmental Information submission. Appendix B of the CSIP is an updated version of the **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001). An **Outline Offshore Operations and Maintenance Plan** (WHX001-FLO-CON-ENV-PLN-0008) and an **Outline Decommissioning Programme** (WHX001-FLO-CON-ENV-PLN-0011) are also provided as part of the Further Environmental Information submission. An **Outline Bentonite Management Plan** (WHX001-FLO-CON-ENV-PLN-0012) is provided. The Applicant is open to the requirement for a Soil Management Plan to be a condition of planning permission and Marine Licence consent.
Schedule of mitigation		
7	No mitigation or schedule of mitigation or controls have been formally agreed and we highlight there are not conditions currently included to secure these.	A Mitigation Register is provided in **Chapter 6 Appendix 6.B** of the **Onshore ES**. An updated Mitigation Register is provided in **Appendix P: Mitigation Register**. Conditions will be implemented by North Devon Council and the MMO.
River Taw crossing		
8	Even though a trenchless crossing is proposed for the River Taw there are still potential impact which may occur in the intertidal environment. Therefore, consideration needs to be given as to whether The River Taw HDD requires a marine licence as well as town and country planning. We will be guided by the competent authorities on how this is achieved.	The Taw Estuary Crossing is part of the Project Design Envelope for both the Onshore and Offshore Projects.

Applicant ID	Natural England Comment	Applicant Response
Construction and operational ports		
9	There is no discussion about construction and operational ports and the impacts that the commute may cumulatively/in-combination have with the construction and operation of the wind farm and other plans and projects. As a side note, it is not clear whether there are any ports within the vicinity that can facilitate sizeable cranes, standing areas and wet storage. Natural England advises that the project should be looked at holistically.	The preferred base port(s) for construction, operation and decommissioning of the Project elements is not known and any decision would be a commercial undertaking and not be made until consent surety. Recognising the uncertainty regarding base port(s) location and likely levels of terrestrial traffic, the Offshore Project Environmental Impact Assessment (EIA) outlines that a pre-commencement condition (to produce a Port Traffic Management Plan) would be the best mechanism to assess, monitor and mitigate the traffic and transport impacts.
Operation and maintenance		
10	Across all receptors the impacts from operation and maintenance requires further clarification. Currently it is too vague to assess impacts.	An **Outline Offshore Operations and Maintenance Plan** (WHX001-FLO-CON-ENV-PLN-0008) is provided as part of the Further Environmental Information submission. **Chapter 5 Section 5.9** of the **Offshore ES** and of the **Onshore ES** details operation and maintenance activities. Further responses to specific impacts are provided within this document. Clarification on the operations and maintenance phase of the Project is provided in **Section 5.3** of this **ES Addendum**.
EIA matrix approach		
11	We acknowledge that a matrix approach to determining the significance of effects on ecological features, is commonly used. However, this method often relies on value- rather than evidence-based judgements. The	In relation to **Chapter 16: Onshore Ecology and Ornithology**, the assessment methodology, which is based on the CIEEM industry guidance, is set out in **Sections 16.3.2.2 - 4**. The assessment has evaluated

Applicant ID	Natural England Comment	Applicant Response
	subjective evaluation of magnitude of impact and sensitivity/importance of receptors through expert judgement has led to many impact magnitudes and receptor importance/sensitivities being downgraded across topics in the Application. We also note that any effect that is concluded to be of moderate or major significance in the Application, is deemed to be ‘significant’ in EIA terms, whereas effects concluded to be of negligible or minor significance, are deemed ‘not significant’ in EIA terms. This cut-off could exclude any effect concluded to be less than moderate, in turn, this could lead to errors in assessing cumulative effects adequately.	features and assigned impact significance based on a defined geographical context. This approach is cross-referenced with a matrix in this chapter for reference, as the matrix approach is used elsewhere in the ES; the purpose of to ensure that the assessment method (which is slightly different from other chapters) can be clearly understood and is sufficiently detailed and transparent; it is not considered to downgrade impacts. The “CIEEM approach” is thereafter cross-referenced throughout Chapter 16 with the Matrix, used in other parts of the ES. The CIEEM approach is also carried through to cumulative assessment as set out in **Section 16.3.3** [Only] “In cases where this project has negligible (or no) effect on a receptor (through for example avoidance measures) it is considered that there is no pathway for a cumulative effect” and is detailed further in **Section 16.8** (paragraph 387 explains how effects are considered and carried through).
Impacts on the natural environment		
Marine and coastal processes		
12	The baseline characterisation is not complete with several factors missing, including sediment transport and morphological change. There is insufficient information to enable a characterisation of baseline conditions, which compromises its use as a conceptual model on which to base predictions of systems’ responses to the installation of cables. For baseline conditions to be fully established, geophysical data is required to provide more certainty on the potential impacts of cable installation techniques on	Additional consideration of sediment transport and morphological change have been included in **Appendix F: Coastal Geomorphology Technical Note** (WHX001-FLO-CON-CAG-ASS-0002). This information is derived from the geophysical survey that covers the Offshore Export Cable Corridor and Windfarm Site. The geophysical data collection is summarised in **Chapter 8: Marine and Physical Processes** (**Table 8.12)** of the **Offshore ES**.

Applicant ID	Natural England Comment	Applicant Response
	coastal geomorphology. A complete geotechnical investigation must be undertaken.	
13	The evidence used to understand beach-dune and estuary-delta systems is insufficient. Natural England would advise that a conceptual model needs to be established for the Saunton Sands beach-dune system and the Taw-Torridge Estuary-delta system.	A description of morphological change along Saunton Sands beach and at the landfall was provided in **Chapter 8: Marine and Physical Processes** (**Section 8.4.19** and **Section 8.4.1.2**) of the **Onshore ES** using Lidar data from 2006/07, 2011/12, 2016/17 and 2020/21. **Appendix F: Coastal Geomorphology Technical Note** (WHX001-FLO-CON-CAG-ASS-0002) considers the Taw-Torridge Estuary system and its potential relationship with Saunton Sands, which has confirmed the conclusion of the **Offshore ES**. The more detailed appraisal of the Lidar data to include the Taw-Torridge Estuary system is supported by use of Pethick's 2007 publication titled: The Taw-Torridge Estuaries: Geomorphology and Management Report.
14	Furthermore, additional assessment is needed of these systems' geomorphology, evolution and response to installation activities to improve conceptual understanding.	Further assessment has been undertaken to improve conceptual understanding. This is reported in **Appendix F: Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002)**.**
15	The potential impact of cable exposure and subsequent scour on coastal geomorphology need to be fully assessed with mitigation included (i.e., Cable Burial Risk Assessment). The trenchless section which could impact coastal geomorphology need to be fully assessed using specific worst-case scenarios.	As outlined in **Table 8.8 of Chapter 8: Marine and Coastal Processes** of the **Onshore and Offshore ES**, during operation, the cable will be buried sufficiently to avoid it becoming exposed. Further evidence for this, and the specific worst case scenario, is provided in **Appendix T Onshore Ground Interpretative Factual Report** of this **ES Addendum** and analysis of this data provided in **Appendix F: Coastal Geomorphology Technical**

Applicant ID	Natural England Comment	Applicant Response
		Note of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002)**.** Currently known geotechnical information (i.e., intertidal seismic survey data) indicates there is sufficient depth of sand (approx. 7-8m in depth) for opencut trenching to be used to bury the cable to a sufficient depth to avoid the cable becoming exposed. Four telecoms cables also make landfall at this location and have not become exposed. Therefore, it is considered that exposure at landfall is not a realistic worst case scenario. Evidence for this is provided in **Appendix T Annex 1.** A further assessment of coastal geomorphological change is provided in **Appendix F: Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002)**.** The Cable Burial Risk Assessment (provided in **Appendix U of** this **ES Addendum** the **Cable Burial Risk Assessment** (**CBRA**) (WHX001-FLO-CON-ENG-RSA-0001) has been updated to accurately define the preferred burial depth to mitigate future exposure at Landfall. The trenchless section of the cables underneath the Taw-Torridge Estuary system will have no impact on coastal geomorphology. Morphological change would continue as a natural phenomenon driven by waves/tidal currents (Taw-Torridge Estuary system), which would not be affected by the Project.

Applicant ID	Natural England Comment	Applicant Response
		It is assumed here that 'the impact of cable exposure and subsequent scour' means the impact of *remedial action (i.e., placement of cable protection)* in the event of cable exposure, *i.e., the potential for* subsequent scour caused by cable protection. Depending on its length and height above the seabed, cable protection could potentially affect waves, tidal currents, and sediment transport. However, the main impact would be potential interruption of bedload sediment transport processes across the seabed, rather than scouring which would be very minor. The localised nature of scour means only the finest sediment fractions from a thin layer of surface sediments will reside in the water column. Additionally, sediment would be suspended for short durations (likely to be a magnitude of days, or at maximum weeks) and would be limited to the lower layers of the water column (approximately within <10m of the seabed), minimising potential for further sediment transport. Therefore, any increase in suspended sediment concentration resulting from scour is most likely to be within the range of natural variability. In the unlikely event that sand or coarser is suspended, this will fall to the seabed in less time than the finer sediment fraction, shortly after disturbance. Due to this, there is minimal chance of any bed level change resulting from scour. Nevertheless, once parameters of the required cable protection (locations, spatial footprint, volumes, height and slope) are established following the detailed

Applicant ID	Natural England Comment	Applicant Response
		design phase, a numerical assessment of the cable protection's potential for scour will be provided. This will be assessed using methods such as those suggested by Broekema et al (2024)[1] and Chambel et al (2024)[2]; the results of which will be used to assess the risk to nearby designated sites and/or sensitive areas of seabed. All assessments will be provided to the MMO and its advisers in order to identify suitable mitigation measures, if appropriate. However, this can only be undertaken once detailed design has taken place. It should be noted that a key design principle will be to minimise the amount of cable protection required in the first instance. This was also considered during the site selection phase to avoid areas of reef habitat. Furthermore, the Project has committed to avoiding the use of external cable protection within the Bideford to Foreland Point MCZ.
Fish ecology		
16	Natural England disagrees with the conclusion of underwater noise assessment for Annex II migratory fish, further justification and potential modelling is needed to	Further justification has been provided in **Section 9** of this document. Specifically, responses to Comment ID's G12 to G17 (**Table 17**).

[1]Broekema, Y.B., van Steijn, P.W., Wu, M., Robijns, T., (2024) Predicting loose rock scour protection deformation around monopiles using the relative mobility number and the Keulegan–Carpenter number, Ocean Engineering, Volume 300, 117475, ISSN 0029-8018, https://doi.org/10.1016/j.oceaneng.2024.117475.

[2]Chambel, J., Fazeres-Ferradosa, T., Miranda, F., Bento, A.M., Taveira-Pinto, F., Lomonaco, P. (2024), A comprehensive review on scour and scour protections for complex bottom-fixed offshore and marine renewable energy foundations, Ocean Engineering, Vol 304,117829, ISSN 0029-8018, https://doi.org/10.1016/j.oceaneng.2024.117829.

Applicant ID	Natural England Comment	Applicant Response
	evidence no adverse effect on hearing and non-hearing specialist species.	Full underwater noise modelling for worst case scenarios is provided in **Appendix 12.A: Marine Mammal and Marine Turtle Underwater Noise Modelling Report**, with worst case impact ranges for both stationary and fleeing receptors provided in the Report to Inform Appropriate Assessment (RIAA) (see Appendix 6.A of FLO-WHI-REP-0002-06 **Chapter 6: EIA Methodology** of the **Offshore ES**). Both stationary and fleeing results are presented in the **RIAA**. To clarify, stationary receptors are assumed to determine likely zone of influence (ZoI) and pathway for effect of the Project.
17	The inclusion of some features, projects and protected sites are missing from certain assessments. Annex II fish and sites to the north and east of the project designated for Annex II fish should be included in Stage 1 screening. The in-combination effects assessment should include Hinkley Point C Nuclear Build and Swansea Bay Tidal Lagoon Project as they will impact migratory Annex II fish features from sites screened into appropriate assessment. Newquay and the Gannel and Mounts Bay MCZs should be included in screening for the MCZ assessment. The extent/distribution of supporting habitat and water quality – turbidity have been identified as impact pathways for spiny lobster and therefore should be considered in screening and the assessment. The migration of adult spiny lobster following egg laying (from September until spring) should also be considered within the underwater noise (UWN) assessment. There is direct overlap between the UWN Temporary Threshold	Further explanation regarding the assessment of features, projects and protected sites has been provided in **Section 9**, specifically responses to Comment ID's G12 to G17 (**Table 17**). A detailed response to the comment on the inclusion of Newquay and the Gannel and Mounts Bay MCZs is provided in Comment ID G18. A detailed response to the comment on turbidity is provided in Comment ID G19. A detailed response to the comment on the overlap between the UWN Temporary Threshold Shift (TTS) contour and Lundy MCZ is provided in Comment ID G20.

Applicant ID	Natural England Comment	Applicant Response
	Shift (TTS) contour and Lundy MCZ, which should be considered within the UWN assessment.	
18	Incorrect units and measurements have been used which could have impacts on whether a site is screened in or the presence of an impact pathway. This has resulted in sites not been taken forward to Likely Significant Effect (LSE) assessment within the HRA. To determine no impact pathway on Annex II migratory fish, stationary receptor values should be used instead of fleeing receptor values. Soft start should not be used as a mitigation measure for fish.	This comment is directed to the MMO. However, the Applicant would like to provide the following input as provided in Comment ID's G13 and G14: Both stationary and fleeing results are presented in the RIAA. To clarify, stationary receptors are assumed to determine likely ZoI and pathway for effect of the Project. The Applicant acknowledges that the effectiveness of soft start is not clear for all species, but some of the most sound sensitive fish species may move away from the immediate vicinity of the pile before peak pressure reaches a level when instantaneous injury or mortality could occur. The assessment of no adverse effect on integrity (AEoI) of a designated site does not rely on the use of soft starts as mitigation, so the removal of this mitigation would not affect the findings of the **RIAA**.
19	All comments regarding fish ecology will be found within our Designated Sites Annex.	Noted.
Marine mammals		
20	Natural England is concerned about the potential for marine mammal entanglement during construction and operation. Prior to consent Natural England requests to see a Project Environmental Monitoring Plan to address our concerns which should clearly state how entanglement will be monitoring and reported. Furthermore, owing to the uncertainties in the design envelope and construction procedures, entanglement	An **Outline Entanglement Monitoring and Remediation Plan** (WHX001-FLO-CON-ENV-PLN-0002) is part of the **Project Environmental Management and Mitigation Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003) and the **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-ENV-PLN-0010) which are

Applicant ID	Natural England Comment	Applicant Response
	should be considered in the Construction Environmental Monitoring Plan and reviewed by relevant Statutory Nature Conservation Bodies (SNCBs) prior to construction.	provided as part of the Further Environmental Information submission.
21	Floating Offshore Wind (FLOW), being a new technology provides the opportunity for White Cross to complete monitoring to fill the evidence gaps surrounding operational underwater noise from FLOW. As demonstration site, White Cross can be used to inform the wider expansion of FLOW within the Celtic Sea and monitoring of underwater noise during operation should be a condition of the Marine Licence.	The Applicant is open to discussing operational underwater noise monitoring to support future understanding of potential impacts of FLOW on noise sensitive receptors. An **Outline Underwater Noise Monitoring Plan (OUNMP**) (WHX001-FLO-CON-ENV-PLN-0006) is part of the **Project Environmental Management and Mitigation Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003) which is provided as part of the Further Environmental Information submission. The **OUNMP** (WHX001-FLO-CON-ENV-PLN-0006) includes a section setting out proposed consultation (i.e., with the MMO and Natural England) on this outline plan to agree the possible scope of such monitoring as the project design progresses.
Ornithology (offshore)		
22	The cumulative and in-combination assessments for offshore ornithology do not factor in impacts from a number of projects due to a lack of data. Impacts specified as 'unknown' have inappropriately been treated as zero, which will inevitably underestimate impacts, potentially significantly. Natural England disagrees with this approach and hence consider it to be inappropriate for us to comment on the potential significance of cumulative or in- combination impacts. Natural England proposes working with projects and other stakeholders	The Applicant highlighted, within **Section 13.14 of Chapter 13: Offshore Ornithology** of the **Offshore ES**, that due to the age of some of the historic projects considered within cumulative assessments no data was available to provide predicted impact values for consideration within cumulative assessments. However, the absence of data does not mean that the Applicant did not exclude such historic projects when concluding cumulative assessments. Qualitative

Applicant ID	Natural England Comment	Applicant Response
	collaboratively to generate suitable impact estimates for historic projects and to facilitate a comprehensive, quantitative cumulative and in-combination assessment.	consideration was given to these historic projects when concluding cumulative assessments. In accordance with Natural England's proposed method for calculating impact values for historic projects, a gap analysis has now been conducted in order to provide an estimate of the potential impacts posed by these historic projects. This can be found within **Appendix Q Annex 3: Cumulative and In-combination Gap Analysis Report** (WHX001-FLO-CON-ENV-ASS-0003) of this **ES Addendum**. Updated cumulative effects assessments of displacement were calculated for: • Guillemot (*Uria aalge*) • Razorbill (*Alca torda*) • Puffin (*Fratercula arctica*) • Manx shearwater (*Puffinus puffinus*) • Gannet (*Morus bassanus*). • Updated cumulative effects assessments of collision risk were calculated for: • Kittiwake (*Rissa tridactyla*) • Great black-backed gull (*Larus marinus*) • Herring gull (*Larus argentatus*) • Lesser black-backed gull (*Larus fuscus*) • Gannet (*Morus bassanus*). With the exception of great black-backed gull, guillemot and razorbill cumulative assessments which

Applicant ID	Natural England Comment	Applicant Response
		already exceeded a 1% increase in baseline mortality threshold, the remainder of the species assessed the cumulative predicted impacts still remained below a 1% increase in baseline mortality threshold as previously concluded within **Chapter 13: Offshore Ornithology** of the **Offshore ES**. For the three species where the cumulative assessment exceeded the 1% threshold, Population Viability Analysis (PVA) was undertaken to further understand the level of potential effected predicted, as presented within **Appendix Q Annex 1: Population Viability Analysis** of this **ES Addendum**. Analysis of the PVA results concluded that for all species, the level of cumulative predicted impact can be concluded as not significant in EIA terms as originally assessed within **Chapter 13**. Additionally, the PVA results clearly presented that the level of potential effect predicted for White Cross would not tangibly contribute to any cumulative level of effect. With regards to the in-combination assessment, as presented within the **RIAA** (see **Appendix 6.A** of **Chapter 6: EIA Methodology** of the **Offshore ES**), even when considering Natural England's worst case assessment approaches, the Project's contribution to any in-combination effect can confidently be concluded as in-tangible. Additionally, given the geographical location of the historic projects, connectivity is limited to the designated sites and features for which the Project undertook in-combination assessments for.

Applicant ID	Natural England Comment	Applicant Response
		Therefore, it can be confidently concluded that the results of this gap analysis would not materially change the in-combination assessment conclusions originally drawn within the **RIAA**.
23	Clarification is required on the worst-case scenario being assessed, which will then require the Environmental Impact Assessment (EIA) and Report to Inform Appropriate Assessment (RIAA) to be reconducted based on those clarified parameters. It is also unclear if correction factors have been applied to relevant abundance and density estimates for some species to account for availability bias. If not applied, relevant abundance and density estimates must be updated with the methods used, being fully and clearly detailed in the relevant documents. Natural England would like to highlight that Manx shearwater is a surface diving species and data are available detailing foraging and diving behaviour. Natural England also recommend it may be appropriate to consider availability bias for that species.	In order to ensure clarity with respect to different project designs assessed for offshore ornithology, the Applicant clearly stated that only the worst case scenario (WCS) was considered within the ES (as stated within **Chapter 13: Offshore Ornithology Section 13.9.2**) and **Report to Inform Appropriate Assessment** (as stated within **Section 8.2.1**), which was found to be the 18MW Wind Turbine Generator (WTG) based on the results presented within **Appendix 13.C: Offshore Ornithology Collision Risk Modelling**. For additional clarity and to account for Natural England's best practice guidance changes with respect to collision risk modelling input parameters, updated collision impacts were modelled and considered within **Appendix Q Annex 3: Cumulative and In-combination Gap Analysis Report** (WHX001-FLO-CON-ENV-ASS-0003) of this **ES Addendum**. For kittiwake and gannet this resulted in further reductions in the worst-case impact predictions The Applicant can confirm that correction for availability bias was applied to the assessment of auk species. Although Manx shearwater is a surface diving species, there is currently no availability bias value considered or approved by any UK SNCBs that could be

Applicant ID	Natural England Comment	Applicant Response
		incorporated. It should also be noted that the consideration for or inclusion of an availability bias for Manx shearwater was not requested through Expert Topic Group (ETG) meetings for the Project or through Scoping Opinion. Therefore, in the absence of such a request this was not considered a requirement for the Project. Additionally, even when considering the upper levels of displacement mortality for Manx shearwater the predicted increase in baseline mortality was concluded as 0.002% per annum, even if a correction factor was to be incorporated into assessment, it can confidently be stated this would not lead to any change in assessment conclusions given the in-tangible population level effect predicted from the Project.
24	Natural England does not consider the current evidence base sufficient to recommend sabbatical rates of >0 for any species and we recommend the no apportioning is applied to account for sabbatical rates.	Due to the long-lived nature of seabirds, in times of poor physiological condition or in response to climatic events (Cubaynes et al., 2011[3]; Giudici et al., 2010[4]; Harris, 2008[5]; Reed et al., 2008[6]; Fitzgerald et al.,

[3] Cubaynes, S., Doherty Jr, P.F., Schreiber, E.A. and Gimenez, O., 2011. To breed or not to breed: a seabird's response to extreme climatic events. Biology letters, 7(2), pp.303-306.
[4] Giudici, A., Navarro, J., Juste, C. and González-Solís, J., 2010. Physiological ecology of breeders and sabbaticals in a pelagic seabird. Journal of Experimental Marine Biology and Ecology, 389(1-2), pp.13-17.
[5] Harris, M.P. and Wanless, S., 1995. Survival and non-breeding of adult Common Guillemots Una aalge. Ibis, 137(2), pp.192-197.
[6] Reed, T.E., Kruuk, L.E., Wanless, S., Frederiksen, M., Cunningham, E.J. and Harris, M.P., 2008. Reproductive senescence in a long-lived seabird: rates of decline in late-life performance are associated with varying costs of early reproduction. The American Naturalist, 171(2), pp.E89-E101.

Applicant ID	Natural England Comment	Applicant Response
		2022[7]; Horswill & Robinson, 2015[8]), breeding adults may choose to skip breeding in order to increase likelihood of survival. The Applicant, therefore, considers that due consideration is required of sabbatical breeders when considering population demographics. In accordance with best practice the Applicant has relied upon the best available evidence to inform assessments, including sabbatical rates, which followed those values presented by the Crown Estate for the recent Round Four Plan Level HRA (NIRAS, 2022), originally based on recommendations from Marine Scotland Science. For clarity, inclusion of a sabbatical rate was only applied to the gannet *Morus bassanus* qualifying feature of designated sites assessed. In order to provide Natural England with confidence that the exclusion of a sabbatical rate does not materially change the impact conclusions presented within the **RIAA**, the Applicant requested that APEM Ltd (APEM) undertake apportionment of operational and maintenance phase displacement and collision risk impacts to individual colonies excluding apportionment accounting for sabbatical rates (see **Appendix Q Annex 2: White Cross Offshore Windfarm Offshore Ornithology HRA Excluding Sabbatical**

[7]Fitzgerald, M., Lynch, S.A. and Jessopp, M., 2022. Breeding stage impacts on chronic stress and physiological condition in northern gannets (Morus bassanus). Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology, 274, p.111305.
[8] Horswill, C. and Robinson, R.A., 2015. Review of Seabird Demographic Rates and Density Dependence. JNCC Report no. 552.

Applicant ID	Natural England Comment	Applicant Response
		Rates (WHX001-FLO-CON-ENV-RPT-0003)). The exclusion of a sabbatical rate within assessments as requested by Natural England resulted in predicted impacts for the Project increasing by less than 0.1 additional mortalities per annum, which would not materially change the Project's original assessment conclusions within the **Report to Inform Appropriate Assessment**.
Terrestrial ecology		
25	With direct physical damage and disturbance to the Braunton Burrows Site of Special Scientific Interest (SSSI)/SAC, as well as riparian habitats and water courses, during cable installation, further assessment is required. This risk will also need to be mitigated during ongoing maintenance and emergency repairs of cables. Pre-works ecological surveys are required to determine areas of these invasive non-native species as well as rare, protected and designated species. This surveying is required for the Invasive Non-Native Species (INNS) Management Plan to inform the Construction Environmental Management Plan (CEMP).	Clarification of the operations and maintenance phase of the Project is provided within **Section 5.3** of this **ES Addendum**. The Applicant agrees with the need for pre-works ecological surveys in relation to INNS. An **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-ENV-PLN-0010) is provided as part of the Further Environmental Information submission. This includes an **Outline Invasive Non-Native Species (INNS) Management** Plan (WHX001-FLO-CON-ENV-PLN-0009).
26	We advise that areas of petalwort, other rare species and diverse areas of vegetation should be avoided during works and that a pre consent survey is undertaken to understand the level of risk.	The Applicant has engaged a specialist bryologist sub-consultant, with experience of petalwort, to undertake a desk based assessment and petalwort survey. The results of this assessment and survey can be found in **Appendix L.** It concluded that no petalwort is present within the Onshore Development Area. Therefore, there is no impact pathway.
27	The impact of potential release of frac-out lubricant bentonite from HDD on species and habitats, including	**Appendix T: Onshore Ground Investigation Interpretative Report** of the **ES Addendum**

Applicant ID	Natural England Comment	Applicant Response
	impacts if flushed out to sea, needs to be addressed for the intertidal habitats and Taw-Torridge Estuary SSSI at the Taw Estuary Crossing. The impact of frac-out or fuel spill into ditches on otters and how this has been mitigated has not been mentioned within the impacts section. The proposed monitoring for frac-out during the trenchless works requires clarification as to what this monitoring would involve and any remediation measures.	provides data which shows the ground conditions are suitable for use of a trenchless technology under the Taw Estuary and confirms the previous conclusion that risk of frac out is low (see also **Appendix S: Hydrofracture Report**). The Applicant considers that this supports the conclusions of the ES that as the entry and exit areas for the trenchless technique used to cross the estuary are above MHWS, no benthic or intertidal ecology receptors will be impacted. **Appendix G: Hydrogeological Risk Assessment** includes an assessment to groundwater due to trenchless works. A final Bentonite Management Plan, which will include details of the monitoring and any remediation measures in the unlikely event of frac-out, will be included within the final CEMP that is expected to be a condition to planning permission and Marine Licence consent. Agreement with Natural England will be sought on this condition on the trenchless technique methodology and response procedures. An Outline Bentonite Management (WHX001-FLO-CON-ENV-PLN-0012) is provided. Impacts to ditches used by otters from frac out from minor trenchless crossings and fuel spills are considered within **Section 16.5.12** (Impact 11: Temporary loss/disturbance to ditches, riparian habitats and watercourses). Following the implementation of mitigation measures, secured through the final CEMP, the effect on ditches and

Applicant ID	Natural England Comment	Applicant Response
		watercourse is considered to be **minor adverse** in the short term and **negligible** once vegetation has re-established**.** Therefore, it is considered there is no pathway for impacts to otters**.** The final CEMP will provide specific detail on the mitigation measures for oils, fuels, and chemicals. Outlines measures are included within the **Outline Construction Environment Management Plan (Outline CEMP)** (WHX001-FLO-CON-ENV-PLN-0010) provided as part of the Further Environmental Information submission.
28	Greenaways and Fresh Marsh SSSI may be impacted by disruption to field drainage and ditches through works to create trenchless crossings, ditches and pipes. This requires further consideration to avoid impacting designated features. Mitigation is also needed to control/avoid invasion during works by non-native aquatic plants.	See responses to comments in detailed tables in **Section 4**.
29	The Bideford to Foreland Point MCZ and Fremington Quay Cliffs SSSI need to be included in the listing of unit conditions. Construction of pipelines and heavy machinery crossing the geological features of this area may damage designated geological features of the Fremington Quay Cliffs SSSI.	See responses to comments in detailed tables in **Section 4**.
30	Soils extracted and stored separately during construction need mitigation to reduce runoff and carbon flux. Once reinstated, soils should not be left bare. Cover crops should be used to help protect the soil and restore the soil organic matter and soil carbon lost because of the works. Cover crops need to be carefully considered to avoid species being introduced which are	See responses to comments in detailed tables in **Section 4**.

Applicant ID	Natural England Comment	Applicant Response
	unrepresentative of the area, which could seed and spread into sensitive areas.	
Coastal Habitats		
31	The main concern related to coastal habitats are features of the Braunton Burrows Special Area of Conservation (SAC): petalwort and dune slacks. Both features require further data or further consideration over a range of impacts.	See comments in detailed tables in **Sections 4** and **10**.
32	Impacts of trenchless techniques upon groundwater dependent humid dune slack and petalwort, have not been considered. Given the prevalence of dune slack habitat along the cable route as identified by the National Vegetation Classification (NVC) survey it is possible that petalwort could be present. As petalwort surveys were not included within the NVC and botanical surveys and impacts on this species cannot be ruled out, Natural England advise petalwort surveys are carried out during winter months. The potential for hydrologically impacts on both these features including subsurface hydrology and indirect effects should be fully assessed.	Trenchless techniques entail the installation of ductwork through which the export cable will run at depths of up to 10m below ground level. The diameter of the duct is 250mm. This linear feature deep underground within what is identified as deep sandy substrate (permeable) or siltstone /mudstone (low permeability) and will not impact on hydrology as it would not form a barrier or a 'new' route through different substrates where the geology is permeable. It will have no effect in areas of impermeable or low permeability. Given that no change to hydrology could occur, there is no pathway by which any impact on humid dune slack or petalwort or any other plant species and communities could arise. However, a petalwort survey has been undertaken and is provided in **Appendix L: Petalwort Desk-Based Assessment and Survey Report**.
33	The impacts of potential changes to hydrology, geomorphology and water quality upon water-dependent biological communities are not explored in detail and need to be assessed in full by the HRA.	See response above. Within the works areas within the SAC and outwith, the presence of the ductwork whether trenchless within the SSSIs and SAC, or trenchless and open trenched outwith the SSSIs and SAC, would not result in any hydrological change given the soil and ground conditions and the lack of obstruction to groundwater flows as a result.

Applicant ID	Natural England Comment	Applicant Response
34	The impact of climate change and associated warmer, drier summers has not been considered for the water resources associated with the Secondary A aquifer that characterises the Onshore Project. It may become under more pressure due to more permits to abstract being sought which could have associated impacts on surface and groundwater hydrology, water quality and designated sites. This consideration is required as part of cumulative assessment of impacts upon groundwater dependent SAC features (petalwort and dune slacks).	As described above, there is no change to hydrology whether under current conditions or potential climate change induced conditions. Water resources associated with the Secondary A aquifer that characterises the Onshore Project is considered with **Section 14.4.2.5** of **Chapter 14: Water Resources and Flood Risk** of the **Onshore ES**. It states that "*Due to climate change and associated warmer, drier summers, water resources associated with the Secondary A aquifer that characterises the Onshore Project may come under more pressure, due to more permits to abstract being sought. This could have associated impacts on surface and groundwater hydrology, water quality and designated sites.* *However, ongoing initiatives are in place to reduce pressures on groundwater, including increased regulation of agricultural chemicals, in order to achieve compliance with the WER (Environment Agency, 2022). This would suggest that groundwater quality and quantity is likely to improve in the future, although this would occur over long timescales.*" Therefore, it is considered there is no potential for cumulative impacts on groundwater.
35	There are a few instances of the incorrect data and resources being used in relation to coastal habitats. The incorrect site conservation advice has been used to inform the HRA. Reference to Morecombe Bay SAC advice should be disregarded and revised to take account the site-specific advice for Braunton Burrows	This comment is directed to the MMO.

Applicant ID	Natural England Comment	Applicant Response
	Supplementary Advice on Conservation Objectives (SACOs). Pressures identified for sand dune features refer to impacts at the seabed and in the water column which are not relevant to sand dune features. Pressures need to be re-defined for sand dune features to consider impacts of construction footprint, operation maintenance and decommissioning and potential for indirect impacts associated with HDD techniques. It is stated that increased suspended sediment from abrasion and disturbance to the seabed and habitat loss and physical change to sediment type through intertidal cable activities may impact Salix repens ssp. argentea (Salicion arenariae). The 2170 Dunes with Salix repens spp. argentea feature is found inland of MHWS and therefore not relevant for consideration here. The assessment should instead consider the impacts upon 2120 Shifting dunes along the shoreline with Ammophila arenaria (“white dunes”) which could potentially be affected due to proximity to Saunton Sands car park and wider HDD cable activity taking place between the car park and the intertidal.	
Ornithology (onshore)		
36	Natural England is concerned over the lack of bespoke wintering bird surveys and the reliance on data (principally the 2019 high tide roost report) that is 4 years old. Natural England would expect at least one year of wintering bird surveys for a proposal such as this. If no surveys can be carried out Natural England would require justification for why it is felt unnecessary to update this information and why they believe birds still use this area in the same way as in 2019.	Additional survey work has been undertaken for wintering birds. The focus of this work was to understand how birds are using the known lapwing roosts in Braunton Marsh, which is within the same fields as the Onshore Export Cable Corridor. The work involved two visits per month between mid-October and mid-March as far as possible to 2hrs either side of the high tide (4hrs in total for each visit).

Applicant ID	Natural England Comment	Applicant Response
		The results of this work provide additional baseline data and inform mitigation requirements. The area surrounding the drilling compound on the south side of the estuary was also monitored during the survey work described above. The survey results can be found in **Appendix J: Wintering Bird Survey Report (Braunton Marsh and River Taw)** and the relevant mitigation measures within **Appendix K: Approach to Lapwing Mitigation**.
37	Further timing details of cabling works across intertidal at Braunton Burrows are required to ensure avoidance of the wintering bird season. To avoid noise and visual disturbance to wintering birds, works in this area should take place between August to October or March to April. If this is not possible, the compound should be screened to minimise noise and visual disturbance from HDD operations.	As the scheme has developed it has become apparent that the original plan to avoid the wintering period, which was discussed with Natural England at an earlier stage of the project, cannot be guaranteed. Where possible works in these areas (such as enabling works) will be undertaken outside the winter period to minimise disturbance. The compound will be screened to minimise disturbance. This mitigation approach is discussed in **Section 16.5.13.2** of the Onshore Ecology and Ornithology chapter. Paragraph 359 sets out the proposed approach to screening. Further detail is provided in **Appendix K: Approach to Lapwing Mitigation**.
38	The pit and working compound for the HDD will affect wader roosts at Braunton Mashes, as identified in the 2019 high tide roost report. Mitigation for this is discussed however, it is stated that disturbance and displacement will be temporary and that there are alternative roost locations on Braunton Marshes and Horsey Island. It is unclear whether this statement considers disturbance from the Haul Road that runs between Braunton Burrows and Horsey Island. Natural	Clarification: We think this comment relates to Access Road 009, which runs from the Toll Road, northwest across Braunton Marsh. It is an existing farm track/private road that is flanked with hedgerows/ditches on both sites, which provide some screening of the adjacent land.

Applicant ID	Natural England Comment	Applicant Response
	England requires further information on whether the additional disturbance from the haul road and trenching would affect the use of that area.	This track will be used for early works access, which will be primarily outside the winter period. It will not be used by construction traffic.
39	Impacts on birds from cabling on the south side of the Taw Estuary require further consideration. If there is any possibility that habitats are suitable for wintering waterbirds in places that would be affected by the cabling (e.g. at Braunton Marshes or terrestrial habitats on the south side of the Taw) and that have not been fully mitigated, then mitigation should be provided on a precautionary basis, or wintering bird surveys carried out to demonstrate that birds do not use the area and further mitigation is not necessary.	The nearby known roosts on the south side of the estuary have been considered in detail in the assessment (see **Chapter 16: Onshore Ecology and Ornithology Section 16.5.13** of the **Onshore ES**). These are distant from the working area (see **Table 16.20**). Precautionary mitigation is already proposed (**Section 16.5.13.2**) – screening, working methods and monitoring. Which at the distances involved is considered to be proportionate. Further detail is provided in **Appendix K: Approach to Lapwing Mitigation**. The southern area has been incorporated into the additional ongoing winter bird survey work carried out from October 2023 onwards. This is provided in **Appendix J: Wintering Bird Survey Report** of this **ES Addendum**.
Bats		
40	There are several survey data gaps such as missing data from local bat groups, missing months from a normal bat surveying period and missed survey areas. Bat surveying should be completed between May and September to encompass maternity period. Following further surveys full rationale for survey and impact assessment for the Caen Valley Bats SSSI is required within the EIA, including precautionary mitigation to retain any existing bat commuting routes.	The data gap appears to relate primarily to the survey work carried out on the hedgerow on Saunton Road. Survey work for this hedgerow was scoped into the assessment at a late stage when it became apparent that for highway safety reasons a section of hedgerow would require (temporary) removal to accommodate a visibility splay for the vehicle access point. Therefore, the additional survey at this location is supported by the much larger area surveyed across Braunton Marshes the previous year (as reported in the ES).

Applicant ID	Natural England Comment	Applicant Response
		Survey data has been obtained during June, July and August 2023 (see **Appendix H**), and April and May 2024 (see **Appendix H**). The surveys were carried out to inform the approach for mitigation in this area. Given its managed and slightly gappy form it is not assessed to be of high value for bats, but bats have been recorded using it during the surveys, including low numbers of GHS and LHS. The data do not suggest that this is an important foraging area or commuting route for greater horseshoe bat. It is also noted that there is a double hedgerow in this area, only the southern hedgerow will be affected. The northern hedgerow, which will remain, will continue to provide habitat connectivity in this area. These surveys have confirmed the previously identified need for mitigation for the temporary removal of this hedgerow. **Chapter 16: Onshore Ecology and Ornithology** (**Section 16.5.12.4**) of the **Onshore ES** states that "Hedgerow sections requiring purely to provide visibility splays will be coppiced rather than removed, and the vegetation will be maintained at a height of below 0.4m for the duration of the works. This will allow these two sections of hedgerows to regenerate following completion of construction and removal of the haul road. The reinstated hedgerows would be enhanced through supplementary planting". In addition, installation of a temporary 'fake hedge' (i.e. Heras fencing panels covered with netting); this will positioned to provide the linear-shelter-navigable

Applicant ID	Natural England Comment	Applicant Response
		flight lines function of a hedge set will be back further to allow sufficient visibility/access; these will be in place throughout the construction period during the active period for bats (April to October). This would be in line with mitigation approaches set out in the recently published Bat Mitigation Guidelines (Sept 2023; p110-111), and given the assessment is considered to be proportionate. There is obviously scope to discuss the design of the temporary fake hedge. As set out in **paragraph 260** of the **Chapter 16: Onshore Ecology and Ornithology**, lighting of habitats suitable for foraging or commuting bats will be avoided, and where the use of lighting is necessary within the Onshore Development Area, then the lighting will be minimised during the period when bats are active. The additional survey work and subsequent results do not result in any change to the suggested approach to mitigation. However, we have provided further clarification and detail on bat mitigation across the Onshore Development Area within **Appendix I** building on the measures stated in the ES. Thus, Natural England's suggestion for precautionary mitigation is considered to be achieved. Caen Valley Bats SSSI has been considered in detail in the assessment – see **Chapter 16: Onshore Ecology and Ornithology** (**Section 16.5.8**).

Applicant ID	Natural England Comment	Applicant Response
41	The SSSI for greater horseshoe bats is within 1.7km of onshore works. This species has a core sustenance zone of 3km. Natural England advise that in order to protect the features for which this site is designated, there should be no disturbance or damage to this species ability to survive and reproduce. This would include retaining hedgerows proven important for this species. Mitigation would be required to compensate for any hedgerow losses and following construction, monitoring on hedgerows retained to ensure bats are still using them.	Noted, as above Caen Valley Bats SSSI has been considered in detail in the assessment – see **Chapter 16: Onshore Ecology and Ornithology** (**Section 16.5.8**) of the **Onshore ES**. Precautionary mitigation has been incorporated in the scheme design as detailed in **Appendix I: Approach to Bat Mitigation at Saunton Road** of this **ES Addendum**.
Wildlife licensing		
42	Great Crested Newts. Given the close proximity of confirmed Great Crested Newt ponds to the development, and the prevalence of Great Crested Newts (GCN) in the wider area, Natural England does not consider works carried out under RAMs as sufficient mitigation. An application for a European protected species (EPS) Mitigation Licence from Natural England is required.	Noted. The exact approach can be kept under review and obtaining a Natural England EPSL licence is an option (which is stated in the **Chapter 16: Onshore Ecology and Ornithology** of the **Onshore ES**. The route has been designed to avoid ponds and habitats suitable for this species. As stated in **Table 16.11** of **Chapter 16**, the amount of vegetation clearance work within 250m of breeding ponds is minimal, and the risk of an impact on this species is considered to be very low – work will be primarily limited to sub-optimal habitats. The information provided in the ES should be sufficient to allow the LPA to consider impacts in and to consider in sufficient detail whether it is likely that a licence could be issued. Resolving this comment is therefore considered to be primarily a matter of legal compliance, rather than an issue that needs to be considered in further detail in the **Chapter 16: Onshore Ecology and Ornithology** of the **Onshore**

Applicant ID	Natural England Comment	Applicant Response
		ES. Further discussion is provided below in the section relating to Terrestrial Ecology.
43	The current survey data does not meet the requirements of the GCN Mitigation Guidance enforced by Natural England. This guidance requires all waterbodies within 250m of the works area to be surveyed. Surveying by eDNA (Environmental DNA) and Habitat Suitability Index (HSI) is not sufficient as data shows GCN can be present in ponds considered to be negative for both these methods. Several GCN positive ponds not identified by these survey measures could be impacted by the development. Natural England's preferred approach would be for all waterbodies in the area to be surveyed as per our guidance. If this is not possible due to time constraints, an application to Natural England will need to be submitted invoking Licencing Policy 4 – allowing for reduced survey effort in return for greater compensation.	The Applicant disagrees with this point – this is not considered to accord with standard NE guidance. The ES was informed by a suite of surveys for GCN which were undertaken in 2022 (see **Appendix 16.L** of the **Onshore ES**). These included scoping surveys using HSI assessment, presence/ absence surveys via eDNA testing, and population size class estimate surveys of ponds testing positive for GCN eDNA. The 2022 surveys were carried out on all suitable waterbodies within 250m of the proposed onshore export cable corridor route, which at the time included two potential routes and covered a much larger area than the current Site boundary. Of these, 50 waterbodies tested positive for GCN eDNA, 10 of which were located within 250m of the Onshore Development Area, with the remainder falling within the wider survey area. It is noted that HSI is not sufficient survey technique alone, however, eDNA survey is now a standard survey technique for GCN, which underpins the Natural England District Level Licencing system. While no method is 100% reliable, eDNA survey has been demonstrated to be a very effective survey technique (Biggs et al., 2015, for example, found that eDNA survey has a 99.3% detection rate, compared to the "traditional" methods bottle traps, torch counts and egg searches were significantly less effective, detecting newts 76%, 75% and 44% of the time).

Applicant ID	Natural England Comment	Applicant Response
		The GCN mitigation guidelines, date from 2001, and pre-date eDNA survey; and while these remain useful guidance, the advice relating to survey is not up to date. An updated GCN survey of all ponds within 250m of the Onshore Development Area has been conducted in 2024. This is provided in **Appendix AA: GCN Survey Report**. In conclusion, the various survey work carried out, as described above, is considered sufficiently detailed to inform the assessment and to allow NDC to consider impacts and consider whether it is likely that a licence, if needed, could be issued. Depending on the approach taken to licencing (see above) and the timing of the work, further survey (to ensure that it is sufficiently up to date), may need to be carried out to inform a licence application in advance of development.
Badgers		
44	The provided badger survey data only covers the area immediately adjacent to the proposed Yelland Power Station. There is no data provided for badger setts along the proposed 8km cable route. Natural England believes that laying subterranean cables along this route could potentially harm badgers and their setts. Natural England would normally expect setts in the cable's path to be excluded before works begin.	The whole route has been surveyed for badgers, this is outlined in **Section 6.5** of the **ES Addendum** and detailed in the **Preliminary Ecological Appraisal** (**Appendix 16.B** of **Chapter 16: Onshore Ecology and Ornithology**) – one sett has been recorded in the corridor. The Yelland area was surveyed separately at a different stage, which is why there is a separate badger report for this area, which could give the impression that this is the only area that has been subject to a dedicated badger survey.

Applicant ID	Natural England Comment	Applicant Response
		We note that the text in the **Preliminary Ecological Appraisal** is brief. **Section 3.3.2 of the PEA** states that "It is considered that both the full extent of the PEA survey area provides sett, dispersal and foraging habitat for badger", would be better expressed as follows: "*…* the full extent of the PEA survey area provides *habitats that are potentially suitable for sett creation*, and for dispersal and foraging habitat for badger". The PEA did not recommend any further survey for badger and it was considered to be sufficiently conclusive.
45	Justification must be provided to Natural England as to why no badger survey was carried out along this route or why the works will not impact the badger setts along this route. If this is not possible, Natural England would recommend surveying the entire route of the cable for badger setts before deciding if a licence is necessary to close any setts. If any setts are found along to proposed route that could be impacted by the works, a licence from Natural England will be required.	See above – in addition, as standard industry practice, further precautionary pre-construction badger survey will be carried out (as set out in **Section 186 and Table 16.25** of **Chapter 16: Onshore Ecology and Ornithology** of the **Onshore ES**).
Other species		
46	The presence of sand lizards during Braunton Burrows surveys may require an A46 licence from Natural England if the works will affect this species.	As set out in **Section 162**, "the presence of sand lizard within the Onshore Development Area (i.e. outside Braunton Burrows) is considered unlikely. This assessment is based on the reptile survey results and the habitats present, which do not offer suitable habitat for this species: this species is dependent on managed heathland and coastal sand dunes in the UK". To provide further clarification this species was scoped into the earlier stages of the assessment when various route options were being considered, including

Applicant ID	Natural England Comment	Applicant Response
		routes within Braunton Burrows which could have had potential to affect the species. The final agreed route, does not affect habitats suitable for this species and it has therefore been scoped out.

2. Natural England's Structure / Framework of/for Natural England advice in relation to attributing risk and potential to resolve

3. For ease of reference, the following framework used by Natural England's to attribute risk is copied from their comments on the Project in **Table 2**.

Table 2 Natural England's framework of/for Natural England advice in relation to attributing risk and potential to resolve pre-application

Structure / Framework	Risk
Purple Note for the developer.	Purple
Red Natural England considers that unless these issues are resolved it will have to advise that (in relation to any one of them, and as appropriate) it is not possible to ascertain beyond reasonable scientific doubt that the project will not affect the integrity of an SAC/SPA/Ramsar and/or significantly hinder the conservation objectives of an MCZ and/or damage or destroy the interest features of a SSSI and/or comply fully with the Environmental Impact Assessment requirements. Addressing these concerns may require the following: • new baseline or survey data; and/or • significant revisions to baseline characterisation and/or impact modelling and/or • significant design changes; and/or • significant mitigation Natural England feels that issues given Red status are so complex, or require the provision of so much outstanding information, that they are unlikely to be resolved during the Examination, and respectfully suggests that they be addressed beforehand.	Red
Amber Natural England does not agree with the developer's position or approach and consider that this could make a material difference to the outcome of the decision-making process for this project. Natural England considers that these matters may be resolved through: • provision of additional evidence or justification to support conclusions; and/or • revisions to impact assessment methodology and/or assessment conclusions; and/or • minor to moderate revisions to impact modelling; and/or • well-designed mitigation measures that are adequately secured through the draft DCO/dML and/or amendments to draft plans If these issues remain at the time of the application and are not addressed or resolved by the end of the Examination, then they may become a Red risk as set out above.	Amber

Structure / Framework	Risk
Yellow Natural England doesn't agree with the developer's position or approach. We would ideally like this to be addressed but are satisfied that for this particular project it is unlikely to make a material difference to our advice or the outcome of the decision-making process. However, we reserve the right to revise our opinion should further evidence be presented. It should be noted by interested parties that just because these issues/comments are not raised as significant concerns in this instance, it should not be understood or inferred that Natural England would be of the same view in other cases or circumstances.	
Green Natural England is in broad agreement with the developer's approach and has no significant outstanding concerns. As above, we reserve the right to revise our opinion should new evidence be presented.	

3. Response to Comments relating to Marine and Coastal Processes

4. **Table 3** outlines the Applicant's response to the key concerns raised by Natural England in relation to Marine and Coastal Processes (Onshore).

5. **Table 4** outlines the Applicant's response to Natural England's key advice and recommendations.

Table 3 Summary of Key Issues Identified by Natural England – Marine and Coastal Processes (Onshore)

NE Ref	NE's Summary of Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk	Applicant's Response
A1	Identified impacts – some potential impacts on coastal geomorphology have not been identified/assessed.	The potential impact of cable exposure and subsequent scour on coastal geomorphology needs to be fully assessed, with mitigation included (i.e., Cable Burial Risk Assessment). The trenchless sections which could impact coastal geomorphology (i.e., Taw crossing and short dune crossing between landfall and carpark) need to be fully assessed, using specific worstcase scenarios.		As outlined in **Table 8.8 of Chapter 8: Marine and Coastal Processes** of the **Onshore and Offshore ES**, during operation, the cable will be buried sufficiently to avoid it becoming exposed. Further evidence for this, and the specific worst case scenario, is provided in **Appendix T Onshore Ground Interpretative Factual Report** of this **ES Addendum** and analysis of this data provided in **Appendix F: Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002)**.** The Cable Burial Risk Assessment (provided in **Appendix U of** this **ES Addendum** the **Cable Burial Risk Assessment (CBRA**) (WHX001-FLO-CON-ENG-RSA-0001)has been updated to accurately define the preferred burial depth to mitigate future exposure at Landfall. The trenchless section of the cables underneath the seaward part of Braunton Burrows (between the beach and car park) and the Taw-Torridge Estuary system will have no impact on coastal geomorphology due to the depth of installation. Morphological change would continue as a natural phenomenon driven by wind (Braunton Burrows) and waves/tidal currents (Taw-Torridge Estuary system), which would not be affected by the Project.
A2	Adequacy of survey data – The baseline section is missing some key aspects which compromise its use as a conceptual model on which to base predictions of system response to cable installation. We advise that the Application has insufficient information to enable a characterisation of baseline conditions.	Baseline conditions need to be fully established. It is appreciated that a preliminary ground desk investigation has been conducted within Appendix 5.A, in which historical borehole data is presented (although this data should be cross-referenced within the Marine and Coastal Processes chapter). However, this data should be cross-referenced with geophysical data and project specific geotechnical data to provide more certainty on the potential impacts of cable techniques on coastal geomorphology. A preliminary integrated model would establish sediment depths in the intertidal zone (required to assess impacts of potential cable exposure and associated scour) and highlight areas in need of further geotechnical investigation. As recommended in Appendix 5.A (p11, para 24) – a complete geotechnical investigation must be undertaken to inform consent decisions on the certainty of trenchless installation as mitigation measures to avoid impacts. Noting that due to lasting habitat change/loss to designated site features Natural England wouldn't support open cut trenching beyond the foreshore area.		As outlined in **Chapter 8: Marine and Physical Processes** (**Sections 8.5.1**) of the **Onshore and Offshore ES's**, the **Cable Burial Risk Assessment (CBRA**) (WHX001-FLO-CON-ENG-RSA-0001) provides information on target burial depths, and will be updated to accurately define the preferred burial depth to mitigate future exposure once a full suite of geotechnical survey data is available. Full details of the proposed areas of open cut trenching are provided in **Section 5** of the **ES Addendum**. Analysis of the data provided in the **Onshore Ground Investigation Factual Report** (**Appendix T Annex 1**) is reported in **Appendix F: Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002). Analysis has included defining the geological sequence and the thicknesses of the units to provide more detail and support for the baseline characterisation at the coast. These data have been used alongside the marine geophysical data to provide extension into the

NE Ref	NE's Summary of Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk	Applicant's Response
			Red	nearshore, and an integrated model of sediment depths across the coastal/nearshore zone. This has then been used to support the assessment of potential cable exposure.
A3	Overall Assessment Conclusion – data gaps exist within the baseline characterisation, which presents significant uncertainties. Therefore, conclusions cannot be drawn with any certainty.	Baseline conditions need to be fully established to reduce uncertainties and the outstanding specified impacts on coastal geomorphology need to be fully assessed (e.g., potential cable exposure, trenchless sections).	Red	Analysis of the data provided in the **Onshore Ground Investigation Factual Report** (**Appendix T Annex 1**) is reported in **Appendix F: Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002) and provides further baseline characterisation including more detail on coastal morphological change along Saunton Sands beach, the Taw-Torridge Estuary system and Braunton Burrows. The analysis undertaken supports the conclusion of the impact assessment. This information has been derived from a variety of sources including Lidar data (already assessed in **Chapter 8: Marine and Coastal Processes Section 8.4.1.2** of the **Onshore ES**), **Appendix T Annex 1** and existing scientific literature.
A4	Further options should be considered to avoid/reduce/mitigate impacts as part of the Application to inform any permission conditions.		Amber	It is unclear what specific impacts are being referred to. Therefore, no response is provided.
A5	Conceptual modelling of the beach-dune and estuary-delta systems is not sufficient	We advise that additional project specific assessment is needed of habitat geomorphology, evolution and response to installation activities.	Red	Further project assessment is provided in **Appendix F: Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002)**.** The understanding of the beach-dune and estuary-delta system has been updated using information from a variety of sources including Lidar data (already assessed in **Section 8.4.1.2 of the Onshore ES**), **Appendix T: Onshore Ground Investigation Interpretative Report** of this **ES Addendum** and existing scientific literature.
A6	Rationale for some worst-case scenarios is not clear and/or sufficient.	We advise that further explanation/information is needed for WCSs before we are able to advise further on the significance of any impacts.	Amber	As outlined in **Table 8.8 of Chapter 8: Marine and Coastal Processes** of the **Onshore ES**, the rationale for the selection of open-cut trenching as the worst-case scenario is that this represents the greatest potential for morphological change landward of MLWS because of changes to sedimentary processes during construction. During operation, the cable will be buried sufficiently beneath the beach to avoid it becoming exposed. Geotechnical assessment indicates there is sufficient depth of sand (approx. 7-8m in depth) for opencut trenching to be used to achieve this. **Section 5** of the **ES Addendum** and the **Outline CSIP** (WHX001-FLO-CON-ENV-PLN-0007) provide confirmation that open-cut trenching is now the only option that will be used at Landfall. Evidence for depth

NE Ref	NE's Summary of Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk	Applicant's Response
				of sand at Landfall is provided in **Appendix T: Onshore Ground Investigation Interpretative Report.**
A7	Specific locations (including MPAs) that may require sandwave levelling and cable protection are not clearly identified.	We advise that specific locations and extent of sandwave levelling and cable protection should be clearly identified on a map (along with any designated sites or other sensitive receptors).		Locations of sand waves are identified in **Figure 5-3** of **Appendix 8.B: Geophysical Survey Results Report of Chapter 8: Marine and Coastal Processes** of the **Offshore ES** and summarised in **Section 8.4.1.7** and **Section 8.5.2**. An additional figure identifying locations of sand waves, megaripples and designated sites within the Offshore Export Cable Corridor is provided in **Annex 1: Bathymetry and Seabed Features** of this document. In addition, the **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001) presents information on the presence of sand ripples, megaripples and sandwaves in both the Windfarm Site and the Offshore Export Cable Corridor (including figures of mobile sediment features). Whilst it is not possible to advise specific locations of seabed levelling at this stage (prior to a full suite of geophysical and geotechnical survey data being available), it is known that within the Offshore Export Cable Corridor, sand wave levelling is estimated to require 5.6km of excavation along two cables, across an area of 280,000m^2 (volume of 842,400m^3 assuming an average sand wave height of 3m). Along the inter-array cables, excavation of 29,760m^3 of sand is anticipated (across an area of 14,880m^2) in the Windfarm Site. The total area of sand waves defined by Wood (2022) along the Offshore Export Cable Corridor is 7.62km^2. The area of sand wave levelling (294,880m^2) equates to only 3.9% of the total area of sand waves in the offshore export cable corridor. The **CBRA** (WHX001-FLO-CON-ENG-RSA-0001) also discusses the likely requirements for cable protection in the Windfarm Site and Offshore Export Cable Corridor. Excluding the possible requirement for stabilisation of inter-array cables in the vicinity of the WTGs (which is expected to have a spatial footprint of 22,400m^2), cable protection is not expected to be required in the Windfarm Site. Furthermore, the Windfarm Site does not overlap with any designated sites; the closest site to the Windfarm Site that is

NE Ref	NE's Summary of Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk	Applicant's Response
				designated for benthic features[9] is the South West Approaches to Bristol Channel MCZ, located 8.93km away. To date, no evidence has been found for other non-designated sensitive habitats within the Windfarm Site, e.g., the presence of reefs, either rocky or biogenic. There is an area of exposed bedrock in the Offshore Export Cable Corridor likely making cable burial in this location unfeasible (see Figure 5-11 in **Cable Burial Risk Assessment (CBRA**) (WHX001-FLO-CON-ENG-RSA-0001)). Therefore, cable protection will likely be required here amounting to a footprint of approx. 252,560m^2 of the placement of material. The proposed Offshore Export Cable Corridor overlaps with two sites designated for benthic features only where it nears landfall: Bideford to Foreland Point MCZ and Braunton Burrows SAC; however, the expected area requiring cable protection does not overlap with designated sites and the Project has made a commitment to avoid installing cable protection within the boundary of this MCZ. Further geotechnical and geophysical surveys will characterise the seabed sediment features within the Windfarm Site and Offshore Export Cable Corridor. If any sensitive features or areas not suitable for cable burial are identified in future surveys, it should be possible for the cable to be routed to avoid these areas.
A8	Sediment plume extent, concentration, persistence and associated bed level change data have not been provided.	Natural England advises the Applicant to provide relevant data and representation on a map (particularly for locations that are designated or sensitive areas of seabed).		The assessment of sediment plumes is conceptual and so a quantified distribution of extent and concentration is not provided (and cannot be using this method). Expert assessment indicates that the plume generated from a predominantly sandy seabed (fine sediment constitutes less than 7%) would be small, temporary, and would be within the range of natural variability. Hence, a more quantified (numerical) assessment is considered disproportionate.

[9]note that the Bristol Channel Approaches SAC is closer but is designated for harbour porpoise and not for benthic features.

Table 4 Natural England's Key Advice and Recommendations – Marine and Coastal Processes (Onshore)

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
Natural England's Position on Worst Case Scenario	2.1	Chapter 8	WCS for pre-lay grapnel run, boulder clearance, and UXO clearance have not been included.	Natural England advises that prior to consent the WCS for these activities are provided and assessed for each receptor.		These activities are not assessed as part of **Chapter 8: Marine Geology, Oceanography and Physical Processes** of the **Offshore ES** because there are no potential impacts. The Offshore Export Cable Corridor predominantly passes through areas of sand (with megaripples in many places and some sand waves). Nevertheless, it is worth noting that the **Cable Burial Risk Assessment (CBRA**) (WHX001-FLO-CON-ENG-RSA-0001) discusses the need for further geotechnical and geophysical surveys to establish the presence of (and the WCS for) UXOs and boulders within the cable laying areas. This includes consideration of the potential requirements for further UXO surveys and assessment. Where UXOs or boulders are within a designated distance to cable lay activities such that potential interference is possible, they will be further investigated to confirm their status, and/or either removed or the cable route diverted.
	2.2	5.4.3.2/Chapter 8/8.5.1	There are three options proposed currently for cable installation at Landfall (to MLWS). However, in Chapter 8, only the Maximum Design Scenario (MDS) open trenching has been presented. Whilst all three options are being progressed and given the uncertainty regarding cable burial depth across the beach, information on the MDS for all three options should be included. Noting that due to lasting habitat change/loss to designated site features Natural England wouldn't support open cut trenching beyond the foreshore area.	Natural England advises that prior to consent sufficient information should be provided on the MDS for all three cable installation options at Landfall, to inform the impact assessment and inform any mitigation measures to be secured in any planning permission.		The WCS for the landfall is open trenching and hence, using the Rochdale Envelope principle, this was assessed in both the Offshore Project and **Onshore ES**'s. Any other form of installation method at the landfall (e.g. HDD) are considered to be less worse with respect to Marine Geology, Oceanography and Physical Processes than open trenching. No opencut trenching would take place within the foreshore dunes between Saunton Sands beach and the car park. **Section 5** of the **ES Addendum** and the **Outline CSIP** (WHX001-FLO-CON-ENV-PLN-0007) provide further information on the selection of open-cut trenching as the only option that will be used at Landfall. Evidence for depth of sand at Landfall is

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						provided in **Appendix T: Onshore Ground Investigation Interpretative Report.**
	2.3	5.9.1.3/Point 153 & Table 5.21	It is stated that the total length of cable exposed and replaced in any one repair event is unlikely to exceed 200m, however, in Table 5.21 it is suggested that the max length of cable repair for an export cable is 1km, and for an inter-array cable, 3km. The maximum design scenario should be considered and assessed.	We advise that the worst-case scenario (WCS) should be considered and assessed within the Application and not the 'likely' scenario.		The worse-case scenario is a max length of cable repair for an export cable of 1km, and for an inter-array cable, 3km. A maximum of 5 repair events for each cable type is assumed for the lifetime of the Project. Cable repairs were not considered separately within the **Offshore ES** because the plume generated from such activities would be very small in the unlikely event a cable did become exposed. However, the Applicant considers that cable reburial during operation and maintenance would result in lesser effects on the form and function of the subtidal seabed and suspended sediment concentration than reported for the construction phase (which was negligible).
	2.4	5.9.1.3/Point 155	The width of reburial is anticipated not to be more than 2m width, however, it also states that the maximum would be 7m, if the cable cannot be reburied to the original trench. The maximum design scenario should be used i.e. 7m and assume full de-burial and reburial as the worst case scenario. Natural England also queries if this includes	As advised above, the WCS should be considered in the Application assessment.		Refer to response to Comment ID 2.3 above. Second sentence within NE comment is uncomplete. Therefore, no response is given by the Applicant.
	2.5	8.5.3/Point 87	The worst case of jetting/ploughing or trenching/cutting is given as 1,952,6400m3. However, we would suggest that this is a typo and it should read 1,952,640m3. The estimate for sandwave levelling across the Offshore Development Area is 872,160m3, however, in Section 8.5.2, it is 842,400m3 for export cables and 29,760m3 for inter-array cables. And we require clarity on where the sandwaves will be levelled and any sediment deposited to ensure that there are no wider environmental impacts.	Natural England request further clarification on the impact parameters of cable installation within an Outline cable specification and installation plan, especially in relation to sand wave levelling.		The Applicant acknowledges this typo. The Offshore Development Area is the export cables plus the inter-array cables, so the numbers are correct (872,160 = 842,400 + 29,760). Locations of sand waves are identified in **Figure 5-3 of Appendix 8.B: Geophysical Survey Results Report** of the **Offshore ES** and summarised in **Chapter 8: Marine and Coastal Processes** (Section **8.4.1.7** and **Section 8.5.2**). An additional figure identifying locations of sand wave megaripples is provided in **Annex 1 of this document.**

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						Chapter 8: Marine and Coastal Processes (**Section 8.5.2**) of the **Offshore ES** states that the sediment arising from sand wave removal would be disposed back to the seabed local to its extraction and so there would be no net loss of sediment within the area. Furthermore, **Section 8.5.2** assesses the potential impacts on the wider environment including South West Approaches to Bristol Channel MCZ , Bideford to Foreland Point MCZ and Lundy Island. An **Outline Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007) and an **Updated Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001) is provided as part of the Further Environmental Information which provides all currently known impact parameters of sand wave levelling**.**
	2.6	Chapter 8	Scouring around cable protection and crossings does not appear to have been assessed.	We advise that an assessment of scouring around cable protection should be included prior to consent in order to identify any mitigation measures. Particular consideration of spatial extent and proximity to sensitive areas of seabed should be included.		Depending on its length and height above the seabed, the upstanding cable protection could potentially affect waves, tidal currents, and sediment transport. However, the main impact would be potential interruption of bedload sediment transport processes across the seabed, rather than scouring which would be very minor. The localised nature of scour means only the finest sediment fractions from a thin layer of surface sediments will reside in the water column. Additionally, sediment would be suspended for short durations (likely to be the magnitude of days, or at maximum weeks) and would be limited to the lower layers of the water column (approximately within <10m of the seabed), minimising potential for further sediment transport. Therefore, any increase in suspended sediment concentration resulting from scour is most likely within the range of natural variability. In the unlikely event sand or coarser is suspended this will fall to the seabed in less time than the finer

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						sediment fraction, shortly after disturbance. Due to this, there is minimal chance of any bed level change resulting from scour. Nevertheless, once parameters of the required cable protection (locations, spatial footprint, volumes, height and slope) are established following the detailed design phase, the Applicant will numerically assess the cable protection's potential for scour using methods such as those suggested by Broekema et al (2024)[1] and Chambel et al (2024)[2]. The results of numerical assessments will be provided to the MMO and its advisers in order to identify suitable mitigation measures, if appropriate. It should be noted that a key design principle will be to minimise the amount of cable protection required in the first instance. This was also considered during the site selection phase to avoid areas of reef habitat (see **Chapter 4: Site Selection and Assessment of Alternatives** of both the **Onshore** and **Offshore ES's**). As already mentioned, the Applicant has committed to avoiding the use of external cable protection within the Bideford to Foreland Point MCZ.
	2.7	Table 8.8 P14	Table of worst-case scenarios for predicted impacts – the trenchless sections are not included as part of the worst-case scenario for construction impacts. As per the project description, the sections relevant to this chapter would be the short section between Saunton Sands and the car park and also the Taw crossing.	It is not clear from the project description what the worst-case scenario for coastal/intertidal section is as it appears that both open trenching and trenchless options are being sought approval for. Whilst, in principle, outstanding further information requests aside, NE has no objection to cable trenching on the foreshore; we advise that due to lasting habitat change/loss to designated site features Natural England wouldn't support open cut trenching beyond the foreshore area. Therefore, the Proposed Design Envelope and WCS require refinement to the habitat type and location, especially if trenchless is proposed as in-built mitigation i.e., that can be the only WCS.		The trenchless sections were not included in the worst-case scenario due to the assumption that these sections are buried at a depth and will have no impact on coastal morphology. Morphological change along these sections would continue as a natural phenomenon driven by wind (Braunton Burrows) and waves/tidal currents (Taw-Torridge Estuary system), which would not be affected by the Onshore Project. The worst case scenario for coastal geomorphology relates to the open trench activity alone. Trenchless would not be the worst case from the perspective of coastal geomorphology.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						Geotechnical assessment indicates there is sufficient depth of sand (approx. 7-8m in depth) for opencut trenching to be used to achieve a burial depth that would not affect coastal morphology. Evidence for this is provided in **Appendix T: Onshore Ground Investigation Interpretative Report** of this **ES Addendum.** No opencut trenching would take place within the foreshore dunes between Saunton Sands beach and the car park. The **Outline Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007) and the **Outline Cable Landfall Plan** (WHX001-FLO-CON-DES-PDE-0001) present the trenchless technique that is proposed at the landfall. No opencut trenching will take place for the Taw Estuary Crossing.
	2.8	Table 8.8 P14	Table of worst-case scenarios – under 'Operation', there is no reference to potential onshore morphological/SSC impacts from offshore infrastructure.	Natural England advises that potential construction impacts/worst-case scenario for interaction of offshore infrastructure with coastal geomorphology are provided by the Applicant.		**Chapter 8: Marine and Coastal Processes** (**Sections 8.6.1 to 8.6.4**) of the **Offshore ES** describe potential operational impacts to waves, tidal currents and sediment transport landward to the landfall. These sections concluded no changes at the coast to any of these parameters, and hence, by inference there would be no impact in the **Onshore ES**. They were not included because it would be duplication. The same applies to construction impacts.
	2.9	Table 8.8 P14	Table of worst-case scenarios – under 'Operation', there is no reference to morphological impacts from cable installation as a result of potential future cable exposure (WCS).	As above the Applicant should provide morphological impacts from cable installation as a result of potential future cable exposure (WCS).		The trenchless sections were not included in the worst-case scenario because the assumption is that these sections are buried at depth and will have no impact on coastal morphology. Morphological change along these sections would continue as a natural phenomenon driven by wind (Braunton Burrows) and waves/tidal currents (Taw-Torridge Estuary system), which would not be affected by the Onshore Project. Further project assessment is provided in **Appendix F: Coastal Geomorphology Technical Note** of this **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002) considering sediment depths, using the

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						Appendix T: Ground Investigation Factual Report of this **ES Addendum** to support the assessment of potential cable exposure.
	2.10	20.3.6 Table 20.8	Worst case scenario details include construction impact parameters associated with trenchless technique at export cable landfall but does not include the same parameters for the trenchless technique along the estuary crossing section of the cable route.	We advise that construction impacts associated with HDD including potential for frac-out and noise and vibration should be included in a worst-case scenario assessment of construction impacts in relation to onshore ecology & ornithology.		Impacts on birds are considered within **Section 16.5.5** of **FLO-WHI-REP-0016-20 Chapter 16: Onshore Ecology and Ornithology** of the **Onshore ES**. A short-term and temporary minor adverse indirect effect on the Taw-Torridge Estuary SSSI has been determined which is not significant. **Appendix T: Onshore Ground Investigation Interpretative Report** of this **ES Addendum** provides data which shows the ground conditions are suitable for use of a trenchless technology under the Taw Estuary and confirms the previous conclusion that risk of frac out is low. Further assessment of the risk of frac out, and the mitigation measures to be employed during construction are provided in an **Outline Bentonite Management Plan (Outline BMP)** (WHX001-FLO-CON-ENV-PLN-0012) which is provided as part of the **Further Environmental Information**. WCOWL consider that this supports the conclusions of the **Chapter 16** that as the entry and exit areas for the trenchless technique used to cross the estuary are above MHWS, there will be no impacts relating to benthic and intertidal ecology.
Baseline Characterisation – Document(s) Used: Chapter 8: Marine Geology, Oceanography and Physical Processes						
Survey Data Acquisition	2.11	8.3.7 & 8.4.1.4	We note that regional tidal current conditions have been obtained from BERR (2008) and project-specific tidal current data have not been collected. However, the BERR current data are now very old. Given the 'first of a kind' nature of this floating offshore wind farm project, and the tidal dominance in this area, there is a need to understand tidal behaviour as part of this EIA.	We advise that additional assessment to prior consent are needed of water levels and tidal currents both within and adjacent to the development site and how these propagate across the offshore development area. Include maps showing tidal range, peak flow speed, and spring tidal ellipses across the study area.		Collection of bespoke tidal current and water level data (tidal range, peak flow speed, and spring tidal ellipses) is disproportionate to the potential impact on tidal currents that eight floating substructures and a jacket structure would have. The use of higher-level data from BERR was considered sufficient to meet the needs of the conceptual evidence-based impact assessment. Collection of time series tidal current data and a more detailed understanding derived from it would not add any value

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						to the assessment, given the conceptual (non-numerical) approach that was adopted.
Data Gaps	2.12	8.4.1/Figure 8.2/Table 8.16	Bathymetry has been summarised across the Offshore Development Area however, no map has been provided to show bathymetry survey data across the study area.	We advise that a bathymetry data map including key features across the Offshore Export Cable Corridor (OECC) and wind farm area is required.		Bathymetric maps of the Offshore Development Area are provided in **Annex 1** of this document and Figures 5-1 and 5-9 of the **Cable Burial Risk Assessment (CBRA**) (WHX001-FLO-CON-ENG-RSA-0001).
	2.13	8.4.1/Point 43	The primary bedforms are described in terms of percentage of the surveyed area and area covered, but there is no map to show where these bedforms occur.	We advise that a map identifying areas of bedforms and other significant seabed morphological features within the study area is provided as part of the application		Bathymetric maps of the Offshore Development Area are provided in **Annex 1** of this document and Figures 5-1 and 5-9 of the **Cable Burial Risk Assessment (CBRA**) (WHX001-FLO-CON-ENG-RSA-0001).
	2.14	8.4.1.2	Discussion of potential sea level rise scenarios, but this is not used to predict future shoreline behaviour (both for landfall area and Taw Estuary crossing).	Natural England advises that more information is needed to expand these statements relating to wave heights and impacts on designated sites to provide better understanding of future shoreline recession and potential beach lowering. In addition consideration of SLR impact on the outer Taw required is also required.		The sea-level rise discussion is included in the baseline, but not used in the assessment with respect to waves, because waves will be unchanged at the coast due to the project. Hence, waves will change naturally with sea-level rise and not be affected by the development. However, a section on the potential effect of sea-level rise on future coastal morphological development of Saunton Sands beach and the Taw-Torridge Estuary system and it's interaction with the project will be added.
	2.15	8.4.1	Changes in temperature and/or salinity may be important considerations and should be included in the baseline characterisation.	Natural England advises that temperature and salinity regime is provided in baseline characterisation, if possible.		These baseline characteristics are not relevant to Marine Geology, Oceanography and Physical Processes assessment and therefore are not included in the baseline. However, changes to temperature and salinity have been considered in the scoping assessment for Barnstaple Bay (GB610807680003) coastal water body as part of **Appendix 9.A: Water Environment Regulations Compliance Assessment** of the **Offshore ES**.
	2.16	8.4.1	Sediment transport has not been included in the baseline characterisation. There is a need to consider sediment sources and sinks, sediment transport pathways and cells and how these may be disrupted by the project.	Natural England advises that sediment transport patterns and rates, sources and sinks, pathways and cells are included in the baseline characterisation and any assessment demonstrates what the protected impacts from the proposed development are with clear evidence and rationale.		Sections on offshore and coastal sediment transport have been included within **Appendix F: Coastal Geomorphology Technical Note** of this **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002) using a variety of sources including the offshore geophysical survey and existing literature about the coast.
	2.17	8.4.1.2	This section provides some analysis of LiDAR data, but it lacks detail and	Further discussion and interpretation of the data would be beneficial, which would improve		The interpretation of the Lidar data has been expanded within **Appendix F:**

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			interpretation of other data sources, which compromises its value as a full conceptual model of the beach/dune system.	understanding of historic shoreline behaviour and enable predictions of future behaviour. It would also be beneficial to integrate wider literature into the coastal processes section, to provide a better understanding of coastal functioning, such as Pethick (2007) The Taw-Torridge Estuaries: Geomorphology and Management Report.		**Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002) to incorporate the wider literature on coastal processes including Pethick's 2007 publication titled: The Taw-Torridge Estuaries: Geomorphology and Management Report.
	2.18	8.4.1.9/Points 66-67	We note that lidar elevation data have been included for Saunton Sands, however, these do not show beach profile change, or intertidal erosion/accretion at the Taw Estuary. These need to be considered and assessed.	In order to gain a better understanding of the processes controlling temporal and spatial beach and estuarine-delta morphological change; inter-annual and intra-annual beach profile data and estuarine bathymetric/topographic data should be reviewed and used to support the Application assessments.		The description of morphological change along Saunton Sands beach and at the landfall using the Lidar data has been expanded within **Appendix F: Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002) to include erosion/accretion of the Taw-Torridge Estuary system. Inter-annual and intra-annual beach profile data and estuarine bathymetric/topographic data are not available. Furthermore this data is not considered helpful in such a dynamic environment. Longer term historic data identifying trends/patterns and conceptual understanding would give a enhance understanding of the scale of predicted change over time with sea level rise and coastal erosion. Additionally, it will also depend on management measures implemented withing the estuary.
	2.19	8.4.2 P22	The Do Nothing Scenario lacks detail as the baseline section does not contain enough information/a sufficient conceptual model to predict future coastal/estuarine evolution at the correct scale. The full impacts of the works, especially regarding cable exposure, are difficult to assess without this information.	Natural England advises that a more robust conceptual model of both the coastal and estuarine sections, is required by addressing the recommendations above. This should provide more certainty on local response in the Do Nothing Scenario.		**Appendix F: Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002) provides more detail on the baseline characterisation to develop a robust conceptual model of coastal/estuarine evolution to support impact assessment. More detail has also been covered within the note relating to the Do Nothing Scenario. Futurecoast and Shoreline Management Plans have also been used to inform **Chapter 8: Marine Geology, Oceanography and Physical Processes** of the **Offshore ES**.
Data Analysis, Modelling and Reporting	2.20	8.4.1.6 & 8.4.1.9/Points 69-70	It is stated that the coast will be most affected by environmental changes (including climate change driven sea level rise). Furthermore, it is stated that predicting coastal erosion rates is critical	In order to understand the shoreline response to future environmental change, with and without the proposed development, we advise that first a conceptual model needs to be established for the Saunton Sands beach-dune system and Taw-		**Appendix F: Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002) provides more detail on the baseline characterisation to develop a robust

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			to forecasting future problem areas. However, the baseline includes only lidar elevation data. As advised above, beach profile and estuarine bathymetric/topographic data should be considered and assessed to inform the conceptual understanding of the beach-dune and estuary-delta system evolution over the life-time of the project to ensure that infrastructure is appropriately located.	Torridge Estuary-delta system. This will also help inform understanding of the vulnerability of the proposed development to coastal change. We advise that this should be undertaken prior to consent to inform any permissions and that the Environment Agency may have further information to assist with this		conceptual model of coastal/estuarine evolution to support impact assessment. This has been used to update sections on the shoreline response to future environmental change, with and without the development. Inter-annual and intra-annual beach profile data and estuarine bathymetric/topographic data are not available.
	2.21	8.5.2/Points 89-90	WCS in terms of maximum sediment plume concentration, extent and persistence, as well as associated changes in bed levels should be evaluated, in particular for locations within/near sensitive areas of seabed (e.g. Lundy, MCZs, nearshore etc).	Prior to consent we advise that there is a requirement to show the anticipated maximum extent of sediment plumes, concentration, and persistence and associated bed level changes due to cable installation, in particular near/within sensitive areas of seabed and/or supporting habitat for mobile features.		The assessment of sediment plumes is conceptual and so a quantification of the maximum extent and concentration is not provided (and cannot be using this method). Expert assessment indicates that the plume generated from a predominantly sandy seabed (fine sediment constitutes less than 7% - see **Appendix F: Coastal Geomorphology Technical Note** (WHX001-FLO-CON-CAG-ASS-0002)) would be small, temporary, and would be within the range of natural variability. Hence, a more quantified (numerical) assessment is considered disproportionate. The assessment of the potential impact on sensitive areas of seabed is provided in **Chapter 8: Marine and Physical Processes** (**Section 8.5.3**) of the **Offshore ES**. In addition, the effects on suspended sediment concentrations do not directly impact upon the sensitive areas because the receptors are dominated by processes that are active along the seabed and not affected by sediment suspended in the water column.
	2.22	8.6.1/Point 100	The OWF infrastructure would cause a small wave shadow effect, and wave heights and current speeds would return to baseline conditions a short distance downstream. What is the spatial extent of these effects?	We advise that the spatial and temporal scale of any wave impacts are included in the Application assessment before we can agree with the conclusions which have been drawn		In **Chapter 8: Marine and Physical Processes** (**Section 8.6.1**) of the **Offshore ES**, it is stated that wave heights and current speeds would return to baseline conditions a short distance downstream and would not interact with changes from adjacent infrastructure due to the separation distances. From this we can conclude that the spatial scale of the wave shadow is less than the separation distance of the wind turbines. For context,

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						the minimum separation distance between wind turbines (in row) is 1,100m. Bespoke modelling of waves has been completed (**Appendix 8.A: Wave Modelling Report** of the **Offshore ES**) to assess the potential impact of the Offshore Project on waves at the coast (and also at the Windfarm Site itself).
	2.23	8.8	We note that there are a number of other floating offshore wind farms planned within the Celtic Sea in the vicinity of White Cross OWF. Has the potential impact of these other projects acting cumulatively with the proposed development been investigated in terms of changes to the wave climate?	From the Planned Level HRA for the Celtic Sea FLOW and other formal consultations can the Applicant please determine if all future plans and projects have been assessed in-combination/cumulatively.		**Chapter 8: Marine and Physical Processes** (**Section 8.8**) of the **Offshore ES** considers cumulative effects. The operational infrastructure at the Windfarm Site is a small obstacle to wave and tidal current passage, and the knock-on effects on bedload sediment transport, and hence the magnitude of impact is negligible. In the case of wave effects, there would also be reductions due to a shadow effect across a greater seabed area, but the changes in wave heights across this wider area are very low (a few percent) the changes in wave heights across this wider area are very low (a few percent) compared to the changes local to each wind turbine (tens of percent). The projects are several 10s of km's away from the Offshore Project and there is therefore no potential for cumulative effect on the identified receptors.
	2.24	8.5.1/Point 61	It is stated that landfall activities would cause a temporary short-term cessation of longshore beach sediment transport, due to the presence of the trench. It is concluded that this will have little effect on beach morphology owing to low longshore sediment transport rates in this area, as demonstrated by the lack of any distinct longshore driven morphological features. However, previous studies have suggested a sediment cell circulation pattern with sediment transported to the north of the bay and then offshore.	Natural England advises that this needs to be investigated further prior to consent to ensure any mitigation measures can be taken into account in the various permissions.		During construction, the use of trenching and related machinery on Saunton Sands for approx. 5 days, as described in the **Outline Cable Landfall Plan** (WHX001-FLO-CON-DES-PDE-0001) may reduce the rate of the predominant northward longshore sediment transport. However, this will have little effect on the beach morphology as the dominant wave direction (from the west) relative to the orientation of the beach and minimum refraction in the nearshore zone likely generates weak longshore sediment transport rates. Research by Pethick (2007) has shown beach sediment transport is more likely a result of a larger complex single

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						anticlockwise tidal current gyre within an ebb-tide delta. This gyre drives transport of sand north along the Northam Burrows shore, from where it bypasses the Taw-Torridge channel and arrives on Saunton Sands at Airy Point. It is likely that this sediment circulation drives some accumulation at the north end of Saunton Sands in the lee of Saunton Down. This system results in sand waves merging with the beach, facilitating coastal sediment transport or sand waves being transported by flood tide currents into the outer Taw-Torridge Estuaries via Crow Point. Here sediment is temporarily deposited before moving seaward to re-join the ebb-tide delta. This re-circulatory system explains the continued northerly transport of sediment along the coast despite the lack of any sediment inputs to Bideford Bay or erosion of the coast. Hence, alterations to longshore beach sediment transport will have little effect on the beach morphology. **Appendix F: Coastal Geomorphology Technical Note** of this **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002) provides more detail on the sediment cell and circulation to enhance the coastal conceptual model. This has then been used to further support the assessment provided in **Chapter 8: Marine and Physical Processes** (**Section 8.5.1**) of the **Onshore ES.**
Environmental Impact Assessment – Document Used: Chapter 5: Project Description; Chapter 8: Marine Geology, Oceanography and Physical Processes; Chapter 10 Benthic and Intertidal Ecology; Chapter 20 Onshore Ecology and Ornithology						
Identified Impacts	2.25	5.4.5/Point 37	Mooring lines associated with the 'Taut', and combination options will comprise of synthetic materials including plastics which are likely to increase micro plastics/filaments into the marine and/or coastal environment depending on predominant currents	We discourage the introduction of plastics to the marine environment and request that an assessment of the likelihood of plastics entering the marine/coastal environment over the lifetime of the project. Particular focus would is needed in relation to marine/Coastal protected sites and presence of mobile features. Consideration should also be given to alternatives and potential benefits of particular options outweighing any potential costs.		The final design of the mooring system including the material to be used for mooring cables is not known at this stage. The Applicant will work with the MMO to provide justification in their use and any alternatives that have been considered.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
				We would also welcome regulator including DEFRAs view on the use of synthetic moorings especially with more floating turbines being proposed.		
	2.26	Pages 1, 3, 6, 17, 18	Typo 'taught' has been used instead of 'taut'.	Please amend text.		Noted.
	2.27	Table 5.15 8.6.2/Points 113-114	The footprint has been calculated for the anticipated requirement for external protection requirement but there is no map showing locations where this requirement is anticipated.	Please provide a Cable Burial Risk Assessment to help determine in a form of a map, the location of where external protection is anticipated for sub-optimally buried cables and cable crossings.		The **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001) discusses the likely requirements for cable protection in the Windfarm Site and Offshore Export Cable Corridor. Excluding the possible requirement for stabilisation of inter-array cables in the vicinity of the WTGs (which is expected to have a spatial footprint of 22,400m^2), cable protection is not expected to be required in the Windfarm Site. There is an area of exposed bedrock in the Offshore Export Cable Corridor likely making cable burial in this location unfeasible (see Figure 5-11 in **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001) Therefore, cable protection will likely be required here amounting to a footprint for all sources of cable protection (including for crossings) of approx. 252,560m^2. Further geotechnical and geophysical surveys will further characterise the seabed sediment features within the Windfarm Site and Offshore Export Cable Corridor. If any sensitive features or areas not suitable for cable burial are identified in future surveys, it should be possible for the cable to be routed to avoid these areas.
	2.28	5.6/Point 80	If trenchless technique is selected at Landfall, it will be drilled from above MHWS at an onshore construction compound and will exit the seabed in an exit pit at a suitable water depth. Is it anticipated that cofferdams may be used during construction for the HDD exit pits? How long will the HDD exit pits be open and how many at one time?	Natural England advises that more information should be included in the application assessment on location, number and size of any exit pit cofferdam/s and how access will be achieved. Equally if exit pit/s is more intertidal/Subtidal an assessment of a barge bottoming out and/or jackup legs use should be included.		Recent geotechnical investigation at Landfall and within the Onshore Development Area (reported in **Appendix T: Onshore Ground Investigation Interpretative Report Annex 1** of this **ES Addendum**) has indicated that there is sufficient depth within the beach to undertake open trenching in the intertidal area. Therefore the Applicant can confirm that trenchless techniques won't be used in the intertidal/sub-tidal area.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	2.29	5.9.1.3/Point 152	We note the recovery of a cable will be performed by a suitable Dynamic Positioning (DP) vessel or anchor barge if in the nearshore region. A suitable dive spread/platform may also be needed.	Natural England advises that impacts on the nearshore due to the use of a DP vessel and dive spread/platform need to be considered and assessed as part of the Application, including the potential for propeller wash seabed erosion to identify potential impacts and related mitigation measures.		DP vessels use thrusters that operate in a lateral rather than vertical direction, and the vessels will have a minimum depth of water in which they can safely operate due to their specified under-keel clearance. Therefore for the distance from shore where a DP vessels may be used the depth of water / under-keel clearance will mean there is no impact on the seabed. Therefore, the worst case scenario for seabed indentations in the nearshore is for cable recovery using jack-ups, which has been assessed in **Chapter 8: Marine and Physical Processes** (**Section 8.5.4**) of the **Offshore ES**. Any release of suspended sediment through the cable recovery process would be very small compared to the release that would occur through installation of the cable and so the worst case scenario has been assessed as the latter and negligible adverse in significance (**Section 8.5.3** of the **Offshore ES**).
	2.30	Table 8.10	The embedded mitigation states that the Project will not use external cable protection in the nearshore including at the trenchless technique exit point. How will this be secured?	Natural England queries what is meant by nearshore and how any mitigation measures will be secured as a condition?		It is proposed that this is secured through a condition of the Marine Licence. The Applicant considers the nearshore as the area covered by the Bideford to Foreland Point MCZ.
	2.31	Table 8.10	The embedded mitigation also states that route selection and micro-siting of cables will be used to avoid areas of sandwaves and megaripples, which we also welcome. However, a significant volume of sediment is anticipated to be disturbed through sandwave removal, which is contradictory.	As per comment 7 Natural England advises that clarity is needed in relation to sandwave levelling locations, quantity (area and volume) and where deposition will be.		Locations of sand waves are identified in **Figure 5-3** of **Appendix 8.B: Geophysical Survey Results Report** of the **Offshore ES** and summarised in **Chapter 8: Marine and Physical Processes** (**Section 8.4.1.7** and **Section 8.5.2**) of the **Offshore ES**. In addition, the **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001) presents information on the presence of sand ripples, megaripples and sandwaves in both the Windfarm Site and the Offshore Export Cable Corridor (including figures of mobile sediment features). Whilst it is not possible to advise specific locations of seabed levelling at this stage (prior to a full suite of geophysical and geotechnical survey data being available), it is known

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						that within the Offshore Export Cable Corridor, sand wave levelling is estimated to require 5.6km of excavation along two cables, across an area of 280,000m^2 (volume of 842,400m^3 assuming an average sand wave height of 3m). Along the inter-array cables, excavation of 29,760m^3 of sand is anticipated (across an area of 14,880m^2) in the Windfarm Site. The total area of sand waves defined by Wood (2022) along the Offshore Export Cable Corridor is 7.62km^2. The area of sand wave levelling (294,880m^2) equates to only 3.9% of the total area of sand waves in the offshore export cable corridor. This is the worst case scenario which has been assessed in the **Offshore ES** and as negligible adverse in significance. Every effort will be made to avoid sandwaves (and megaripples) where feasible to do so.
	2.32	8.4.1 P20	General comment - The baseline section is missing some key aspects which compromise its use as a conceptual model on which to base our predictions of system response to cable installation.	Provide discussion of sediment characteristics (grain properties, suspended sediment concentrations and transport dynamics). Refer to NRW (2018) 'Guidance on Best Practice for Marine and Coastal Physical Processes Baseline Survey and Monitoring Requirements to Inform EIA of Major Development Projects'. This section should also be informed by the preliminary ground investigation		The NRW guidance has been reviewed to identify information that is missing from the baseline characterisation that is critical to the assessment of impacts. Detailed data on seabed sediment characteristics were included in **Chapter 8: Marine and Physical Processes** (**Section 8.4.1**) of the **Offshore ES**, including data compiled from 134 samples across the Offshore Development Area. Suspended sediment concentrations were obtained from a Cefas spatial dataset. The Applicant believes the characterisation of the sediment, both bedload and suspended, is robust. Nevertheless, more detail on sediment characteristics and transport is provided in **Appendix F: Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002).
	2.33	8.4.1 P20	General comment – The section does not provide any baseline understanding of the Taw Estuary.	Natural England advises that ideally there should be two baseline sections, each focussing on the coastal and estuarine section, respectively.		Further analysis of baseline conditions of the Taw-Torridge Estuary has been provided in **Appendix F: Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						ASS-0002) including its potential relationship with Saunton Sands. This has then been used to develop one baseline section/conceptual model which is also presented in **Appendix F**.
	2.34	Table 8.10	The embedded mitigation states that cables 'will be buried at sufficient depth to have no effect on coastal processes.' but there has been no assessment of future risk of cable exposure for any of the three proposed options (based on the trajectory of future shoreline behaviour). There is no comprehensive conceptual model within the baseline to inform how deep the cables would need to be to reduce future risk. At present there is insufficient evidence to support this conclusion.	Cable exposure needs to be assessed as a potential impact prior to mitigation. Please can the Applicant provide a cable burial risk assessment and an Outline Cable Specification and Installation plan to inform consent decisions.		The **Onshore Ground Investigation Factual Report** (**Annex 1** of **Appendix T: Onshore Ground Investigation Interpretative Report**) has been used to define the geological sequence and the thicknesses of the units to provide more detail and support for the baseline characterisation at the coast. These data have been used alongside an interpretation of future shoreline behaviour (beach elevation v sea-level rise) to support the assessment of potential cable exposure. This is reported in **Appendix F: Coastal Geomorphology Technical Note** of this **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002)**.** An **Outline Cable Specification and Installation Plan (Outline CSIP)** (WHX001-FLO-CON-ENV-PLN-0007) is provided as part of the Further Environmental Information submission. Appendix B of the CSIP is an updated version of the **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001). These documents set out the target burial depth in the intertidal zone (and other areas) and explain future cable exposure risks. They also explain how the exposure risk will be fully assessed once a full understanding of the geomorphology of the cable laying areas is established following the completion of future geophysical and geotechnical surveys.
	2.35		A Cable Burial Risk Assessment will be required as mitigation, but potential cable exposure still needs to be assessed as a potential impact.	Natural England advises that the assessment should include cable exposure and associated scour as a potential impact. The Applicant should expand baseline section to provide information to assess a prediction of shoreline recession/future beach evolution. Cross-reference to preliminary ground investigation.		An **Outline Cable Specification and Installation Plan (Outline CSIP)** (WHX001-FLO-CON-ENV-PLN-0007) is provided as part of the Further Environmental Information submission. Appendix B of the CSIP is an updated version of the **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001). These documents

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						set out the target burial depth in the intertidal zone (and other areas) and explain future cable exposure risks. It is assumed here that 'the impact of cable exposure and subsequent scour' means the impact of *remedial action (i.e., placement of cable protection)* in the event of cable exposure, *i.e., the potential for* subsequent scour caused by cable protection. Depending on its length and height above the seabed, cable protection could potentially affect waves, tidal currents, and sediment transport. However, the main impact would be potential interruption of bedload sediment transport processes across the seabed, rather than scouring which would be very minor. The localised nature of scour means only the finest sediment fractions from a thin layer of surface sediments will reside in the water column. Additionally, sediment would be suspended for short durations (likely to be a magnitude of days, or at maximum weeks) and would be limited to the lower layers of the water column (approximately within <10m of the seabed), minimising potential for further sediment transport. Therefore, any increase in suspended sediment concentration resulting from scour is most likely to be within the range of natural variability. In the unlikely event that sand or coarser is suspended, this will fall to the seabed in less time than the finer sediment fraction, shortly after disturbance. Due to this, there is minimal chance of any bed level change resulting from scour. Nevertheless, once parameters of the required cable protection (locations, spatial footprint, volumes, height and slope) are established following the detailed design phase, a numerical assessment of the cable protection's potential for scour will be provided. This will be assessed using methods such as those suggested by Broekema et al

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						(2024)[1] and Chambel et al (2024)[2]; the results of which will be used to assess the risk to nearby designated sites and/or sensitive areas of seabed. All assessments will be provided to the MMO and its advisers in order to identify suitable mitigation measures, if appropriate. However, this can only be undertaken once detailed design has taken place. The **Onshore Ground Investigation Factual Report** (**Annex 1** of **Appendix T: Onshore Ground Investigation Interpretative Report** (WHX001-FLO-CON-ENV-RPT-0001) has been used to define the geological sequence and the thicknesses of the units to provide more detail and support for the baseline characterisation at the coast. These data have been used alongside an interpretation of future shoreline behaviour (beach elevation v sea-level rise) to support the assessment of potential cable exposure. This is reported in **Appendix F: Coastal Geomorphology Technical Note** of this **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002)**.**
	2.36		Cable exposure also needs to be assessed for the Taw Crossing.	As above.		**Appendix A** of the **Onshore Ground Investigation Interpretative Report** (WHX001-FLO-CON-ENV-RPT-0001) presents information on the constructability of the River Taw HDD (Section 3). This document reports that the prevailing geology of this section is mudstone/siltstone bedrock which will enable a clean, self-supporting bore path to be drilled. Where the geology is found to be sand, steel casing will be driven to support the trench. The risk of cable exposure at this section is therefore largely eliminated since the cable bore will be installed through bedrock. In addition, **Appendix F: Coastal Geomorphology Technical Note** of this **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002) includes detailed appraisal of the Taw-Torridge Estuary system using existing data and information from

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						Pethick's 2007 publication titled: The Taw-Torridge Estuaries: Geomorphology and Management Report. These data have been used to support the assessment of potential cable exposure in the estuary.
	2.37	Paras 67 P27	"There is no significant effect on the Taw-Torridge Estuary SSSI because the cable will be installed using trenchless techniques." Use of GI to guide trenchless design/methodology needs to be discussed.	As per our previous advice, a complete geotechnical investigation is required to ensure no significant impact on beach/estuarine morphology as a result of trenchless cabling. As recommended in Appendix 5.A (p11, para 24) – a complete geotechnical investigation must be included as a post-consent planning condition that must be adhered to prior to any trenchless crossing works. This statement needs to be supported by data from the preliminary ground investigation, the value of which would be improved by the inclusion of geophysical as well as historical borehole data (the latter are already included). Ensure that monitoring prior to construction and following removal is included as license requirement- include remedial action if impact occurs.		The **Onshore Ground Investigation Factual Report** (**Annex 1** of **Appendix T: Onshore Ground Investigation Interpretative Report** (WHX001-FLO-CON-ENV-RPT-0001) of this **ES Addendum**) has been used to define the geological sequence and the thicknesses of the units in the Taw-Torridge Estuary system to guide trenchless cabling. **Appendix G: Hydrogeological Risk Assessment** of this **ES Addendum** has used this data to assess the risk at the Taw Estuary Crossing during the installation process. It has confirmed the conclusions of the ES that there is no likely significant effect to the Taw-Torridge Estuary SSSI. The Applicant is committed to completing full geotechnical investigations as well as pre and post construction monitoring as post-consent planning conditions. **Chapter 8: Marine and Physical Processes** (**Section 8.3.5**) of the **Onshore ES** indicates that cables will be buried at sufficient depth to have no effect on estuary processes.
	2.38	Para 69 P27	"energy levels at the beach are too high for significant deposition of finer sediment, both at the present day and historically. Hence, the volume of fine sediment excavated to create the trench, that could be suspended, would be very small" – baseline information required to support this statement.	Natural England advises that particle size analysis from sediment samples should be used to determine likely Suspended Sediment Concentrations and plumes and any deposition.		Detailed data on seabed sediment characteristics were included in **Chapter 8: Marine and Physical Processes** (**Section 8.4.1**) of the **Offshore ES**, including data compiled from 134 samples across the Offshore Development Area. Suspended sediment concentrations were obtained from a Cefas spatial dataset. The Applicant believes the characterisation of the sediment, both bedload and suspended, is robust. Nevertheless, more detail on sediment characteristics and transport is provided in **Appendix F: Coastal Geomorphology Technical Note** (WHX001-FLO-CON-CAG-ASS-0002)**.**

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						Particle size data along the beach were not collected as part of the assessment, but the nature of the beach exposed to swell from the west would suggest that, conceptually, the beach would contain an insignificant quantity of fine sediment. The Applicant believes that collection of beach samples and detailed particle size distribution analysis is disproportionate to understanding the potential release of fines from such a small volume of sediment, which would be dispersed rapidly in the high energy beach environment.
	2.39	8.5.1	It is not stated whether beach access will be required during cable installation works at landfall.	Natural England is concerned about how beach access will be achieved during any landfall works. We therefore request that this is included in an Outline Cable landfall plan at Application which is updated prior to construction.		Public access to the beach, including to the sea, will be maintained for the duration of the works at landfall with full access along the existing slipway maintained. More detail on access is provided in **Section 5** of this **ES Addendum** and the **Outline Cable Landfall Plan** (WHX001-FLO-CON-DES-PDE-0001).
	2.40	8.5.1/Point 67	The assessment of impacts on the Taw-Torridge Estuary SSSI concludes no significant effect due to cable installation. However, previous studies have shown that there is considerable uncertainty regarding the future evolution of the estuary mouth and its tidal deltas. Therefore, we are concerned that the response of this feature to both sea level rise, future estuary management, and cable installation over the lifetime of the project, have not been adequately assessed.	We advise that the geomorphology of this feature, its evolution, future management and response to cable installation (and potential O&M) over the lifetime of the project need to be further assessed as part of the Application.		**Appendix F: Coastal Geomorphology Technical Note** of this **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002) provides more detail on the baseline characterisation to develop a robust conceptual model of coastal/estuarine evolution to support impact assessment. More detail has also been covered within the note relating to how the estuary might respond to cable installation over the lifetime of the project. Futurecoast and Shoreline Management Plans have also been used to inform **Chapter 8: Marine Geology, Oceanography And Physical Processes** of the **Offshore ES**.
	2.41	8.5.1/Point 75	It is stated that due to the short-term nature of the construction programme, and long-term low rates of vertical change at Landfall, cable installation would lead to low and temporary changes to the beach. However, vertical change in beach profile throughout the lifetime of the development needs to be considered.	Natural England advises that vertical change in beach profile throughout the lifetime of the development, including consideration of future environmental change should be assessed as part of the Application.		**Appendix F: Coastal Geomorphology Technical Note** of this **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002) includes an assessment of potential effect of sea-level rise on future coastal morphological development (vertical change) of Saunton Sands beach.
	2.42	8.5.2/Point 81	Within the Offshore Export Cable Corridor (OECC), sandwave levelling is estimated	We advise that all possible efforts should be made to avoid the areas of sandwaves/minimise the need		Locations of sand waves are identified in **Figure 5-3** of **Appendix 8.B:**

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			to require 5.6km of excavation along two cables, across an area of 280,000m2 /volume of 842,000m3 (based on sandwave height of 3m). A further 29,760m3 of sand excavation is anticipated along the inter-array cables. However, the embedded mitigation (Table 8.10) sandwave and megaripple areas will be avoided.	for clearance by micro-routing the cable(s). Otherwise, the WCS must be fully assessed as set out in previous comments.		**Geophysical Survey Results Report of Chapter 8: Marine and Coastal Processes** of the **Offshore ES** and summarised in **Section 8.4.1.7** and **Section 8.5.2**. An additional figure identifying locations of sand waves, megaripples and designated sites within the Offshore Export Cable Corridor is provided in **Annex 1** of this document. In addition, the **Cable Burial Risk Assessment (CBRA**) (WHX001-FLO-CON-ENG-RSA-0001) presents information on the presence of sand ripples, megaripples and sandwaves in both the Windfarm Site and the Offshore Export Cable Corridor (including figures of mobile sediment features). The estimated volume of sandwave levelling assessed in **Chapter 8: Marine Geology, Oceanography And Physical Processes** (**Section 8.5.2**) of the **Offshore ES** is the worst-case volume which was deemed to be of negligible adverse significance. Further geotechnical and geophysical surveys will characterise the seabed sediment features within the Windfarm Site and Offshore Export Cable Corridor. All efforts will be made to avoid the areas of sandwaves/minimise the need for clearance avoid; however, the figures quoted here represent the worst case scenario of sandwave levelling.
	2.43	8.5.2/Point 82	It is stated that the effects of sandwave levelling on the surrounding environment are anticipated to be small 'because it is likely that the natural changes to the sandwaves, through the active physical processes, are far greater than the quantities of sand that would be extracted.' If close to the coast, this activity could have impacts on the nearshore and in particular designated sites (e.g. Bideford to Foreland MCZ and Lundy Island).	We advise that areas requiring sandwave levelling should be identified on a map and potential impacts to sensitive receptors considered and assessed. We also advise that cleared material should be 'intelligently' placed so that excavated material quickly infills the excavated depression.		Locations of sand waves are identified in: • **Figure 5-3** of **Appendix 8.B: Geophysical Survey Results Report** of the **Offshore ES** • the **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001) and • **Chapter 8: Marine Geology, Oceanography and Physical Processes** (**Section 8.4.1.7** and **Section 8.5.2**) of the **Offshore ES**.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						Sandwave levelling close to the coast (i.e., within Bideford to Foreland Point MCZ) is not anticipated because the sandwaves are located offshore and not inside the boundary of the MCZ. **Section 8.5.2 of the Offshore ES** states that the sediment arising from sand wave removal would be disposed back to the seabed local to its extraction and so there would be no net loss of sediment within the area. Further, **Section 8.5.2** assesses the potential impacts on the wider environment including South West Approaches to Bristol Channel MCZ, Bideford to Foreland Point MCZ and Lundy Island. The Project Habitats Regulations Assessment (**Appendix 6.A of FLO-WHI-REP-0002-06 Chapter 6 EIA Methodology of the Offshore ES**) and MCZ Assessment (**Appendix 10. A of FLO-WHI-REP-0002-10 Chapter 10 Benthic and Intertidal Ecology of the Offshore ES**) include assessments of the impacts of sandwave levelling (e.g., suspended sediment and deposition during construction) on South West Approaches to Bristol Channel MCZ Lundy MCZ, Lundy SAC and Bideford to Foreland Point MCZ. All site assessments concluded that there will be no adverse effect or hindrance to achieving any conservation objectives from sandwave levelling.
	2.44	8.5.2/Point 83	It is stated that following sandwave removal, excavation of the trench, cable installation and backfilling, sandwaves will reform. Furthermore, can it be demonstrated that natural processes will sufficiently bury the cables in the dredged trench to target burial depth? There is no reference to estimated timescales for sandwave/bedform recovery.	We advise that as part of the application sandwave/bedform recovery timescale should be provided along with supporting evidence that natural processes will sufficiently bury cables to target burial depth.		Evidence for sandwave recovery has been published for Race Bank Offshore Wind Farm which is located inside the boundary of Haisborough, Hammond and Winterton SAC. Evidence presented[10] suggests that the direct changes to the seabed associated with sandwave levelling recovered within 13 months, which is due to natural sand transport pathways. The

[10]Appendix 2 of https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010087/EN010087-002841-The%20Applicant's%20Response%20to%20Request%20for%20Further%20Information.pdf

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						results showed that the seabed had completely or nearly completely recovered to pre-construction levels (greater than 75% recovery of sand waves in all areas). At Haisborough, Hammond and Winterton SAC sand bank system, it was therefore concluded that the overall form and functioning of any sandwave is not disrupted by levelling or cable installation methods. Whilst the sandwave recovery evidence is for a different region, the conclusions are considered relevant to the Celtic Sea region. Notably, excavated sediment will be replaced following the completion of works to fill trenched areas and bury cables. Natural process will then facilitate bedform recovery. The rate of this recovery is dependent on the nature of the bedforms (likely to be the magnitude of months to two years to fully reform). Natural processes will not be relied upon to bury the cables in the dredged trench. Further information is presented in Section 4.1.1 of the **Outline Cable Specification and Installation Plan (Outline CSIP)** (WHX001-FLO-CON-ENV-PLN-0007).
	2.45	8.5.2/Points 84-85	It is not clear if sandwave levelling/removal is anticipated to be required within the MCZ or near Lundy Island. Consequently, the sensitivity and significance of effect on these receptors cannot be assessed.	We advise that the Applicant provide further assessment/clarification on this matter.		Locations of sand waves are identified in: • **Figure 5-3 of Appendix 8.B: Geophysical Survey Results Report** of the **Offshore ES** • the **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001) and • **Chapter 8: Marine Geology, Oceanography and Physical Processes (Section 8.4.1.7** and **Section 8.5.2**) of the **Offshore ES**. Sandwave levelling close to the coast (i.e., within Bideford to Foreland Point MCZ) is not anticipated because the sandwaves are located offshore and not inside the boundary of the MCZ.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						Section 8.5.2 of the Offshore ES states that the sediment arising from sand wave removal would be disposed back to the seabed local to its extraction and so there would be no net loss of sediment within the area. Further, **Section 8.5.2** assesses the potential impacts on the wider environment including South West Approaches to Bristol Channel MCZ, Bideford to Foreland Point MCZ and Lundy Island. The Project Habitats Regulations Assessment (**Appendix 6.A** of FLO-WHI-REP-0002-06 **Chapter 6 EIA Methodology** of the **Offshore ES**) and MCZ Assessment (**Appendix 10. A** of FLO-WHI-REP-0002-10 **Chapter 10 Benthic and Intertidal Ecology** of the **Offshore ES**) include assessments of the impacts of sandwave levelling (e.g., suspended sediment and deposition during construction) on South West Approaches to Bristol Channel MCZ, Lundy MCZ, Lundy SAC and Bideford to Foreland Point MCZ. All site assessments concluded that there will be no adverse effect or hindrance to achieving any site conservation objectives from sandwave levelling.
	2.46	Table 8.12 P18	Under 'Construction impacts on the form and function of the coast landward of MLWS due to cable installation', also need to consider that the presence of a trench might persist and change beach/dune morphology. Under 'Construction impacts on the form and function of the coast landward of MLWS due to cable installation' also need to consider Taw Crossing	Natural England advises that the assessments are updated to consider potential indirect impacts landwards of MLWS.		Clarification of the construction process at landfall landwards of MLWS is provided in: • the **Outline Cable Landfall Plan** (WHX001-FLO-CON-DES-PDE-0001) • **Section 5** of this **ES Addendum** • the **Outline Cable Specification and Installation Plan (Outline CSIP)** (WHX001-FLO-CON-ENV-PLN-0007). The indicative period for cable installation will be 5 days. The cable will be installed by a non-displacement type cable plough to minimise disturbance. As it installs the cable the excavated material falls back into the cable trench so that the

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						topography post-installation will be the same as the topography pre-installation. To confirm this, monitoring prior to cable installation in the intertidal and following backfilling will be undertaken, including remedial action if the levels do not match Hence, the trench will not persist post installation, and will not change beach morphology. The cable crossing of the Taw-Torridge estuary system will be trenchless and will have no impact on estuary morphology as it will be below the extent of morphological change. However, a more detailed geomorphological appraisal of the Taw-Torridge Estuary system and its potential future evolution will be provided.
	2.47	Table 8.12 P18	There is no reference to operational impacts from cable installation as a result of potential future cable exposure and associated scour.	Natural England advises that potential cable exposures require assessment.		An **Outline Cable Specification and Installation Plan (Outline CSIP)** (WHX001-FLO-CON-ENV-PLN-0007) is provided as part of the Further Environmental Information submission. Appendix B of the CSIP is an updated version of the **Cable Burial Risk Assessment (CBRA**) (WHX001-FLO-CON-ENG-RSA-0001). These documents set out the target burial depth in the intertidal zone (and other areas) and explain future cable exposure risks. They also explain how the exposure risk will be fully assessed once a full understanding of the geomorphology of the cable laying areas is established following the completion of future geophysical and geotechnical surveys.
	2.48	8.6.3	It is not known if any MPAs are likely to be affected by the placement of cable protection measures. Specific locations should be informed by geophysical data and further details provided. Methods of cable protection placement should also be provided.	Our advice is to use the avoid – reduce – mitigate hierarchy to minimise environmental impacts. Therefore, our advice is to avoid cable protection within MPAs. Where it is deemed necessary, we advise that specific locations should be identified, along with the presence of sensitive habitats and total area of impact. Methods used for placing cable protection measures should also be considered. Furthermore, we advise selection of cable protection materials to match the receiving environment. Please also refer to NE & JNCC (2022) best practice for subsea cables.		The **Cable Burial Risk Assessment (CBRA**) (WHX001-FLO-CON-ENG-RSA-0001) discusses the likely requirements for cable protection in the Windfarm Site and Offshore Export Cable Corridor. Excluding the possible requirement for stabilisation of inter-array cables in the vicinity of the WTGs (which is expected to have a spatial footprint of 22,400m^2), cable protection is not expected to be required in the Windfarm Site. Furthermore, the Windfarm Site does not overlap with any designated sites; the

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						closest site to the Windfarm Site that is designated for benthic features[11] is the South West Approaches to Bristol Channel MCZ, located 8.93km away. To date, no evidence has been found for other non-designated sensitive habitats within the Windfarm Site, e.g., the presence of reefs, either rocky or biogenic. There is an area of exposed bedrock in the Offshore Export Cable Corridor likely making cable burial in this location unfeasible (see Figure 5-11 in **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001). Therefore, cable protection will likely be required here amounting to a footprint of approx. 252,560m^2 . The proposed Offshore Export Cable Corridor overlaps with two sites designated for benthic features only where it nears landfall: Bideford to Foreland Point MCZ and Braunton Burrows SAC; however, the expected area requiring cable protection does not overlap with designated sites and the Project has made a commitment to avoid installing cable protection within the boundary of this MCZ. Further geotechnical and geophysical surveys will characterise the seabed sediment features within the Windfarm Site and Offshore Export Cable Corridor. If any sensitive features or areas not suitable for cable burial are identified in future surveys, it should be possible for the cable to be routed to avoid these areas. The Applicant commits to selecting cable protection materials to match the receiving environment, where possible, and will fully comply with the Natural England and Joint Nature Conservation Committee's '*Nature conservation considerations and environmental best*

[11]note that the Bristol Channel Approaches SAC is closer but is designated for harbour porpoise and not for benthic features.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						practice for subsea cables for English Inshore and UK offshore waters' (published in September 2022). Evidence of compliance will be presented in the final **Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007).
	2.49	Table 8.20	The Devon coast has been identified as a receptor however, this is a very long stretch of coast. It would be useful to consider impacts to more specific coastal receptors such as Saunton Sands, Bideford Bay, MCZ etc. Furthermore, without more detailed information on the likely location and extent of cable protection measures, we cannot yet agree with the assessment of sensitivity and significance.	We advise that consideration is given to potential impacts to more specific coastal receptors i.e. Saunton Sands, Bideford Bay, MCZ etc. based on likely location and extent of cable protection measures.		The Devon coast is used as an overall receptor in the **Offshore ES**. However, the coast is broken down into smaller receptors in **Chapter 8: Marine Geology, Oceanography And Physical Processes** (**Section 8.3.5**) of the **Onshore ES,** where the potential for impacts can be more easily geographically limited. Hence, in the **Onshore ES**, consideration is given to more specific coastal receptors, that are not directly relevant to the **Offshore ES**. **Chapter 8: Marine Geology, Oceanography And Physical Processes** (**Section 8.3.5**) of the **Offshore ES** states that the use of external cable protection would be minimised in all cases and no cable protection would be in the nearshore including within the boundary of Bideford to Foreland Point MCZ The **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001) discusses the likely requirements for cable protection in the Windfarm Site and Offshore Export Cable Corridor. Excluding the possible requirement for stabilisation of inter-array cables in the vicinity of the WTGs (which is expected to have a spatial footprint of 22,400m^2), cable protection is not expected to be required in the Windfarm Site. Furthermore, the Windfarm Site does not overlap with any designated sites; the closest site to the Windfarm Site that is designated for benthic features[12] is the South West Approaches to Bristol Channel

[12] note that the Bristol Channel Approaches SAC is closer but is designated for harbour porpoise and not for benthic features.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						MCZ, located 8.93km away. To date, no evidence has been found for other non-designated sensitive habitats within the Windfarm Site, e.g., the presence of reefs, either rocky or biogenic. There is an area of exposed bedrock in the Offshore Export Cable Corridor likely making cable burial in this location unfeasible (see Figure 5-11 in **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001). Therefore, cable protection will likely be required here amounting to a footprint of approx. 252,560m^2 . The proposed Offshore Export Cable Corridor overlaps with two sites designated for benthic features only where it nears landfall: Bideford to Foreland Point MCZ and Braunton Burrows SAC; however, the expected area requiring cable protection does not overlap with designated sites and the Project has made a commitment to avoid installing cable protection within the boundary of this MCZ. Further geotechnical and geophysical surveys will characterise the seabed sediment features within the Windfarm Site and Offshore Export Cable Corridor. If any sensitive features or areas not suitable for cable burial are identified in future surveys, it should be possible for the cable to be routed to avoid these areas.
	2.50	8.5.2 Para 79	"This excavated sediment would be backfilled into the trench by mechanical means to re-instate the beach to its original morphology." – this is not stated in the project description chapter – it is stated there that "A non-displacement type cable plough will be employed, this causes relatively little disturbance with the majority of the sediment falling back into the trench as the cable is laid." If the latter method, it is essential that any indentation is mechanically backfilled/profiled to match existing beach levels and sediment layering.	Natural England advises that conditions are required within an Outline Cable specification and installation plan to ensure that any indentation is mechanically backfilled to match existing beach levels, or if left to natural processes this needs to be justified with use of the baseline characterisation. This will need to be monitored prior to construction and following reinstatement as license requirement- incl remedial action if impact occurs.		Clarification of the construction process at landfall is provided in: • the **Outline Cable Landfall Plan** (WHX001-FLO-CON-DES-PDE-0001) • **Section 5** of this **ES Addendum** • the **Outline Cable Specification and Installation Plan (Outline CSIP)** (WHX001-FLO-CON-ENV-PLN-0007). The cable will be installed by a non-displacement type cable plough to minimise disturbance. As it installs the

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						cable the excavated material falls back into the cable trench so that the topography post-installation will be the same as the topography pre-installation. To confirm this, monitoring prior to cable installation in the intertidal and following backfilling will be undertaken (see the **Outline Cable Specification and Installation Plan (Outline CSIP)** (WHX001-FLO-CON-ENV-PLN-0007), including remedial action if the levels do not match. Hence, the trench will not persist post installation, and will not change beach morphology.
	2.51	8.5.1 Para 73	"Assuming the worst-case scenario, a trench would be cut across the beach providing an almost continuous barrier to sediment transport for a period of up to five days" – in the project description it states 14 days for open trench cut (unless that is including other activities?).	Natural England requests that the Applicant provide further clarification on this		Clarification of the construction process at landfall is provided in: • the **Outline Cable Landfall Plan** (WHX001-FLO-CON-DES-PDE-0001) • **Section 5** of this **ES Addendum** • the **Outline Cable Specification and Installation Plan (Outline CSIP)** (WHX001-FLO-CON-ENV-PLN-0007). The indicative period for cable installation through the intertidal, from bringing the cable ashore to final reinstatement, will be 5 days. Although the installation with the cable plough through the intertidal area would be completed within a single tidal period (approximately 6 hours) from flood tide to ebb tide to take advantage of the high tide. There would be no change to the conclusions of the **Chapter 8: Marine and Coastal Processes** of the **Onshore ES**.
	2.52	10.3.3 Table 10.8	Impacts of construction identified are limited to those associated with offshore construction and do not consider inshore impacts associated with construction which may be manifested in the intertidal.	We advise that the Worst Case Scenario Assessment should include consideration of construction impacts inshore, in particular potential for impacts within the Taw Torridge Estuary. Potential impact pathways associated with HDD of cable route include noise and vibration upon migratory fish and wading bird receptors. Onshore construction may result in the release of sediment into watercourses feeding into the estuary giving rise to intertidal impacts including increased suspended sediments and deposition, re-		The WCS assessments included consideration of construction impacts inshore. The impacts of other noise making activities, superficially those of low level non-impulsive types are assessed within **Chapter 11: Fish and Shellfish Ecology** (**Section 11.5.3.1.3**) of the **Offshore ES**. It is noted that HDD noise modelling was not specifically undertaken,

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
				mobilisation of contaminated sediment which may be generated by onshore construction should be considered upon estuarine habitats, water quality. Furthermore the potential for "Frac-Out" in the intertidal during the HDD beneath the estuary should be fully assessed, measures proposed for minimising the risk and mitigation developed accordingly in the event that it does occur.		however works of this type will likely fall within the scale of magnitude of low level non-impulsive noise, as opposed to the magnitude of impact anticipated from UXO or impact piling. The modelling of low level non-impulsive noise is intended for application across any location in or around the Project site, and so remains relevant at the River Taw. It is assessed that the magnitude of HDD activities will be **negligible**. As this is less than the potential magnitude of other low level non-impulsive noise impacts, the magnitude for Other Noise Making Activities therefore remains as low, as indicated within **Section 11.5.3.2.3**, and sensitivity remains as **negligible**, as indicated within **Section 11.5.3.3.3**. Due to the low magnitude of the impact and the negligible sensitivity of the most sensitive receptor group to other noise making activities, these activities are assessed as having a **Negligible** effect, which is **Not Significant** in EIA terms. Indirect disturbance to habitats within the Taw-Torridge Estuary SSSI, including from frac out, are considered within **Chapter 16: Onshore Ecology and Ornithology** (**Section 16.5.5**) of the **Onshore ES.** A short-term and temporary minor adverse indirect effect on the Taw-Torridge Estuary SSSI is non-significant. **Appendix T: Onshore Ground Investigation Interpretative Report** of this **ES Addendum** provides data which shows the ground conditions are suitable for use of a trenchless technology under the Taw Estuary and confirms the previous conclusion that risk of frac out is low. Further assessment of the risk of frac out, and the mitigation measures to be employed during construction are provided in an **Outline Bentonite Management Plan (Outline BMP)** (WHX001-FLO-CON-ENV-PLN-0012) which

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						is provided as part of the **Further Environmental Information**. WCOWL consider that this supports the conclusions of the **Chapter 10: Benthic and Intertidal Ecology** of the **Offshore ES** that as the entry and exit areas for the trenchless technique used to cross the estuary are above MHWS, there will be no impacts relating to benthic and intertidal ecology.
	2.53	10.3.5 Fig 10.2	Benthic & Intertidal Ecology Survey sampling locations are located entirely along the offshore cable route with no sampling locations deployed along the Taw Torridge Estuary crossing of the cable route.	We advise that the Benthic & Intertidal Ecology survey should include sampling locations within the Taw Torridge Estuary in order that the impacts upon the features of the SSSI and adjacent Braunton Burrows SAC can be fully assessed.		As detailed in **Chapter 5: Project Description** and **Appendix 5.A: Braunton Burrows and Taw Estuary Crossing Method Statement** of the **Onshore ES** the cable will be installed via a trenchless method below the Taw-Torridge Estuary system. Hence, collection of a suite of sediment samples would not add value to the assessment because there will be no seabed impacts (however, see responses to potential cable exposure comments).
	2.54	10.4.1 Para 47	Entry and exit areas for HDD may be located above MHWS but impacts of noise and vibration and potential FracOut during HDD beneath estuary are not considered by the assessment.	We advise that a full assessment of potential impacts to the intertidal estuarine environment of the construction of the proposed project should be provided. Our primary concern is that impacts are minimised.		See response to 2.52 (**Table 4**) above.
	2.55	20.3.10 Paras 44 & 45	It is stated that key potential impacts relate to the construction phase and maintenance activities (if required).	We advise that activities associated with requirement for ongoing maintenance during the operational phase should be scoped into the worst case scenario assessment.		Clarification on the ongoing maintenance requirements during the Operations and Maintenance Phase of the Project is provided in **Section 5.3** of this **ES Addendum**. Operation and maintenance activities are scoped into the assessment of **Chapter 20: Onshore Ecology and Ornithology** (**Section 20.6**) of the **Offshore ES**. There would be no change to the conclusions of the **Chapter 20: Onshore Ecology and Ornithology** of the **Offshore ES**.
	2.56	20.4.1 Fig. 20.3	Designated sites - missing	We request that within a map outlining the study area for onshore ecology & ornithology all designated sites are included		**Chapter 20: Onshore Ecology and Ornithology** (**Figures 20.1 to 20.5**) **of the Offshore ES** which were omitted in

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	2.57	20.4.3 Fig 20.4	Non-statutory nature conservation sites - missing	We request that within a map outlining the study area for onshore ecology & ornithology all non-statutory nature conservation sites are included.		error are provided within **Annex 5** of this document. These show the study area related to the Offshore Project. **Chapter 16: Onshore Ecology and Ornithology** (**Figure 16.1**) of the **Onshore ES** includes the full study area. **Annex 9** of this document shows the designated sites in proximity to the Onshore Development Area.
	2.58	20.4.3.3 Para 66	It is stated that priority habitats identified within the landfall are maritime cliffs and slopes and in the Taw Estuary Crossing include lowland fens and reedbeds.	This chapter is concerned with the potential impacts of the onshore ecology receptors of construction, operation and maintenance & decommissioning phases seaward of MHWS. It is Natural England`s understanding that only those impacts that would arise from activities within and below MHWS springs are assessed with the closest elements to onshore being at the Landfall and the Taw Estuary Crossing. Activities and infrastructure above MHWS are assessed within the onshore application. The habitats referred to are typically found above MHWS and so their inclusion here is not necessary and has potential to cause confusion.		Habitats above MHWS were considered within the study area for the **Offshore ES** as defined in **Chapter 20: Onshore Ecology and Ornithology** (**Table 20.4**) of the **Offshore ES**.
	2.59	20.5.3 Para 149	It is stated that the trenchless methods would entail the entry and exit points to be located inland of the coastal defence embankments and thus outside of the subtidal and intertidal areas of the estuary. As such there would be no physical disturbance within the estuary as the trenchless techniques would be located c. 10m or more below the bed of the estuary.	We advise that construction impacts associated with HDD including potential for frac-out and noise and vibration should be included in a worst case scenario assessment of construction impacts in relation to onshore ecology & ornithology.		Direct impacts associated with HDD frac-out and noise and vibration are considered within the **Onshore ES** as they are above MHWS. Specifically in **Chapter 16: Onshore Ecology and Ornithology** of the **Onshore ES**, frac-out is considered in **Section 16.5.3** and **Section 16.5.5**. **Section 16.5.14** considers noise and vibration impacts.
	2.60	20.12 Table 20.28	Impact 12: Disturbance to or introduction of non-native invasive species at the Taw Estuary Crossing – proposed mitigation is identified as good site practice measures for managing the spread of invasive species.	We advise that this should be augmented on site by ECoW and tool box talks advocating the Check Clean Dry approach.		The Applicant can confirm that measures such as tool box talks, Check Clean Dry and Ecological Clerk of Works (ECoW) supervision are good site practice measures for working in / near water environments and will be included as part of the final CEMP. An **Outline Cable Construction Environment Management Plan (Outline CEMP)** (WHX001-FLO-CON-ENV-PLN-0010) and **Outline Invasive Non-Native Species Management Plan (Outline INNSMP)** (WHX001-FLO-CON-ENV-PLN-0009) are provided as part

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						of the **Further Environmental Information** submission.
Methodology	2.61	8.3.2/Point 18 & 8.3.4	Only receptors with geological or geomorphological value or function have been included in the EIA. Water column features such as stratification should also be considered.	We advise that changes to water column features should be included in the EIA due to the project alone and in combination with other nearby projects/plans.		Given that the water column stratification is highly dynamic and ephemeral landscape-scale feature, it would not be affected by localised, small-scale changes in water column turbulence induced by eight floating wind turbines. The strength of stratification (due to buoyancy forces) would be sufficient to overcome any very minor increased mixing induced by the development. The Applicant considers the inclusion of an assessment of water column impacts of this nature is not proportionate for a development of this scale.
	2.62	8.3.2.2	The determination of significance has been guided by the use of an effect significance matrix. It is worth noting that CIEEM (2018) avoid and discourage the use of a matrix approach and categorisation.	We would also add that it is important to make a clear distinction between evidence-based and value-based judgements to identify where subjective evaluation has been used.		Please refer to **Comment ID 11 in Section 1** (Table 1) of this document which provides a detailed response to the use of the significance matrix approach.

4. Response to Comments relating to Terrestrial Ecology

6. **Table 5** outlines the Applicant's response to the key concerns raised by Natural England in relation to Terrestrial Ecology.

7. Table 6, Table 7, Table 8, Table 9 and Table 10 outlines the Applicant's response to Natural England's key advice and recommendations.

Table 5 Summary of Natural England's Key Issues – Terrestrial Ecology

NE Ref	Document Ref	Subject Area	Summary of NE's Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk Level	Applicant's Response
B1	16.4.2.6 Taw Torridge Estuary	Coastal Habitats	Petalwort *Petalophyllum ralfsii* is a nationally rare species and Annex II species which is also a protected SAC species. Onshore Development Area immediately north of the estuary, in the vicinity of Crow Point car park, has potential for petalwort to be present. Petalwort is not covered by NVC/botanical survey therefore precise locations unknown for avoidance of damage, impacts cannot be ruled out.	We advise that a petalwort survey is carried out in this location and within Braunton Burrows during the winter months/optimal season by a competent/ experienced bryophyte surveyor		Petalwort has been considered in the assessment. Documented locations of Petalwort that were provided to the project by Natural England are shown in **Annex 3**. The Applicant commissioned a specialist bryologist sub-consultant with experience of petalwort to undertake a desk-based assessment and field survey to address this comment, the results are presented in **Appendix L: Petalwort Desk Based Assessment and Survey** of this **ES Addendum**. The survey confirms the findings and assessment within the **RIAA** that there are no petalwort within the Project's works areas and thus no impact will arise **Appendix 6.A: Habitats Regulations Assessment: Report to Inform Appropriate Assessment** (**Section 6.4.2.2.1**) of the **Onshore ES**. There would be no change to the conclusions of the **Chapter 20: Onshore Ecology and Ornithology** of the **Offshore ES**.
B2	16.4.5 Scope	Coastal Habitats	Potential for trenchless techniques (HDD or direct pipe) upon groundwater dependent humid dune slack and petalwort. Braunton Burrows SAC features have not been considered as part of this assessment.	We advise that hydrology impacts should be fully assessed, including subsurface hydrology and indirect effects. Consider all groundwater dependent habitats and species potentially impacted by trenchless (HDD/direct pipe) and open trench cable installation methods.		The Applicant can confirm that has been considered in the assessment. The soils comprise sandy deposits overlaid by silty soil (as confirmed in geotechnical investigations **Appendix T: Onshore Ground Investigation Interpretative Report Annex 1: Onshore Ground Investigation Factual Report** of this **ES Addendum**), as such the presence of the ducting for the cable (which will be up to 560mm in diameter) in this very high porosity environment would not impact on groundwater, either directly or indirectly. As no change would occur, no impact on any habitats or species would arise. The results of the geotechnical investigations have been used to inform further hydrogeological modelling and risk assessment, see **Appendix G: Hydrogeological Risk Assessment** of this **ES Addendum**, and conclusions stated in **Annex 2: Hydrogeological Technical Note** of this document. The Applicant commissioned a specialist bryologist sub-consultant with experience of petalwort to undertake a desk-based assessment and field survey to address this comment, the results are presented in **Appendix L: Petalwort Desk Based Assessment and Survey** of this **ES Addendum**. **Appendix L: Petalwort Desk Based Assessment and Survey** shows that NVC dune slack communities SD15c and

NE Ref	Document Ref	Subject Area	Summary of NE's Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk Level	Applicant's Response
						SD16b in the northern part of Braunton Burrows are not close to the Onshore Development Area. Given no presence of petalwort in the Project's works areas and the localised (and temporary) nature of any hydrogeological change no effect on petalwort is concluded. This supports the findings as reported in **Appendix 6.A Combined RIAA** (**Section 6.4.2.2.1**) of the **Onshore ES**.
B3	Appendix 16.P 3.2 NVC Communities	Coastal Habitats	Mapped onshore corridor suggests some potential for overlap with known petalwort records and associated SD14a communities identified in NVC survey.	Advise that the potential for impacts upon petalwort populations in this location requires full consideration and mitigation proposed to avoid AEOSI.		As noted above, no ground works are taking place within the SAC, and the nearest works to potential petalwort at Crow Point Car Park are in excess of 200m away, thus there is no potential for impact and therefore no mitigation required. The Applicant commissioned a specialist bryologist sub-consultant with experience of petalwort to undertake a desk-based assessment and field survey to address this comment, the results are presented in **Appendix L: Petalwort Desk Based Assessment and Survey** of this **ES Addendum**.
B4	14.4.2.5 Abstractions Para 207	Coastal Habitats	Due to climate change and associated warmer, drier summers, water resources associated with the Secondary A aquifer that characterises the Onshore Project may come under more pressure, due to more permits to abstract being sought. This could have associated impacts on surface and groundwater hydrology, water quality and designated sites.	Requires consideration as part of cumulative assessment of impacts upon groundwater dependent SAC features – dune slacks & petalwort.		The project does not intend or require any abstraction during the operation phase. The installed ductwork will have no effect or change on hydrology (see **Comment ID 32** and **33** of **Table 1** in **Section 1** of this document). No discharges would arise during operation. Other than at the northern end of the SAC where trenchless occurs, no activities or infrastructure would be present or near to the Braunton Burrows SAC and therefore given there are no surface waters discharging into the Burrows from the works / Onshore Development Area, no surface water impacts (capacity or quality) could occur as there is no pathway for such impacts to arise. In terms of groundwater, it has been stated earlier that there is no change to groundwater and no discharges to groundwater during operation (or construction) therefore there is no pathway for impacts to occur on groundwater flow or quality and thus no indirect effects likely on any features of the SAC.
B5		Wildlife Licensing	Given the close location of confirmed Great Crested Newts (GCN) ponds to the development, and the prevalence of GCN in the wider area, Natural England does not consider works being carried out under Reasonable Avoidance Measures (RAMs) as sufficient mitigation.	Applicant will need to apply for an EPS Mitigation Licence from Natural England. It is usual best practice for a draft EPS licence to be submitted to NE's Wildlife Licensing team at the time of Application in order to provide a Letter of No Impediment (LONI) for the Local Planning Authority to provide necessary comfort in their decision making. However, that is not		The Applicant's ecologists (BSG Ecology) experience of "Letter of No Impediment" (LONI) is only from NSIP/DCO projects (N.B. the White Cross Project is not a DCO/NSIP), where significant and complicated impacts on EPS were foreseen and which required detailed and complex mitigation measures to be developed; in these situations it makes sense to discuss these issues with NE where the certainty of getting a licence is critical to taking the project forwards.

NE Ref	Document Ref	Subject Area	Summary of NE's Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk Level	Applicant's Response
				currently possible on the information included within the Application.		However, the LONI approach suggested is not standard practice for all development types. For this project the issues relating to great crested newt are considered straight-forward. Given the assessment (i.e. risk of impacts and impact significance is very low), as the route has been designed to avoid ponds and habitats suitable for this species and, as stated in **Chapter 16: Onshore Ecology and Ornithology** (**Table 16.11**) of the **Onshore ES**, the amount of vegetation clearance work within 250m of breeding ponds is minimal, the work is temporary – work will be primarily limited to sub-optimal habitats. In addition, great crested newt is a well understood species, for which there is a high level of understanding in effective mitigation. Given the above, it is not considered to be a complex and difficult case, and the information provided in the ES should be sufficient to allow the LPA to consider impacts and consider whether it is likely that a licence, if needed, could be issued. The Applicant recognises that exact approach for licensing/mitigation can be kept under review and obtaining a Natural England EPS Licence remains option (which is stated in the **Chapter 16: Onshore Ecology and Ornithology**). If it is decided that an EPS licence is required (based on the finalisation of detailed working methods in proximity to ponds), further survey work (population class assessment survey would be carried out in advance as part of the licence application), as necessary, to prepare an application. This is considered a common approach.
B6		Wildlife Licensing	The current survey data does not meet the requirements of the GCN Mitigation Guidance (GCNMG) enforced by Natural England. The GCNMG require all waterbodies within 250m of the works area to be surveyed. Surveying by eDNA and HSI is not sufficient, as data shows GCN can be present in ponds considered to be negative for both these methods. Several GCN positive ponds not identified by these survey measures could be impacted by the development.	Natural England's preferred approach would be for all of the waterbodies in the area to be surveyed as per the GCNMG. If this is not possible due to time constraints and the overall size of the survey required, an application to Natural England will have to be submitted invoking Licencing Policy 4. This allows for reduced survey effort in return for greater compensation.		This point is not considered to accord closely with standard NE guidance. The ES was informed by a suite of surveys for GCN which were undertaken in 2022 by EcoLogic (see **Appendix 16.L: Great Crested Newt Survey Report** of the **Onshore ES**). These included scoping surveys using HSI assessment, presence/ absence surveys via eDNA testing, and population size class estimate surveys of ponds testing positive for GCN eDNA. The EcoLogic surveys were carried out on all suitable waterbodies within 250m of the proposed onshore export cable corridor route, which at the time included two potential routes and covered a much larger area than the current Site boundary. Of these, 50 waterbodies tested positive for GCN eDNA, 10 of which were located within 250m of the current

NE Ref	Document Ref	Subject Area	Summary of NE's Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk Level	Applicant's Response
						Site boundary, with the remainder falling within the wider survey area. HSI is not sufficient alone, however, eDNA survey is a now a standard survey technique for great crested newt, which underpins Natural England District Level Licencing system. While no method is 100% reliable, eDNA survey has been demonstrated to be a very effective survey technique (Biggs et al., 2015, for example, found that eDNA survey has a 99.3% detection rate, compared to the "traditional" methods bottle traps, torch counts and egg searches were significantly less effective, detecting newts 76%, 75% and 44% of the time). The GCN mitigation guidelines, date from 2001, and pre-date eDNA survey; and while these remain useful guidance, the advice relating to survey is not up-to-date. The work carried out is considered sufficiently detailed to inform the assessment and to allow the LPA to consider impacts and consider whether it is likely that a licence, if needed, could be issued. An updated GCN survey of all ponds within 250m of the current Site boundary has been conducted in 2024 (report in production). This was carried out to ensure survey data is up to date. In conclusion, the various survey work, as described above, is considered sufficiently detailed to inform the assessment and to allow the LPA to consider impacts and consider whether it is likely that a licence, if needed, could be issued (yes). Depending on the approach taken to licencing (see above) and timing, further survey may need to be carried out to ensure that the data is sufficiently up to date and inform a licence application in advance of development.
B7		Wildlife Licensing	Sand lizards were found during the survey of Braunton Burrows. If the works will affect this species, an A46 licence from Natural England is required.	Natural England advises that the Applicant may need to r apply for an A46 licence from Natural England. Again, it is not clear if the LPA would require actions to be undertaken prior to consent to provide confidence that mitigation measures can and will be implemented?		As set out in **Chapter 16: Onshore Ecology and Ornithology** (**Paragraph 162**) of the **Onshore ES**, "the presence of sand lizard within the Onshore Development Area (i.e. outside Braunton Burrows) is considered unlikely. This assessment is based on the reptile survey results and the habitats present, which do not offer suitable habitat for this species: this species is dependent on managed heathland and coastal sand dunes in the UK". To provide further clarification this species was scoped into the earlier stages of the assessment when various route options were being considered, including routes within

NE Ref	Document Ref	Subject Area	Summary of NE's Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk Level	Applicant's Response
						Braunton Burrows which could have had potential to affect the species. The final agreed route, does not affect habitats suitable for this species and it has therefore been scoped out.
B8		Wildlife Licencing	The provided badger survey data only covers the area immediately adjacent to the proposed Yelland Power Station. There is no data provided for badger setts along the proposed 8km cable route. Natural England believes that laying subterranean cable along this route could potentially harm badgers and their setts intersecting its path. We would normally expect badger setts in the cable's path to be excluded before works begin.	Justification must be provided to Natural England as to why no badger survey was carried out along this route OR why the works will not impact the badger setts along this route. If this is not possible, Natural England would recommend surveying the entire route of the cable for badger setts before deciding if a licence is necessary to close any setts. If any setts are found along the proposed route that could be impacted by the works, a licence from Natural England will be required. Again, it is not clear if the LPA would require actions to be undertaken prior to consent to provide confidence that mitigation measures can and will be implemented?		Clarification: The whole route has been surveyed for badgers, this is detailed in the **Appendix 16.B: Preliminary Ecological Appraisal Report** of the **Onshore ES** – one sett has been recorded in the corridor. The Yelland area was surveyed separately at a different stage, which is why there is a separate badger report for this area, which could give the impression that this is the only area that has been subject to a dedicated badger survey. We note that the text in the **Appendix 16.B: Preliminary Ecological Appraisal Report** is brief, **Section 3.3.2** states that "It is considered that both the full extent of the PEA survey area provides sett, dispersal and foraging habitat for badger", would be better expressed as follows: "*…* the full extent of the PEA survey area provides *habitats that are potentially suitable for sett creation*, and for dispersal and foraging habitat for badger". The PEA did not recommend any further survey for badger and it was considered to be sufficiently conclusive. In addition, as standard industry practice, further precautionary pre-construction badger survey will be carried out, as set out in **Chapter 16: Onshore Ecology and Ornithology** (**Paragraph 186 and Table 16.25**) of the **Onshore ES.**
B9		Bats	Several gaps in the survey data. It is unclear whether the Applicant is intending to carry out a second years' worth of surveys. In addition, we are concerned that some surveys have only been carried out during one month. Therefore, there is a risk that the scale of the impacts could be over-estimated/under estimated because inter season and annual variation can't be taken into account.	Natural England advises that standard advice on survey bats has not been adopted. Therefore, gaps in survey data need filling to ensure the associated predicted impacts are as accurate as possible. Ideally the Applicant would ensure further surveys are conducted, to include partly surveyed and un- surveyed areas/features prior to consent. Without this information then a more precautionary approach will be required to ensure that there are sufficient mitigation measures secured to avoid, reduce and mitigate any impacts to acceptable levels should pre-construction surveys identify		The data gap appears to relate primarily to the survey work carried out on the hedgerow on Saunton Road. Survey work for this hedgerow was scoped into the assessment at a late stage when it became apparent that for highway safety reasons a section of hedgerow would require (temporary) removal to accommodate a visibility splay for the vehicle access point. Therefore the additional survey at this location is supported by the much larger area surveyed across Braunton Marshes the previous year (as reported in the ES). Survey data has been obtained during June, July and August 2023, and April and May 2024, results are presented in **Appendix H: Supplementary Bat Activity Survey Report (Saunton Road)** of this **ES Addendum**. The surveys were carried out to inform the approach for mitigation in this area.

NE Ref	Document Ref	Subject Area	Summary of NE's Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk Level	Applicant's Response
				the presence of bats and this will inform any licence requirements. Natural England requests that all data is shared with NE, as this contributes towards the species-specific degrees of sensitivity mentioned within the Onshore Ecology and Ornithology Report.		Given its managed and slightly gappy form it is not assessed to be of high value for bats, but bats have been recorded using it during the surveys, including low numbers of GHS and LHS. The data do not suggest that this is an important foraging area or commuting route for greater horseshoe bat. It is also noted that there is a double hedgerow in this area, only the southern hedgerow will be affected. The northern hedgerow, which will remain, will continue to provide habitat connectivity in this area. These surveys have confirmed the previously identified need for mitigation for the temporary removal of this hedgerow. **Chapter 16: Onshore Ecology and Ornithology** (**Section 16.5.12.4**) of the **Onshore ES** states that "Hedgerow sections requiring purely to provide visibility splays will be coppiced rather than removed, and the vegetation will be maintained at a height of below 0.4m for the duration of the works. This will allow these two sections of hedgerows to regenerate following completion of construction and removal of the haul road. The reinstated hedgerows would be enhanced through supplementary planting". In addition, installation of a temporary 'fake hedge' (i.e. Heras fencing panels covered with netting); this will positioned to provide the linear-shelter-navigable flight lines function of a hedge set will be back further to allow sufficient visibility/access; these will be in place throughout the construction period during the active period for bats (April to October). This would be in line with mitigation approaches set out in the recently published Bat Mitigation Guidelines (Sept 2023; p110-111), and given the assessment is considered to be proportionate. There is obviously scope to discuss the design of the temporary fake hedge. As set out in **Chapter 16: Onshore Ecology and Ornithology** (**Paragraph 260**) of the **Onshore ES**, lighting of habitats suitable for foraging or commuting bats will be avoided, and where the use of lighting is necessary within the Onshore Development Area, then the lighting will be minimised during the period when bats are active. An assessment of the impacts from lighting during the construction phase of the Project is provided in **Appendix O: Lighting Impact Assessment** of this **ES Addendum**. Measures to mitigate the impacts from lighting during the Construction Phase of the Project are also presented in an **Outline Cable Construction Environment Management Plan (Outline CEMP)** (WHX001-FLO-CON-ENV-PLN-0010)

NE Ref	Document Ref	Subject Area	Summary of NE's Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk Level	Applicant's Response
						which is provided as part of the **Further Environmental Information** submission. The additional survey work and subsequent results do not result in any change to the suggested approach to mitigation. Therefore there would be no change to the conclusions of the **Chapter 20: Onshore Ecology and Ornithology** of the **Offshore ES**. However, we have provided further clarification and detail on bat mitigation, building on the measures stated in the ES, in relation to the hedgerow on Saunton Road within **Appendix I: Approach to Bat Mitigation at Saunton Road** of this **ES Addendum.** Thus, Natural England's suggestion for precautionary mitigation is considered to be achieved. Caen Valley Bats SSSI has been considered in detail in the assessment – see **Chapter 20: Onshore Ecology and Ornithology** (**Section 16.5.8**) of the **Offshore ES**.
B10		Bats	A full rationale for survey and impact assessment for this Caen Valley Bats SSSI is required within the EIA following further surveys.	Following further surveys (as detailed) the EIA should include precautionary mitigation to retain any existing bat commuting routes along the hedgerow line during construction in respect of the Caen Valley Bats SSSI.		Please see response to **Comment B9** above. Noted, as above Caen Valley Bats SSSI has been considered in detail in the assessment – see **Chapter 20: Onshore Ecology and Ornithology** (**Section 16.5.8**) of the **Offshore ES**. Precautionary mitigation has been incorporated in the scheme design and further clarified in **Appendix I: Approach to Bat Mitigation at Saunton Road** of this **ES Addendum.**
B11		Onshore Ornithology	It would be helpful if the information in the EIA were presented spatially. For example, there are no maps showing the designated sites and the overlap with the project area. The Taw Torridge high tide roost and disturbance study (Berridge, 2019) is heavily relied upon, but it would have been helpful if the high tide roost areas were presented on a map overlain with the cable route and drilling pits for the HDD.	We advise that further information to help inform the impacts assessment should be presented before NE can provide further advice.		**Annex 4: High Tide Roost Locations** of this document presents the extent of the Onshore Development Area and the high tide roosts identified by Berridge (2019). The HDD entry and exit points are identified within **Chapter 5: Project Description, Appendix 5.D: Onshore Export Cable Corridor Alignment Sheets** of the **Onshore ES**. The HDD entry compound is located on the south of the Taw Estuary and does not overlap any high tide roosts.
B12		Onshore Ornithology	No project specific wintering bird surveys have been undertaken. The standard we would normally expect, where a designated site is impacted, is two year's surveys, with two visits a month (one high tide, one low tide) from Oct to Mar (Sep to Apr if passage birds are a concern). One year of	Natural England advises that if no wintering surveys can be carried out, Natural England would require justification for this and why it is felt unnecessary to update this information. Specifically, why the Applicant believes high tide roosts and foraging areas are		Additional survey work has been undertaken for wintering birds to confirm and inform the assessment conclusions and the approach to mitigation. The survey results are presented in **Appendix J: Wintering Bird Survey Report (Braunton Marsh and River Taw)** of this **ES Addendum**. The focus of this work is to understand how birds are using the known lapwing roosts in Braunton Marsh, which is within

NE Ref	Document Ref	Subject Area	Summary of NE's Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk Level	Applicant's Response
			survey may be acceptable if there is detailed, up-to-date, existing information, which can support the application. In this case, there has been heavy reliance on the high tide roost and disturbance report, which uses WeBS data up to 2019 and survey work over the 2018/19 winter. These data are now 4 years old, which might not be a major issue if more was known about the nature of the high tide roosts and it they were persistent over time. However, as there has been no wintering bird survey carried out to inform the proposal, there is no current data presented to confirm that birds still use the area in the same way as in 2019.	unlikely to have moved and why any additional important areas are unlikely to have developed.		the same fields as the Onshore Export Cable Corridor (see **Annex 4** of this document). This work involved two visits per month between mid-October 2023 and mid-March 2024 2hrs either side of the high tide (4hrs in total for each visit). The survey area was extended to include the area surrounding the HDD compound on the south side of the estuary following consultation with Natural England, therefore this area was only surveyed between December 2023 and mid-March 2024. The results have been used to ensure the that the baseline data is up-to-date, and to help consider any further mitigation requirements. Mitigation requirements for lapwing are set out in **Appendix K: Approach to Lapwing Mitigation** of this **ES Addendum**.
B13		Onshore Ornithology	Cabling across Braunton Burrows intertidal by trenchless technique – takes 5 days. Timing of the works is not clear, but it would be best practice if this happened outside wintering birds season even though exit pit is located outside of the SSSI boundary. Although breeding bird surveys have been undertaken, the findings have not been referred to in the section on impacts and mitigation. Noise from the HDD operations would potentially affect bird use of the intertidal habitats (wintering) and dunes (breeding).	We advise that to avoid noise and visual disturbance, the work in this area should be timed to occur in Aug – Oct or Mar – Apr. If this is not possible, the compound should be as a minimum screened to minimise noise and visual disturbance from the HDD operations. Further detail is required on the timing of cabling works across the intertidal at Braunton Burrows and suitable mitigation measures secure as part of the consenting Process.		Clarification: As the scheme has developed it has become apparent that the original plan to avoid the wintering period, which was discussed with Natural England at an earlier stage of the project, is not practical as it cannot be accommodated within the work programme. Where possible works in these areas (such as enabling works) will be undertaken outside the winter period to minimise disturbance. The compound will be screened to minimise disturbance. This mitigation approach discussed in **Chapter 16: Onshore Ecology and Ornithology** (**Section 16.5.13.2**) of the **Onshore ES**. **Paragraph 359** sets out the proposed approach to screening. An overwintering bird survey has been undertaken over 2023-2024 and is provided in **Appendix J: Wintering Bird Survey Report (Braunton Marsh and River Taw)** of this **ES Addendum**. Mitigation requirements for lapwing are set out in **Appendix K: Approach to Lapwing Mitigation** of this **ES Addendum**.
B14		Onshore Ornithology	Taw Estuary is proposed to be crossed by trenchless technique with entrance and exit landwards of sea wall outside SSSI, therefore, there unlikely to be direct impacts on intertidal habitats. However, the pit and working compound for the HDD will affect wader roosts at Braunton Marshes identified in the 2019 high tide roost report. Mitigation for this is discussed under Impact 13 – disturbance to overwintering birds, as impacts are inevitable as the	Natural England requires further information on whether the mitigation measures at Braunton Marshes are sufficient: • Will there be additional disturbance from the haul road and trenching that would affect use of the area? • Can we be certain that the high tide roost and feeding areas on the marshes are in the same place as in the 2019 report?		Clarification: We think this comment relates to Access Road 009, which runs from the Toll Road, northwest across Braunton Marsh. It is an existing farm track that is flanked with hedgerows/ditches on both sites, which provide some screening of the adjacent land. This track will be used for pre-construction access / early works access, which will be primarily outside the winter period. It will not be used by HGVs. Further detail is set out in **Chapter 5: Project Description** (**Section 5.3.3.9.1**) and **Chapter 19: Traffic and Transport Appendix 19.A: Transport Assessment** (**Figure 1**) of the **Onshore ES**. A

NE Ref	Document Ref	Subject Area	Summary of NE's Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk Level	Applicant's Response
			length of time for the works means that winter cannot be avoided. However, it is stated that disturbance and displacement will be temporary and that there are alternative roost locations on Braunton Marshes and Horsey Island (para 354). However, It is not clear whether this statement takes into account disturbance from the Haul Road that runs between Braunton Marshes and Horsey Island. Additional mitigation is proposed to minimise disturbance to birds around the Taw Estuary. Screening around the compounds and management to ensure suitable alternative lapwing roosts is welcomed. However, the impact of the trenching and haul road either side of Braunton Marshes on the alternative lapwing roosts needs to be considered further as part of the Application to ensure that mitigation measures are sufficient. There is limited consideration of the impacts on birds from cabling on the south side of the Taw Estuary. Again, there is no location map for the compound for HDD operations. Presumably the compound will be screened but it would be helpful to have this confirmed and that disturbance to birds on the south side of the Taw will be avoided, particularly in combination with development works at Yelland Quay.	Natural England also requires further information on the terrestrial habitats on the south side of the Taw estuary: • are these habitats suitable for birds such as lap wing? • Is there any likelihood that new hightide roosts or feeding areas have developed since 2019? If there is any possibility that habitats are suitable for wintering waterbirds in places that would be affected by the cabling (e.g. at Braunton Marshes or terrestrial habitats on the south side of the Taw) and that have not been fully mitigated, then mitigation should be provided on a precautionary basis, or wintering bird surveys carried out to demonstrate that birds do not use the area and further mitigation is not necessary.		peak of up to 68 LVs per day and an average of 30 a day are assigned to access 008 (via Link, 3, 4 and 5) and accesses 009 to 011 (via Link 11). These estimates are the total for all five access and also represent the worst-case scenario before the implementation of measures to reduce their use. An overwintering bird survey has been undertaken over 2023-2024 and is provided in **Appendix J: Wintering Bird Survey Report (Braunton Marsh and River Taw)** of this **ES Addendum**. Mitigation requirements for lapwing are set out in **Appendix K: Approach to Lapwing Mitigation** of this **ES Addendum**.
B15		Onshore Ornithology	Whilst the Applicant and their consultants are confident that frac-out will not occur at the River Taw cross, but in the unlikely event it does sandbags will be used to contain the drilling fluid. However, we draw your attention to the East Anglia ONE cable installation under Martlesham Creek within the Deben Estuary SPA. Due to intertidal environmental conditions sandbags could not be deployed without causing further impacts and the bentonite spread out in a veneer such that containing and pumping drilling fluid for recycling was not possible. Should similar happen here the potential smoothing of	Natural England queries what the implications would be here if similar was to occur and what would the contingency plan be in this situation?		A programme of geotechnical investigations have been undertaken and are reported in **Appendix T: Onshore Ground Investigation Interpretative Report** (data provided in **Annex 1: Onshore Ground Investigation Factual Report**) of this **ES Addendum**. The results of these investigations confirm the original assessment presented within **Appendix 5.A: Braunton Burrows and Taw Estuary Crossing Method Statement** of the **Onshore ES** on the suitability of HDD and the low risk of frac out. Further assessment of the risk of frac out, and the mitigation measures to be employed during construction are provided in an **Outline Bentonite Management Plan (Outline BMP)** (WHX001-FLO-CON-ENV-PLN-0012), with more detail

NE Ref	Document Ref	Subject Area	Summary of NE's Key Concerns	NE's Recommendations to Resolve Issues	NE's Risk Level	Applicant's Response
			the intertidal which remain persistent even after several tidal cycles and months had impactions for food availability for foraging SPA birds.			on measures to mitigate impacts during construction presented within an **Outline Construction Environment Management Plan (Outline CEMP)** (WHX001-FLO-CON-ENV-PLN-0010), both are provided as part of the **Further Environmental Information** submission. WCOWL is open to planning and Marine Licence conditions being imposed for the agreement of an updated BMP and CEMP prior to construction.
B16		Onshore Ornithology	Onshore ecology & ornithology study area missing from document. (20.3.2, Fig 20.1 & Fig 20.2	We request that a map outlining the study area for onshore ecology & ornithology be included.		**Chapter 20: Onshore Ecology and Ornithology** (**Figures 20.1 to 20.5**) of the **Offshore ES** which were omitted in error are provided within **Annex 5** of this document. These show the study area related to the Offshore Project. **Chapter 16: Onshore Ecology and Ornithology** (**Figure 16.1**) of the **Onshore ES** includes the full study area.

Table 6 Natural England's Key Advice and Recommendations – Coastal Habitats

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	
Environmental Impact Assessment- Documents Used: Chapter 16 Onshore Ecology & Ornithology; Chapter 20 Onshore Ecology & Assessment						
Identified Impacts	2.1	16.3.5 Worst case scenario Table 16.9 Operation & maintenance	It is stated that there is no ongoing requirement for regular maintenance of the onshore cables following installation, and therefore no associated impacts however access to the onshore export cables would be required to conduct emergency repairs, if necessary.	We note the WCS rationale is described as representing the greatest potential for disturbance. The worst-case scenario should therefore consider the requirement for regular/routine maintenance /repairs of cables/other infrastructure and the assessment should take account of this.		The Onshore Export Cables will be contained within ducting. This allows the cables to be accessed from link boxes meaning that no further ground works would be needed once the cabling infrastructure is installed. Clarification on the operations and maintenance phase of the Project is provided in **Section 5.3** of this **ES Addendum**.
	2.2	Worst case scenario Table 16.9 Decommissioning	It is stated that the decommissioning policy for the Project infrastructure is not yet defined and that the detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time.	We advise that an outline assessment of potential impacts to the onshore environment of the decommissioning of the proposed project should be provided as part of the consenting process. Our primary concern is that impacts are minimised. However, we would advise that if the materials which form the cables are entirely inert or pose minimal risk to any environmental asset they should be left in situ. This would be preferable to major works to excavate the route in whole or in part to extract them.		As outlined in **Chapter 16: Onshore Ecology and Ornithology** (**Table 16.9**) of the **Onshore ES** for the purposes of the worst-case scenario, it is anticipated that the impacts will be comparable to those identified for the construction phase. The Applicant agrees with Natural England that it would be preferable to leave assets in situ. As outlined in **Chapter 5: Project Description** (**Section 5.10.1**) of the **Onshore ES**, onshore there are two main options with regards to decommissioning of the Onshore Export Cable Corridor. The cables can be left buried in-situ with the cable ends cut, sealed and securely buried. Alternatively, the cables can be removed by pulling them through the ducts. It is likely that the cables would be pulled through the ducts and removed, with the ducts themselves left in situ. Clarification on the decommissioning phase of the Project is provided in **Section 5.4** of this **ES Addendum**. An **Outline Decommissioning Programme** (WHX001-FLO-CON-ENV-PLN-0011) is provided as part of the **Further Environmental Information** submission. The Applicant expects that final CEMP will be a condition to the planning permission and Marine Licence if approved. The Applicant will consult Natural England in the development of the final Decommissioning Programme which will be approved by the local planning authority and the MMO.
	2.3	16.3.6.1 Embedded Mitigation Table 16.10	Construction Environmental Management Plan will be implemented to avoid or	Advise the use of low ground pressure plant e.g SofTrac in areas of wetter/softer ground and		An updated **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	
		All construction activities and sites	minimise impacts from all construction activities. Mitigation should include measures to avoid/reduce impacts associated with vehicle/plant impacts, ground disturbance, trampling for features of the Taw Torridge Estuary, Braunton Burrows and Greenaways & Freshmarsh SSSIs and Priority Habitats.	during winter months to reduce ground disturbance impacts. We advise where impacts cannot be avoided CEMP should include detailed habitat specific site remediation/ habitat restoration post construction to include Criteria for Success by which progress/success/failure can be monitored and addressed.		ENV-PLN-0010) is provided as part of the **Further Environmental Information** submission. The Applicant will use low ground pressure plant wherever required. Monitoring measures to ensure the success of landscape reinstatement are described in **Appendix N: Outline Landscape and Ecological Management Plan** (OLEMP) of this **ES Addendum**. The Applicant expects that final CEMP will be a condition to the planning permission and Marine Licence if approved. The Applicant will consult Natural England in the development of the final Decommissioning Programme which will be approved by the local planning authority and the MMO.
	2.4	16.3.6.1 Embedded Mitigation Table 16.10	No measures are identified to avoid impacts to vascular plants, notable plants recorded and identified in section 16.4.3.1	We advise the inclusion of measures such as marking out sensitive areas, vulnerable species, tool box talks and ECOW supervision to ensure impacts to notable plants species are avoided. These should all be included in the CEMP		An updated **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-ENV-PLN-0010) is provided as part of the **Further Environmental Information** submission. The Applicant can confirm that measures such as marking out sensitive areas, vulnerable species, tool box talks and ECOW supervision will be included as part of the final CEMP.
	2.5	16.3.6.1 Additional Mitigation Table 16.11 Effects on neutral and marshy grassland habitats	In grassland affected by trenching within Braunton Marsh, which support semi-improved grassland or marshy grassland (as opposed to improved grassland), additional management will be carried out to promote re-establishment (reseeding/mowing/weed management) vegetation establishment will be monitored to ensure that habitats are restored to the desired condition.	Natural England emphasises that all impacts to Braunton Burrows must be avoided. But in the unlikely event impacts occur a remediation plan agreed and implement e.g. (but not exclusively) using wildflower seed mixes compatible with on-site communities. An outline plan should be included at part of the consenting phase.		Clarification: This comment relates to Braunton Marsh which is not part of Braunton Burrows SAC, but it will also be important to restore this area to the pre-construction condition (and this is discussed in **Chapter 16: Onshore Ecology and Ornithology** (**Section 16.5.9**) of the **Onshore ES**, and further details will be set out in the CEMP/LEMP which will be agreed with the local planning authority. The approach to re-establishing grassland habitat is covered within **Section 1.5.7** of the **Appendix N: Outline Landscape and Ecological Management Plan** (OLEMP) of this **ES Addendum**.
	2.6	16.4.2.6 Taw Torridge Estuary Page 51 para 82	It is stated that a small section of Braunton Burrows SAC and SSSI lies within the Onshore Development Area immediately north of the estuary, in the vicinity of Crow Point car park. The car park itself is sparsely vegetated. Behind the dune ridge, the flatter land has been	Petalwort records are known to occur in the vicinity around Sandy Lane car park in the SE corner of the SAC adjacent to the proposed Estuary crossing corridor as mapped. These records lie landward of the MHWS limit but as the mapped corridor suggests some potential for overlap we		Clarification: This is an erroneous statement in the chapter which has crept in from the text in the NVC report, which was based on a different, and larger, red-line boundary at an earlier stage of the Project. The Onshore Development Area avoids the SAC and SSSI in this area (as shown in **Annex 9: Designated Sites** of this document).

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	
			damaged by vehicles, and there are considerable areas of bare sand. As a result there are also areas of early successional grassland related to coastal dune communities where the vegetation was re-establishing.	advise that the potential for impacts upon petalwort populations in this location requires full consideration and mitigation proposed to avoid AEOSI. Impacts to be scoped in should include direct habitat damage/destruction associated with construction activities and indirect impacts associated with HDD techniques i.e. potential impacts upon groundwater. In order to rule out potential for impact then we advise that a petalwort survey is carried out during the winter months/optimal season by a competent/experienced surveyor.		Refer to Applicant's response to **Comment ID B1** in **Table 5** of **Section 4** of this document for confirmation of how Petalwort has been considered in the assessment.
	2.7	16.4.3 Protected & Notable Species 16.4.3.1 Notable Plants Desk Study Pages 53 – 54 Pars 91&92	Data received from DBRC contained 135 records for plant species. The Preliminary Ecological Appraisal (PEA; Appendix 16.B: Preliminary Ecological Appraisal Report) provides further details of notable plant records within the study area	We advise that these should be identified on a map relative to cable route corridor so that potential for impacts upon notable plant species can be understood and mitigation developed.		**Annex 3: Notable Plant Species** of this document identifies notable plant species near or within the Onshore Development Area.
	2.8	16.4.3 Protected & Notable Species 16.4.3.1.1 Site Survey Page 54 Para 95	The notable plant species recorded during the survey that are from within or immediately adjacent to the Onshore Development Area are detailed in Table 16.16.	We advise that it would be useful if these were represented on a map relative to cable route corridor and relationship to corresponding NVC communities so that potential for impacts upon notable plant species can be understood and mitigation developed.		**Annex 3: Notable Plant Species** of this document identifies notable plant species near or within the Onshore Development Area.
	2.9	16.4.5 Scope Table 16.23 Summary of impacts scoped in relating to onshore ecology	It is stated that habitats within the Braunton Burrows SAC/SSSI landward of MLWS will not be directly impacted by the onshore project as the cable route will be installed using trenchless techniques (direct pipe or HDD). However, NE highlights that at the rear of the Braunton Burrows dune system, there is an extensive area of low dunes and slacks (see NVC survey Appendix 16.P maps 1-5) which	Natural England advises that potential impacts of trenchless techniques (HDD or direct pipe) upon groundwater dependent Humid dune slack and petalwort features should be considered as part of the assessment. Until the Applicant undertake this assessment, we are unable to further advise on the significance of the impacts		Please refer to previous responses to **Comment IDs 32** and **33** of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Annex 2: Hydrogeology Technical Note** of this document. **Figure 1** of **Appendix L: Petalwort Desk Based Assessment and Survey** of this **ES Addendum** shows that NVC dune slack communities (SD15c and SD16b) in the northern part of Braunton Burrows are not close to the Onshore Development Area.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)
			may be extensively flooded in winter. Variations in the extent and duration of flooding of the dune surface are important in determining vegetation species composition and structure and in maintaining suitable breeding conditions for aquatic species. Any disturbance of this regime will affect the ecohydrological condition of humid dune-slacks The elevation of the slacks is highest in the middle of the central zone of the dunes at about 9 m OD but falling in elevation northwards, southwards and seawards. The water table underlying the system is reported to be dome-shaped being some 6 m higher in the centre than at the margins. The dunes at Braunton Burrows overlie both marine clay and gravels and sand resting on the Culm Measures bedrock. A preliminary interpretation of the hydrogeological conditions suggest that groundwater flow radiates away from the domed water table ridge known as a *Flow-through* slack. Groundwater flows into the up-gradient edge of the slack, flows through the slack and then infiltrates at the downgradient edge. These slacks are highly sensitive to hydrological changes and water table fluctuations in response to seasonal wet and dry conditions and/or external influences such as groundwater abstraction and land drainage. Given the tendency towards an ephemeral nature, then any external influence on groundwater levels or recharge rates within or adjacent to a dune system is likely to adversely affect the existence of dune-slacks. Such		

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	
			external activities include groundwater abstraction for municipal, agricultural, industrial, military and recreational purposes and dewatering of groundwater for land drainage control and quarrying activities.			
	2.10	16.4.5 Scope Table 16.23 Summary of impacts scoped in relating to onshore ecology	It is stated that the Greenaways & Freshmarsh SSSI not be directly impacted by the Onshore Project. However, it is scoped in because it is adjacent to Onshore Development Area and because the possible risk of adverse effects (such as dust, lighting and noise) need to be considered by the assessment. Natural England advises that the onshore cable route passes directly through unit 2 of this freshwater site which is also Priority Habitat CFGM. These habitats are of particular importance as they now have a very restricted distribution in Devon. The site occupies the northern fringe of Braunton Marsh, the land being generally flat and low-lying with a high water table. The soils are derived from marine alluvium with a peaty surface horizon in places.	Natural England advises that consideration is given to the potential for hydrological impacts resulting from HDD installation technique. This site is of special interest for its herb-rich marshy grasslands and the rich water-plant communities occurring in the drainage ditches and therefore the assessment should focus on these areas.		As shown on **Annex 9: Designated Sites** to this document the cable does not pass directly through or beneath the Greenaways & Freshman Barunton SSSI, but crosses directly beneath Sandy Lane. Please refer to previous responses to **Comment IDs 32** and **33** of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Annex 2: Hydrogeology Technical Note** of this document. Further work has been undertaken and is provided in **Appendix G: Hydrogeological Risk Assessment**. Assessment of the direct impacts during construction to the Braunton Marsh is detailed in **Chapter 16: Onshore Ecology and Ornithology** (**Section 16.5.9**) of the **Onshore ES**. After mitigation, and reinstatement the residual affect is assessed to be minor adverse and not significant.
	2.11	16.5.1.2 Further mitigation Braunton Barrows SAC/SSSI (intertidal area) Page 101 Para 194 16.5.3 Para 208-209	It is stated that some localised disturbance could potentially arise at the exit point and transition with the offshore cable as it is not determined at this point whether this would take place in the subtidal and outside the boundary of the SSSI and SAC. There is therefore uncertainty whether or not this would provide a better solution	Natural England advises that the potential for impacts at entry and exit point will be determined by their precise location and associated footprint. Presumably one advantage of HDD across the intertidal is that entry/exit points can be micro-sited to some extent to avoid any particular sensitivities. However, the assessment should consider the balance against the impacts associated with the potential for frac out.		The design of the landfall has been refined following the completion of the onshore ground investigation works in 2023. The option for a trenchless technique at landfall has been dropped with the open-cut option retained. Clarification of the works at landfall are presented in **Section 5** of the **ES Addendum**.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	
	2.12	16.5.3 Impact 3: Indirect disturbance to Braunton Burrows SSSI / SAC arising from use of trenchless techniques within the SAC Para 211	It is stated that although the likelihood of frac-out is considered to be low, a variety of embedded mitigation measures are proposed to both prevent and respond to such an event, should it occur. These are set out in detail in Appendix 5.A: Taw Estuary Crossing Method Statement	Natural England notes this has been scoped out of Chapter 10 Intertidal Ecology on the basis that frac out is considered unlikely and mitigation is therefore not required. Consistency is required across documents. The approach outlined here is preferred. However, we advise that further assessment of any mitigations measures and/or frac out remediation is agreed as part of the consenting phase in a bentonite management plan to ensure that no further damage would occur to the site.		**Impact 3** as assessed within **Chapter 16: Onshore Ecology and Ornithology** (**Section 16.5.3**) of the **Onshore ES** is an assessment of the indirect impacts from the trenchless crossing beneath Braunton Burrows/Saunton Golf Course. Therefore, there is no interaction with the intertidal for this impact, and it is not assessed within **Chapter 10: Benthic and Intertidal Ecology** of the **Onshore ES**. **Appendix 5.A: Taw Estuary and Braunton Burrows Crossing Method Statement** of the **Onshore ES** provides further information on the use of trenchless techniques underneath the Braunton Burrows SSSI/SAC. A Bentonite Management Plan will be included within the final CEMP that is expected to be a condition to planning permission and Marine Licence consent. An Outline Bentonite Management Plan (WHX001-FLO-CON-ENV-PLN-0012) is provided.
	2.13	16.5.3 Impact 3: Indirect disturbance to Braunton Burrows SSSI / SAC arising from use of trenchless techniques within the SAC Para 215	It is stated that in the event that frac-out was to occur, taking into account the mitigation, the impact would be very localized and due to the monitoring, it would be expected to be identified very rapidly, and were any of the drilling lubricant (inert bentonite and water) to escape and cover vegetation at the exit point, it is expected this could be removed and the vegetation reinstated.	Please see above point and those relating to intertidal bird impacts. In addition NE queries if re-instatement of the vegetation necessary given the surrounding seedbank? Natural recovery would be preferable to re- instatement if possible.		Measures to mitigate the impacts in the unlikely event of a Frac-Out are provided in the **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-ENV-PLN-0010) and **Outline Bentonite Management Plan** (WHX001-FLO-CON-ENV-PLN-0012) which are provided as part of the Further Environmental Information submission. There is no proposal to reseed vegetation, but to provide conditions to re-instate the existing vegetation or just to allow natural processes to revegetate any area affected. The re-instatement techniques will be agreed for the final CEMP to be approved pre-construction.
	2.14	Impact 4: Physical disturbance to intertidal habitats (and Taw-Torridge Estuary SSSI) at the Taw Estuary Crossing Para 221	The trenchless methods would entail the entry and exit points to be located inland of the coastal defence embankments and thus outside of the subtidal and intertidal areas of the estuary. As such there would be no physical disturbance within the estuary as the trenchless cable route would be located c.10m or more below the bed of the estuary.	We advise that approximate proposed locations of entry and exit points and their associated footprints of disturbance should be identified on maps so that impacts upon surround habitat/features can be understood.		The HDD entry and exit points are identified within **Chapter 5: Project Description Appendix 5.D: Onshore Export Cable Corridor Alignment Sheets** of the **Onshore ES**. A plan showing the location of the entry and exit locations for the Taw Estuary Crossing is provided as **Annex 3** to **Appendix B: Response to MMO & Cefas** of this **ES Addendum**. The HDD entry compound is located on the south of the Taw Estuary and does not overlap any intertidal habitat or the Taw-Torridge SSSI.
	2.15	16.5.5 Impact 5: Indirect disturbance to habitats within the Taw-Torridge Estuary SSSI	Coastal saltmarsh effects are likely to be small as these habitats are inter-tidal and	Natural England advises that the following is taken into consideration in any updated		An **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	
		Para 223	experience large influxes of nutrients; and sensitivity it assessed to be low. Significantly, impacts from pollution or air quality impacts are not identified by Natural England in the unit condition assessments. The botanical interest of the SSSI, does not refer to plant communities that are dependent on low nutrient conditions or those likely to be high sensitivity to air quality impacts.	assessment. https://www.apis.ac.uk/app for habitat specific critical loads. 10-20 kg/ha/yr is the relevant critical load range for most saltmarsh but the lower level of 10 should be applied to more densely vegetated upper marsh zones and to areas of marsh subject to catchment run-off. For pioneer marsh use the higher figure of 20-30 kg/ha/yr. Air quality impacts should still be assessed if associated with the works. Consider potential for impacts of pollutants released during construction activity on sand dune habitats using APIS data as referenced above.		ENV-PLN-0010) is also as part of the **Further Environmental Information** submission. With the employment of management and control measures secured through the final CEMP, air quality effects on Braunton Burrows SAC/SSSI and Taw-Torridge Estuary SSSI would not be significant. Agreement of the final CEMP which is expected to be a condition of planning permission.
	2.16	16.5.6 Impact 6: Indirect impacts to Greenaways & Freshmarsh Braunton SSSI Para 239	It is stated that this SSSI will be avoided (there will be no direct impact), in the area adjacent to the SSSI the cable route will be situated in arable fields to the west of Sandy Lane, before crossing the road and entering pasture fields to the south of the SSSI. Hydrological impacts are not considered likely to occur.	The cable route passes directly through/beneath the SSSI depending on technique used. It not clear whether this section will be installed by HDD or open trench. Natural England queries on what information is the judgement of no hydrological impact based? No evidence is provided to assess potential for impacts to hydrology. Without hydrological assessment we cannot draw any conclusions about potential for linkage with the features of this SSSI or other hydrologically dependent habitats (and associated species) within the SAC and therefore cannot be confident of no impact.		As shown on **Annex 9: Designated Sites** to this document the cable does not pass directly through or beneath the Greenaways & Freshman Barunton SSSI, but crosses directly beneath Sandy Lane. Please refer to previous responses to **Comment IDs 32** and **33** of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Annex 2: Hydrogeology Technical Note** of this document. Further work has been undertaken and is provided in **Appendix G: Hydrogeological Risk Assessment**.
	2.17	16.5.6 Impact 6: Indirect impacts to Greenaways & Freshmarsh Braunton SSSI Para 249	Saunton to Baggy Point SSSI has been identified in the Air Quality chapter (Chapter 13: Air Quality) as being at possible risk from air quality impacts (i.e. it will experience increases in NOx (nitrogen oxides), NH3 (ammonia) and N-Dep (nitrogen- deposition) that exceed (1% of) the Critical Load or Level); the possible impact	Natural England advises mitigation measures for these impacts should be identified and secured		Refer to Applicant's response to **Comment ID 3.10** in **Table 5** of **Section 4**. Mitigation measures relating to air quality will be secured via the Final CEMP which is expected to be a planning condition. An **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-ENV-PLN-0010) is also provided as part of the **Further Environmental Information** submission.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	
			from the exceedance is discussed in this section.			
	2.18	Appendix 16.P NVC 3.2 NVC Community Descriptions	SD14a This dune-slack community was recorded in three places, the largest of which was a seasonally flooded pool to the south-west of the Sandy Lane carpark.	These records lie landward of the MHWS limit but as the mapped corridor suggests some potential for overlap. We advise that the potential for impacts upon petalwort populations in this location requires full consideration and mitigation proposed to avoid AEOSI. Impacts to be scoped in should include direct habitat damage/destruction associated with construction activities and indirect impacts associated with HDD techniques i.e. potential impacts upon groundwater. In order to rule out potential for impact then we advise that a petalwort survey is carried out during the winter months/optimal season by a competent/experienced surveyor.		Refer to Applicant's response to **Comment ID B2** in **Table 5** of **Section 4**. Petalwort has been considered in the assessment and from information provided by Natural England the documented locations of Petalwort that were provided to the project by Natural England are shown in **Appendix L: Petalwort Desk Based Assessment and Survey.** The Applicant has engaged a specialist bryologist sub-consultant, with experience of petalwort, to undertake an initial review/desk-based assessment and field survey to further support this position. This is provided in **Appendix L** of the Further Environmental Information submission.
	2.19	Appendix 16.P NVC 3.3 Rare Species	NVC data includes records of rare species, but these are not illustrated on a map which would allow mitigation, micro-siting to avoid impacts during construction	Natural England requests that a map in included showing target notes of notable species to be avoided.		This is provided in **Annex 3: Notable Plant Species (including Petalwort) Locations** of this document.
	2.20	20.3.10 Paras 44 & 45	It is stated that key potential impacts relate to the construction phase and maintenance activities (if required).	We advise that activities associated with requirement for ongoing maintenance during the operational phase should be scoped into the worst case scenario assessment.		Clarification on the operations and maintenance phase of the Project is provided in **Section 5.3** of this **ES Addendum**.
	2.21	20.4.1 Fig. 20.3	Designated sites – missing	We request that within a map outlining the study area for onshore ecology & ornithology all designated sites are included		**Figures 20.1 to 20.5** from **Chapter 20: Onshore Ecology and Ornithology** of the **Offshore ES** were omitted in error and are provided within **Appendix 5: Chapter 20 Figures Omitted in Error from Offshore ES** of this document. These show the study area related to the Offshore Project. **Chapter 16: Onshore Ecology and Ornithology** (**Figure 16.1**) of the **Onshore ES** includes the full study area. **Annex 6: Onshore Designated Sites and Main Environmental Constraints** of this document identifies Onshore Designated Sites (and other environmental constraints).
	2.22	20.4.3 Fig 20.4	Non-statutory nature conservation sites – missing	We request that within a map outlining the study area for onshore ecology & ornithology all non-statutory nature conservation sites are included.		
	2.23	Fig 20.5	Habitats within the study area – missing	We request that a habitat map outlining the study area for onshore ecology & ornithology be included.		

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	
Environmental Impact Assessment – Document Used: Chapter 14 Water Resources and Flood Risk						
	2.24	14.3.4 Summary of Mitigation Table 14.9 Embedded mitigation measures: Groundwater Flows	It is stated that ground investigations and a hydrogeological risk assessment meeting the requirements of the Environment Agency's approach to groundwater protection (Environment Agency, 2018), will be undertaken at each trenchless technique crossing location. A written scheme dealing with contamination of any land and groundwater will be submitted and approved by the Local Planning Authority before construction activities commence.	We advise that the potential impacts to groundwater of trenchless cable installation (and their dependent habitats and species) are not limited to those of contamination as indicated here. The hydrological risk assessment and resulting written of mitigation scheme should include potential for disruption to groundwater flows. If impacts to groundwater flow are identified this will require consideration in terms of the impacts upon groundwater dependent SAC features e.g., humid dune slacks and petalwort. These impacts need to be considered at the HRA stage which will not be possible until the results of these ground investigations are known.		Please refer to previous responses to **Comment IDs 32** and **33** of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Annex 2: Hydrogeology Technical Note** of this document. Further work has been undertaken and is provided in **Appendix G: Hydrogeological Risk Assessment**. The Applicant commissioned a specialist bryologist sub-consultant with experience of petalwort to undertake a desk-based assessment and field survey to address this comment, the results are presented in **Appendix L: Petalwort Desk Based Assessment and Survey** of this **ES Addendum**. The survey confirms the findings and assessment within the **RIAA** that there are no petalwort within the Project's works areas and thus no impact will arise **Appendix 6.A: Habitats Regulations Assessment: Report to Inform Appropriate Assessment** (**Section 6.4.2.2.1**) of the **Onshore ES**.
	2.25	14.3.7 Scope Table 14.12 Summary of Impacts scoped in relating to Water Resources & Flood Risk.	Potential for impacts to groundwater flows during construction have been scoped out and with no justification given (Table 14.13). Changes to surface water runoff, groundwater flows & flood risk are identified as potential impacts during operation & maintenance. It is stated that: *Permanent above ground infrastructure at the Landfall to MLWS, White Cross Onshore Substation and along the Onshore Export Cable Corridor, and any new permanent access tracks, will result in permanent changes. This may alter the movement of water and* the *surface and subsurface, and locally affect flood risk.* This is contradicted later in the document in Table 14.31 in which it is stated that:	NE questions the assertion, based on the worst-case scenario approach, that impacts to groundwater flows are possible during maintenance/operation but not during construction. We draw the decision makers attention to the fact that no evidence is provided to support these assumptions.		This is an inconsistency/typo in the impact title. It should be the same as the operational impact 'changes to surface water runoff, groundwater flows and flood risk'. In **Section 14.5.4** of **Chapter 14: Water Resources and Flood Risk** of the **Onshore ES** the impact title is given as 'Changes to surface and groundwater flows and flood risk'. **Table 14.23** of **Chapter 14** shows that both groundwater bodies have been assessed for construction for this impact (although 'groundwater' is also missing from the table caption). It appears the impact title for construction for this impact has not been used consistently. This will be checked throughout and corrected to read 'Changes to surface and groundwater flows and flood risk'. All other impact titles will be checked as well.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	
			The greatest significance of effect (to groundwater receptors) will occur as a result of subsurface excavations during the construction phase. Once this disturbance impact has ceased, any further impact will be small scale, highly localised and episodic.			
	2.26	14.3.8 Consultation Table 14.14 Scoping Opinion & ETG consultation responses.	(30/05/2022 Scoping Opinion) The MMO required the potential **impact of the development on groundwater resources** and groundwater quality to be assessed. This should include the appropriate measures to identify private water supplies along the corridor of the proposed cable route.	We advise that impacts of cable trenching techniques (HDD/direct pipe) during construction up on groundwater flows and groundwater dependent habitats and species should be further assessed.		Please refer to previous responses to **Comment IDs 32** and **33** of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Annex 2: Hydrogeology Technical Note** of this document.
	2.27	14.4.1 Current Baseline 14.4.1.1 Surface water drainage Taw Estuary (Sir Arthur`s Pill catchment) Para 64	In addition to the Main River (Sir Arthur's Pill) and Ordinary Watercourses of Braunton Marsh, Sir Arthur's Pill's catchment also includes several permanent freshwater ponds at its western boundary that have developed in the 'slacks' between the dunes of Braunton Burrows. The dune system rests on an estuarine clay layer which forms the base of a small rain-fed sand aquifer (Burden, 1998).	Potential for impacts of trenchless techniques (HDD or direct pipe) upon groundwater dependent Humid dune slack and petalwort features have not been considered as part of the assessment. Given the prevalence of dune slack habitat along the cable route as identified by the NVC survey it is possible that petalwort could be present We advise that the potential for hydrological impacts on both these features needs to be fully understood.		Please refer to previous responses to **Comment IDs 32** and **33** of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Annex 2: Hydrogeology Technical Note** of this document. **Appendix L: Petalwort Desk Based Assessment and Survey** of the **ES Addendum** shows that NVC dune slack communities SD15c and SD16b) in the northern part of Braunton Burrows are not close to the Onshore Development Area.
	2.28	14.4.2.5 Abstractions Para 107	Due to climate change and associated warmer, drier summers, water resources associated with the Secondary A aquifer that characterises the Onshore Project may come under more pressure, due to more permits to abstract being sought. This could have associated impacts on surface and groundwater hydrology, water quality and designated sites.	Natural England advises that consideration as part of cumulative assessment of impacts upon groundwater dependent SAC features – dune slacks & petalwort is required before we can provide further advice.		Please refer to previous responses to **Comment IDs 32** and **33** of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Annex 2: Hydrogeology Technical Note** of this document. **Appendix L: Petalwort Desk Based Assessment and Survey** of the **ES Addendum** shows that NVC dune slack communities SD15c and SD16b) in the northern part of Braunton Burrows are not close to the Onshore Development Area. Given no hydrological change would result from the project, there is no pathway for a reduction in water availability within the aquifer would be further exacerbated by the project. Consequently, no impact

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	
						would occur on the designated sites or features where groundwater is a supporting or influencing factor.
	2.29	Table 14.15 Water Resources & Flood Risk receptor sensitivity	Taw Torridge and (Coastal catchment) Instow Barton Marsh, Braunton Burrows Sensitivity or these receptors is high because of SSSI and SAC designations (part of Braunton Burrows SAC overlaps the estuary) and the area of catchment crossed by the Onshore Export Cable Corridor may also be underlain by the small sand aquifer that contributes to the freshwater ponds within the dune 'slacks' of the SAC.	While we agree that impacts assessed as minor adverse for these catchments and mainly relate to impacts upon surface flow rather than impacts upon groundwater; we advise further consideration is required on what this means for dependent features.		Please refer to previous responses to **Comment IDs 32** and **33** of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Annex 2: Hydrogeology Technical Note** of this document. **Appendix L: Petalwort Desk Based Assessment and Survey** shows that NVC dune slack communities SD15c and SD16b) in the northern part of Braunton Burrows are not close to the Onshore Development Area. As stated above, given no hydrological change would result from the project, there is no pathway for a reduction in water availability within the aquifer would be further exacerbated by the project. Consequently, no impact would occur on the receptors (and designated site features) where groundwater is a supporting or influencing factor.
	2.30	14.5.4 Impact 4: Changes to surface & groundwater flows & flood risk Para 162	Subsurface flow patterns can be altered because of changes to infiltration rates, surface flows and the installation of impermeable subsurface infrastructure.	Natural England advises that changes to subsurface flows have potential to impact upon the extent and duration of flooding of the dune surface which is important in determining vegetation composition and structure and in maintaining suitable breeding conditions for aquatic species. Any disturbance of this regime will affect the ecohydrological condition of humid dune-slacks. Therefore, we advise that further consideration is given to this matter.		A detailed study (Allen et al., 2014) of the sand aquifer shows that groundwater flows away from the centre of the dunes in a radial pattern. Using dipwells and chemical analysis, the study suggests groundwater takes 5 to 7.5 years to move from the centre to the edge of the dunes. The long residence time of groundwater in the dune aquifer will to some extent buffer any potential changes. Within the long residence timeframe any disturbed ground will have been reinstated. Furthermore, the dunes rest on an estuarine clay layer forming the base of the small rain-fed aquifer – the underlying Pilton Mudstone Formation (Devonian) forms a low-yielding aquifer, with little to no hydraulic connectivity between this and the sand aquifer. The crossing for the trenchless techniques will be entirely within these underlying deposits (except for the entry and exit points), thereby potentially limiting any impacts on the overlying sands. The onshore cable corridor passes at the furthest edge of the dunes, outside the SAC and distant from the dune slacks. The very small area of the Taw Estuary surface water body and large groundwater body that will be affected by construction and operation activities, combined with the long residence time and potential aquiclude, indicates there will be limited changes either to the extent or duration of flooding. Furthermore, the above study also indicates that changes in the dune

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	
						aquifer are due to changes in rainfall changes over the last 40 years i.e. more likely to be affected by above ground rather than below ground changes in the hydrological regime.
	2.31	Impact 5: Changes to surface & groundwater flows & flood risk Para 177 & Para 179	The presence of the buried cable ducting along the Onshore Export Cable Corridor may impact upon subsurface flow corridors as it will introduce an impermeable barrier which may change subsurface flow patterns. This may force water to move upwards towards the surface, or downwards away from the surface. Buried cable ducting may also impact upon the level of recharge and distribution of groundwater within the aquifers underlying the Onshore Project. Ground disturbance during installation of the cable trench may change the transmissivity of the ground which overlays the cable infrastructure after reinstatement and may therefore become a preferential corridor for subsurface water flow.	Implications for groundwater dependent habitats & species features within the SAC requires further consideration in the impact assessment and HRA.		Please refer to previous responses outlining there will no change to the ecohydrological regime. Further information is provided in **Annex 2: Hydrogeology Technical Note** of this document. **Appendix L: Petalwort Desk Based Assessment and Survey** shows that NVC dune slack communities SD15c and SD16b) in the northern part of Braunton Burrows are not close to the Onshore Development Area. Given no hydrological change would result from the project, there is no pathway for a reduction in water availability within the aquifer would be further exacerbated by the project. Consequently no impact would occur on the receptors (and designated site features) where groundwater is a supporting or influencing factor.
	2.32	14.6 Potential impacts during operation and maintenance Table 14.25	Permanent infrastructure will consist of the onshore export cables. As the onshore export cables will be located up to 13 m below the channel bed, impacts on flows at the surface are considered extremely unlikely. However, there could be negligible impacts (increased runoff to the estuary) from operation and maintenance activities in the adjacent catchments where permanent infrastructure is located	We advise that potential for impacts during construction of HHD upon groundwater flows require further consideration.		This comment refers specifically to HDD/direct pipe crossing up to 13m below the estuary channel bed. The proportion of the Taw River and North Devon Streams groundwater body that would be crossed at depth by a worst case 1.42m diameter direct pipe is 0.00014%. For the whole project permanent infrastructure will only occupy 0.003% of the groundwater body. At the water body scale it is considered unlikely that groundwater flows will be affected. Clarification on the operations and maintenance phase of the Project is provided in **Section 5.3** of this **ES Addendum**. Please refer to previous responses to **Comment IDs 32** and **33** of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Annex 2: Hydrogeology Technical Note** of this document.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	
	2.33	14.10 Inter relationships Para 211 Table 14.28 Impacts on water-dependent habitats and designated sites.	Potential changes to the hydrology, geomorphology and water quality of designated sites could impact upon water-dependent biological communities (including the designated interest features).	We advise that these impacts are identified but not explored in any detail. These will need to be assessed in full in the application and by the HRA.		Please refer to previous responses to **Comment IDs 32** and **33** of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Annex 2: Hydrogeology Technical Note** of this document. Given no hydrological change would result from the project, there is no pathway for a reduction in water availability within the aquifer would be further exacerbated by the project. Consequently, no impact would occur on the receptors (and designated site features) where groundwater is a supporting or influencing factor.

Table 7 Natural England's Key Advice and Recommendations – Terrestrial Ecology

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
Project Parameters. Document(s) Used: Chapter 16 Onshore Ecology and Ornithology						
Natural England's Position on Worst Case Scenario or Scenarios	3.1	16.3 16.3.6.1	Direct physical damage and disturbance to Braunton Burrows SSSI/SAC (intertidal area) due to cable installation	We advise that works for trenching and trenchless installation need to mitigate spread risk of invasives such as Sea buckthorn (noted as present in VAM for Braunton Burrows SSSI), hottentot fig, as well as those noted in 16.3.6.1 (Montbretia, Japanese knotweed, three-cornered garlic) etc. Same comment applies to ongoing maintenance / emergency repairs of cables.		Precautionary control measures in relation to risk management from invasive and non-native species are set out in the following documents which are being provided as part of the **Further Environmental Information** submission: • **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-ENV-PLN-0010) • **Outline Invasive Non-Native Species (INNS) Management Plan** (WHX001-FLO-CON-ENV-PLN-0009). The Applicant expects there to be a condition of the planning permission and Marine Licence consent that both of these management plans are updated and approved pre-construction. But it should be noted that risk of these species is considered to be low based on the survey results.
Baseline Characterisation– Document(s) Used: Chapter 15 Land Use; Chapter 16 Onshore Ecology and Ornithology						
Data Gaps	3.2	15.4.1.3 15.5.4	Stewardship Schemes – ES & CS schemes are discussed however the figure 15.3 only shows a map of ELS & HLS schemes not Mid or Higher Tier schemes.	We advise that the installation of this project should not be detrimental to any stewardship schemes especially were there are sensitive management options protecting and enhancing vulnerable habitats, which are not easily replaceable. We advise the agreement holder will need to speak with the Rural Payment agency and NE.		The impact on specific agreements will only be known once the final working area and programme has been confirmed, and landowner agreements are in place, confirming the extent and duration of impacts to specific land parcels. The Applicant through their Land Agents will engage with all farmers, tenants and other land managers to fully understand what environmental and countryside stewardship schemes they are currently part of. The Project will work with the landowners/occupiers as the detailed design stage to understand any ecological constraints or opportunities associated with existing agreements.
	3.3	16.3.6		Natural England advises as part of the consenting phase an In Principle Monitoring Plan (IPMP) needs to be agreed between all interested parties in relation to the focus of pre, during and post installation monitoring. And monitoring /site investigations should avoid further damage to designated site interest features. This should form on of the principles of the IPMP		An **Outline Project Environmental Management & Monitoring Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003), including an In-Principle Monitoring Plan is provided as part of the **Further Environmental Information** submission.
	3.4	16.4.1 – Table 16.5	Confusion about the listing of favourable/ unfavourable condition by unit here. [Natural England's](#)	Natural England advises that any designated site assessment requires updating to ensure that necessary context		Summary unit conditions in the table were taken from NE website: [Site units (naturalengland.org.uk)](#). The points in the NE's comments noted and will be rechecked/cross-referenced

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			Designated Sites data shows that different designated features have different favourable status *within* each unit, rather than specific units being entirely in unfavourable/ favourable condition as seems to be suggested by the wording here. E.g. Unit 101 – Saunton Golf Club is listed as "unfavourable recovering condition" in the document, but in fact, within Unit 101 some features are in Unfavourable Recovering condition, e.g. H2130 Fixed dunes, and some are in Favourable Condition, e.g. Vascular plant assemblage. Bideford to Foreland Point MCZ and Fremington Quay Cliffs SSSI also need inclusion in this table. (Bideford Point MCZ mentioned later on in 16.4.2). Construction of pipes, heavy machinery crossing the geological features in this area may damage designated geological features of Fremington Quay Cliffs SSSI – though this seems unlikely given distance of the works from the SSSI.	is considered as part of any decision making		– updating this info can be carried out as necessary. This correction is not however considered to change the assessment later on in the **Chapter 16: Onshore Ecology and Ornithology** of the **Onshore ES** (or elsewhere in the ES); no changes in the assessment section are therefore required. Fremington Quay Cliffs SSSI – this is a geological SSSI and as such it has not been considered in **Chapter 16** (which is limited to ecology). It is noted that at its closest point it is over c. 2.5km to the east (and therefore NE's suggestion that impacts on this geological SSSI seem unlikely, appear reasonable, although this point is outside of the scope of the ecological assessment). Assessment of the effects of the Project on the Bideford to Foreland Point MCZ are provided in **Chapter 10: Benthic and Intertidal Ecology** of the **Onshore** and **Offshore ES**.
	3.5	16.4.3.4 – Otters	As survey shows evidence that all suitable habitat within / adjacent to the Onshore Development Area (estuary, ditches and ponds) could be used by this species for foraging on at least an occasional basis, further surveys may be needed to inform mitigations.	Natural England requests that pre construction otter surveys are a requirement of any planning permission to inform the implementation of outline mitigation measures agreed as part of the consenting phase		Need for precautionary pre-construction surveys is set out in **Chapter 16: Onshore Ecology and Ornithology** (**Table 16.11**) of the **Onshore ES**.
Analysis, Modelling and Reporting	3.6	16.4.3.2	Presence of five badger setts and survey evidence that badgers use all parts of the Onshore Development Area indicates additional mitigation may be required and added to table 16.10 'Embedded mitigation measures relevant to the onshore ecology and ornithology'.	Natural England advises that as a minimum a pre-construction badger survey is undertaken and the outcome of which agreed with the regulator in consultation with NE. Please see NEWLS comments		Need for precautionary pre-construction surveys is set out in **Chapter 16: Onshore Ecology and Ornithology** (**Table 16.11**) of the **Onshore ES**.
Environmental Impact Assessment – Document Used: Chapter 15 Land Use; Chapter 16 Onshore Ecology and Ornithology; Chapter 20 Onshore Ecology and Ornithology (marine application)						
Identified impacts	3.7	15.4.1.4.1 15.6.1 16.4.5 – Table 16.23	No mention of Greenaways & Freshmarsh SSSI which the pipeline borders and will doubtless impact upon as the notified features are reliant on the water levels, drainage and ditches which border the SSSI	We advise that the ES requires further update to include this site. Particular consideration to avoid impacting designated features of Lowland fens, including basin, flood-plain, open water		Indirect impacts to Greenaways and Freshmarsh, Braunton SSSI are considered within **Chapter 16: Onshore Ecology and Ornithology** (**Section 16.5.6**) of the **Onshore ES**.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
				transition and valley fens and lowland wet neutral grassland from create, use and decommissioning of the haul road. Mitigation also needed to control/ avoid invasion during works by non-native aquatic plants such as floating pennywort and water fern.		Please refer to previous responses to **Comment IDs 32** and **33** of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Annex 2: Hydrogeology Technical Note** of this document. Please refer to previous responses to **Comment ID 3.1** of **Table 7** in **Section 4** of this document measures for managing the spread of INNS.
Identified impacts	3.8	16.4.5 - Table 16.23	Riparian habitats and water courses. Consideration here needed of risk of spread of water borne invasive species.	Natural England advises that further consideration of managing the spread of INNs is required		Please refer to previous responses to **Comment ID 3.1** of **Table 7** in **Section 4** of this document measures for managing the spread of INNS.
	3.9	16.5.5	233. Impact of air pollution from ammonia etc is deemed here to be 'likely to be small' on the botanical interest of the SSSI, as "the botanical interest of the SSSI does not refer to plant communities that are dependent on low nutrient conditions or those likely to be high sensitivity to air quality impacts". However, significant nutrient deposition or runoff could lead to an increase in rank grasses and hence a loss of botanical diversity	Natural England advises that this needs to be considered in the assessment of impacts on the salt marsh habitats.		No salt marsh habitat is located in areas which disturbance will occur due to the use of trenchless technology. Further detail on the suitability of HDD is provided in **Appendix A** and **Appendix J** of this document. The following documents which are being provided as part of the **Further Environmental Information** submission: • Outline Construction Environmental Management Plan (CEMP) (WHX001-FLO-CON-ENV-PLN-0010) • Outline Bentonite Management Plan (WHX001-FLO-CON-ENV-PLN-0012) The Applicant expects there to be a condition of the planning permission and Marine Licence consent that both of these management plans are updated and approved pre-construction.
	3.10	16.5.7	Indirect impacts to Saunton to Baggy Point SSSI's mineral-rich soils support important lichen communities, which are potentially vulnerable to air pollution impacts. Impact is judged by this report to be negligeable, given only a "small proportion of the SSSI is within 200m of the Operational Development Area...the temporary effect of construction and potential wind-driven dispersal/dilution".	Based on the evidence included in the assessment Natural England does agree with this assessment		For context, the SSSI extends for 7km to the west and north along the coastline; therefore c. 98% of the SSSI is more than 200m from the Operational Development area. As described in the assessment, it is considered unlikely that effects will arise that would affect the integrity of the SSSI [due to the very small proportion of the SSSI within proximity, also given the short-term temporary nature of the work and since]. Logically, it is considered likely that there will also be a wind-driven dispersal/dilution effect given the coastal location which is considered likely to further reduce the likelihood of an effect. The Applicant notes Natural England's agreement on the assessment, however queries why this is assigned as a 'red' risk. Can Natural England provide further information on the rationale if there are particular concerns that contradict the assessment set out in **Chapter 16: Onshore Ecology and Ornithology** of the **Onshore ES**?

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	3.11	20.5.7	P181. Otters - mitigation measures such as fencing are mentioned, but then refer to Table 20.9, where fencing is not mentioned. With regards to disturbance: *"As otter territories are very large (up to 30km) and these impacts will be short-term and extremely localised, and <u>not near any confirmed otter holt or resting sites</u>, (and with embedded mitigation such as site fencing, see Table 20.9) this is likely to produce an effect of negligible magnitude."* However, the watercourse containing holts seems close to the pipeline route.	We advise that further consideration is given to disturbance to Otters and the need for any monitoring and license.		The watercourse mentioned by Natural England is well screened from the Onshore Development Area by scrub and dense vegetation and this is taken into account in the assessment. Need for precautionary pre-construction surveys is set out in **Chapter 16: Onshore Ecology and Ornithology** (**Table 16.11**) of the **Onshore ES**. Mitigation measures are discussed in the **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-ENV-PLN-0010) which is provided as part of the **Further Environmental Information** submission.
	3.12	20.9	Embedded mitigation table 20.9	Natural England advises that Plant nappies should be used as well as spill kits – if not then justification is required.		Mitigation measures are discussed in the **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-ENV-PLN-0010) which is provided as part of the **Further Environmental Information** submission.

Table 8 Natural England's Key Advice and Recommendations – Soils

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
Soils and Best and Most Versatile Agricultural Land	4.1	12.2.1 Table 12.1 / 15.2.2 Table 15.1	Local planning authorities are responsible for ensuring that they have sufficient detailed agricultural land classification (ALC) information to apply NPPF policies (Paragraphs 174 and 175). Para 175 makes reference to footnote (58) 'Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality'.	Natural England has focused on this in providing our statutory nature conservation advice on the White Cross planning Application		Noted
	4.2	12.2.2 Table 12.2 / 15.2.2 Table 15.2	Policy DM08: Biodiversity and Geodiversity states that 'Development should conserve, protect and, where possible, enhance biodiversity and geodiversity interests and soils commensurate with their status and giving appropriate weight to their importance'			
	4.3	Table 12.8	We note there is no assessment of the decommission process on soils for the cable route corridor.	Natural England advise that within the ES, there is a commitment to decommissioning and an outline decommissioning plan. There should be more attention given to the latter stages of project lifecycles (i.e. decommissioning), ensuring that mechanisms for environmental mitigation, restoration and enhancement that are built in at the design stage are secured well into the future.		Clarification on the decommissioning phase of the Project is provided in **Section 5.4** of this **ES Addendum**. As outlined in **Chapter 15: Land Use** (**Section 15.7**) of the **Onshore ES**, impacts during the decommissioning stage are assumed to be the same as those identified during the construction stage. **Section 15.5.3** outlines that residual effects relating to soil degradation and loss of soil to erosion will be not significant following the implementation of further mitigation. Further mitigation will include a Soils Management Plan (SMP) outlining the mitigation measures and best practice techniques, which contractors will be obliged to comply with will also be produced. The Applicant expects that this will form a condition of planning permission. An **Outline Decommissioning Programme** (WHX001-FLO-CON-ENV-PLN-0011) is provided as part of the Further Environmental Information submission. The Applicant will consult Natural England in the development of the final Decommissioning Programme which will be approved by the local planning authority. The plan will follow all relevant legislation and guidance at the time of decommissioning. Noting that these will likely change before this project is decommissioned.
	4.4	Table 12.8, 12.3.5 / 15.3.5 12.5.5.2 (165)	The spatial distribution of ALC grades determined from a detailed ALC survey are necessary to inform the reinstatement criteria, which allows the area of each ALC Grade temporarily disturbed to be returned to the same quality as far as practicable to minimise potential loss.	We advise that further land quality and soil resources information is gathered through project specific survey for any land that is disturbed by the development, Ideally a full detailed ALC survey would		A soil survey of the onshore export cable route has been undertaken, and the results and assessment presented in **Appendix R: Agricultural Land Classification Soil Survey** of the **ES Addendum**. As set out in **Section 6.4** of the **ES Addendum**, the results of the soil survey and assessment do not change the assessment presented in **Chapter 15: Land Use** (**Section 15.6.2**) of the **Onshore ES** that,

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			Whilst this predictive mapping provides an indication of the ALC grade, and thus the potential impact on BMV agricultural land, it does not provide the soil details required to inform soil management which would feed into the Soil Management Plan. There is a risk of soil damage, ALC degradation and long term or permanent loss of BMV from cable installation. Soil will need to be handled according to best practice and reinstated to a high standard to reduce the impacts. The results from a detailed ALC survey would provide soils data to inform a soil management plan for the whole site regardless of whether the use is permanent or temporary in nature.	have been carried out across the whole site. The ALC survey will enable a finalised soil management plan to be generated for any areas to be disturbed (temporary and permanent) to ensure correct handling and restoration of soils, and onsite reuse of any surplus soils stripped from areas of permanent development. The ALC survey should follow the [Guide to assessing development proposals on agricultural land - GOV.UK (www.gov.uk).](https://www.gov.uk) All land which may experience temporary or permanent disturbance should be subject to a detailed ALC survey, to inform suitable handling and restoration.		following the implementation of mitigation, there will be a minor adverse effect relating to permanent loss of land for agriculture. As set out within **Chapter 5: Project Description** (**Section 5.6.3.3**) of the **Onshore ES**, link boxes will be required along the route of the onshore export cable, and are assumed as a worst case to be concrete enclosures of 3m x 3m. It is proposed that all link boxes within the cable corridor would be located below ground with an above ground marker post at each location. The final location will be determined following detailed design, but as a worst case it is assumed there would be a single link box in close proximity to each joint bay (JB). The indicative locations of the JB are shown on **Figures 5.D 1 – 5** in **Appendix 5.D: Onshore Export Cable Corridor Alignment Sheets** of the **Onshore ES.** This is not considered to represent a significant permanent loss of agricultural land. The Applicant is committed to the delivery of a Soil Management Plan (SMP) pre-construction following detailed design and expects the production of a SMP to be a planning condition. During the preparation of the SMP, the Applicant will continue to liaise closely with landowners to understand their preferred soil management processes.
	4.5	**Table 12.5 / Table 15.5**	It is unclear what guidelines have been used to determine receptor sensitivity criteria sensitivity. In planning, ALC Grade 1, Grade 2 and Subgrade 3a land is termed 'Best and Most Versatile' (BMV), as defined by the NPPF ([National Planning Policy Framework -Annex 2: Glossary – Guidance – GOV.UK (www.gov.uk).](https://www.gov.uk)	Natural England requests that further clarity is provided on how receptor sensitivity has been determined by the Applicant		Sensitivity is based on the capacity of receptors to tolerate change and is used to determine if the degree of change would be acceptable in terms of the current legislation and guidelines. In relation to ALC grades, sensitivity is defined as follows: • High = ALC Grade 1 or 2 and 3 with respect to permanent land take • Medium = ALC Grade 3 with respect to temporary land take • Low = Grade 4 • Negligible = Grade 5. The assessment was undertaken on the basis that all Grade 3 land is 3a and not 3b. Therefore, that all Grade 2 or 3 is BMV land. The subsequent ALC Soil Survey that has been undertaken since the assessment has found all agricultural land within the Onshore Development Area to be class 3b meaning that no Best and Most Versatile land is within the Onshore Development Area. Refer to **Appendix R: Agricultural Land Classification Soil Survey** of the **ES Addendum**.
	4.6	**Table 12.9 / Table 15.10**	A SMP may be expected to be prepared in line with the Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.	Natural England advises that an Outline SMP is provided as part of the consenting		As above the Applicant is committed to the delivery of a SMP pre-construction. The Applicant disagrees that an Outline SMP is required at this stage. Once the final working width (within the Onshore Development Area) and final construction methodology are identified,

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			The SMP should include the following: An assessment of agricultural land and soil resource of the site will be undertaken before work commences (as per Natural England's Guide to assessing development proposals on agricultural land) which is considered to represent UK good practice. Mitigation should include reference to the Defra Construction Code The methods by which the Applicant intends to restore appropriate affected areas to agricultural use after works including excavations and restoration has finished. An aftercare programme which would enable a satisfactory standard of agricultural after-use to be reached, with regards to cultivating, reseeding, draining or irrigating, applying fertiliser, or cutting and grazing the site. Where topsoil is proposed to be stripped, typically for construction compounds; access tracksand laying cabling, the soil handling methodology (movement, storage & replacement) and soil protection proposals are reviewed to ensure that appropriate mitigation is in place to allow for the restoration of the land to the baseline ALC Grade.	phase and updated once the ALC survey and pre construction checks have been completed to ensure all necessary mitigation and monitoring is secured, including an adaptive management clause if monitoring demonstrates impacts are not as predicted		specific management measures will be established. These measures are unknown at this stage.
	4.7	12.5.5.1	**164** Natural England advises that for areas of temporary loss of agricultural land, (specifically land subject to cabling or temporary access), an ALC survey should be undertaken at the same time as the ALC surveys proposed for areas of permanent infrastructure. The ALC surveys will identify the ALC grade, which can then be used to contribute to the routing, so as to demonstrate the potential impacts on Best and Most Versatile agricultural land were minimised as far as practicable. This baseline information can also be used to inform sustainable soil handling and the reinstatement criteria.	Natural England advises that an Outline SMP is provided as part of the consenting phase and updated once the ALC survey has been completed to ensure all necessary mitigation and monitoring is secured, including an adaptive management clause if monitoring demonstrates impacts are not as predicted		A soil survey of the onshore export cable route has been undertaken, and the results and assessment presented in **Appendix R: Agricultural Land Classification Soil Survey** of the **ES Addendum**. As above the Applicant is committed to the delivery of a SMP pre-construction. The Applicant disagrees that an Outline SMP is required at this stage. Once the final working width (within the Onshore Development Area) and final construction methodology are identified, specific management measures will be established. These measures are unknown at this stage.
	4.8	12.6.4	**203** The temporary displacement of soil as a result of the underground cable installation and temporary haul roads/construction compounds can result in permanent land quality change and soil damage if undertaken inappropriately.	Natural England advises this should be considered in the SMP. This is required for consultees and decision makers to understand the extent (ha) and likely long-term impacts on		A soil survey of the onshore export cable route has been undertaken, and the results and assessment presented in **Appendix R: Agricultural Land Classification Soil Survey** of the **ES Addendum**. The methodology is set out in **Section 3.2** of **Appendix R** and comprised at least one hand auger boring per hectare to a depth of

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
				agricultural land quality (ALC grade). A detailed ALC and soil survey of the agricultural land should be undertaken across the full Study Area to inform the EIA. This should normally be at a detailed level, e.g. one auger boring per hectare, supported by pits dug in each main soil type to confirm the physical characteristics of the full depth of the soil resource, i.e. 1.2 metres. Soil data collected as part of an ALC survey can also be used to inform the soil resource and management plan as set out in the Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.		1.20m below ground level (where achievable) in accordance with current guidance. In addition, in order to determine subsoil structure, at least one inspection pit per soil type has been excavated.
	4.9	Table 12.23	Impact 5 and 9 allude to pre- construction site investigations. It is unclear whether this is referring to ALC surveys.	Detailed ALC surveys across the whole onshore project should be undertaken prior to consent.		A soil survey of the onshore export cable route has been undertaken, and the results and assessment presented in **Appendix R: Agricultural Land Classification Soil Survey** of the **ES Addendum**.
	4.10	Table 15.5	See comments above for Table 12.5.	For Sensitivity we recommend the following: **Sensitivity of Soil Receptors (Table 7.2 Reproduced from the ICE Environmental Impact Assessment Handbook – A Practical Guide for Planners, Developers and Communities (3rd Edition)** Very High ALC 1 & 2 High ALC 3a Med ALC 3b Low ALC 4 & 5		Sensitivity levels for receptors (as well as magnitude and significance) have been defined into levels in line with the approach set out within **Chapter 6: EIA Methodology** of the **Onshore ES**. This enables a consistent assessment approach within each topic and for the EIA as a whole. In relation to ALC grades, sensitivity is defined as follows: • High = ALC Grade 1 or 2 and Grade 3 with respect to permanent land take • Medium = ALC Grade 3 with respect to temporary land take • Low = Grade 4 • Negligible = Grade 5. The Applicant has now undertaken a full ALC survey as requested. This has concluded that all arable and pastural land within the Onshore Development Area is Grade 3b meaning that no Best and Most Versatile land is within the Onshore Development Area. This is reported in **Appendix R: Agricultural Land Classification Soil Survey.**

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	4.11	15.2.4. 15.5.3.4.	**Bullet 2, sub-bullet 2**. The MAFF Guidelines have been superseded by the 2021 Soils Guidance (quarrying.org). Although it is noted that the IQ guidelines are also listed (sub-bullet 13).	Natural England advises using most up to date guidance and that application conclusions are checked on this premise to ensure they remain true.		Noted, the 2021 guidance will be used to inform the SMP.
	4.12	Table 15.6	The table fails to include the definition for subgrade 3a and 3b as presented in the MAFF 1988 Guidelines.	Natural England requests for the avoidance of doubt and audit trial purposes that the Application provide the definition used for 3a and 3b		See response to Comment ID 4.10 in **Table 8** in **Section 4**. The Applicant has now undertaken a full ALC survey as requested. This has concluded that all arable and pastural land within the Onshore Development Area is Grade 3b. This is reported in **Appendix R: Agricultural Land Classification Soil Survey.**
	4.13	15.3.2	The most recent EIA guidance for agricultural land and soils are the 2022 IEMA guidelines 'A New Perspective on Land and Soil in Environmental Impact Assessment', which we recommend are followed. Consideration of the development impacts on the soil resource and soil function should be considered alongside agricultural land take.	Natural England advises using most up to date guidance and that application conclusions are checked on this premise to ensure they remain true.		As outlined in **Chapter 15: Land Use** (**Section 15.2.4**) of the **Onshore ES** this guidance has been considered.
	4.14	15.3.2.2	The national dataset referred to in para 31 is the Provisional ALC mapping, in which Grade 3 is not sub- divided into Subgrades 3a and 3b, however, the most up to date methodology does provide this split.	In the absence of a detailed, site-specific soil and ALC survey in the Environmental Statement (ES) and assuming that all mapped (Provisional) ALC Grade 3 land is BMV (i.e. Subgrade 3a), it is impossible to provide an accurate baseline/characterisation and demonstrate the likely potential impacts. So, whilst this may make the mitigation precautionary, it means that the project is unable to avoid impacts to BMV agricultural land, nor accurately inform the design of potential mitigation to safeguard the soil resources.		See response above. The Applicant has now undertaken a full ALC survey as requested. This has concluded that all arable and pastural land within the Onshore Development Area is Grade 3b. This is reported in **Appendix R: Agricultural Land Classification Soil Survey** of the **ES Addendum**.
	4.15	15.3.4 Mitigation	The assessment of impacts is based on embedded mitigation. It is assumed that this mitigation will work. For soils, this standard mitigation is presented in the Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites which sets out the best practice to minimise soil disturbance and damage. This mitigation will minimise the risk, however it doesn't remove it completely.	Natural England advises that monitoring of outstanding/remaining concerns and effectiveness of mitigation measures will need to be a condition of planning application especially in areas of BMV		The Applicant is open to this proposed condition.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			Despite mitigation, there can still be the loss of BMV land. For example, the temporary soil disturbance can result in soil disturbance, preventing the restoration to the baseline ALC grades Land take cannot be mitigated.			
	4.16	Table 15.14	Agree with the summary of impacts scoped in relating to Land Use. The soil degradation could usefully be expanded to cover multiple soil functions (for example, the impact of construction on the soil structure and thus flood risk. Could usefully cross reference to Ch 14 Water Resource and Flood Risk – as stated in Para 119; also the risk of erosion could be linked to the loss of soil C). There is also the potential for ALC grade to be downgraded as a result of soil loss or soil degradation, and thus potential BMV loss beyond permanent land take.	Natural England advises that this needs further consideration by the Applicant as part of the SMP		Note, this will be addressed within the SMP (expected to be a planning condition).
	4.17	15.4.1	**59** Presumption of grade 3a is not concurrent with best practice when assessing impacts on agricultural land.	Natural England does not agree with this approach and refers the Applicant to advice given in 12.3.5		The Applicant has now undertaken a full ALC survey as requested. This has concluded that all arable and pastural land within the Onshore Development Area is Grade 3b. This is reported in **Appendix R: Agricultural Land Classification Soil Survey** of the **ES Addendum**.
	4.18	15.5.1.4	Natural England notes the commitment to provide pre and post underdrainage.	As requested at Scoping (Table 15.16), Natural England re iterate the importance of a full ALC survey in order the provide an accurate baseline of ALC grades and soil type to inform suitable handling during construction and provide effective drainage ensuring earlier phases are not left undrained for a number of years to the detriment of soil health and agricultural land quality. Therefore, Natural England request that prevision of under drainage is included in an planning permission.		The Applicant has now undertaken a full ALC survey as requested. This has concluded that all arable and pastural land within the Onshore Development Area is Grade 3b. This is reported in **Appendix R: Agricultural Land Classification Soil Survey** of the **ES Addendum**. As outlined in **Chapter 15: Land Use** (**Section 15.5.1.4**) of the **Onshore ES** an Agricultural Liaison Officer and/or land drainage consultant will be appointed to develop pre- and postconstruction drainage plans. The Applicant is open to this commitment being a planning condition.
	4.19	15.6.2	Natural England will not make any further comment on temporary or permanent impacts on Best and Most Versatile agricultural land until the Applicant has completed an ALC survey as mentioned in our comments above (12.3.5)	An outline Soil Management Plan should be prepared to accompany the ES as per the 2009 Defra Construction Code.		This will be addressed within the SMP (expected to be a planning condition). The SMP will be prepared in line with recent best practice guidance. **Appendix R: Agricultural Land Classification Soil Survey** of the **ES Addendum** will inform the SMP.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	4.20	15.7	As above, we note there is no assessment of the decommission process on soils (including BMV land) for the cable route corridor.	Natural England advise that within the ES, there is a commitment to decommissioning and an outline decommissioning plan.		See response to **Comment ID 4.3** (**Table 8**) above. An **Outline Decommissioning Programme** (WHX001-FLO-CON-ENV-PLN-0011) is provided as part of the Further Environmental Information submission. The Applicant will consult Natural England in the development of the final Decommissioning Programme which will be approved by the local planning authority
	4.21	Figure 15.2	It would be expected that the standard colours are used for ALC mapping.			Noted. The Agricultural Land Classification Soil Survey is provided in **Appendix R: Agricultural Land Classification Soil Survey** of the **ES Addendum**.
	4.22	16.3.6.1 Embedded Mitigation Table 16.10 Grassland (lowland Floodplain grazing marsh) within Braunton Marsh Unconfirmed Wildlife Site (UWS).	It is stated that topsoil and subsoil will be extracted and stored separately during construction, and reinstated in the correct order following completion of works to maintain soil structure and allow the vegetation to re-establish on completion. Removal and storage of turves will also be carried out, for example, in any localised areas where more diverse vegetation is present.	We advise that topsoil and subsoil should be stored sufficiently distant from watercourses so as to avoid run off during we weather periods. Storage of removed turves should include routine watering to and covering to prevent drying out in warmer weather.		Noted, the Applicant will set this out within the SMP.

Table 9 Natural England's Key Advice and Recommendations – Bats

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
Project Parameters. Document(s) Used: Chapter 16 Onshore Ecology and Ornithology						
Natural England's Position on Worst Case Scenario or Scenarios	5.1	16.3.5, page 25	The rationale and proposed definition for Bat WSCs seem reasonable. However no WCS has been agreed.	Natural England advises that a WCS should be agreed for bat species		Table relates to WCS development approach to installation technique rather than individual ecological receptors. Possible impacts with regards to bats are considered in detail in **Section 16.5.12** of **Chapter 16: Onshore Ecology and Ornithology** of the **Onshore ES**; this considers impacts before mitigation (i.e. the equivalent of a WCS), and again after mitigation.
Baseline Characterisation – Document(s) Used: Chapter 16 Onshore Ecology and Ornithology						
Survey Data Acquisition, methodologies and data gaps	5.2	Table 16.12, paragraph 56	The desk study does not include records from local bat group records.	We advise that records from local bat groups e.g. Devon Bat Group, should be used where possible to support Application.		Records have subsequently been obtained from Devon Bat Group on 23 November 2023. In conclusion, the additional data obtained from the Devon Bat Group, while providing additional general contextual information, are not considered to alter the existing assessment set out in **Chapter 16 Onshore Ecology and Ornithology** of the **Onshore ES**.
	5.3	Paragraph 22, 16.4.3.3.1	The desk study for bat records, including MAGIC searching for EPSM licences, was completed for a 1km search radius only, though paragraph 22 states that for bats consideration of records within and up to 5km development area. The report states that the majority of Onshore Development Area to the north of the River Taw lies within 5km of Caen Valley Bats SSSI. The core sustenance zone for Greater Horseshow bat for which the above SSSI is designated for is 3 km.	We advise that further clarification is required in relation to the desk-based study area and whether a 1km search radius was used. If so, justification for this required, but we strongly advice extending this to 5km search radius.		The Caen Valley SSSI has been identified in the desk study (in the 2km search area for designated sites); records for other non-statutory sites and protected species were requested from DBRC for a 1km search radius, as were records of EPSM licences (also, as stated elsewhere in response to NE comments, further records have also been obtained from the Devon Bat Group). The basic data search was 1km (in line with CIEEM's suggested approach) but was extended for protected sites for at least 10km (also in line with this approach), and or protected species licences (bats and great crested newt) for 5km (see **Chapter 16: Onshore Ecology and Ornithology Appendix 16.B: Preliminary Ecological Appraisal** (**Section 2.1**) of the **Onshore ES**. Additional local research information on bats/birds has also been considered in the assessment (Natural England research ENRR495 -Caen Valley SSSI bat foraging/Berridge's (2019) Taw Torridge Estuary disturbance study on birds/WeBS data) for a wider area, which have been an

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						important part of the desk study. This approach is considered to be in line with the standard industry recommendations; it also takes into account the designed in mitigation (route options selected to minimise impacts), zone of influence, and temporary nature of the project (and low risk of habitat fragmentation). It is also worth noting that the survey work for the project was scoped in consultation with NE and NDC, to ensure that all the likely key issues are addressed. Also, given the number of designated/protected wildlife sites locally, issues in the local area are relatively well known, and these have been considered in the assessment. A basic 5km search area for all records, as suggested, is considered to be more than is necessary for this project and is unlikely to give any additional certainty in relation to the assessment of impacts.
	5.4	Table 16.12, page 34	The search radius for the baseline data sources for the desk study has not been provided.	Clarification as to whether this search area is also based on a 1km radius as per the desk study provided in 16.4.3.3.1. also see comment above.		The assessment has considered Caen Valley SSSI as a specific feature in the assessment. There will be no impact on roosts (no buildings or trees with roost potential will be affected). Survey work that has been carried means that there is a good understanding about the species assemblage that uses the Site.
	5.5	Appendix 16.E Chapter 2 Supplementary Bat Activity Survey Interim Report (Saunton Road, page 3	Remote automated detector surveys were carried out on the south side of the B3231 Saunton Road (adjacent to Sandy Lane), with detectors deployed at this location between 06 June and 11 June 2023. However, due to technical issues, only the first five nights were recorded. Bat guidelines (Collins, 2016; 2023) data to be collected for a minimum of five consecutive nights per month (April to October) for habitats of high and moderate suitability for bats. The suitability assessment of this section of hedgerow is not provided in this report. However, as per Appendix 16.D Bat Activity Survey Report, 2022, it is understood that this would form part of the 'moderate' suitability habitat for bats. as such, further survey would be required.	Ideally further surveys are required in months where survey was not carried out i.e. April-May, July, August- October to understand how bats might be using the sites during this period. The results would then be added to the Onshore Ecology Chapter and used to form the assessment. The above would essentially only form one years' worth of survey data. As such, consideration should be given as to whether a second's years' worth of surveys are required. Results to be added to the Onshore Ecology Chapter and used to form the assessment. This would also provide up to date survey results. Without this survey data Natural England is unable to advise as to whether mitigation measures would be appropriate and/or sufficient.		Refer to detailed response to **Comment ID 40** in **Table 1** in **Section 1.**

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	5.6	Appendix 16.E 16.5.8, para 259 Chapter 16, Chapter 2 Supplementary Bat Activity Survey Interim Report (Staunton Road, page 3	It does not appear that the haul road access point off Saunton Road B3231 where a maximum 90m stretch of hedgerow will require temporary removal to allow for a visibility splay, has been surveyed, due to low potential for foraging bats.	We advise that further survey should be considered for the section of hedgerow where the haul road access point off Saunton Road B3231, if results from further survey of the section of hedgerow adjacent to Sandy Lane, differ from those previously recorded, consideration should be given as to whether the second section of hedgerow along Saunton Road requires bat activity survey. As above ideally the results should be added to the Onshore Ecology Chapter and used to form the assessment. Precautionary mitigation to retain any existing bat commuting routes along the hedgerow line during construction in respect of the Caen Valley Bats SSSI should be provided as informed by the above surveys.		Refer to detailed response to Comment ID 40 in **Table 1** in **Section 1.**
	5.7	16.3.8 2.5 Bat emergence and Activity Report 22 - Buildings 2.5	Access was not provided to undertake internal bat inspections of the off-site Saunton Golf Clubhouse and associated buildings, Braunton Barn or South Barrow Farmstead.	If these buildings are to be impacted, further attempt should be made to access these properties and carry out internal surveys to ensure not harm to roosting bats.		These buildings will not be impacted. Some of these buildings were considered in the bat survey report at an early stage in the project before the final route was confirmed. Clarification on the bat surveys undertaken are provided in **Section 6.5** of the **ES Addendum**.
	5.8	Appendix 16.G, 16.F 16.3.8 Chapter 16, and 2.5 Bat Emergence and Activity Survey Report, 2.4 Inspection and Bat Emergence Survey – Trees	Full area within the redline boundary has not been surveyed due to access restrictions for internal surveys of some buildings and areas of land for trees.	If these are to be impacted further surveys should be carried out. This may also require hibernation surveys depending on the potential impact.		No buildings and no trees with bat roost potential will be impacted. Clarification on the bat surveys undertaken are provided in **Section 6.5** of the **ES Addendum**.
	5.9	Appendix 16.G Appendix 16.D Bat Activity Survey Report 2022 Inspection and Bat Emergence Survey – Trees, 2.4	The majority of trees have only been subjected to one nights' worth of surveys which were only carried out in September 2022 due to access restrictions.	Natural England advises that a further survey is carried out on trees with moderate and high potential if they are to be impacted by the development. These should be carried out across the survey season (May-September with at least two surveys between May and August) as per best practice guidance (Collins, 2016, 2023) to inform how bats are using the area during this period. Results to be added to the Onshore Ecology Chapter and used to form the assessment.		No trees with bat roost potential will be impacted. Clarification on the bat surveys undertaken are provided in **Section 6.5** of the **ES Addendum**.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
				For any other trees that will be impacted as a result of the development, further attempt should be made to access land to carry out further survey to confirm the presence or likely absence of bat roosts. This should be carried out between May-September 2024 and results used to inform the impact assessment and added to the Onshore Ecology Chapter. Furthermore, only surveying within September would miss the maternity period of bats.		
	5.10	Appendix 16.D Bat Activity Survey Report 2022 31., 3.2	One years' worth of remote monitoring surveys, bat activity surveys and building surveys were carried out April to October 2022. The standard methodology would be for two years' worth of data to be collected.	Further survey to be carried out in April to October 2024. Results to be added to the Onshore Ecology Chapter and used to form the assessment. Surveys carried out in 2022 would also be out of date by the time the project commenced. The undertaking of Pre-construction surveys should be a condition of any consent and a more precautionary mitigation package agreed as part of the consenting process.		The industry standard (BCT) survey guidance recommends surveys across one season. This guidance has been followed for the Project. Clarification on the bat surveys undertaken are provided in **Section 6.5** of the **ES Addendum**. The survey work across the site in general is considered to be sufficiently up-to-date to inform the assessment (noting the points about the work on Saunton Road hedgerow, where less survey has been carried out, and the comments on this provided above [B9]). For guidance, further pre-construction surveys may need to repeated/updated where an EPS licence is required (which is not the case here) or in certain circumstances to confirm or refine mitigation. The mitigation proposed is precautionary and is considered to be proportionate in relation to the predicted impacts (i.e. temporary coppicing of two sections of hedgerow where, in both cases, alternative adjacent features are present; provision of fake hedges to provide an alternative flight path, to be set back from the road, during the construction phase, after which the hedgerow affected will be restored/allowed to regrow). **Appendix H: Supplementary Bat Activity Survey Report (Saunton Road)** of the **ES Addendum** provides data for June to August 2023 and April to May 2024. Further survey is considered unlikely to change the assessment of recommendations for mitigation which is detailed for Saunton Road in **Appendix I: Approach to Bat Mitigation at Saunton Road**.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						It is noted that guidance for projects (requiring HRA) near to South Hams SAC (for greater horseshoe bats)[13], nearby in south Devon, identifies circumstances where the LPA and Natural England could agree to mitigation requirements without the need for full survey, including: "*a situation in which survey (or further survey) would not contribute further to the identification of impacts and avoidance /mitigation requirements*". A similar approach is considered to be applicable here – use of the hedgerow by bats, including horseshoe bats has been considered and responded to in the mitigation design. Monitoring of the mitigation approach using remote detectors is outlined in **Section 2** of **Appendix I: Approach to Bat Mitigation at Saunton Road**.
Environmental Impact Assessment - Document Used: Chapter 16 Onshore Ecology and Ornithology						
Identified impacts	5.11	16.5.13.6, page 128	The residual effect for disturbance to non-roosting bats, temporary loss of bat foraging or commuting habitats has been assessed as minor adverse once all the mitigation and habitat reinstatement is in place, and assessed as negligible significant effect once vegetation has re-established. However, with data gaps and only one years' worth of survey being carried out this should be reassessed following further surveys.	Further survey data, as detailed, is required to inform the impact assessment and whether all aspects have been captured.		The industry standard (BCT) survey guidance recommends surveys across one season. This guidance has been followed for the Project. Clarification on the bat surveys undertaken are provided in **Section 6.5** of the **ES Addendum**. The survey work across the site in general is considered to be sufficiently up-to-date to inform the assessment (noting the points about the work on Saunton Road hedgerow, where less survey has been carried out, and the comments on this provided above [B9]).
HRA - Document Used: Chapter 16 Onshore Ecology and Ornithology						
Screening	5.12		All comment provided under EIA in relation to data acquisition, methodology and evidence gaps are also relevant to the HRA screening. Once this is provided the HRA can proceed.			Noted.
Assessment of SSSI impacts: Chapter 16 Onshore Ecology and Ornithology; Chapter 18 Noise and Vibration						
Screening	5.13		Natural England advice relates to Caen Valley Bats SSSI designated for Greater Horseshoe bats.			Noted.

[13] https://democracy.teignbridge.gov.uk/documents/s5193/South%20Hams%20SAC%20HRA%20Guidance_FINAL_Appendix.pdf

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
Priority Habitats and Species listed under Section 41 list of the Natural Environmental and Rural Communities (NERC) Act, 2006.						
Potential impact pathways where further info/assessment required	5.14	16.5.8	Comments based solely with regards to Caen Valley Bats SSSI designated for Greater Horseshoe bats. See above regarding sections of hedgerows to be surveyed, gaps in data and survey periods. Monitoring of bat activity, particularly with regards to greater horseshoe bats, along Saunton Road is required following removal/coppicing of hedgerows work and suitable mitigation provided.	Following further surveys (as detailed above) the EIA should include precautionary mitigation to retain any existing bat commuting routes along the hedgerow line during construction in respect of the Caen Valley Bats SSSI. A full rationale for survey and impact assessment for this area is required within the EIA following further surveys.		Precautionary mitigation is proposed as suggested which is considered to be proportionate mitigation regardless of the outcome of survey work, given the temporary nature of the impact and the presence of an unaffected hedgerow along the north side of Saunton Road. Mitigation for the Saunton Road hedgerow is detailed in **Appendix I: Approach to Bat Mitigation at Saunton Road** of the **ES Addendum**. Monitoring of the mitigation approach using remote detectors is outlined in **Section 2** of **Appendix I: Approach to Bat Mitigation at Saunton Road**.
	5.15		Any important areas for foraging and/or commuting bats must not be lit, and best practice guidelines should be followed.	Follow best practice guidelines with regards to artificial lighting, with no direct lighting of key habitats, particularly though important for foraging and/or commuting greater horseshoe bats in relation to Caen Valley Bats SSSI. To be included within the Outline Code of Construction Practice.		Lighting of habitat features is not proposed. Any lighting required, which is likely to be restricted to work compounds, will be restricted in line with the measures set out in the **Chapter 16: Onshore Ecology and Ornithology** (**Table 16.11**) of the **Onshore ES**. An assessment of the construction phase impacts is provided in **Appendix O: Lighting Impact Assessment** (LIA) of the **ES Addendum**. Measures to manage artificial lighting and mitigate any impacts during construction are set out in **Outline Construction Environmental Management Plan (CEMP)** (WHX001-FLO-CON-ENV-PLN-0010 which is provided as part of the **Further Environmental Information** submission. The Applicant expects there to be a condition of the planning permission that both the LIA and CEMP are updated and approved pre-construction.
	5.16		Where any bat roosts are recorded a European Protected Species Mitigation (EPSM) licence must be sought if bats are to be impacted. Please note EPSM licence require the most recent years' worth of survey data (eg. May to September).	Please refer to Natural England's standard advice regarding protection of bats for where bats will be potentially impacted as a result of the development Bats: advice for making planning decisions - GOV.UK (www.gov.uk)		No requirement for a licence has been identified based on predicted impacts.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	5.17	Chapter 16, Table 16.23 and Chapter 18 Noise and Vibration	The following impacts; Impact 1: Noise of construction works at the site, Impact 2: Noise of cable corridor construction works, Impact 3: Noise of Onshore Substation construction works, Impact 5: Construction vibration impact from noise and vibration, are mentioned in the Noise and Vibration chapter. The chapter though refers to Chapter 10: Onshore Ecology & Ornithology for potential noise impacts at ecological receptors. However, in Chapter 16 the only reference to noise appears to be provided within Table 16.23 which refers to 'Bats – commuting and foraging' with importance of sensitivity based on 'National (High); based on assemblage and present of important nearby roosts Caen Valley Bats SSSI. However, Chapter 16 only states that the risk of noise and lighting disturbance to hedgerows will be minimised through imbedded mitigation, though no assessment appears to be provided for this.	The potential impacts from noise and vibration to be considered for foraging and communing bats with regards to Caen Valley Bats SSSI to be assessed at Application. Results to be added to Chapter 16 and Chapter 18 Noise and Vibration. And detailed litigation measures secured		Clarification: The noise and vibration impacts will not have a direct impact on Caen Valley Bats SSSI (i.e. the roost) given the distances involved (1.7km). Any possible impact therefore is limited to bats foraging or commuting. As assessed in **Chapter 18: Noise and Vibration** (**Section 18.5.2**) of the **Onshore ES**, temporary noise and vibration effects during the construction phase which were found to be minor, can be minimised by screening (mitigation), and therefore significant effects are not anticipated. Effects on bats are therefore considered to be unlikely, noting also the following points: For the majority of the Site, noise and vibration impacts are not anticipated during the night-time period when bats are active. Standard working hours are 07:00 to 19:00 hours Monday to Friday (with reduced/no hours on Saturday/Sunday). Bats are generally most active (between sunset and sunrise) during the period between April and September/October. The standard working hours do not overlap at all with sunrise/sunset times between April and late September. In late March sunrise is slightly after 07:00hrs for a few days only; from 25 March onwards sunset is after 19:00hrs. Similarly, in the autumn, sunset is only after 19:00hrs from the end of September. The period when overlap with working hours and bat activity in the spring is very limited, and given the sequential nature of the work, this effect would be temporary (typically lasting for a few days only), limited to a small section of the route at any one time; taking all these factors into account any effect is considered likely to be negligible. Night-time works may be required for the major trenchless technique. Major trenchless technique works could require up to 7 days of continuous working per drill (a total of 28 days at the Saunton Sands Car Park and 14 days at the crossing of the Taw Estuary Crossing); however, any disturbance in these areas will

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						be very localised, and unlikely to have an effect beyond the immediate area. It is also noted that these areas are distant from Caen Valley SSSI (the Saunton Sands Car Park HDD compound is c 3.5km from the SSSI, the Taw Estuary Crossing is between 4.7km – c. 5.8km from the SSSI; and the Onshore substation is c. 5.4km); at these distances, they are beyond typical core sustenance zones for greater horseshoe bats (3km), and two are on the south side of the River Taw, which is c. 1km wide at this point. No night-time working will be undertaken outside of these defined periods, or in any other locations.p

Table 10 Natural England's Key Advice and Recommendations – Biodiversity Net Gain

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
Document(s) Used: Appendix 16A						
Identified impacts	6.1	Appendix 16.A	The following extract from Appendix 16.A states: *"A specific BNG plan has not been generated for the proposed development at the time of writing this report, and such a plan will need to be prepared prior to the delivery of BNG for the proposed development."* *Some assumptions in the Annex may need to be checked in the consideration of BNG. For example, it is stated:* *"Given the nature of the project which includes trenchless techniques to install cabling below ground (meaning that in some parts of the red line boundary, there will be no impact on habitat features, and only temporary impacts much of along the cabling route)."* However, if any impacts are likely within the red-line boundary that could affect the condition of habitat (e.g., bentonite breakouts from HDD or loss of habitat through cable installation activities) then we would advise that there is a requirement during the consenting phase for this to be factored into the BNG calculation of onsite post-development Biodiversity Unit value/unit loss though development. 'Temporary impacts' in a BNG calculation would be those where the habitat could be predicted with certainty to return to the same, pre-development, condition within 2 years of the impact taking place.	Natural England advises that due to DEFRAs introduction of the mandatory 10% Biodiversity Net Gain in January 2024 for new housing, industrial or commercial developments in England, it is advisable that BNG proposals are included as part of application/consenting process for this project, noting the likely impacts from transmission asset installation.		Clarification: the requirement for applications to developments to include a mandatory 10% Biodiversity Net Gain (BNG) came into force on 12 February 2024 for major applications submitted on or after that date. The Onshore Application for the Project was submitted to the local planning authority on 18 August 2023; therefore, the mandatory requirement does not apply. However, the Applicant has committed to deliver 10% BNG which has been considered in the application and is set out in **Appendix 16.A: Biodiversity Net Gain Assessment** of the **Onshore ES**. Temporary impacts have been considered in the BNG assessment, taking into account the BNG guidance documents. The methodology and assumptions have been set out in the BNG assessment appendix.
	6.2	Page 9/ para 47	Page 9 (47.) *"Enhanced or new compensatory habitats should include sufficient like-for-like or like-for-better habitats (in respect of distinctiveness and condition) in order for the metric Rule 3 trading rules to be met."* Natural England advises that this will depend on the habitats in question. There is more flexibility in the metric for lower distinctiveness habitats, whereas BdU losses for high distinctiveness habitats will need to be offset on a like-	Natural England advises that the Applicant uses the BNG matric when developing their proposals		The current Metric 4.0 has been used to prepare the BNG assessment. Further detail is set out in **Appendix 16.A: Biodiversity Net Gain Assessment** of the **Onshore ES**.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			for like basis (through enhancement or creation). We advise that in developing the BNG proposal the Applicant uses the metric to check that the BNG plan is following the trading rules for each of the habitats concerned via the 'Detailed Results' tab.			
	6.3		The Annex states that there will be a significant delay between the development impacts taking place and the delivery of habitat offsetting works to be initiated. We'd advise that this incurs a 'penalty' in the BNG calculation as the 'delayed creation/enhancement' (negative) multiplier will be triggered, which means that much more habitat will need to be delivered in order to derive a net gain over development losses. For this reason, we'd advise that consideration of how net gain will be delivered for this project is considered as part of the consenting process, and definitely initiated *ahead* of the development taking place if practical. Beginning habitat gains ahead of development impacts can trigger the 'advance' function of the metric which can bring down the amount of habitat that needs to be delivered.	Natural England advises that BNG proposals are developed as early as possible and could advise the Applicant through DAS on any proposals		The metric is based on the project programme, the only reference to delay relates to the BNG user guidance on assessing temporary habitat impacts which is factored into the calculations. There is no significant delay factored into the metric as this is not anticipated. The document outlines the BNG approach but the detail of the strategy still needs to be finalised. NE comments noted.
		Appendix 16 A	There is currently no expectation for BNG to be delivered for subtidal development (development work below Mean Low Water). However, Defra are currently developing a Marine Net Gain policy (there was a consultation response on the high- level principles in Summer 2022) and developers working in the subtidal environment are encouraged to try to deliver gains if they are able to and want to. There is currently no equivalent to the BNG metric for subtidal environments/developments.	Natural England encourages the Applicant to consider implementing Marine BNG.		The Applicant will monitor developments in the industry in relation to Marine BNG. However it is noted there is currently no requirement to implement Marine BNG.

5. Response to Comments relating to Marine Mammals

5.1 Natural England's Advice and Recommendations

8. **Table 11** outlines the Applicant's response to the key concerns raised by Natural England in relation to Marine Mammals.

9. **Table 12** outlines the Applicant's response to Natural England's key advice and recommendations in relation to Marine Mammals.

Table 11 Natural England's Summary of Key Issues – Marine Mammals

NE Ref	Summary of NE's Key Concerns	Natural England's Recommendations to Resolve Issues.	NE's Risk	Applicant's Response
C1	Since Floating Offshore Wind (FLOW) is a new technology, much of the underwater noise modelling of operational noise for this project is based on assumption. White Cross is a demonstration site which is being used to inform wider expansion of floating wind in the Celtic Sea. Natural England therefore recommends the project completes monitoring to help fill the evidence gaps surrounding operational underwater noise from FLOW.	MMO should ensure that monitoring of underwater noise during operation is a condition of the Marine Licence. Refer to the FORTUNE project final report for details: Fortune_Report_Final_12_05_2023.pdf (supergen-ore.net)		The Applicant is open to discussing operational underwater noise monitoring to support future understanding of potential impacts of FLOW on noise sensitive receptors. An **Outline Underwater Noise Monitoring Plan (OUNMP)** (WHX001-FLO-CON-ENV-PLN-0006) is part of the **Project Environmental Management and Mitigation Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003) which is provided as part of the Further Environmental Information submission.
C2	Natural England are concerned about the potential for marine mammal entanglement during construction and operation. We recommend that the Applicant is required to produce a Project Environmental Monitoring Plan (PEMP) which clearly sets out how entanglement will be monitored and reported. This plan should include regular monitoring at the project site for entanglement, and that any entanglement is reported to relevant Regulator and SNCBs Furthermore, owing to the uncertainties in the design envelope and construction procedures, entanglement should be considered in the Construction Environmental Monitoring Plan (CEMP) and reviewed by relevant SNCBs prior to construction.	We recommend that best practice procedures outlining monitoring and reporting of entanglement during construction and operation should be clearly set out in the CEMP and PEMP, draft versions of which should be provided for review before the licence is granted. Adherence to these plans and the entanglement measures therein should be a condition of the marine licence.		See Applicant's response to Natural England comment 20 (**Table 1**). The **Outline Entanglement Monitoring and Remediation Plan** (WHX001-FLO-CON-ENV-PLN-0002) was submitted to the MMO on 5.3.2024. Comments from the MMO and the Seal Research Trust were received by the Applicant between 11.3.24 and 3.6.24. These comments and how they have been addressed is captured in Section 2.1 and Appendix 1 of the **Outline Entanglement Monitoring and Remediation Plan** (WHX001-FLO-CON-ENV-PLN-0002).

Table 12 Natural England's Key Advice and Recommendations – Marine Mammals

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
Project Parameters. Document(s) Used: Chapter 12 Marine Mammal and Marine Turtle Ecology						
Natural England's Position on Worst Case Scenario or Scenarios	2.1	Table 12.14	Natural England does not agree with the worst-case scenario (WCS) proposed for barrier effects from underwater noise from operational turbines. The project uses a maximum impact range as 0.01km for each WTG. The underwater noise modelling for this parameter is based on assumptions and there is little consideration for the potential mooring noise emitted from Floating Offshore Wind (FLOW) structures. We highlight that the findings from the FORTUNE project (FORTUNE final report, May 2023) compared operational noise from two FLOW projects and found that predicted noise fields for unweighted sound pressure levels were above median ambient noise levels for maximum distances of 4km. The report also found impulsive noise from mooring lines was recorded at both Hywind and Kincardine FLOW sites and was correlated with high wind speeds. The potential for mooring noise needs to be considered in the impact assessment. We also highlight that monitoring of harbour porpoise activity around the Hywind and Kincardine sites showed a decrease in porpoise activity closer to the closer to WTG (600m and 300m from turbine) than further away (1500 and 2400 from turbine). It is therefore important that barrier effects during operation, both acoustic and physical, need to be assessed appropriately.	The Applicant should reassess the maximum impact range to include the potential for mooring noise and results from the FORTUNE project which show harbour porpoise displaced from FLOW project sites and update the assessment accordingly.		NE identifies the FORTUNE report on "Characterisation of underwater operational noise of two types of floating offshore wind turbines" (Risch et al. 2023), which was published after the issue of the White Cross OWF underwater noise assessment. It should be noted that "predicted noise fields for unweighted sound pressure levels were above median ambient noise levels for maximum distances of 4 km", but noise above ambient is not a predictor of any impact. The Applicant does not feel it is appropriate to update the WCS for the assessment following the release of data following submission. Furthermore, the Applicant has reviewed the data and has concluded that it will not change the conclusions of the ES chapter. While the FORTUNE report notes a decreased presence of harbour porpoise at 300 and 600m when compared to further afield, whether this is a significant reduction of presence was not reported. The turbine spacing will be a minimum of 1.1km, and therefore even with a maximum disturbance range of 600m, there would be adequate space for marine mammals to transit through the site. Therefore, while the FORTUNE report provides some further information as to the potential disturbance and/or barrier effect from operational floating WTGs, it does not alter the overall conclusions provided within **Chapter 12: Marine Mammal and Marine Turtle Ecology** of the **Offshore ES**, with a sensitivity of low to medium, a magnitude of negligible, and an overall effect significance of negligible to minor adverse for all species, for the potential for disturbance from operational WTG noise. As noted in **Appendix 12.A: Underwater Noise Modelling Report** of the **Offshore ES**, data from the HYWIND site (JASCO, 2011) identified the noise from cable mooring of a maximum of 23 "snaps" per day. This was used as the worst-case per turbine per day which was then modelled and found the equivalent noise levels to be below any SPL_{peak} PTS or injury criteria for marine mammals or fish. It was also determined that disturbance leading to avoidance behaviour is considered minimal for this range. The Applicant is open to discussing operational underwater noise monitoring to support future

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						understanding of potential impacts of FLOW on noise sensitive receptors. An **Outline Underwater Noise Monitoring Plan** (OUNMP) (WHX001-FLO-CON-ENV-PLN-0006) is part of the **Project Environmental Management and Mitigation Plan** (PEMMP) (WHX001-FLO-CON-ENV-PLN-0003) which is provided as part of the Further Environmental Information submission.
Baseline Characterisation– Document(s) Used: Chapter 12 Marine Mammal and Marine Turtle Ecology						
Survey Data Acquisition	2.2	12.6	Before we can agree with the densities included in the assessment, it is necessary for Natural England to review the detailed aerial survey results to understand the quality of the data for example, weather conditions, number of unidentified species, correction factors etc. Refer to the best practice guidance for further detail: Environmental considerations for offshore wind and cable projects - Phase I Best Practice Advice for Baseline Characterisation Surveys, Version 1.1, July 2022.pdf - All Documents (sharepoint.com)	The Applicant should provide survey details from aerial surveys so that the appropriateness of the densities used can be assessed.		The survey report is provided in **Annex 8: Southwest England Ornithological and Marine Mammal Aerial Survey Results** of this document.
Data Gaps	2.3	12.6.2	The management unit for the Coastal West Channel bottlenose dolphin population was updated in March 2023. The area now spans around the Isles of Scilly and along the north coast of Cornwall up to Padstow, bringing it closer to the project site. It is important this is updated and this population is considered for at least project activities in coastal waters. Furthermore, SCANS IV was published in October 2023. We recognise it may have been published too recently to incorporate into the application, however, NE recommends the high density of bottlenose dolphins reported in SCANS IV are accounted for in an updated assessment.	The Applicant should include the latest IAMMWG (2023) report for management units. JNCC Report 734: Review of Management Unit boundaries for cetaceans in UK waters (2023) and if possible, consider updating densities from SCANS IV. Microsoft Word - SCANS-III design-based estimates 2021-05-26 (tiho- hannover.de).		While the Inter-Agency Marine Mammal Working Group IAMMWG (2023) report was published in March 2023, this was following submission of the EIA/HRA. As noted by Natural England, SCANS-IV was also published following completion the EIA/HRA. The Applicant does not feel it is appropriate to update the assessment following the release of data following submission. Furthermore, the Applicant has reviewed the data and has concluded that it will not change the conclusions of the ES chapter. In addition to the below responses on the specific papers mentioned, it should be noted that the assessments for piling and UXO clearance would be updated through the Marine Wildlife Licencing process, in the pre-construction phase, to take account of the final project design (and any underwater noise modelling that is updated accordingly), and for any recent data on marine mammal presence in the area (such as the IAMMWG (2023) and SCANS-IV reports). Regarding the IAMMWG (2023) report, the assessments for bottlenose dolphin were completed against a similar population number (10,947 as assessed in the EIA and reported in IAMMWG, 2022, compared to the recent

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						IAMMWG estimate of 10,653). This overall population number is very similar and would not expect to see a difference in the impact significance of the assessments should the updated estimate be used. To clarify, the Project site is not within the mentioned Coastal West Channel bottlenose dolphin Management Unit (MU) and is approximately 33km at closest point to that MU. Note that the worst-case impact range for dolphin species is 1,110m for TTS from high-order UXO clearance (Table 12.58 of **FLO-WHI-REP-0002-12 Chapter 12 Marine Mammal and Marine Turtle Ecology** of the **Offshore ES**), or up to 11.07km in the case of the maximum acoustic deterrence device (ADD) activation time of 123 minutes (Table 12.59 of **FLO-WHI-REP-0002-12 Chapter 12 Marine Mammal and Marine Turtle Ecology** of the **Offshore ES**). The CEA screening study area included the Coastal West Channel MU in addition to the Irish Sea MU and Offshore Channel and South West England MU. Therefore, it is expected that updating for the IAMMWG (2023) report would make no material difference to the assessments. In regard to the SCANS-IV update, it is acknowledged that there is an increase in bottlenose dolphin sightings in the Celtic and Irish Seas, including in the area surrounding White Cross. However, these assessments were based on the best available information at the time of writing, and it should also be noted that no bottlenose dolphin were recorded within the site-specific surveys. As previously mentioned, any updated data, such as the SCANS-IV surveys, would be taken into account in any post-consent licencing process (such as the Marine Wildlife Licencing process as noted above).
	2.4	12.8.1	Since FLOW is a new technology, much of the underwater noise modelling of operational noise for this project is based on assumption. White Cross is a demonstration site which is being used to inform wider expansion of floating wind in the Celtic Sea. Natural England therefore recommends that the project completes monitoring to help fill the evidence gaps surrounding operational underwater noise from FLOW. We highlight that the FORTUNE Project Final Report recommends that future underwater noise monitoring for FLOW record detailed, directional measurements that separate and	As noted above, monitoring of underwater noise during operation should be made a condition of the Marine Licence. Refer to the FORTUNE project final report for details : [Fortune_Report_Final_12_05_2023.pdf (supergen-ore.net)]()		The Applicant is open to discussing operational underwater noise monitoring to support future understanding of potential impacts of FLOW on noise sensitive receptors. An **Outline Underwater Noise Monitoring Plan (OUNMP)** (WHX001-FLO-CON-ENV-PLN-0006) is part of the **Project Environmental Management and Mitigation Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003) which is provided as part of the Further Environmental Information submission. The **Outline Underwater Noise Monitoring Plan (OUNMP)** (WHX001-FLO-CON-ENV-PLN-0006)

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			characterise noise emissions by each part of the turbine and moorings.			proposes to develop methods to record detailed, directional noise emissions.
Analysis, Modelling and Reporting	2.5	12.7.1.3.5	Owing to the distance from the project, Natural England is unsure that background noise data taken from the Burbo Bank Extension is representative of the project site. Provide further justification to support the use of background noise data from the Burbo Bank Extension.	The Applicant should provide further justification to support the use of background noise data from the Burbo Bank Extension.		It is acknowledged that the Burbo Bank region is somewhat removed from the Bristol Channel/ Celtic Sea region and the background noise at Burbo Bank is not necessarily representative. However, no background noise data is available for the White Cross region. The background noise section of the report is provided for information only and does not contribute to the assessment as all assessment thresholds and criteria are absolute and not dependent on a baseline. Therefore, in the absence of any additional site specific data, no further consideration of the background noise has been undertaken.
Environmental Impact Assessment - Document Used: Chapter 12 Marine Mammal and Marine Turtle Ecology						
Identified impacts	2.6	12.8.1.2	Given our concerns with the WCS and underwater noise modelling of operational turbine noise and the data gaps in the literature review, NE cannot agree to the conclusion of negligible magnitude. The magnitude should be reviewed and fully justified, following updates to the noise modelling, to incorporate mooring noise and an updated review to include literature on FLOW operational noise.	The Applicant should include mooring noise into an updated underwater noise assessment and reassess the sensitivity and magnitude of marine mammals to operational noise, taking into consideration the results of the FORTUNE project final report.		NE identifies the FORTUNE report on "Characterisation of underwater operational noise of two types of floating offshore wind turbines" (Risch et al. 2023), which was published after the issue of the White Cross OWF underwater noise assessment. It should be noted that "predicted noise fields for unweighted sound pressure levels were above median ambient noise levels for maximum distances of 4 km", but noise above ambient is not a predictor of any impact. The Applicant does not feel it is appropriate to update the WCS for the assessment following the release of data following submission. Furthermore, the Applicant has reviewed the data and has concluded that it will not change the conclusions of the ES chapter (see response to 2.1 above). As noted in **Appendix 12.A: Underwater Noise Modelling Report** of the **Offshore ES**, data from the HYWIND site (JASCO, 2011) identified the noise from cable mooring of a maximum of 23 "snaps" per day. This was used as the worst-case per turbine per day which was then modelled and found the equivalent noise levels to be below any SPL_{peak} PTS or injury criteria for marine mammals or fish. It was also determined that disturbance leading to avoidance behaviour is considered minimal for this range. The Applicant is open to discussing operational underwater noise monitoring to support future understanding of potential impacts of FLOW on noise sensitive receptors.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						An **Outline Underwater Noise Monitoring Plan** (OUNMP) (WHX001-FLO-CON-ENV-PLN-0006) is part of the **Project Environmental Management and Mitigation Plan** (PEMMP) (WHX001-FLO-CON-ENV-PLN-0003) which is provided as part of the Further Environmental Information submission.
	2.7	12.8.7	Paragraph 773 states *"Appendix 12.C: Draft MMMP will include monitoring for risk of entanglement"*. However, there is no entanglement monitoring plan within the draft MMMP.	See above comment regarding the CEMP and PEMP – a detailed plan for entanglement monitoring is needed.		See Applicant's response to Natural England comment 20 (**Table 1**).
	2.8	1.2.8.9. 3, Table 12.96	In this section and table, the significance of EMF on marine mammals is Negligible, despite the sensitivity and magnitude being assessed as low. According to the matrix (table 12.9), a low magnitude and a low sensitivity would result in a minor significance.	The Applicant should correct the significance to minor in an updated assessment.		The Applicant acknowledges the erratum identified by NE. However, this has no bearing on the overall result of that impact assessment, where the assessment results a non-significant impact with either a negligible or minor significance.
	2.9	MMMP	Natural England are concerned about the potential for marine mammal entanglement during construction and operation. We request to see a project environmental monitoring plan which clearly states how entanglement will be monitored and reported. This plan should include regular monitoring at the project site for entanglement, and that any entanglement is reported to relevant Regulator and SNCBs. Adherence to such a plan should be secured as a condition of the marine licence. Furthermore, owing to the uncertainties in the design envelope and construction procedures, entanglement in mooring lines should be considered in the Construction Environmental Monitoring Plan (CEMP) and reviewed by relevant SNCBs prior to construction.	Recommended procedures outlining monitoring and reporting of entanglement during construction and operation should be clearly stated in the CEMP and PEMP, which should be submitted for review prior to determination. Adherence to these plans and the entanglement measures therein should be a condition of the marine licence.		See Applicants response to Natural England comment 20 (**Table 1**).
	2.10	MMMP	Natural England advises that the UXO MMMP is developed in accordance with the latest policy statement on UXO clearance. At the time of writing, this can be found online here https://www.gov.uk/government/publications/marine-environment-unexploded-ordnance-clearance-joint-interim-position-statement though be aware that the current statement will be updated shortly. We anticipate that low order clearance methods will be used as the preferred and primary means of clearance. High order	To note for UXO MMMP.		Noted. The Applicant will prioritise low noise alternatives to high order detonations when developing protocols to clear UXOs.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			clearance should only be used when low order is not feasible and should be used in conjunction with noise abatement methods wherever possible. This will be of particular importance if UXO clearance is required along the cable route and within the Bristol Channel Approaches SAC.			
Methodology	2.11	1.4.1	As stated above, owing to evidence gaps with operational noise and mooring noise from floating offshore wind turbines, NE does not agree to operational noise being screened out of the CEA screening.	The CEA assessment should be updated to include operational noise from White Cross and other FLOW OWFs.		In line with the Applicants response to Natural England comment ID 2.1 (**Table 12**) above, theApplicant does not beleive the FORTUNE report materially alters the results of the assessments relating to underwater noise from operational WTGs at the Project, and therefore there is no change to the relevant cumulative assessment.

6. Response to Comments relating to Ornithology (Offshore)

6.1 Natural England's Advice and Recommendations

10. **Table 13** outlines the Applicant's response to the key concerns raised by Natural England in relation to Ornithology (Offshore).

11. **Table 14** outlines the Applicant's response to Natural England's key advice and recommendations in relation to Ornithology (Offshore).

Table 13 Natural England's Summary of Key Issues – Offshore Ornithology

NE Ref	NE's Summary of Key Concerns	Natural England's Recommendations to Resolve Issues.	NE's Risk	Applicant's Response
D1	The cumulative and in- combination assessments do not factor in impacts from a number of other projects due to a lack of data. Impacts specified as 'unknown' have been treated as zero which will inevitably underestimate impacts, potentially significantly. Natural England consider this approach to be unacceptable, and hence consider it inappropriate to comment on the potential significance of cumulative or in- combination impacts.	NE propose working with the project and other stakeholders collaboratively to generate suitable impact estimates for historic projects and facilitate a comprehensive, quantitative cumulative and in-combination assessment. A method statement for the project's consideration is supplied.		As detailed within Comment ID 22, the Applicant has undertaken the gap analysis following their provided method statement. The results of this additional assessment are presented within **Appendix Q Annex 3: Cumulative and In-combination Gap Analysis Report (WHX001-FLO-CON-ENV-ASS-0003)** of this **ES Addendum**. The conclusions of this gap analysis did not materially change the cumulative assessment conclusions of **Chapter 13: Offshore Ornithology** of the **Offshore ES**. With regards to the in-combination assessment, as presented within the **RIAA** (see **Appendix 6.A** of **Chapter 6: EIA Methodology** of the **Offshore ES**), even when considering Natural England's worst case assessment approaches, the Project's contribution to any in-combination effect can confidently be concluded as in-tangible. Additionally, given the geographical location of the historic projects, connectivity is limited to the designated sites and features for which the Project undertook in-combination assessments for. Therefore, it can be confidently concluded that the results of this gap analysis would not materially change the in-combination assessment conclusions originally drawn within the RIAA.
D2	The worst-case scenario (WCS) is not clear and confounding numbers of WTG (Wind Turbine Generators) of different power outputs are presented.	Clarify the WCS being assessed and conduct the EIA and RIAA based on those parameters.		As detailed within Comment ID 23 **(Table 1)**, for additional clarity and to account for Natural England's best practice guidance changes with respect to collision risk modelling input parameters, updated collision impacts were modelled and considered within **Appendix Q Annex 3: Cumulative and In-combination Gap Analysis Report** (WHX001-FLO-CON-ENV-ASS-0003) of this **ES Addendum**. For kittiwake and gannet this resulted in further reductions in the worst-case impact predictions.
D3	It is unclear if correction factors have been applied to relevant abundance and density estimates (namely, auks) to account for availability bias.	If corrections for availability bias have not been made, relevant abundance and density estimates must be updated. If the data has been corrected, the methods used should be fully and clearly detailed in the relevant documents. Natural England also highlight that Manx shearwater is a surface diving species and data are available detailing foraging & diving behaviour. It may also be appropriate to consider availability bias for that species.		Please see Applicant's response to Comment ID 23 **(Table 1)**. The Applicant can confirm that correction for availability bias was applied to the assessment of auks.
D4	Sabbatical rates have been applied to apportioning of breeding adult numbers to individual colonies for gannet population estimates.	NE does not consider the current evidence base sufficient to recommend sabbatical rates of >0 for any species. We recommend that no apportioning is applied to account for sabbatical rates.		As detailed within Comment ID 24 **(Table 1)**, the Applicant has undertaken additional assessments excluding consideration of a sabbatical rate (see **Appendix Q Annex 2: White Cross Offshore Windfarm Offshore Ornithology HRA Excluding Sabbatical Rates** of the ES Addendum (WHX001-FLO-CON-ENV-RPT-0003)). The exclusion of a sabbatical rate within assessments as requested by Natural England, resulted in predicted impacts for the Project increasing by less than 0.1 additional mortalities per

NE Ref	NE's Summary of Key Concerns	Natural England's Recommendations to Resolve Issues.	NE's Risk	Applicant's Response
				annum, which would not materially change the Project's original assessment conclusions within the RIAA.
D5	The assessment of impacts on Lundy SSSI is incomplete	SSSI is also notified for guillemot, razorbill, kittiwake and Atlantic puffin. Impacts on these species should therefore be considered.		The Applicant's conclusions on approach to assessment of Lundy SSSI was discussed with Natural England during the ETG meeting held on the 24th April 2023. The Applicant provided detail on the proposed assessment methodology of Lundy SSSI based on feedback received from Scoping Opinion. It was requested that for Lundy SSSI, where the current population exceeds the SPA designation threshold, an impact assessment should be undertaken on the individual feature. The Applicant, therefore, reviewed the latest population counts for all features of Lundy SSSI, combined with the predicted impact levels from the Project, and concluded that it was appropriate to assess Manx shearwater only. This conclusion was discussed with Natural England and agreement was reached on only Manx shearwater being required for an individual impact assessment. The Applicant's position remains that in accordance with a proportionate approach to EIA, pre-application agreement on the methods to be applied with Natural England and in light of the level of predicted risk on the features of Lundy SSSI stated, that the potential for a significant adverse effect can be confidently scoped out from requiring assessment.

Table 14 Natural England's Key Advice and Recommendations – Offshore Ornithology

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
Project Parameters. Document(s) Used: Chapter 5, Chapter 13, HRA, Annex 9						
Natural England's Position on Worst Case Scenario	2.1	Ch.5 sec. 5.3. Ch. 13 sec. 13.3.3. HRA doc, Ann. 9.	It is unclear if the Maximum Design Scenario (MDS)/WCS entails 6, 7 or 8 WTG – see note below on CRM analyses. The project description states the Project Design Envelope (PDE) is for 6-8 WTG but the WCS and the Collision Risk Modelling (CRM) are based on 7 WTG. Note 8 WTG are also shown in Annex 9 of the HRA doc.	Ensure all documentation states the number of WTG to be built under the max design scenario and base the impact assessment on a clearly defined worst case scenario (WCS) following best practice guidelines.		Please see Applicant's response to Comment ID 23 (**Table 1**) & D2 (**Table 14**).
Baseline Characterisation– Document(s) Used: ES Chapters 6 and 13						
Survey Data Acquisition	2.2	Chap. 13. App13A Tech rep. Sec.3	A map illustrating the DAS route and area coverage is not shown.	Following best practice guidelines present a map to illustrate DAS transects and the extent of survey coverage, including a readable scale.		**Figure 2** of **Annex 8: Southwest England Ornithological and Marine Mammal Aerial Survey Results** (of this document) identifies the flight lines and image capture points of the digital aerial survey.
	2.3	App 13A Tech rep. sec. 8.1.2.	The species accounts do not present raw maps indicating abundance or derived maps of bird distribution in relation to the array + buffer.	Present maps to illustrate species abundance and density.		**Annex 8: Southwest England Ornithological and Marine Mammal Aerial Survey Results** (of this document) includes maps identifying the abundance and distribution of bird species within the array and survey area buffer.
	2.4	Chap. 13. App13A Tech rep. Sec.8	No spatial modelling is undertaken to create density maps for each species.	Present maps to illustrate density of species across the Potential Developable Area (PDA).		**Annex 8: Southwest England Ornithological and Marine Mammal Aerial Survey Results** (of this document) includes maps identifying the abundance and distribution of bird species within the array and survey area buffer.
Data Gaps	2.5	Chap.6. App. 6A, Table 5.4	Castlemartin Range SSSI in Wales has not been screened in. Guillemot is a designated feature at this site and the project lies within the species mean max + 1SD foraging range.	Assess impacts for Castlemartin Range SSSI.		The Castlemartin Range SSSI guillemot population is included within the Sgomer, Sgogwm a Moroedd Penfro / Skomer, Skokholm and the Seas off Pembrokeshire SPA, for which the Applicant has appropriately assessed within **Section 8.4** of the **RIAA**) (see Appendix 6.A of FLO-WHI-REP-0002-06 **Chapter 6: EIA Methodology** of the **Offshore ES**).
Data Analysis, Modelling and Reporting	2.6	Tech rep. sec. 4.12	It is not stated if auk numbers have been adjusted for availability bias or not.	Follow best practice guidelines and apply correction factors to account for availability bias when estimating abundance and density of auks. Adjust analyses accordingly. If corrections have been made the methods used should be fully detailed. Natural England also highlight that Manx shearwater is a surface diving species and data are available detailing foraging & diving behaviour. It may also be appropriate to consider availability bias for that species.		See Applicant's response to Comment ID 23 **(Table 1)**. The Applicant can confirm that correction for availability bias was applied to the assessment of auks.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	2.7	Tech rep. Sec. 5.3.1.2	In the apportioning of breeding adult numbers to individual colonies, sabbatical rates were applied to the population estimates for gannet (but not Manx shearwater.	NE note that Horswill and Robinson (2015) provide a sabbatical rate for Manx shearwater but do not provide a rate for gannet. Regardless, **NE does not consider the current evidence base sufficient to recommend sabbatical rates of >0 for any species**. As consistently advised to other developers and regulators, we advise that no apportioning is applied to account for sabbatical rates.		Please see Applicant's response to Comment ID 24 **(Table 1)** & D2 **(Table 14)**.
	2.8	Tech Rep. Sec. 5.3.1.4	The counts for Manx shearwater were apportioned to all relevant SPAs only within the mean +1SD foraging distance from the PDA. NE best practice recommends bird are apportioned to SPAs within the mean max +1SD foraging range of a species. However, in this circumstance we agree that the best available evidence from tracking studies indicates that the shorter (mean +1SD) distance adequately screened in all SPA populations of the species that are likely to be present.	No action needed.		The Applicant welcomes Natural England's agreement on the approach taken. For clarity, two apportionment processes and corresponding assessments were undertaken for Manx shearwater, the first following Natural England's best practice guidance (Parker et al., 2022) and the second using the shorter foraging distance.
	2.9	Chap. 13. App13A Tech rep. Annex 1	Species abundances and densities are published with upper and lower confidence limits (UCL and LCL), but precision of these data is unclear as no coefficients of variation (CVs) are shown.	Following NE best practice present species abundance and density estimates with their upper and low confidence limits and an indication of their precision e.g. using the coefficient of variation.		The Applicant has presented species abundances, including UCL and LCL, within **Annex 1** of **Appendix 13.A: Offshore Ornithology Technical Report**. **Annex 8: Southwest England Ornithological and Marine Mammal Aerial Survey Results** (of this document) includes maps identifying the abundance and distribution of bird species within the array and survey area buffer.
	2.10	Chap. 13, App 13A Tech rep. Table 5.1.	Adults and immatures have been apportioned to the Manx shearwater and gannet populations using Appendix A in Furness (2015) and have not used site specific data.	If site specific data are not available, then all birds should assumed to be adult, as recommended by SNCB guidance.		The Applicant does not agree with the assumption that any bird which is not able to be identified to an age category should be defined as an adult bird. The Applicant considers this approach to be 'bad science' and would almost certainly lead to an overly precautionary assessment. This assumption does not take into account species ecology and population dynamics. As acknowledged in detail within **Section 5.2.1.2** of **Chapter 13 Appendix 13.A: Offshore Ornithology Technical Report**, accurate age identification is not possible. To overcome this issue and in accordance with best practice, the Applicant has relied upon the best available evidence to quantify an adult / immature age ratio for each species assessed. The approach taken by the Applicant, is based on the same approach

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						undertaken by the Crown Estate for the recent Round Four Plan Level HRA (NIRAS, 2022) and Round Five Plan Level HRA (The Crown Estate, 2024).
Environmental Impact Assessment - Document Used: ES Chapter 13						
Identified impacts	2.11	Chap 13.sec. 13.7 and 13.4.3.1	Storm Petrel was screened out and discounted from further analyses due to too few data in DAS, as well as few records from on-shore vantage points. However, few data are likely to be obtained from the site using these techniques.	Natural England highlight that the issue relates to a lack of baseline data due to inappropriate survey techniques.		In light of concerns raised within Scoping Opinion, additional consideration was given to additional data sources, as presented within **Section 13.4.3** of **Chapter 13 Offshore Ornithology** and **Section 5.3.1** of the **RIAA** (**see Appendix 6.A of FLO-WHI-REP-0002-06 Chapter 6 EIA Methodology of the Offshore ES**). Using the best available evidence, the Applicant was able to confirm the conclusion that the area is not of importance to storm petrels. Therefore, the potential for adverse effect / likely significant effect was confidently ruled out.
	2.12	Chap 13, App 13A, sec. 13.10	The impacts to the Lundy seabird colony are only shown for Manx shearwater but the SSSI is also notified for guillemot, razorbill, kittiwake and Atlantic puffin. Impacts on these species should therefore be considered. Although the site is not an SPA and individual species populations do not exceed 1% of the bio-geographic populations of these species, we highlight the assemblage does exceed the minimum for SPA status (over 20,000 individual seabirds in the breeding season).	For the purposes of assessment and in recognition of its importance and recovering status, NE consider it appropriate to treat Lundy as an SPA colony within the HRA.		Please see Applicant's response to Comment ID D5 (Table 13). As welcomed during the ETG meeting held on 24th April 2023, the Applicant has assessed Manx shearwater as if it were a qualifying feature of an SPA. However, to comply with legislative requirements the assessment is presented within the ES chapter rather than the RIAA. Furthermore, the purpose of the Habitats Regulations is that they will apply to protected/designated sites. On the basis that Lundy does not fall into this category, it is not a requirement to assess the site in this way. Extending the obligations of the Habitats Regulations to undesignated sites, or to aspects of a site which are not designated, would go beyond the purpose and powers of the Habitats Regulations. The HRA process is framed around a site's conservation objectives, so including a site/species which is not part of any objectives of a designated site would not link into the purpose and regulatory framework of HRA. Should Lundy be put forward as a proposed SPA then consideration would then be afforded to it through the RIAA.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	2.13	Chap. 13, Tables 13.45-13.50, App13A tech report,	The impacts of the project on the Lundy Manx shearwater population are based on superseded data.	Contact RSPB to obtain latest census results (from 2023) and revise analyses using these data.		At the time of assessments being undertaken for the Project, the 2023 census has not taken place and, therefore, data from it could not be considered. However, the assessment of Lundy SSSI Manx shearwater population was undertaken based on the closest colony count to the years of site-specific survey data being collected, following best practice. For clarity, the 2023 census data suggests that the colony has further increased in size since the colony count relied upon for the Project's assessments. Therefore, even if the 2023 census data were utilised this would not materially affect the Project's assessment conclusions.
Methodology	2.14	Chap. 13, App. 13A, sec. 6	Para 39 of Appendix 13A states that *'for all species, the worst-case turbine array scenario was identified to be the 6x18MW turbine site design (highest estimated annual collisions for a given species). sCRM was completed for this scenario and the 6x15MW turbine site design scenario (identified by the Applicant as the site design most likely to be progressed).'* However, table 6.1 suggests the turbine parameters used in the sCRM are 7x15MW and 6x18MW. In addition, Table 6 of Appendix 13B lists WCS for migrant CRM as 7x18MW turbines and Table 1 of Appendix 13C for updated CRM also lists CRM WCS as 7x18MW. The WCS is therefore unclear and needs clarification.	The WCS should be identified and clearly stated with the analyses based on this scenario. Where several scenarios are modelled the results of each should be presented clearly for comparison.		Please see Applicant's response to Comment ID 23 (**Table 1**) & D2 (**Table 14**). The worst-case scenario considered for the stochastic Colision Risk Modelling of all species is 6x18MW. A 6x15MW scenario was also modelled as this was considered to be the most likely scenario, however this has not been used to determine effects. The worst-case scenario considered for the CRM of migratory species is 7x18MW. Note, although this is modelled, the Project would not be able to generate in excess of 100MW and WTGs would be downgraded to stay below this threshold.
	2.15	Chap.5. sec. 5.3. Chap. 13, App 13C, sec. 2.1	The CRMs for seabirds and migratory birds are based on 7 WTG but Rochdale envelope/WCS stated as max of 8 WTG	Clarify and Revise CRM based on the WCS		As above.
	2.16	Chap 13. Sec. 13.13.2 and 13.8.1.3	Cumulative impacts on auks by displacement were calculated using 50% displacement and 1% mortality to ameliorate the possibility that combined mean peak counts for each site generate artificially high total counts due to double counting, but also to take into account new evidence that displacement impacts were likely less than the max. range NE advocate (i.e. 70% displacement and 10% mortality) and habituation may occur. NE does not support this approach and seeks an assessment that follows the SNCB displacement guidance in full.	Despite recent work and new observations, post construction evidence of auk displacement and its impact on mortality remain unclear. Therefore, NE advise in-combination and project alone displacement impacts should continue to be evaluated using the SNCB guidance. If increases to baseline mortality of >1% are estimated within the precautionary range recommended by SNCB guidance, PVA may be required to investigate further.		As is best practice, the Applicant utilised the best available evidence to inform cumulative assessments for the Project. The derived displacement and mortality rates were based on the critical appraisal undertaken by APEM (2022) of all post consent monitoring studies available at the point of drafting. Since drafting, the Beatrice OWF second year of post consent monitoring study (MacArthur Green, 2023 & 2024) has been published and undergone peer review, which further corroborates the conclusions drawn by APEM (2022).

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						When considering the small scale of the Project the Applicant wishes to work with Natural England to consider a best fit for a more bespoke range recognising the limited effects associated with such a development and being mindful of its overall contribution to any cumulative or in-combination levels. As outlined in response to Comment ID 22, a gap analysis has now been conducted in order to provide an estimate of the potential impacts posed by these historic projects. This can be found in **Appendix Q Annex 3: Cumulative and In-combination Gap Analysis Report** (WHX001-FLO-CON-ENV-ASS-0003) of the **ES Addendum**.
	2.17	Chap 13, section 13.6.2, Table 13.20	NE do not agree with the method used to define breeding season BDMPS.	See attached guidance note. The SNCBs consider this a 'live' issue and accept that there are currently inherent flaws in both approaches. We recommend further discussion in the follow-up ETG.		The Applicant acknowledges Natural England's acceptance that calculation of the breeding season biologically defined minimum population scale (BDMPS) is currently a 'live issue'. The Applicant is aware that there are currently two separate approaches being utilised for recent project assessments within England. Due to these circumstances, the Applicant reviewed and followed the recommended approach presented within Natural England's best practice guidance (Parker et al., 2022). Fundamentally, however, given the limited level of predicted impacts from the Project the Applicant considers that this would not materially change assessment conclusions should either approach be taken. As previously noted the Applicant has undertaken additional cumulative assessments post submission of the **Offshore ES**, the result of which are presented within **Appendix Q Annex 3: Cumulative and In-combination Gap Analysis Report** (WHX001-FLO-CON-ENV-ASS-0003). These revised assessments utilised Natural England's latest recommended demographic rates (Natural England & NRW, 2024). As expected, the use of these updated demographic rates did not fundamentally change the cumulative assessment conclusions compared to those presented within **Chapter 13: Offshore Ornithology**.

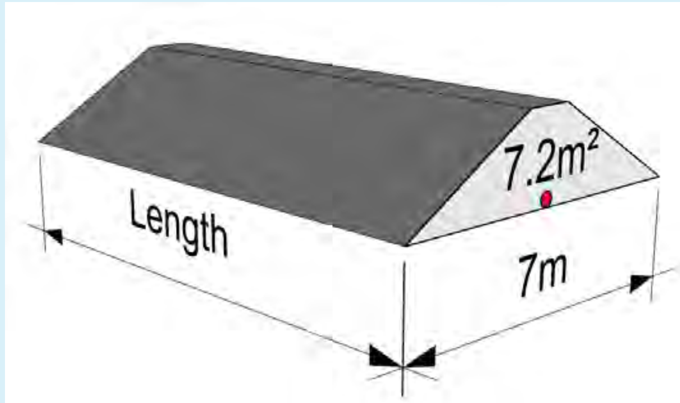
Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	2.18	Chap. 13, sections 13.7 and 13.8	Annual mortality should be assessed against the baseline mortality of the largest seasonal BDMPS. On occasion the EIA reports annual impacts against the largest BDMPS but only use the largest non-breeding season BDMPS even though the breeding season BDMPS is larger, e.g. for Manx shearwater and gannet displacement during construction and operation phases.	Ensure all assessments are based on the largest seasonal BDMPS and revise the impact assessment accordingly.		The Applicant acknowledges that annual impacts should usually be assessed against the largest seasonal BDMP. However, given the 'live issue' noted in Comment ID 2.17 (the row above) with respect to the breeding season BDMPS, the Applicant considers the use of the largest non-breeding season BDMPS to be appropriate. Fundamentally, the use of the larger breeding season BDMPS value would not change the conclusions made within the ES, that the level of impact predicted is not significant in EIA terms.

7. Response to Comments relating to Benthic and Intertidal

12. **Table 15** outlines the Applicant's response to the key concerns raised by Natural England in relation to Benthic and Intertidal.

Table 15 Natural England's Key Advice and Recommendations – Benthic and Intertidal

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
Project Parameters. Document(s) Used: Chapter 5 Project Description; Chapter 20 Onshore Ecology and Ornithology						
Project Description	E.1	5.5.1	Natural England queries if any cable protection will be decommissioned. If no, we advise that rather than being a lasting impact over the lifetime of the project it becomes a permanent habitat change/loss.	Please can the Applicant provide an outline decommissioning plan and ensure that the EIA assessment reflects the outcome of this		An **Outline Decommissioning Programme** (WHX001-FLO-CON-ENV-PLN-0011) is provided as part of the Further Environmental Information submission. The Applicant will consult Natural England in the development of the final Decommissioning Programme (i.e., through continual updates to the outline version). As outlined within **Section 5.10 (Offshore Decommissioning Activities)** of FLO-WHI-REP-0002-05 **Chapter 5 Project Description** of the **Offshore ES**, the programme will follow all relevant legislation and guidance at the time of decommissioning. Noting that these will likely change before this project is decommissioned. **Section 10.6.4** of FLO-WHI-REP-0002-10 **Chapter 10 Benthic and Intertidal Ecology** of the **Offshore ES** assesses the impact of permanent habitat loss / long term habitat loss due to cable protection on the assumption that cable protection would be left in situ.
	E.2	5.5.1	It is also not clear if any protection will be required within the near shore, intertidal and the Bideford and Foreland MCZ	Natural England requests that further clarity is provided by the Applicant in relation to the likely placement of cable protection and encourages the Applicant to use protection which has the most likelihood of being able to be decommissioned and where possible the least footprint		Cable burial is the preferred installation method as outlined in the **Outline Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007); therefore, the Project will install the least possible footprint of cable protection. However, there is an area of exposed bedrock in the Offshore Export Cable Corridor likely making cable burial in this location unfeasible (see Figure 5-11 in **Cable Burial Risk Assessment (CBRA**) (WHX001-FLO-CON-ENG-RSA-0001). Although cable protection will likely be required here, this area does not overlap with Bideford to Foreland Point MCZ and the Project has made a commitment to avoid installing cable protection within the boundary of this MCZ (see also **Section 6.1.1** of **Appendix 10.A** of FLO-WHI-REP-0002-10 **Chapter 10 Benthic and Intertidal Ecology** of the **Offshore ES**). The **Outline Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007) also commits to selecting cable protection materials to match the receiving environment, where possible; and using protection which has the most likelihood of being able to be decommissioned.
	E.3	Table 5.13	Natural England queries how the volume of cable protection will the same as the volume	We request the Applicant reviews this		The volume of cable protection due to cable crossings is 14,400m3and the area of cable protection on the seabed due to cable crossings is 14,000m2. The area is calculated as width x length of cable protection with a maximum width of 7m used in the assessment. The volume is calculated as cross-sectional area of cable protection x its length with a

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						maximum cross-sectional area of 7.2m2 used in the assessment. The width and cross-sectional area are based upon a maximum crest height of 1.8m with 1m crest width and 3m width sloping berms either side. The volume and seabed area are calculated using the same length so the fact that the maximum width and cross-sectional area of cable protection are very similar results in very similar values for volume and seabed area. 
	E.4	Para 98	Consideration needs to be given to a realistic worst-case scenario for UXO detonation and impacts on benthic habitats within the red line boundary	Natural England advises that an assessment from UXO detonation is required as part of the consenting phase. If information is not available, then a more precautionary approach should be taken to making the UXO safe such that impacts do not occur - particularly in areas of priority habitat (NERC Act 2006)		Consent for Unexploded Ordnance (UXO) removal will be sought in a future Marine Licence application when geophysical survey data of suitable spatial resolution is available to identify and quantify UXO risk to benthic habitats. Assessment to be left under UXO license and not to be included in this report.
	E.5	Plate 5.8	There is the potential for the OSP to be a non-floating foundation. However, the location of this hasn't been identified. Natural England advises that without a biotope characterisation map we are unable to advise on the most/least suitable locations from a benthic habitats perspective.	NE requests the Applicant provides a biotope characterisation map and more information on both the foundation type and location of the OSP.		At this stage it is not appropriate to define exact locations, this will be undertaken once pre-construction survey is undertaken to inform detailed design. However, based on available project data, there are no sensitive habitats within the Windfarm Site (see **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001) and therefore no location is considered unsuitable. Provision of a biotope map (interpolating the point samples shown in **Figure 10.3** of FLO-WHI-REP-0002-10 **Chapter 10 Benthic and Intertidal Ecology**) would not provide additional information, this would be provided by pre-construction survey as noted above.
	E.6	5.9.13	The operation and maintenance activities are too vague to advice on the potential significance of any impacts on the marine and intertidal	The Applicant should provide further information and assessment on O&M activities over the lifetime of the project.		An **Outline Offshore Operation and Maintenance Plan** (WHX001-FLO-CON-ENV-PLN-0008) is provided as part of the Further Environmental Information. This provides more context to the information provided in the **Offshore ES**; specifically, **Table 10.8** of FLO-WHI-REP-0002-10 **Chapter 10 Benthic and Intertidal Ecology** and **Section 5.9.1.2** of FLO-WHI-REP-0002-05 **Chapter 5 Project Description**.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						The **Outline Offshore Operation and Maintenance Plan** (WHX001-FLO-CON-ENV-PLN-0008) is limited to information currently known at this early stage of project design. However, the Applicant is committed to providing updated assessments of operation and maintenance activities (in future versions of the Outline Offshore Operation and Maintenance Plan) as more information becomes available throughout the detailed design phase. Broadly, offshore operation and maintenance activities fall into two main categories: • planned maintenance (i.e., function tests, inspections, cleaning, repairs, surveys, and scour protection replenishment) • unplanned maintenance (i.e., cable reburial and repairs, repairs and/or replacement of components of WTGs, substructures, mooring lines and cabling ancillary equipment) The majority of the maintenance work will take place above the water line. Whilst maintenance and repairs may require vessels such as cable-lay vessels, anchor-handlers, tugs and heavy-lift vessels, the frequency/level of these visits will be less than the worst case level of vessel activity assessed during the construction phase, so these have already been assessed by proxy. Likewise, where works are below the water line or interacting with the seabed (i.e., cable reburial, repairs or scour protection replenishment) these will all be within the worst-case envelopes assessed for construction. It should be noted that there currently isn't an in-situ 'major component change out plan' (i.e., unplanned maintenance) for the operational phase for FLOW projects. This is because currently the technology required is not available to facilitate in-situ floating to floating lifts using motion-compensated vessels. For comparison, at fixed offshore wind farms major repair of large components usually takes place on-site using jack-up vessels; however, this approach is not feasible for FLOW projects as the water depths on site are likely to be too deep for jack-up vessels. Instead, major repairs are completed by disconnecting WTGs from their moorings and laying the mooring chains on the seabed. WTGs are then towed to a port for completion of the required work at the quayside. The Applicant is working actively with the supply chain to develop in-situ replacement solutions as well as undertaking independent studies with suppliers with the aim of collaborating with and supporting crane suppliers to design and build these.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	E.7	Appendix 5	There is no pollution contingency plan for the marine environment	We advise the Applicant provides an outline marine and intertidal pollution contingency plan as part of the application		This Further Environmental Information includes an **Outline Marine and Intertidal Pollution Contingency Plan** (WHX001-FLO-CON-ENV-PLN-0004) and the **Outline Project Environmental Management & Monitoring Plan** (WHX001-FLO-CON-ENV-PLN-0003).
	E.8	Appendix 5	Natural England advises that monitoring of residual impacts, recovery and effectiveness of mitigation measures will be required for pre, during and post construction	We advise the Applicant to provide a In Principle Monitoring Plan as part of the consenting phase.		The **Outline Project Environmental Management & Monitoring Plan** (WHX001-FLO-CON-ENV-PLN-0003) includes an overview of the Project's in-principle monitoring proposals.
	E.9	App. 5.1	Crossing Statement: there is no assessment of supporting infrastructure that will be require on the Seawards side of the HDD. For example (but not exclusively) will a drilling rig need to be located on a bottomed-out barge or a jack up ridge? Will a cofferdam be required at the exit pit locations and if so, what will the footprint be	Natural England advises that that assessment includes a WCS for any associated infrastructure for the HDD operations in both the marine and intertidal.		Recent geotechnical investigation at Landfall and within the Onshore Development Area has indicated that there is sufficient depth within the beach (approx. 7-8m) to undertake open trenching in the intertidal area. Therefore, the HDD option at Landfall is no longer required as outlined in **the Outline Cable Specification and Installation Plan (Outline CSIP) (WHX001-FLO-CON-ENV-PLN-0007).** On that basis there will be no infrastructure (cofferdams) or jack-up barges etc within the intertidal zone. Within the subtidal zone at the ECC emergence and for the rest of the cable corridor, the works are as detailed in **Chapter 8: Marine and Physical Processes (Section 8.4.19** and **Section 8.4.1.2**) of the **Onshore ES**, which would not extend into the Braunton Burrows SAC. The proposed entry and exit areas for the trenchless technique used to cross the Taw Estuary are above MHWS (in land) so no supporting infrastructure will be required on the seawards side (below MHWS) at this location. This was further confirmed in **Appendix 5.A: Taw Estuary and Braunton Burrows Crossing Method Statement** of the **Onshore ES**. The **Onshore Ground Investigation Factual Report** is provided in **Appendix T Annex 1** of this document and provides data which shows the ground conditions are suitable for use of a trenchless technology under the Taw Estuary and confirms the previous conclusion that risk of frac-out is low (see also **Appendix S: Hydrofracture Report**).
	E.10	App. 5.1 Para. 22	Until geotechnical investigations are undertaken to support the feasibility of trenchless techniques, we are unable to agree with the WCS presented and the conclusions drawn	We advise that geotechnical investigations are undertaken as part of the consenting phase and assessment updated from the results.		Geotechnical investigations have now been conducted by the Applicant. The **Onshore Ground Investigation Interpretative Report** (WHX001-FLO-CON-ENV-RPT-0001) provides data which shows the ground conditions are suitable for use of a trenchless technology under the Taw Estuary and confirms the previous conclusion that risk of frac out is low (see also **Appendix S: Hydrofracture Report**). The Applicant considers that this supports the conclusions of the ES that as the entry and exit areas for the trenchless technique used to cross the estuary are above MHWS, no benthic or intertidal ecology receptors will be impacted.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						Further work has been undertaken and is provided in **Appendix G: Hydrogeological Risk Assessment.**
	E.11	App. 5.1 4.1.2.2	Natural England notes that no controls have been considered in full and/or secured	Natural England advises that all mitigation measures and working practises are secured in a named plan at the time of consent.		Construction environmental controls will be secured through marine licence and planning permission conditions agreed with the MMO and NDC. An **Outline Construction Environmental Management Plan** (WHX001-FLO-CON-ENV-PLN-0010) and **Appendix P: Updated Mitigation Register** of the ES addendum is provided as part of the Further Environmental Information submission. These documents include a Waste Audit Statement.
	E.12	App. 5.1 5.3	Natural England highlights that we are aware of at least 5 HDD operations through intertidal habitats that have resulted in a frac-out and therefore we do not agree that frac-out are uncommon	Natural England advises that an outline bentonite management plan is provided and agreed as part of the consenting phase		Further detail on the suitability of HDD is provided in the **Onshore Ground Investigation Interpretative Report** (WHX001-FLO-CON-ENV-RPT-0001). An Outline Bentonite Management Plan (WHX001-FLO-CON-ENV-PLN-0012) is provided.
	E.13	App 5.1 156	Implications for inspections across designated sites during HDD works needs to be considered as part of the HDD works assessment. For example, how will sites be accessed?	Natural England advises that the assessment for trenchless operations is updated to include all aspects of the work.		An Outline Bentonite Management Plan (WHX001-FLO-CON-ENV-PLN-0012) is provided. Development of an Emergency Spill Response Plan would consider implications for inspecting all aspects of HDD work. These plans will include agreed access routes for monitoring the Onshore Development Area where HDD is proposed. For the Braunton Burrows, emergency access would be via the Saunton Golf Course (as shown in **Figure 1 of Chapter 19 Appendix 19: Transport Statement**). For the Taw Estuary Crossing, the preferred method of access would be agreed with Natural England, however it would likely be on foot.
	E.14	Annex 1 HDD Hydrofracture	Natural England notes that frac-out is most likely towards the exit pits	Natural England advises that a bentonite management plan is required		The is correct. Exit (and entry) pits will be located outside the boundaries of designated sites. The Applicant is open to a planning and Marine Licence condition being imposed to require the agreement of a Bentonite Management Plan and an **Outline Bentonite Management Plan** (WHX001-FLO-CON-ENV-PLN-0012) is provided. The HDD entry and exit points are identified within **Chapter 5: Project Description Appendix 5.D: Onshore Export Cable Corridor Alignment Sheets** of the **Onshore ES**.
Natural England's Position on Worst Case Scenario or Scenarios	E.15	20.3.6 Table 20.8	Worst case scenario details include construction impact parameters associated with trenchless technique at export cable landfall but does not include the same parameters for the	We advise that construction impacts associated with HDD including potential for frac-out and noise and vibration should be included in a worst-case scenario assessment of construction		**Table 16.9 in Chapter 16 of the Onshore ES** outlines the realistic worst-case scenario for the Taw Estuary Crossing. Please refer to comments relating to onshore ecology and ornithology in **Section 4**. A detailed response to concerns on noise and vibration is provided in response to Comment ID 2.10.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			trenchless technique along the estuary crossing section of the cable route.	impacts in relation to onshore ecology & ornithology.		**Appendix 5.A: Taw Estuary and Braunton Burrows Crossing Method Statement** of the **Onshore ES** provides further information on the use of trenchless techniques underneath the Braunton Burrows SSSI/SAC. Further detail on the suitability of HDD is provided in **Appendix T** of the ES Addendum.
Baseline Characterisation– Document(s) Used: -						
Analysis, Modelling and Reporting	E.16	General	Natural England advises that the surveys should be to characterise the red line boundary and produce biotope habitat mapping. A further preconstruction survey will be required which will become the baseline	Natural England request that a biotope map using all relevant data is provided		Provision of a biotope map (interpolating the point samples shown in **Figure 10.3** of **FLO-WHI-REP-0002-10 Chapter 10 Benthic and Intertidal Ecology** of the **Offshore ES** would not provide additional information which would inform the assessment. The area included within the Offshore Development Area is small and for the Windfarm Site relatively homogeneous – the information provided is proportionate. Defining exact locations for siting of WTGs and the Offshore Substation Platform (OSP), this will be undertaken once pre-construction survey is undertaken to inform detailed design. However, there are no sensitive habitats within the Windfarm Site (see **Cable Burial Risk Assessment (CBRA)** (WHX001-FLO-CON-ENG-RSA-0001) and therefore no location is considered unsuitable. Pre-construction surveys will be undertaken to inform micro-siting.
	E.17	General	Impacts are only considered temporary if persist no more than 2 years			**Section 5.3.2** of **FLO-WHI-REP-0002-05 Chapter 5 Project Description** of the **Offshore ES** states: *It is anticipated that the realistic worst-case for construction of the Offshore Project will take 28 months (18 months for onshore fabrication and assembly of floating substructures and 16 months offshore construction activities).* Therefore, all construction impacts would fall within the 2 years. For operation, temporary impacts relate to disturbance activities (from jack up vessels, cable replacement) which would be short-lived and episodic not continuous.
Environmental Impact Assessment - Document Used: Chapter 10 Benthic and Intertidal Ecology; Chapter 20 Onshore Ecology and Ornithology						
Identified impacts	E.18	10.3.3 Table 10.8	Impacts of construction identified are limited to those associated with offshore construction and do not consider inshore impacts associated with construction which may be manifested in the intertidal.	We would advise that the Worst Case Scenario Assessment should include consideration of construction impacts inshore, in particular potential for impacts within the Taw Torridge Estuary. Potential impact pathways associated with HDD of cable route include noise and vibration upon migratory fish and wading bird receptors. Onshore construction may result in the release of sediment into watercourses feeding into the estuary giving rise to intertidal		As outlined in previous responses, further detail on the suitability of HDD is provided in **Appendix T** of the ES Addendum. The Applicant confirms the position (within **Table 10.9** of **FLO-WHI-REP-0016-10 Chapter 10 Benthic and Intertidal Ecology** of the **Onshore ES**) that there is no impact pathway to benthic and intertidal receptors given the entry and exit points of the HDD at the Taw Estuary crossing are above MHWS. An **Outline Bentonite Management Plan** (WHX001-FLO-CON-ENV-PLN-0012) is provided.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
				impacts including increased suspended sediments and deposition, re-mobilisation of contaminated sediment which may be generated by onshore construction should be considered upon estuarine habitats, water quality. Furthermore, the potential for "Frac-Out" in the intertidal during the HDD beneath the estuary should be fully assessed, measures proposed for minimising the risk and mitigation developed accordingly in the event that it does occur.		A detailed response to concerns on noise and vibration in relation not migratory fish and wading bird receptors is provided in response to Comment ID 2.52 (**Table 4**). Impacts on birds are considered within **Section 16.5.5** of **FLO-WHI-REP-0016-20 Chapter 16 Onshore Ecology and Ornithology** of the **Onshore ES**. A short-term and temporary minor adverse indirect effect on the Taw-Torridge Estuary SSSI has been determined which is not significant.
	E.19	10.3.5 Fig 10.2	Benthic & Intertidal Ecology Survey sampling locations are located entirely along the offshore cable route with no sampling locations deployed along the Taw Torridge Estuary crossing of the cable route.	We advise that the Benthic & Intertidal Ecology survey should include sampling locations within the Taw Torridge Estuary in order that the impacts upon the features of the SSSI and adjacent Braunton Burrows SAC can be fully assessed.		As outlined in previous responses, further detail on the suitability of HDD is provided in **Appendix T** of the ES Addendum. The Applicant confirms the position (within **Table 10.9** of **FLO-WHI-REP-0016-10 Chapter 10 Benthic and Intertidal Ecology** of the **Onshore ES**) that there is no impact pathway to benthic and intertidal receptors given the entry and exit points of the HDD at the Taw Estuary crossing are above MHWS. Therefore, the Applicant considers that a survey of this area is not required.
	E.20	10.4.1 Para 47	Entry and exit areas for HDD may be located above MHWS but impacts of noise and vibration and potential Frac-Out during HDD beneath estuary are not considered by the assessment.	We advise that a full assessment of potential impacts to the intertidal estuarine environment of the construction of the proposed project should be provided. Our primary concern is that impacts are minimised.		An **Outline Bentonite Management Plan** (WHX001-FLO-CON-ENV-PLN-0012) is provided. However, **Appendix A** of the **Onshore Ground Investigation Interpretative Report** (WHX001-FLO-CON-ENV-RPT-0001) presents information on the constructability of the River Taw HDD (Section 3). This document reports that the prevailing geology of this section is mudstone/siltstone bedrock which will enable a clean, self-supporting bore path to be drilled. Where the geology is found to be sand, steel casing will be driven to support the trench. The risk of frac-out at this section is therefore largely eliminated since the cable bore will be installed through bedrock. Section 10.5.4 of **FLO-WHI-REP-0016-10 Chapter 10 Benthic and Intertidal Ecology** of the **Onshore ES**.
	E.21	Table 10.8	Natural England notes that the removal and return of the WTG over the lifetime of the project has not been discussed an/or assessed here	Please could full consideration of all O&M activities me included by the Applicant and assessed accordingly		The **Outline Offshore Operation and Maintenance Plan** (WHX001-FLO-CON-ENV-PLN-0008) is limited to information currently known at this early stage of project design. However, the Applicant is committed to providing updated assessments of operation and maintenance activities (in future versions of the Outline Offshore Operation and Maintenance Plan) as more information becomes available throughout the detailed design phase. Broadly, operation and maintenance activities fall into two main categories: • planned maintenance (i.e., function tests, inspections, cleaning, repairs, surveys, and scour protection replenishment)

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						• unplanned maintenance (i.e., cable reburial and repairs, repairs and/or replacement of components of WTGs, substructures, mooring lines and cabling ancillary equipment) The majority of the maintenance work will take place above the water line. Whilst maintenance and repairs may require vessels such as cable-lay vessels, anchor-handlers, tugs and heavy-lift vessels, the frequency/level of these visits will be less than the worst case level of vessel activity assessed during the construction phase so these have already been assessed, by proxy. Likewise, where works are below the water line or interacting with the seabed (i.e., cable reburial, repairs or scour protection replenishment) these will all be within the worst-case envelopes assessed for construction. It should be noted that there currently isn't an in-situ 'major component change out plan' (i.e., unplanned maintenance) for the operational phase for FLOW projects. This is because currently the technology required is not available to facilitate in-situ floating to floating lifts using motion-compensated vessels. For comparison, at fixed offshore wind farms major repair of large components usually takes place on-site using jack-up vessels; however, this approach is not feasible for FLOW projects as the water depths on site are likely to be too deep for jack-up vessels. Instead, major repairs are completed by disconnecting WTGs from their moorings and laying the mooring chains on the seabed. WTGs are then towed to a port for completion of the required work at the quayside. The Applicant will work to minimise the benthic spatial footprint of the disconnected mooring chains when they placed on the seabed. Where possible, these will be laid within the already disturbed area around the foundations of the mooring anchors (created by the scouring effects of the catenary action of the mooring lines as described in **Section 10.6.2** of **Chapter 10 Benthic and Intertidal Ecology** of the **Offshore ES**). Once further information is known on the mooring design, the **Outline Offshore Operation and Maintenance Plan** will be updated. The Applicant is working actively with the supply chain to develop in-situ replacement solutions as well as undertaking independent studies with suppliers with the aim of collaborating with and supporting crane suppliers to design and build these.
	E.22	Table 10.12	Natural England advises that anchor and cable protection impacts on benthic and intertidal habitats are 'lasting'	Natural England advises that the assessment is updated accordingly based on more comprehensive detail.		Permanent habitat loss / long term habitat loss during operation is considered in **Section 10.6.4** of FLO-WHI-REP-0002-10 **Chapter 10 Benthic and Intertidal Ecology** of the **Offshore ES.** This includes the consideration of cable protection for the offshore export cable and anchoring systems for catenary turbines.

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	E.23	Chapter 10 Para. 62	It is not clear how deep the sand veneer is?	Please can the Applicant provide a cable burial risk assessment to support assumptions that cable will remain buried over the lifetime of the project.		The **Cable Burial Risk Assessment (CBRA**) (WHX001-FLO-CON-ENG-RSA-0001) presents more information on the identification of the depth of sand veneers in the final CBRA to support assumptions of efficient cable burial. However, at this stage, a full understanding of the depth of sand veneers across the proposed cable burial area is not established, given that a full suite of project-specific geotechnical data has not yet been collected. The **Cable Specification and Installation Plan** (WHX001-FLO-CON-ENV-PLN-0007) provides details of the Project's commitments to assessing the efficiency of cable burial techniques across various sediment types once full geotechnical information has been collected.
	E.24	Chapter 10 Para 65	In Table 18 of Appendix 8B there is a reef assessment, but it would be good to have close up maps along the export cable route in order to consider habitat types and potential impacts and significance thereof	Natural England advises that high resolution maps should be provided during the consenting phase, which include the habitats along the export cable route both in marine and intertidal		A Benthic Characterisation Report is provided in **Appendix 8.C** of FLO-WHI-REP-0002-08 **Chapter 8 Marine and Physical Processes** of the **Offshore ES**. Detailed, high resolution maps/habitats along the export cable route will be provided once pre-construction surveys have been undertaken to inform detailed design. The **Cable Burial Risk Assessment (CBRA**) (WHX001-FLO-CON-ENG-RSA-0001) and **Section 10.4.3** of FLO-WHI-REP-0002-10 **Chapter 10 Benthic and Intertidal Ecology** of the **Offshore ES** reports that although there are records of Annex I bedrock and/or stony reef present along the coastline within the OECC, no biogenic reef habitat was observed. This is because despite individuals of Ross worm *Sabellaria spinulosa* being found, these were not deemed to meet the reef qualifying criteria.
	E.25	20.3.10 Paras 44 & 45	It is stated that key potential impacts relate to the construction phase and maintenance activities (if required).	We advise that activities associated with requirement for ongoing maintenance during the operational phase should be scoped into the worst-case scenario assessment.		See responses stated in E.6 and E.21.
	E.26	20.4.1 Fig 20.3	Designated sites - missing	We request that within a map outlining the study area for onshore ecology & ornithology all designated sites are included		**Figures 20.1** to **20.5** of FLO-WHI-REP-0002-20 **Chapter 20 Onshore Ecology and Ornithology** of the **Offshore ES** were omitted in error and are provided within **Appendix A Annex 5** of this document. These show the Onshore Ecology and Ornithology study area related to the Offshore Project.
	E.27	20.4.3 Fig 20.4	Non-statutory nature conservation sites - missing	We request that within a map outlining the study area for of all non-statutory nature conservation sites are provided at the consenting phase.		**Figure 16.1** of FLO-WHI-REP-0016-20 **Chapter 16 Onshore Ecology and Ornithology** of the **Onshore ES** includes the full Onshore Ecology and Ornithology study area related to the Onshore Project. **Appendix A Annex 6** of this document identifies Onshore Designated Sites (and other environmental constraints).

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	E.28	20.4.3 Para 66	It is stated that priority habitats identified within the landfall are maritime cliffs and slopes and in the Taw Estuary Crossing include lowland fens and reedbeds.	This chapter is concerned with the potential impacts of the onshore ecology receptors of construction, operation and maintenance & decommissioning phases seaward of MHWS. It is Natural England`s understanding that only those impacts that would arise from activities within and below MHWS springs are assessed with the closest elements to onshore being at the Landfall and the Taw Estuary Crossing. Activities and infrastructure above MHWS are assessed within the onshore application. The habitats referred to are typically found above MHWS and so their inclusion here is not necessary and has potential to cause confusion.		Habitats above MHWS were considered within the study area for the **Offshore ES** as defined in **Table 20.4 Chapter 20 of the Offshore ES**. They were included for consideration of indirect impacts associated with nearshore activities. Separate ESs were required for the onshore and offshore consenting regimes.
	E.29	20.5.3 Para 149	It is stated that the trenchless methods would entail the entry and exit points to be located inland of the coastal defence embankments and thus outside of the subtidal and intertidal areas of the estuary. As such there would be no physical disturbance within the estuary as the trenchless techniques would be located c. 10m or more below the bed of the estuary.	We advise that construction impacts associated with HDD including potential for frac-out and noise and vibration should be included in a worst-case scenario assessment of construction impacts in relation to onshore ecology & ornithology.		Further assessment of the risk of frac out, and the mitigation measures to be employed during construction are provided in an **Outline Bentonite Management Plan (Outline BMP)** (WHX001-FLO-CON-ENV-PLN-0012), with more detail on measures to mitigate impacts during construction presented within an **Outline Construction Environment Management Plan (Outline CEMP)** (WHX001-FLO-CON-ENV-PLN-0010). Both of these documents are provided as part of the **Further Environmental Information** submission. **Appendix A** of the **Onshore Ground Investigation Interpretative Report** (WHX001-FLO-CON-ENV-RPT-0001) presents information on the constructability of the River Taw HDD (Section 3). This document reports that the prevailing geology of this section is mudstone/siltstone bedrock which will enable a clean, self-supporting bore path to be drilled. Where the geology is found to be sand, steel casing will be driven to support the trench. The risk of frac-out at this section is therefore largely eliminated since the cable bore will be installed through bedrock. A detailed response to concerns on noise and vibration is provided in response to Comment ID 2.52 (**Table 4**).
	E.30	20.12 Table 20.28	Impact 1: Habitat alteration or disturbance to intertidal habitats at the Landfall – it is assessed as no effect and that no mitigation is required.	We advise that activities associated with requirement for ongoing maintenance during the operational phase should be scoped into the worst-case scenario assessment.		Geotechnical assessment indicates there is sufficient depth of sand (approx. 7-8m in depth) for opencut trenching to be used to bury the cable to a sufficient depth to avoid the cable becoming exposed. Four telecoms cables also make landfall at this location. Therefore, it is considered that ongoing maintenance at landfall will not be required during the operational life of the Project and is therefore not included in the realistic worst case scenario. Evidence for this is provided in **Appendix T Annex 1: Onshore Ground Investigation Factual Report.**

Environmental Impact Assessment	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						A further assessment of coastal geomorphological change is provided in **Appendix F: Coastal Geomorphology Technical Note** of the **ES Addendum** (WHX001-FLO-CON-CAG-ASS-0002).
	E.31	20.12 Table 20.28	Impact 12: Disturbance to or introduction of non-native invasive species at the Taw Estuary Crossing – proposed mitigation is identified as good site practice measures for managing the spread of invasive species.	We advise that this should be augmented on site by ECoW and tool box talks advocating the Check Clean Dry approach.		An **Outline Construction Environmental Management Plan** (WHX001-FLO-CON-ENV-PLN-0010) is provided as part of the Further Environmental Information submission. This includes an **Outline Invasive Non-Native Species (INNS) Management Plan** (WHX001-FLO-CON-ENV-PLN-0009). The Applicant can confirm that measures such as tool box talks and ECoW supervision are included.
Methodology	E.32	General	There are lots of statements through the chapters that identify relatively small impacts, but there are no assessment of the WCS provided in the chapters which use information from the project description to help determine 'relativity'	Natural England advises that the necessary evidence needs to be included to support conclusions drawn throughout these chapters.		The Applicant notes the use of 'relatively' could cause confusion. The Applicant can confirm that impacts are assessed using the worst-case scenario outlined within each chapter which is based on the Project Design Envelope set out within **Chapter 5: Project Description** (FLO-WHI-REP-0016-05).

8. Response to Comments relating to SLVIA and LVIA

13. **Table 16** outlines the Applicant's response to the key concerns raised by Natural England in relation to SLVIA and LVIA.

Table 16 Applicant's response to Natural England's comments on SLIVA and LVIA

ID	Consultee Comments	Applicant Response
SLVIA		
Natural England's advice and recommendations		
1 2	*This document provides Natural England (NE) review of the landscape, seascape, visual assessments and related chapters of the Environmental Statement as they relate to the offshore aspects (and to a limited extent onshore) of the project. In keeping with our previous comments on the potential landscape and visual effects likely to arise from the development we limit our comments to those effects associated with the North Devon Coast Area of Outstanding Natural Beauty ('AONB') and its seascape setting.* *To ensure that the decision makers can reach a fully informed determination of this OWF project as it pertains to the AONB we recommend that close attention is paid to the advice of the AONB Partnership. Their detailed local knowledge of the designated landscape, its special qualities, its management needs and the relationship between land and sea in supporting the area's statutory purpose will provide greater depth and detail than can be provided by Natural England.* *A summary of Natural England's key concerns in relation to SLVIA is set out below with detailed comments following. A summary regarding LVIA is provided also.* *Summary of comments* *Natural England agrees that:* *i. 8 x 284m turbines at the internal separation distances stated represent the worst case scenario for landscape and visual effects.* *ii. No significant adverse landscape and visual effects are likely to the affect the AONB. As a result there are no adverse effects on the special qualities of the AONB.* *iii. We also agree with the judgement that of no significant effects on the special qualities of the AONB and users of the South West Coastal Path.* *iv. Natural England agrees that appropriate mitigation measures for night-time lighting have been identified* *Natural England has the following concerns:* *v. With some of the explanatory text used.* *vi. With how mitigation measures in particular for night-time effects of navigational lighting will be secured.* *vii. The significant cumulative effects with the other OWF projects.* *Detailed Comments* *Natural England notes that's the current AONB management plan (2019 -2024) emphasises the distinctive coastal scenery of the ANOB to include 'the seemingly infinite expanse of ocean' which has a 'sense of timelessness and raw nature devoid of human influence'. Further describing the AONB as having a sense of tranquillity and remoteness. But this wilderness has a fragile quality which can dissolve with the sight of wind turbine/s or mast on the skyline and is particularly sensitive to night-time lighting. Therefore, Natural England advises that the proposed development proposes a threat to the special qualities of the AONB especially locations, such as Hartland, within the Zone of Theoretical Influence (ZTI). Therefore, development can have a profound effect across the entire AONB.* *We advise that the following special qualities are most at risk:* *• #2 – Views are of landscape and seascape devoid of human influence* *• #9 Rare and fragile quality of wilderness in Braunton Burrows and Hartland coast*	The Applicant welcomes that Natural England agree that the stated worst case scenario has been used as the basis for the assessment of seascape, landscape and visual effects. The Applicant notes that Natural England agree with the conclusions of the SLVIA, that there would be no significant landscape or visual effects, no adverse effects on the Special Qualities of the North Devon Coast Area of Outstanding Natural Beauty, and the judgement that no significant effects would occur on the visual amenity of users of the South West Coast Path. The Applicant also welcomes that Natural England agree that appropriate mitigation measures for night-time aviation lighting have been identified, and that this together with the number of proposed turbines, turbine layout, and separation distance from coast support the conclusion that there would be no significant landscape or visual effects on the Special Qualities of the North Devon Coast Area of Outstanding Natural Beauty, or the visual amenity of users of the South West Coast Path. The Applicant notes the concern with some of the explanatory text used, although it is not specifically identified what these concerns relates to; however, crucially, as identified above, Natural England agrees with the justified conclusions presented in the SLVIA in respect of the Special Qualities of the North Devon Coast Area of Outstanding Natural Beauty, and users of the South West Coast Path. The Applicant notes Natural England's concern regarding potential for effects on the AONB as further projects are progressed. As assessed in the **Chapter 19: Offshore Seascape, Landscape and Visual Amenity** (**Section 19.24**) of the **Offshore ES**, there would be no significant cumulative effects as a result of the addition of the Offshore Project to a context containing operational, under construction, consented, application or scoping stage cumulative developments identified in the Cumulative Effect Assessment (CEA). The progress of other projects and how they may affect the AONB is beyond the control of the Applicant. The Applicant notes that Natural England defer to the North Devon Coast AONB Board for LVIA matters. The siting of the Onshore Substation has been sensitively considered and is carefully sited to avoid impacts on the AONB by being separated by the River Taw, and situated beyond the existing East Yelland substation, and adjacent to other large built form. The Applicant is committed to delivering appropriate landscape mitigation proposals and substation design secured by condition, in order to minimise landscape and visual impacts of the proposed substation and reinstate the landscape within the Onshore Export Cable Corridor. Monitoring measures to ensure the success of landscape reinstatement are described in **Appendix N: Outline Landscape and Ecological Management Plan** (OLEMP) of this **ES Addendum**. A full LEMP will be submitted to and approved by the Local Planning Authority prior to commencement of development.

ID	Consultee Comments	Applicant Response
	Therefore, we welcome the in-built mitigation in reducing the turbine height, and proposed motion sensors to dim navigational lighting at night to reduce the potential impacts to the special qualities of the AONB. These combined with the number of proposed turbines, turbine layout and separation distance from coast to development area, we believe it is unlikely that the AONB's special qualities will be significantly impacted. Similarly, we advise no significant adverse visual effects on receptors along the South West Coast Path from the proposed project. But this may not remain the case as further projects are progressed as set out the figures included within the Appendices. *Whilst we defer to the AONB for LVIA matters, we do draw the Local Planning Authorities attention to the fact that while outside of the AONB that is a risk that the ground elevated, tall building housing the onshore substation is likely to impact on the special qualities of the designated landscape. And whilst some mitigation including planting has been proposed to mitigate for that, it will take some time whilst the trees establish and grow for this to become fully functional. Therefore, we advise that all possible options are considered in the final project design and construction management plan to avoid, reduce and mitigate the impacts as must as possible.* To ensure that the decision makers can reach a fully informed determination of this OWF project as it pertains to the AONB we recommend that close attention is paid to the advice of the AONB Partnership. Their detailed local knowledge of the designated landscape, its special qualities, its management needs and the relationship between land and sea in supporting the area's statutory purpose will provide greater depth and detail than can be provided by Natural England.	

9. Response to Comments relating to Designated Site Assessment

14. **Table 17** and **Table 18** outlines the Applicant's response to the key concerns raised by Natural England in relation to Designated Site Assessment.

9.1 Natural England's Advice and Recommendations

15. A summary of Natural England's key concerns in relation to Designated Sites is set out in **Table 17**. Natural England's key advice and recommendations are presented in further detail in **Table 18**.

Table 17 Natural England's Summary of Key Issues– Coastal Habitats

NE Ref	Subject Area	Summary of NE's Key Concerns	Natural England's Recommendations to Resolve Issues.	NE's Risk	Applicant's Response
G1	Braunton Burrows SAC and SSSI	Petalwort *Petalophyllum ralfsii* is a nationally rare species and Annex II species which is also a protected SAC species. Potential for impacts of trenchless techniques (HDD or direct pipe) upon groundwater dependent Humid dune slack and petalwort features have not been considered as part of the assessment.	Given the prevalence of dune slack habitat along the cable route as identified by the NVC survey it is possible that petalwort could be present and potential for hydrological impacts on both these features needs to be fully understood.		Petalwort has been considered in the assessment. A full response to the comment on Petalwort is provided to **Comment ID B1** of **Table 5** of this document. Documented locations of Petalwort that were provided to the project by Natural England are shown in **Annex 3**. The Applicant commissioned a specialist bryologist sub-consultant with experience of petalwort to undertake a desk-based assessment and field survey to address this comment. The survey report is available in **Appendix L: Petalwort Desk Based Assessment and Survey.**
G2	Braunton Burrows SAC	Incorrect site conservation advice (Morecombe Bay) used to inform HRA	Reference to Morecombe Bay SAC advice should be disregarded and the HRA revised to take account of site specific advice for Braunton Burrows SACOS.		This comment is directed to the MMO. Therefore, no response has been provided by the Applicant. The Applicant can confirm there is no reference to Morecambe Bay SAC within the RIAA. The Braunton Burrows SAC Conservation Objectives (Natural England, 2018) were used though the reference in the text was not completed in the reference list. The Supplementary Advice was considered and relevant aspects referred to in our assessment.
G3	Braunton Burrows SAC, and SSSI	Pressures identified for consideration do not correlate directly with the habitat features against which they are being assessed. Pressures identified for sand dune features refer to impacts at the seabed and in the water column which are not relevant to these features.	Pressures need to be re- defined for sand dune features to consider impacts of construction footprint but also operation maintenance and decommissioning (direct habitat damage/loss) and potential for indirect impacts associated with HDD techniques.		This comment is directed to the MMO. Therefore, no response has been provided by the Applicant.
G4	Braunton Burrows SAC and SSSI	It is stated that Intertidal cable activities may cause abrasion and disturbance to seabed and has the potential to cause a temporary increase in suspended sediments, habitat loss and physical change to sediment type and which may impact on *Salix repens ssp. argentea* (*Salicion arenariae*)	The 2170 Dunes with *Salix repens spp argentea* feature is found inland of MHWS and therefore we do not consider it relevant for consideration within the HRA. The assessment should instead consider the impacts upon 2120 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes") which could potentially be affected due to proximity to Saunton Sands car park and wider HDD cable activity taking place between the car park and the intertidal.		This comment is directed to the MMO. Therefore, no response has been provided by the Applicant.
G5	All designated sites	Potential changes to the hydrology, geomorphology and water quality of designated sites could impact upon water-dependent biological communities (including the designated interest features).	These impacts are identified but not explored in any detail. These will need to be assessed in full by the HRA.		This comment is directed to the MMO. However, the Applicant refers the MMO to the Applicant's previous responses relating to the provision of a petalwort survey and desk-based assessment.

NE Ref	Subject Area	Summary of NE's Key Concerns	Natural England's Recommendations to Resolve Issues.	NE's Risk	Applicant's Response
G6	Braunton Burrows SAC	Due to climate change and associated warmer, drier summers, water resources associated with the Secondary A aquifer that characterises the Onshore Project may come under more pressure, due to more permits to abstract being sought. This could have associated impacts on surface and groundwater hydrology, water quality and designated sites.	Requires consideration as part of cumulative assessment of impacts upon groundwater dependent SAC features – dune slacks & petalwort.		The Project does not intend or require any abstraction during the operation phase. The installed ductwork will have no effect or change on hydrology (see Comment ID 32 and 33 of **Table 1**No discharges would arise during operation. In terms of groundwater, it has been stated earlier that there is no change to groundwater and no discharges to groundwater during operation (or construction) therefore there is no pathway for impacts to occur on groundwater flow or quality and thus no indirect effects likely on any features of the SAC.
G7	Caen Valley Bats SSSI	A full rationale for survey and impact assessment for this Caen Valley Bats SSSI is required within the EIA following further surveys.	Following further surveys (as detailed) the EIA should include precautionary mitigation to retain any existing bat commuting routes along the hedgerow line during construction in respect of the Caen Valley Bats SSSI.		Refer to detailed response to Comment ID 40 in **Table 1** in **Section 1.**
G8	River Wye SAC River Usk SAC Severn Estuary SAC River Camel SAC Dartmoor SAC Severn Estuary Ramsar Carmarthen Bay and Estuaries SAC River Tywi SAC River Slaney SAC River Barrow and River Nore SAC Lower River Suir SAC Blackwater River (Cork/Waterford) SAC	English SACs where Annex II migratory fish are a qualifying feature identified in the Report to Inform Appropriate Assessment (RIAA) have not been carried through to Stage 1 screening.	Stage 1 screening should include English SACs where Annex II migratory fish are a qualifying feature that were screened into the RIAA.		The Stage 1 Screening identified many of those sites as screened in due to the Zone of Influence: • River Wye SAC • River Usk SAC • Severn Estuary SAC • Severn Estuary Ramsar • Carmarthen Bay and Estuaries SAC • River Tywi SAC • River Slaney SAC • River Barrow and River Nore SAC • Lower River Suir SAC • Blackwater River (Cork/Waterford) SAC. The exceptions were the River Camel SAC and Dartmoor SAC, which based on consultation comments on the Stage 1 Screening were screened into the Stage 2 RIAA. This update from the Stage 1 Screening is appropriately captured in the **Table 5.5** of the **RIAA** (**see Appendix 6.A of FLO-WHI-REP-0002-06 Chapter 6 EIA Methodology of the Onshore ES**).
G9	Bideford to Foreland Point MCZ Cardigan Bay SAC Carmarthen Bay SAC Pembrokeshire Marine SAC Lands End and Cape Bank SAC	Incorrect units used in explanation of why the site has not taken forward to further assessment.	Revisit decisions based on correct distances if latter used in assessment.		This comment is directed to the MMO. Therefore, no response has been provided by the Applicant.

NE Ref	Subject Area	Summary of NE's Key Concerns	Natural England's Recommendations to Resolve Issues.	NE's Risk	Applicant's Response
G10	East coast: Plymouth Sound and Estuaries SAC River Axe SAC River Avon SAC River Itchen SAC North west coast: River Dee and Bala Lake SAC River Derwent and Bassenthwaite Lake SAC River Eden SAC River Ehen SAC Solway Firth SAC	Given the highly migratory nature of Annex II fish, NE would like to see the consideration of designated sites to the north and east of the project included in stage 1 screening.	Consideration of designated sites to the north and east of the project to be included in stage 1 screening.		Atlantic salmon smolts along the west coast of England have been shown to use a northward migratory route through the Irish Sea to reach feeding grounds (Barry et al. 2020, Green et al. 2022). Similarly, Atlantic salmon smolts from the east coast of Ireland migrate northwards out of the Irish sea after leaving their natal rivers (COMPASS, 2022). In 2021, 1008 wild and 60 ranched Atlantic salmon smolts were tagged with acoustic transmitters in 12 rivers in England, Scotland, Northern Ireland and Ireland which outflow into the Irish Sea. The tracking showed a strong preference for Irish Sea smolts to migrate in a north westerly direction out of the Irish Sea to the North East Atlantic after exiting their natal rivers (Lilly et al., 2023). On this basis, based on the latest tracking data, and the generally accepted general trend of Atlantic salmon smolt migrating towards Norwegian feeding grounds after leaving their natal rivers, sites designated for Atlantic salmon in the Celtic and Irish seas to the north and west of the Project would be inappropriate to screen in for LSE, even given the uncertainties regarding the granular detail of their marine migratory routes. Similarly, Atlantic salmon migrating to and from their natal rivers to the east of the Project are not expected to travel around the Cornish coast into the Bristol Channel into the ZoI of the Project. With regard to other diadromous fish such as lampreys and European eel, there is a high degree of uncertainty regarding their marine migratory routes to and from river systems. This uncertainty means that apportioning an individual fish within the ZoI of the Project to any given SAC is not possible, rendering a meaningful assessment to any of the SACs mentioned in HRA terms not possible. It is for this reason that other SNCBs such as NatureScot have arrived at the position that there is not enough evidence to assess any diadromous fish meaningfully in HRA terms, and these features are better assessed in the EIA as receptors in their own right. This is particularly true for the SACs mentioned here which are situated at a significant distance from the Project, where a degree of dispersion of individuals moving to and from the SAC over a wider area can be expected. Long distance migratory capacity and uncertain migratory routes do not invalidate the logic that the likelihood of an individual fish within the ZoI of the Project being associated with any one SAC decreases as the distance (as the fish swims) of that SAC

NE Ref	Subject Area	Summary of NE's Key Concerns	Natural England's Recommendations to Resolve Issues.	NE's Risk	Applicant's Response
					to the Project increases. It is the Applicant's position that the distance to the SACs listed here is sufficiently great that LSE can be ruled out.
G11	River Wye SAC	Table 5.5 RIAA Allis shad missing for River Wye. Justification to also be provided for how brook lamprey and bullhead have been screened out (River Wye and River Camel).	Table 5.5. to be updated to include allis shad for River Wye. Justification to be provided for how brook lamprey and bullhead have been screened out (River Wye and River Camel).		The omission of allis shad from the River Wye is noted with thanks. The assessment for allis shad in the context of the River Wye remains the same as presented for other sites in the RIAA, so this is not considered to materially affect the assessment. Obligate freshwater species that will not meaningfully leave the river systems where they are resident, such as brook lamprey and bullhead are beyond the ZoI for the Project and screened out on that basis. The ZoI from the windfarm site arises from temporary and reversible TTS impacts from piling (assuming a stationary receptor) and is 51km. The ZoI from the cable corridor arises from UXO clearance noise, which is 680m, or 240m when mitigated with a bubble curtain. These freshwater species are beyond these ZoI.
G12	River Wye SAC Severn Estuary SAC	Natural England disagrees with the conclusion of the underwater noise assessment for Annex II migratory fish.	Further justification is needed (and potentially modelling) to evidence no adverse effect on hearing and non-hearing specialist species.		Full underwater noise modelling for worst case scenarios is provided in **Chapter 12: Marine Mammals and Marine Turtle Ecology Appendix 12.A: Underwater Noise and Vibration Technical Report** of the **Offshore ES,** with worst case impact ranges for both stationary and fleeing receptors provided in the RIAA.
G13	River Wye SAC	NE disagrees with the emphasis on fleeing receptor responses to determine no impact pathway on Annex II migratory fish.	Stationary receptor values should be used to determine the impact pathway on Annex II migratory fish.		Both stationary and fleeing results are presented in the RIAA. To clarify, stationary receptors are assumed to determine likely ZoI and pathway for effect of the Project.
G14	River Wye SAC	NE disagrees with soft start as suitable mitigation for fish.	NE recommend removing soft start as a mitigation measure for fish and assessment to be updated.		The Applicant acknowledges that the effectiveness of soft start is not clear for all species, but some of the most sound sensitive fish species may move away from the immediate vicinity of the pile before peak pressure reaches a level when instantaneous injury or mortality could occur. The assessment of no AEoI does not rely on the use of soft starts as mitigation, so the removal of this mitigation would not affect the findings of the RIAA.
G15	River Wye SAC	Natural England recommends that impact is defined in reference to the conservation objectives of the site.	Impacts on the conservation objectives of the site should be determined within the assessment.		The Applicant acknowledges with thanks that the wording of impacts for the RIAA may be better applied to conservation objectives of sites rather than the features themselves. For the avoidance of doubt, where no potential for an AEoI has been found in the RIAA for a designated site, based on no significant effect on the designated feature, there is also no significant impact on the site's conservation objectives.
G16	River Wye	NE fish specialists are aware of two projects – Hinkley Point C Nuclear build and Swansea Bay Tidal	Hinkley Point C and Swansea Bay Tidal Lagoon to be assessed in combination for Annex II migratory fish.		Swansea Bay Tidal Lagoon and Hinkley Point C are beyond the worst case 51km ZoI for temporary and

NE Ref	Subject Area	Summary of NE's Key Concerns	Natural England's Recommendations to Resolve Issues.	NE's Risk	Applicant's Response
		Lagoon Project that will impact on migratory Annex II fish features from sites screened into this assessment.			reversible TTS effects resulting from monopiling at the Windfarm Site (assuming fish are stationary receptors). For this reason, it is considered that the effects of the Project does not have a potential to directly interact with the effects of these projects.
G17	River Wye	Natural England recommend more quantitative justification should be provided within the in-combination assessment.	Further justification needed in line with the above recommendations for UWN impacts on Annex II migratory fish.		Further justification is as follows. The worst-case ZoI for temporary and reversible TTS effects resulting from monopiling at the windfarm site (assuming fish are stationary receptors), has been modelled as 51km. The worst case ZoI from the cable corridor arises from UXO clearance noise, which is 680m, or 240m when mitigated with a bubble curtain. The potential for effects to interact in combination with other projects is therefore considered in terms of whether their noise impact can overlap. No windfarms are expected to be under construction within 51km of the project during 2026/2027, and so there is no potential for piling noise (which results in the longest impact range) to interact in-combination with other projects.
G18	Gannel and Mounts MCZ	NE would like to see the consideration of Newquay and the Gannel and Mounts Bay MCZs included in screening.	Newquay and the Gannel and Mounts Bay MCZs to be included in screening.		Newquay and the Gannel and Mounts Bay MCZs have been considered in this response, and both are beyond the worst case impact range of the project, which is 51km for temporary and reversible TTS effects resulting from monopiling at the windfarm site (assuming fish are stationary receptors). For this reason, no further assessment of these sites is conducted as they are beyond the ZoI of the Project.
G19	Bideford to Foreland Point MCZ. Lundy MCZ	The extent/distribution of supporting habitat and water quality – turbidity have been identified as impact pathways for spiny lobster and should therefore be considered in screening and the assessment.	The extent/distribution of supporting habitat and water quality – turbidity to be included in screening and the assessment.		Spiny lobster is not considered particularly sensitive to temporary changes in suspended sediment concentrations, as reflected in NE's Advice on Operations for Bideford to Foreland Point MCZ, which classes the Changes in suspended solids (water clarity) pressure as not relevant for Spiny Lobster (NE,2023). As described in **Table 8.3** of **Appendix 10.A: Marine Conservation Zone Assessment of the Onshore ES**, redeposition of suspended sediments will be local to the construction activity and is unlikely to change sediment composition and distribution. Increases in suspended sediment concentrations will be localised, short term and within the natural range of turbidity. It is considered that the conservation objective of maintaining and recovering the relevant features to favourable condition will not be hindered by increased suspended sediment concentrations and subsequent deposition related to the construction of the Project

NE Ref	Subject Area	Summary of NE's Key Concerns	Natural England's Recommendations to Resolve Issues.	NE's Risk	Applicant's Response
					Lundy MCZ is located at least 2km north from the closest point of the Offshore Export Cable Corridor and was therefore the scale of increases in suspended sediment concentrations is reduced. Furthermore, the worst-case assumption for construction as assessed in **Chapter 9: Marine Water and Sediment Quality** of the **Offshore ES** is that jetting/ploughing will be used to install the cables which is likely to cause the suspension of sediment into the water column. Particle size analysis of sediment samples taken within the wind farm site and export cable corridor show the sediments are dominated by sand, therefore dispersion of fine sediment from these areas would be very low. Whilst the increased mud content closer to land would increase the proportion of finer sediments released into the water, it is predicted that increases for both sand and mud would be short in duration (lasting the maximum duration of cable installation – 22 days for inter array cables and 120 days for the export cables) and disperse over time. Rapid settlement of coarser sediments would likely be close to the point of disturbance and whilst finer sediments would become entrained within a plume, it is predicted that they would quickly be widely dispersed by tidal and wave action.
G20	Lundy MCZ	There is direct overlap between the UWN TTS contour and Lundy MCZ. In addition, adult spiny lobster undertake offshore migration following egg laying (September onwards), returning to shallower waters in spring.	The overlap between the TTS contour and Lundy MCZ, as well as spiny lobster offshore migration should be considered within the UWN assessment.		The 186dB SELcum (dB re 1 µPa2s) threshold for onset of TTS due to impulsive piling, derived from Popper et al., (2014), is a threshold specific for fish species that fall into the four hearing groups (as defined by Popper et al., (2014)). This threshold has been produced by reviewing the experimental literature concerning the impacts of sound on fish. It is therefore not possible to meaningfully apply this threshold to an invertebrate species, which does not have comparable auditory sensory systems. There are no known studies on pile driving noise impacts on spiny lobster. Whilst still not directly comparable, as also designed for fish species, a perhaps slightly more appropriate (whilst still being treated with great caution) threshold is mortality and potential mortal injury resulting from UXO clearance (derived again from Popper et al., 2014). This is an instantaneous effect resulting from physical damage to tissue and sensory systems and may therefore be slightly more agnostic to the taxa in question. The worst-case unmitigated impact range for UXO from the Project is 680m, which is beyond the range of Lundy MCZ.

NE Ref	Subject Area	Summary of NE's Key Concerns	Natural England's Recommendations to Resolve Issues.	NE's Risk	Applicant's Response
G21	All designated sites	The cumulative and in-combination assessments do not factor in impacts from a number of other projects due to a lack of data. Impacts specified as 'unknown' have been treated as zero which will inevitably underestimate impacts, potentially significantly. Natural England consider this approach to be unacceptable, and hence consider it inappropriate to comment on the potential significance of cumulative or in-combination impacts.	NE propose working with the project and other stakeholders collaboratively to generate suitable impact estimates for historic projects and facilitate a comprehensive, quantitative cumulative and in-combination assessment. A method statement for the project's consideration is supplied.		Please see Applicant's response to Comment ID 22 in **Table 1** in **Section 1**.
G22	Braunton Burrows SAC	Mapped onshore corridor suggests some potential for overlap with known petalwort records and associated SD14a communities identified in NVC survey.	Advise that the potential for impacts upon petalwort populations in this location requires full consideration and mitigation proposed to avoid AEOSI.		As noted above, no ground works are taking place within the SAC, and the nearest works to potential petalwort at Crow Point Car Park are in excess of 200m away, thus there is no potential for impact and therefore no mitigation required. All the habitats present within the works area are long grassland habitats which are unsuitable for petalwort. The Applicant commissioned a specialist bryologist sub-consultant with experience of petalwort to undertake a desk-based assessment and field survey to address this comment, the results are presented in **Appendix L: Petalwort Desk Based Assessment and Survey** of this ES Addendum.

Table 18 Natural England's Key Advice and Recommendations – Designated Sites Assessments

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
Environmental Impact Assessment - Document Used: Chapter 10 Benthic Intertidal Ecology (Offshore)						
Identified impacts	2.1	10.4.4 Table 10.15	The table does not include a list of the SSSI features for Taw Torridge Estuary and instead descriptive text is used. It is stated that trenchless techniques (HDD) will be used and will have no interaction with the bed of the estuary and that as the entry & exit areas are above MHWS this assessment will be carried out as part of the onshore project.	We advise that this use of descriptive text does not accurately convey the features being considered for the purpose of the assessment and that in the interests of avoiding ambiguity a list of the qualifying features of the Taw Torridge Estuary SSSI be provided instead. Natural England question the assertion that impacts are confined to receptors above MHWS. We advise that the potential for Frac-Out along the cable route beneath the estuary and impacts of noise & vibration upon intertidal receptors in the Taw Torridge Estuary should be assessed in full as part of this assessment.		A full list of qualifying features for the Taw-Torridge SSSI is provided in **Table 16.15** of **Chapter 16: Onshore Ecology and Ornithology** of the **Onshore ES**. Features include: Large areas of mudflats, sandbanks and areas of saltmarsh and beaches. Overwintering and migratory populations of wading birds. Over 20,000 waders may be present at any one time, including nationally important numbers: • curlew Numenius arquata • golden plover Pluvialis apricaria • lapwing Vanellus vanellus • redshank Tringa tetanus • dunlin Calidris alpina • oystercatcher Haematopus ostralegus. Estuarine plants include: • common saltmarsh-grass Puccinellia maritima • cord-grass Spartina spp. • sea aster Aster tripolium • annual seablite Suaeda maritima • rock sea-lavender Limonium binervosum • great sea-stock Matthiola sinuate. • Other estuarine species include: • mullet Mugil sp. • bass Dicentrarchus labrax • pollack Pollachius pollachius • eel Anguilla anguilla • a diversity of invertebrates.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						The SSSI unit within the Onshore Development Area is 103 – River Taw (favourable condition). Indirect disturbance to habitats within the Taw-Torridge Estuary SSSI, including from frac out, are considered within **Section 16.5.5** of **Chapter 16** of the **Onshore ES**. A short-term and temporary minor adverse indirect effect on the Taw-Torridge Estuary SSSI is non-significant. Impacts to over-wintering birds, including those using the Taw-Torridge Estuary SSSI, are considered within **Section 16.5.14** of **Chapter 16** of the **Onshore ES**. A short-term and temporary minor adverse indirect effect on the assemblage of wintering birds is non-significant. A plan showing the location of the entry and exit locations for the Taw Estuary Crossing is provided as **Annex 3** to **Appendix B: Response to MMO & Cefas** of this **ES Addendum**. A full response to the comment on the assessment of Frac-Out is provided to **Comment ID 27** of **Table 1** of this document.
	2.2	16.4.2.6 Taw Torridge Estuary Page 51 para 82	It is stated that a small section of Braunton Burrows SAC and SSSI lies within the Onshore Development Area immediately north of the estuary, in the vicinity of Crow Point car park. The car park itself is sparsely vegetated. Behind the dune ridge, the flatter land has been damaged by vehicles, and there are considerable areas of bare sand. As a result, there are also areas of early successional grassland related to coastal dune communities where the vegetation was re-establishing.	Petalwort records are known to occur in the vicinity around Sandy Lane car park in the SE corner of the SAC adjacent to the proposed Estuary crossing corridor as mapped. These records lie landward of the MHWS limit but as the mapped corridor suggests some potential for overlap we advise that the potential for impacts upon petalwort populations in this location requires full consideration and mitigation proposed to avoid AEOSI. Impacts to be scoped in should include direct habitat damage/destruction associated with construction activities and indirect impacts associated with HDD techniques i.e. potential impacts upon groundwater. In order to rule out potential for impact then we advise that a petalwort survey is carried out during the winter months/optimal season by a competent/experienced surveyor.		Petalwort has been considered in the assessment. A full response to the comment on Petalwort is provided to **Comment ID B1** of **Table 5** of this document.
Environmental Impact Assessment - Document Used: Onshore Ecology & Ornithology (Offshore project – below MHWS)						

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	2.3	20.4.1 Fig. 20.3	Designated sites - missing	We request that within a map outlining the study area for onshore ecology & ornithology all designated sites are included		**Figures 20.1 to 20.5** of the **Chapter 20: Onshore Ecology and Ornithology** of the **Offshore ES** which were omitted in error are provided within **Appendix A Annex 5** of this document. These show the study area related to the Offshore Project. **Figure 16.1** of **Chapter 16: Onshore Ecology and Ornithology** of the **Onshore ES** includes the full study area.
	2.4	20.6.1/2 Para 230,241	It is stated that given the extremely low probability of cable failure and requirement for replacement that no disturbance or habitat alteration would be reasonably expected throughout the lifetime of the project.	Natural England question this assertion and advise that potential for emergency repairs to infrastructure above and below ground over the operational lifetime and potential for associated habitat impacts be assessed on as part of the worst-case scenario approach.		Clarification on the ongoing maintenance requirements during the Operations and Maintenance Phase of the Project is provided in **Section 5.3** of this **ES Addendum**. Operation and maintenance activities are scoped into the assessment of **Chapter 20: Onshore Ecology and Ornithology** (**Section 20.6**) of the **Offshore ES**. There would be no change to the conclusions of the **Chapter 20: Onshore Ecology and Ornithology** of the **Offshore ES**.
	2.5	20.12 Table 20.28	Impact 3: Physical disturbance to SSSI habitats at the Taw Estuary Crossing – it is stated that no mitigation is required	Table 20.22 identifies potential impacts resulting from frac-out. We advise that appropriate mitigation measures be adopted as described in Annex B prior to HDD to reduce the risk of frac-out. Furthermore, measures to respond to frac-out should be developed.		A full response to the comment on the assessment of Frac-Out is provided in **Comment ID 27** of **Table 1** of **Section 1**. This includes identification of appropriate mitigation measures including an **Outline Bentonite Management Plan** (WHX001-FLO-CON-ENV-PLN-0012).
HRA - Document Used: HRA White Cross Offshore Windfarm						
Screening	2.6	Ch.5 sec. 5.3. Ch. 13 sec. 13.3. 3. HRA doc, Ann. 9.	It is unclear if the Maximum Design Scenario (MDS)/WCS entails 6, 7 or 8 WTG – see note below on CRM analyses. The ~~P~~roject description states the Project Design Envelope (PDE) is for 6-8 WTG but the WCS and the Collision Risk Modelling (CRM) are based on 7 WTG. Note 8 WTG are also shown in Annex 9 of the HRA doc.	We advise that all documentation states the number of WTG to be built under the max design scenario and base the impact assessment on a clearly defined worst case scenario (WCS) following best practice guidelines.		Please see Applicant's response to **Comment ID 23** of **Table 1** of this document.
	2.7	Conservation advice package used. Table 3b LSE Page 22 Q2 Pages 69-79	It is stated that there is currently no Conservation Advice package for Braunton Burrows SAC and to help inform the HRA the MMO has, where appropriate, used the Conservation Advice packages from Morecambe Bay SAC - UK0013027 NSN site as a proxy to help provide information on relevant feature-pressure sensitivities. This is not a definitive list and all relevant	This is incorrect as Conservation Advice does exist for Braunton Burrows file:///C:/Users/M1008471/Downloads/UK0012570_BrauntonBurrowsSAC_COSA%20Formal%20Published%206%20Feb%2019%20(6).pdf Reference to Morecambe Bay SAC advice should be disregarded and the HRA revised to take account of site specific advice.		This comment is directed to the MMO. Therefore, no response has been provided by the Applicant.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
		Table 8b Braunton Burrows SAC	considerations of specific interactions at Braunton Burrows SAC NSN site have been considered as part of the HRA process			
	2.8	LSE table for Braunton Burrows Table 4b Pressure's to discuss Page 47 Table 5 Feature /pressure interactions from LSE alone to be taken to AA	Pressures identified for consideration do not correlate directly with the habitat features against which they are being assessed. Pressures identified for sand dune features refer to impacts at the seabed and in the water column. Petalwort is a dune slack species which is found inland and above MHWS. Not present on sea bed. Petalwort records are known to occur in the vicinity around Sandy Lane car park in the SE corner of the SAC adjacent to the proposed Estuary crossing corridor as mapped. These records lie just beyond the MHWS limit, but as the mapped corridor suggests some potential for overlap we advise that the potential for impacts upon petalwort populations in this location requires full consideration and mitigation proposed to avoid AEOSI. Impacts to be scoped in should include direct habitat damage/destruction associated with construction activities and indirect impacts associated with HDD techniques i.e. potential impacts upon groundwater. In order to rules out potential for impact then advise that a petalwort survey is carried out during the winter months/optimal season by a competent/experienced surveyor. Given the prevalence of dune slack habitat along the cable route as identified by the NVC survey it is possible that petalwort could be present and potential for hydrological impacts needs to be understood.	We advise that pressures need to be re- defined for sand dune & features to consider impacts of construction footprint, but also operation maintenance and decommissioning (direct habitat damage/loss) and potential for indirect impacts associated with HDD techniques.		This comment is directed to the MMO. Therefore, no response has been provided by the Applicant.
	2.9	HRA /Table 3	English SACs where Annex II migratory fish are a qualifying feature identified in the Report to Inform Appropriate Assessment (RIAA) have not been carried through to Stage 1 screening. As such, Natural England (NE) comments on	We advise that Stage 1 screening should include English SACs where Annex II migratory fish are a qualifying feature that were screened into the RIAA.		This comment is directed to the MMO. However, the Applicant would like to provide the following input:

NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
		screening (below) are from a review of the RIAA. NE welcomes the inclusion of two Welsh sites in Stage 1 screening designated for Annex II migratory fish (Cardigan Bay and Pembrokeshire Marine SAC) that have not been assessed in the RIAA.			The Stage 1 Screening identified many of those sites as screened in due to the Zone of Influence: • River Wye SAC • River Usk SAC • Severn Estuary SAC • Severn Estuary Ramsar • Carmarthen Bay and Estuaries SAC • River Tywi SAC • River Slaney SAC • River Barrow and River Nore SAC • Lower River Suir SAC • Blackwater River (Cork/Waterford) SAC. The exceptions were the River Camel SAC and Dartmoor SAC, which based on consultation comments on the Stage 1 LSE Screening were screened into the Stage 2 RIAA. This update from the Stage 1 Screening is appropriately captured in the Consultation response in **Table 5.5** of the **RIAA** (**see Appendix 6.A of FLO-WHI-REP-0002-06 Chapter 6 EIA Methodology of the Onshore ES**).
2.10	HRA/ Table 3d-e and 3g-i	Incorrect units used in explanation of why the site has not taken forward to LSE assessment e.g., 113km referred to as 113,000km.	Natural England advises that conclusions based on correct distances are provided by the Applicant		This comment is directed to the MMO. However, the Applicant would like to provide the following input: The Applicant can confirm that the ZoI from the windfarm site for fish arises from temporary and reversible TTS impacts from piling (assuming a stationary receptor) and is 51km. The screening of sites in and out and the rationale behind this screening remains valid, as e.g. 131km remains beyond the ZoI.
2.11	RIAA 1 Chapter 6 EIA Methodology- 35/ Section 5.4/ Table 5.5	Relevant sites and features for Annex II migratory fish have been identified for the Devon/Cornwall and Seven/south Wales regions. Given the highly migratory nature of several Annex II fish, NE would like to see the consideration of designated sites to the north and east of the project included in	NE advises that consideration of designated sites to the north and east of the project are included in stage 1 screening.		This comment is directed to the MMO. However, the Applicant would like to provide the following input: Atlantic salmon smolts along the west coast of England have been shown to use a northward migratory route through the Irish Sea to reach feeding grounds (Barry et al. 2020, Green et al. 2022). Similarly, Atlantic salmon smolts from the east coast of Ireland migrate

NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
		stage 1 screening. This includes the below SACs. East coast: • Plymouth Sound and Estuaries • River Axe • River Itchen North west coast: • River Dee and Bala Lake • River Derwent and Bassenthwaite Lake • River Eden • River Ehen • Solway Firth Based on the current available evidence, NE believes there is no significant impact pathway, and these sites would be scoped out at the LSE stage.			northwards out of the Irish sea after leaving their natal rivers (COMPASS, 2022). In 2021, 1008 wild and 60 ranched Atlantic salmon smolts were tagged with acoustic transmitters in 12 rivers in England, Scotland, Northern Ireland and Ireland which outflow into the Irish Sea. The tracking showed a strong preference for Irish Sea smolts to migrate in a north westerly direction out of the Irish Sea to the North East Atlantic after exiting their natal rivers (Lilly et al., 2023). On this basis, based on the latest tracking data, and the generally accepted general trend of Atlantic salmon smolt migrating towards Norwegian feeding grounds after leaving their natal rivers, sites designated for Atlantic salmon in the Celtic and Irish seas to the north and west of the Project would be inappropriate to screen in for LSE, even given the uncertainties regarding the granular detail of their marine migratory routes. Similarly, Atlantic salmon migrating to and from their natal rivers to the east of the Project are not expected to travel around the Cornish coast into the Bristol Channel into the ZoI of the Project. With regard to other diadromous fish such as lampreys and European eel, there is a high degree of uncertainty regarding their marine migratory routes to and from river systems. This uncertainty means that apportioning an individual fish within the ZoI of the Project to any given SAC is not possible, rendering a meaningful assessment to any of the SACs mentioned in HRA terms not possible. It is for this reason that other SNCBs such as NatureScot have arrived at the position that there is not enough evidence to assess any diadromous fish meaningfully in HRA terms, and these features are better assessed in the EIA as receptors in their own right. This is particularly true for the SACs mentioned here which are situated at least 100 km from the Project as the fish swims, where a degree of dispersion of individuals moving to and from the SAC over a wider area

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						can be expected. Long distance migratory capacity and uncertain migratory routes do not invalidate the logic that the likelihood of an individual fish within the ZoI of the Project being associated with any one SAC decreases as the distance (as the fish swims) of that SAC to the Project increases. It is the Applicant's position that the distance to the SACs listed here is sufficiently great that LSE can be ruled out. The Applicant can confirm the following (direct) distances to the Offshore Development Area for reference: • Plymouth Sound and Estuaries - 85km • River Axe – 90km • River Itchen – 200km • River Dee and Bala Lake 200km • River Derwent and Bassenthwaite Lake – 380km / 395km • River Eden – 380km • River Ehen – 70km • Solway Firth – 400km.
	2.12	RIAA 2 Chapter 6 EIA Methodology- 35/ Section 5.4/ Table 5.5	Table 5.5 is missing allis shad for River Wye (should be screened in). Justification to be provided for how brook lamprey and bullhead have been screened out (River Wye and River Camel).	Table 5.5. to be updated to include allis shad for River Wye. Justification to be provided for how brook lamprey and bullhead have been screened out (River Wye and River Camel).		This comment is directed to the MMO. However, the Applicant would like to provide the following input: The omission of allis shad from the River Wye is noted with thanks. The assessment for allis shad in the context of the River Wye remains the same as presented for other sites in the RIAA, so this is not considered to materially affect the assessment. Obligate freshwater species that will not meaningfully leave the river systems where they are resident, such as brook lamprey and bullhead are beyond the ZoI for the Project and screened out on that basis. The ZoI from the windfarm site arises from temporary and reversible TTS impacts from piling (assuming a stationary receptor) and is 51km. The ZoI from the cable corridor arises from UXO clearance noise, which is 680m, or 240m when

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						mitigated with a bubble curtain. These freshwater species are beyond these ZoI. Full underwater noise modelling for worst case scenarios is provided in **Appendix 12.A: Underwater Noise and Vibration Technical Report** of the **Offshore ES**, with worst case impact ranges for both stationary and fleeing receptors provided in the **RIAA**.
	2.13	RIAA 3 Chapter 6 EIA Methodology- 35/ Section 9.2/ Paragraph 1882	The key potential pressures/ impact pathways for Annex II migratory fish have been identified.	No recommendation.		This comment is directed to the MMO. Therefore, no response has been provided by the Applicant.
	2.14	RIAA 4 Chapter 6 EIA Methodology- 35/ Section 9.5/ Sub- section 9.5.2.2	Impacts screened out for LSE alone for Annex II migratory fish have been considered in-combination.	No recommendation.		This comment is directed to the MMO. Therefore, no response has been provided by the Applicant.
	2.15	Table 6	Natural England recommends that Erebus Floating Wind is taken through to in-combination appropriate assessment for entanglement, operational noise and physical barrier. It is more than 26 km from the Bristol Channel Approaches SAC. However, given the evidence gaps surrounding entanglement and operational noise from FLOW and the highly mobile nature of harbour porpoise, this project in combination still has potential to impact the SAC harbour porpoise population.	The Applicant should provide information on the potential impacts of Erebus Floating Wind on entanglement, operational noise and physical barriers so it can be taken through to in-combination appropriate assessment.		This comment is directed to the MMO: The Applicant has included Erebus within the in-combination assessments for the Bristol Channel Approaches SAC, Lundy SAC, Pembrokeshire Marine SAC, and Cardigan Bay SAC, for underwater noise disturbance from offshore construction. The Applicants response to ID 2.12 in **Section 9** outlines the Applicant's reasoning for no including operational WTG disturbance in the in-combination assessment. The potential for in-combination entanglement has been assessed for all marine mammal SACs within the **RIAA**.
	2.16	Table 8a	Natural England recommends that operational noise is screened into Appropriate Assessment.	We advise that operational noise should be screened into the Appropriate Assessment for noise sensitive receptors.		This comment is directed to the MMO. However, the Applicant refers the MMO to **Section 7.2.1.3.1** of **Appendix 6.A: Habitats Regulations Assessment: Report to Inform Appropriate Assessment** (FLO-WHI-REP-0002-06) of the **Offshore ES** which assesses the potential effects of underwater noise from operational

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						turbines on marine mammals and marine turtles.
	2.17	Table 8a, Table 8c	As noted above, there is no draft entanglement plan in the MMMP.	See above comment regarding the CEMP and PEMP, We advise that an outline plan for entanglement monitoring and remediation should be developed and consulted on as part of the consenting phase, which will be finalised pre-construction.		Please see Applicant's response to **Comment ID 20** of **Table 1** of this document.
	2.18	Table 8C	Natural England cannot agree with the assessment conclusion regarding prey availability because we have raised issues with the impact assessment in the fish and shellfish chapter.	We advise that the Applicant updates the fish and shellfish assessment.		This comment is directed to the MMO. However, the Applicant refers the MMO to further justification provided in **Section 10** of this document. Specifically, responses to **Comment ID's G12** to **G17** of **Table 17**.
	2.19	Appropriate Assessment Conclusions	Natural England notes that there are outstanding Plans or mitigation measures therein which are relied upon in the assessment conclusions. Until the Plans are provided, we cannot agree with the assessment conclusions. The Plans at this stage must provide sufficient confidence that any final Plans produced thereafter would uphold the assessment conclusion of No Adverse Effect on Integrity of the site.	The Applicant should provide updated versions of MMMP, CEMP, PEMP and a schedule of mitigation measures for consultation with NE prior to any licence determination.		This comment is directed to the MMO. However, the Applicant refers the MMO to **Appendix P: Mitigation Register**, and **Appendix V: Draft Marine Mammals Management Protocol (MMMP)** of this **ES Addendum**. And to the following outline documents submitted as part of the **Further Environmental Information** submission: • **Outline PEMMP** (WHX001-FLO-CON-ENV-PLN-0003) • **Outline CEMP** (WHX001-FLO-CON-ENV-PLN-0010)
Assessment	2.20	Alone Appropriate assessment Pages 69-79 Table 8b Braunton Burrows SAC 16.4.5 Scope Table 16.23 Summary of impacts scoped in relating to onshore ecology	Potential for impacts of trenchless techniques (HDD or direct pipe) upon groundwater dependent Humid dune slack and petalwort features have not been considered as part of the assessment. However, NE highlights that at the rear of the Braunton Burrows dune system, there is an extensive area of low dunes and slacks which may be extensively flooded in winter. Variations in the extent and duration of flooding of the dune surface are important in determining vegetation species composition and structure and in maintaining suitable breeding conditions for aquatic species. Any disturbance of this regime will affect the ecohydrological	Natural England advises that potential impacts of trenchless techniques (HDD or direct pipe) upon groundwater dependent Humid dune slack and petalwort features should be considered as part of the assessment. Until the Applicant undertake this assessment, we are unable to further advise on the significance of the impacts.		This comment is directed to the MMO. However, the Applicant refers the MMO to further justification provided in **Section 10** of this document. Specifically, responses to **Comment ID's G12** to **G17** of **Table 17**.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			condition of humid dune-slacks The elevation of the slacks is highest in the middle of the central zone of the dunes at about 9 m OD but falling in elevation northwards, southwards and seawards. The water table underlying the system is reported to be dome-shaped being some 6 m higher in the centre than at the margins. The dunes at Braunton Burrows overlie both marine clay and gravels and sand resting on the Culm Measures bedrock. A preliminary interpretation of the hydrogeological conditions suggest that groundwater.flow radiates away from the domed water table ridge – Flow-through slack. Groundwater flows into the up-gradient edge of the slack, flows through the slack and then infiltrates at the downgradient edge. These slacks are highly sensitive to hydrological changes and water table fluctuations in response to seasonal wet and dry conditions and/or external influences such as groundwater abstraction and land drainage. Given the tendency towards an ephemeral nature, then any external influence on groundwater levels or recharge rates within or adjacent to a dune system is likely to adversely affect the existence of dune-slacks. Such external activities include groundwater abstraction for municipal, agricultural, industrial, military and recreational purposes and dewatering of groundwater for land drainage control and quarrying activities. (*ENRR696 Development of eco-hydrological guidelines for dune habitats*)			
	2.21	Appropriate Assessment Braunton Burrows Page 70 Table 8b Petal wort	It is stated that the onshore cable installation works entail a combination of trenched and trenchless crossings along agricultural lands to the east of the Braunton Burrows SAC, with a number of temporary site compounds along the corridor. The crossing itself would be undertaken using trenchless techniques to avoid disturbance within the SAC. Whilst the	Natural England queries if a separate HRA will be undertaken to assess impacts of onshore activities above MHWS. Comments relating to onshore impacts above MHWS are not supported within this HRA and should be addressed fully as part of the onshore HRA.		This comment is directed to the MMO. However, the Applicant would like to clarify that the combined **Appendix 6.A: Habitats Regulations Assessment: Report to Inform Appropriate Assessment** of the **Onshore** and **Offshore ES** has assessed all aspects of the Project – both above and below MHWS.

NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
		corridor boundary would be immediately adjacent to the SAC boundary, the only activity occurring in this area will be the construction and placement of a haul road and its use. The haul road is offset from the SAC boundary by several metres. Therefore, there will be no direct disturbance to Petalwort.			
2.22	RIAA 5 Chapter 6 EIA Methodology-35/Section 9.5/ Sub- section 9.5.2. 1.4.3	Natural England disagrees with the conclusion of this section of the assessment. The underwater noise (UWN) modelling shows that for stationary receptors (which should be used as a precautionary category for fish) the Temporary Threshold Shift (TTS) contour is likely to be ~51km from the site. This encompasses the entire width of the Bristol Channel. The Bristol Channel is the only migratory route available for the designated Annex II fish features of the Severn Estuary and River Wye. In particular, the River Wye represents the only major spawning run/breeding population of twaite shad in England. Twaite shad are in hearing category 4 and evidence suggests UWN can delay/deter fish from completing their migration.	Further justification is needed (and potentially modelling) to evidence no adverse effect on hearing and non- hearing specialist species. NE recommends the project follow the avoid, mitigate, compensate hierarchy to ensure there is no adverse effect on these SACs designated for fish features. NE suggests the project could explore options for seasonal restrictions (e.g., during twaite shad spawning season, April-June) and/or noise abatement or reducing technologies.		The Applicant refers the MMO to further justification provided in **Section 10** of this document. Specifically, responses to **Comment ID's G12** to **G17** of **Table 17**.
2.23	RIAA 6 Chapter 6 EIA Methodology-35/Section 9.5/ Sub- section 9.5.2. 1.4.3/ Paragraph 1920	NE disagrees with the emphasis on fleeing receptor responses to determine no impact pathway on Annex II migratory fish. NE's Offshore Wind Marine Environmental Assessments: Best Practice Advice for Evidence and Data Standards states: *"There is currently insufficient evidence to support the inclusion of fleeing behaviour of fish into models. Whilst some degree of movement would be expected, fish may also choose to remain in the affected area (e.g., due to prey availability or mating opportunities) despite the harmful noise exposure (Faulkner et al. 2018). Therefore, for the purposes of environmental assessments, it is currently advised that*	Natural England advises that the assessment should be updated to include stationary receptor values in order to determine the impact pathway on Annex II migratory fish.		Further justification has been provided in **Section 10** of this document. Specifically, responses to **Comment ID's G12** to **G17** of **Table 17**. Full underwater noise modelling for worst case scenarios is provided in **Appendix 12.A: Marine Mammal and Marine Turtle Underwater Noise Modelling Report** of the **Offshore ES**, with worst case impact ranges for both stationary and fleeing receptors provided in **Appendix 6.A: Report to Inform Appropriate Assessment** (RIAA) of the **Onshore ES.** Both stationary and fleeing results are presented in the **RIAA**. To clarify, stationary receptors are assumed to determine likely ZoI and pathway for effect of the Project.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			fish are considered to be stationary receptors within underwater noise models. However, applications may also assess the effects of underwater noise with fleeing behaviours included within the model, if presented in addition to assessments of stationary receptors."			
	2.24	RIAA 7 Chapter 6 EIA Methodology 35/Section 9.5/ Sub- section 9.5.2. 1.4.3/ Para graph 1921	NE disagrees with soft start as suitable mitigation for fish. This mitigation is designed primarily for cetaceans that regularly exhibit consistent fleeing behaviours, i.e., detect noise and move away from the area of influence. The few studies investigating fish fleeing responses do not show consistent, directional fleeing out of the area of influence. Fish responses to underwater noise are highly variable, and rarely directional (i.e., shoaling in place, or in haphazard directions, flinching, fleeing into shelter).	NE recommend removing soft start as a mitigation measure for fish and the assessment updated without this mitigation.		Refer to response to **Comment ID G14** in **Table 17** of **Section 10** of this document.
	2.25	RIAA 8 Chapter 6 EIA Methodology- 35/Section 9.5/ Sub- section 9.5.2. 1.4.3/ Para graph 1923	Natural England recommends that impact is defined in reference to the conservation objectives of the site, rather/as well as than e.g., injury/TTS on the receptor.	Impacts on the conservation objectives of the site (e.g., biological connectivity) should be determined within the assessment.		The Applicant refers the MMO to further justification provided in **Section 10** of this document. Specifically, responses to **Comment ID's G12** to **G17** of **Table 17**.
	2.26	RIAA 9 Chapter 6 EIA Methodology 35/Section 9.5/ Sub- section 9.5.2.1.3	Natural England advises that hydrodynamic/sediment plume modelling is conducted to determine the potential extent of sediment deposition and load on designated site features.	Natural England advises that additional quantification would improve this section.		The Applicant refers the MMO to the response to **Comment ID 2.22** in **Table 4** of **Section 3** of this document.
	2.27	Chap 13, App 13A, sec. 13.10	The impacts to the Lundy seabird colony are only shown for Manx shearwater but the SSSI is also notified for guillemot, razorbill, kittiwake and Atlantic puffin. Impacts on these species should therefore be considered. Although the site is not an SPA and individual species populations do not exceed 1% of the bio-geographic populations of these species, we highlight the assemblage does exceed the minimum for SPA status (over 20,000 individual seabirds in the breeding season).	For the purposes of assessment and in recognition of its importance and recovering status, NE considers it appropriate to treat Lundy as an SPA colony within the HRA, because the proposals should not hinder future classification as an SPA.		Please see Applicant's response to **Comment ID D5** in **Table 13** & **Comment ID 2.12** in **Table 14** both of **Section 6** of this document.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
In-combination	2.28	RIAA 10 Chapter 6 EIA Methodology-35/Section 9.5/ Sub- section 9.5.2.2	NE fish specialists are aware of two projects – Hinkley Point C Nuclear build and Swansea Bay Tidal Lagoon Project that will impact on migratory Annex II fish features from sites screened into this assessment. These projects should therefore be assessed in-combination.	We advise that Hinkley Point C and Swansea Bay Tidal Lagoon are assessed in combination for Annex II migratory fish.		As outlined in the response to Comment ID's G16 in **Table 17** of **Section 9,** Swansea Bay Tidal Lagoon and Hinkley Point C are beyond the worst case 51km ZoI for temporary and reversible TTS effects resulting from monopiling at the Windfarm Site (assuming fish are stationary receptors). For this reason, it is considered that the effects of the Project does not have a potential to directly interact with the effects of these projects. Therefore,
	2.29	RIAA 11 Chapter 6 EIA Methodology-35/Section 9.5/ Sub- section 9.5.2. 2.3 - 9.5.2. 2.4.	Natural England advises a more quantitative justification should be provided on the below sections: 9.5.2.2.3 – As per comment above (RIAA 9) Natural England advises that hydrodynamic/sediment plume modelling is conducted to determine the potential extent of sediment deposition and load (project alone (+ in- combination if possible)) to help justify conclusions. 9.5.2.2.4 – Noise assessment to be revisited in line with the project alone comments above (RIAA 6-7).	NE advises that further justification is required to align with UWN impacts on Annex II migratory fish. As per NE's Offshore Wind Marine Environmental Assessments: Best Practice Advice for Evidence and Data Standards - assessments should consider cumulative underwater noise assessments (where possible), as well direct and indirect impact pathways for fish species. NE advises the project to follow the avoid, mitigate, compensate hierarchy to ensure there is no adverse effect on these SACs designated for fish features in- combination.		The Applicant refers the MMO to the response to **Comment ID 2.22** in **Table 4** of **Section 3** of this document. The Applicant refers the MMO to further justification provided in **Section 10** of this document. Specifically, responses to **Comment ID's G12** to **G17** of **Table 17** related to SACs designated for fish.
	2.30	RIAA 12 Chapter 6 EIA Methodology-35/Section 9.5/ Sub- section 9.5.2. 2.5- 9.5.2. 2.8	As identified in NE's marine mammal review – It is worth noting that although no project alone or in-combination adverse effects have been determined for the below impact pathways, future developments in the region have the potential to cause in-combination effects in the future on Annex II migratory fish. • EMF (particularly mid- water suspended cables) • UWN from moorings/cable snapping • Barrier effects • Ghost fishing/secondary entanglement • Fish aggregation	No recommendations currently.		No response required.
	2.31	Chap. 13, sec. 13.13	Project has sought 'as built' parameters where attainable and not considered consented parameters.	Natural England are actively engaged with industry considering ways that 'as-built' parameters can be used within assessments. However, at present we do not consider it appropriate to reduce impact estimates by		A gap analysis has now been conducted using predominantly the consented design parameters to inform predicted impacts for historic projects. Due to the age of some of

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
				considering as-built parameters, unless legally secured through the DCO licence. Therefore, the in-combination assessment should be based on consented parameters unless legally secured.		the historic projects, accurate information on the consented design parameters were not publicly available, in such cases 'as-built' design information had to be used instead to provide an estimate of the potential impacts posed. Further detail can be found within **Appendix Q Annex 3: Cumulative and In-combination Gap Analysis Report** (WHX001-FLO-CON-ENV-ASS-0003) of this **ES Addendum**. The Applicant also would like to note the Project is not a NSIP and therefore is not subject to a 'DCO licence'. The Offshore Project will be secured via the Section 36 Consent and Marine Licence.
	2.32	Chap 13. Sec. 13.1. 13 Chap. 6 App. 6A	Where data are missing from existing OWFs it was assumed these sites contribute zero birds to the CEA. Table 13.55 of ES chapter 13 mentions that OWF projects where data were not available will be considered qualitatively, but this doesn't appear to have been done.	Natural England advises that an acceptable approach to OWF with no data needs to be developed so that the in-combination assessment is robust. See attached advice relating to 'gap-filling'. Until this is agreed we are unable to provide further advice on the significance of in-combination/cumulative advice		A gap analysis has now been conducted in order to provide an estimate of the potential impacts posed by these historic projects. This can be found within **Appendix Q Annex 3: Cumulative and In-combination Gap Analysis Report** (WHX001-FLO-CON-ENV-ASS-0003) of this **ES Addendum**.
Further Receptor Points	2.33	Impact 5: Changes to surface & groundwater flows & flood risk Para 177 & Para 179	The presence of the buried cable ducting along the Onshore Export Cable Corridor may impact upon subsurface flow corridors as it will introduce an impermeable barrier which may change subsurface flow patterns. This may force water to move upwards towards the surface, or downwards away from the surface. Buried cable ducting may also impact upon the level of recharge and distribution of groundwater within the aquifers underlying the Onshore Project. Ground disturbance during installation of the cable trench may change the transmissivity of the ground which overlays the cable infrastructure after reinstatement and may therefore become a preferential corridor for subsurface water flow.	Natural England advises that implications for groundwater dependent habitats & species features within the SAC requires full consideration within HRA.		Please refer to previous responses to **Comment IDs 32** and **33** of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Appendix A Annex 2** of this document. **Appendix L** shows that NVC dune slack communities SD15c and SD16b) in the northern part of Braunton Burrows are not close to the Onshore Development Area. Given no hydrological change would result from the project, there is no pathway for a reduction in water availability within the aquifer would be further exacerbated by the project. Consequently no impact would occur on the receptors (and designated site features) where groundwater is a supporting or influencing factor.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	2.34	14.10 Inter relationships Para 211 Table 14.28 Impacts on water-dependent habitats and designated sites	Potential changes to the hydrology, geomorphology and water quality of designated sites could impact upon water-dependent biological communities (including the designated interest features). These impacts are identified but not explored in any detail.	Natural England advises that implications for water-dependent biological communicates within the SAC requires full consideration within HRA.		Refer to previous responses relating to water-dependent biological communities in Comment ID 33 and 34 in **Table 1** in **Section 1**.
	2.35	8.8	We note that there are a number of other floating offshore wind farms planned within the Celtic Sea in the vicinity of White Cross OWF. Has the potential impact of these other projects acting cumulatively with the proposed development been investigated in terms of changes to the wave climate?	From the Planned Level HRA for the Celtic Sea FLOW and other formal consultations can the Applicant please determine if all future plans and projects have be assessed in- combination/cumulatively		Refer to Applicant's response provided to **Comment ID 2.23** in **Table 4** of **Section 3.**
	2.36	Chap. 6. App. 6A	Generally, NE agrees that the risk of an adverse effects on site integrity (AEOI) for the project alone is low, but we cannot rule out adverse effects alone until methodological issues regarding the apportioning methodology (adults/immatures, sabbaticals) and WCS are appropriately addressed.	NE advises adoption of the NE best practice guidelines and recommendations stated above and undertaking re-analysis where appropriate to allow NE to provide its integrity judgements.		Refer to Applicant's response to Comment ID 24 **(Table 1)** & D2 **(Table 14)**.
MCZ Assessment. Document Used: MCZ Assessment						
Screening	2.37	MCZ 1 MCZ Assessment/ Table 1	NE agrees that Bideford to Foreland Point MCZ and Lundy MCZ which have spiny lobster as a protected feature should be scoped into screening. NE would like to see the consideration of Newquay and the Gannel and Mounts Bay MCZs (with giant goby listed as a protected feature) included in screening even if potentially scoped out later in the process.	Newquay and the Gannel and Mounts Bay MCZs (with giant goby listed as a protected feature) to be included in screening.		A detailed response to the comment on the inclusion of Newquay and the Gannel and Mounts Bay MCZs is provided in **Comment ID G18** of **Table 17 in Section 9** of this document.
	2.38	MCZ 2 MCZ Assessment/ Table 1	The extent/distribution of supporting habitat (e.g., reef and subtidal rock) has been identified as an impact pathway for spiny lobster and should therefore be considered in screening and the assessment. Water quality – turbidity has been identified as an impact pathway for spiny lobster and should therefore be considered in screening and the assessment. As noted	The extent/distribution of supporting habitat and water quality – turbidity to be included in screening and the assessment.		A detailed response to the comment on turbidity is provided in **Comment ID G19** of **Table 17 in Section 9** of this document.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			above, hydrodynamic/sediment plume modelling would be welcomed to determine the potential extent of sediment deposition and load. The MarLIN sensitivity review identifies high sensitivity of the species to heavy smothering and siltation rate changes.			
Assessment	2.39	8.5.2/ Points 84-85	It is not clear if sandwave levelling/removal is anticipated to be required within the MCZ or near Lundy Island. Consequently, the sensitivity and significance of effect on these receptors cannot be assessed.	We advise that the Applicant provide further assessment/clarification on this matter.		Locations of sand waves are identified in **Figure 5-3 of Appendix 8.B: Geophysical Survey Results Report** and summarised in **Chapter 8: Marine Geology, Oceanography and Physical Processes** (**Section 8.4.1.7** and **Section 8.5.2**) of the **Offshore ES**. Sandwave levelling close to the coast is not anticipated because the sandwaves are located offshore. **Section 8.5.2** states that the sediment arising from sand wave removal would be disposed back to the seabed local to its extraction and so there would be no net loss of sediment within the area. Further, **Section 8.5.2** assesses the potential impacts on the wider environment including Bideford to Foreland Point MCZ and Lundy Island.
	2.40	MCZ 3 MCZ Assessment/ Table 2b	NE agrees that the distance to the Bideford to Foreland Point MCZ (71km) is greater than the TTS contour for piling (51km) in terms of a direct overlap of impact with the site. However, there is direct overlap with Lundy MCZ (42km). Furthermore, adult spiny lobster undertake offshore migration following egg laying (September onwards), returning to shallower waters in spring which may coincide with project activities.	The overlap between the TTS contour and Lundy MCZ, as well as spiny lobster offshore migration should be considered within the UWN assessment.		A detailed response to the comment on the overlap between the UWN Temporary Threshold Shift (TTS) contour and Lundy MCZ is provided in **Comment ID G20** of **Table 17 in Section 9** of this document**.**
Assessment of SSSI impacts: Chapter 5 Project Description; Chapter 6 EIA Methodology; Chapter 8 Marine and Coastal Processes; Chapter 10 Benthic and Intertidal Ecology; Chapter 13 Offshore Ornithology; Chapter 14 Water Resources and Flood Risk; Chapter 15 Land Use; Chapter 16 Onshore Ecology and Ornithology						
Screening	2.41	Chapter 10 Benthic Intertidal Ecology (offshore) 10.4.4 Table 10.15	The table does not include a list of the SSSI features for Taw Torridge Estuary and instead descriptive text is used.	We advise that this use of descriptive text does not accurately convey the features being considered for the purpose of the assessment and that in the interests of avoiding ambiguity a list of the qualifying features of the Taw Torridge Estuary SSSI be provided instead.		See response to **Comment ID G2.1** of **Table 18** in **Section 9** of this document.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
	2.42	Chapter 10 Benthic Intertidal Ecology (offshore) 10.4.4 Table 10.15	It is stated that trenchless techniques (HDD) will be used and will have no interaction with the bed of the estuary and that as the entry & exit areas are above MHWS this assessment will be carried out as part of the onshore project	Natural England question the assertion that impacts are confined to receptors above MHWS. We advise that the potential for Frac-Out along the cable route beneath the estuary and impacts of noise & vibration upon intertidal receptors in the Taw Torridge Estuary should be assessed in full as part of this assessment.		Refer to previous responses regarding frac-out and noise and vibration in response to **Comment ID G2.1** of **Table 18** in **Section 9** of this document.
	2.43	Chapter 10 Benthic Intertidal Ecology (offshore) 10.3.5 Fig 10.2	Benthic & Intertidal Ecology Survey sampling locations are located entirely along the offshore cable route with no sampling locations deployed along the Taw Torridge Estuary crossing of the cable route.	We advise that the Benthic & Intertidal Ecology survey should include sampling locations within the Taw Torridge Estuary in order that the impacts upon the features of the SSSI and adjacent Braunton Burrows SAC can be fully assessed.		See response to **Comment ID G2.53** of **Table 4** in **Section 3** of this document.
	2.44	Chapter 10 Benthic Intertidal Ecology (offshore) 10.33 Table 10.8 16.3.6.1 Embedded Mitigation Table 16.10 All construction activities and sites	Impacts of construction identified are limited to those associated with offshore construction and do not consider inshore impacts associated with construction which may be manifested in the intertidal. Mitigation should include measures to avoid/reduce impacts associated with vehicle/plant impacts, ground disturbance, trampling for features of the Taw Torridge Estuary, Braunton Burrows and Greenaways & Freshmarsh SSSIs and Priority Habitats.	We advise that the Worst-Case Scenario Assessment should include consideration of construction impacts inshore, in particular potential for impacts within the Taw Torridge Estuary. Potential impact pathways associated with HDD of cable route include noise and vibration upon migratory fish and wading bird receptors. Onshore construction may result in the release of sediment into watercourses feeding into the estuary giving rise to intertidal impacts including increased suspended sediments and deposition, re- mobilisation of contaminated sediment which may be generated by onshore construction should be considered upon estuarine habitats, water quality. We advise that where impacts cannot be avoided the CEMP should include outline habitat specific site remediation/ habitat restoration as part of the consenting phase and include Criteria for Success by which progress/success/failure can be monitored and addressed.		See response to **Comment ID 2.1** of **Table 18** in **Section 10** of this document.
		16.4.2.6 Taw Torridge Estuary Page 51 para 82 16.5.1.2 Further mitigation Braunton Barrows SAC/SSSI (intertidal area) Page 101 Para 194	It is stated that small section of Braunton Burrows SAC and SSSI lies within the Onshore Development Area immediately north of the estuary, in the vicinity of Crow Point car park. The car park itself is sparsely vegetated. Behind the dune ridge, the flatter land has been damaged by vehicles, and there are considerable areas of bare sand. As a result there are also areas of early successional grassland related to coastal dune communities where the vegetation was re-establishing. It is stated that some localised disturbance could potentially arise at the exit point and transition with the offshore cable as it is not determined at this point whether this would take place in the subtidal and	Petalwort records are known to occur in the vicinity around Sandy Lane car park in the SE corner of the SAC adjacent to the proposed Estuary crossing corridor as mapped. These records lie landward of the MHWS limit but as the mapped corridor suggests some potential for overlap, we advise that the potential for impacts upon petalwort populations in this location requires full consideration and mitigation proposed to avoid AEOSI. Impacts to be scoped in should include direct habitat damage/destruction associated with construction activities and indirect impacts associated with HDD techniques i.e. potential impacts upon groundwater. In order to rule out potential for impact then advise that a petalwort survey is carried out during the winter months/optimal season by a competent/experienced surveyor. Natural England advises that the potential for impacts at entry and exit point will be determined by their precise location and associated footprint. Presumably one		See response to **Comment ID B1** of **Table 5** in **Section 4**of this document. A plan showing the location of the entry and exit locations for the Taw Estuary Crossing is provided as **Annex 3** to **Appendix B: Response to MMO & Cefas** of this **ES Addendum**.

NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
		outside the boundary of the SSSI and SAC. There is therefore uncertainty whether or not this would provide a better solution.	advantage of HDD across the intertidal is that entry/exit points can be micro-sited to some extent to avoid any particular sensitivities. However, the assessment should consider the balance against the impacts associated with the potential for frac out		
	16.5.3 Impact 3: Indirect disturbance to Braunton Burrows SSSI / SAC arising from use of trenchless techniques within the SAC Para 208-209	It is stated that the HDD drilling point will be within Saunton Sands Car Park, which is outside of the SAC. The cables will be installed up to 13m below ground. This approach has been devised to avoid direct impacts to habitat features within the designated sites within Onshore Development Area.	Natural England advises that levels/footprint of disturbance associated with HDD entry & exit points for the cable landfall or estuary crossing have not been described nor estimated locations identified on maps. This detail is needed to understand potential for impact and identify appropriate mitigation at these locations.		The HDD entry and exit points are identified within **Chapter 5: Project Description Appendix 5.D: Onshore Export Cable Corridor Alignment Sheets** of the **Onshore ES**. A plan showing the location of the entry and exit locations for the Taw Estuary Crossing is provided as **Annex 3** to **Appendix B: Response to MMO & Cefas** of this **ES Addendum**. Clarification of the construction process at landfall is provided in: • the **Outline Cable Landfall Plan** (WHX001-FLO-CON-DES-PDE-0001) • **Section 5** of this **ES Addendum** • the **Outline Cable Specification and Installation Plan (Outline CSIP)** (WHX001-FLO-CON-ENV-PLN-0007).
	16.5.3 Impact 3: Indirect disturbance to Braunton Burrows SSSI / SAC arising from use of trenchless techniques within the SAC Para 211	It is stated that although the likelihood of frac-out is considered to be low, a variety of embedded mitigation measures are proposed to both prevent and respond to such an event, should it occur. These are set out in detail in Appendix 5.A: Taw Estuary Crossing Method Statement.	Natural England notes this has been scoped out of Chapter 10 Intertidal Ecology on the basis that frac out is considered unlikely and mitigation is therefore not required. Consistency is required across documents. The approach outlined here is preferred. However, we advise that further assessment of any mitigations measures and/or frac out remediation is agreed as part of the consenting phase in a bentonite management plan to ensure that no further damage would occur to the site.		See response to **Comment ID 27** of **Table 1** in **Section 1** of this document.
	16.5.3 Impact 3: Indirect disturbance to Braunton Burrows SSSI / SAC arising from use of trenchless techniques within the SAC	It is stated that in the event that frac- out was to occur, taking into account the mitigation, the impact would be very localised and due to the monitoring, it would be expected to be identified very rapidly, and were any of the drilling lubricant (inert bentonite and water) to escape and cover vegetation at the exit point, it is expected this could be removed and the vegetation reinstated.	Please see above point and those relating to intertidal bird impacts. In addition, NE queries if re-instatement of the vegetation necessary given the surrounding seedbank? Natural recovery would be preferable to re- instatement if possible.		See response to **Comment ID 2.13** of **Table 6** in **Section 4** of this document

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
		Para 215				
		Impact 4: Physical disturbance to intertidal habitats (and Taw-Torridge Estuary SSSI) at the Taw Estuary Crossing Para 221	The trenchless methods would entail the entry and exit points to be located inland of the coastal defence embankments and thus outside of the subtidal and intertidal areas of the estuary. As such there would be no physical disturbance within the estuary as the trenchless cable route would be located c.10m or more below the bed of the estuary.	We advise that approximate proposed locations of entry and exit points and their associated footprints of disturbance should be identified on maps so that impacts upon surround habitat/features can be understood.		The HDD entry and exit points are identified within **Chapter 5: Project Description Appendix 5.D: Onshore Export Cable Corridor Alignment Sheets** of the **Onshore ES**. A plan showing the location of the entry and exit locations for the Taw Estuary Crossing is provided as **Annex 3** to **Appendix B: Response to MMO & Cefas** of this **ES Addendum**.
		16.5.5 Impact 5: Indirect disturbance to habitats within the Taw- Torridge Estuary SSSI Para 223	For coastal saltmarsh effects are likely to be small as these habitats are inter-tidal and experience large influxes of nutrients; and sensitivity it assessed to be low. Significantly, impacts from pollution or air quality impacts are not identified by Natural England in the unit condition assessments. The botanical interest of the SSSI, does not refer to plant communities that are dependent on low nutrient conditions or those likely to be high sensitivity to air quality impacts.	Natural England advises that the following is taken into consideration in any updated assessment. https://www.apis.ac.uk/app for habitat specific critical loads. 10-20 kg/ha/yr is the relevant critical load range for most saltmarsh but the lower level of 10 should be applied to more densely vegetated upper marsh zones and to areas of marsh subject to catchment run-off. For pioneer marsh use the higher figure of 20-30 kg/ha/yr. Air quality impacts should still be assessed if associated with the works. Consider potential for impacts of pollutants released during construction activity on sand dune habitats using APIS data as referenced above.		.In Section 13.5 Air Quality of the ES, the potential for dust and other airborne emissions have been evaluated as being not significant. At the Taw-Torridge Estuary crossing the works are set back behind the existing flood embankments and therefore at least 160m and generally much greater from any saltmarsh. Therefore, no effects were anticipated to arise due to the short-term and temporary impact which would be uncertain to arise due to distance, likely wind direction, and tidal state at any one time. Furthermore, due to proposed dust management measures (and where any earthworks would be moving away from the saltmarsh areas) any measurable effect is negligible.
		16.5.6 Impact 6: Indirect impacts to Greenaways & Freshmarsh Braunton SSSI Para 239	It is stated that this SSSI will be avoided (there will be no direct impact), in the area adjacent to the SSSI the cable route will be situated in arable fields to the west of Sandy Lane, before crossing the road and entering pasture fields to the south of the SSSI. Hydrological impacts are not considered likely to occur.	The cable route passes directly through/beneath the SSSI depending on technique used. It not clear whether this section will be installed by HDD or open trench. Natural England queries on what information is the judgement of no hydrological impact based? No evidence is provided to assess potential for impacts to hydrology. Without hydrological assessment we cannot draw any conclusions about potential for linkage with the features of this SSSI or other hydrologically dependent habitats (and associated species) within the SAC and therefore cannot be confident of no impact.		As shown on **Annex 9: Designated Sites** to this document the cable does not pass directly through or beneath the Greenaways & Freshman Barunton SSSI, but crosses directly beneath Sandy Lane. The construction technique for the crossing of Sandy Lane is provided in **Chapter 5: Project Description** (**Section 5.6.3.5**) and shown on **Figure 5.D 4** of **Appendix 5.D: Onshore Export Cable Corridor Alignment Sheets** of the **Onshore ES**. For response to comment on hydrological impact see also response to **Comment ID 2.10** of **Table 6** in **Section 4** of this document.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
		16.5.6 Impact 6: Indirect impacts to Greenaways & Freshmarsh Braunton SSSI Para 249	Saunton to Baggy Point SSSI has been identified in the Air Quality chapter (Chapter 13: Air Quality) as being at possible risk from air quality impacts (i.e. it will experience increases in NOx (nitrogen oxides), NH3 (ammonia) and N-Dep (nitrogen-deposition) that exceed (1% of) the Critical Load or Level); the possible impact from the exceedance is discussed in this section.	Natural England advises mitigation measures for these impacts should be identified and secured		Refer to Applicant's response to Comment ID 3.10 in **Table 5** of **Section 4**. Mitigation measures relating to air quality will be secured via the Final CEMP which is expected to be a planning condition (if approved. An **Outline CEMP** (WHX001-FLO-CON-ENV-PLN-0010) is provided as part of the **Further Environmental Information** submission.
		Table 14.15 Water Resources & Flood Risk receptor sensitivity	Taw Torridge and (Coastal catchment) Instow Barton Marsh, Braunton Burrows Sensitivity or these receptors is high because of SSSI and SAC designations (part of Braunton Burrows SAC overlaps the estuary) and the area of catchment crossed by the Onshore Export Cable Corridor may also be underlain by the small sand aquifer that contributes to the freshwater ponds within the dune 'slacks' of the SAC.	Natural England advises that Impacts assessed as minor adverse for these catchments and mainly relate to impacts upon surface flow rather than impacts upon groundwater but what this means for dependent features need to be assessed.		Please refer to previous responses to Comment IDs 32 and 33 of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Annex 2: Hydrogeology Technical Note** of this document. Further work has been undertaken and is provided in **Appendix G: Hydrogeological Risk Assessment.**
		16	Direct physical damage and disturbance to Braunton Burrows SSSI/SAC (intertidal area) due to cable installation	We advise that works for trenching and trenchless installation need to mitigate spread risk of invasives such as Sea buckthorn (noted as present in VAM for Braunton Burrows SSSI), hottentot fig, as well as those noted in 16.3.6.1 (Montbretia, Japanese knotweed, three-cornered garlic) etc. Same comment applies to ongoing maintenance / emergency repairs of cables.		Control of invasive species will be addressed within the Final CEMP which is expected to be a planning permission or Marine Licence condition (if approved). An **Outline Cable Construction Environment Management Plan (Outline CEMP)** (WHX001-FLO-CON-ENV-PLN-0009). The Applicant can confirm that measures such as tool box talks and ECoW supervision are included in the Outline CEMP. An **Outline Project Environmental Management & Monitoring Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003), including an In-Principle Monitoring Plan is provided as part of the Further Environmental Information submission. The Final PEMMP will detail measures required during the operation and maintenance phase.
		16.3.6		Natural England advises as part of the consenting phase an In Principle Monitoring Plan (IPMP) needs to be agreed between all interested parties in relation to the focus of pre, during and post installation monitoring. And monitoring /site investigations should avoid further damage to designated site interest features. This should form on of the principles of the IPMP		See response to Comment ID 16 above (**Table 18** in **Section 9)**.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
		16.4.1 - Table 16.5	Confusion about the listing of favourable/ unfavourable condition by unit here. Natural England's Designated Sites data shows that different designated features have different favourable status *within* each unit, rather than specific units being entirely in unfavourable/ favourable condition as seems to be suggested by the wording here. E.g. Unit 101 –Saunton Golf Club is listed as "unfavourable recovering condition" in the document, but in fact, within Unit 101 some features are in Unfavourable Recovering condition, e.g. H2130 Fixed dunes, and some are in Favourable Condition, e.g. Vascular plant assemblage. Bideford to Foreland Point MCZ and Fremington Quay Cliffs SSSI also need inclusion in this table. (Bideford Point MCZ mentioned later on in 16.4.2). Construction of pipes, heavy machinery crossing the geological features in this area may damage designated geological features of Fremington Quay Cliffs SSSI – though this seems unlikely given distance of the works from the SSSI.	Natural England advises that any designated site assessment requires updating to ensure that necessary context is considered as part of any decision making		As outlined in the Applicant's response to Comment ID 3.4 in **Table 7** in **Section 4**. Summary unit conditions in the table were taken from NE website: Site units (naturalengland.org.uk). The points in the NE's comments noted and will be rechecked/cross-referenced – updating this info can be carried out as necessary. It is not however considered to the change the assessment later on in the Chapter 16 (or elsewhere in the ES). Fremington Quay Cliffs SSSI – this is a geological SSSI and as such it has not been considered in Chapter 16 (which is limited to ecology). It is noted that at its closest point it is over c. 2.5km to the east (and therefore NE's suggestion that impacts on this geological SSSI seem unlikely, appear reasonable, although this point is outside of the scope of the ecological assessment). Assessment of the effects of the Project on the Bideford to Foreland Point MCZ are provided in Chapter 10: Benthic and Intertidal Ecology.
		15.4.1.4.1 15.6.1	No mention of Greenaways & Freshmarsh SSSI which the pipeline borders and will doubtless impact upon as the notified features are reliant on the water levels, drainage and ditches which border the SSSI	We advise that the ES requires further update to include this site. Particular consideration to avoid impacting designated features of Lowland fens, including basin, flood- plain, open water transition and valley fens and lowland wet neutral grassland from create, use and decommissioning of the haul road. Mitigation also needed to control/ avoid invasion during works by non- native aquatic plants such as floating pennywort and water fern.		Indirect impacts to Greenaways and Freshmarsh, Braunton SSSI are considered within **Section 16.5.6 of the Onshore ES**. Please refer to previous responses to Comment IDs 32 and 33 of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Appendix A Annex 2** of this document. Precautionary control measures in relation to risk management from invasive and non-native species will be set out in the CEMP but risk of these species is considered to be low based on the survey results.
		16.3.6	Cable and haul road crossings: watercourses – impact of trenchless techniques, ditches and pipes on ditches and drainage of Greenaways and Freshmarsh, Braunton SSSI's needs consideration to avoid impacting	Natural England advises that further consideration required by the Applicant before we can advise on the significance of any impact/s		Please refer to previous responses to Comment IDs 32 and 33 of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Appendix A Annex 2** of this document.

NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
		designated features of Lowland fens, including basin, flood-plain, open water transition and valley fens and lowland wet neutral grassland. Mitigation also needed to control/ avoid invasion during works by non- native aquatic plants such as floating pennywort and water fern.			Precautionary control measures in relation to risk management from invasive and non-native species will be set out in the CEMP but risk of these species is considered to be low based on the survey results.
	16.3.6.1	Works for trenching and trenchless installation need to mitigate spread risk of invasives such as Sea buckthorn (noted as present in VAM for Braunton Burrows SSSI), cotoneaster and hottentot fig, as well as those noted in 16.3.6.1 (Montbretia, Japanese knotweed, three-cornered garlic) etc. This comment also applies to ongoing maintenance/emergency repairs of cables.	Natural England advises that this needs to be surveyed for the INNS Management Plan to inform the Construction Environmental Management Plan (CEMP).		Control of invasive species will be addressed within the Final CEMP which is expected to be a planning permission or Marine Licence condition (if approved). An **Outline Cable Construction Environment Management Plan (Outline CEMP)** (WHX001-FLO-CON-ENV-PLN-0009). The Applicant can confirm that measures such as tool box talks and ECoW supervision are included in the Outline CEMP. An **Outline Project Environmental Management & Monitoring Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003), including an In-Principle Monitoring Plan is provided as part of the Further Environmental Information submission. The Final PEMMP will detail measures required during the operation and maintenance phase.
	16.4.5 - Table 16.23	Table notes Greenaways and Fresh Marsh Braunton SSSI not directly affected by works as adjacent to Onshore Development Area, but impact of adjacent works to create trenchless crossings, ditches and pipes on the ditches and drainage on the SSSI needs consideration here to avoid impacting designated features of Lowland fens, including basin, flood-plain, open water transition and valley fens and lowland wet neutral grassland. Mitigation also needed to control/ avoid invasion during works by non- native aquatic plants such as floating pennywort and water fern.	Natural England advises that this requires further consideration is required by the Applicant as set out in the various Annexes.		Please refer to previous responses to Comment IDs 32 and 33 of **Table 1** in **Section 1** of this document outlining there will no change to the ecohydrological regime. Further information is provided in **Appendix A Annex 2** of this document. Precautionary control measures in relation to risk management from invasive and non-native species will be set out in the CEMP but risk of these species is considered to be low based on the survey results.
	16.4.5 - Table 16.23	Impact of any lighting used during works needs to be considered for Caen Valley bats SSSI, and all other areas where bat foraging, sustenance and roosting areas have been identified.	Please see advice within Annex B on bat mitigation.		Lighting of habitat features is not proposed. Any lighting required, which is likely to be restricted to work compounds, will be restricted in line with the measures set out in the ES. Measures to manage artificial lighting and mitigate any impacts during construction will be set out in the CEMP.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
						A Lighting Impact Assessment is provided in **Appendix O** of this **ES Addendum**.
		16.5.4	Impact 4: Physical disturbance to intertidal habitats (and Taw-Torridge Estuary SSSI) at the Taw Estuary Crossing	Natural England advises that impact of potential release of frac-out lubricant bentonite on species as well as habitats is needed, as well as impact if flushed out to sea. Please see Annex B		Refer to Applicant's response to **Comment ID 32** and **33** of **Table 1** in **Section 1** of this document.
		16.5.5	233. Impact of air pollution from ammonia etc is deemed here to be 'likely to be small' on the botanical interest of the SSSI, as "the botanical interest of the SSSI does not refer to plant communities that are dependent on low nutrient conditions or those likely to be high sensitivity to air quality impacts". However, significant nutrient deposition or runoff could lead to an increase in rank grasses and hence a loss of botanical diversity	Natural England advises this needs to be considered in the assessment of impacts on the salt marsh habitats.		For response to comment on hydrological impact see also response to **Comment ID 3.9** of **Table 6** in **Section 4** of this document.
		16.5.7	Indirect impacts to Saunton to Baggy Point SSSI's mineral-rich soils support important lichen communities, which are potentially vulnerable to air pollution impacts. Impact is judged by this report to be negligeable, given only a "small proportion of the SSSI is within 200m of the Operational Development Area...the temporary effect of construction and potential wind-driven dispersal/dilution".	Natural England advises that further consideration is given to this and any mitigation measures to reduce impacts		Refer to Applicant's response to Comment ID 3.10 in **Table 5** of **Section 4**.
		Paragraph 22, 16.4.3.3.1	The desk study for bat records, including MAGIC searching for EPSM licences, was completed for a 1km search radius only, though paragraph 22 states that for bats consideration of records within and up to 5km development area. The report states that the majority of Onshore Development Area to the north of the River Taw lies within 5km of Caen Valley Bats SSSI. The core sustenance zone for Greater Horseshow bat for which the above SSSI is designated for is 3 km.	We advise that further clarification is required in relation to the desk-based study area and whether a 1km search radius was used. If so, justification for this required, but we strongly advice extending this to 5km search radius.		Refer to Applicant's response to Comment ID 5.3 in **Table 9** in **Section 4**.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
		Appendix 16.E 16.5.8, para 259 Chapter 16, Chapter 2 Supplementary Bat Activity Survey Interim Report (Staunton Road, page 3	It does not appear that the haul road access point off Saunton Road B3231 where a maximum 90m stretch of hedgerow will require temporary removal to allow for a visibility splay, has been surveyed, due to low potential for foraging bats.	We advise that further survey should be considered for the section of hedgerow where the haul road access point off Saunton Road B3231, if results from further survey of the section of hedgerow adjacent to Sandy Lane, differ from those previously recorded, consideration should be given as to whether the second section of hedgerow along Saunton Road requires bat activity survey. As above ideally the results should added to the Onshore Ecology Chapter and used to form the assessment. Precautionary mitigation to retain any existing bat commuting routes along the hedgerow line during construction in respect of the Caen Valley Bats SSSI should be provided as informed by the above surveys.		Refer to detailed response to Comment ID 40 in **Table 1** in **Section 1.**
			Any important areas for foraging and/or commuting bats must not be lit and best practice guidelines should be followed.	Follow best practice guidelines with regards to artificial lighting, with no direct lighting of key habitats, particularly though important for foraging and/or commuting greater horseshoe bats in relation to Caen Valley Bats SSSI. To be included within the Outline Code of Construction Practice.		Refer to Applicant's response to **Comment ID 5.15** of **Table 9** in **Section 4** of this document.
		Chapter 16, Table 16.23 and Chapter 18 Noise and Vibration	The following impacts; Impact 1: Noise of construction works at the site, Impact 2: Noise of cable corridor construction works, Impact 3: Noise of Onshore Substation construction works, Impact 5: Construction vibration impact from noise and vibration, are mentioned in the Noise and Vibration chapter. The chapter though refers to Chapter 10: Onshore Ecology & Ornithology for potential noise impacts at ecological receptors. However, in Chapter 16 the only reference to noise appears to be provided within Table 16.23 which refers to 'Bats – commuting and foraging' with importance of sensitivity based on 'National (High); based on assemblage and present of important nearby roosts Caen Valley Bats SSSI. However, Chapter 16 only states that the risk of noise and lighting disturbance to hedgerows will be minimised through imbedded mitigation, though no assessment appears to be provided for this.	We advise that the potential impacts from noise and vibration to be considered for foraging and communing bats with regards to Caen Valley Bats SSSI to be assessed at Application. Results to be added to Chapter 16 and Chapter 18 Noise and Vibration. And detailed mitigation measures Secured.		Refer to Applicant's response to **Comment ID 5.17** of **Table 9** in **Section 4** of this document.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
		Paras 67 P27	"There is **no significant effect** on the Taw-Torridge Estuary SSSI because the cable will be installed using trenchless techniques." Use of GI to guide trenchless design/methodology needs to be discussed.	As per our previous advice, a complete geotechnical investigation is required to ensure no significant impact on beach/estuarine morphology as a result of trenchless cabling. As recommended in Appendix 5.A (p11, para 24) – a complete geotechnical investigation must be included as a post-consent planning condition that must be adhered to prior to any trenchless crossing works. This statement needs to be supported by data from the preliminary ground investigation, the value of which would be improved by the inclusion of geophysical as well as historical borehole data (the latter are already included). Ensure that monitoring prior to construction and following removal is included as license requirement- include remedial action if impact occurs.		Refer to Applicant's response to **Comment ID 2.37** of **Table 4**Table 9 in **Section 4** of this document.
		8.5.1/Point 67	The assessment of impacts on the Taw-Torridge Estuary SSSI concludes no significant effect due to cable installation. However, previous studies have shown that there is considerable uncertainty regarding the future evolution of the estuary mouth and its tidal deltas. Therefore, we are concerned that the response of this feature to both sea level rise, future estuary management, and cable installation over the lifetime of the project, have not been adequately assessed.	We advise that the geomorphology of this feature, its evolution, future management and response to cable installation (and potential O&M) over the lifetime of the project need to be further assessed as part of the Application.		Refer to Applicant's response to **Comment ID 2.40** of **Table 4**Table 9 in **Section 4** of this document.
		10.3.5 Fig 10.2	Benthic & Intertidal Ecology Survey sampling locations are located entirely along the offshore cable route with no sampling locations deployed along the Taw Torridge Estuary crossing of the cable route.	We advise that the Benthic & Intertidal Ecology survey should include sampling locations within the Taw Torridge Estuary in order that the impacts upon the features of the SSSI and adjacent Braunton Burrows SAC can be fully assessed.		Refer to Applicant's response to **Comment ID 2.53** in **Table 4** of **Section 3** of this document.
		Chap.6. App. 6A, Table 5.4	Castlemartin Range SSSI in Wales has not been screened in. Guillemot is a designated feature at this site and the project lies within the species mean max + 1SD foraging range.	We advise that impacts on Castlemartin Range SSSI are assessed		Please see Applicant's response to **Comment ID 2.5** in **Table 14** of **Section 6** of this document.
		Chap 13, App 13A, sec. 13.10	The impacts to the Lundy seabird colony are only shown for Manx shearwater but the SSSI is also notified for guillemot, razorbill, kittiwake and Atlantic puffin. Impacts on these species should therefore be considered. Although the site is not an SPA and individual species populations do not exceed 1% of the bio-geographic	For the purposes of assessment and in recognition of its importance and recovering status, NE consider it appropriate to treat Lundy as an SPA colony within the HRA.		Please see Applicant's response to **Comment ID D5** in **Table 13** & **Comment ID 2.12** in **Table 14** both of **Section 6** of this document.

	NE Ref	Doc Ref	NE's Comment	NE's Recommendation	NE's Risk (RAG)	Applicant's Response
			populations of these species, we highlight the assemblage does exceed the minimum for SPA status (over 20,000 individual seabirds in the breeding season).			
		Chap. 13, Tables 13.45-13.50, App13A tech report,	The impacts of the project on the Lundy Manx shearwater population are based on superseded data.	We advise contacting the RSPB to obtain latest census results (from 2023) and revise analyses using these data.		Please see Applicant's response to **Comment ID 2.13** in **Table 14** of **Section 6** of this document.

10. Response to Comments relating to Coastal Habitats

16. **Table 19** and **Table 20** outlines the Applicant's response to the comments raised by Natural England in relation to Coastal Habitats.

Table 19 Summary of Key Issues – Coastal Habitats

NE Ref	Summary of NE's Key Concerns	Natural England's Recommendations to Resolve Issues.	NE's Risk	Applicant's Response
6.4.2.2.1Petalwort	Onshore Development Area immediately north of the estuary, in the vicinity of Sandy Lane car park and Broad Sands potential for petalwort impacts. Petalwort not covered by NVC/botanical survey therefore precise locations unknown for avoidance of damage, impacts cannot be ruled out.	Advise that a petalwort survey is carried out during the winter months/optimal season by a competent/ experienced bryophyte surveyor and if impact pathways are identified adopt the mitigation hierarchy		The Applicant has engaged a specialist bryologist sub-consultant, with experience of petalwort, to undertake petalwort survey. The results of this survey, undertaken during winter, can be found in **Appendix L: Petalwort Desk Based Assessment and Survey.** No areas of petalwort that are present within the Onshore Development Area.
6.4.2.2.1 Petalwort **6.4.2.3 Indirect disturbance to Habitats during Construction**	Potential for direct/indirect impacts of trenchless techniques (HDD or direct pipe) upon groundwater dependent humid dune slack and petalwort Braunton Burrows SAC features have not been considered as part of the assessment.	Hydrology impacts should be fully assessed, including subsurface hydrology and indirect effects. Consider all groundwater dependent habitats and species potentially impacted by trenchless (HDD/direct pipe) and open trench cable installation methods. Sub-surface impacts upon hydrologically dependent features from installation of cable route should be considered as potential indirect impacts.		A Hydrogeology Risk Assessment is provided in **Appendix G: Hydrogeological Risk Assessment.** This concludes that there is no risk to groundwater or sub-surface indirect impacts due to the installation and operation of the onshore export cable corridor.
6.4.2.2.1 Petalwort	Natural England disagrees with the conclusion that there is no potential for the project alone to prevent the achievement of the site's conservation objectives, therefore there would be no AEoSI of the Braunton Burrows SAC from direct disturbance.	It has not been satisfactorily demonstrated by submission of evidence to support this position for petalwort of other hydrologically dependent SAC features e.g. humid dune slacks. No contemporary/detailed survey has been undertaken to determine the presence/absence of petalwort populations within/adjacent to the development footprint. Potential for impacts of trenchless techniques (HDD or direct pipe) upon groundwater dependent Humid dune slack and petalwort features have not been considered as part of the assessment.		Please refer to the detailed response to Comment ID B1 in **Table 5**.
6.4.3.1 Loss of Habitats In-combination with Other Projects **6.4.3.2 Disturbance to Habitats In-combination with Other Projects**	Conclusion of no potential for the Project alone or in-combination with other projects to have an AEoI of the Braunton Burrows SAC from direct or indirect habitat loss/disturbance.	Potential for AEOSI /residual effects as a result of direct habitat loss or indirect habitat disturbance has not been ruled out satisfactorily due to lack of evidence presented around project alone impacts as already set out in our Application response. Therefore, it cannot be concluded that there is no in Alone or combination effect with other projects.		Please refer to the detailed response to Comment ID B1 in **Table 5**.
	Impacts covered in supporting ES chapters have been scoped out of this report without justification e.g (Chapter 14.4.5.2.5) *Due to climate change and associated warmer, drier summers, water resources associated with the Secondary A aquifer that characterises the Onshore Project may come*	We advise that these require scoping in for consideration in HRA as there is an impact pathway. All impacts should also be considered in relation to feature specific conservation objectives.		The example cited is stated in a Do Nothing Scenario (i.e. without implementation of the Project). The two main aspects of climate change that are likely to affect the Onshore Project comprises of sea level rise and tidal flooding, and an increase in peak rainfall intensity. These have been

NE Ref	Summary of NE's Key Concerns	Natural England's Recommendations to Resolve Issues.	NE's Risk	Applicant's Response
	under more pressure, due to more permits to abstract being sought. This could have associated impacts on surface and groundwater hydrology, water quality and designated sites.			considered within **Chapter 14: Water Resources and Flood Risk.**

Table 20 Natural England's Key Advice and Recommendations – Coastal Habitats

Planning Application	NE Ref	Planning Application Ref	Comment	Recommendation	Risk (RAG)	Applicant's Response
HRA - Document Used: Chapter 6 EIA Methodology Appendix 6A: Report to Inform Appropriate Assessment						
Screening	2.1	6.2 Screening conclusions Para 185	It is stated that the Braunton Burrows SAC is located within the cable corridor	Suggest a change of language/re-wording: The cable corridor is located within the Braunton Burrows SAC		The Applicant acknowledges this and will address in future documentation.
	2.2	6.2. Screening conclusions Para 186 & Table 6.1	It is stated elsewhere in ES Chapter 16.3.5 the that the decommissioning policy for the Project infrastructure is not yet defined and that the detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time.	We advise that without this information the potential for impact cannot be ruled out. A full assessment of potential impacts to the onshore environment of the decommissioning of the proposed project should be provided. Our primary concern is that impacts are minimised. Furthermore, decommissioning should also consider permanent habitat loss from any infrastructure that remains at the time of decommissioning (an extension of habitat loss from the operational phase).		An **Outline Decommissioning Programme** (WHX001-FLO-CON-ENV-PLN-0011) is provided as part of the Further Environmental Information submission. The Applicant will consult Natural England in the development of the final Decommissioning Programme (i.e., through continual updates to the outline version). As outlined within **Section 5.10** (Offshore Decommissioning Activities) of FLO-WHI-REP-0002-05 **Chapter 5 Project Description** of the **Offshore ES**, the **Outline Decommissioning Programme** (WHX001-FLO-CON-ENV-PLN-0011) follows all relevant legislation and guidance, and the Project is committed to following new legislation and guidance at the time of decommissioning; noting that these will likely change before this project is decommissioned. As outlined in **Section 16.7** of FLO-WHI-REP-0016-20 **Chapter 16 Onshore Ecology and Ornithology** of the **Onshore ES** , it is anticipated that at most, a similar assessment would apply for the decommissioning phase regardless of the final decommissioning methodologies: but in all likelihood, the significance is likely to be lower. Permanent habitat loss will not occur as any infrastructure left in situ (i.e., cable ducting) will be below ground level. The Onshore Substation will be decommissioned and the area remediated (noting the location of the Onshore Substation is currently a brownfield site).
	2.3	6.4.1 Description of the designation Para 221	It is stated that at the Taw Estuary Crossing the corridor is situated greater than 40m outside the SAC boundary, and at other locations along the onshore cable corridor the SAC boundary is offset by 5m	The map which identifies the onshore and offshore elements of the cable corridor shows overlap with the SAC boundary at the Taw Torridge Estuary crossing point. Given that construction activities and the potential for associated impacts have not been defined within this area, the potential for direct and indirect impacts upon SAC		The Applicant acknowledges that the Offshore Development Area overlaps with the SAC boundary. However, this was subsequently refined for the **Onshore ES**. Therefore, it is correct to state that the Onshore Development Area is 40m for the SAC boundary.

Planning Application	NE Ref	Planning Application Ref	Comment	Recommendation	Risk (RAG)	Applicant's Response
				features at this location should be considered fully by the HRA.		
	2.4	6.4.1 Description of the designation Para 222	It is stated that "This species (petalwort) mainly grows in damp, calcareous dune-slack systems but not where *Salix spp.* scrub dominates, or in those slacks which are water-filled" (Natural England 2019). The statement concerning the absence of petalwort from water-filled slacks is not correct. Petalwort grows in dune slacks which are subject to seasonal inundation with water. The importance of seasonal flooding to the life cycle is captured below: *All English sites are dry for large parts of a normal summer and most are wet or flooded in at least some winters. A small residue of colonies exist in locations that cannot flood. Plants in these locations do not produce sporophytes and are probably prevented from reproducing sexually. Holyoak, D.T. 2006. Petalophyllum ralfsii species dossier, PlantLife International* The Natural England 2019 reference is not included in the list of references.	Natural England advises that all best available evidence is used to inform an updated RIAA.		The Applicant has engaged a specialist bryologist sub-consultant, with experience of petalwort, to undertake petalwort survey. The results of this survey can be found in **Appendix L**. It concluded that there are no areas of petalwort present within the Onshore Development Area.
	2.5	6.4.2.1 Direct Habitat Loss (Operation & Maintenance) Para 229	The requirement for maintenance and emergency repairs to buried cable during the operation and maintenance phase have not been considered here.	Potential for habitat loss/disturbance impacts upon SAC features due to requirement for repairs/maintenance of below ground infrastructure along the cable route should be scoped into the HRA.		The Onshore Export Cables will be contained within ducting. This allows the cables to be accessed from link boxes meaning that no further ground works would be needed once the cabling infrastructure is installed.
	2.6	6.4.2.1 Direct Habitat Loss (Operation & Maintenance Para 231	Conclusion of no potential for an adverse effect on the integrity of the Braunton Burrows SAC as a result of Habitat loss during operation and maintenance phase.	We advise that further consideration of operation and maintenance work is included within the updated RIAA.		Refer to comment above.

Planning Application	NE Ref	Planning Application Ref	Comment	Recommendation	Risk (RAG)	Applicant's Response
			Disagree with this statement on account of the fact that the potential for impacts during the operational lifetime of the windfarm have not been fully considered. See above comment re: routine maintenance & emergency repairs to sub-surface cables.			
	2.7	6.4.2.2 Direct Disturbance to Habitats during Construction Para 232	It is stated that "the Project export cable corridor covers Braunton Burrows SAC"	Language/accuracy - suggest re-wording: the Project export cable corridor crosses Braunton Burrows SAC		The Applicant acknowledges this and will address in future documentation.
	2.8	6.4.2.2 Direct Disturbance to Habitats during Construction 232	It is stated that: Any cable route through or Landfall within the SAC could result in disturbance and/or alteration to the habitats during construction, operation, and decommissioning phases, which could impact on the extent, physical structure, diversity, community structure and typical species representative of the habitat features for which the site is designated. However, we advise that both Humid dune slacks and petalwort SAC features are dependent upon groundwater hydrology to support ecosystem function humid dune slack and petalwort. Sub surface installation of the cable route by HDD could result in impacts to below ground hydrology, potential frac-out both within and beyond the site boundary which could potentially undermine the conservation objectives of these features.	The installation of the cable route can result in potential for disturbance impacts within and beyond the SAC boundary. This should be reflected in the scope of the HRA.		The Applicant has engaged a specialist bryologist sub-consultant, with experience of petalwort, to undertake petalwort survey. The results of this survey can be found in **Appendix L: Petalwort Desk Based Assessment and Survey**. It concluded that there are no areas of petalwort present within the Onshore Development Area. Therefore, there is no impact pathway. **Appendix L: Petalwort Desk Based Assessment and Survey** shows that NVC dune slack communities SD15c and SD16b in the northern part of Braunton Burrows are not close to the Onshore Development Area. Given no presence of petalwort in the Project's works areas and the localised (and temporary) nature of any hydrogeological change no effect on petalwort is concluded. This supports the findings as reported in **Appendix 6.A: Combined RIAA** (**Section 6.4.2.2.1**) of the **Onshore ES**.
	2.9	6.4.2.2 Direct Disturbance to Habitats during	It is stated that "*As all the works and site compounds are located outwith the SAC*	The potential for frac-out within the golf course and potential		**Appendix T Annex 1: Onshore Ground Investigation Interpetive Report** of this document provides data which shows the ground conditions are suitable for use of a trenchless technology under the golf course and confirms the previous conclusion that risk

Planning Application	NE Ref	Planning Application Ref	Comment	Recommendation	Risk (RAG)	Applicant's Response
		Construction 236	*boundary, there are no sources of direct disturbance to SAC qualifying habitats".* But we advise that the potential for frac-out during HDD beneath the golf course has not been considered here as it has for the intertidal. Also potential for hydrological impacts associated with disturbance of subsurface hydrology and impacts upon ground water dependent SAC features (see above) has not been considered.	hydrological impacts should be scoped in to the HRA.		of frac out is low (see also **Appendix S: Hydrofracture Report**). The Applicant considers that this supports the conclusions of the ES that as the entry and exit areas for the trenchless technique used to cross the SAC, there is no impact pathway.
	2.10	6.4.2.2 Direct Disturbance to Habitats during Construction 238	All three crossings are referred to but consideration of frac-out impacts of smothering of surface vegetation only considered for intertidal sandflat. The same impacts could also occur should frac out occur beneath the golf course and would not be limited to vegetation smothering, ground disturbance would also result.	Impacts of potential frac out upon the shifting dunes and fixed dune grassland features require scoping in for consideration in the HRA.		**Appendix T: Onshore Ground Investigation Interpretative Report** of the ES Addendum provides data which shows the ground conditions are suitable for use of a trenchless technology under the shifting dunes and fixed dune grassland and confirms the previous conclusion that risk of frac out is low (see also **Appendix S: Hydrofracture Report)**. The Applicant considers that this supports the conclusions of that there is no impact pathway. Further assessment of the risk of frac out, and the mitigation measures to be employed during construction are provided in an **Outline Bentonite Management Plan (Outline BMP)** (WHX001-FLO-CON-ENV-PLN-0012).
	2.11	6.4.2.2 Direct Disturbance to Habitats during Construction 240	The onshore cable installation works entail a combination of trenched and minor trenchless crossings along agricultural lands to the east of the Braunton Burrows SAC, with a number of temporary site compounds along the corridor. The works are generally some distance outside the SAC boundary, with the exception of several stretches which are adjacent to the SAC boundary.	We advise that a map should be included to clearly identify trenched and trenchless sections of the cable route as well as any permanent & semi-permanent above ground structures to provide full and transparent understanding of the construction/operational footprint and appraisal of associated habitat impacts.		Plans showing the indicative design and layout of the Onshore Export Cable Corridor is provided in **Appendix 5.D: Onshore Export Cable Corridor Alignment Sheets of the Onshore ES**. The plans also identify the transition joint bay locations. However, link box locations will not be determined until detailed design. The link boxes will be a maximum of 3m by 3m and will be at ground level in the margins of agricultural and pastoral fields. No link boxes would be required to be located within Braunton Burrows SAC/SSSI or the Taw-Torridge Estuary SSSI.
	2.12	6.4.2.2.1 Petalwort 241	It is stated that: It is not known whether either of the species occurs within the survey corridor. The ideal time to find Petalwort *Petalophyllum ralfsii* is between November and March as it aestivates	We advise that a petalwort survey is carried out during the winter months/optimal season by a competent/experienced bryophyte surveyor. And if impact pathways are identified, adopt the mitigation hierarchy.		The Applicant has engaged a specialist bryologist sub-consultant, with experience of petalwort, to undertake a desk-based assessment and petalwort survey (undertaken on 27th February 2024 by Sharon Pilkington). The results of this survey can be found in **Appendix L: Petalwort Desk Based Assessment and Survey.** The desk-based assessment and survey has not identified suitable habitat within the Onshore Development Area (i.e. the pastoral fields to the north

Planning Application	NE Ref	Planning Application Ref	Comment	Recommendation	Risk (RAG)	Applicant's Response
			during the drier months and would Report to Inform Appropriate Assessment Page 106 therefore not have been visible during the survey period. Onshore Development Area immediately north of the estuary, in the vicinity of Sandy Lane car park and Broad Sands, where there is potential for petalwort impacts. Petalwort not covered by NVC/botanical survey therefore precise locations unknown for avoidance of damage, impacts **cannot** be ruled out.			of Broad Sands/Crow Point car park or within the pastoral field to the east of the American Road or arable fields north of the Sandy Land car park). Therefore, there is no impact pathway.
	2.13	6.4.2.2.1 Petalwort 242	Known areas of Petalwort *Petalophyllum ralfsii* are shown in Figure 6.2 (Natural England, 2020). No petalwort locations were recorded within close proximity to the cable corridor or access route. Survey information from 2023 (Dynamic Dunescapes) has revealed a number of records of petalwort populations (over 1000 thalli) adjacent to the Broadsands car park and American road. Potential for direct impacts from Estuary crossing work or indirect impacts upon hydrology from HDD.	We advise that best available evidence should inform the RIAA. And note that Natural England (2020) is not included in the references list please identify the correct source.		Refer to comment above regarding survey data. The assessment undertaken and survey data collected (see **Appendix L: Petalwort Desk Based Assessment and Survey**) confirms the conclusions of the RIAA in relation to petalwort. The Applicant acknowledges the missing reference. The correct reference is: Natural England (2020) Assessment of England Coast Path proposals between Combe Martin and Marsland Mouth On Tintagel-Marsland-Clovelly Coast Special Area of Conservation, (SAC), Bristol Channel Approaches SAC and Braunton Burrows SAC. Available at: https://assets.publishing.service.gov.uk/media/5e021ecded915d1f6d7a92d7/combe-martin-marsland-mouth-habitats-regulations-assessment.PDF.
	2.14	6.4.2.2.1 Petalwort 244	Natural England highlights the following conclusion made within the RIAA and advises that we are unable to support this conclusion *"overall therefore there is not potential for the Project alone to prevent the achievement of the site`s conservation objectives, therefore there would be no AEoSI of the Braunton Burrows SAC from direct disturbance'.*	We advise further evidence is required to support this position for petalwort of other hydrologically dependent SAC features e.g. humid dune slacks.		Please refer to comments above. The Applicant commissioned a specialist bryologist sub-consultant with experience of petalwort to undertake a desk-based assessment and field survey to address this comment, the results are presented in **Appendix L: Petalwort Desk Based Assessment and Survey** of this **ES Addendum**. Furthermore, the results of the geotechnical investigations have been used to inform further hydrogeological modelling and risk assessment, see **Appendix G: Hydrogeological Risk Assessment** of this **ES Addendum**, and conclusions stated in **Annex 2: Hydrogeological Technical Note** of this document. This concludes that

Planning Application	NE Ref	Planning Application Ref	Comment	Recommendation	Risk (RAG)	Applicant's Response
			No contemporary/detailed survey has been undertaken to determine the presence/absence of petalwort populations within/adjacent to the development footprint. Potential for impacts of trenchless techniques (HDD or direct pipe) upon groundwater dependent Humid dune slack and petalwort features have not been considered as part of the assessment. The rear of the Braunton Burrows dune system, there is an extensive area of low dunes and slacks (see NVC survey Appendix 16.P maps 1-5) which may be extensively flooded in winter. Variations in the extent and duration of flooding of the dune surface are important in determining vegetation species composition and structure and in maintaining suitable breeding conditions for aquatic species. Any disturbance of this regime will affect the ecohydrological condition of humid dune-slacks The elevation of the slacks is highest in the middle of the central zone of the dunes at about 9 m OD but falling in elevation northwards, southwards and seawards. The water table underlying the system is reported to be dome-shaped being some 6 m higher in the centre than at the margins. The dunes at Braunton Burrows overlie both marine clay and gravels and sand resting on the Culm Measures bedrock. A preliminary interpretation of the hydrogeological conditions			temporary dewatering during construction at the entry and exit pits will not impact on the groundwater table. Additionally, it concludes that no operational impacts will occur.

Planning Application	NE Ref	Planning Application Ref	Comment	Recommendation	Risk (RAG)	Applicant's Response
			suggest that groundwater flow radiates away from the domed water table ridge known as a *Flow-through* slack. Groundwater flows into the up-gradient edge of the slack, flows through the slack and then infiltrates at the downgradient edge. These slacks are highly sensitive to hydrological changes and water table fluctuations in response to seasonal wet and dry conditions and/or external influences such as groundwater abstraction and land drainage. Given the tendency towards an ephemeral nature, then any external influence on groundwater levels or recharge rates within or adjacent to a dune system is likely to adversely affect the existence of dune-slacks. Such external activities include groundwater abstraction for municipal, agricultural, industrial, military and recreational purposes and dewatering of groundwater for land drainage control and quarrying activities.			
	2.15	6.4.2.3 Indirect disturbance to Habitats during Construction 245	It is stated: *During construction of the export cable there will be increased traffic, equipment, personnel, lighting, and subsequent emissions to air (noise, dust, and gaseous emissions), land (solid and liquid discharges) and water (liquid discharges).*	We advise that Sub-surface impacts upon hydrologically dependent features from installation of cable route should be considered as potential indirect impacts.		The results of the geotechnical investigations have been used to inform further hydrogeological modelling and risk assessment, see **Appendix G: Hydrogeological Risk Assessment** of this **ES Addendum**, and conclusions stated in **Annex 2: Hydrogeological Technical Note** of this document. This has concluded that dewatering for the execution of trenchless / trenched areas will be of a temporary nature that will last for a few days at most. Therefore, with appropriate mitigation measures, they should will not adversely affect nearby protected areas, even at a very localised scale.
	2.16	6.4.2.3.1 Traffic 246	It is stated that: *The vehicles would be 4 x 4's and therefore present the same activities as that carried out by the golf course (such as tractors for mowing) and would not result in any disturbance to habitat*	Given that the volume/frequency of traffic along these routes could be expected to be increased during construction period relative to that typical of golf course BAU, consideration should be given to use of low		The Applicant notes to this recommendation and will incorporate it in the final Construction Environmental Management Plan (an **Outline Construction Environmental Management Plan** (WHX001-FLO-CON-ENV-PLN-0010) is provided as part of the Further Environmental Information). It should be noted that frequent access to the golf course is not expected as the cable will be installed beneath it via trenchless technology. It is only included for borehole monitoring purposes if required.

Planning Application	NE Ref	Planning Application Ref	Comment	Recommendation	Risk (RAG)	Applicant's Response
			features or indirect disturbance to supporting features or species.	ground pressure vehicles e.g softrack to reduce potential for ground damage/disturbance especially during winter months.		
	2.17	6.4.25.3.5 Dust 253	Mitigation measures proposed for dust management include: *Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary*	We advise that the assessment should include checks of dust build up on vegetation within the SAC boundary near to compound and if present implement mitigations measures identified in the RIAA to reduce accumulate/smothering of foliage e.g. low-pressure hosing. This will be particularly important to monitor dust accumulation in dune slack habitats near to the source of dust as lower plants lichens and bryophytes which may be present are more susceptible to these impacts. Suggest ECoW to monitor.		The Applicant will include monitoring of dust build up on vegetation within the SAC boundary. The provision of an ECoW will be secured in the final Construction Environmental Management Plan and a Dust Management Plan will form part of the final Construction Environmental Management Plan (an **Outline Construction Environmental Management Plan** (WHX001-FLO-CON-ENV-PLN-0010) is provided as part of the Further Environmental Information). An **Outline Project Environmental Management & Monitoring Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003) is also provided as part of the Further Environmental Information submission.
	2.18	6.4.2.3.6 Air Quality 256	The movement of traffic during the construction process to deliver equipment, materials, and personnel, has the potential to result in increased emissions of nitrogen oxides (NOx), ammonia (NH3), nutrient nitrogen (N-dep) and acid deposition. These emissions could extend into the SAC boundary and result in changes in growth and therefore floral community of habitats that are a qualifying feature of the SAC.	Air quality impacts could be monitored on site to ensure critical thresholds are not exceeded. Dynamic Dunescapes currently have air quality/nitrates monitoring taking place and so will have established baseline against which any impacts arising from construction could be monitored to avoid adverse impacts to nitrate sensitive SAC features – lower plants (lichens & bryophytes in particular). In the eventuality that emissions levels exceed predicted thresholds, mitigation measures which can be successfully implemented at this location should be included in the RIAA.		The Applicant is open to monitoring air quality and nitrates levels and will engage with Natural England on this matter. However, no air quality impacts to designated sites have been identified within the ES. An **Outline Project Environmental Management & Monitoring Plan (PEMMP)** (WHX001-FLO-CON-ENV-PLN-0003) is provided as part of the Further Environmental Information submission, which includes an overview of the Project's in-principle monitoring proposals.
	2.19	6.4.2.4 Disturbance to Habitats during Operation &	It is stated that: Emergency works would be unlikely to occur and would likely arise at the transition points (the	This cannot be known with any certainty without supporting evidence. Experience of other offshore wind farms tells us that		The Onshore Export Cables will be contained within ducting. This allows the cables to be accessed (and replaced if needed) from link boxes meaning that no further ground works would be needed once the cabling infrastructure is installed.

Planning Application	NE Ref	Planning Application Ref	Comment	Recommendation	Risk (RAG)	Applicant's Response
		Maintenance 257	transition point east beyond the Golf Course, the TJB within Saunton Sands Car Park), the transition point offshore where the cable connection occurs before the cable enters the ducting and under the beach. It is expected that the latter would occur within the subtidal zone and thus outside the site, with no expected disturbance to habitats within the SAC.	potential emergency repairs/maintenance could be required anywhere along the cable route corridor and at any stage of the lifespan. The potential for such impacts should therefore be assessed as part of the operational impacts associated with the development. Potential for impacts (and conclusion of no AEoSI) resulting from emergency works cannot be ruled out in the absence of any evidence to support this position.		Only cable ducting, not link boxes, would be installed (up to 13m) below Braunton Burrows SAC. Access to cables within this ducting would be from the link boxes located outside the SAC. If cable repairs were required, no direct disturbance would therefore take place within the SAC. Therefore there is no pathway for impacts (and AEoSI). An **Outline Offshore Operation and Maintenance Plan** (WHX001-FLO-CON-ENV-PLN-0008) is provided as part of the Further Environmental Information. This plan is limited to information currently known at this early stage of project design. However, the Applicant is committed to providing updated assessments of operation and maintenance activities (in future versions of the Outline Offshore Operation and Maintenance Plan) as more information becomes available throughout the detailed design phase. Broadly, offshore operation and maintenance activities fall into two main categories: • planned maintenance (i.e., function tests, inspections, cleaning, repairs, surveys, and scour protection replenishment) • unplanned maintenance (i.e., cable reburial and repairs, repairs and/or replacement of components of WTGs, substructures, mooring lines and cabling ancillary equipment). The majority of the maintenance work will take place above the water line. Whilst maintenance and repairs may require vessels such as cable-lay vessels, anchor-handlers, tugs and heavy-lift vessels, the frequency/level of these visits will be less than the worst case level of vessel activity assessed during the construction phase, so these have already been assessed by proxy. Likewise, where works are below the water line or interacting with the seabed (i.e., cable reburial, repairs or scour protection replenishment) these will all be within the worst-case envelopes assessed for construction.
	2.20	6.4.3 Potential effects from the Project In-Combination with other Plans & Projects 270	It is stated that: Given that the Project will not result in disturbance to habitat or qualifying features within the SAC, and that the projects listed in Table 6.3 are beyond the 10km Zone of Influence, additive impacts across the region could not occur.	Projects listed Table 6.3 for consideration of in-combination effects are confined to other offshore wind projects. What about development projects occurring within 10km of the landward SAC boundary - have these been considered as part of the in-combination assessment of impacts?		As stated in **Section 6.4.3.1**, Given that the Project will not result in disturbance or loss to habitat or qualifying features within the SAC. There is no potential for in-combination effects or associated assessment.
	2.21	6.4.3.1 Loss of Habitats In-combination with Other Projects 269	Natural England notes the RIA conclusion that, there is no potential for the Project alone or in-combination with other projects to have an AEoI of the Braunton Burrows SAC as a result of habitat loss.	We advise that further evidence is required to support the RIAA conclusions with any certainty.		As stated in previous comments, additional survey data collection and assessment has been undertaken which confirm the conclusions of the RIAA in relation to Braunton Burrows SAC. This includes the following documents: • **Annex 2: Hydrogeological Technical Note of this document** • **Appendix G: Hydrogeological Risk Assessment**

Planning Application	NE Ref	Planning Application Ref	Comment	Recommendation	Risk (RAG)	Applicant's Response
		6.4.3.2 Disturbance to Habitats In-combination with Other Projects 270	No potential for the Project alone or in-combination with other projects to have an AEoI of the Braunton Burrows SAC from direct or indirect disturbance. However, NE advises that Potential for AEOSI /residual effects as a result of direct habitat loss or indirect habitat disturbance has not been ruled out satisfactorily due to lack of evidence presented around project alone impacts as already described. Therefore, it cannot be concluded that there is no in combination effect with other projects.			• **Appendix L: Petalwort Desk Based Assessment and Survey of this ES Addendum.** • **Appendix S: Hydrofracture Report** • **Onshore Ground Investigation Interpretative Report** (WHX001-FLO-CON-ENV-RPT-0001).
	2.22		Impacts covered in supporting ES chapters have been scoped out of this report without justification	Natural England advises that further justification is required to support this position.		The Applicant requests Natural England be more specific of which impacts in what chapters they are referring to.

11. References

Barry, J., Kennedy, R. J., Rosell, R., Roche, W. K. (2020) Atlantic salmon smolts in the Irish Sea: First evidence of a northerly migration trajectory. Fish Manag Ecol. 27: 517–522. Accessed at: https://doi.org/10.1111/fme.12433

Carbon Trust (2015) Cable Burial Risk Assessment Methodology Guidance. for the Preparation of Cable Burial Depth of Lowering Specification, CTC835. Accessed at: https://ctprodstorageaccountp.blob.core.windows.net/prod-drupal-files/documents/resource/public/cable-burial-risk-assessment-guidance.pdf

COMPASS (2022). Mapping migration pathways and habitat use by salmonids. Accessed at: https://storymaps.arcgis.com/stories/36821417d6b549d4a8f5639ad4181bbf

Green, A., Honkanen, H. M., Ramsden, P., Shields, B., del Villar-Guerra, D., Fletcher, M., Walton, S., Kennedy, R., Rosell, R., O'Maoiléidigh, N., Barry, J., Roche, W., Whoriskey, F., Klimley, P., & Adams, C. E. (2022). Evidence of long-distance coastal sea migration of Atlantic salmon, *Salmo salar*, smolts from northwest England (River Derwent). Animal Biotelemetry, 10(1), 3. Accessed at: https://doi.org/10.1186/s40317-022-00274-2.

Lilly, J., Honkanen, H. H., Rodger, J. R., del Villar, D., Boylan, P., Green, A., Pereiro, D., Wilkie, L., Kennedy, R., Barkley, A., Rosell, R., Ó. Maoiléidigh, N., O'Neill, R., Waters, C., Cotter, D., Bailey, D., Roche, W., McGill, R., Barry, J., ... Adams, C. E. (2023). Migration patterns and navigation cues of Atlantic salmon post-smolts migrating from 12 rivers through the coastal zones around the Irish Sea. Journal of Fish Biology, n/a(n/a). Accessed at: https://doi.org/10.1111/jfb.15591

Natural England (2023) Advice on Operations for Bideford to Foreland Point MCZ. Accessed at: https://designatedsites.naturalengland.org.uk

Natural England & NRW (2024). NE and NRW interim advice regarding demographic rates, EIA scale mortality rates and reference populations for use in offshore wind impact assessments.

NIRAS Group (UK) Ltd (2022). OW Round 4 Plan RIAA. Accessed at: https://www.marinedataexchange.co.uk/details/TCE-3582/2022-the-crown-estate-2020-offshore-wind-round-4-plan-habitats-regulations-assessment/packages/10650?directory=%2F&type=Report#downloads

Parker, J., Fawcett, A., Banks, A., Rowson, T., Allen, S., Rowell, H., Harwood, A., Ludgate, C., Humphrey, O., Axelsson, M., Baker, A. and Copley, V. (2022c), 'Offshore Wind Marine Environmental Assessments: Best Practice Advice for Evidence and Data Standards. Phase III: Expectations for data analysis and presentation at examination for offshore wind applications', Natural England. Version 1.2. 140 pp.

Pethick, J (2007). The Taw-Torridge Estuaries: Geomorphology and Management. Report to Taw-Torridge Estuary Officers Group, February 2007.

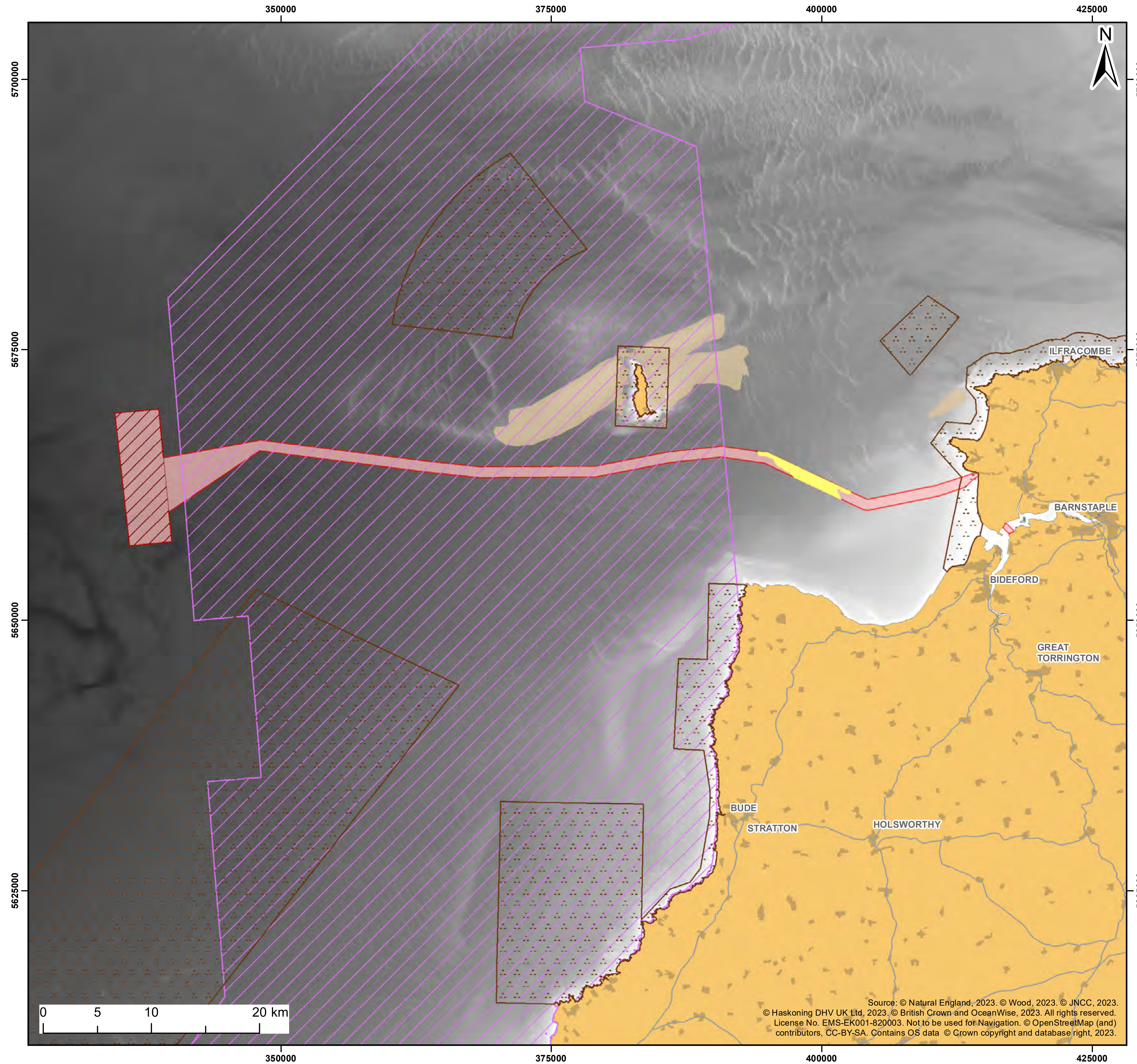
Popper, A. N., Hawkins, A. D., Fay, R. R., Mann, D. A., Bartol, S., Carlson, T. J., Coombs, S., Ellison, W. T., Gentry, R. L., Halvorsen, M. B., Løkkeborg, S., Rogers, P. H., Southall, B. L., Zeddies, D. G., & Tavolga, W. N. (2014). ASA S3/SC1.4 TR-2014 Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI. Springer International Publishing. Accessed at: https://doi.org/10.1007/978-3-319-06659-2

The Crown Estate (2024) Round 5 Plan HRA, Appropriate Assessment. Accessed at: https://www.marinedataexchange.co.uk/details/TCE-3960/2024-the-crown-estate-habitats-regulations-assessment-hra-round-5-floating-offshore-wind/packages/11635?directory=%2FAppropriate%20Assessment%2F&type=Report#downloads

Trinder, M., O'Brien, S.H. and Deimel, J., (2024). A new method for quantifying redistribution of seabirds within operational offshore wind farms finds no evidence of within-wind farm displacement. Frontiers in Marine Science, 11, p.1235061.

Vattenfall (2021) Norfolk Boreas Offshore Wind Farm Environmental Statement The Applicant's Response to the Request for Additional Information Appendix 2 Evidence of sand wave recovery from Race Bank array cable installation. https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010087/EN010087-002841-The%20Applicant%27s%20Response%20to%20Request%20for%20Further%20Information.pdf

Annex 1: Bathymetry and seabed features



Legend:

- Windfarm Site
- Offshore Development Area
- Special Areas of Conservation (SAC)
- Marine Conservation Zones (MCZ)
- Sand Wave Megaripple Feature
- Annex 1 Sandbanks

Bathymetry

Height (m)

High : 0

Low : -100

Client:	Project:
Offshore Wind Ltd.	White Cross Offshore Windfarm

Title: Bathymetry and Key Features

Figure: 1 | Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0756

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	22/11/2023	AB	DB	A3	1:350,000

Co-ordinate system: WGS 1984 UTM Zone 30N

WHITE CROSS

Royal HaskoningDHV Enhancing Society Together

Annex 2: Hydrogeology Note

1 Introduction

17. This is an expanded note providing confirmation regarding the hydrogeology and impacts on it and successive receptors across the Onshore Development Area, raised in the **Onshore ES** consultation. In order to provide further reasoning for the conclusions of no significant impact on the features and associated indirect and secondary impacts to other features additional surveys and studies have been undertaken and these have been considered in this note.

18. Please note the focus has been specifically on the onshore export cable corridor north of the Taw Estuary due to the presence of designated sites in that area.

2 Baseline

19. The baseline used in the assessment of the **Onshore ES** and summarised here was informed by BGS historic borehole (BH) data, site visits, and data from the Braunton Marshes Internal Drainage Board (IDB), as well as consultation with Braunton Marshes IDB and landowners / land agents. Additional data was also obtained in relation to site designations, and also from available plans (e.g. River Basin Management Plan).

20. Since the submission of the Onshore Application site investigation work has been completed across the onshore export cable corridor which provides additional focussed data considered in this note. In particular, the baseline is also now informed by the Geotechnical Investigation (GI) and Surveys carried out in 2023 and 2024, which is detailed in **ES Addendum Appendix T Annex 1: Onshore Ground Investigation Factual Report**) and includes data on ground water levels from monitoring wells installed in BH. The interpretative report presenting an analysis and conclusions of the survey is presented in **ES Addendum Appendix T: Onshore Geotechnical Interpretative Report**.

21. The soils across the Onshore Development Area vary. At the south-east near MoD Chivenor they are dark silty sands with depths of c.3.5m or more until clay or rock. Moving west toward the Braunton Marshes and Braunton Burrows the depth of soil increases, and becomes increasingly sandy below the surface layers. The depth of sand increases to a range in excess of 7m across the Burrows. These soils are evidenced through the examination of BGS borehole data. Essentially the hydrogeology of the area is one of extremely porous soils which are unconfined in terms of flow. Across the Braunton Marshes soils are extremely waterlogged due to the water management regime which intentionally retains high water levels across the area. To the north, groundwater levels are lower as there is no artificial maintenance of surface water levels across the agricultural land.

22. The new GI data (see **ES Addendum Appendix T Annex 1**) confirms the general information used in the **Onshore ES**, albeit providing far more localised information including detail on groundwater levels measured at the time of the investigation. The key findings are that where Blown Sand and Tidal Flat Deposits are present across the Onshore Development Area, they are identified as having good water permeability. Where Pilton Mudstone is present this is identified as having very low permeability.

23. The survey also confirms highly porous soils exceeding depths below 2m below ground level (bgl) and greater in many locations. Furthermore, the BH identified groundwater depths ranging from 1.9m bgl to 4m bgl north of Sandy Lane Car Park. Either side of Sandy Lane Car Park (adjacent to Greenaways and Freshmarsh Braunton SSSI and the Braunton Burrows SSSI and SAC) the water depth was recorded as varying from 1.9m bgl to 3.2m bgl. Trial pits either side indicated water depths around of 1.5m to 1.6m. Though BH09 daily water depth readings indicated a depth at 0.15m bgl for most readings. Moving south through Braunton Marsh the groundwater levels drop from 1.6m bgl to around 0.8m bgl to 1.2m bgl. Often this is dependent on the proximity to the surface water drains (e.g. the Boundary Drain).

24. In summary, as inferred from the historic BGS data and other information available at submission, the GI work has confirmed the porous and unconfined nature of the soils. Our interpretation of drainage and hydrogeology on the anecdotal information and information gleaned from other sources pre-submission indicated high groundwater levels south of Sandy Lane Car Park, and given the nature of the soils and topography we anticipated lower groundwater levels north of the Car Park. These interpretations have been confirmed by the recently undertaken GI work.

3 Assessment

25. The assessment and level of consideration of impacts on hydrogeology and any subsequent indirect and secondary impacts on other features (e.g. ecological etc) in the **Onshore ES** was driven by the baseline as determined at the time, and the nature of the sources and pathways of impacts that could arise as a result of the construction and operation of the Project.

26. Given the comments received from Natural England and the importance of surrounding habitats and communities in the wider area, a Hydrogeological Risk Assessment (HyRA) was carried out. This is presented in **Appendix G** of the **ES Addendum**. The HyRA provides relevant details on the geology, soils, hydrogeology and hydrology relevant to the key trenchless crossings and areas of dewatering. Alongside this, a Petalwort desk-based assessment and survey was carried out to determine whether this rare species is present in the Onshore

Development Areas and thus if any areas of influence on groundwater from trenchless crossings and areas of dewatering would extend to these areas. The petalwort desk-based assessment and survey and locations are presented in **Appendix L: Petalwort Desk-Based Assessment and Survey Report** of the **ES Addendum**.

27. The HyRA created a Conceptual Site Model and utilised modelling on that basis to quantify the extents and nature of changes to groundwater. The following paragraphs summarise the conclusions in relation to those findings, specifically with regard to the designated sites and features present in the surrounding area.

28. Operational Phase

29. Our initial considerations started with the operational phase as this is the phase by which long-term or permanent effects would arise, which may be harder to mitigate for than those during construction.

30. The effect on receptors is a function of the infrastructure being installed for the Project. The infrastructure proposed from Saunton Sands Car Park to the Taw Estuary via Braunton Marshes comprises up to 6 HDPE ducts containing the cable. The ducts are up to 250mm in diameter. The ducts would be installed at a depth of around 1.2m bgl.

31. There is a difference in respect to the trenchless route under the Saunton Golf Course. Firstly, the route follows the topographic trend (sloping east to west), essentially running parallel. The ducting is larger than the other ducting being c. 0.6m in diameter, of which there would be two separated by a short distance. However, the depth of the ducting due to trenchless would be in the region of 10m bgl, within the siltstone rockhead (below and not linked to the aquifer above). This coupled with our understanding of the groundwater indicates that the ducting would be significantly below the groundwater level. In terms of hydrogeology, as with any of the ducting where the ducting is below groundwater level or occasionally below, the presence of the ducting would only produce a partial obstruction. A complete obstruction would result in potentially significant impacts to hydrogeology the scale of which would be dependent on the length and depth of the obstruction relative to the groundwater body. However, the project would only result in a partial obstruction. A partial obstruction would result in an uprising of the water table along the side of the ducting (the upflow side) and a symmetrical lowering of the water table on the other side (the downflow side). Across the Golf Course therefore (and within the Braunton Burrow SSSI and SAC there) the parallel partial obstruction at a significant depth below the groundwater level would be negligible. The obstruction is only partial at a significant depth and when it returns to the surface, given it is negligible due in scale (cross-section). Any change in level

on the upflow side would be significantly less than the height of the ducting, and similar very small on the downflow side. This would be further reduced as it is perpendicular to the flow.

32. Where the ducting crosses Sandy Lane, to the south of the Greenaways and Freshwater Marsh SSSI and north of Sandy Lane Car Park and the route is perpendicular to the expected groundwater flow due to the topography and the surface water drains (in the south).

33. North of Sandy Lane Car Park, the groundwater depth appears to be deeper than 1.5m and greater, and the soil is an unconfined water table. Given this the presence of the ductwork would not influence hydrogeological function across that area in any way. Whilst there could be higher groundwater levels in winter the response below regarding partial obstruction is considered to be relevant. However, north of Sandy Lane Car Park (and including adjacent to the Braunton Burrows SSSI and SAC) any potential seasonal increase in groundwater levels to anywhere close to the level of the ducting, is expected to be temporary and outside of the average.

34. At the section further south of the Sandy Lane Car Park through Braunton Marshes the depth of groundwater is often above that of ducting, ranging from at least 0.8m bgl to 1.2m bgl. Again however, the ducting is generally parallel to groundwater flow therefore limited if any upflow or downflow differences would occur, and any scale of change in upflow and downflow would be very localised (i.e. close to the ducting) and small in scale. When considering the Greenaways and Freshwater Marsh Braunton SSSI, the ducting is closest in areas where groundwater levels appear to be lower than the ducting (at an average of 1.5m bgl or more). The direction of flow at the location where the ducting occurs in relation to the Greenaways and Freshwater Marsh Braunton SSSI is 'downstream'. Given a negligible localised scale of change to upflow and downflow there is no effect expected on hydrogeology within the Greenaways and Freshwater Marsh Braunton SSSI or into the Braunton Burrows SSSI and SAC boundary. It is noted that at the closest point to both SSSIs, where the route is installed beneath Sandy Lane the construction technique would be trenchless and deeper than a trenched route. The deeper the ducting the less potential for influence on groundwater there is, particularly if it is below the groundwater level. It is further noted that no petalwort were identified within the Onshore Development Area and thus any localised area of influence of the ducting and cabling.

35. Across the Braunton Marshes, whilst this is the location where the groundwater levels are above the ductingr, this arises due to proximity to the nearby surface water drains which keeps water levels high. The perpendicular location to groundwater flow, only partial obstruction, and limited upflow and downflow

changes which are localised would not be expected to lead to any long-term changes to hydrogeology that would be noticeable above the existing conditions.

36. Construction Phase

37. In relation to the construction phase, the works would entail trenchless sections at the Golf Course and across key infrastructure (roads and main surface watercourses). These would extend below the groundwater level by some distance and would entail some form of drilling techniques which would not impact on groundwater flow, creating as it is a sealed duct route. In addition, any dewatering required at the pits would be limited to a very localised and temporary cone of depression. Therefore, impacts would only occur as identified for operation (after the installation).

38. For trenched approaches, the groundwater is significantly below ground level north of Sandy Car Park and therefore is not expected to be disturbed or reached during construction (excavation of trench, placement of ducting, and infilling of trench). In addition, this free draining area to the north of Sandy Lane Car Park to the Golf Course has occasional field drains that maintain efficient field drainage.

39. South-east of Sandy Lane Car Park the trenched sections are expected to commence approximately 40m outside the boundary of both the Greenaways and Freshwater Marsh Braunton SSSI and the Braunton Burrows SSSI and SAC. The trenches would be constructed in 500m to 1000m sections (and thus moving away from the SSSIs), and where groundwater levels are higher than 1.2m, above ground level dewatering would be required. The dewatering would entail pumping out inflowing water as they are excavating and laying the ducting. Then it would cease whilst they are infilling the excavated material. The dewatering would cause a temporary and localised draw down of the groundwater level (a 'depression cone'). The quantity and extent is detailed in **Appendix G: Hydrogeological Risk Assessment** of the **ES Addendum**. Given the short duration of the work (approximately 10 days maximum), any drawdown would be extremely short-term in nature and is not significant (being several centimetres in range of depression).

40. In the case of the Greenaways and Freshwater Marsh Braunton SSSI the movement would be away from the site. At Braunton Burrows SSSI and SAC, there would be little or no expected change. This is further expected when the cable route crosses east of the intervening Boundary Drain between any works and the SAC. The localised draw down is not expected to result in noticeable change in the hydrogeology of the Greenaways and Freshwater Marsh Braunton SSSI due to the temporary nature and the distance from the nearest point, the variable nature of the groundwater changes in the area, and their influence by

the existing water level management structures and operations, and the insignificant change modelled. It is noted that there are no habitats suitable for petalwort in these areas (see **Appendix L: Petalwort Desk-Based Assessment and Survey Report** of the **ES Addendum**) and figures present in **Annex 3 Notable Plant Species (including Petalwort) Locations**.

41. One potential activity on the surface water drains is where trenching will occur through the drain without trenchless techniques. The disruption to drainage (and thus hydrogeology) would be immeasurable as continue passage of water would be provided through diversion and pumping or other measures detailed in the **Onshore ES**. Where trenching through drains is intended at this stage, they will be subject to detailed design and any unidentified disruption identified at that stage. Where there is a potential for a significant unidentified impact, trenchless techniques could be used.

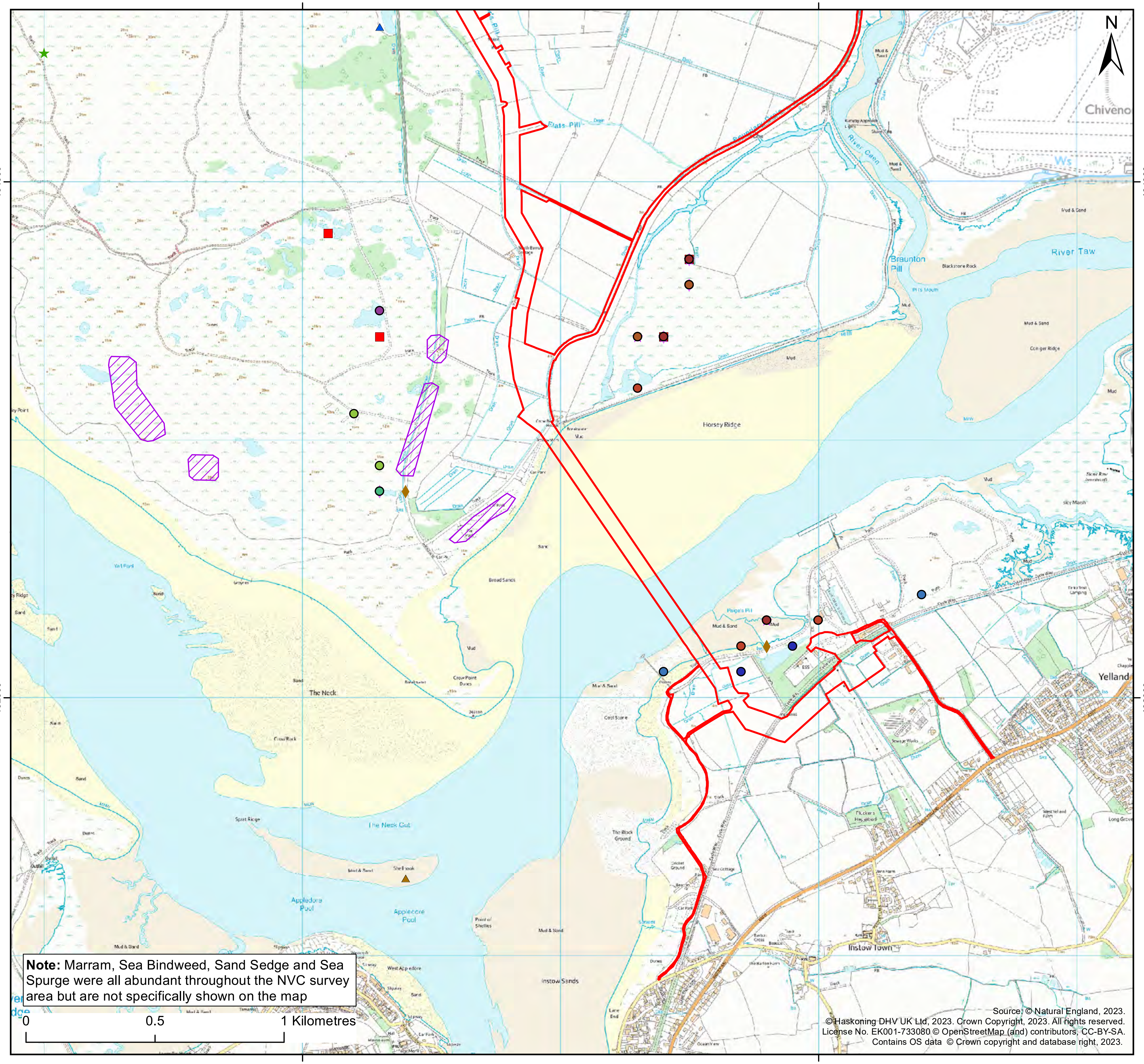
4 Summary

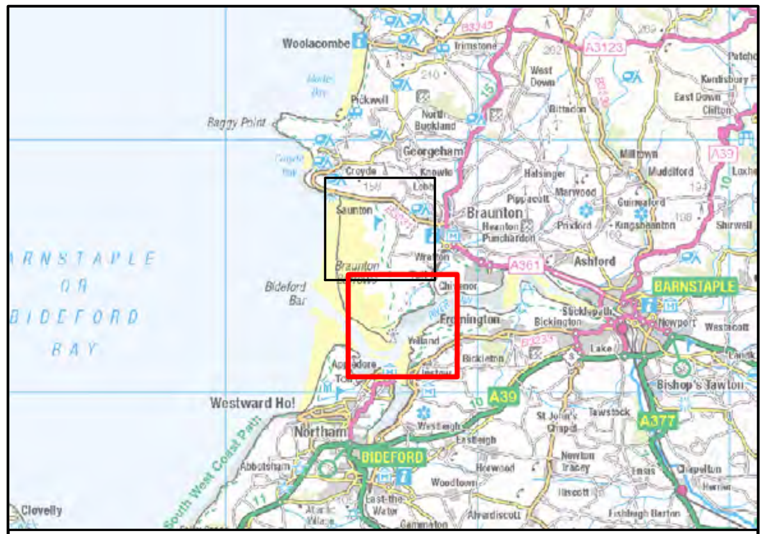
42. The baseline environment as described in the **Onshore ES** and **Appendix 6.A: Habitats Regulations Assessment: Report to Inform Appropriate Assessment** (RIAA) of the **Onshore ES** are confirmed as correct in the recent GI work and the HyRA, and the inferences drawn from the information available at the time. The additional GI information does not change the conclusions of our assessment rather it provides further evidence justifying the inferred baseline and our assessment conclusions.

43. In terms of the assessment, the HyRA and our expanded description of the nature of the effects and justification for our conclusions in the **Onshore ES** and **RIAA** that there would be no measurable or temporary and negligible effects on the hydrogeology of the area (and therefore no subsequent indirect or secondary effects on ecological receptors particular the SSSIs and SACs, or petalwort, in the area). The assessment previously was guided by the principles of understanding of the porous and unconfined nature of the soils and groundwater, the surface water drainage and its management and influence on groundwater levels and flow, and our understanding of the nature of the activities and infrastructure that would occur during the construction and operation of the Project.

44. In expanding on the reasoning and description at a more localised level, this provides further justification for concluding no changes to hydrogeology except on very localised scales which would not be 'experienced' within the SSSIs and SAC, except a potentially temporary and negligible localised drawdown at the works very close to the Greenaways and Freshwater Marsh Braunton SSSI.

Annex 3: Notable Plant Species (including Petalwort) Locations





Legend:

- Onshore Development Area
- Petalwort

Protected and Notable Plant Species

- Annual Sea-blite
- Autumn Lady's-Tresses
- Bird's-Foot Clover
- Brookweed
- Common Saltmarsh-grass
- Corky-Fruited Water-Dropwort
- Distant Sedge
- Grey Club-rush
- Long-bracted Sedge
- Marsh Helleborine
- Parsley Water-Dropwort
- Parsley Water-dropwort
- Portland Spurge
- Pyramidal Orchid
- Round-Headed Club-Rush
- Round-Leaved Crowfoot
- Sea Aster
- Sea Clover
- Sea Couch
- Sea-purslane
- Strawberry Clover
- Water Germander
- Wild Celery
- Yellow Bartsia
- Yellow-wort

Client:	Project:
Offshore Wind Ltd.	White Cross Offshore Windfarm

Title:

Notable Plant Species (Including Petalwort) Locations

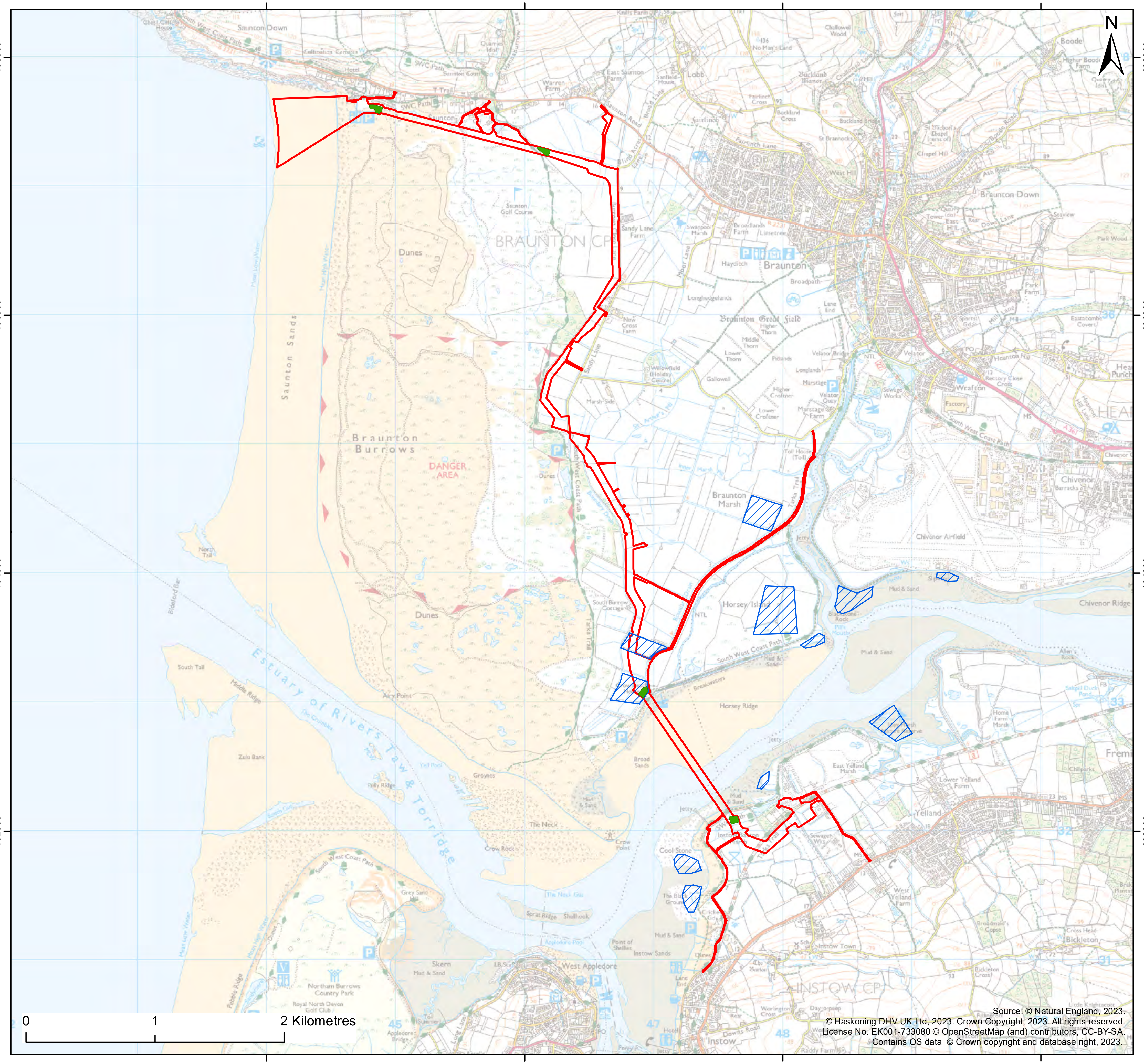
Figure:	3a	Drawing No:	PC2978-RHD-ZZ-XX-DR-Z-0758		
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	22/11/2023	AB	CB	A3	1:15,000

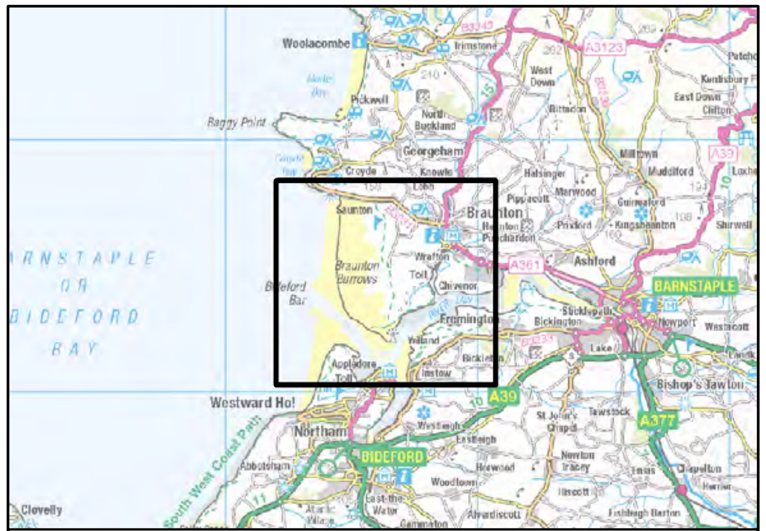
Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
Enhancing Society Together

Annex 4: High Tide Roost Locations





Legend:

- Onshore Development Area
- High Tide Roost Area
- HDD Compounds

Client:	Project:
Offshore Wind Ltd.	White Cross Offshore Windfarm

Title:

Onshore Development Area and High Tide Roosts

Figure:	2	Drawing No:	PC2978-RHD-ZZ-XX-DR-Z-0757

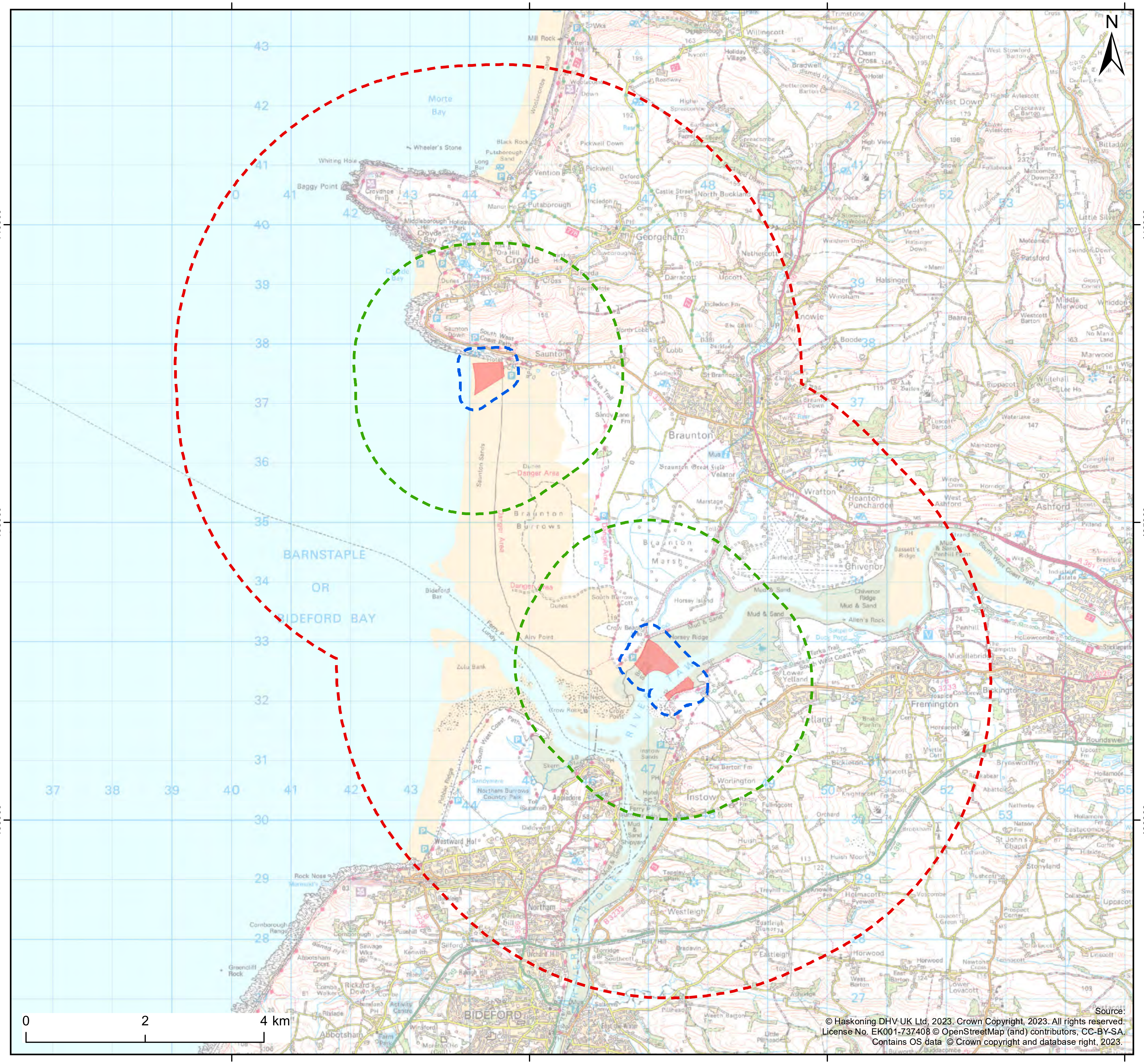
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	22/11/2023	AB	CB	A3	1:30,000

Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
Enhancing Society Together

Annex 5: Chapter 20 Figures Omitted in Error from Offshore ES



Legend:

- Onshore Corridor Within Intertidal Area
- Bat Activity / Bat Roost / Breeding Bird Survey Areas
- Protected and notable species (excluding great crested newts, birds and bats); Statutory and non-statutory designated sites; UK Habitats of Principal Importance (UKHPI) and Forestry habitats; Statutory sites and associated impact risk zones Survey Areas
- Great Crested Newt Survey Area

Client: Offshore Wind Ltd.

Project: White Cross Offshore Windfarm

Title: Onshore Ecology and Ornithology Study Area

Figure: 20.1

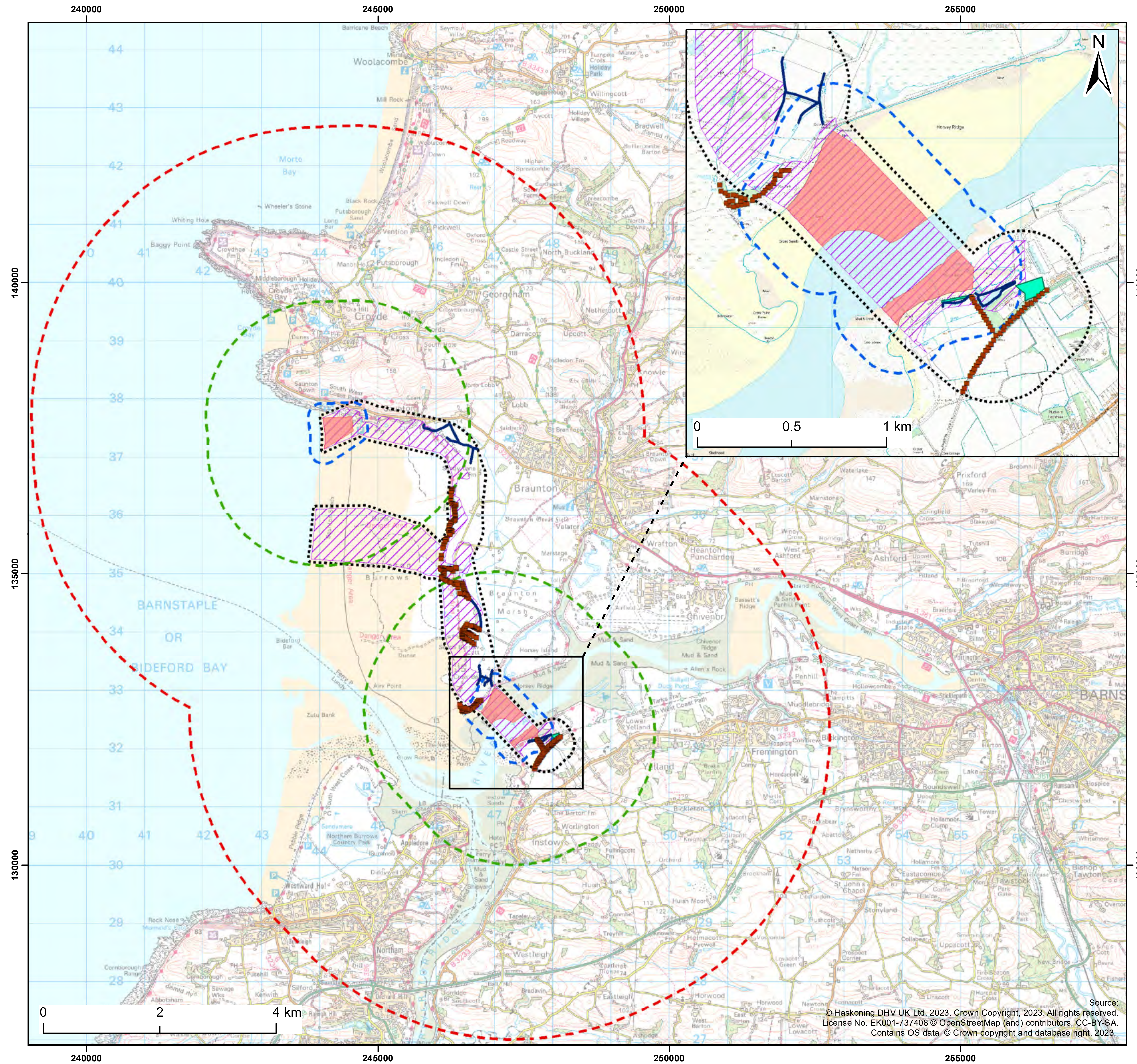
Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0485

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	02/03/2023	AB	PT	A3	1:65,000
P01	17/01/2023	ND	PT	A3	1:65,000

Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
Enhancing Society Together



Legend:

- Onshore Corridor Within Intertidal Area
- Extended Phase 1 Habitat Survey Area
- Bat Activity / Bat Roost / Breeding Bird Survey Areas
- Protected and notable species (excluding great crested newts, birds and bats); Statutory and non-statutory designated sites; UK Habitats of Principal Importance (UKHPI) and Forestry habitats; Statutory sites and associated impact risk zones Survey Areas
- Great Crested Newt Survey Area
- Terrestrial and Aquatic Invertebrates / Terrestrial Botanical Survey Area
- Reptile Survey Area
- Water Vole and Otter Survey Area
- Doormouse Survey Area

Client:	Project:
Offshore Wind Ltd.	White Cross Offshore Windfarm

Title:

Onshore Ecology Survey Areas

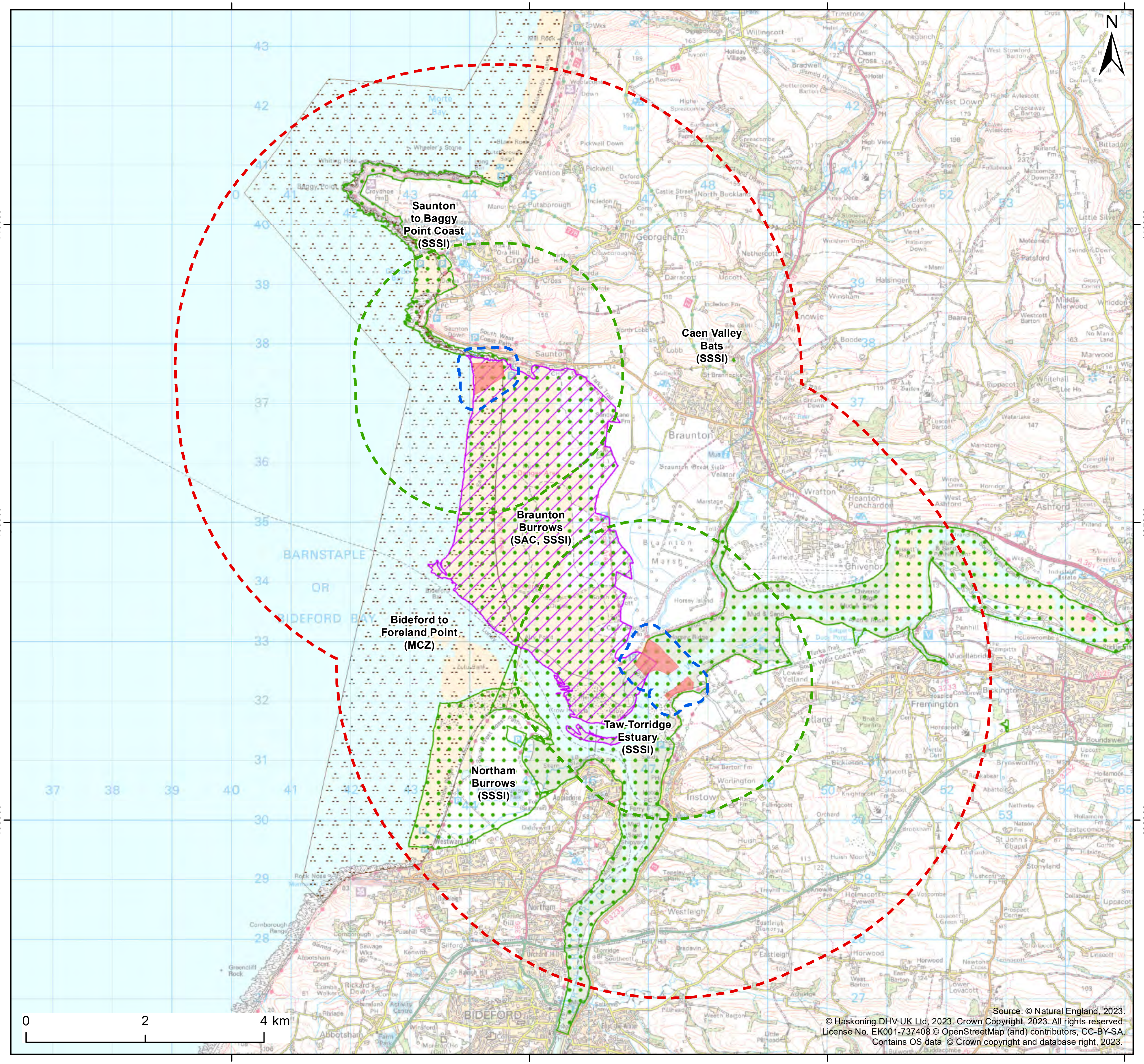
Figure:	Drawing No:
20.2	PC2978-RHD-ZZ-XX-DR-Z-0561

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	03/03/2023	AB	PT	A3	1:65,000

Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
Enhancing Society Together



Legend:

- Onshore Corridor Within Intertidal Area
- Bat Activity / Bat Roost / Breeding Bird Survey Areas
- Protected and notable species (excluding great crested newts, birds and bats); Statutory and non-statutory designated sites; UK Habitats of Principal Importance (UKHPI) and Forestry habitats; Statutory sites and associated impact risk zones Survey Areas
- Great Crested Newt Survey Area

Designations

- Special Areas of Conservation (SAC)
- Sites of Special Scientific Interest (SSSI)
- Marine Conservation Zones (MCZ)

Client:	Project:
Offshore Wind Ltd.	White Cross Offshore Windfarm

Title:

Designated Nature Conservation Sites

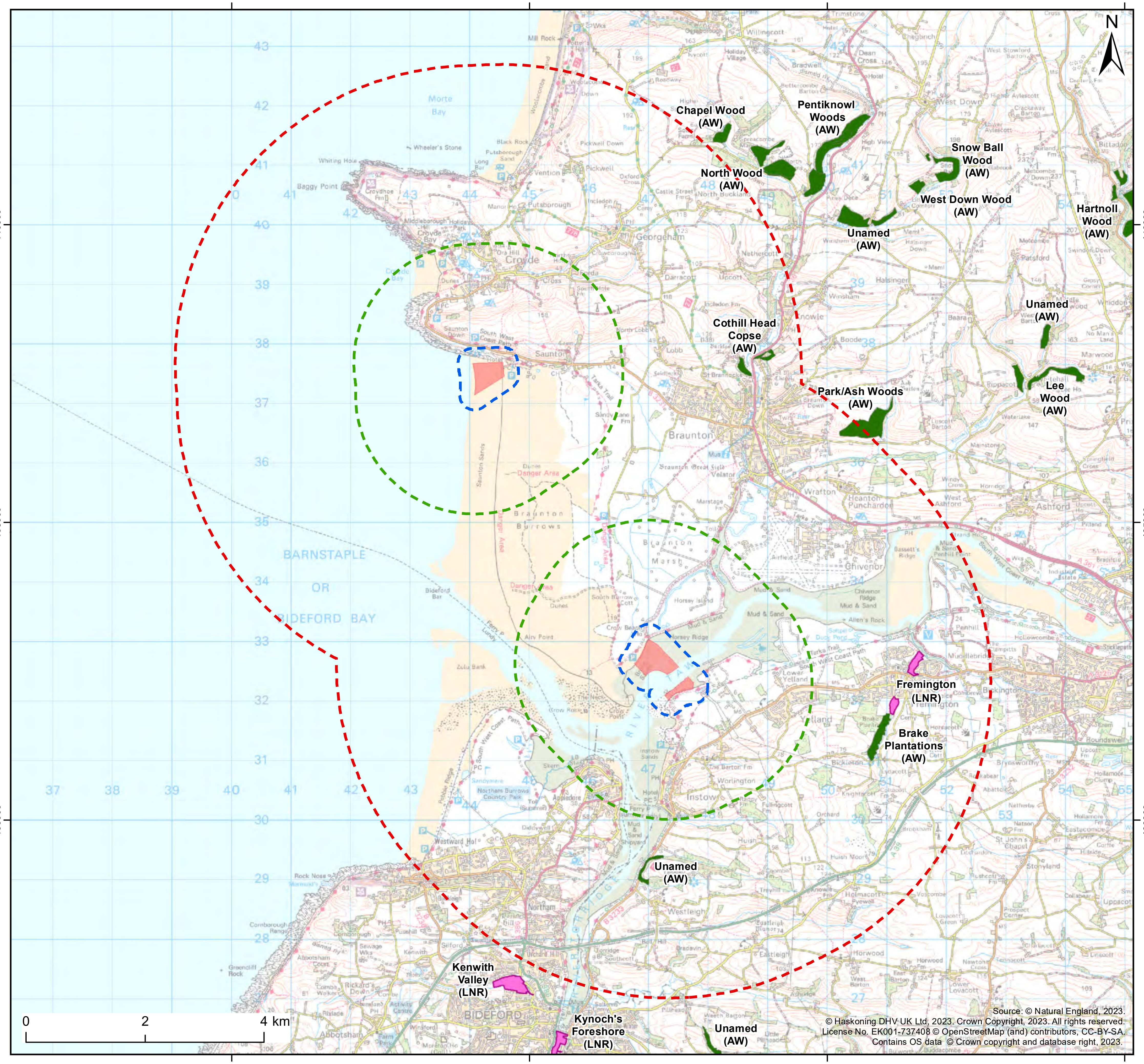
Figure: 20.3 | Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0486

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	02/03/2023	AB	PT	A3	1:65,000
P01	18/01/2023	ND	PT	A3	1:65,000

Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
Enhancing Society Together



Legend:

- Onshore Corridor Within Intertidal Area
- Bat Activity / Bat Roost / Breeding Bird Survey Areas
- Protected and notable species (excluding great crested newts, birds and bats); Statutory and non-statutory designated sites; UK Habitats of Principal Importance (UKHPI) and Forestry habitats; Statutory sites and associated impact risk zones Survey Areas
- Great Crested Newt Survey Area

Designations

- Local Nature Reserves (LNR)
- Ancient Woodland

Client:	Project:
Offshore Wind Ltd.	White Cross Offshore Windfarm

Title:

Local Nature Conservation Sites

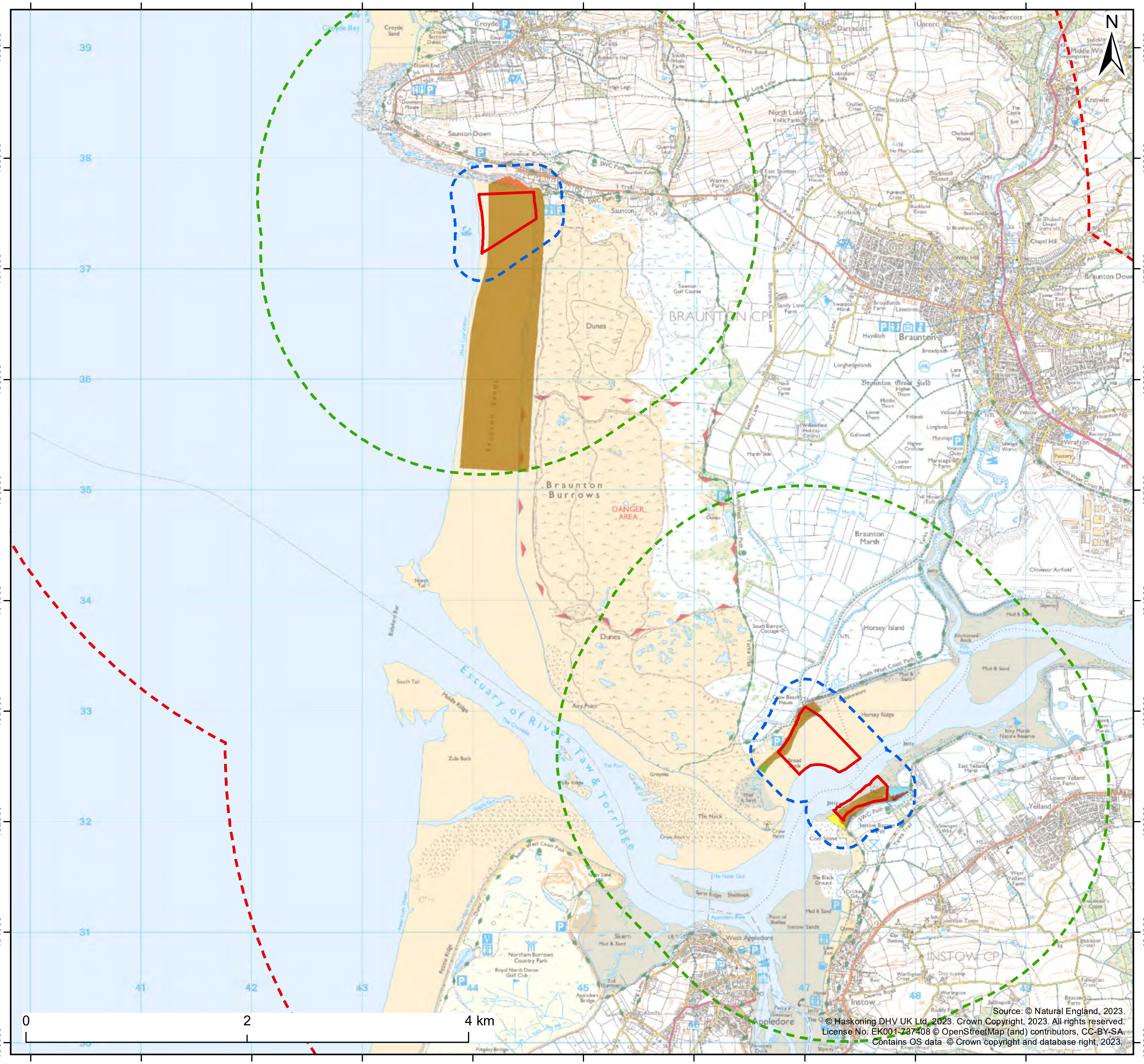
Figure: 20.4 Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0487

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	02/03/2023	AB	PT	A3	1:65,000
P01	18/01/2023	ND	PT	A3	1:65,000

Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
Enhancing Society Together



Legend:

- Onshore Corridor Within Intertidal Area
- Bat Activity / Bat Roost / Breeding Bird Survey Areas
- Protected and notable species (excluding great crested newts, birds and bats); Statutory and non-statutory designated sites; UK Habitats of Principal Importance (UKHPI) and Forestry habitats; Statutory sites and associated impact risk zones Survey Areas
- Great Crested Newt Survey Area

Habitat - EUNIS habitat classification

- Coastal vegetated shingle
- High energy littoral rock
- Intertidal mudflats and sandflats (H1140)
- Littoral mud
- Low energy littoral rock
- Saltmarsh: Cord grass swards
- Saltmarsh: Cord grass with glass wort patches
- Saltmarsh: scattered cord grass swards (H1320)

Client:	Project:
Offshore Wind Ltd.	White Cross Offshore Windfarm

Title:

Habitat Map

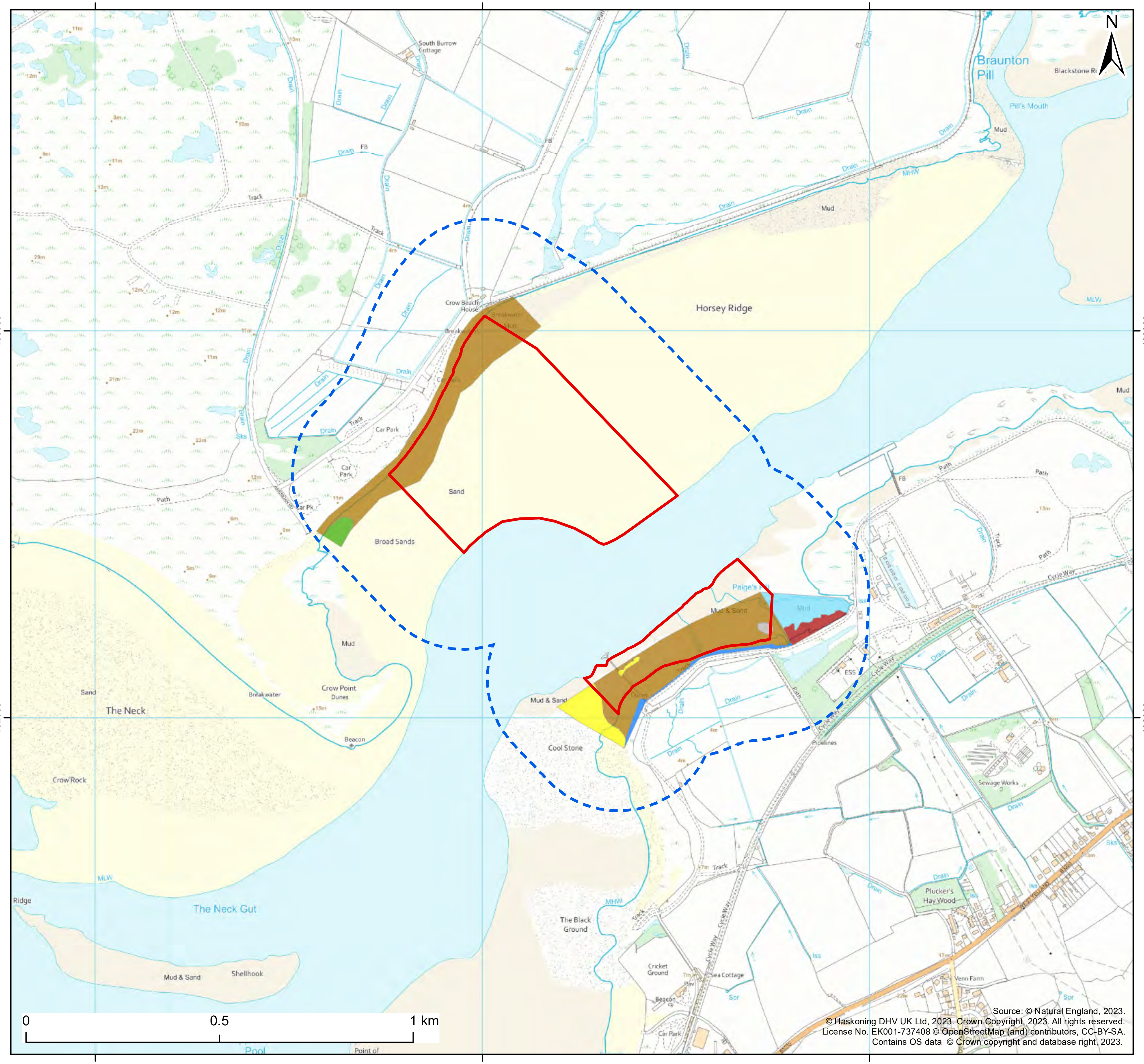
Figure: 20.5 Page a	Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0488

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	02/03/2023	AB	PT	A3	1:35,000
P01	18/01/2023	ND	PT	A3	1:35,000

Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
Enhancing Society Together



Legend:

- Onshore Corridor Within Intertidal Area
- Bat Activity / Bat Roost / Breeding Bird Survey Areas
- Protected and notable species (excluding great crested newts, birds and bats); Statutory and non-statutory designated sites; UK Habitats of Principal Importance (UKHPI) and Forestry habitats; Statutory sites and associated impact risk zones Survey Areas
- Great Crested Newt Survey Area

Habitat - EUNIS habitat classification

- Coastal vegetated shingle
- Intertidal mudflats and sandflats (H1140)
- Littoral mud
- Low energy littoral rock
- Saltmarsh: Cord grass swards
- Saltmarsh: Cord grass with glass wort patches
- Saltmarsh: scattered cord grass swards (H1320)

Client:	Project:
Offshore Wind Ltd.	White Cross Offshore Windfarm

Title:

Habitat Map

Figure: 20.5 Page b

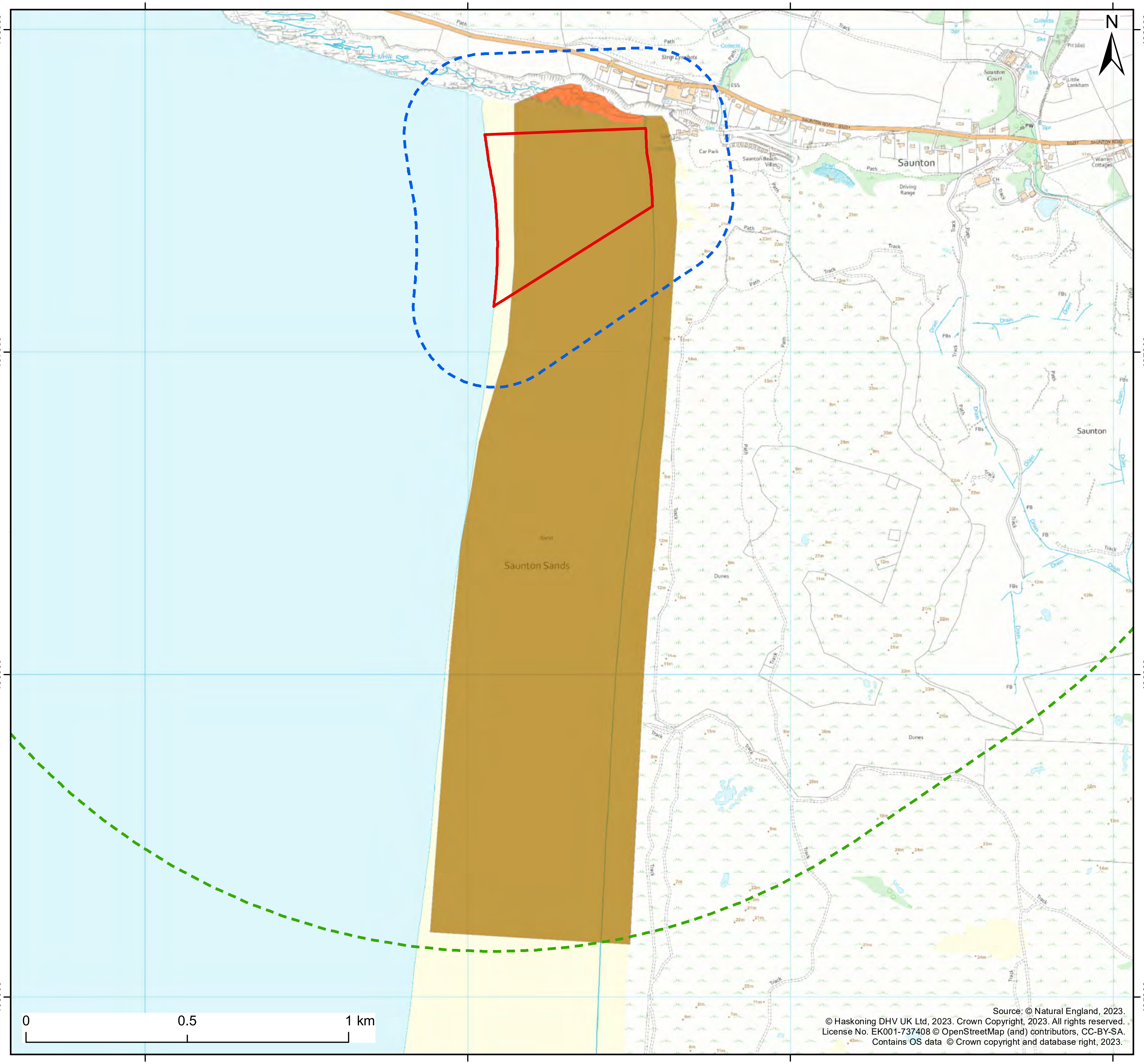
Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0488

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	02/03/2023	AB	PT	A3	1:10,000
P01	18/01/2023	ND	PT	A3	1:10,000

Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
Enhancing Society Together



Legend:

- Onshore Corridor Within Intertidal Area
- Bat Activity / Bat Roost / Breeding Bird Survey Areas
- Protected and notable species (excluding great crested newts, birds and bats); Statutory and non-statutory designated sites; UK Habitats of Principal Importance (UKHPI) and Forestry habitats; Statutory sites and associated impact risk zones Survey Areas
- Great Crested Newt Survey Area

Habitat - EUNIS habitat classification

- High energy littoral rock
- Intertidal mudflats and sandflats (H1140)

Client: Offshore Wind Ltd.

Project: White Cross Offshore Windfarm

Title: Habitat Map

Figure: 20.5 Page c

Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0488

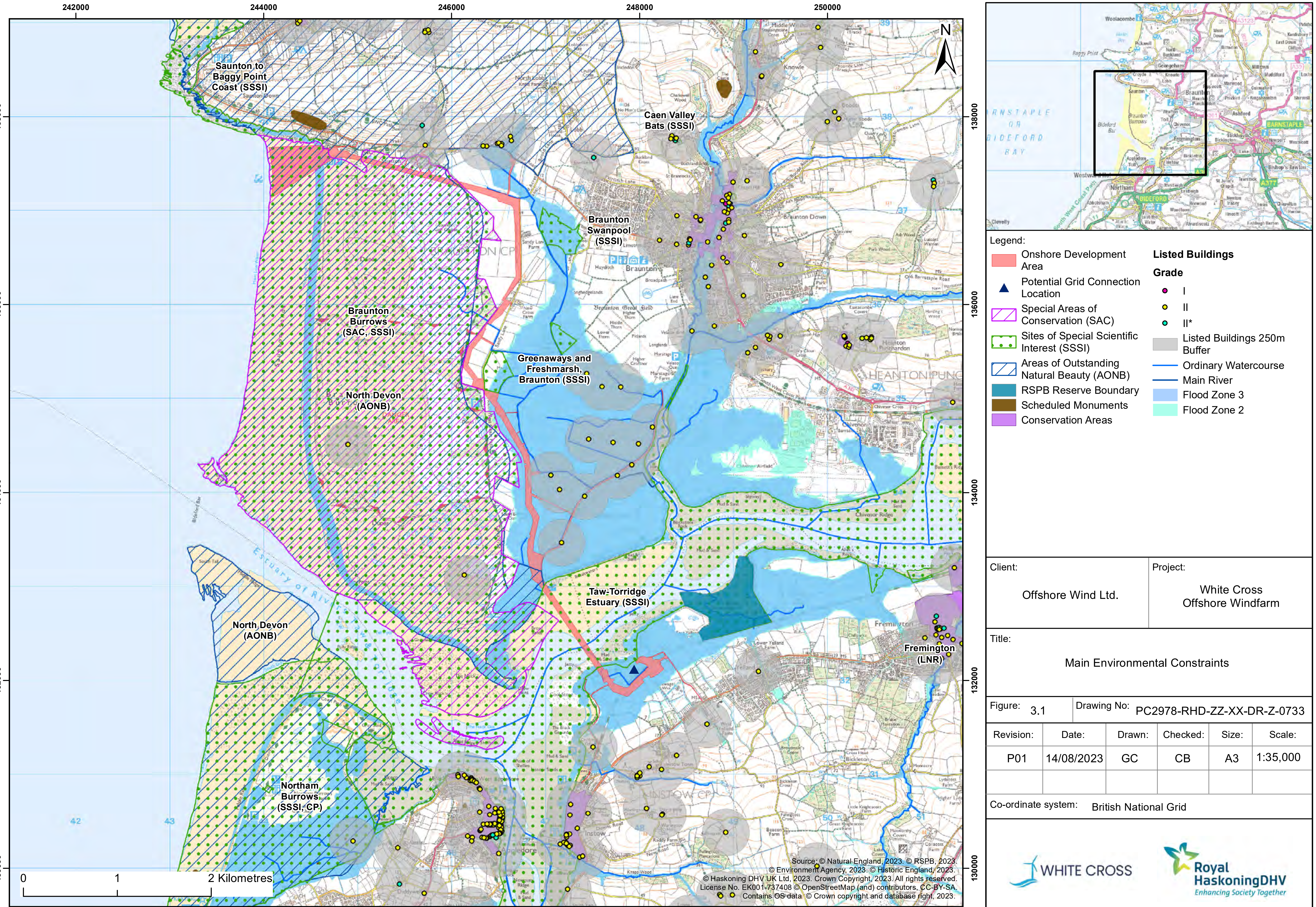
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	02/03/2023	AB	PT	A3	1:12,000
P01	18/01/2023	ND	PT	A3	1:12,000

Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
Enhancing Society Together

Annex 6: Onshore Designated Sites and Main Environmental Constraints



Client: Offshore Wind Ltd.

Project: White Cross Offshore Windfarm

Title: Main Environmental Constraints

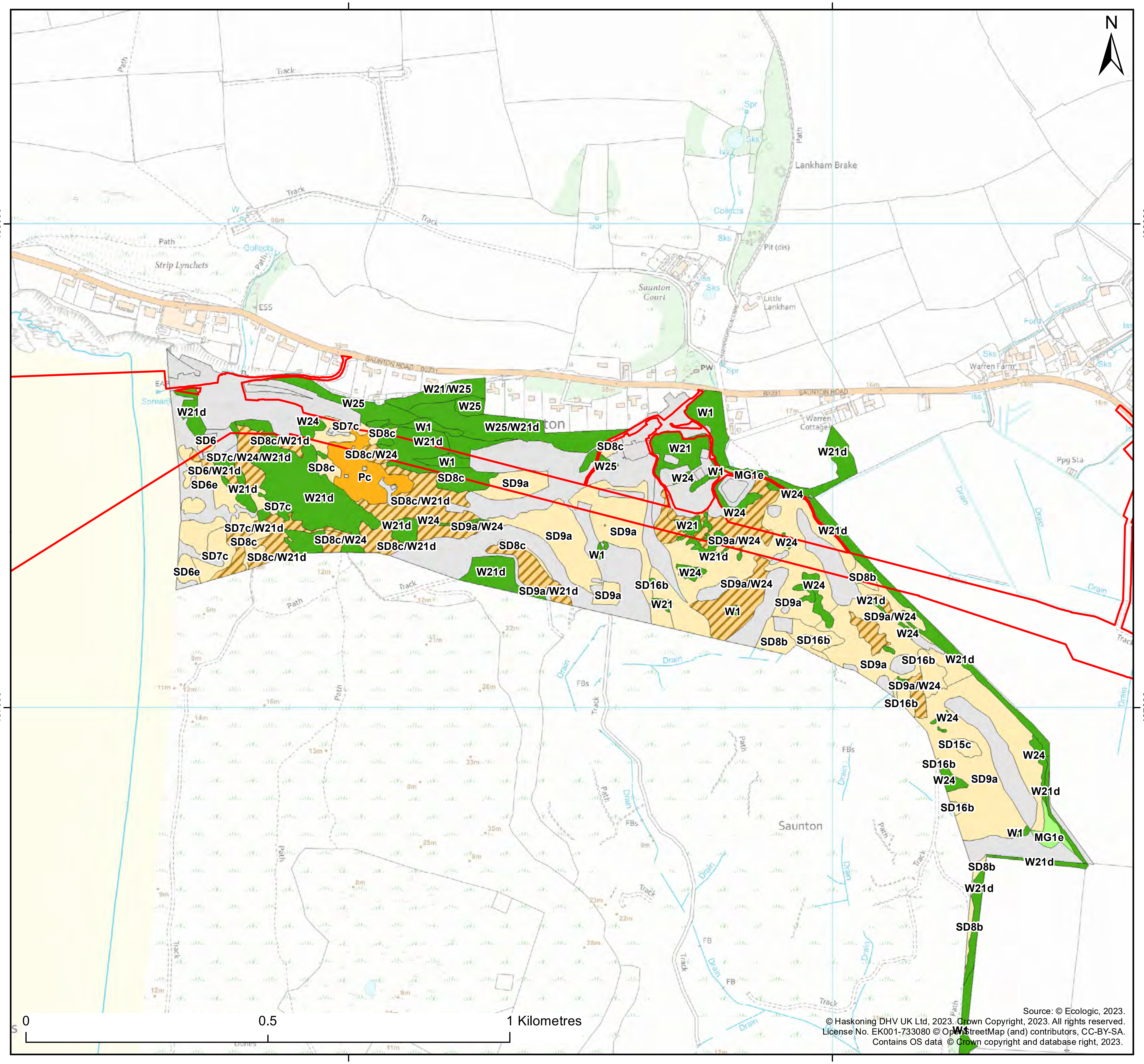
Figure:	Drawing No:				
3.1	PC2978-RHD-ZZ-XX-DR-Z-0733				
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	14/08/2023	GC	CB	A3	1:35,000

Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
Enhancing Society Together

Annex 7: National Vegetation Classification at Saunton Sands



Legend:

- Onshore Development Area

National Vegetation Classification (NVC) Category

- Populus Canescens Scrub (Pc)
- Sand Dunes (SD)
- Sand Dune/Woodland Matrix (SD/W)
- Unimproved/improved grasslands (MG)
- Woodland (W)
- No NVC Classification

Client:	Project:
Offshore Wind Ltd.	White Cross Offshore Windfarm

Title:

National Vegetation Classification (NVC) at Saunton Sands

Figure:	1	Drawing No:	PC2978-RHD-ZZ-XX-DR-Z-0768		
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	06/12/2023	AB	CB	A3	1:8,000

Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
Enhancing Society Together

Annex 8: Southwest England Ornithological and Marine Mammal Aerial Survey Results

Southwest England Ornithological and Marine Mammal Aerial Survey Results

Offshore Wind Ltd.

Annual Report: July 2020 to June 2022

APEM Ref: P00005194

Issued: July 2022

Cassandra Flint, Saskia Bloor, Charlotte Clay, Beate Zein, Kiara Soares, Simon Warford, Danielle Moore, Cristobal Olaya Meza, Stephanie Barnicoat, Billy Brook

Client: **Offshore Wind Ltd.**

Address: **Offshore Wind Ltd.**
One
St Peter's Square
Manchester
M2 3DE

Project reference: **P00005194**

Date of issue: **July 2022**

Project Director: **Gillian Sutherland**

Project Manager: **Cassandra Flint**

Key Contributors: **Cassandra Flint, Saskia Bloor, Charlotte Clay, Beate Zein, Kiara Soares, Simon Warford, Danielle Moore, Cristobal Olaya Meza, Stephanie Barnicoat, Billy Brook**

APEM Ltd
Aviation Park
Hawarden Airport
Flint Road
Saltney Ferry
Chester
CH4 0GZ

Tel: 01244 520 460
Fax: 01244 533 741

Registered in England No. 2530851

This report should be cited as:

APEM (2022). Offshore Wind Ltd.: Annual Report – Southwest England Ornithological and Marine Mammal Aerial Survey Results, July 2020 to June 2022. APEM Scientific Report P5194. Offshore Wind Ltd., 29/07/2022, Draft, 292 pp.

Revision and Amendment Register

Version Number	Date	Section(s)	Page(s)	Summary of Changes	Approved by
1.0	08/06/2022	All	All	First draft	CF
1.1	29/07/2022	All	All	Internal Review	LJ

Contents

1. Executive Summary 1

2. Introduction 6

3. Survey and Analysis Methodologies 8

3.1 Aerial Digital Survey Methods *8*

3.2 Summary of Quality Control *12*

3.3 Species Abundance Estimates *12*

3.4 Species Distribution Maps *13*

3.5 Species Flight Direction Rose Diagrams *13*

3.6 Avian Flight Altitudes *13*

4. Species Accounts 14

4.1 Kittiwake – Rissa tridactyla *14*

4.2 Common Gull – Larus canus *42*

4.3 Small Gull – Unidentified Laridae *45*

4.3 Great Black-backed Gull – Larus marinus *50*

4.4 Herring Gull – Larus argentatus *64*

4.5 Lesser Black-backed Gull – Larus fuscus *78*

4.6 Black-backed Gull – Larus marinus/fuscus *92*

4.7 Large Gull – Unidentified Laridae *99*

4.8 Gull – Unclassified Laridae .... ***Error! Bookmark not defined.***

4.9 Sandwich Tern – Thalasseus sandvicensis *114*

4.10 Common Tern – Sterna hirundo *117*

4.11 'Commic' [Common or Arctic] Tern – Sterna hirundo / paradisaea *121*

4.12 Tern – Unidentified Sternidae *125*

4.13 Great Skua – Catharacta skua *131*

4.14 Guillemot – Uria aalge *134*

4.15 Razorbill – Alca torda *162*

4.16 Guillemot / Razorbill – Uria aalge / Alca torda *183*

4.17 Puffin – Fratercula arctica *211*

4.18 Auk – Unidentified Alcidae *220*

4.19 Fulmar – Fulmarus glacialis *232*

4.20 Storm Petrel – Hydrobates sp. *256*

4.21 Manx Shearwater – Puffinus puffinus *258*

4.22 Small Shearwater – Unidentified Procellariidae *277*

4.23 Shearwater – Unidentified Procellariidae *280*

4.24 Auk / Shearwater – Unidentified Alcidae / Procellariidae *283*

4.25 Gannet – Morus bassanus *297*

4.26 Unidentified Bird – Aves *330*

4.27 Grey Seal – Halichoerus grypus *334*

4.28 Seal – Unidentified Phocidae *338*

4.29 Common Minke Whale – Balaenoptera acutorostrata *344*

4.30 Common Dolphin – Delphinus delphis *347*

4.31 Dolphin – Unidentified Delphinoidea *362*

4.32 Harbour Porpoise – Phocoena phocoena *374*

4.33 Dolphin / Porpoise – Unidentified Delphinoidea *385*

4.34 Marine mammal – Unidentified *399*

4.35 Basking Shark – *Cetorhinus maximus* 402

4.36 Ocean Sunfish – *Mola mola* 404

5. Avian Flight Heights 408

6. Observations of Abiotic Structures 411

7. Summary and Discussion 412

7.1 Small Gulls *412*

7.2 Large Gulls *412*

7.3 Unclassified Gulls *413*

7.4 Terns *413*

7.5 Skuas *414*

7.6 Auks *415*

7.7 Fulmars *416*

7.8 Petrels *417*

7.9 Shearwaters 417

7.10 Auks / Shearwaters 418

7.11 Gannets 418

7.12 Seals 418

7.13 Whales 419

7.14 Dolphin / Porpoise species 419

7.15 Unclassified Marine mammals 421

7.16 Sharks 421

7.17 Ocean sunfish 421

8. References 422

Appendix I Scientific Names and Taxonomy 424

Appendix II JNCC Species and Taxa Grouping Level Codes of Seabirds and Marine Mammals 425

Appendix III Raw Data, Abundance Estimates (plus upper and lower confidence limits; UCL, LCL) & Density Estimates 426

Kittiwake 426

Common Gull 430

Small Gull 431

Great Black-backed Gull 433

Herring Gull 435

Lesser Black-backed Gull 437

Black-backed Gull 439

Large Gull 441

Gull…. 443

Sandwich Tern 444

Common tern 445

'Commic' Tern 446

Tern… 447

Great Skua 449

Guillemot 450

Razorbill 453

Guillemot / Razorbill 456

Puffin 459

Auk 461

Fulmar 463

Storm Petrel 466

Manx Shearwater 467

Small Shearwater 470

Shearwater 471

Auk / Shearwater 472

Gannet 474

Bird 477

Grey Seal 479

Seal 480

Common Minke Whale 482

Common Dolphin 483

Dolphin 486

Harbour Porpoise 488

Dolphin / Porpoise 490

Marine Mammal 492

Basking Shark 493

Ocean Sunfish 494

List of Figures

Figure 1 Location of Southwest England Site and 4 km Buffer 6

Figure 2 Flight lines and image capture points of aerial digital still imagery of Southwest England Site and 4 km Buffer....................8

Figure 3 Distribution of kittiwakes in Survey Area during September 2020....................17

Figure 4 Distribution of kittiwakes in Survey Area during October 2020....................18

Figure 5 Distribution of kittiwakes in Survey Area during November 2020....................19

Figure 6 Distribution of kittiwakes in Survey Area during December 2020....................20

Figure 7 Distribution of kittiwakes in Survey Area during January 2021....................21

Figure 8 Distribution of kittiwakes in Survey Area during February 2021....................22

Figure 9 Distribution of kittiwakes in Survey Area during March 2021 23

Figure 10 Distribution of kittiwakes in Survey Area during April 2021 24

Figure 11 Distribution of kittiwakes in Survey Area during May 2021 25

Figure 12 Distribution of kittiwakes in Survey Area during July 2021....................26

Figure 13 Distribution of kittiwakes in Survey Area during August 2021 27

Figure 14 Distribution of kittiwakes in Survey Area during September 2021....................28

Figure 15 Distribution of kittiwakes in Survey Area during November 2021....................29

Figure 16 Distribution of kittiwakes in Survey Area during December 2021....................30

Figure 17 Distribution of kittiwakes in Survey Area during January 2022....................31

Figure 18 Distribution of kittiwakes in Survey Area during February 2022....................32

Figure 19 Distribution of kittiwakes in Survey Area during March 2022 33

Figure 20 Distribution of kittiwakes in Survey Area during April 2022....................34

Figure 21 Distribution of kittiwakes in Survey Area during May 2022 35

Figure 22 Distribution of kittiwakes in Survey Area during June 2022 36

Figure 23 Summary of flight direction of kittiwakes during survey period....................41

Figure 24 Distribution of common gulls in Survey Area during November 2021 43

Figure 25 Summary of flight direction of common gulls during survey period 44

Figure 26 Distribution of small gulls in Survey Area during October 2020 46

Figure 27 Distribution of small gulls in Survey Area during November 2021........................47

Figure 28 Distribution of small gulls in Survey Area during January 2022 48

Figure 29 Summary of flight direction of small gulls during survey period...........................49

Figure 30 Distribution of great black-backed gulls in Survey Area during July 2020 52

Figure 31 Distribution of great black-backed gulls in Survey Area during November 2020 ..53

Figure 32 Distribution of great black-backed gulls in Survey Area during December 2020 ..54

Figure 33 Distribution of great black-backed gulls in Survey Area during January 2021 55

Figure 34 Distribution of great black-backed gulls in Survey Area during March 2021.........56

Figure 35 Distribution of great black-backed gulls in Survey Area during June 2021...........57

Figure 36 Distribution of great black-backed gulls in Survey Area during October 2021 58

Figure 37 Distribution of great black-backed gulls in Survey Area during January 2022......59

Figure 38 Distribution of great black-backed gulls in Survey Area during February 2022 60

Figure 39 Distribution of great black-backed gulls in Survey Area during June 2022...........61

Figure 40 Summary of flight direction of great black-backed gulls during survey period 63

Figure 41 Distribution of herring gulls in Survey Area during September 2020 66

Figure 42 Distribution of herring gulls in Survey Area during December 2020 67

Figure 43 Distribution of herring gulls in Survey Area during April 2021 68

Figure 44 Distribution of herring gulls in Survey Area during May 2021..............................69

Figure 45 Distribution of herring gulls in Survey Area during June 2021.............................70

Figure 46 Distribution of herring gulls in Survey Area during July 2021 71

Figure 47 Distribution of herring gulls in Survey Area during December 2021 72

Figure 48 Distribution of herring gulls in Survey Area during February 2022 73

Figure 49 Distribution of herring gulls in Survey Area during June 2022.............................74

Figure 50 Summary of flight direction of herring gulls during survey period..........................77

Figure 51 Distribution of lesser black-backed gulls in Survey Area during Dec 2020...........80

Figure 52 Distribution of lesser black-backed gulls in Survey Area during May 2021 81

Figure 53 Distribution of lesser black-backed gulls in Survey Area during June 2021 82

Figure 54 Distribution of lesser black-backed gulls in Survey Area during July 2021 83

Figure 55 Distribution of lesser black-backed gulls in Survey Area during August 2021 84

Figure 56 Distribution of lesser black-backed gulls in Survey Area during Sep 2021 85

Figure 57 Distribution of lesser black-backed gulls in Survey Area during February 2022 ... 86

Figure 58 Distribution of lesser black-backed gulls in Survey Area during March 2022 87

Figure 59 Distribution of lesser black-backed gulls in Survey Area during April 2022 88

Figure 60 Distribution of lesser black-backed gulls in Survey Area during June 2022 ... **Error! Bookmark not defined.**

Figure 61 Summary of flight direction of lesser black-backed gulls during survey period 91

Figure 62 Distribution of black-backed gulls in Survey Area during May 2021 93

Figure 63 Distribution of black-backed gulls in Survey Area during June 2021 94

Figure 64 Distribution of black-backed gulls in Survey Area during Sep 2021 95

Figure 65 Distribution of black backed gulls in Survey Area during February 2022 96

Figure 66 Distribution of black-backed gulls in Survey Area during April 2022 97

Figure 67 Summary of flight direction of black-backed gulls during survey period 98

Figure 68 Distribution of large gulls in Survey Area during July 2020 101

Figure 69 Distribution of large gulls in Survey Area during December 2020 102

Figure 70 Distribution of large gulls in Survey Area during January 2021 103

Figure 71 Distribution of large gulls in Survey Area during March 2021 104

Figure 72 Distribution of large gulls in Survey Area during September 2021 105

Figure 73 Distribution of large gulls in Survey Area during February 2022 106

Figure 74 Distribution of large gulls in Survey Area during March 2022 **Error! Bookmark not defined.**

Figure 75 Distribution of large gulls in Survey Area during June 2022 108

Figure 76 Summary of flight direction of large gulls during survey period 109

Figure 77 Distribution of gulls in Survey Area during August 2020 111

Figure 78 Distribution of unclassified gulls in Survey Area during February 2022 112

Figure 79 Summary of flight direction of unclassified gulls during survey period 113

Figure 80 Distribution of Sandwich terns in Survey Area during September 2020 115
Figure 81 Summary of flight direction of Sandwich tern during survey period 116
Figure 82 Distribution of common terns in Survey Area during August 2020 118
Figure 83 Distribution of common terns in Survey Area during May 2022 119
Figure 84 Summary of flight direction of common terns during survey period 120
Figure 85 Distribution of 'commic' terns in Survey Area during August 2020 122
Figure 86 Distribution of 'commic' terns in Survey Area during Sep 2020..........................123
Figure 87 Summary of flight direction of 'commic' terns during survey period 124
Figure 88 Distribution of terns in Survey Area during August 2020..................................126
Figure 89 Distribution of terns in Survey Area during May 2021 127
Figure 90 Distribution of terns in Survey Area during September 2021 128
Figure 91 Distribution of terns in Survey Area during May 2022 129
Figure 92 Summary of flight direction of terns during survey period 130
Figure 93 Distribution of great skuas in Survey Area during October 2021..........................132
Figure 94 Summary of flight direction of great skua during survey period..........................133
Figure 95 Distribution of guillemots in Survey Area during July 2020 137
Figure 96 Distribution of guillemots in Survey Area during September 2020 138
Figure 97 Distribution of guillemots in Survey Area during October 2020 139
Figure 98 Distribution of guillemots in Survey Area during November 2020 140
Figure 99 Distribution of guillemots recorded in Survey Area during December 2020 141
Figure 100 Distribution of guillemots in Survey Area during January 2021 142
Figure 101 Distribution of guillemots in Survey Area during February 2021 143
Figure 102 Distribution of guillemots in Survey Area during March 2021...........................144
Figure 103 Distribution of guillemots in Survey Area during April 2021 145
Figure 104 Distribution of guillemots in Survey Area during May 2021 146
Figure 105 Distribution of guillemots in Survey Area during June 2021 147
Figure 106 Distribution of guillemots in Survey Area during July 2021 148

Figure 107 Distribution of guillemots in Survey Area during October 2021 149
Figure 108 Distribution of guillemots in Survey Area during November 2021 150
Figure 109 Distribution of guillemots in Survey Area during December 2021 151
Figure 110 Distribution of guillemots in Survey Area during January 2022 152
Figure 111 Distribution of guillemots in Survey Area during February 2022 153
Figure 112 Distribution of guillemots in Survey Area during March 2022 154
Figure 113 Distribution of guillemots in Survey Area during April 2022 155
Figure 114 Distribution of guillemots in Survey Area during May 2022 156
Figure 115 Distribution of guillemots in Survey Area during June 2022 157
Figure 116 Summary of flight direction of guillemots during survey period 161
Figure 117 Distribution of razorbills in Survey Area during September 2020 165
Figure 118 Distribution of razorbills in Survey Area during November 2020 166
Figure 119 Distribution of razorbills in Survey Area during December 2020 167
Figure 120 Distribution of razorbills in Survey Area during January 2021 168
Figure 121 Distribution of razorbills in Survey Area during February 2021 169
Figure 122 Distribution of razorbills in Survey Area during March 2021 170
Figure 123 Distribution of razorbills in Survey Area during April 2021 171
Figure 124 Distribution of razorbills in Survey Area during May 2021 172
Figure 125 Distribution of razorbills in Survey Area during July 2021 173
Figure 126 Distribution of razorbills in Survey Area during October 2021 174
Figure 127 Distribution of razorbills in Survey Area during November 2021 175
Figure 128 Distribution of razorbills in Survey Area during January 2022 176
Figure 129 Distribution of razorbills in Survey Area during February 2022 177
Figure 130 Distribution of razorbills in Survey Area during March 2022 178
Figure 131 Distribution of razorbills in Survey Area during April 2022 179
Figure 132 Distribution of razorbills in Survey Area during May 2022 180
Figure 133 Distribution of razorbills in Survey Area during June 2022 181

Figure 134 Summary of flight direction of razorbills during survey period 182
Figure 135 Distribution of guillemots / razorbills in Survey Area during July 2020 186
Figure 136 Distribution of guillemots / razorbills in Survey Area during August 2020 187
Figure 137 Distribution of guillemots / razorbills in Survey Area during September 2020 .. 188
Figure 138 Distribution of guillemots / razorbills in Survey Area during October 2020 189
Figure 139 Distribution of guillemots / razorbills in Survey Area during November 2020 ... 190
Figure 140 Distribution of guillemots / razorbills in Survey Area during December 2020 ... 191
Figure 141 Distribution of guillemots / razorbills in Survey Area during January 2021 192
Figure 142 Distribution of guillemots / razorbills in Survey Area during February 2021 193
Figure 143 Distribution of guillemots / razorbills in Survey Area during March 2021.......... 194
Figure 144 Distribution of guillemots / razorbills in Survey Area during April 2021 195
Figure 145 Distribution of guillemots / razorbills in Survey Area during May 2021 196
Figure 146 Distribution of guillemots / razorbills in Survey Area during June 2021 197
Figure 147 Distribution of guillemots / razorbills in Survey Area during July 2021 198
Figure 148 Distribution of guillemots / razorbills in Survey Area during October 2021 199
Figure 149 Distribution of guillemots / razorbills in Survey Area during November 2021 ... 200
Figure 150 Distribution of guillemots / razorbills in Survey Area during December 2021 ... 201
Figure 151 Distribution of guillemots / razorbills in Survey Area during January 2022 202
Figure 152 Distribution of guillemots / razorbills in Survey Area during February 2022 203
Figure 153 Distribution of guillemots / razorbills in Survey Area during March 2022.......... 204
Figure 154 Distribution of guillemots / razorbills in Survey Area during April 2022 205
Figure 155 Distribution of guillemots / razorbills in Survey Area during May 2022 206
Figure 156 Distribution of guillemots / razorbills in Survey Area during June 2022 207
Figure 157 Summary of flight direction of guillemots / razorbills during survey period 210
Figure 158 Distribution of puffins in Survey Area during July 2020 213
Figure 159 Distribution of puffins in Survey Area during November 2020 214
Figure 160 Distribution of puffins in Survey Area during March 2021 ... **Error! Bookmark not defined.**

Figure 161 Distribution of puffins in Survey Area during April 2021 216
Figure 162 Distribution of puffins in Survey Area during May 2021 217
Figure 163 Distribution of puffins in Survey Area during April 2022 218
Figure 164 Distribution of puffins in Survey Area during May 2022 219
Figure 165 Summary of flight direction of puffins during survey period 220
Figure 166 Distribution of unidentified auks in Survey Area during December 2020 222
Figure 167 Distribution of unidentified auks in Survey Area during January 2021 223
Figure 168 Distribution of unidentified auks in Survey Area during February 2021............224
Figure 169 Distribution of unidentified auks in Survey Area during March 2021 225
Figure 170 Distribution of unidentified auks in Survey Area during June 2021 226
Figure 171 Distribution of unidentified auks in Survey Area during November 2021...........227
Figure 172 Distribution of unidentified auks in Survey Area during March 2022 228
Figure 173 Distribution of unidentified auks in Survey Area during April 2022....................229
Figure 174 Distribution of unidentified auks in Survey Area during May 2022 230
Figure 175 Summary of flight direction of unidentified auks during survey period..............231
Figure 176 Distribution of fulmars in Survey Area during August 2020.............................235
Figure 177 Distribution of fulmars in Survey Area during September 2020 236
Figure 178 Distribution of fulmars in Survey Area during December 2020....................237
Figure 179 Distribution of fulmars in Survey Area during January 2021 238
Figure 180 Distribution of fulmars in Survey Area during February 2021......................239
Figure 181 Distribution of fulmars in Survey Area during March 2021 240
Figure 182 Distribution of fulmars in Survey Area during May 2021 241
Figure 183 Distribution of fulmars in Survey Area during August 2021 242
Figure 184 Distribution of fulmars in Survey Area during September 2021...................243
Figure 185 Distribution of fulmars in Survey Area during November 2021....................244
Figure 186 Distribution of fulmars in Survey Area during December 2021....................245
Figure 187 Distribution of fulmars in Survey Area during January 2022 246

Figure 188 Distribution of fulmars in Survey Area during February 2022 247
Figure 189 Distribution of fulmars in Survey Area during March 2022 248
Figure 190 Distribution of fulmars in Survey Area during April 2022 249
Figure 191 Distribution of fulmars in Survey Area during May 2022 250
Figure 192 Distribution of fulmars in Survey Area during June 2022 251
Figure 193 Summary of flight direction of fulmars during survey period 255
Figure 194 Distribution of unidentified storm petrels in Survey Area during May 2021 . 257
Figure 195 Distribution of Manx shearwaters in Survey Area during July 2020 260
Figure 196 Distribution of Manx shearwaters in Survey Area during August 2020 261
Figure 197 Distribution of Manx shearwaters in Survey Area during September 2020 . 262
Figure 198 Distribution of Manx shearwaters in Survey Area during March 2021 263
Figure 199 Distribution of Manx shearwaters in Survey Area during April 2021 264
Figure 200 Distribution of Manx shearwaters in Survey Area during May 2021 265
Figure 201 Distribution of Manx shearwaters in Survey Area during June 2021 266
Figure 202 Distribution of Manx shearwaters in Survey Area during July 2021 267
Figure 203 Distribution of Manx shearwaters in Survey Area during Sep 2021 268
Figure 204 Distribution of Manx shearwaters in Survey Area during March 2022 269
Figure 205 Distribution of Manx shearwaters in Survey Area during April 2022 270
Figure 206 Distribution of Manx shearwaters in Survey Area during May 2022 271
Figure 207 Distribution of Manx shearwaters in Survey Area during June 2022 272
Figure 208 Summary of flight direction of Manx shearwaters during survey period 276
Figure 209 Distribution of small shearwaters in Survey Area during September 2021 .. 278
Figure 210 Distribution of small shearwaters in Survey Area during March 2022 279
Figure 211 Summary of flight direction of small shearwaters during survey period 280
Figure 212 Distribution of unidentified shearwaters in Survey Area during Oct 2020 282
Figure 213 Distribution of auks / shearwaters in Survey Area during March 2021 285
Figure 214 Distribution of auks / shearwaters in Survey Area during April 2021 286

Figure 215 Distribution of auks / shearwaters in Survey Area during May 2021 287
Figure 216 Distribution of auks / shearwaters in Survey Area during June 2021 288
Figure 217 Distribution of auks / shearwaters in Survey Area during July 2021............289
Figure 218 Distribution of auks / shearwaters in Survey Area during August 2021.......290
Figure 219 Distribution of auks / shearwaters in Survey Area during March 2022........291
Figure 220 Distribution of auks / shearwaters in Survey Area during April 2022...........292
Figure 221 Distribution of auks / shearwaters in Survey Area during May 2022 293
Figure 222 Distribution of auks / shearwaters in Survey Area during June 2022 294
Figure 223 Summary of flight direction of auks / shearwaters during survey period......296
Figure 224 Distribution of gannets in Survey Area during July 2020............................300
Figure 225 Distribution of gannets in Survey Area during August 2020........................301
Figure 226 Distribution of gannets in Survey Area during September 2020..................302
Figure 227 Distribution of gannets in Survey Area during October 2020 303
Figure 228 Distribution of gannets in Survey Area during November 2020...................304
Figure 229 Distribution of gannets in Survey Area during December 2020...................305
Figure 230 Distribution of gannets in Survey Area during January 2021 306
Figure 231 Distribution of gannets in Survey Area during February 2021.....................307
Figure 232 Distribution of gannets in Survey Area during March 2021 308
Figure 233 Distribution of gannets in Survey Area during April 2021............................309
Figure 234 Distribution of gannets in Survey Area during May 2021 310
Figure 235 Distribution of gannets in Survey Area during June 2021 311
Figure 236 Distribution of gannets in Survey Area during July 2021............................312
Figure 237 Distribution of gannets in Survey Area during August 2021........................313
Figure 238 Distribution of gannets in Survey Area during September 2021..................314
Figure 239 Distribution of gannets in Survey Area during October 2021 315
Figure 240 Distribution of gannets in Survey Area during November 2021...................316
Figure 241 Distribution of gannets in Survey Area during December 2021...................317

Figure 242 Distribution of gannets in Survey Area during January 2022 318
Figure 243 Distribution of gannets in Survey Area during February 2022 319
Figure 244 Distribution of gannets in Survey Area during March 2022 320
Figure 245 Distribution of gannets in Survey Area during April 2022 321
Figure 246 Distribution of gannets in Survey Area during May 2022 322
Figure 247 Distribution of gannets in Survey Area during June 2022 323
Figure 248 Summary of flight direction of gannets during survey period 329
Figure 249 Distribution of birds (unidentified) in Survey Area during January 2022 331
Figure 250 Distribution of birds (unidentified) in Survey Area during February 2022 332
Figure 251 Summary of flight direction of birds (unidentified) during survey period 333
Figure 252 Distribution of grey seals in Survey Area during March 2021 335
Figure 253 Distribution of grey seals in Survey Area during May 2021 336
Figure 254 Distribution of grey seals in Survey Area during September 2021 337
Figure 255 Distribution of unidentified seals in Survey Area during August 2020 339
Figure 256 Distribution of unidentified seals in Survey Area during December 2020 340
Figure 257 Distribution of unidentified seals in Survey Area during March 2021 341
Figure 258 Distribution of unidentified seals in Survey Area during January 2022........342
Figure 259 Distribution of unidentified seals in Survey Area during June 2022............343
Figure 260 Distribution of common minke whales in Survey Area during Aug 2020 345
Figure 261 Distribution of common minke whales in Survey Area during May 2021 346
Figure 262 Distribution of common dolphins in Survey Area during July 2020.............349
Figure 263 Distribution of common dolphins in Survey Area during August 2020.........350
Figure 264 Distribution of common dolphins in Survey Area during Sep 2020.............351
Figure 265 Distribution of common dolphins in Survey Area during November 2020....352
Figure 266 Distribution of common dolphins in Survey Area during December 2020....353
Figure 267 Distribution of common dolphins in Survey Area during January 2021 354
Figure 268 Distribution of common dolphins in Survey Area during April 2021............355

Figure 269 Distribution of common dolphins in Survey Area during May 2021 356

Figure 270 Distribution of common dolphins in Survey Area during September 2021...357

Figure 271 Distribution of common dolphins in Survey Area during January 2022 358

Figure 272 Distribution of common dolphins in Survey Area during February 2022......359

Figure 273 Distribution of common dolphins in Survey Area during April 2022.............360

Figure 274 Distribution of common dolphins in Survey Area during May 2022 361

Figure 275 Distribution of unidentified dolphins in Survey Area during July 2020.........364

Figure 276 Distribution of unidentified dolphins in Survey Area during August 2020 365

Figure 277 Distribution of unidentified dolphins in Survey Area during Sep 2020.........366

Figure 278 Distribution of unidentified dolphins in Survey Area during Nov 2020.........367

Figure 279 Distribution of unidentified dolphins in Survey Area during Dec 2020.........368

Figure 280 Distribution of unidentified dolphins in Survey Area during Feb 2021 369

Figure 281 Distribution of unidentified dolphins in Survey Area during March 2021......370

Figure 282 Distribution of unidentified dolphins in Survey Area during April 2021 371

Figure 283 Distribution of unidentified dolphins in Survey Area during May 2021.........372

Figure 284 Distribution of unidentified dolphins in Survey Area during April 2022 373

Figure 285 Distribution of harbour porpoises in Survey Area during July 2020.............376

Figure 286 Distribution of harbour porpoises in Survey Area during Sep 2020.............377

Figure 287 Distribution of harbour porpoises in Survey Area during October 2020.......378

Figure 288 Distribution of harbour porpoises in Survey Area during May 2021 379

Figure 289 Distribution of harbour porpoises in Survey Area during July 2021...........380

Figure 290 Distribution of harbour porpoises in Survey Area during Sep 2021...........381

Figure 291 Distribution of harbour porpoises in Survey Area during April 2022..........382

Figure 292 Distribution of harbour porpoises in Survey Area during May 2022 383

Figure 293 Distribution of harbour porpoises in Survey Area during June 2022..........384

Figure 294 Distribution of dolphins / porpoises in Survey Area during July 2020..........387

Figure 295 Distribution of dolphins / porpoises in Survey Area during August 2020 388

Figure 296 Distribution of dolphins / porpoises in Survey Area during Sep 2020 389

Figure 297 Distribution of dolphins / porpoises in Survey Area during October 2020 390

Figure 298 Distribution of dolphins / porpoises in Survey Area during Feb 2021 391

Figure 299 Distribution of dolphins / porpoises in Survey Area during March 2021 392

Figure 300 Distribution of dolphins / porpoises in Survey Area during April 2021 393

Figure 301 Distribution of dolphins / porpoises in Survey Area during May 2021 394

Figure 302 Distribution of dolphins / porpoises in Survey Area during Sep 2021 395

Figure 303 Distribution of dolphins / porpoises in Survey Area during October 2021 396

Figure 304 Distribution of dolphins / porpoises in Survey Area during January 2022 397

Figure 305 Distribution of dolphins / porpoises in Survey Area during Feb 2022 398

Figure 306 Distribution of marine mammals in Survey Area during July 21 400

Figure 307 Distribution of marine mammals in Survey Area during Feb 22 401

Figure 308 Distribution of basking sharks in Survey Area during January 2021 403

Figure 309 Distribution of ocean sunfish in Survey Area during June 2021 405

Figure 310 Distribution of ocean sunfish in Survey Area during July 2021 406

Figure 311 Distribution of ocean sunfish in Survey Area during October 2021 407

Figure 312 Flight heights (m) of avian species during Year 1 (July 2020-June 2021). The ‘box’ is the interquartile range, with the middle bold line representing the median of the data. The ‘whiskers’ are the largest and smallest non-outliers. The range of the entire data includes the outliers represented by circles. Note: Species with five or more flight heights have been presented in the graph. 409

Figure 313 Flight heights (m) of avian species during Year 2 (July 2021-June 2022). The ‘box’ is the interquartile range, with the middle bold line representing the median of the data. The ‘whiskers’ are the largest and smallest non-outliers. The range of the entire data includes the outliers represented by circles. Note: Species with five or more flight heights have been presented in the graph. 410

List of Tables

Table 1 Number of individuals in Survey Area for first year, grouped into three-month quarterly periods 4

Table 2 Date and start/end time (Coordinated Universal Time) for each flight for July 2020 to June 2022 monthly surveys...9

Table 3 Weather conditions recorded for completed surveys: July 2020 to June 2021.....10

Table 4 Number of images and survey coverage for each monthly survey.......................11

Table 5 Raw counts and abundance and density estimates (individuals per km²) of kittiwake in: a) Survey Area b) Site and c) 4 km Buffer Zone..15

Table 6 Raw counts and abundance and density estimates (individuals per km²) of common gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 42

Table 7 Raw counts and abundance and density estimates (individuals per km²) of small gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone ……………….…45

Table 8 Raw counts and abundance and density estimates (individuals per km²) of great black-backed gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone....51

Table 9 Raw counts and abundance and density estimates (individuals per km²) of herring gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 65

Table 10 Raw counts and abundance and density estimates (individuals per km²) of lesser black-backed gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone **Error! Bookmark not defined.**

Table 11 Raw counts and abundance and density estimates (individuals per km²) of unidentified black-backed gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 92

Table 12 Raw counts & abundance & density estimates (individuals per km²) of unidentified large gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone.................99

Table 13 Raw counts and abundance and density estimates (individuals per km²) of unclassified gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone....110

Table 14 Raw counts and abundance and density estimates (individuals per km²) of Sandwich tern in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone.......114

Table 15 Raw counts and abundance and density estimates (individuals per km²) of common tern in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 117

Table 16 Raw counts and abundance and density estimates (individuals per km²) of ‘commic’ tern in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 121

Table 17 Raw counts and abundance and density estimates (individuals per km²) of unidentified tern in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone....125

Table 18 Raw counts and abundance and density estimates (individuals per km^2) of great skua in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 131

Table 19 Raw counts and abundance and density estimates (individuals per km^2) of guillemot in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 134

Table 20 Raw counts and abundance and density estimates (individuals per km^2) of razorbill in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 162

Table 21 Raw counts & abundance & density estimates (individuals per km^2) of guillemots / razorbill in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 184

Table 22 Raw counts and abundance and density estimates (individuals per km^2) of puffin in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 211

Table 23 Raw counts and abundance and density estimates (individuals per km^2) of unidentified auk in a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 221

Table 24 Raw counts and abundance and density estimates (individuals per km^2) of fulmar in: a) Survey Area; b) Southwest England Site; and c) 4 km Buffer Zone 233

Table 25 Raw counts & abundance & density estimates (individuals per km^2) of unidentified storm petrel in: a) Survey Area b) Southwest England Site and 4 km Buffer Zone 256

Table 26 Raw counts and abundance and density estimates (individuals per km^2) of Manx shearwater in: a) Survey Area b) Southwest England Site and 4 km Buffer Zone 258

Table 27 Raw counts and abundance and density estimates (individuals per km^2) of unidentified small shearwater in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 277

Table 28 Raw counts & abundance & density estimates (individuals per km^2) of unidentified shearwater in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 281

Table 29 Raw counts and abundance and density estimates (individuals per km^2) of auk / shearwater in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 283

Table 30 Raw counts and abundance and density estimates (individuals per km^2) of gannet in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 298

Table 31 Raw counts and abundance and density estimates (individuals per km^2) of unidentified birds in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone .. 330

Table 32 Raw counts and abundance and density estimates (individuals per km^2) of grey seal in: a) Survey Area b) Southwest England Site c) 4 km Buffer Zone 334

Table 33 Raw counts and abundance and density estimates (individuals per km^2) of seal in: a) Survey Area b) Southwest England Site c) 4 km Buffer Zone 338

Table 34 Raw counts & abundance & density estimates (individuals per km^2) of common minke whale in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 344

Table 35 Raw counts and abundance and density estimates (individuals per km^2) of common dolphin in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone ... 347

Table 36 Raw counts and abundance and density estimates (individuals per km^2) of dolphin in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 362

Table 37 Raw counts and abundance and density estimates (individuals per km^2) of harbour porpoise in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 374

Table 38 Raw counts & abundance and density estimates (individuals per km^2) of dolphin / porpoise in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone............... 385

Table 39 Raw counts & abundance & density estimates (individuals per km^2) of unidentified marine mammal in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone.... 399

Table 40 Raw counts and abundance and density estimates (individuals per km^2) of basking shark in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 402

Table 41 Raw counts and abundance and density estimates (individuals per km^2) of ocean sunfish in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone 404

Table 42 Median flight heights for species in surveys July 2020 to June 2021.............. 409

Table 43 Median flight heights for species in surveys July 2021 to June 2022.............. 411

1. Executive Summary

A programme was undertaken between July 2020 and September 2022 of 27 monthly aerial digital surveys of Offshore Wind Limited's (Offshore Wind) proposed Southwest England offshore windfarm (OWF) Site. This report covers two years Y1: July 2020 - June 2021, Y2: July 2021 - June 2022, with an additional three months of surveys continuing: July, August and September 2022.

Surveys were carried out using APEM Limited's (APEM) high-resolution camera system, capturing digital still imagery to assess the abundance and distribution of birds and marine megafauna within the Southwest England Site and 4 km Buffer Zone (known collectively as the 'Survey Area'). Raw counts and design-based abundance estimates of all species are presented, plus incidental observations. This report also contains information on species distribution, flight height and flight direction.

Here is a summary of the key findings from each monthly survey:

- Survey 1 – July 2020
    - Shearwaters were the most abundant species (n=1,780), followed by gannets (n=71), auks (n=52), marine mammals (n=28) and large gulls (n=3).
- Survey 2 – August 2020
    - Shearwaters were the most abundant species (n=697), followed by marine mammals (n=75), gannets (n=41), auks (n=19), terns (n=14), fulmars (n=6) and gull species (n=1).
- Survey 3 – September 2020
    - Auks were the most abundant species (n=365), followed by shearwaters (n=198), gannets (n=94), small gulls (n=31), marine mammals (n=29), fulmars (n=8), terns (n=7) and large gull species (n=1).
- Survey 4 – October 2020
    - Auks were the most abundant species (n=164), followed by small gulls (n=56), gannets (n=44), marine mammals (n=11) and shearwaters (n=10).
- Survey 5 – November 2020
    - Auks were the most abundant species (n=75), followed by marine mammals (n=27), small gulls (n=7), large gulls (n=1) and gannets (n=1).
- Survey 6 – December 2020
    - Auks were the most abundant species (n=414), followed by fulmars (n=77), small gulls (n=71), large gulls (n=62), gannets (n=15) and marine mammals (n=8).

- Survey 7 – January 2021
  - Auks were the most abundant species (n=327), followed by small gulls (n=269), large gulls (n=2), gannets (n=2), fulmars (n=1), marine mammals (n=1) and sharks (n=1).
- Survey 8 – February 2021
  - Auks were the most abundant species (n=395), followed by gannets (n=17), small gulls (n=15), marine mammals (n=13) and fulmars (n=9).
- Survey 9 – March 2021
  - Auks were the most abundant species followed by small gulls (n=26), gannets (n=26), marine mammals (n=15), fulmars (n=10), large gulls (n=4), shearwaters (n=4) and auks / shearwaters (n=4).
- Survey 10 – April 2021
  - Shearwaters were the most abundant species (n=324), followed by auks (n=58), gannets (n=23), auks / shearwaters (n=20), marine mammals (n=12), small gulls (n=1), large gulls (n=1) and fulmars (n=1).
- Survey 11 – May 2021
  - Shearwaters were the most abundant (n=4,624), followed by auks, marine mammals (n=349), gannets (n=45) auks / shearwaters (n=10), large gulls (n=5), small gulls (n=3), fulmars (n=1) and storm petrels (n=1).
- Survey 12 – June 2021
  - Shearwaters were the most abundant species (n=445), followed by gannets (n=126), large gulls (n=35), auks (n=19) and large bony fish (n=1).
- Survey 13 – July 2021
  - Auks were the most abundant species (n=44), followed by shearwaters (n=42), large gulls (n=6), small gulls (n=4), auks / shearwaters (n=2), gannets (n=2), marine mammals (n=2) and large bony fish (n=1).
- Survey 14 – August 2021
  - Gannets were the most abundant species (n=32), followed by gulls (n=7), fulmars (n=3) and auks / shearwaters (n=1).
- Survey 15 – September 2021
  - Gannets were the most abundant species (n=59), followed by large gulls (n=29), shearwaters (n=9), marine mammals (n=8), terns (n=2), small gulls (n=2) and fulmars (n=1).

- Survey 16 – October 2021
  - Auks were the most abundant species (n=165), followed by gannet (n=22), skuas (n=2), large gulls (n=1), marine mammals (n=1) and large bony fish (n=1).
- Survey 17 – November 2021
  - Auks were the most abundant species (n=508), followed by small gulls (n=170), gannet (n=22) and fulmar (n=1).
- Survey 18 – December 2021
  - Auks were the most abundant species (n=508), followed by small gulls (n=170), gannet (n=22) and fulmar (n=1).
- Survey 19 – January 2022
  - Auks were the most abundant species, followed by small gulls (n=55), marine mammals (n=22), gannets (n=2), unidentified birds (n=2), large gulls (n=1) and fulmars (n=1).
- Survey 20 – February 2022
  - Large gulls were the most abundant species (n=282), followed by auks (n=274), small gulls (n=103), marine mammals (n=24), fulmars (n=19), gannets (n=16), unidentified bird (n=6), and unidentified gull (n=1).
- Survey 21 – March 2022
  - Auks were the most abundant species (n=963), followed by small gulls (n=135), gannets (n=23), shearwaters (n=15), fulmars (n=3), auks / shearwaters (n=3), and large gulls (n=2).
- Survey 22 – April 2022
  - Auks were the most abundant species (n=436), followed by shearwaters (n=420), gannets (n=74), auks / shearwaters (n=34), marine mammals (n=34) small gulls (n=4), large gulls (n=3), fulmars (n=1) and unidentified waders (n=1).
- Survey 23 – May 2022
  - Auks were the most abundant species (n=192), followed by shearwaters (n=144), marine mammals (n=40), unidentified auks / shearwaters (n=8), gannet (n=5), terns (n=5), fulmar (n=2) and small gulls (n=1).
- Survey 24 – June 2022
  - Shearwaters were the most abundant species (n=323), followed by auks (n=101), small gulls (n=30), gannets (n=24), auks / shearwaters (n=16), large gulls (n=9), fulmars (n=2) and marine mammals (n=2).

Table 1 Number of individuals in Survey Area for Y1 and Y2 surveys per quarter

Species	Number of individuals per quarter							
	Q1 Jul-Sep	Q2 Oct-Dec	Q3 Jan-Mar	Q4 Apr-Jun	Q5 Jul-Sep	Q6 Oct-Dec	Q7 Jan-Mar	Q8 Apr-Jun
Kittiwake	31	129	309	4	7	182	289	35
Common Gull	-	-	-	-	-	9		
Small Gull – unidentified	-	4	-	-	-	1	1	-
Great Black-backed Gull	2	18	3	4	-	1	33	2
Herring Gull	1	22	-	31	3	4	117	1
Lesser Black-backed Gull	-	17	-	4	12	-	120	7
Black-backed gull – unidentified	-	-	-	2	6	-	6	1
Large Gull – unidentified	1	6	3	-	20	-	8	1
Gull – unidentified	1	-	-	-	-	-	1	-
Sandwich Tern	1	-	-	-	-	-	-	-
Common Tern	4	-	-	-	-	-	-	1
'Commic'[1] Tern	13	-	-	-	-	-	-	-
Tern – unidentified	1	-	-	3	2	-	-	4
Great Skua	-	-	-	-	-	2	-	-
Guillemot	272	53	369	1,036	40	257	464	584
Razorbill	27	108	113	11	2	17	50	36
Guillemot / Razorbill	132	471	490	26	2	567	916	42
Puffin	1	13	2	9	-	-	-	41
Auk – unidentified	-	6	11	1	-	6	4	20
Fulmar	14	77	20	1	4	4	23	5
Storm Petrel – unidentified	-	-	-	1	-	-	-	-
Manx Shearwater	2,645	-	4	5,393	45	-	11	882
Small Shearwater – unidentified					6	-	4	-
Shearwater – unidentified	-	10	-	-	-	-	-	-
Auk / Shearwater – unidentified	-	-	4	51	3	-	3	58
Gannet	207	60	45	194	93	48	40	103
Bird - unidentified	-	-	-	-	-	-	8	-
Grey Seal	-	-	3	2	1	-	-	-
Seal – unidentified	2	1	1	-	-	-	1	1
Common Minke Whale	1	-	-	2	-	-	-	-
Common Dolphin	49	21	1	289	1	-	39	61
Dolphin – unidentified	48	13	19	43	-	-	-	9
Harbour Porpoise	6	1	-	9	5	-	-	3
Dolphin / Porpoise	24	10	5	16	2	1	5	-
Marine Mammal – unidentified					1	-	1	-
Basking Shark	-	-	1	-	-	-	-	-
Ocean Sunfish	-	-	-	1	1	1	-	-

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Totals for Y1 & Y2	**3,483**	**1,040**	**1,403**	**7,133**	**256**	**1,101**	**2,144**	**1,897**

[1] *'Commic' refers to common or Arctic tern*

2. Introduction

Offshore Wind commissioned APEM to undertake 27 monthly digital aerial surveys of the Southwest England Survey Area comprising the Site and a surrounding 4 km Buffer Zone – a total 'Survey Area' of 336 km^2 (**Figure 1**). Years 1 and 2 started in July 2020 and finished in June 2022, followed by an additional three months from July 2022. These surveys provide baseline information on the abundance, distribution, and behaviour of birds and marine mammals as part of ecological assessments related to the location.

The Survey Area is in the Celtic Sea / northeast Atlantic Ocean, off the north coast of Cornwall. The survey method optimised data collection for all bird and marine mammal species using a grid-based survey design with 1.4 km-spaced transects (**Figure 2**). Specially designed twin-engine aircraft captured digital still imagery at 1,300ft (396 m) resulting in 1.5 cm ground sampling distance (GSD) for approximately 40% capture and 10% analysis coverage. These surveys meet the objectives of work required by Offshore Wind to inform future environmental impact assessments for this proposed wind farm development – the full scope of which is presented below.

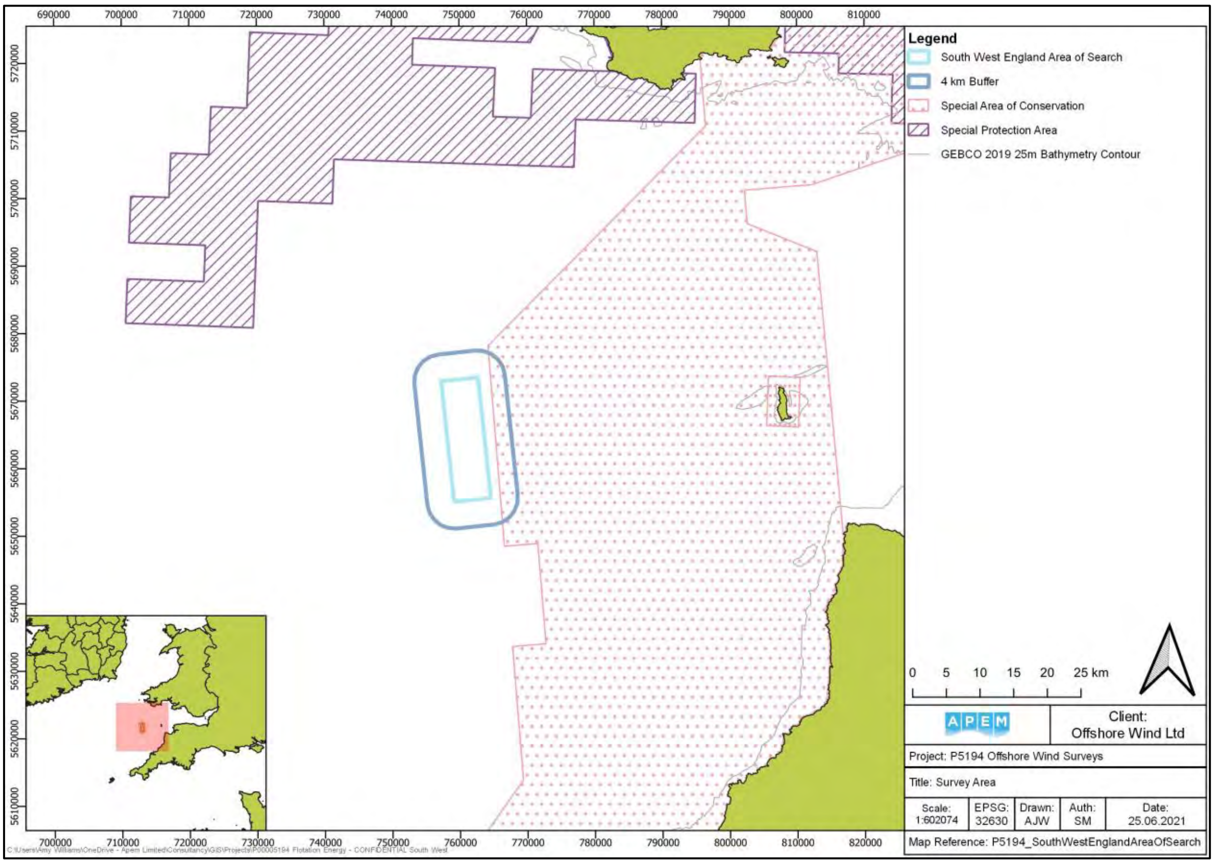


Figure 1 **Location of Southwest England Site and 4 km Buffer Zone**

This is the second annual report. It summarises the information collected during 24 monthly aerial digital surveys of the Survey Area between July 2020 and June 2022.

See Section 3 for:

- Survey and analysis methodology
- No. surveys conducted
- Dates, start / end times, weather conditions
- Health & Safety notes

See Section 4 for:

- Species accounts including abundance and density estimates
- Maps showing locations of birds and other marine megafauna
- Flight direction information

See Section 5 for:

- Anecdotal observations, for example shipping information visually recorded from aircraft or captured within images.

3. Survey and Analysis Methodology

3.1 Aerial Digital Survey Methods

The methods and results presented here relate to the application of APEM's customised camera system, the 'Shearwater IV', for surveying the offshore environment. This is integrated with custom flight planning software that allows each survey transect to be accurately mapped before the aircraft leaves the ground. Each image capture node is precisely defined, allowing the system to fire the camera exposures at precisely the right location. This ensures each survey is flown with the same transect orientation, and the camera triggered at the same position, along each transect. This happens within set tolerances set on the flight path along survey lines, automatically aborting those which drift away from the planned flight line.

During each survey, APEM's on-board camera technician continually monitored the imagery collected to ensure data was fit for purpose. If the conditions became unsuitable for surveying and/or data collection the survey was aborted and resume at the next earliest opportunity.

Data captured comprised 1.5 cm GSD digital still images collected in a grid-based design using a GPS-linked, bespoke flight management system to ensure a high degree of accuracy (Shearwater IV's GPS and IMU systems record to +/-3 to 5 m as standard).

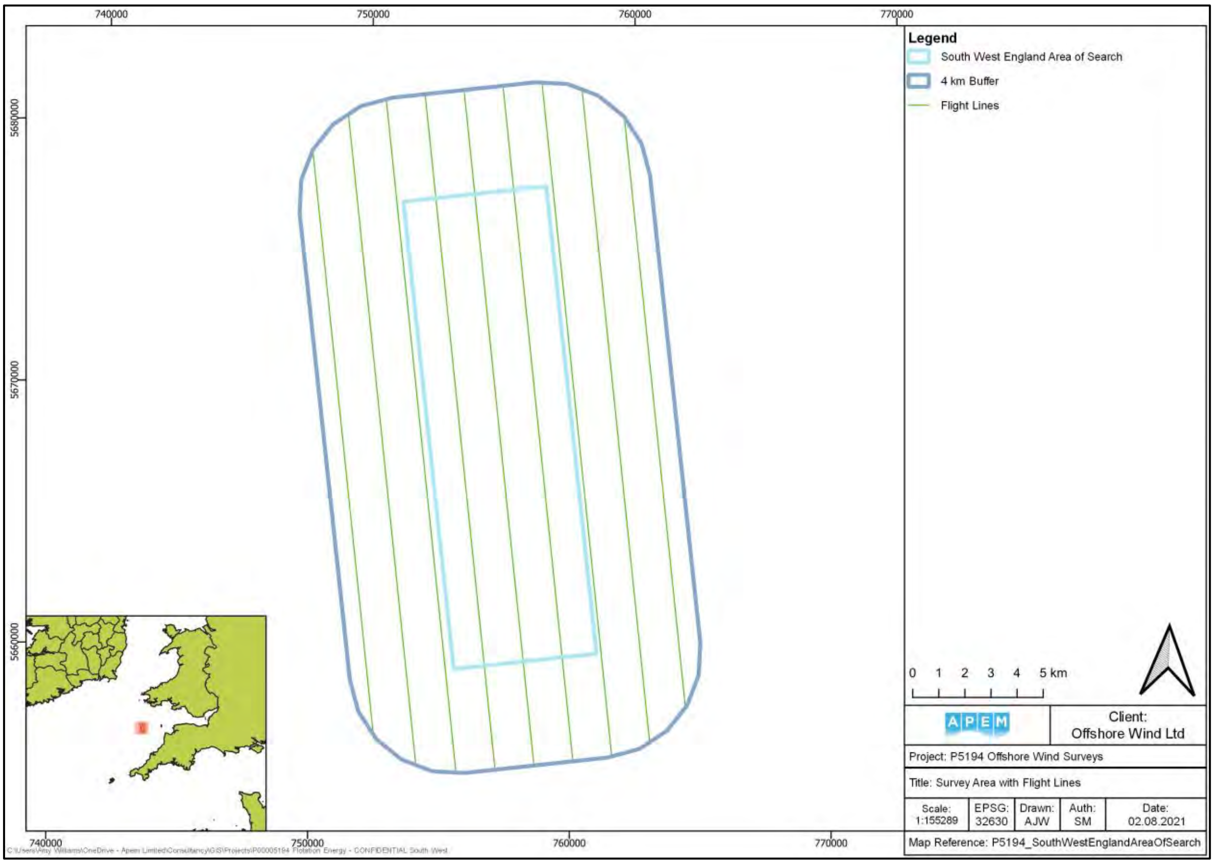


Figure 2 Flight lines and image capture points of the aerial digital still imagery of Southwest England Site and 4 km Buffer

The camera system captured abutting still imagery along nine survey lines spaced approximately 1.4 km between-track (**Figure 2**). The aircraft collected the data at an altitude of approximately 395 m and a speed of approximately 120 knots. Images were collected continuously along the survey lines and a minimum of 40% coverage captured, with 10% of data subject to further analysis.

Imagery was captured in raw format and post-processed to ensure optimal quality for the subsequent stage of image analysis, to extract information on marine fauna or other notable occurrences. When each survey is complete, data are checked to ensure the number of lines and the number of images collected are correct, and that imagery quality is acceptable. On completion of image analysis, further Quality Control (QC) was undertaken (see **Section 3.2**)

No Health & Safety issues were reported during the surveys.

Table 2 Date and start/end time (Coordinated Universal Time) for each flight for July 2020 to June 2022 monthly surveys

Survey No.	Date	Start Time (HH:MM)	End Time (HH:MM)
1	06-07-20	14:53	16:13
2	26-08-20	14:27	15:49
3	10-09-20	09:06	10:27
4	15-10-20	10:05	11:20
5	10-11-20	12:13	13:23
6	05-12-20	12:37	14:07
7	06-01-21	10:49	12:11
8	22-02-21	15:31	16:48
9	07-03-21	12:28	13:51
10	03-04-21	13:06	14:21
11	01-05-21	10:09	11:38
12	08-06-21	09:05	10:36
13	02-07-21	13:58	15:17
14	17-08-21	10:18	11:32
15	03-09-21	16:58	18:35
16	01-10-21	15:57	17:12
17	07-11-21	10:48	12:02
18	21-12-21	10:43	12:21
19	05-01-22	13:06	14:17
20	03-02-22	13:25	14:47
21	10-03-22	13:27	16:27
22	09-04-22	10:20	13:12
23	11-05-22	12:33	13:47
24	01-06-22	09:24	10:39

The date(s), start, and end times for each aerial digital survey are presented in **Table 2**, with corresponding weather conditions in **Table 3**. Weather conditions during all surveys were conducive to collecting and analysing imagery for the purpose of providing data on the identification, distribution, and abundance of bird species and marine megafauna within the

Survey Area. Favourable conditions for surveying are defined as a cloud base of >1,700ft, visibility of >5 km, wind speed of <30 knots, and Douglas Scale sea state of 3 (slight) or less. For safety reasons, no surveying takes place in icing conditions.

Measures are taken to minimise glint and glare when conditions may be subject to this, such as avoiding surveying around midday, when the sun angle has the greatest potential to impact image quality. We also capture additional imagery as an alternative dataset for analysis to ensure sufficient coverage should images be negatively affected. The number of images and coverage captured per survey are presented in **Table 4**.

Table 3 Weather conditions recorded for completed surveys: July 2020 to June 2021

Survey No.	Date	Douglas Sea State[1]	Turbidity[2]	Wind Speed (knots) / Direction	Cloud Cover (%)[3]	Visibility (km)	Air Temp (°C)
1	06-07-20	3	2	10 / WNW	1-10	>10	12
2	26-08-20	3	0	20 / W	50-75	>10	14
3	10-09-20	0	1	2-3 / SE	80-90	>10	6-7
4	15-10-20	1	2	15 / NE	5-40	>10	7
5	10-11-20	2	0	13 / S	100	>10	10
6	05-12-20	2-3	1-1.5	30 / NE	30-40	>10	8
7	06-01-21	1	2	10-15 / NE	60-70	>10	10
8	22-02-21	3	0	15 / S	100	>10	4-5
9	07-03-21	0	1-2	5 / SW	100	>5-7	0
10	03-04-21	1-2	0-1	4 / S	20	>10	8
11	07-05-21	1	1	<5-10 / Various	0	>10	4-5
12	08-06-21	0	0	15-16 / S	<5-10	>10	10-11
13	02-07-21	1	1	8 / S	50-60	>10	13-14
14	17-08-21	3	2	7-10 / N	35-40	>15	9-10
15	03-09-21	3	2	5 / N	80	>10	16
16	01-10-21	3	2	15 / W	30	>10	10
17	07-11-21	2	2	6-12 / NW-N	100	>10	9
18	21-12-21	2	1	17 / S	100	>10	4
19	05-01-22	2	2	19 / N	50	>10	4
20	03-02-22	2-3	1	19-23 / W	60-80	>10	8
21	10-03-22	2	2	20-30 / NE	75	>10	2-4
22	09-04-22	1	1	0	20	>10	6
23	11-05-22	2-4	1	18-27 / W	0-40	>10	9
24	01-06-22	1	2	5-7 / N	50	>20	9

[1] 0 = Calm (Glassy); 1 = Calm (Rippled); 2 = Smooth; 3 = Slight
[2] 0 = Clear; 1 = Slightly Turbid; 2 = Moderately Turbid; 3 = Highly Turbid
[3] 0 = Clear; 1-10 = Few; 11-50 = Scattered; 51-95 = Broken; 96-100 = Overcast

Table 4 Number of images and survey coverage for each monthly survey

Survey No.	Number of Images	Survey coverage (%)	Coverage analysed(%)
1	1,194	44.34	11.18
2	1,194	44.34	11.18
3	1,200	44.34	11.23
4	1,194	44.34	11.18
5	1,194	44.34	11.18
6	1,194	44.34	11.18
7	1,194	44.34	11.18
8	1,194	44.34	11.18
9	1,179	44.34	11.04
10	1,194	44.34	11.18
11	1,194	44.34	11.18
12	1,194	44.34	11.18
13	1,194	44.34	11.18
14	1,194	44.34	11.18
15	1,179	44.34	11.18
16	1,194	44.34	11.18
17	1,194	44.34	11.18
18	1,194	44.34	11.18
19	1,194	44.23	11.18
20	1,194	44.31	11.18
21	1,179	44.31	11.18
22	1,194	44.34	11.18
23	1,203	44.34	11.26
24	1,200	44.34	11.23

3.2 Summary of Quality Control

Internal Quality Assurance (QA) was carried out on the data collected from each of the surveys. Images were assessed in batches with a different APEM staff member responsible for each. Images containing birds and/or marine megafauna were reviewed and checked by the QA Manager – a minimum of 50% of birds and marine megafauna recorded were assessed to confirm all species were correctly identified. Images without birds and/or marine megafauna were removed and stored separately, and of these ‘blank’ images, 10% randomly selected for QA. If there was <90% agreement, the entire batch was re-analysed independently by a different member of staff.

3.3 Species Abundance Estimates

For each monthly aerial survey of the Survey Area, geo-referenced locations of marine fauna contained within each individual digital still image were used to generate raw counts. Marine fauna locations contained within the boundaries of the two areas surveyed (the Site and the 4 km Buffer), were extracted using a GIS, providing raw count data contained in this report.

The raw counts were divided by the number of images collected to give the mean number of animals per image (i). Population estimates (N) for each survey month were subsequently generated by multiplying the mean number of animals per image by the total number of images required to cover the Survey Area (A):

$N = i\ A$

Non-parametric bootstrap methods were used for variance estimation. A variability statistic was generated by re-sampling 999 times with replacement from the raw count data. The statistic was evaluated from each of these 999 bootstrap samples and upper and lower 95% confidence intervals of these 999 values were taken as the variability of the statistic over the population (Efron & Tibshirani, 1993).

A measure of precision was calculated using a Poisson estimator, suitable for a pseudo-Poisson over-dispersed distribution. This produced a CV based on the relationship of the standard error to the mean.

All analyses and data manipulation carried out by APEM were conducted in the R programming language (R Development Core Team, 2012) and non-parametric 95% confidence intervals were generated using the ‘boot’ library of function (Canty & Ripley, 2010). This resulted in species-specific monthly abundance estimates being calculated from the raw count data, with upper and lower confidence limits. Where appropriate, a level of precision is also presented for each monthly abundance estimate. Dividing the monthly abundance estimates by the size of the area covered (Survey Area, Site, or Buffer) calculates the associated density (e.g. animals per km^2) for any given species.

Please note that for species abundance and density estimates, raw counts are ‘clipped’ to the Site and Buffer boundaries, so observations made outside the area are excluded. This means raw counts may not necessarily reflect those reported in individual monthly survey reports, as these may comprise species outside the Buffer boundaries should part of an analysed image capture such an area.

3.4 Species Distribution Maps

Every animal recorded during the surveys has been geo-referenced, allowing the locations to be related to the boundary of the Survey Area. Monthly distribution maps have been produced for each species using QGIS (version 3.18) by separating each individual recorded during a survey and representing these as symbols on a map. Symbols are determined by the species group, with a relevant icon and a unique colour assigned on a per species basis which allows for a differentiation across the board between species with the same icon. The collective results of these distribution maps are presented in Section 4.

3.5 Species Flight Direction Rose Diagrams

The flight direction of birds recorded has been ascertained from all digital still images. Bearings of bird directions were plotted using the R statistical package to summarise overall directions of movement. The mean angle and mean vector have been used to describe directional patterns and extent of 'agreement'. A Rayleigh test that assumes a null hypothesis of uniformity (i.e., scattered orientation in all directions) was used, whereby a significant test indicates directionality of movement.

3.6 Avian Flight Altitudes

Bird flight height was estimated from the digital still images using bespoke APEM software that applies a set of rules developed in-house and trigonometry to provide an estimate of flight height. This method is dependent upon image quality, size of the bird species and the size of the bird relative to the image. It is not possible to accurately estimate flight heights for birds that are diving or turning sharply, as these individuals are not fully stretched out. Their measured lengths are not comparable to the reference length of the relevant species, so these individuals were unsuitable for flight height analysis.

Boxplots (**Figures 312 & 313**) were produced to show flight heights per species, where possible, by combining the suitable data collected from each year of surveys. Species with five or more flight heights have been presented in the graph. The 'box' is the interquartile range, with the middle bold line representing the median of the data. The 'whiskers' are the largest and smallest non-outliers. The range of the entire data includes the outliers (outside 1.5 times the interquartile range) represented by circles. Please note this model relies on comparing a standard reference length to the length of the bird in the imagery. Therefore, the outputs may be influenced by factors such as discrepancies in bird length, for example a larger than average individual, and how the bird was captured in the image, for example head down, leading to outliers within the data.

4. Species Accounts

The following species accounts present the raw counts, design-based abundance estimates, and density estimates, as well as behavioural and peak month distribution data, from a 24-month programme of aerial digital surveys of the Survey Area. The density estimates provide the number of individuals per square kilometre (km^2). Note – abundance estimates for each of the Site, 4 km Buffer Zone, and total Survey Area are likely to differ due to independent calculations based on the number of recorded targets per location, and area covered by these locations.

Scientific names and taxonomy of birds and marine fauna are provided in Appendix I, with JNCC Species Group Codes in Appendix II. Abundance and density estimate raw data are presented in Appendix III.

4.1 Kittiwake – *Rissa tridactyla*

Kittiwakes were recorded from September 2020 to June 2022, with the exception of June 2021 and October 2021. A peak raw count of 268 in January 2021 resulted in an abundance estimate of 2,122 for the Survey Area (**Table 5**).

In the Southwest England Site, kittiwakes were present from September 2020 to June 2022, with the exception of May 2021, June 2021, October 2021 and May 2022. A peak raw count of 105 in January 2021 resulted in an abundance estimate of 922 for the area (**Table 5**).

They were seen between September 2020 and July 2021 in the 4 km Buffer Zone, with the exception of April and June 2021. They were not found in August and October 2021 but were recorded from November 2021 to June 2022. A peak raw count of 163 in January 2021 resulted in an abundance estimate of 1,240 for the Survey Area (**Table 5**).

In **Year One**, kittiwakes occurred in relatively low numbers during the autumn, with a loose distribution across the Survey Area in September, October, and November 2020 (**Figure 3, 4 & 5**). They were predominantly in the north of the Site and Buffer during September and October, and more evenly distributed in November. A dense group was noted in the eastern area of the 4 km Buffer Zone during the October survey. Numbers rose in December and peaked in January 2021, with individuals across the Survey Area, but with a northerly, and central skew, respectively (**Figure 6** & **Figure** 7).

Numbers were relatively low between February and May, with most birds in the east and south of the Survey Area in February and March (**Figure 8 & 9**). A single individual was recorded in the north-east of the Site during April 2021, while three birds were noted in May 2021 survey – one each in the north, east, and south-east of the Survey Area (**Figure 10; Figure 11**).

In **Year Two**, a similar distribution occurred, with the highest numbers between November 2021 and March 2022 (**Table 5**), with the exception of December, and the lowest numbers between July to September 2021 and April to June 2022 (**Table 5**). Kittiwakes were mainly in the 4 km Buffer Zone in July 2021, from November 2021 to January 2022, and from April 2022 to June 2022. In August and September 2021, they were only seen within the Site boundary with a southerly skew (**Figure 13**; **Figure 14**), whereas in February and March 2022, they were more evenly distributed between all areas of the Site and the Buffer (**Figure 18**; **Figure 19).** Southernly skews were also recorded in December 2021, January 2022 and June 2022 (**Figure 16**; **Figure 17; Figure 22**).

The birds flew north in July 2021, April 2022 and May 2022 (**Figure 12**; **Figure 20**; **Figure 21**), and November 2021 saw a denser group in the north-east corner of the Buffer (**Figure 15**). In September 2020 and July 2021, there was no predominant direction (p=0.995; **Figure 23a**; p=0.987**; Figure 23j**).

In **Year One** kittiwakes were recorded flying mostly in easterly directions: north-northeast in December 2020 (17.004°, p<0.001; **Figure 23d**); northeast in January 2021 (40.805°, p<0.001; **Figure 23e**); east-northeast in October 2020 and March 2021 (63.013°, p<0.001; **Figure 23b**; 60.345°, p=0.004; **Figure 23g**); and south-southeast in November 2020 and February 2021 (163.942°, p=0.486; **Figure 23c**; 166.979°, p<0.001; **Figure 23f**). In April and May 2021 they flew south-southwest (191.511°, p=0.512; **Figure 23h**; 204.778°, p=0.147; **Figure 23i**).

In **Year Two**, the opposite happened, with flight predominantly westerly: northwest in November 2021 (308.4°, p<0.001; **Figure 23l**); north-northwest in January 2022, May and June 2022 (336.665°, p<0.001; **Figure 23n**; 327.211°, p=0.512; **Figure 23r**; 336.340°, p=0.018; **Figure 23s**); southwest in February 2022 (228.701°, p<0.001; **Figure 23o**); and south-southwest in March 2022 (186.146°, p<0.001; **Figure 23p**). They also flew easterly: northeast in September 2021 (48.281°, p=0.184; **Figure 23k**), south-southeast in December 2021 (163.625°, p=0.001; **Figure 23m**) and north-northeast in April 2022 (27.315°, p=0.083; **Figure 23q**).

Table 5 **Raw counts and abundance and density estimates (individuals per km^2) of kittiwake in: a) Survey Area b) Site and c) 4 km Buffer Zone**

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Sep-20	31	243	71	495	0.18	0.72
Oct-20	52	398	54	965	0.14	1.18
Nov-20	7	55	16	110	0.38	0.16
Dec-20	70	560	320	864	0.12	1.66
Jan-21	268	2,122	1,552	2,708	0.06	6.31
Feb-21	15	115	46	200	0.26	0.34
Mar-21	26	199	107	299	0.20	0.59
Apr-21	1	8	1	23	1.00	0.02
May-21	3	22	3	51	0.58	0.07
Jul-21	4	31	8	61	0.50	0.09
Aug-21	1	8	1	24	1.00	0.02
Sep-21	2	15	2	38	0.71	0.04
Nov-21	163	1,250	215	2,914	0.08	3.72
Dec-21	19	146	69	246	0.23	0.43
Jan-22	53	410	278	564	0.14	1.22
Feb-22	102	787	563	1,057	0.10	2.34
Mar-22	134	1,018	668	1,481	0.09	3.03
Apr-22	4	30	8	61	0.50	0.09
May-22	1	8	1	23	1.00	0.02
Jun-22	30	224	90	404	0.18	0.67

b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Sep-20	21	183	21	445	0.22	1.85
Oct-20	4	34	4	76	0.50	0.34
Nov-20	3	26	3	62	0.58	0.26
Dec-20	8	71	27	133	0.35	0.72
Jan-21	105	922	579	1,291	0.11	9.31
Feb-21	4	35	9	78	0.50	0.35
Mar-21	11	94	26	172	0.30	0.95
Apr-21	1	9	1	26	1.00	0.09
Jul-21	1	9	1	26	1.00	0.09
Aug-21	1	9	1	26	1.00	0.09
Sep-21	2	16	2	41	0.71	0.16
Nov-21	4	34	9	60	0.50	0.34
Dec-21	7	61	7	165	0.38	0.62
Jan-22	12	105	44	174	0.29	1.06
Feb-22	42	365	174	617	0.15	3.69
Mar-22	55	475	173	942	0.13	4.80
Apr-22	1	8	1	25	1.00	0.08
Jun-22	5	42	8	84	0.45	0.42
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Sep-20	10	75	23	151	0.32	0.32
Oct-20	48	353	48	935	0.14	1.49
Nov-20	4	30	4	75	0.50	0.13
Dec-20	62	476	253	813	0.13	2.00
Jan-21	163	1,240	814	1,719	0.08	5.22
Feb-21	11	81	29	146	0.30	0.34
Mar-21	15	110	51	190	0.26	0.46
May-21	3	21	3	49	0.58	0.09
Jul-21	3	22	3	44	0.58	0.09
Nov-21	159	1,166	183	2,772	0.08	4.91
Dec-21	12	88	44	147	0.29	0.37
Jan-22	41	303	192	443	0.16	1.28
Feb-22	60	442	317	583	0.13	1.86
Mar-22	79	571	376	774	0.11	2.40
Apr-22	3	22	3	51	0.58	0.09
May-22	1	7	1	22	1.00	0.03
Jun-22	25	179	50	365	0.20	0.75

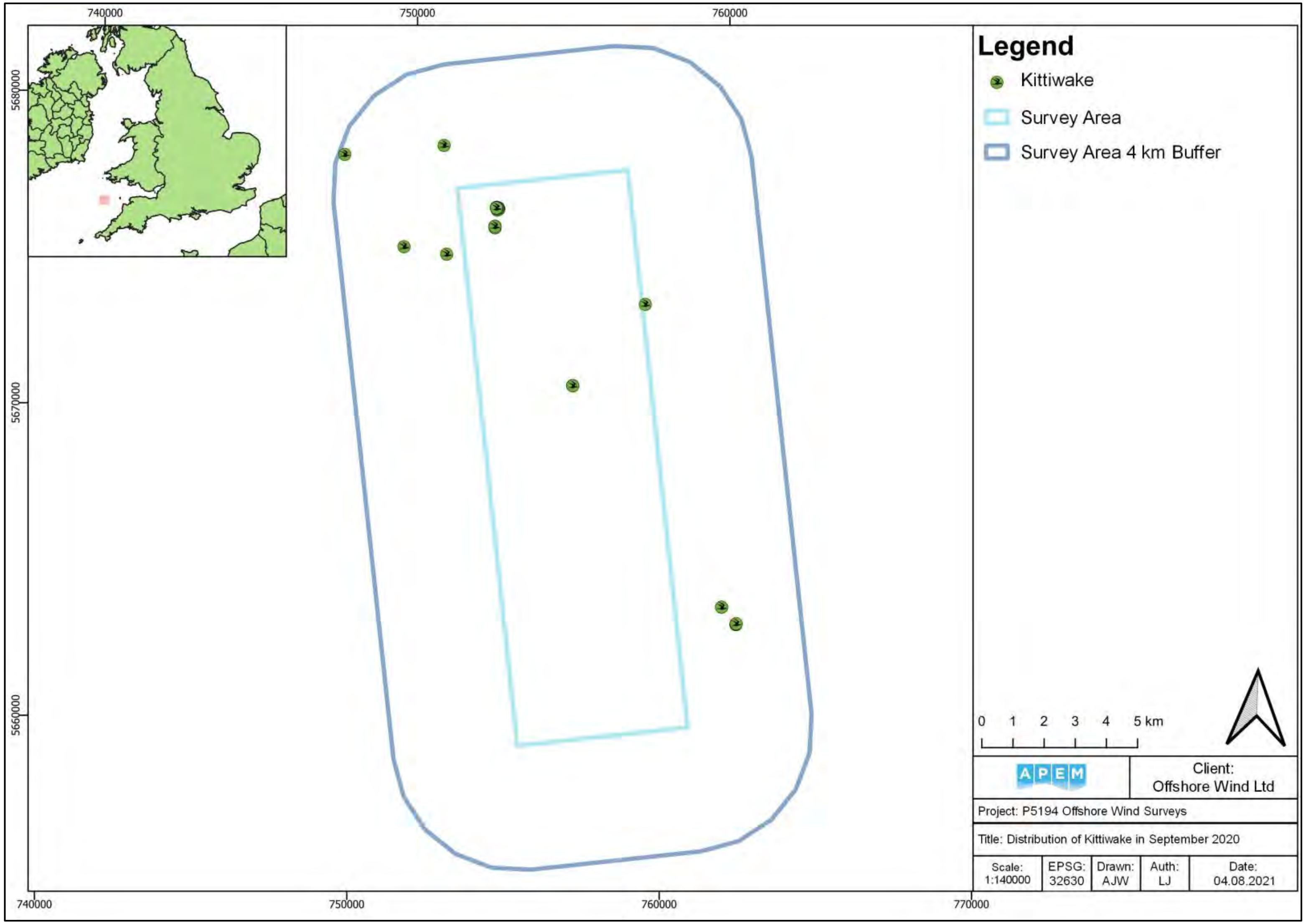


Figure 3 Distribution of kittiwakes in Survey Area during September 2020

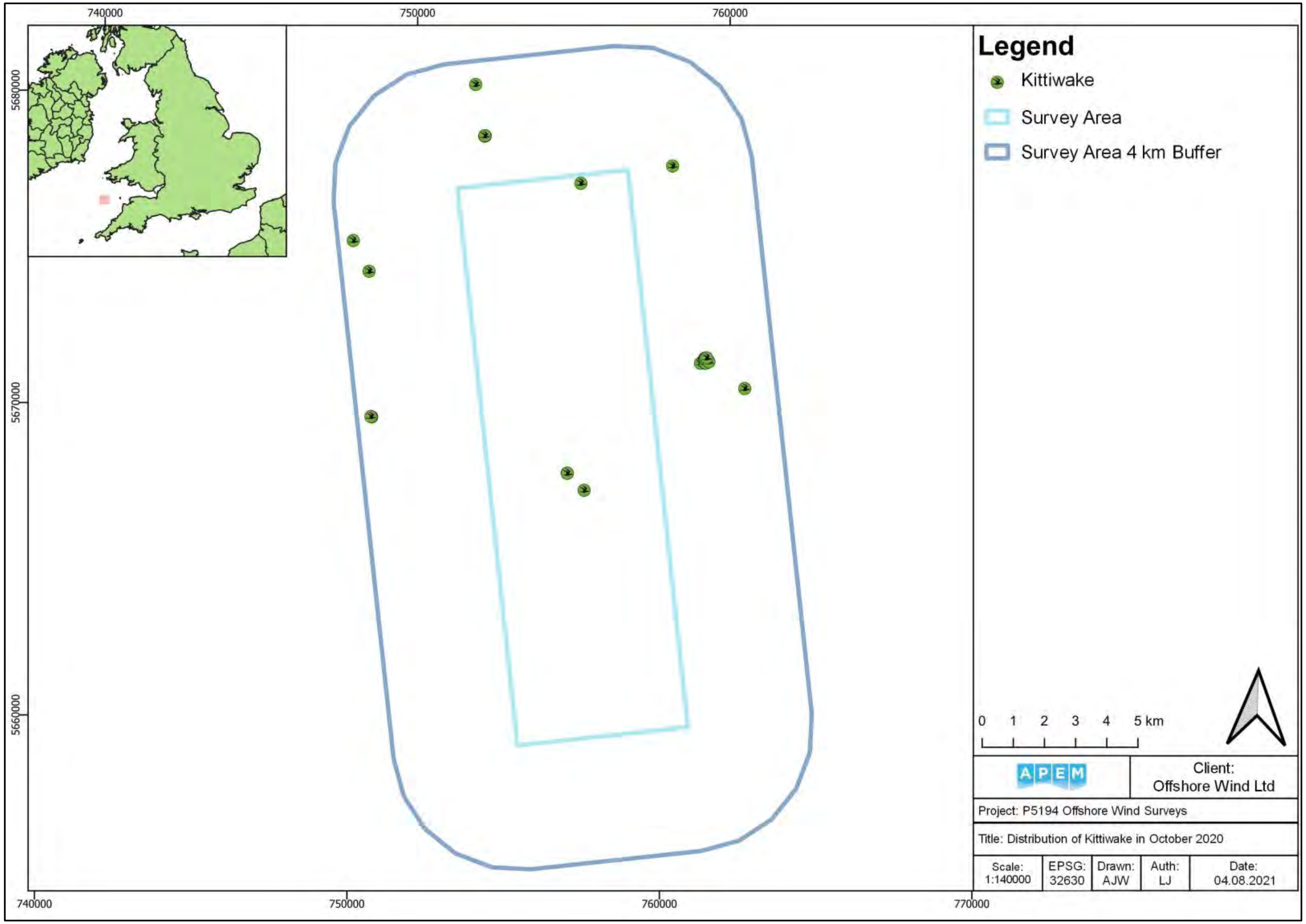


Figure 4 Distribution of kittiwakes in Survey Area during October 2020

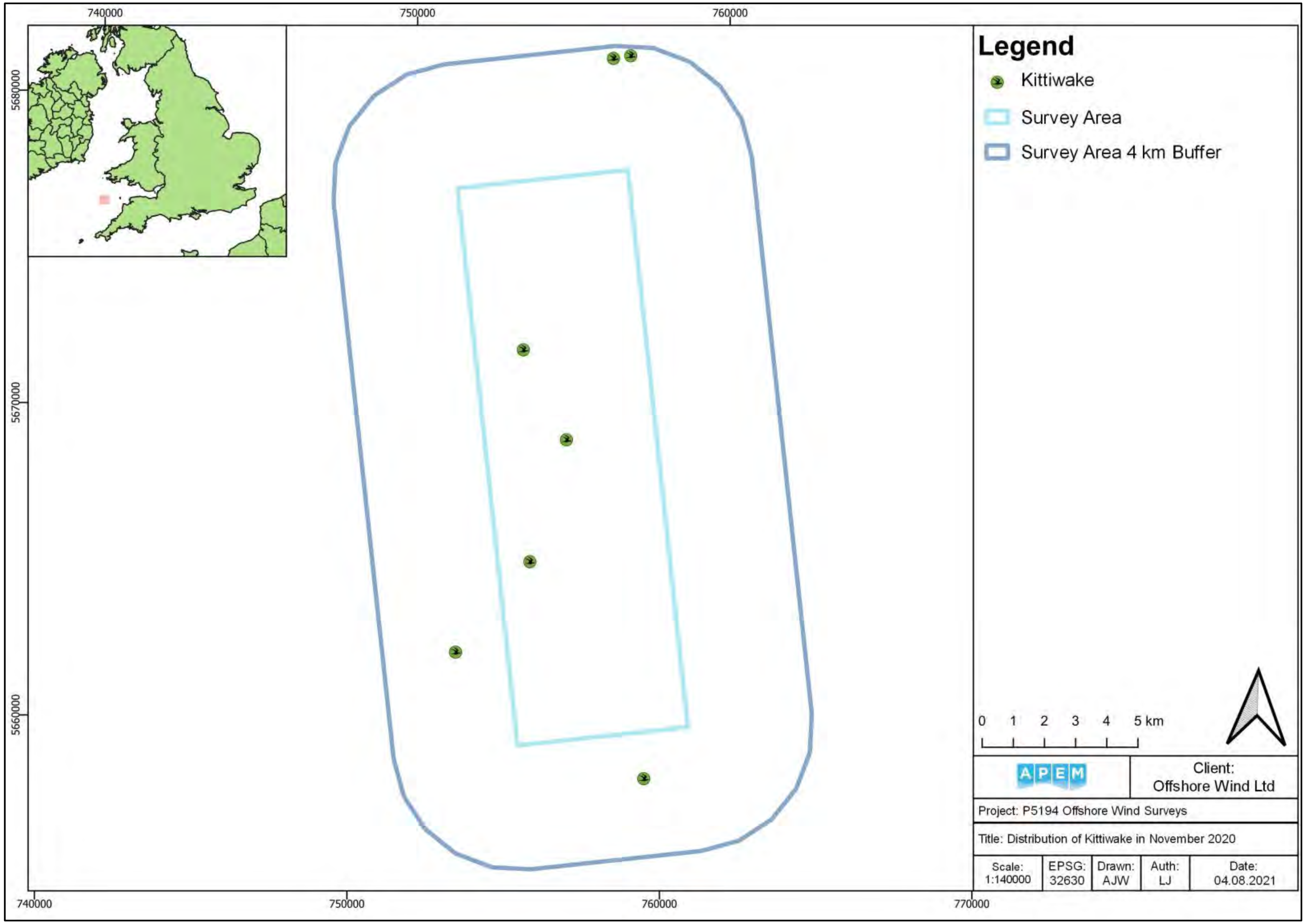


Figure 5 Distribution of kittiwakes in Survey Area during November 2020

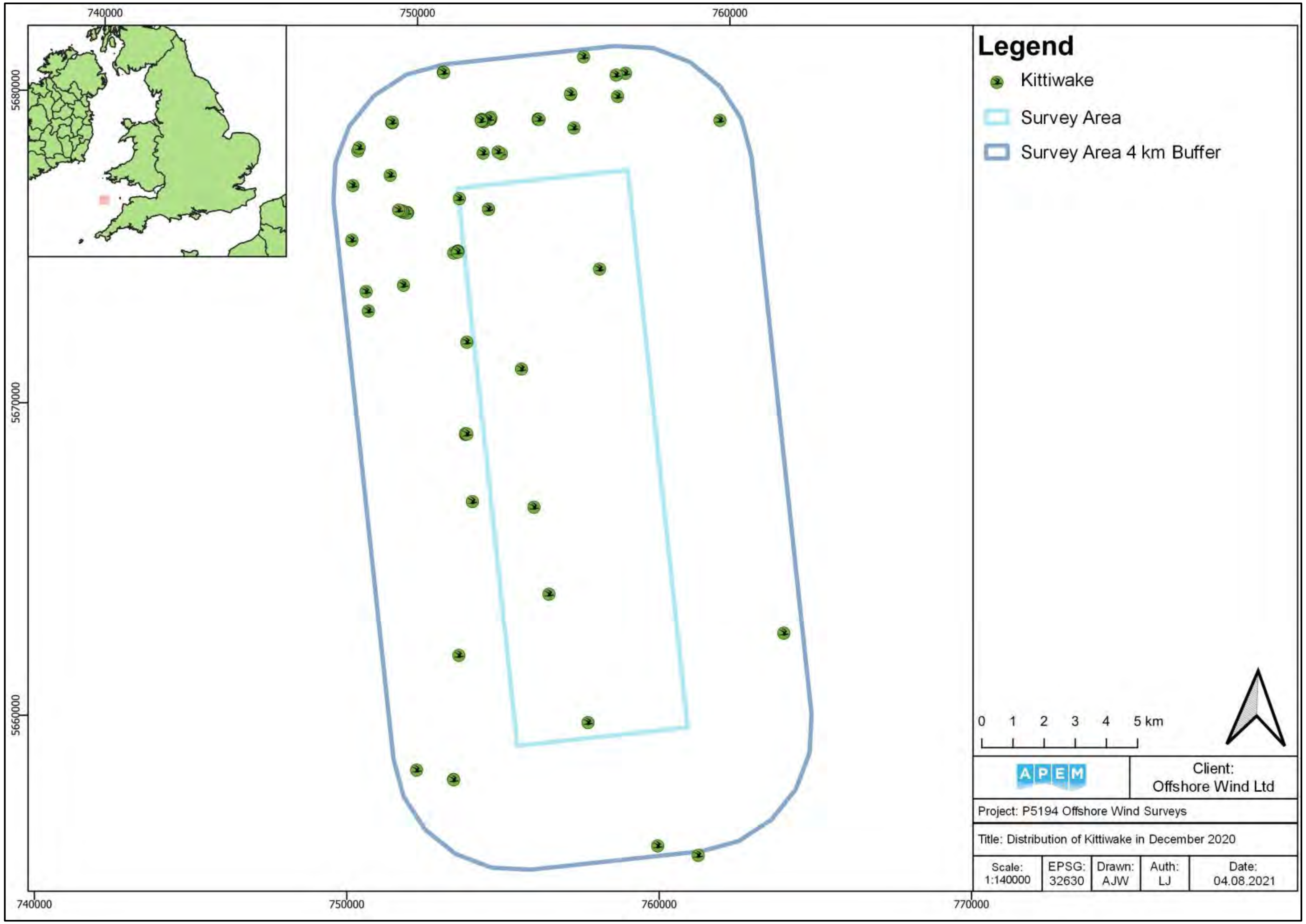


Figure 6 Distribution of kittiwakes in Survey Area during December 2020

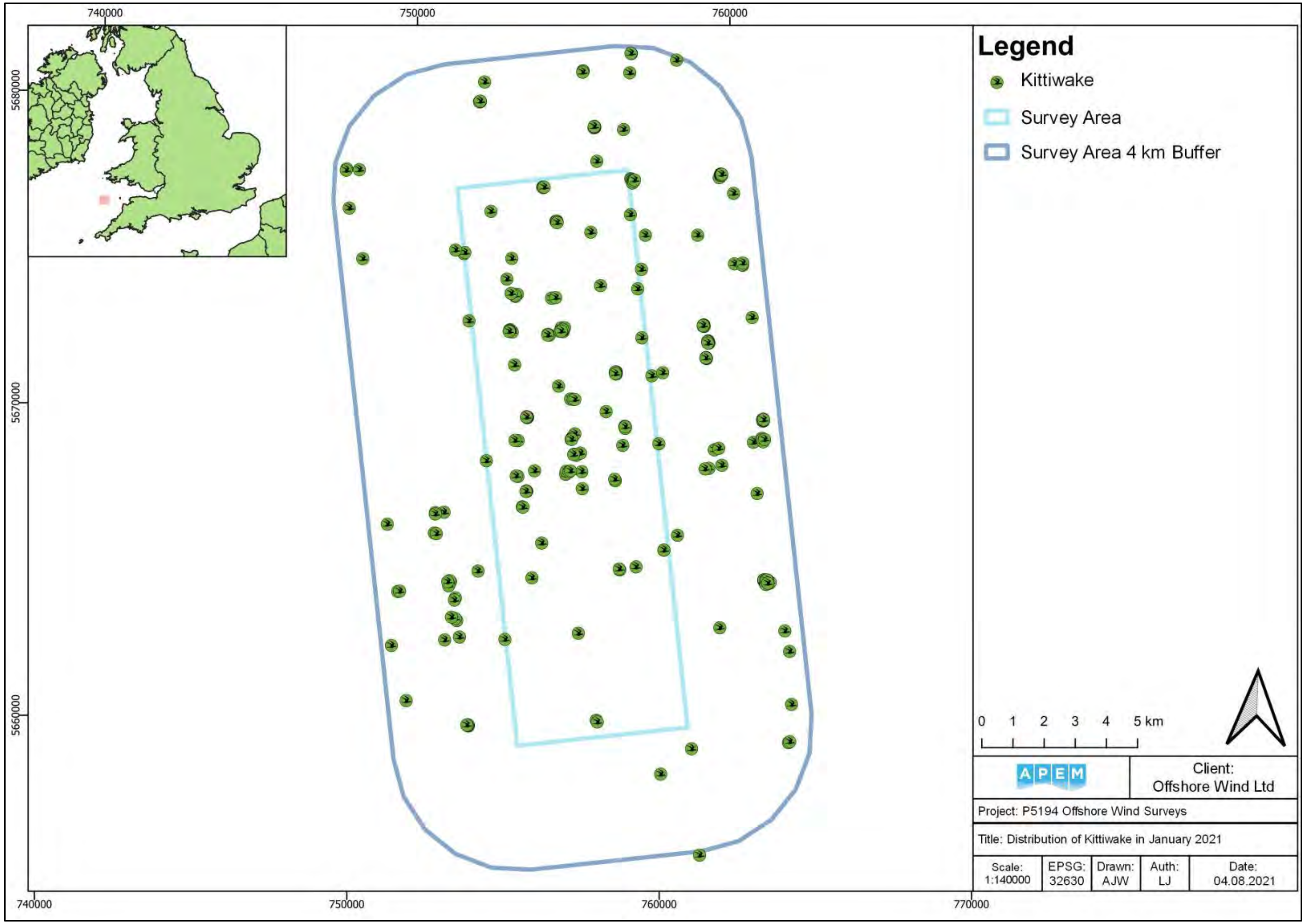


Figure 7 Distribution of kittiwakes in Survey Area during January 2021

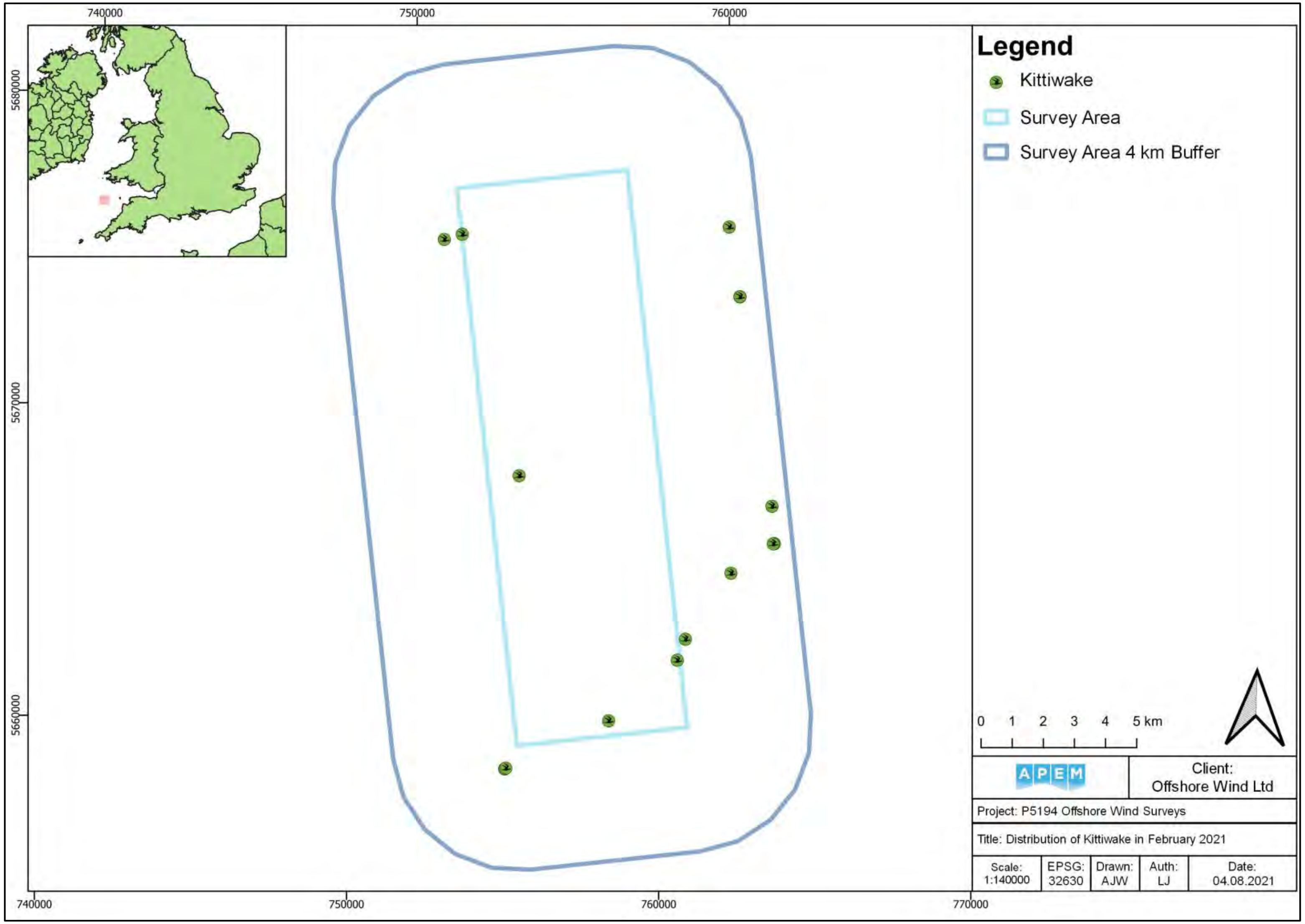


Figure 8 Distribution of kittiwakes in Survey Area during February 2021

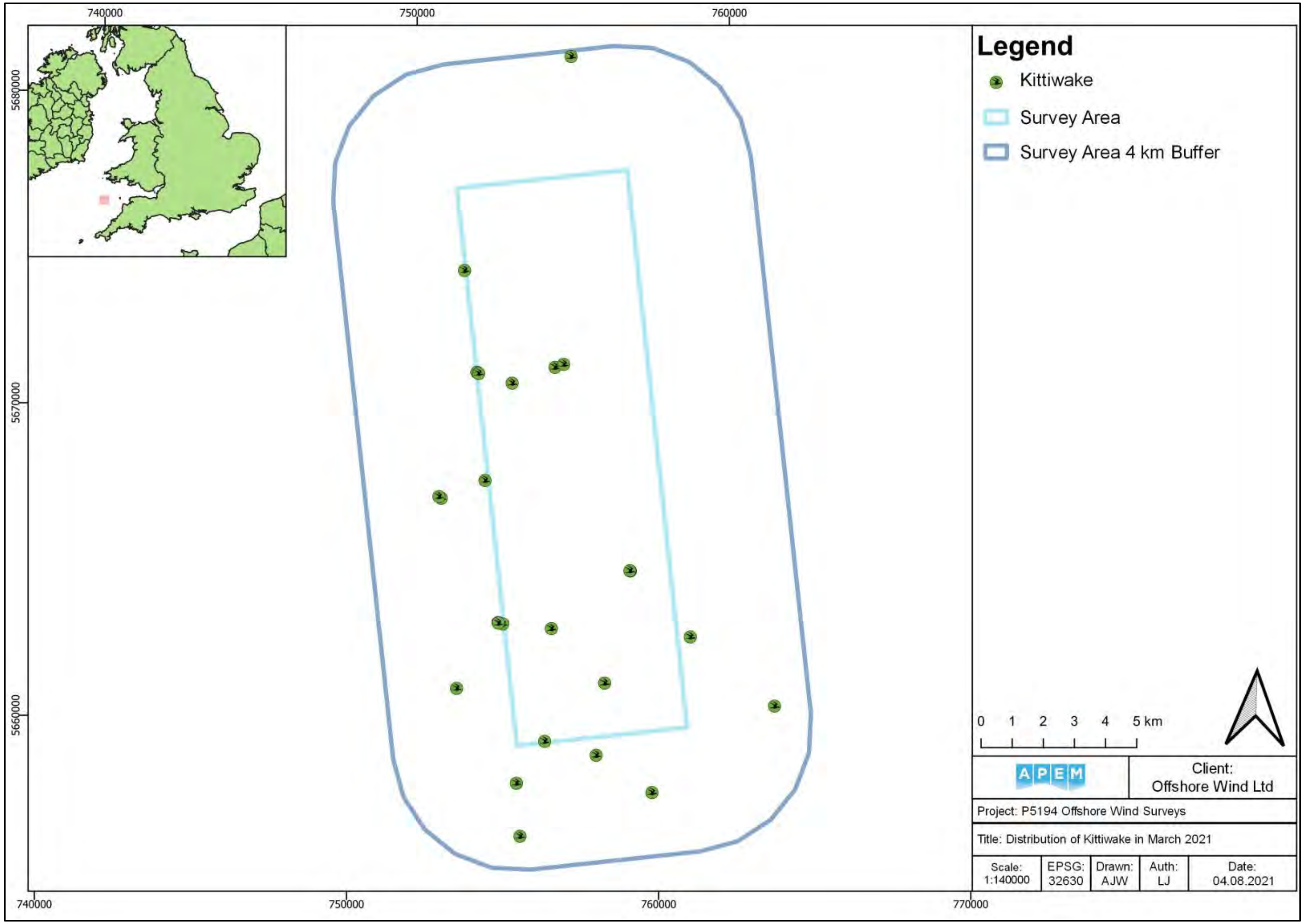


Figure 9 Distribution of kittiwakes in Survey Area during March 2021

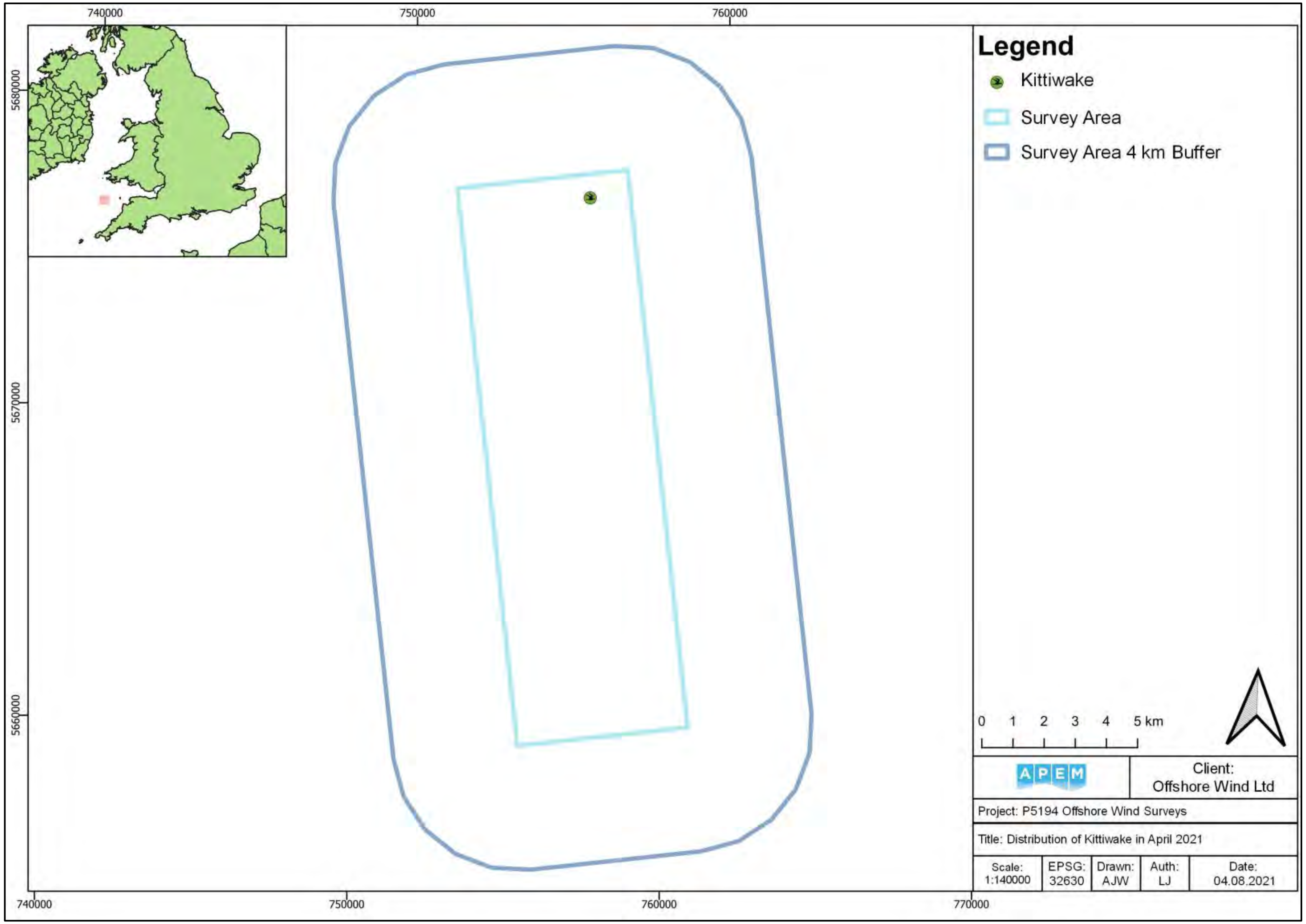


Figure 10 Distribution of kittiwakes in Survey Area during April 2021

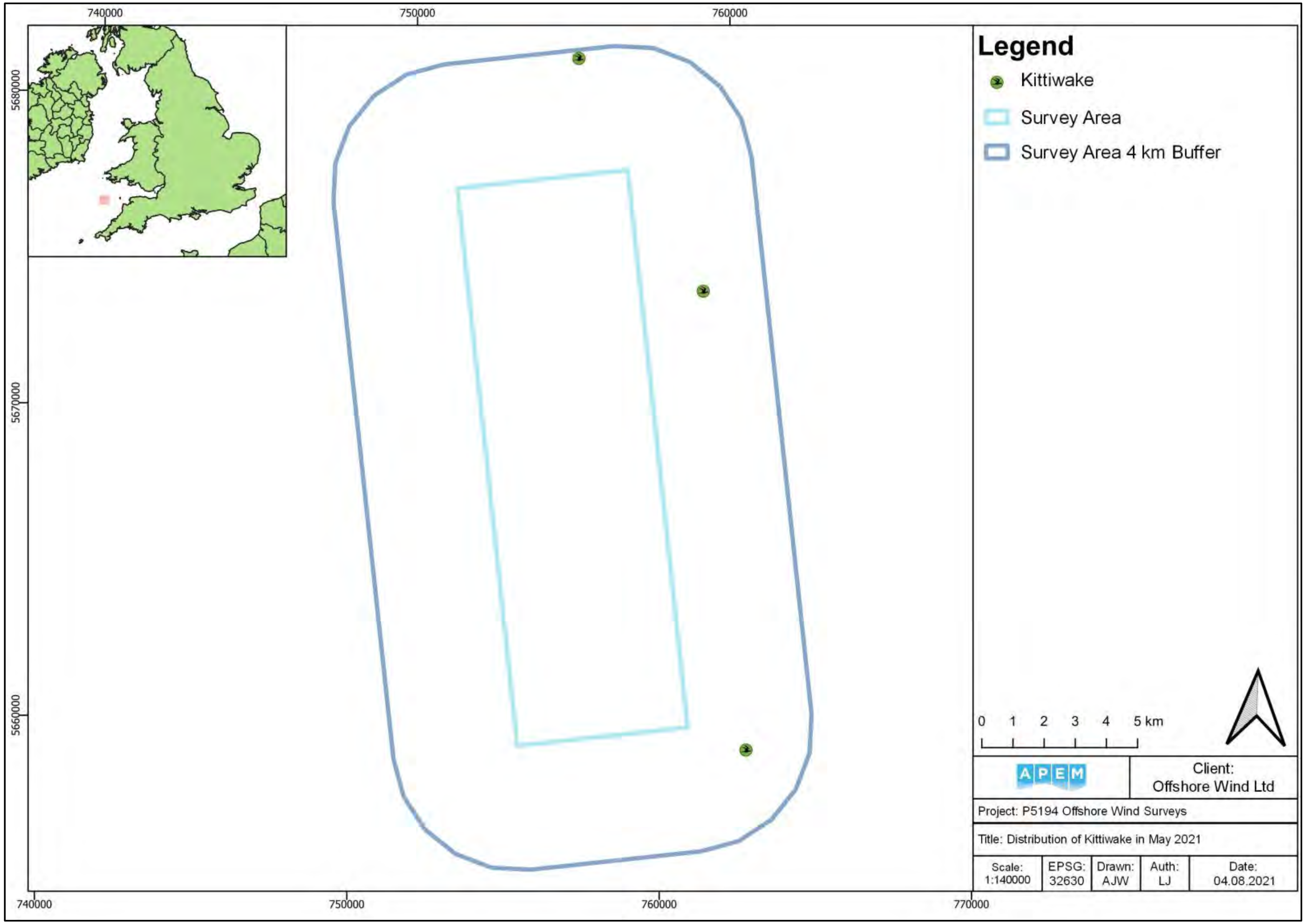


Figure 11 Distribution of kittiwakes in Survey Area during May 2021

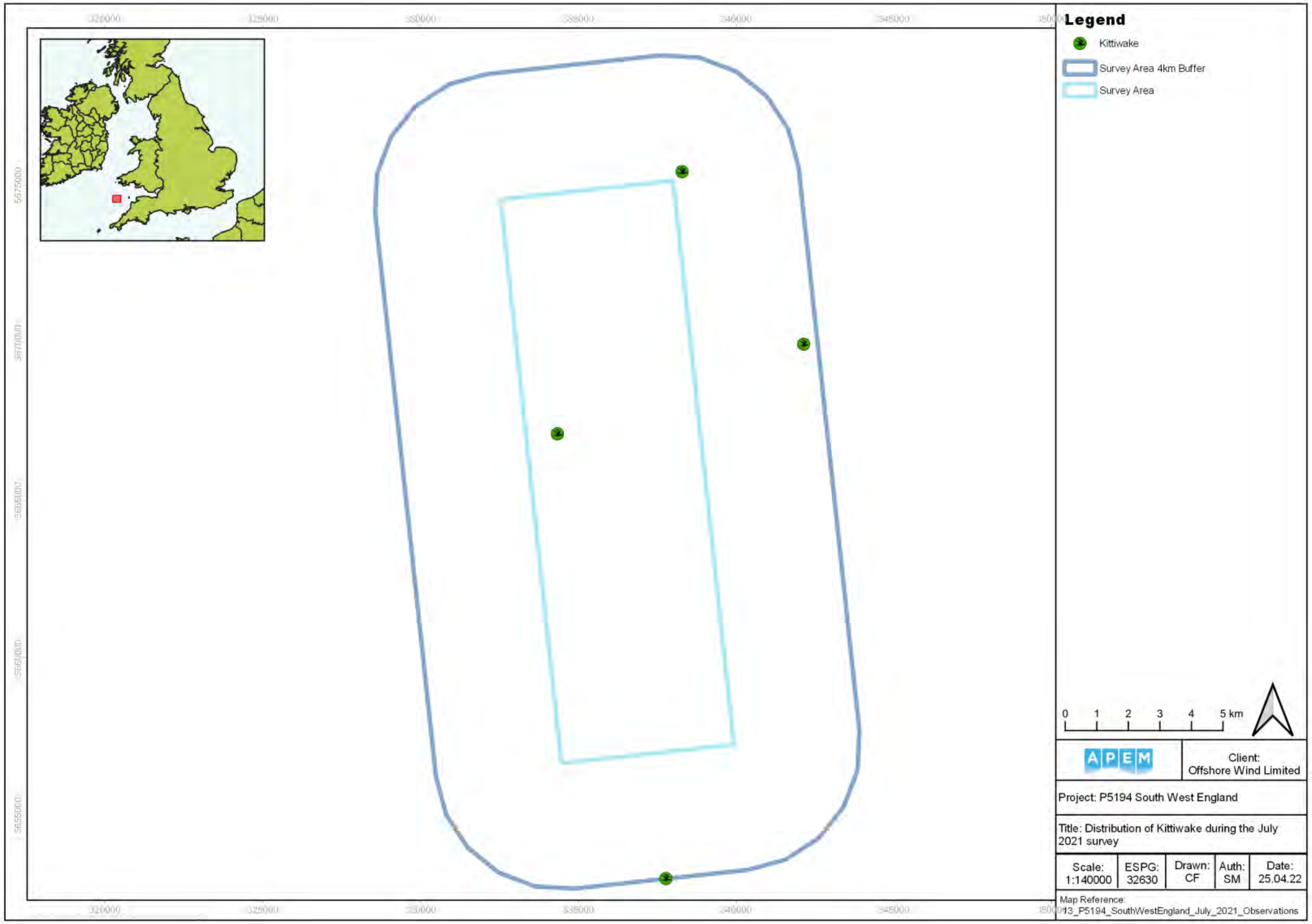


Figure 12 Distribution of kittiwakes in Survey Area during July 2021

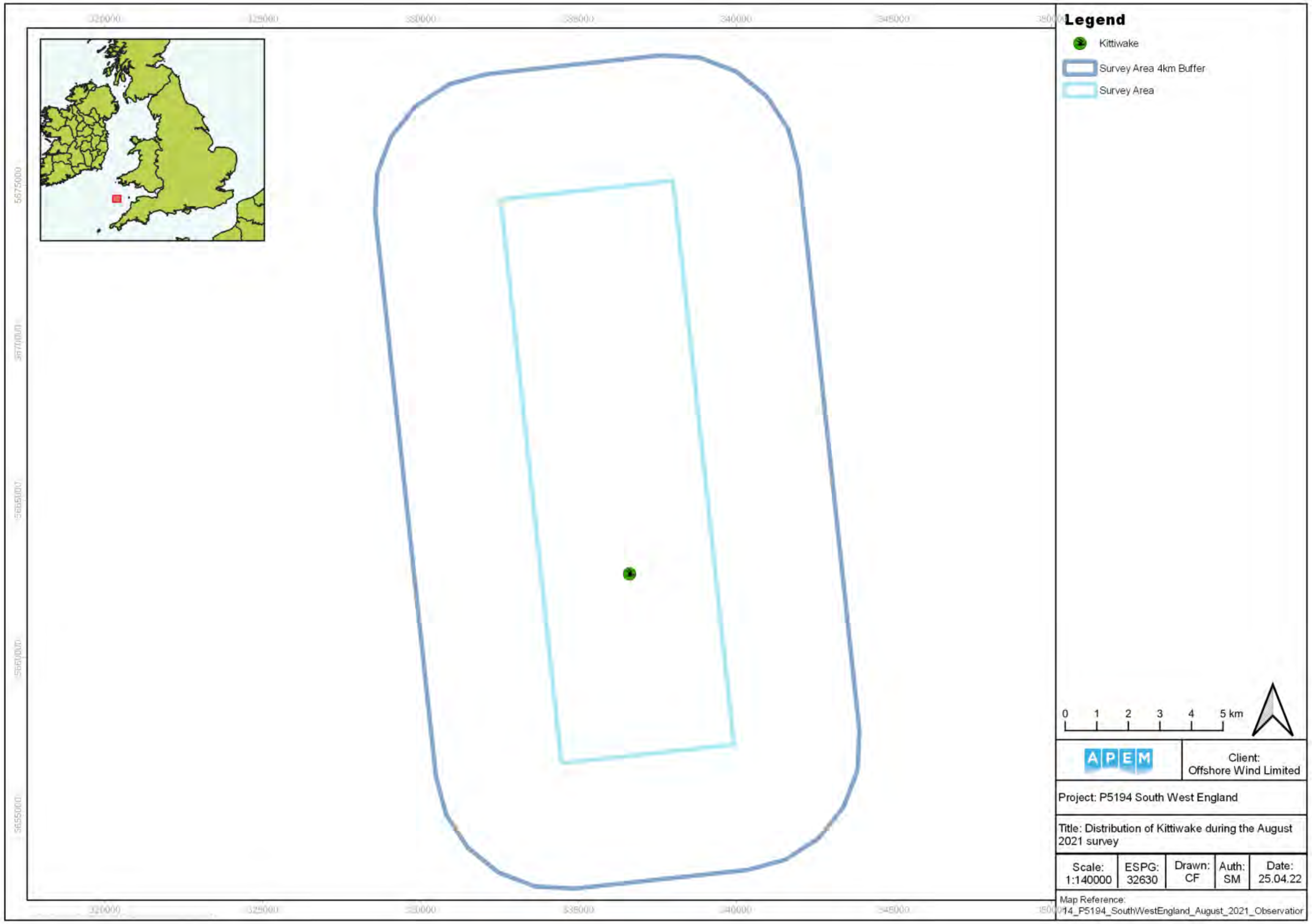


Figure 13 Distribution of kittiwakes in Survey Area during August 2021

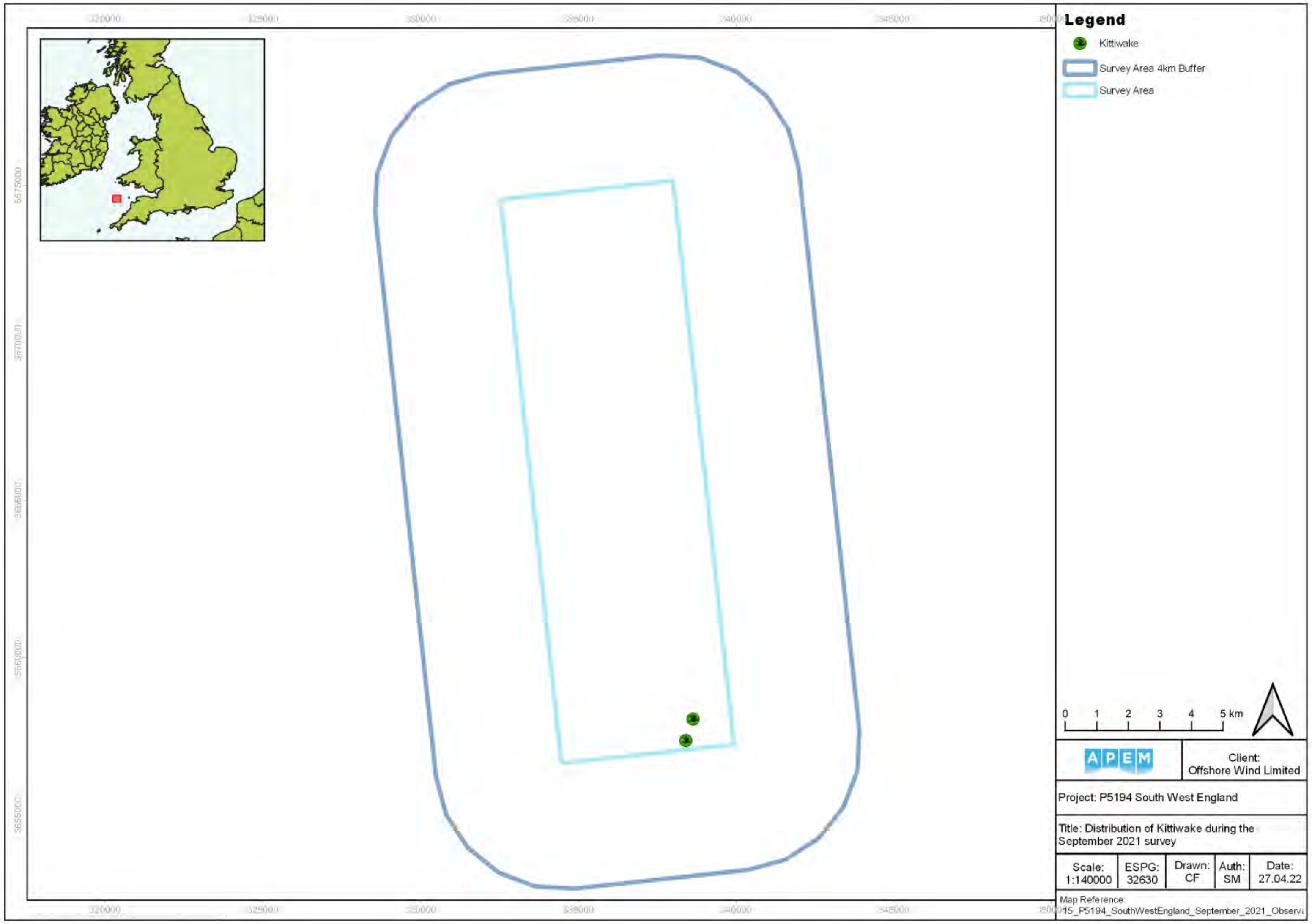


Figure 14 Distribution of kittiwakes in Survey Area during September 2021

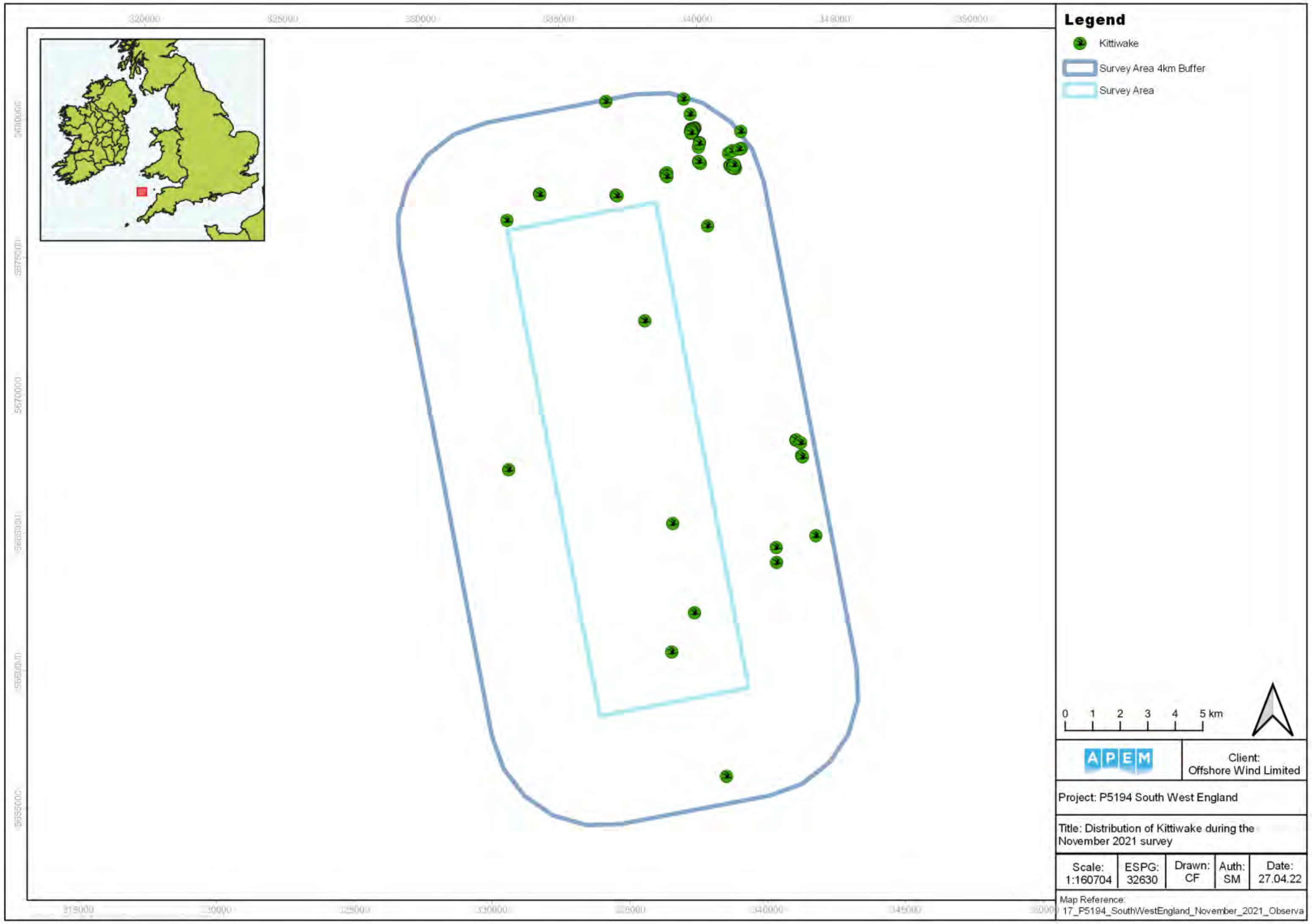


Figure 15 Distribution of kittiwakes in Survey Area during November 2021

Figure 16 Distribution of kittiwakes in Survey Area during December 2021

Figure 17 Distribution of kittiwakes in Survey Area during January 2022

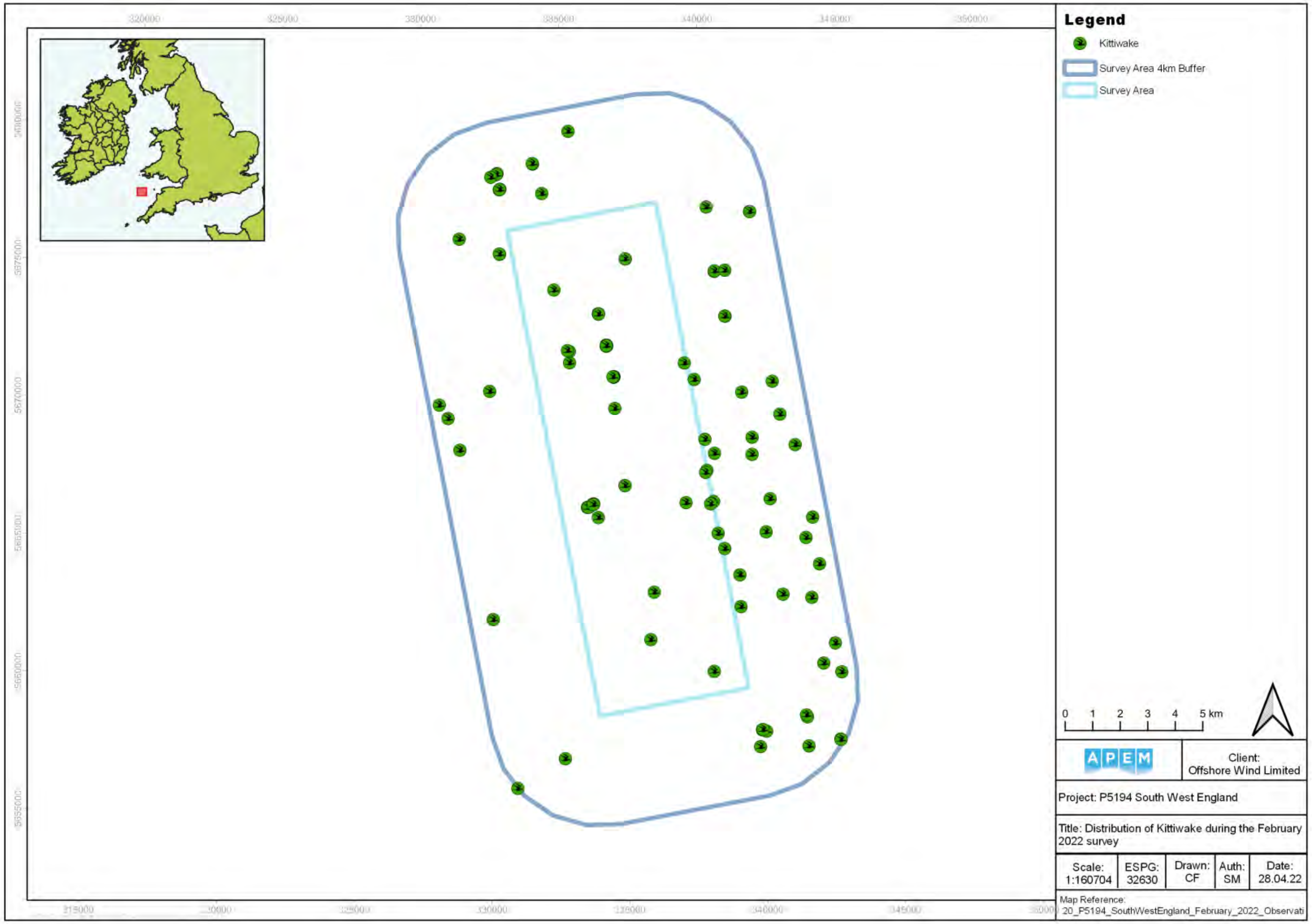


Figure 18 Distribution of kittiwakes in Survey Area during February 2022

Figure 19 Distribution of kittiwakes in Survey Area during March 2022

Figure 20 Distribution of kittiwakes in Survey Area during April 2022

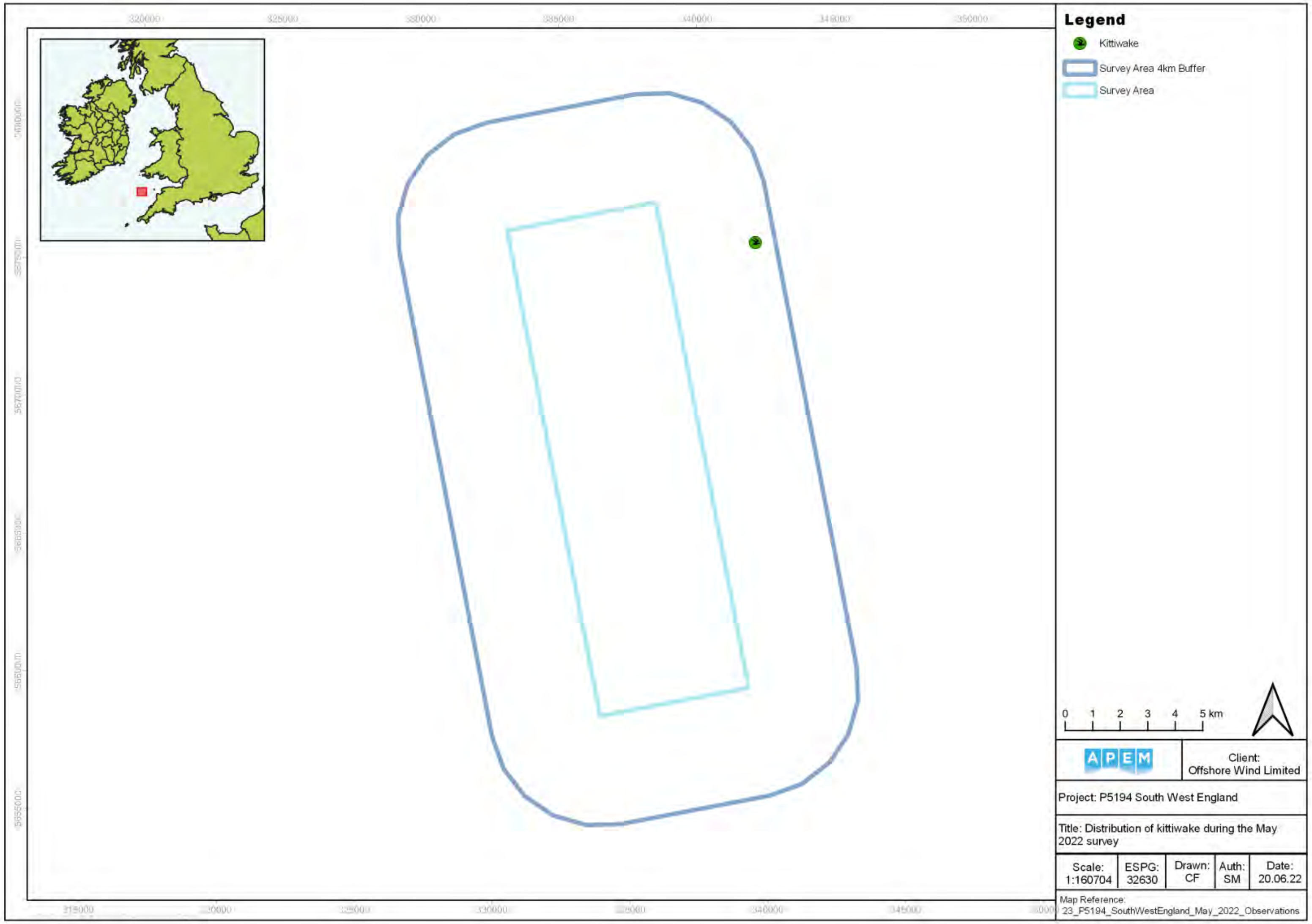
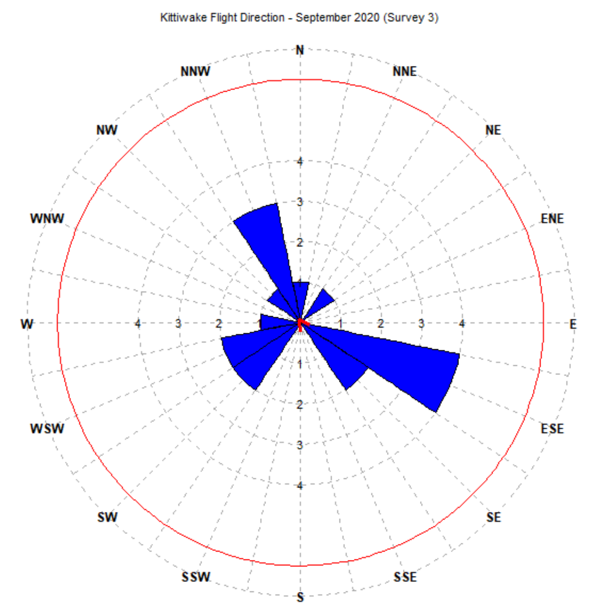


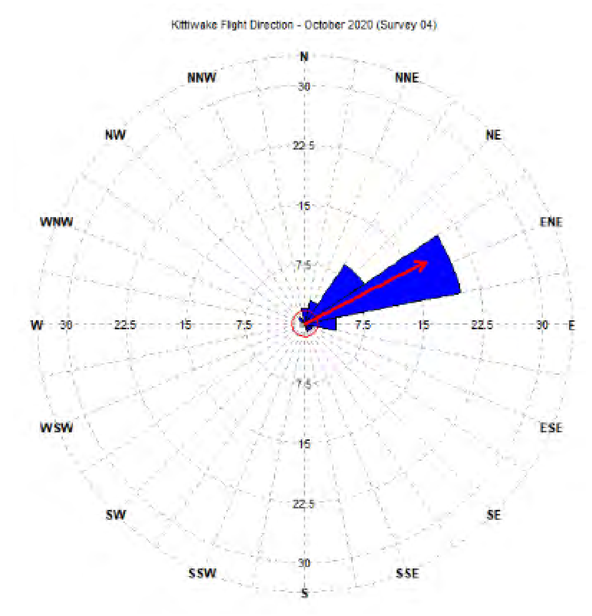
Figure 21 Distribution of kittiwakes in Survey Area during May 2022

Figure 22 Distribution of kittiwakes in Survey Area during June 2022



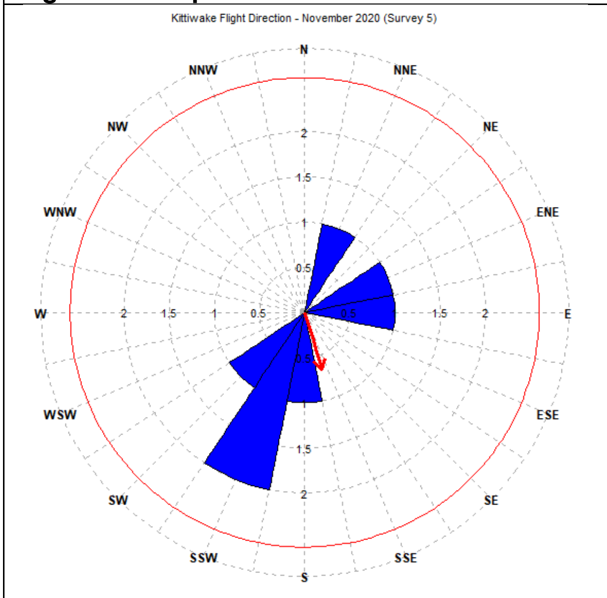
Number of Observations	17
Mean Vector (µ)	325.573
Length of Mean Vector (r)	0.018
Rayleigh Test (Z)	0.005
Rayleigh Test (p)	0.995

Figure 23a September 2020



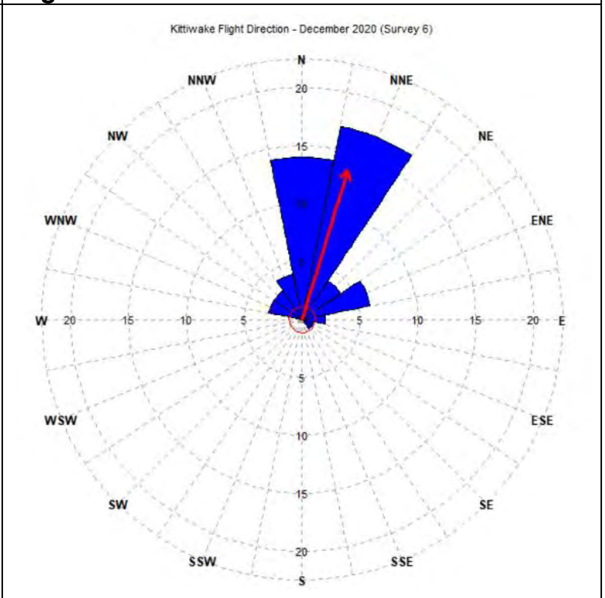
Number of Observations	42
Mean Vector (µ)	63.013
Length of Mean Vector (r)	0.855
Rayleigh Test (Z)	30.679
Rayleigh Test (p)	<0.001

Figure 23b October 2020



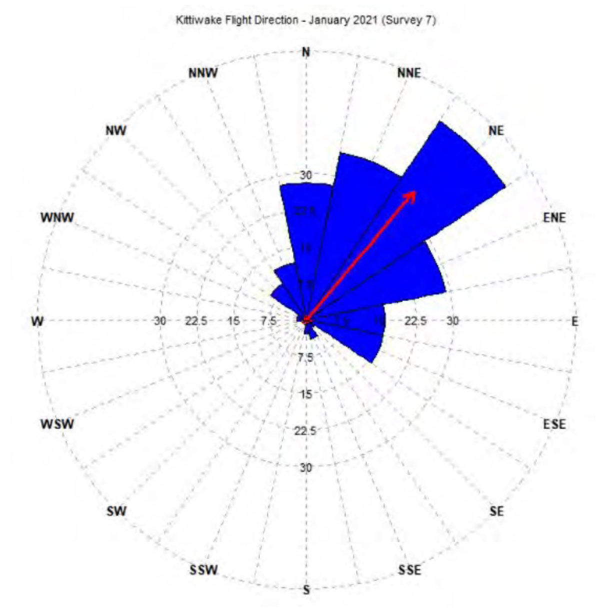
Number of Observations	7
Mean Vector (µ)	163.942
Length of Mean Vector (r)	0.329
Rayleigh Test (Z)	0.757
Rayleigh Test (p)	0.486

Figure 23c November 2020



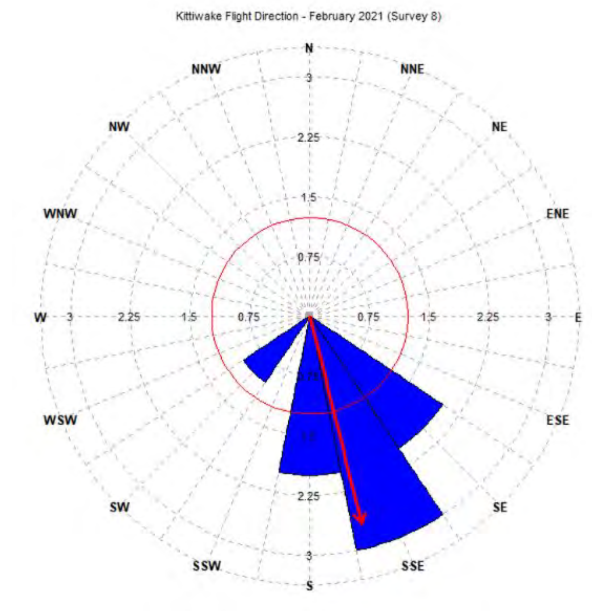
Number of Observations	55
Mean Vector (µ)	17.004
Length of Mean Vector (r)	0.793
Rayleigh Test (Z)	34.571
Rayleigh Test (p)	<0.001

Figure 23d December 2020



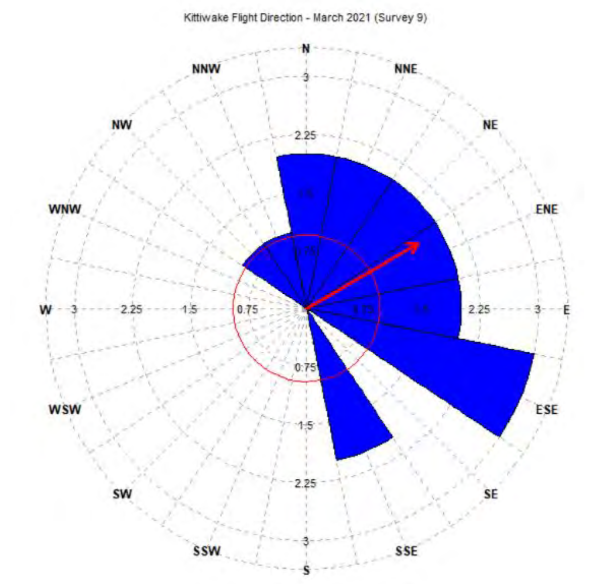
Number of Observations	208
Mean Vector (µ)	40.805
Length of Mean Vector (r)	0.698
Rayleigh Test (Z)	101.280
Rayleigh Test (p)	<0.001

Figure 23e January 2021



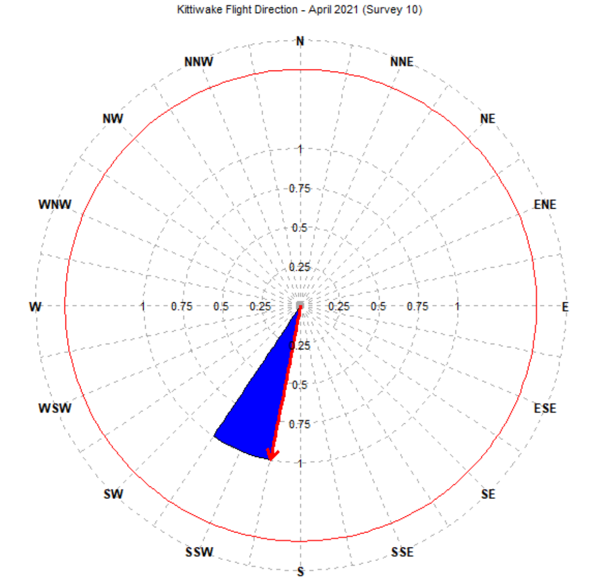
Number of Observations	8
Mean Vector (µ)	166.979
Length of Mean Vector (r)	0.895
Rayleigh Test (Z)	6.403
Rayleigh Test (p)	<0.001

Figure 23f February 2021



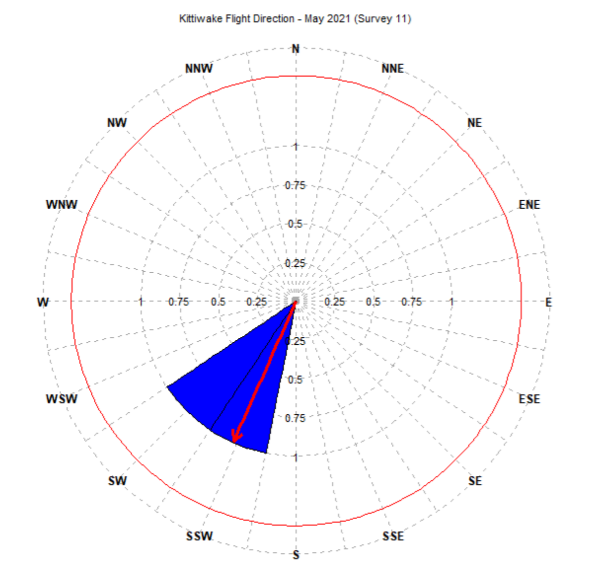
Number of Observations	17
Mean Vector (µ)	60.345
Length of Mean Vector (r)	0.555
Rayleigh Test (Z)	5.227
Rayleigh Test (p)	0.004

Figure 23g March 2021



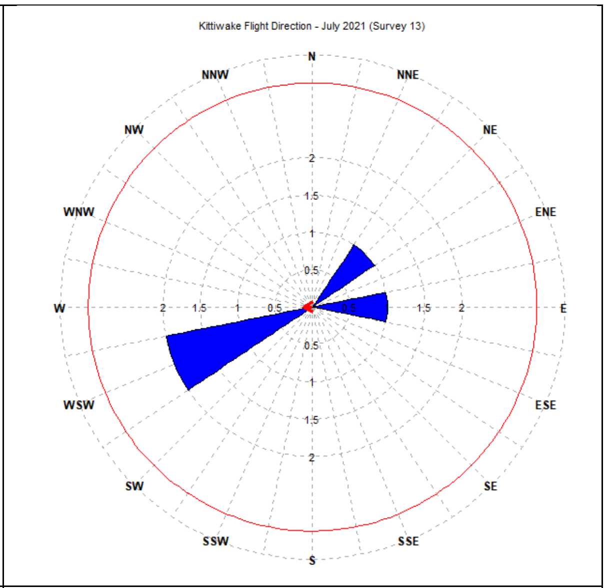
Number of Observations	1
Mean Vector (µ)	191.511
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 23h April 2021



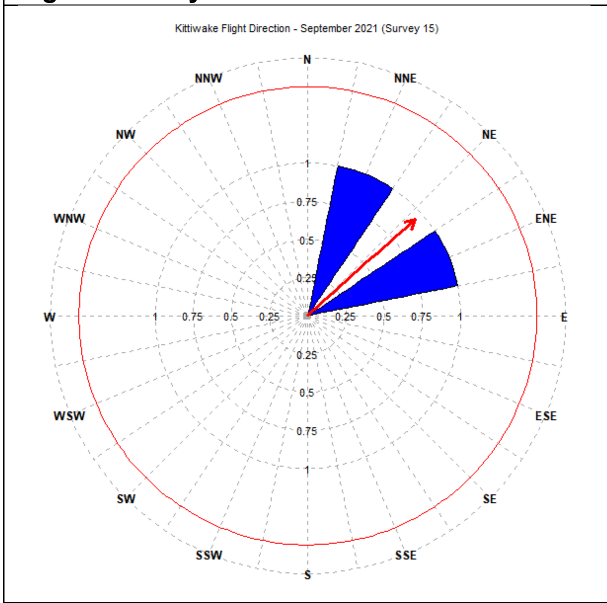
Number of Observations	2
Mean Vector (μ)	204.778
Length of Mean Vector (r)	0.987
Rayleigh Test (Z)	1.949
Rayleigh Test (p)	0.147

Figure 23i May 2021



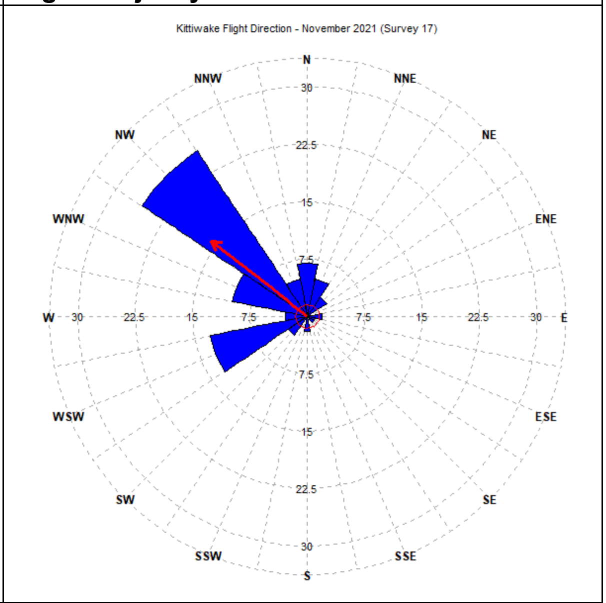
Number of Observations	4
Mean Vector (μ)	268.474
Length of Mean Vector (r)	0.060
Rayleigh Test (Z)	0.015
Rayleigh Test (p)	0.987

Figure 23j July 2021



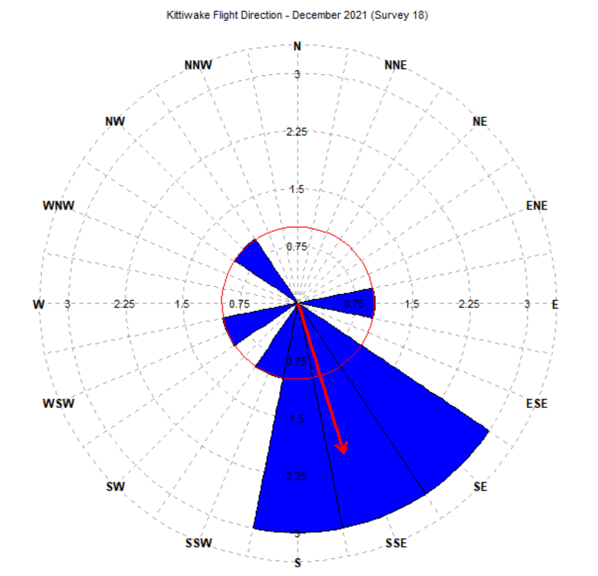
Number of Observations	2
Mean Vector (μ)	48.281
Length of Mean Vector (r)	0.942
Rayleigh Test (Z)	1.774
Rayleigh Test (p)	0.184

Figure 23k September 2021



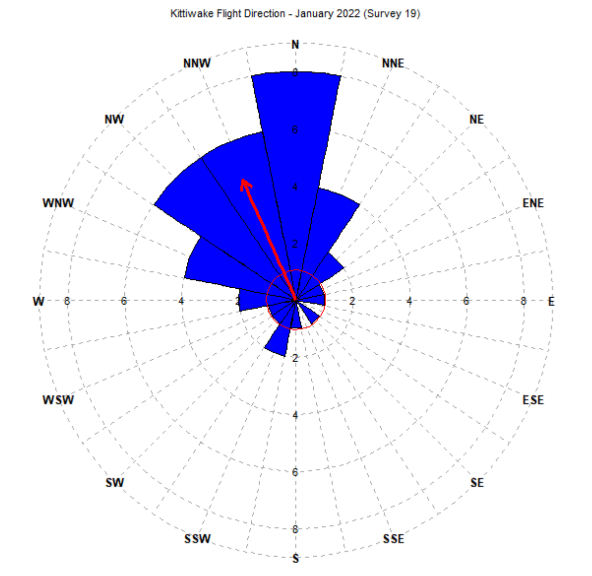
Number of Observations	81
Mean Vector (μ)	308.4
Length of Mean Vector (r)	0.612
Rayleigh Test (Z)	30.364
Rayleigh Test (p)	<0.001

Figure 23l November 2021



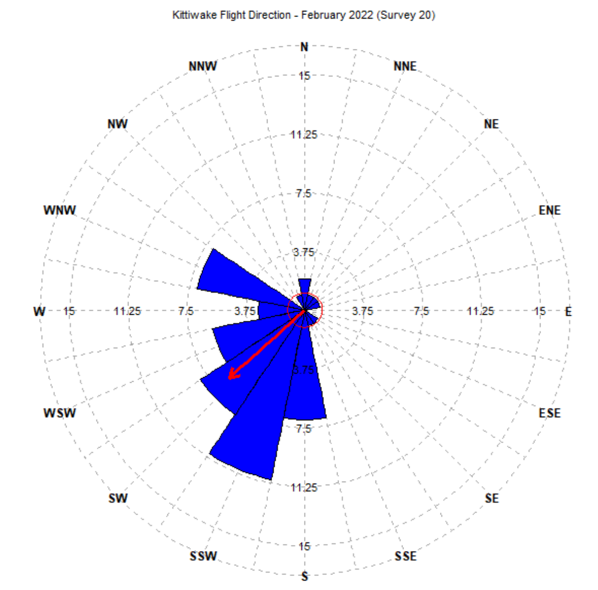
Number of Observations	13
Mean Vector (μ)	163.625
Length of Mean Vector (r)	0.682
Rayleigh Test (Z)	6.053
Rayleigh Test (p)	0.001

Figure 23m December 2021



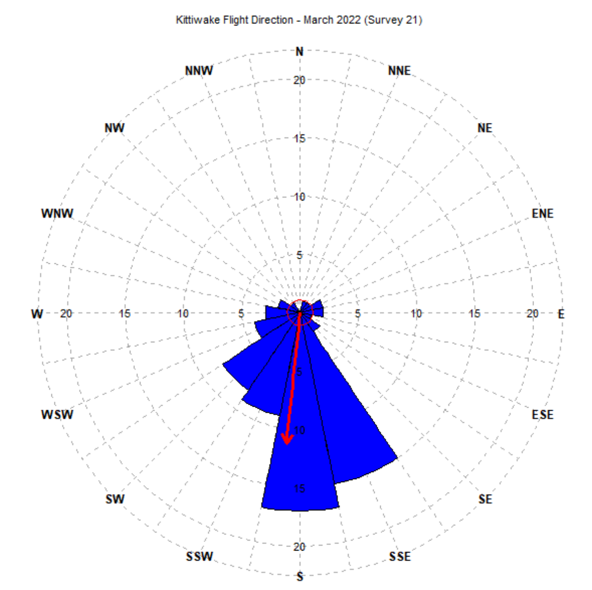
Number of Observations	40
Mean Vector (μ)	336.665
Length of Mean Vector (r)	0.572
Rayleigh Test (Z)	13.079
Rayleigh Test (p)	<0.001

Figure 23n January 2022



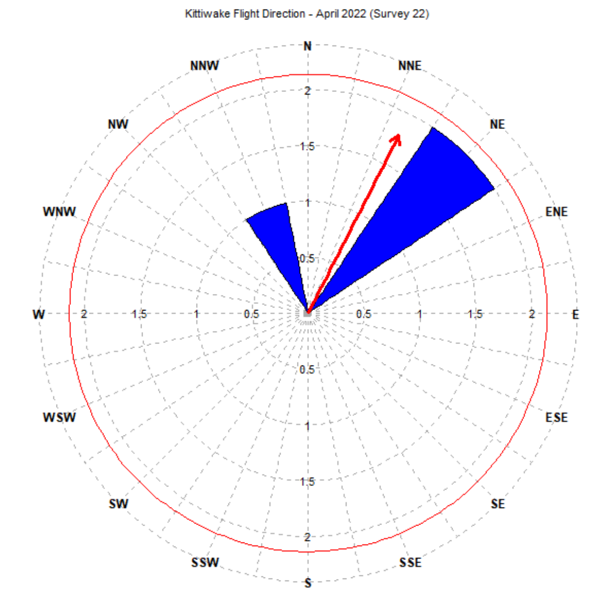
Number of Observations	50
Mean Vector (μ)	228.701
Length of Mean Vector (r)	0.588
Rayleigh Test (Z)	17.299
Rayleigh Test (p)	<0.001

Figure 23o February 2022



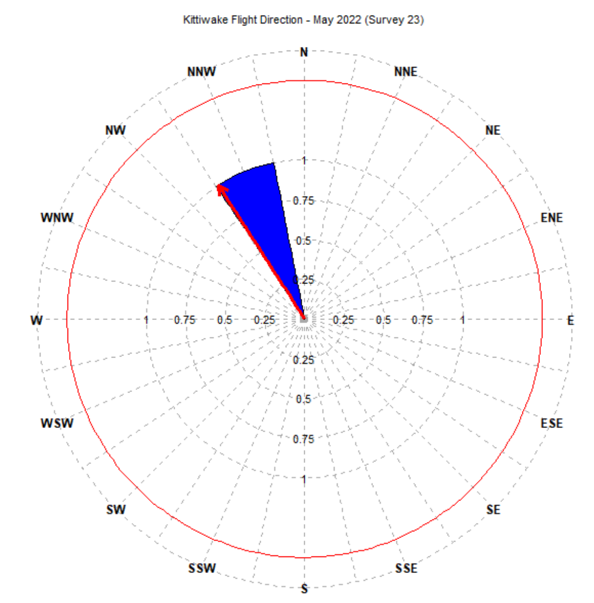
Number of Observations	68
Mean Vector (μ)	186.146
Length of Mean Vector (r)	0.664
Rayleigh Test (Z)	29.991
Rayleigh Test (p)	<0.001

Figure 23p March 2022



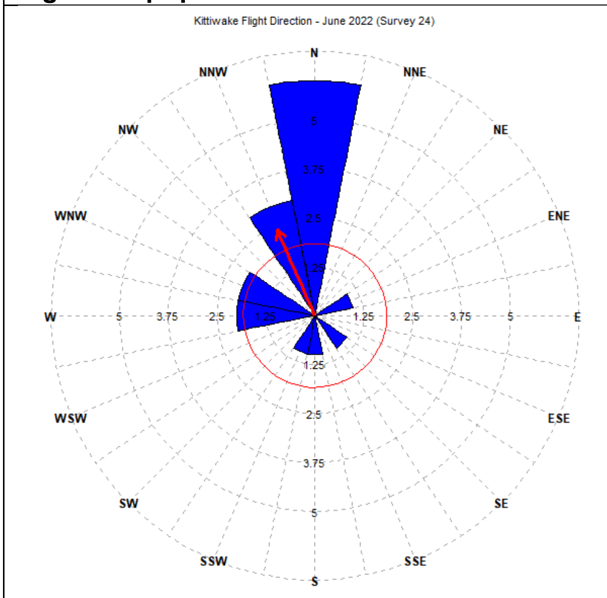
Number of Observations	3
327.211Mean Vector (μ)	27.315
Length of Mean Vector (r)	0.892
Rayleigh Test (Z)	2.389
Rayleigh Test (p)	0.083

Figure 23q April 2022



Number of Observations	1
Mean Vector (μ)	327.211
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 23r May 2022



Number of Observations	17
Mean Vector (μ)	336.340
Length of Mean Vector (r)	0.478
Rayleigh Test (Z)	3.882
Rayleigh Test (p)	0.018

Figure 23s June 2022

Figure 23 Summary of flight direction of kittiwakes during survey period

4.2 Common Gull – *Larus canus*

Common gulls were recorded in November 2021 only, with a peak raw count of five, resulting in an abundance estimate of 38 for the Survey Area (**Table 7**).

A single bird was in the west of the Southwest England Site (**Figure 24**), resulting in an abundance estimate of nine (**Table 6**); while the remaining four were spread east and northeast in the Buffer (**Figure 24**), resulting in an abundance estimate of 29 for the area (**Table 6**).

In November 2021 they flew north-westerly (325.868°, p=0.013; **Figure 25**).

Table 6 Raw counts and abundance and density estimates (individuals per km^2) of common gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Nov-21	5	38	5	77	0.45	0.11
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Nov-21	1	9	1	26	1	0.09
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Nov-21	4	29	4	66	0.5	0.12

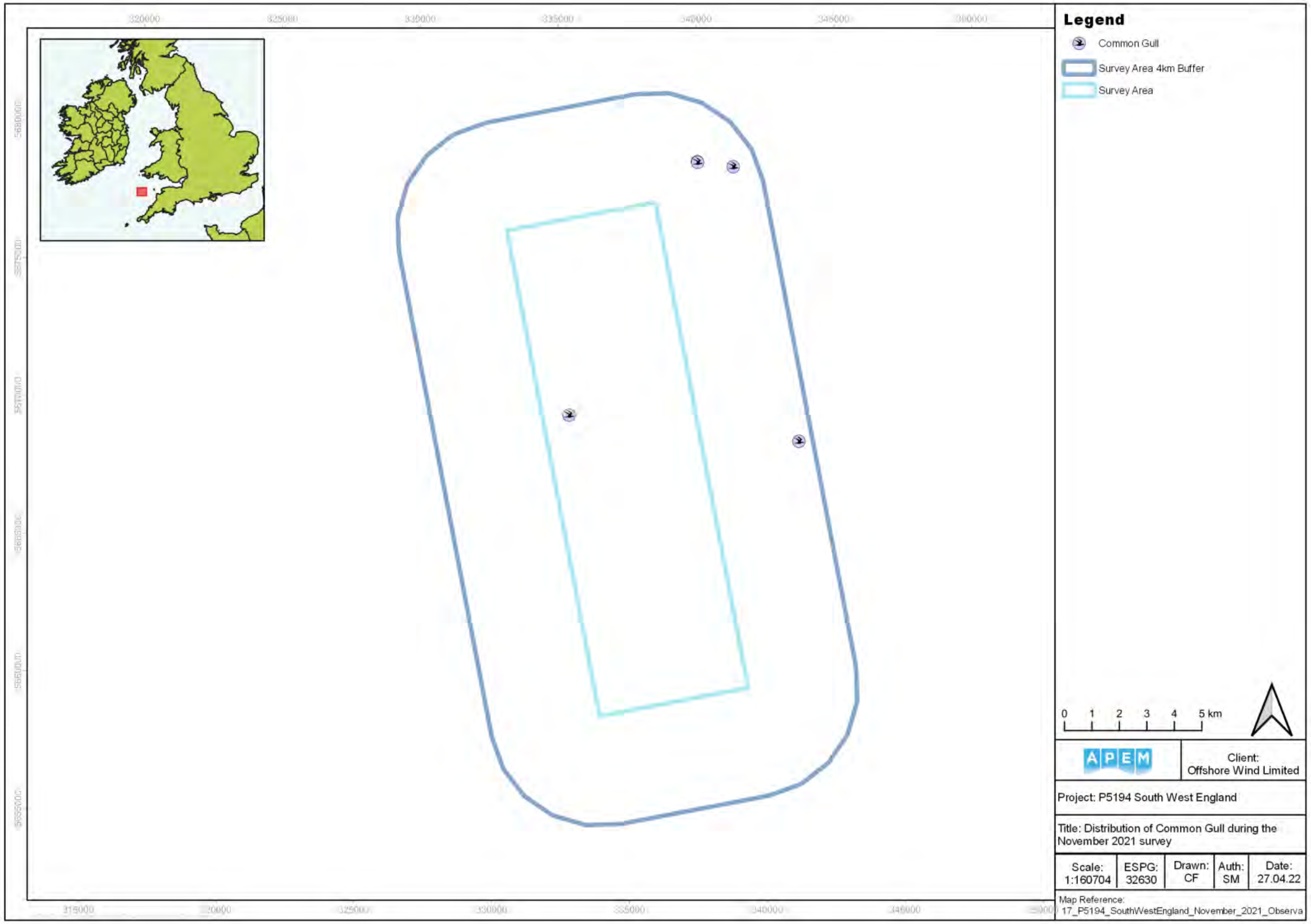
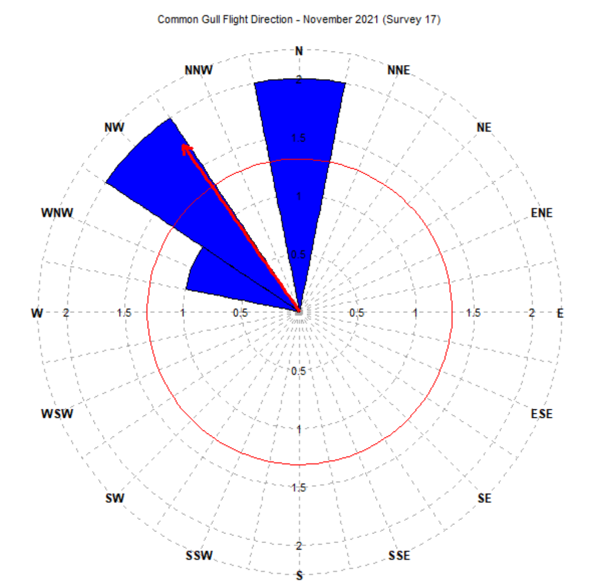


Figure 24 Distribution of common gulls in Survey Area during November 2021



Number of Observations	5
Mean Vector (µ)	325.868
Length of Mean Vector (r)	0.873
Rayleigh Test (Z)	3.814
Rayleigh Test (p)	0.013
Figure 25 November 2021	

Figure 25 Summary of flight direction of common gulls during survey period

4.3 Unidentified Small Gull

Unidentified small gulls were recorded in October 2020, November 2021 and January 2022 only – four individuals, resulting in an abundance estimate of 31 for the Survey Area (**Table 7**).

In the Southwest England Site, unidentified small gulls were present in January 2022 only. A peak raw count of one individual in January 2021, in the southeast of the site resulted in an abundance estimate of nine for the area (**Table 7**), this bird recorded in the southeast of the site (**Figure 28**)

In the 4 km Buffer Zone, small gulls were recorded in October 2020 and November 2021, with a peak raw count of four in October 2020 – an abundance estimate of 29 for the area (**Table 7**). In October, the birds were recorded in the Buffer's southwest (**Figure 26**), while in November 2021, one individual was captured in the Buffer's northeast area of the buffer (**Figure 27**)

In November 2021 and January 2022, the small gulls were flying north-westerly (321.902°, p=0.512; **Figure 29a**; °315.103, p=0.512; **Figure 29b**).

Table 7 Raw counts and abundance and density estimates (individuals per km^2) of small gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Oct-20	4	31	4	92	0.50	0.09
Nov-21	1	8	1	23	1.00	0.02
Jan-22	1	8	1	23	1.00	0.02
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jan-22	1	9	1	26	1.00	0.09
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Oct-20	4	29	4	88	0.50	0.12
Nov-21	1	7	1	22	1.00	0.03

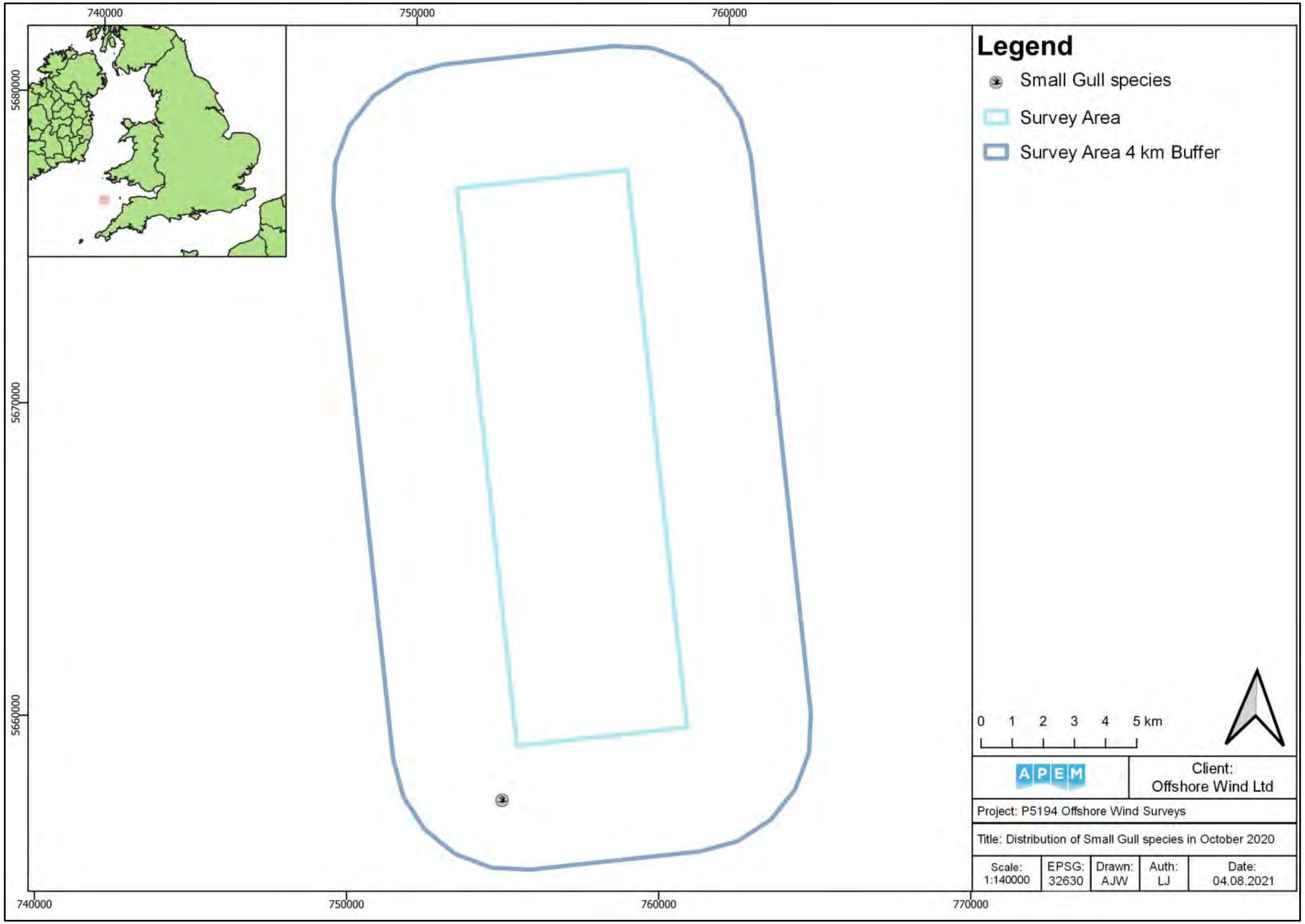


Figure 26 Distribution of small gulls in Survey Area during October 2020

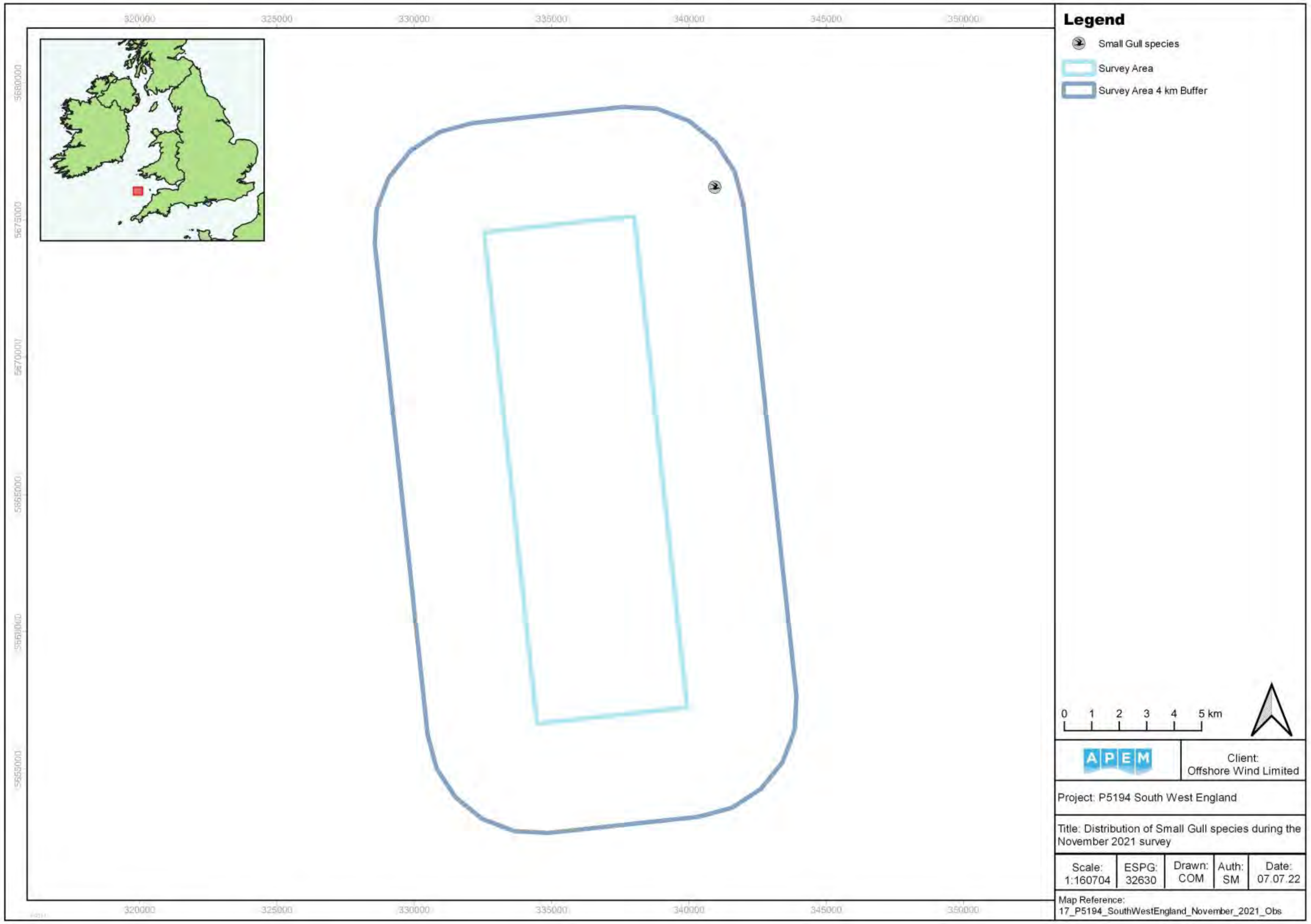


Figure 27 Distribution of small gulls in Survey Area during November 2021

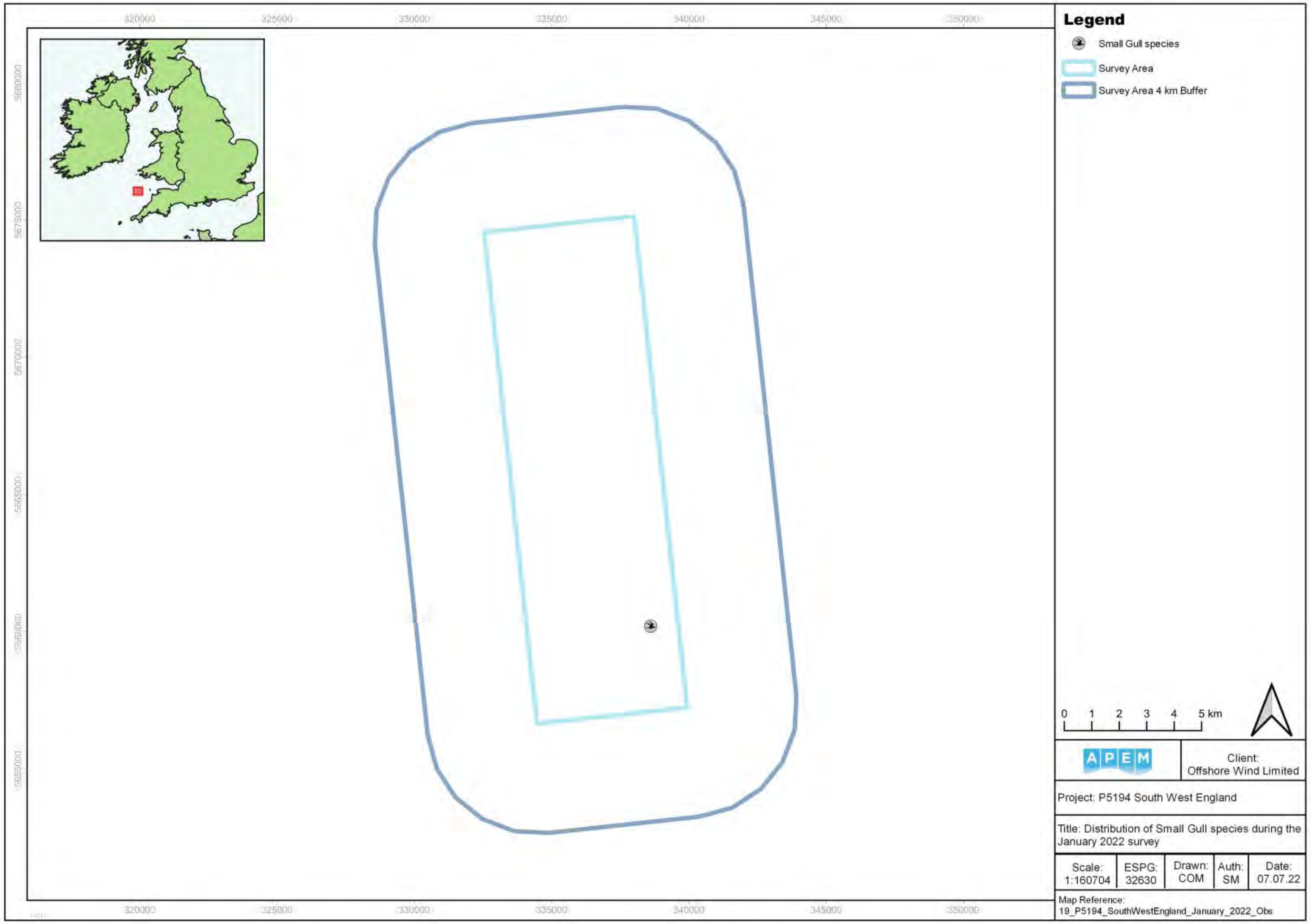
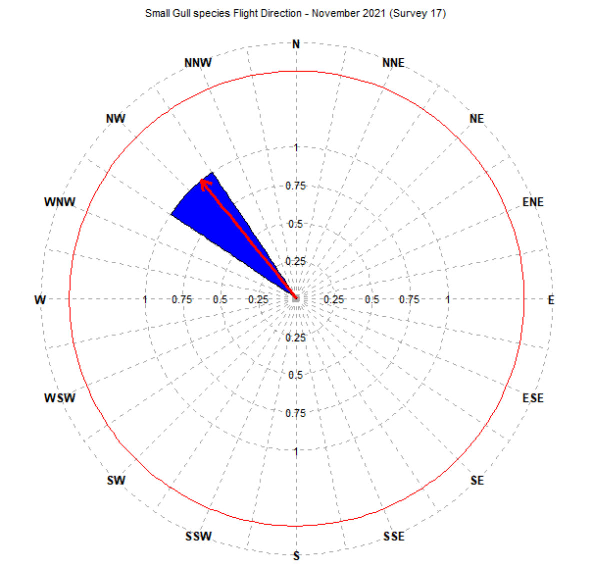
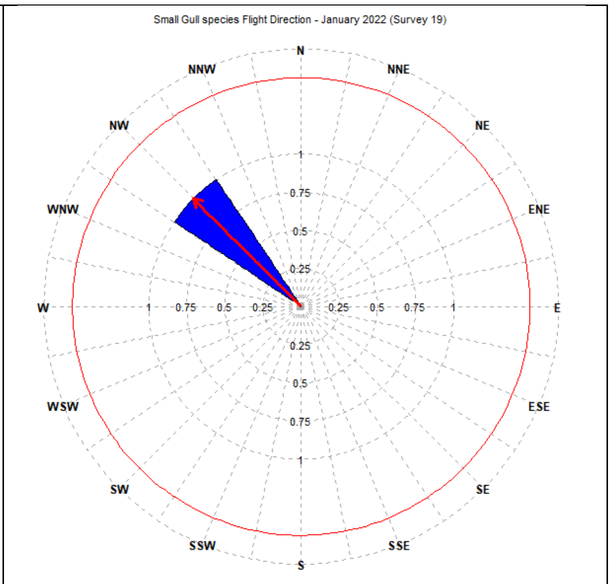


Figure 28 Distribution of small gulls in Survey Area during January 2022





Number of Observations	1	Number of Observations	1
Mean Vector (μ)	321.902	Mean Vector (μ)	315.103
Length of Mean Vector (r)	1.000	Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000	Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512	Rayleigh Test (p)	0.512
Figure 29a November 2021		**Figure 29b January 2022**	

Figure 29 Summary of flight direction of small gulls during survey period

4.3 Great Black-backed Gull – *Larus marinus*

Great black-backed gulls were recorded in July, November and December 2020, January, March, June and October 2021, and January, February and June 2022. The peak raw count of 33 in February 2022 resulted in an abundance estimate of 255 for the Survey Area (**Table 8).**

In the Southwest England Site, they were present in March 2021, and February and June 2022 – 32, resulting in an abundance estimate of 278 (**Table 8)**.

The birds were recorded in the 4 km Buffer Zone during July, November and December 2020; January, June and October 2021; and February and June 2022. The peak raw count of 17 in December 2020 resulted in an abundance estimate of 130 (**Table 8**).

Low numbers were mainly seen within the Buffer, comprising individuals in the east in July 2020 (**Figure 30**); the south-west in November 2020 and February 2022 (**Figure 31; Figure 38**); the south-east in December 2020 and January 2021 (**Figure 32**; **Figure 33**); the north-west in January 2022 (**Figure 37**); and the north-east in June and October 2021, plus June 2022 (**Figure 35**; **Figure 36; Figure 39**). The gulls were only present in the south of the Site during March 2021 (**Figure 34**). However, a group of 32 was seen in February 2022 in the west of the site (**Figure 38**). A single gull was recorded in the east during June 2022 survey.

Across all surveys, great black-backed gulls were found flying in various directions: north in December 2020 and January 2021 (3.857°, p=0.104; **Figure 40c**; 3.955°, p=0.512; **Figure 40d**); northwest in July 2020 (317.856°, p=0.512; **Figure 40a**); east-northeast in March 2021 (58.246°, p=0.512; **Figure 40e**); south-southeast in November 2020 (149.977°, p=0.512; **Figure 40b**); southwest in June 2021 (224.614°, p=0.512; **Figure 40f**); and west-southwest in October 2021 and June 2022 (243.766°, p=0.512; **Figure 40g**; 256.068°, p=0.138; **Figure 40h**).

Table 8 Raw counts and abundance and density estimates (individuals per km^2) of great black-backed gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jul-20	2	16	2	46	0.71	0.05
Nov-20	1	8	1	24	1.00	0.02
Dec-20	17	136	17	408	0.24	0.40
Jan-21	1	8	1	24	1.00	0.02
Mar-21	2	15	2	38	0.71	0.04
Jun-21	4	32	4	88	0.50	0.10
Oct-21	1	8	1	23	1.00	0.02
Jan-22	1	8	1	23	1.00	0.02
Feb-22	33	255	33	741	0.17	0.76
Jun-22	2	15	2	45	0.71	0.04
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Mar-21	2	17	2	43	0.71	0.17
Feb-22	32	278	32	834	0.18	2.81
Jun-22	1	8	1	25	1.00	0.08
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jul-20	2	15	2	45	0.71	0.06
Nov-20	1	8	1	23	1.00	0.03
Dec-20	17	130	17	384	0.24	0.55
Jan-21	1	8	1	23	1.00	0.03
Jun-21	4	31	4	92	0.50	0.13
Oct-21	1	7	1	22	1.00	0.03
Jan-22	1	7	1	22	1.00	0.03
Feb-22	1	7	1	22	1.00	0.03
Jun-22	1	7	1	21	1.00	0.03

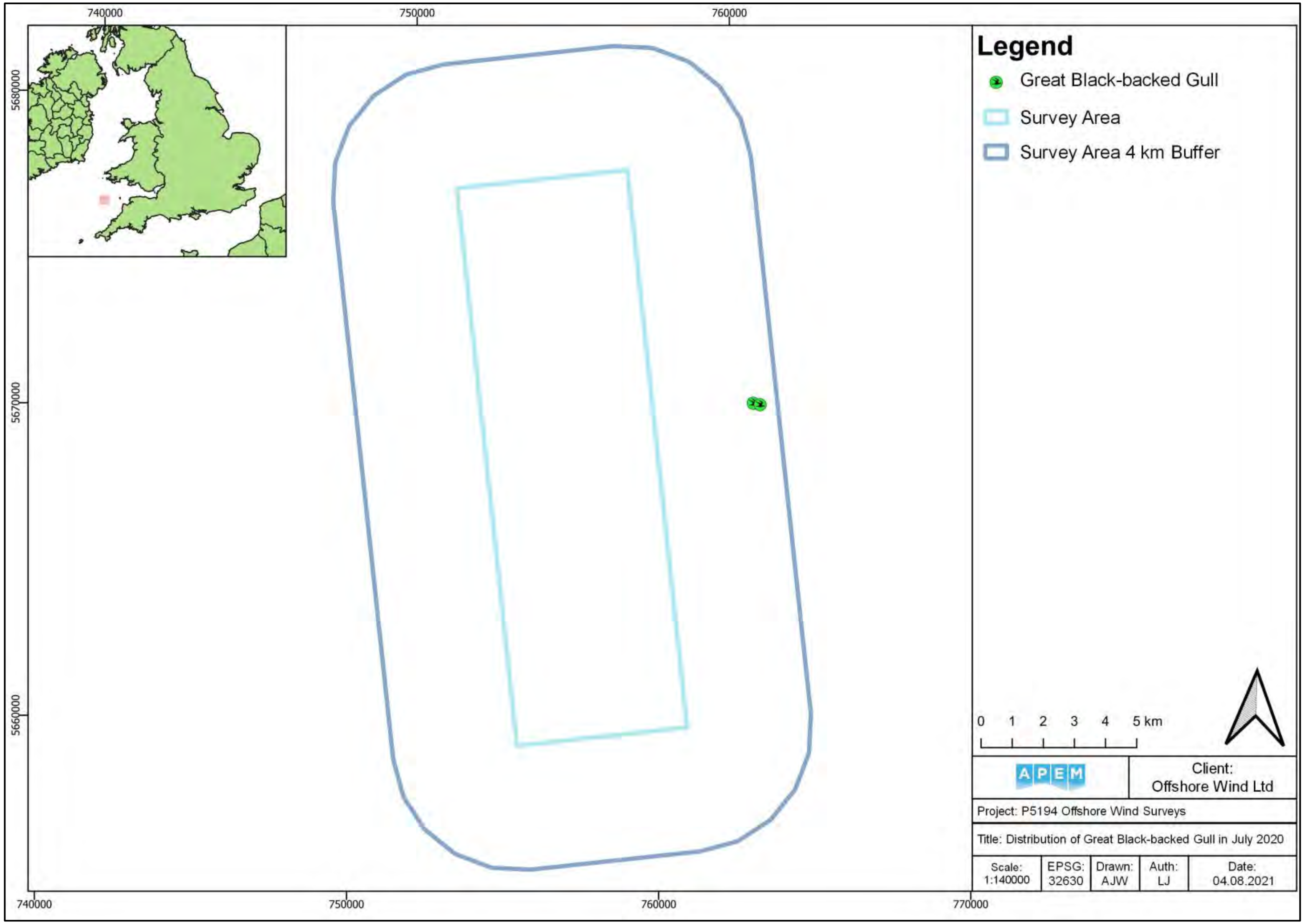


Figure 30 Distribution of great black-backed gulls in Survey Area during July 2020

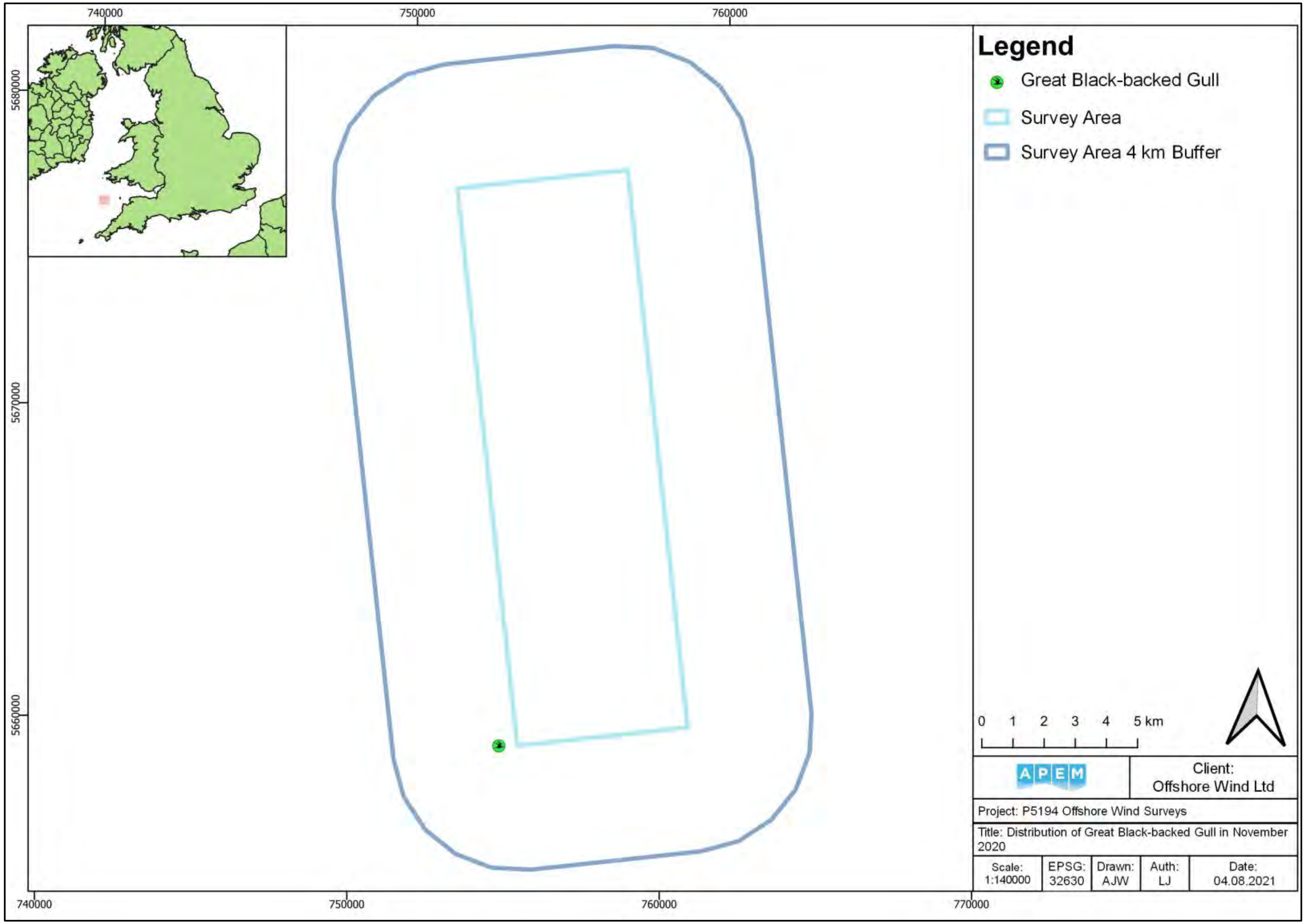


Figure 31 Distribution of great black-backed gulls in Survey Area during November 2020

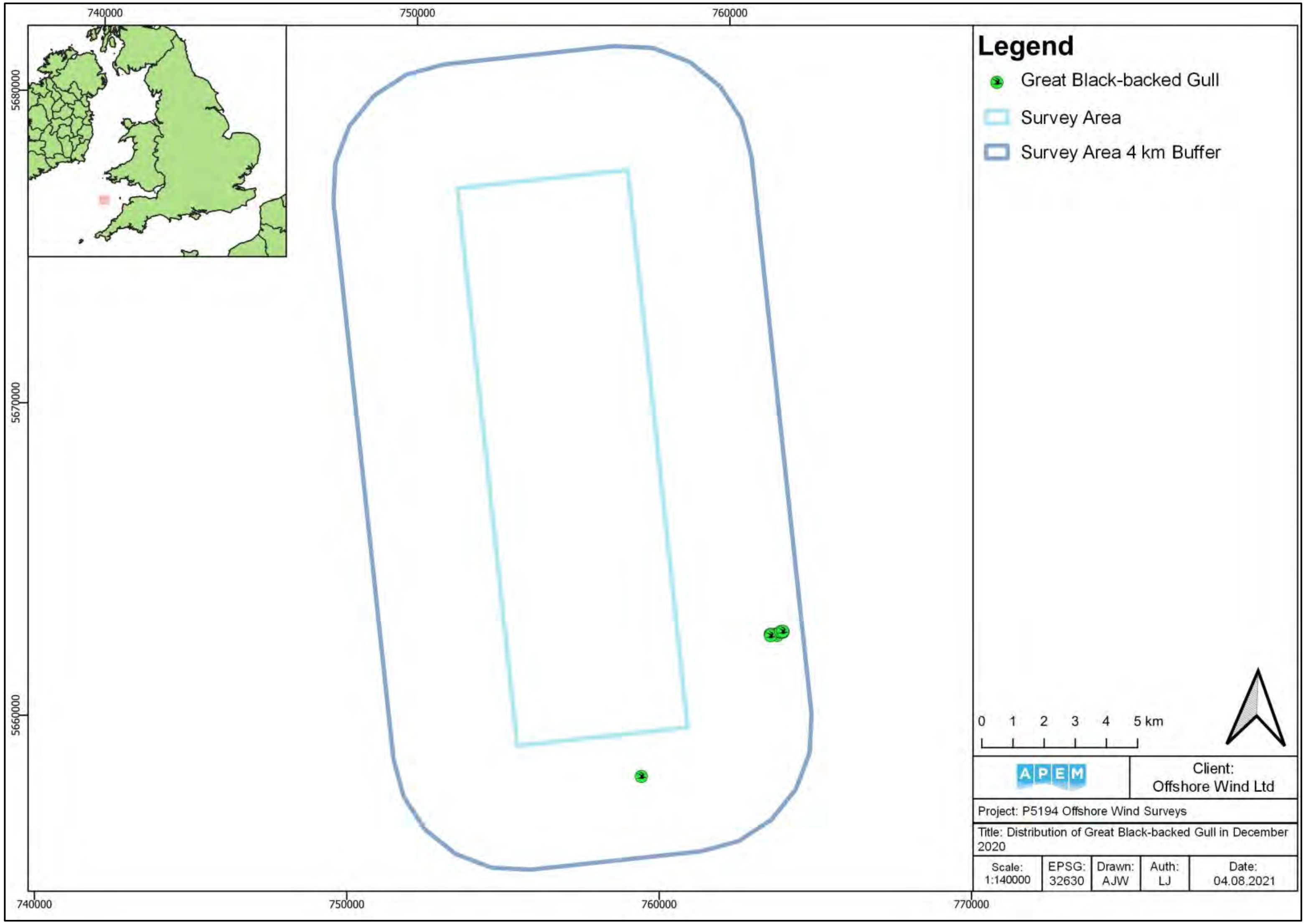


Figure 32 Distribution of great black-backed gulls in Survey Area during December 2020

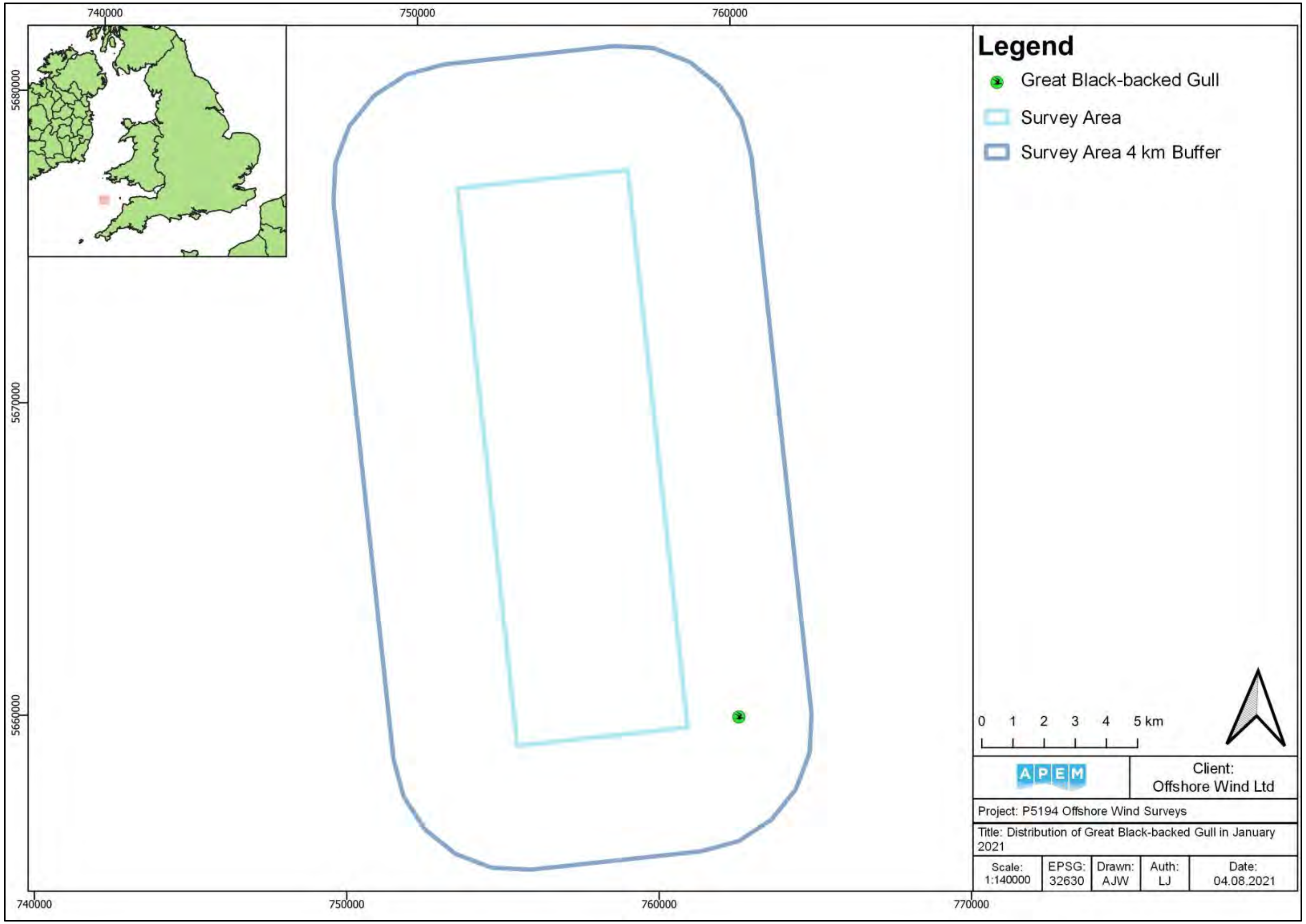


Figure 33 Distribution of great black-backed gulls in Survey Area during January 2021

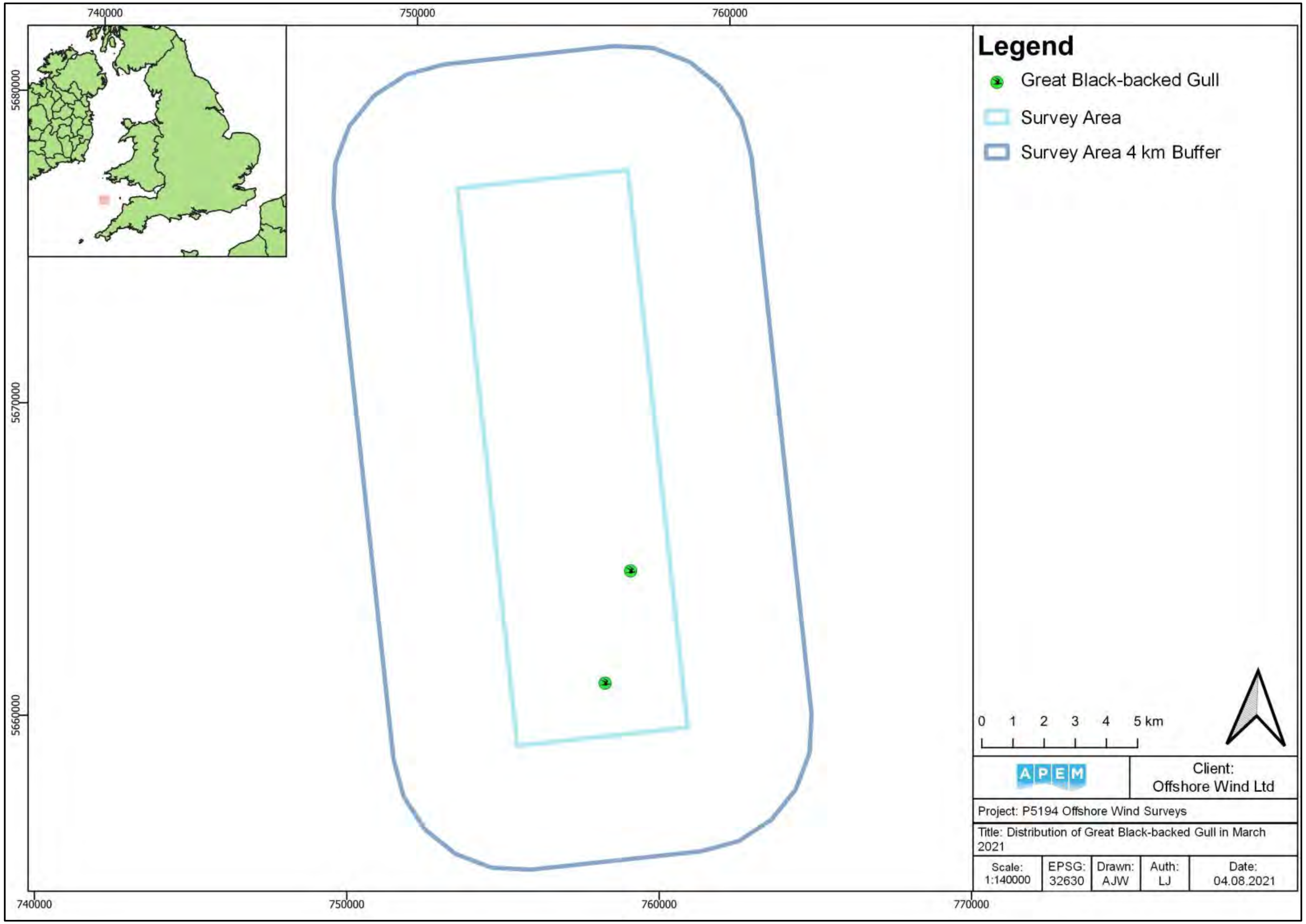


Figure 34 Distribution of great black-backed gulls in Survey Area during March 2021

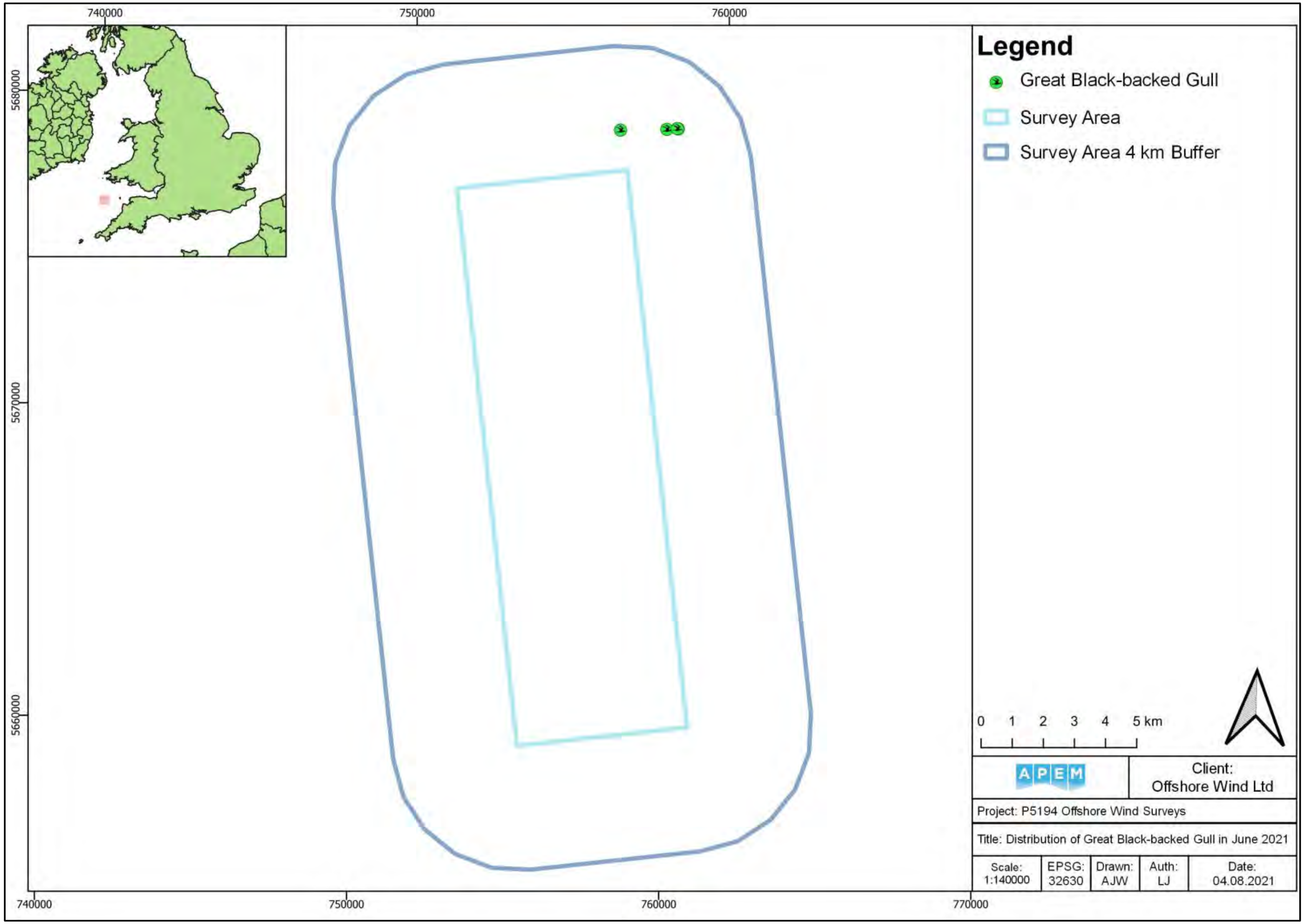


Figure 35 Distribution of great black-backed gulls in Survey Area during June 2021

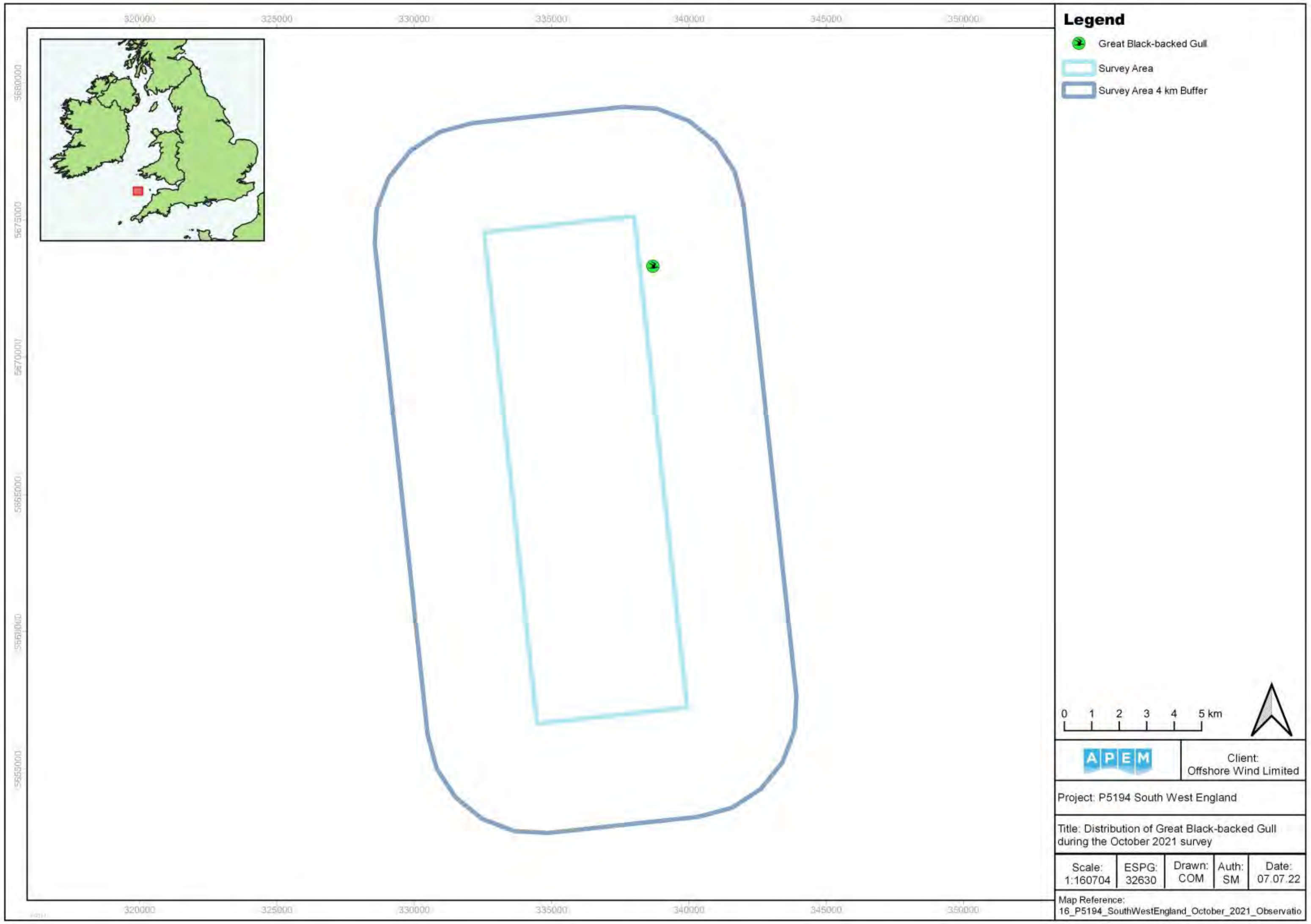


Figure 36 Distribution of great black-backed gulls in Survey Area during October 2021

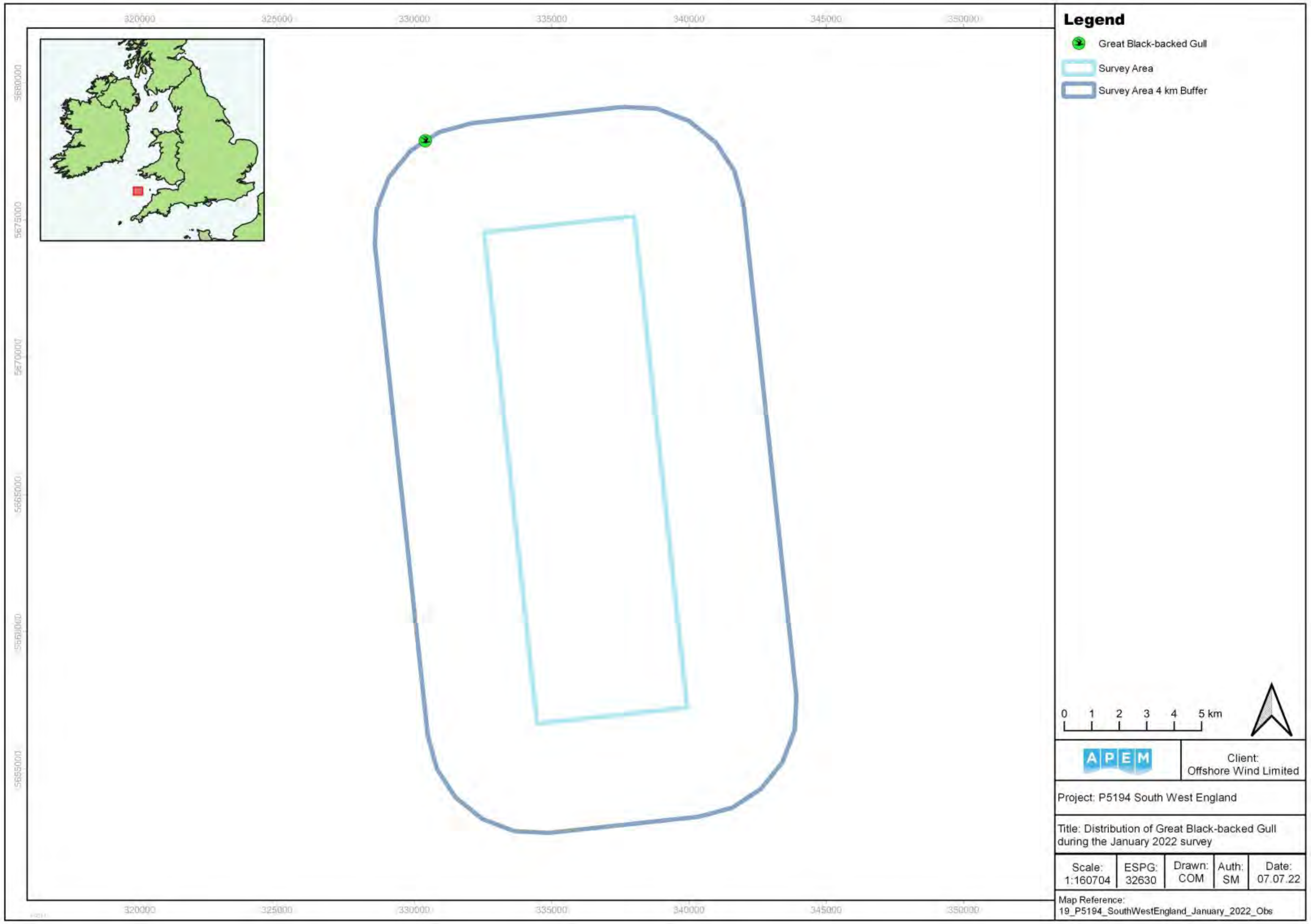


Figure 37 Distribution of great black-backed gulls in Survey Area during January 2022

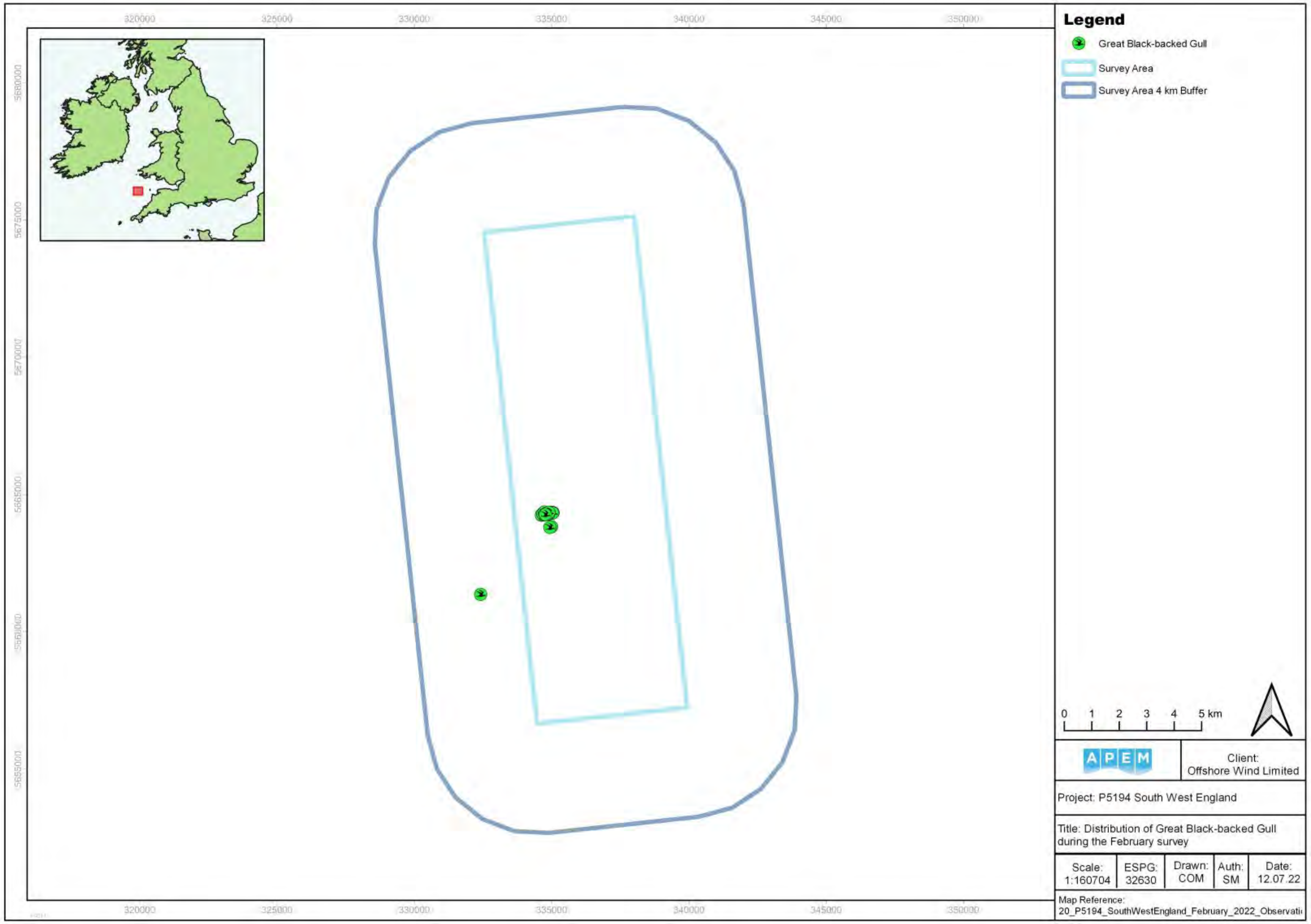


Figure 38 Distribution of great black-backed gulls in Survey Area during February 2022

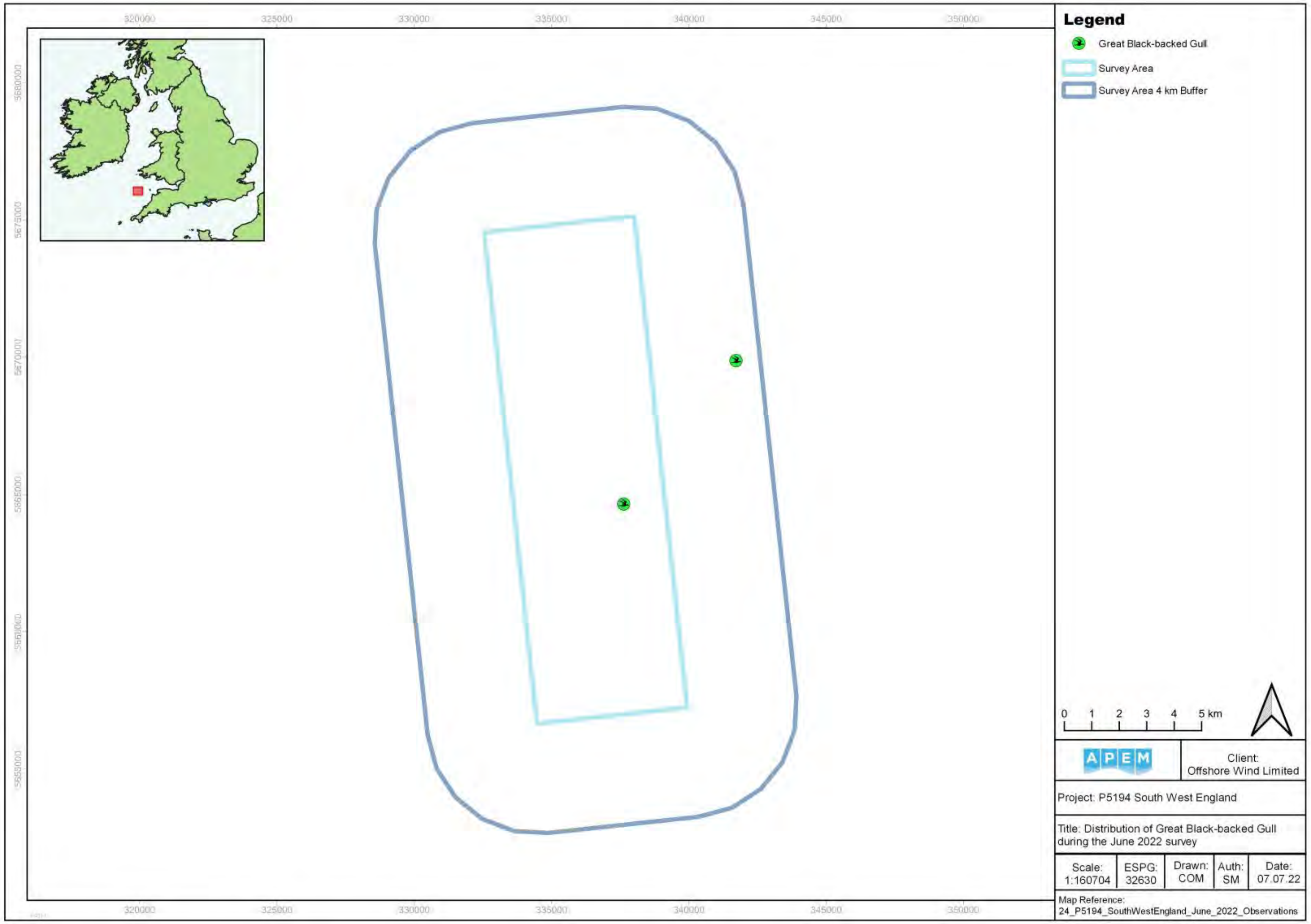
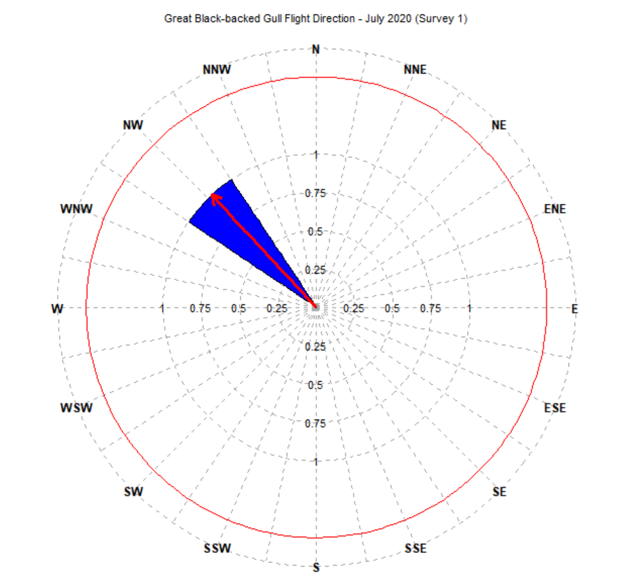
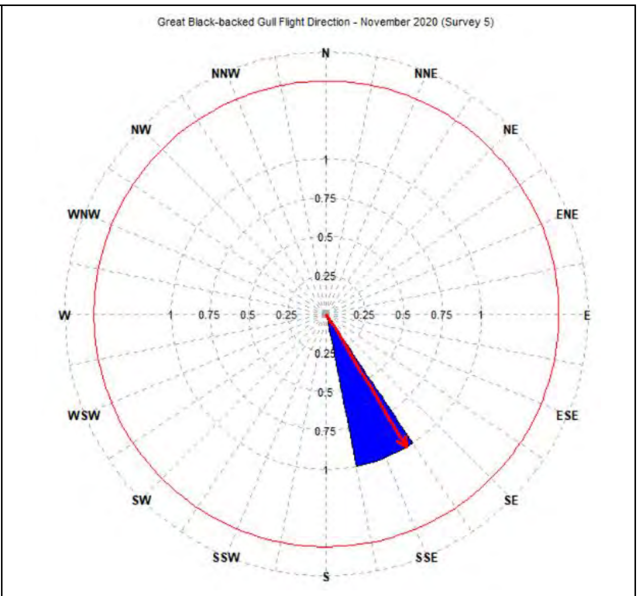


Figure 39 Distribution of great black-backed gulls in Survey Area during June 2022



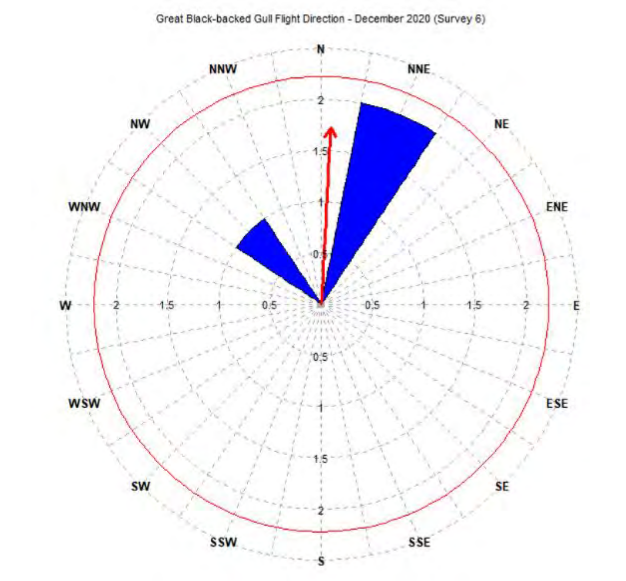
Number of Observations	1
Mean Vector (μ)	317.856
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 40a July 2020



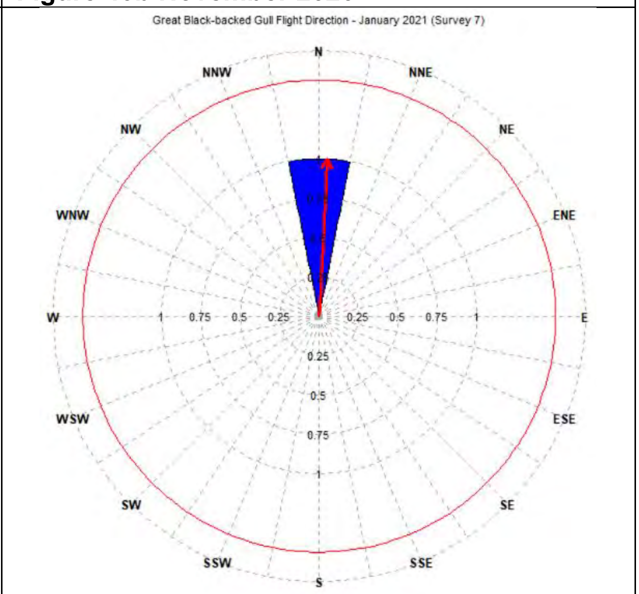
Number of Observations	1
Mean Vector (μ)	149.977
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 40b November 2020



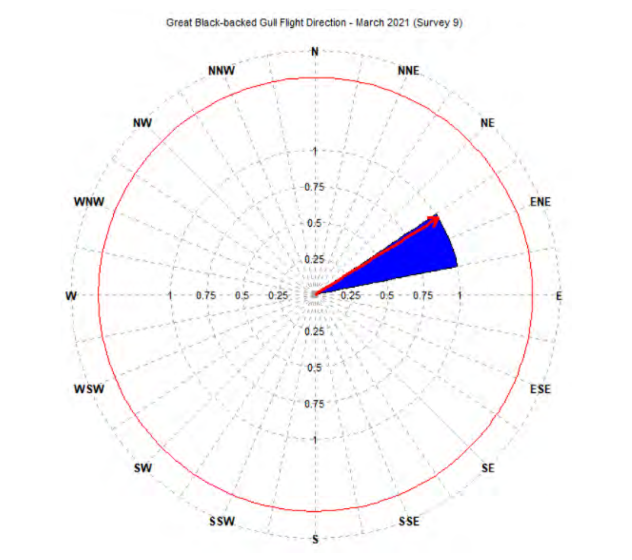
Number of Observations	3
Mean Vector (μ)	3.857
Length of Mean Vector (r)	0.859
Rayleigh Test (Z)	2.215
Rayleigh Test (p)	0.104

Figure 40c December 2020



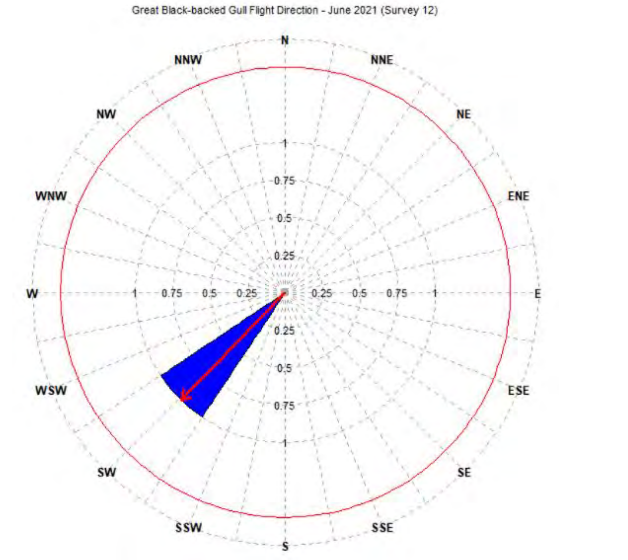
Number of Observations	1
Mean Vector (μ)	3.955
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 40d January 2021



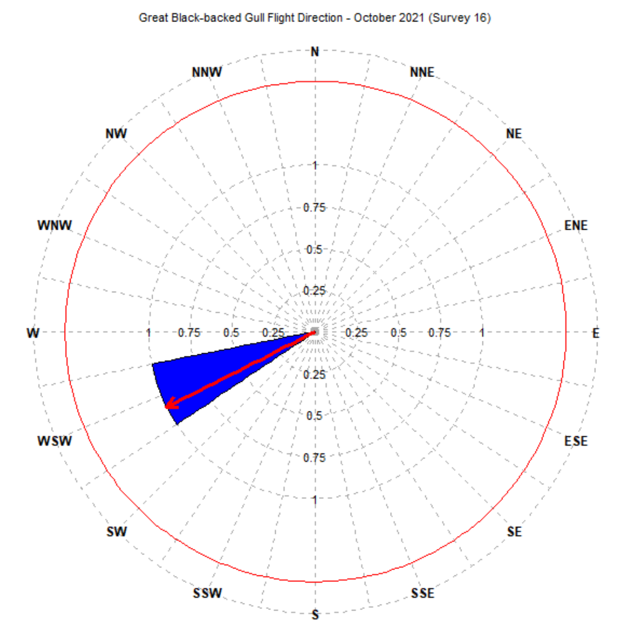
Number of Observations	1
Mean Vector (µ)	58.246
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 40e March 2021



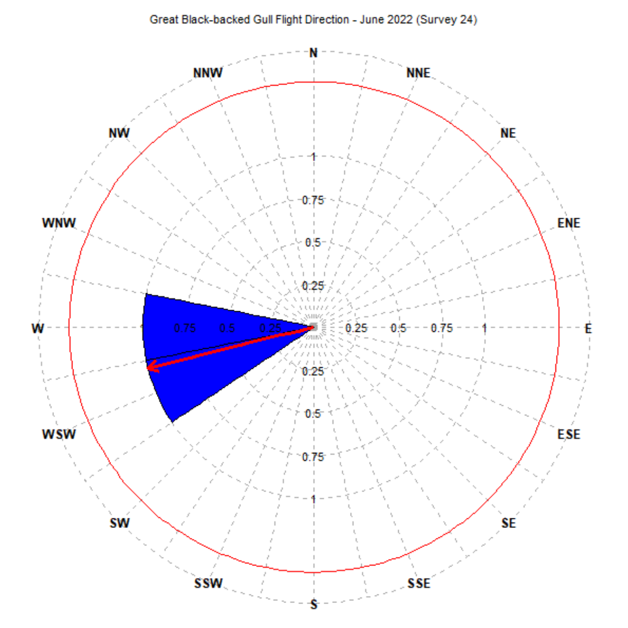
Number of Observations	1
Mean Vector (µ)	224.617
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 40f June 2021



Number of Observations	1
Mean Vector (µ)	243.766
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 40g October 2021



Number of Observations	2
Mean Vector (µ)	256.068
Length of Mean Vector (r)	0.999
Rayleigh Test (Z)	1.996
Rayleigh Test (p)	0.138

Figure 40h June 2022

Figure 40 Summary of flight direction of great black-backed gulls during survey period

4.4 Herring Gull – *Larus argentatus*

Herring gulls were recorded in September and December 2020, in April to July 2021, in December 2021, and in February and June 2022. The peak raw count of 117 in February 2022 resulted in an abundance estimate of 903 for the Survey Area (**Table 9**).

In the Southwest England Site, a single herring gull was seen in September 2020, and July and December 2021. In February 2022, there were 117 herring gulls, resulting in an abundance estimate of 1,016 (**Table 9**).

In the 4 km Buffer Zone, herring gulls were recorded in December 2020, during April to July 2021, in December 2021, and in June 2022. The peak raw count of 29 in June 2021 resulted in an abundance estimate of 223 for the area (**Table 9**).

A single herring gull was recorded in the north-west of the Site in September 2020 (**Figure 41**). But a dense group of 22 individuals was seen the south-east of the 4 km Buffer Zone during December 2020 (**Figure 42**). Single herring gulls were noted in both April and May 2021 in the east and south-east of the Buffer, respectively, and 29 individuals were present in the north-east of the Buffer area in June 2021 (**Figure 43; Figure 44; Figure 45**). In July 2021, three individuals were spread across the north of the site, and the west and south-west of the Buffer (**Figure 46**). In December 2021, four herring gulls were mostly in the south of the survey area, with one in the south-east of the site, two on the south-east of the Buffer, and one on the south-west of the Buffer (**Figure 47**). In February 2022, 117 herring gulls were recorded in the west of the Site (**Figure 48**). And in the June 2022 survey, a single bird was recorded in the east of the Buffer (**Figure 49**).

Across the surveys, the herring gulls flew in various directions: northeast in December (43.670°, $p<0.001$; **Figure 50b**); east-northeast in May (74.511°, $p=0.512$; **Figure 50d**); east in April (98.220°, $p=0.512$; **Figure 50c**); south-southwest in September and June (255.978°, $p=0.512$; **Figure 50a**; 243.914°, $p=0.002$; **Figure 50e**); south-west in July 2021 (222.577°, $p=0.038$; **Figure 50f**); south-east in December 2021 (132.190°, $p= 0.025$; **Figure 50g**); west-southwest in February 2022 (252.594°, $p=0.481$, **Figure 50h**); and west in June 2022 (269.156°, $p=0.512$; **Figure 50i**).

Table 9 Raw counts and abundance and density estimates (individuals per km²) of herring gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Sep-20	1	8	1	24	1.00	0.02
Dec-20	22	176	22	520	0.21	0.52
Apr-21	1	8	1	23	1.00	0.02
May-21	1	7	1	22	1.00	0.02
Jun-21	29	231	29	693	0.19	0.69
Jul-21	3	23	3	54	0.58	0.07
Dec-21	4	31	8	69	0.50	0.09
Feb-22	117	903	117	2,663	0.09	2.68
Jun-22	1	7	1	22	1.00	0.02
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Sep-20	1	9	1	26	1.00	0.09
Jul-21	1	9	1	34	1.00	0.09
Dec-21	1	9	1	26	1.00	0.09
Feb-22	117	1,016	117	2,996	0.09	10.26
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Dec-20	22	169	22	499	0.21	0.71
Apr-21	1	7	1	22	1.00	0.03
May-21	1	7	1	21	1.00	0.03
Jun-21	29	223	29	663	0.19	0.94
Jul-21	2	15	2	37	0.71	0.06
Dec-21	3	22	3	51	0.58	0.09
Jun-22	1	7	1	21	1.00	0.03

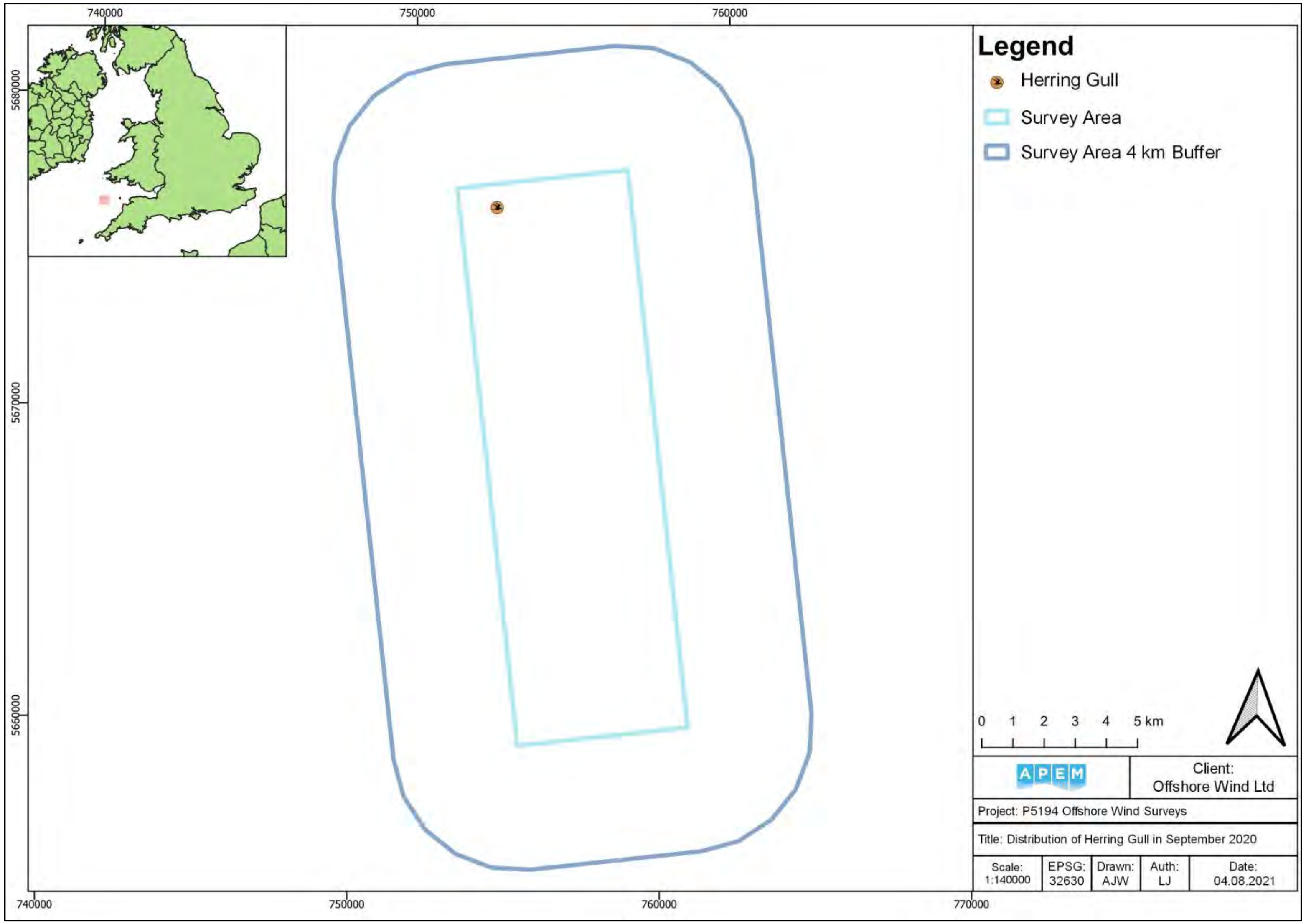


Figure 41 Distribution of herring gulls in Survey Area during September 2020

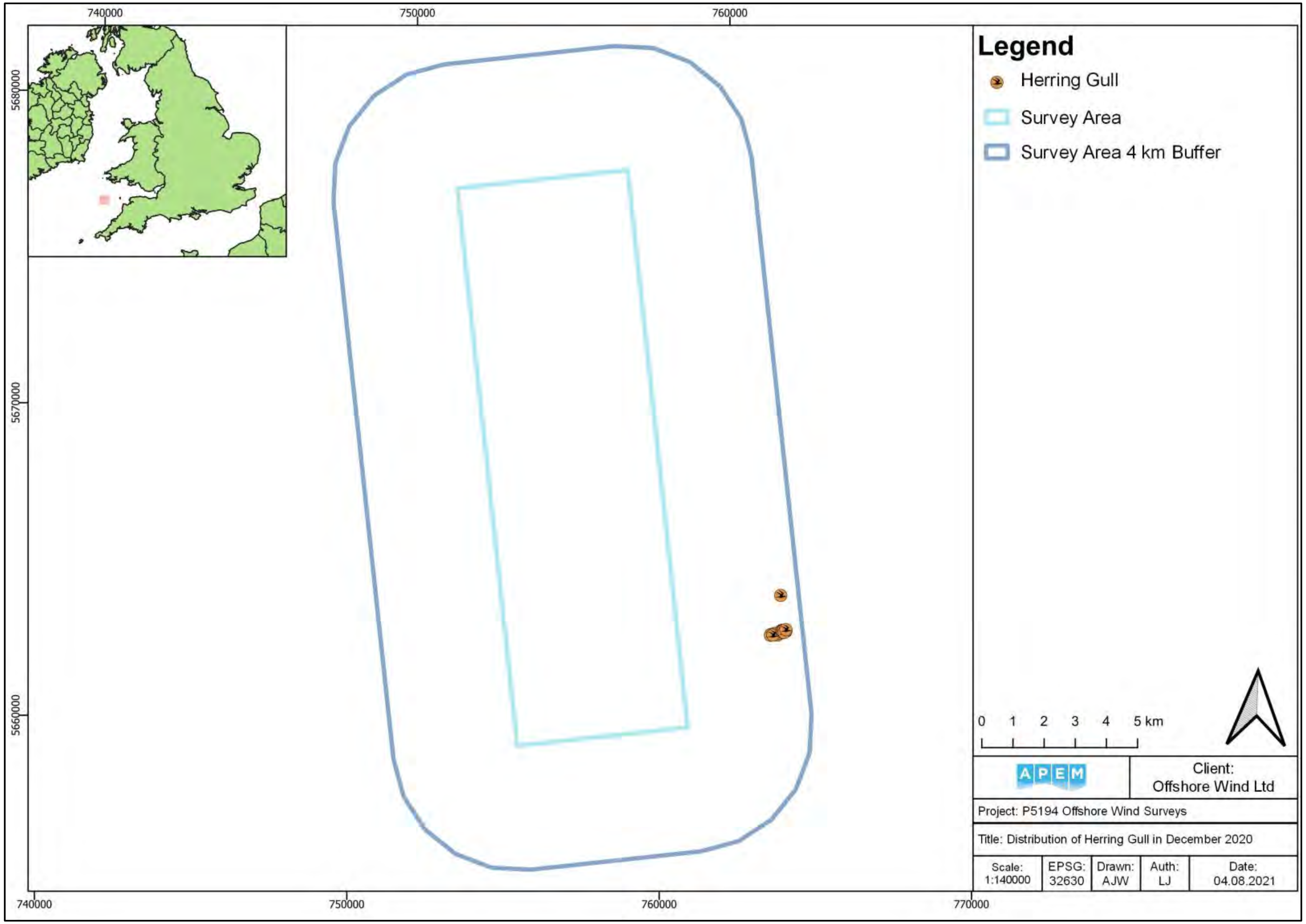


Figure 42 Distribution of herring gulls in Survey Area during December 2020

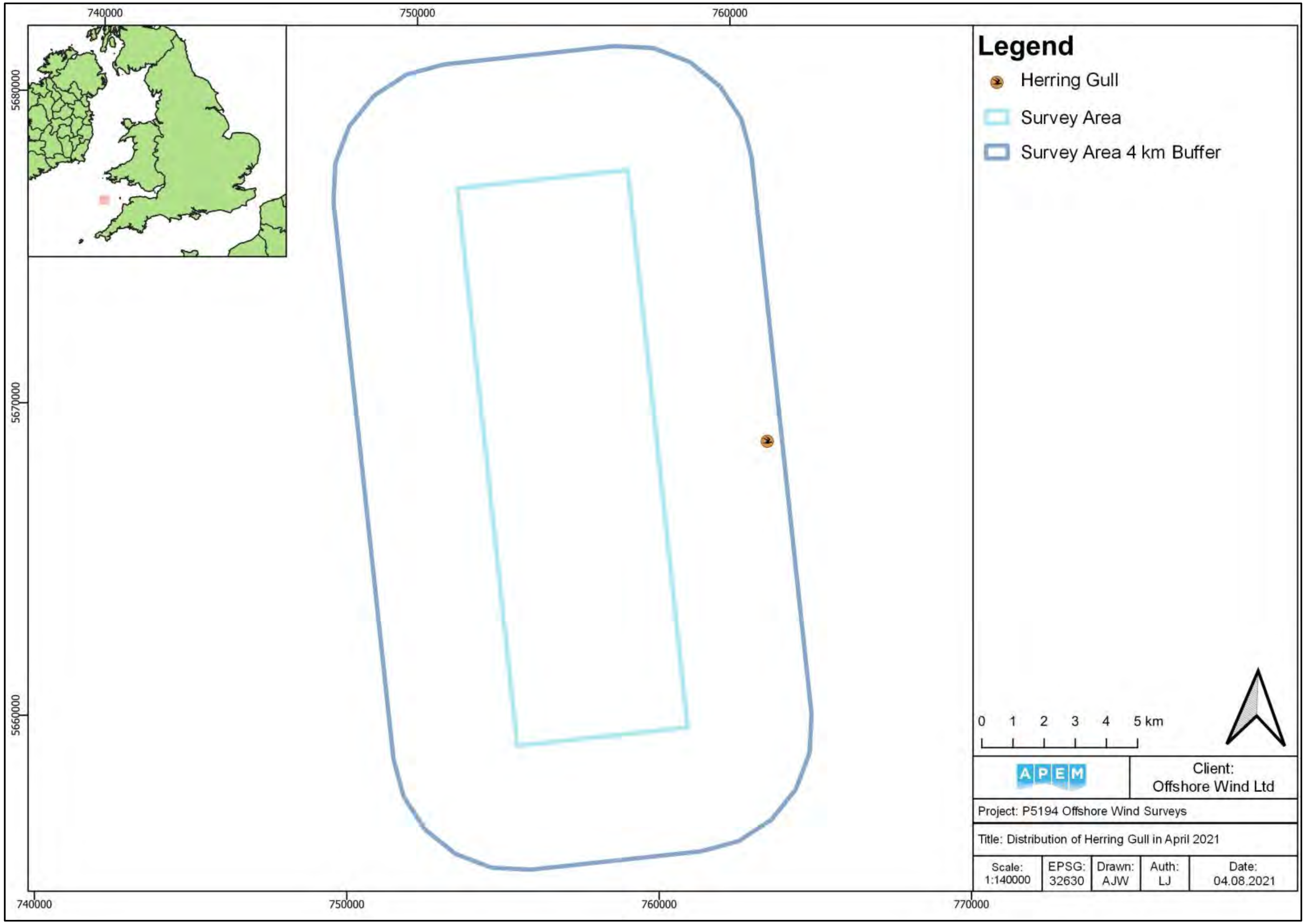


Figure 43 Distribution of herring gulls in Survey Area during April 2021

Figure 44 Distribution of herring gulls in Survey Area during May 2021

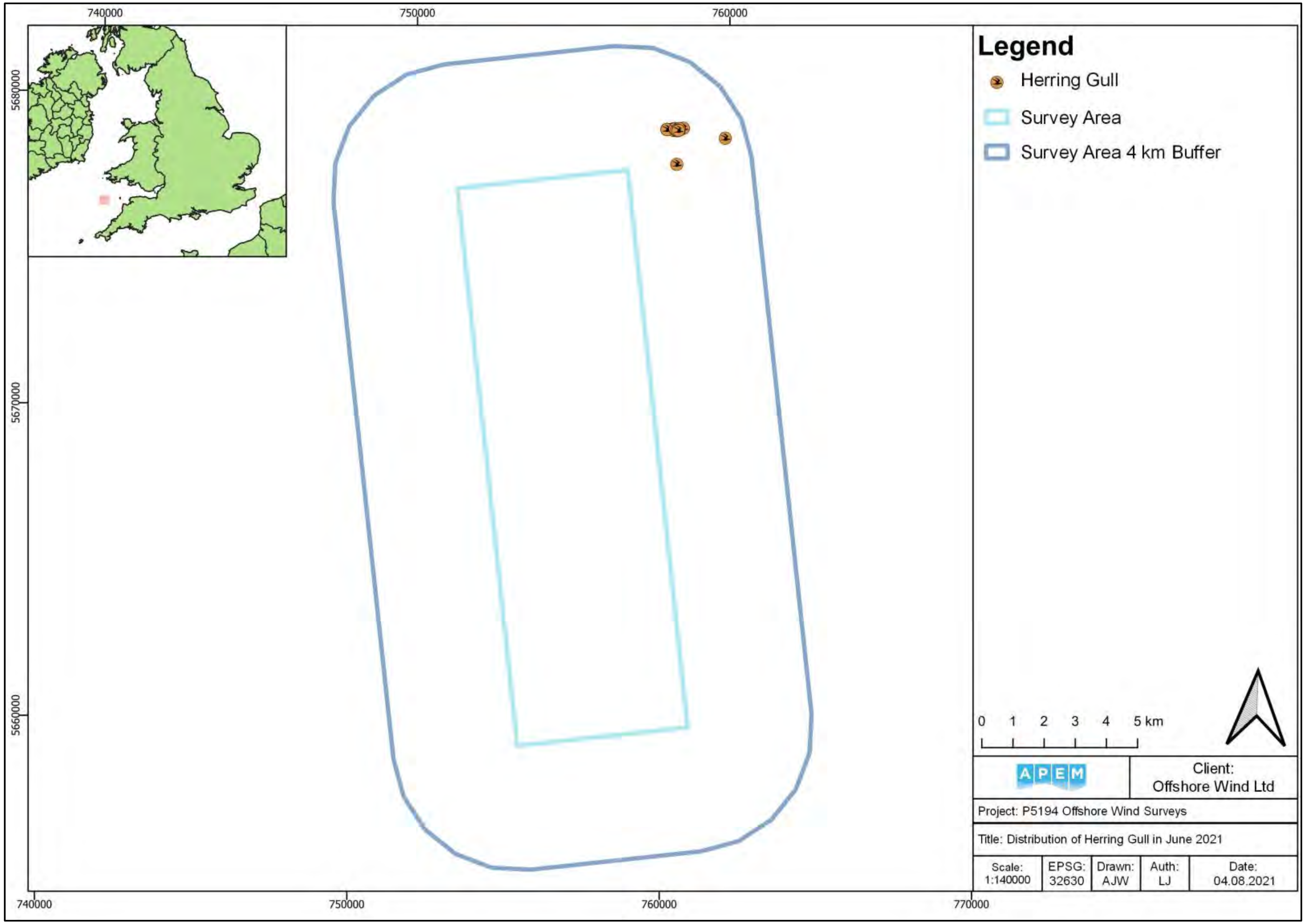


Figure 45 Distribution of herring gulls in Survey Area during June 2021

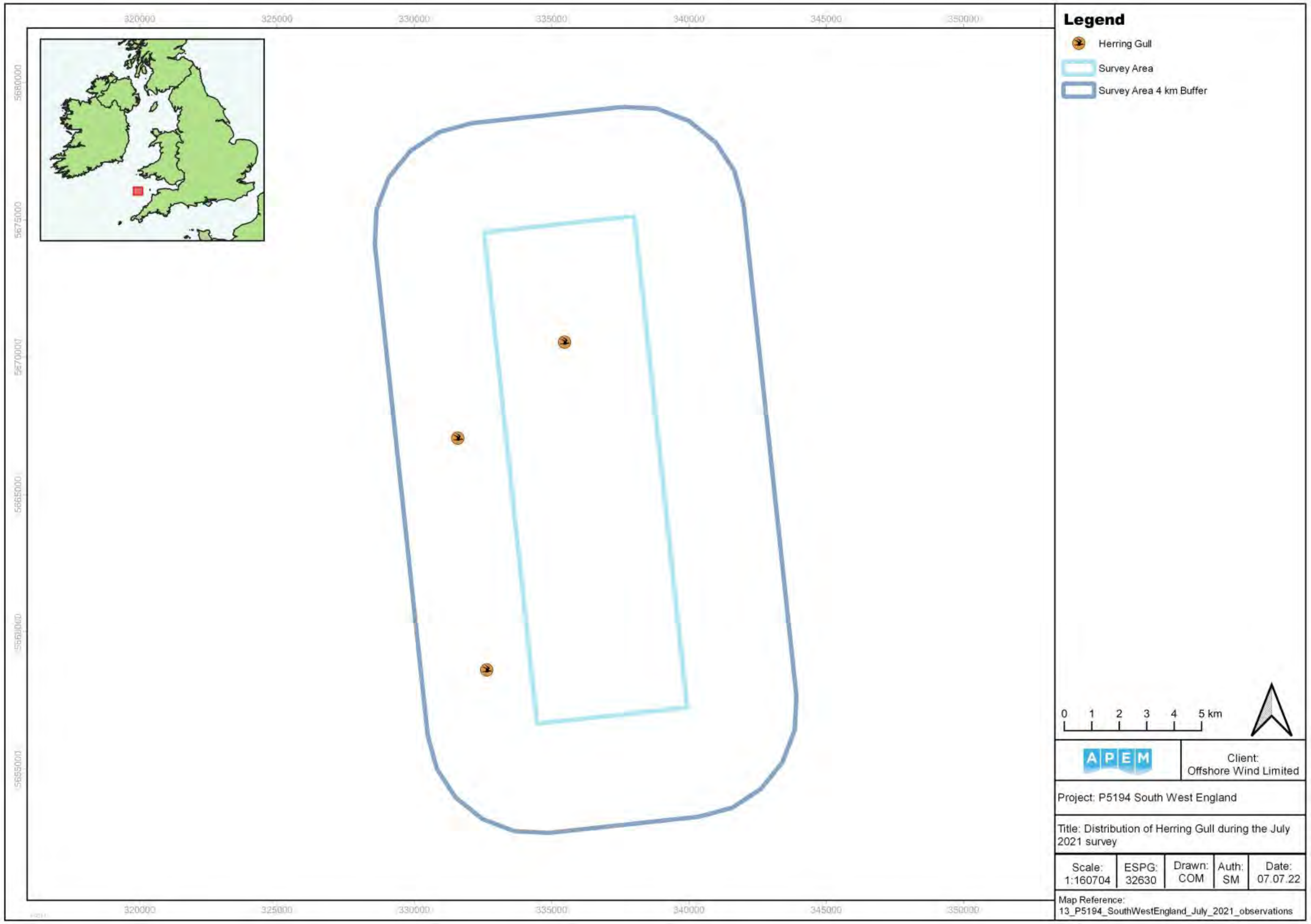


Figure 46 Distribution of herring gulls in Survey Area during July 2021

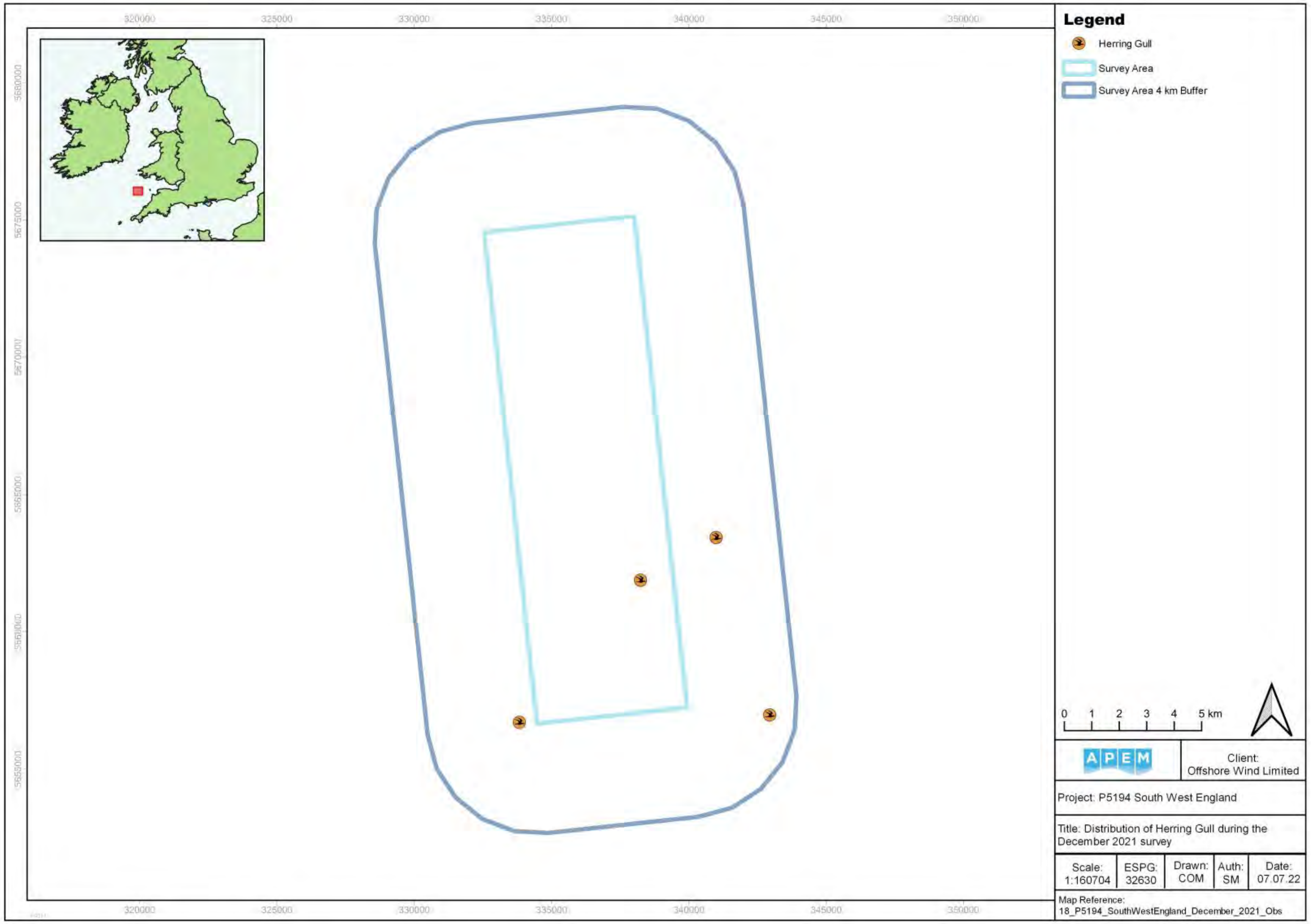


Figure 47 Distribution of herring gulls in Survey Area during December 2021

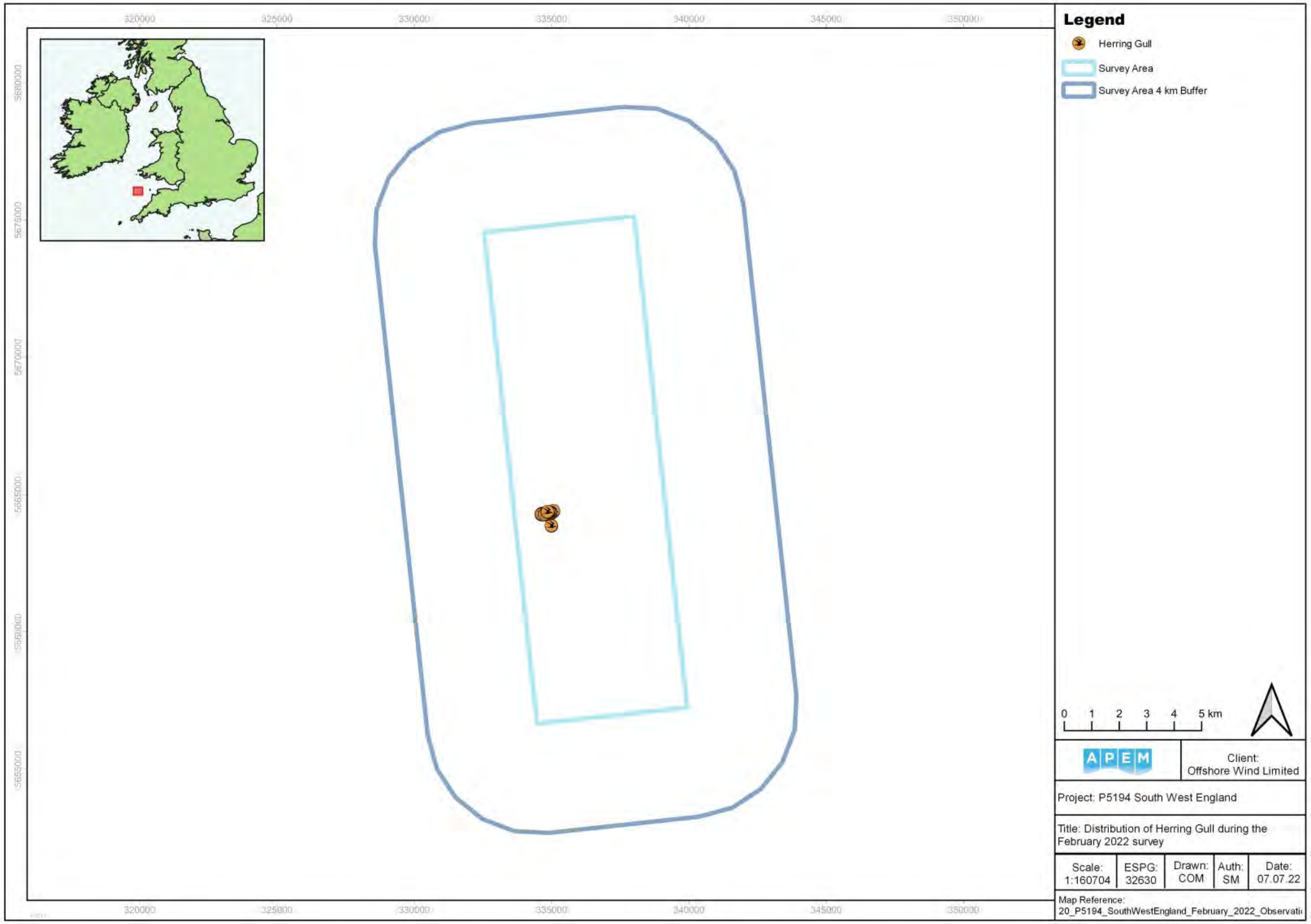


Figure 48 Distribution of herring gulls in Survey Area during February 2022

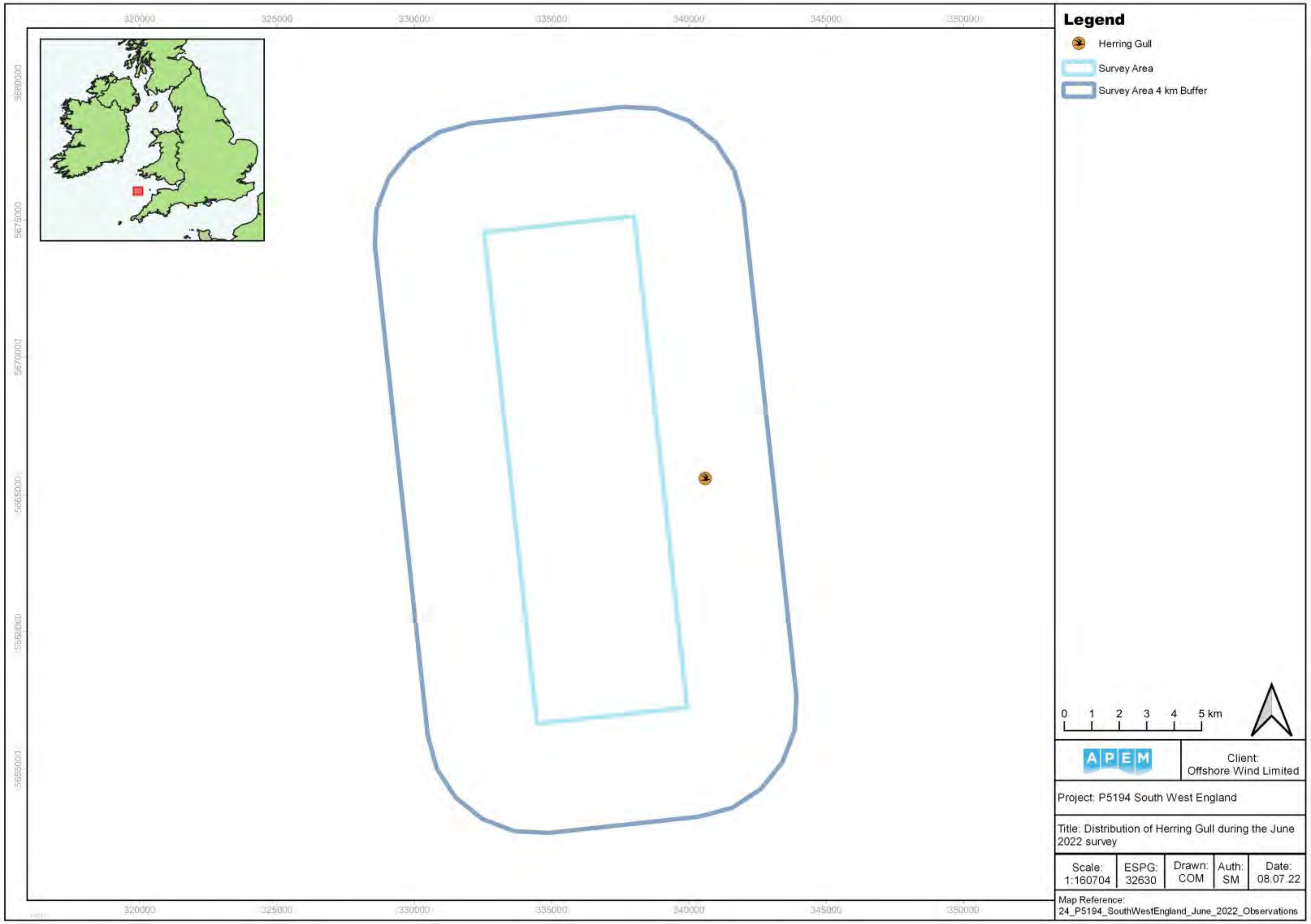
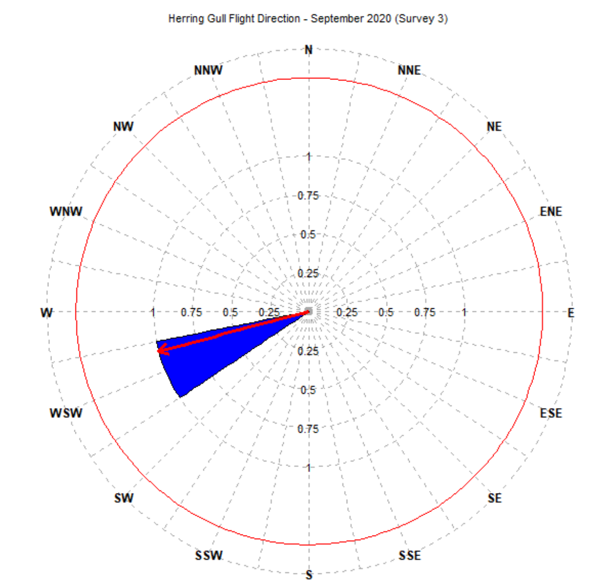
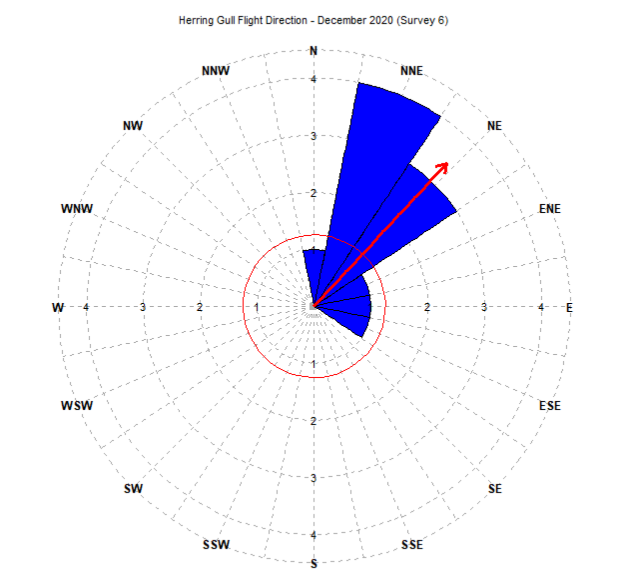


Figure 49 Distribution of herring gulls in Survey Area during June 2022



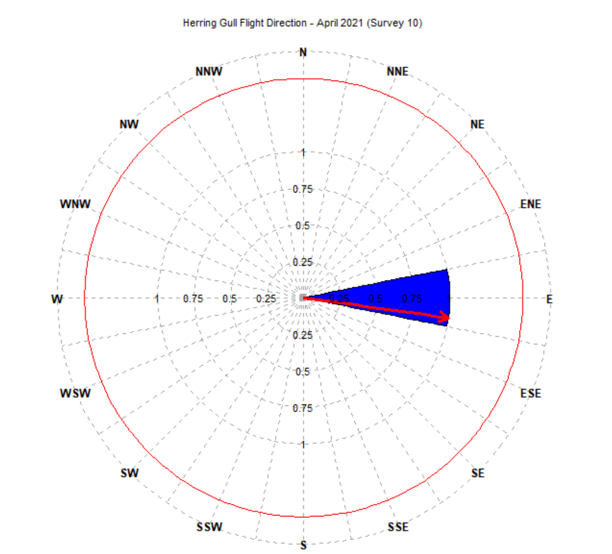
Number of Observations	1
Mean Vector (µ)	255.978
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 50a September 2020



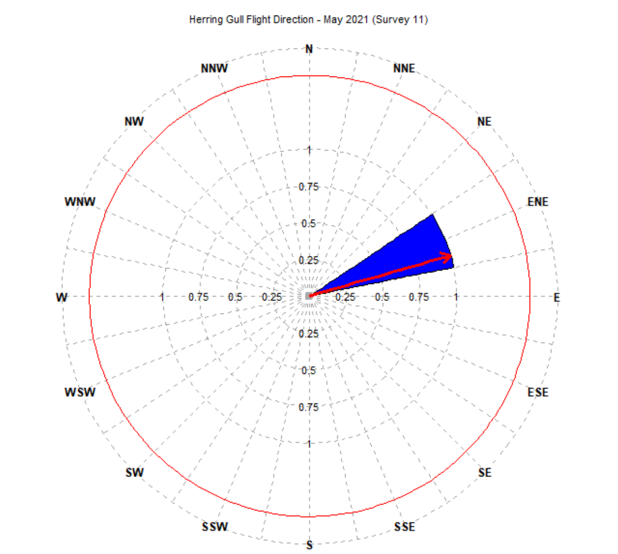
Number of Observations	11
Mean Vector (µ)	43.670
Length of Mean Vector (r)	0.855
Rayleigh Test (Z)	8.043
Rayleigh Test (p)	<0.001

Figure 50b December 2020



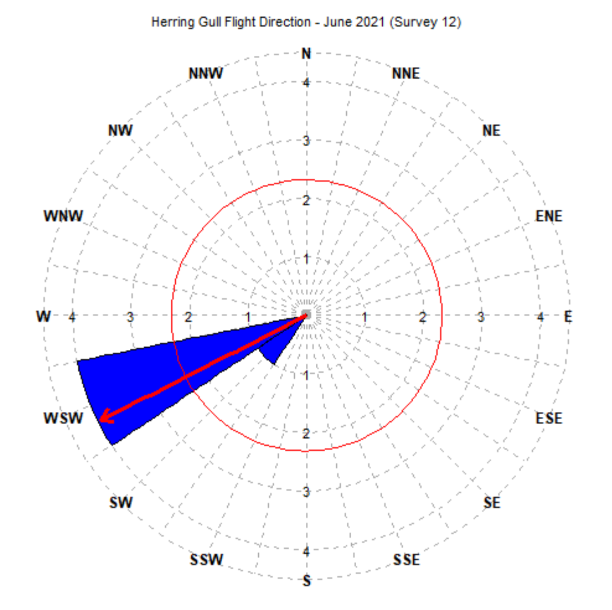
Number of Observations	1
Mean Vector (µ)	98.220
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 50c April 2021



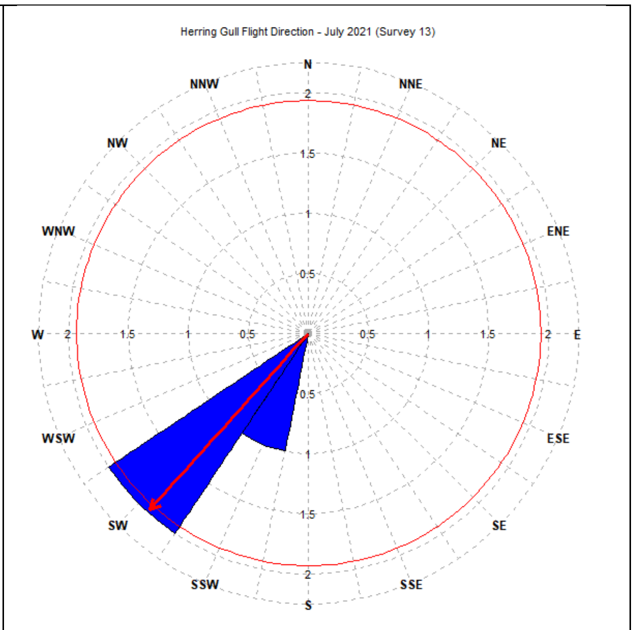
Number of Observations	1
Mean Vector (µ)	74.511
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 50d May 2021



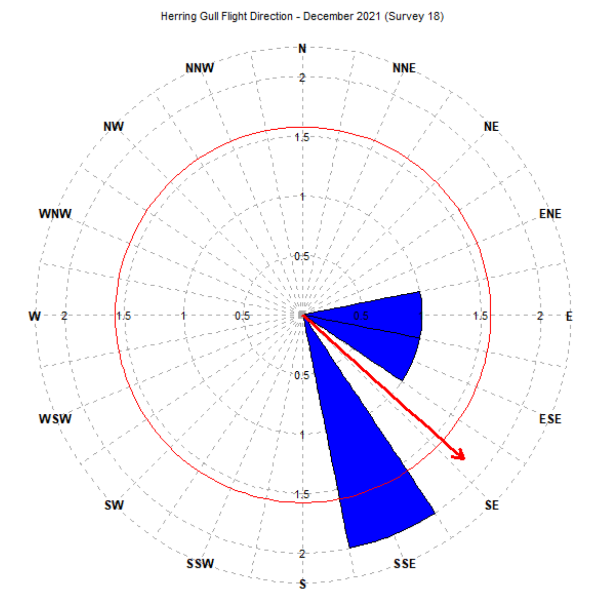
Number of Observations	5
Mean Vector (µ)	243.914
Length of Mean Vector (r)	0.988
Rayleigh Test (Z)	4.879
Rayleigh Test (p)	0.002

Figure 50e June 2021



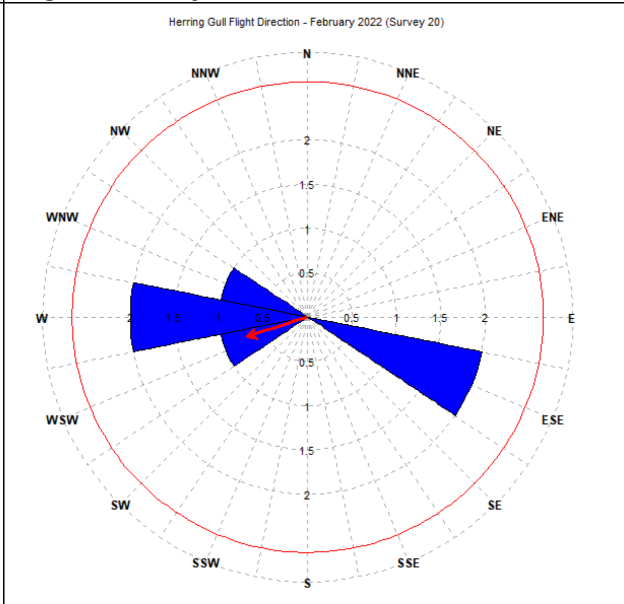
Number of Observations	3
Mean Vector (µ)	222.577
Length of Mean Vector (r)	0.987
Rayleigh Test (Z)	2.920
Rayleigh Test (p)	0.038

Figure 50f July 2021



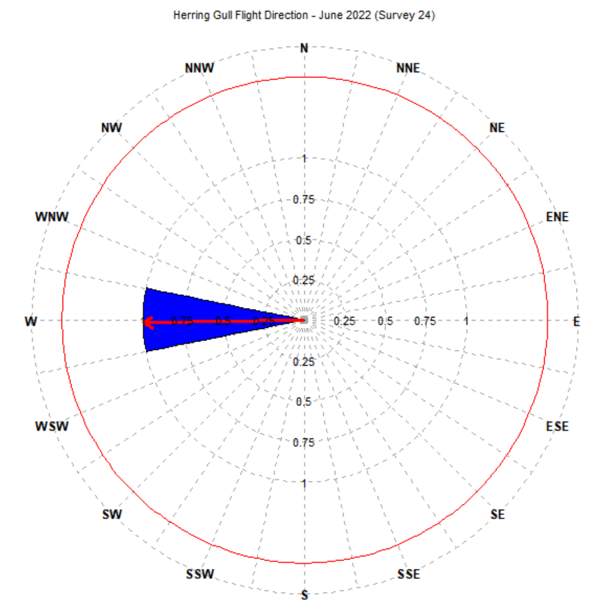
Number of Observations	4
Mean Vector (µ)	132.190
Length of Mean Vector (r)	0.906
Rayleigh Test (Z)	3.283
Rayleigh Test (p)	0.025

Figure 50g December 2021



Number of Observations	6
Mean Vector (µ)	252.594
Length of Mean Vector (r)	0.359
Rayleigh Test (Z)	0.773
Rayleigh Test (p)	0.481

Figure 50h February 2022



Number of Observations	1
Mean Vector (µ)	269.156
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 50i June 2022

Figure 50 Summary of flight direction of herring gulls during survey period

4.5 Lesser Black-backed Gull – *Larus fuscus*

Lesser black-backed gulls were recorded in December 2020, as well as May 2021 to September 2021, February to April 2022, and in June 2022. A peak raw count of 119 in February 2022 resulted in an abundance estimate of 918 for the Survey Area (Error! Reference source not found.).

In the Southwest England Site, single birds were recorded in July and August 2021, and March and April 2022. In June 2022 there were two birds, and in February 2022 a group of 119, resulting in an abundance estimate of 1,034 (Error! Reference source not found.).

In the 4 km Buffer Zone, lesser black-backed gulls were recorded in December 2020, during May to September 2021, and in April and June 2022, with a December 2020 peak raw count of 17, resulting in an abundance estimate of 130 (Error! Reference source not found.).

In December 2020, they were locally concentrated in the southwest of the Buffer Zone (**Figure 51**). During May 2021, two individuals were recorded in the south of the Buffer, and one in the southwest (**Figure 52**). In June 2021, a single gull was located in the east-southeast of the Buffer (**Figure 53**). And during July 202, three lesser individuals were recorded, two in the Buffer's south and south-west, and one in the north of the site (**Figure 54**).

In August 2021, six gulls were spread between the south-west of the Buffer Zone, the east of the Buffer Zone, and the East of the site (**Figure 55**). During September 2021, three were recorded in the Buffer's south-west (**Figure 56**). In February 2022, 119 lesser black-backed gulls were grouped in the west of the site (**Figure 57**). In March 2022, a single individual was recorded in the south of the site (**Figure 58**), while in April 2022, two gulls were seen in the site's north-east, plus another in the north-west of the Buffer (**Figure 59**). During June 2022, gulls were in the south and north-west of the Buffer, and the west of the site (Error! Reference source not found.).

The birds flew north-northeast in December 2020 and May 2021 (27.594°, p=0.002; **Figure 61a**; 32.316°, p=0.138; **Figure 61b**) and south-southwest in June and July 2021 (197.760°, p=1.000; **Figure 61c;** 197.669°, p=0.471; **Figure 61d**). During August 2021, they flew west-northwest (283.774°, p=0.142; **Figure 61e**), and north-west during April and June 2022 (309.351°, p=0.145, **Figure 61f**; 317°, p=0.576, **Figure 61g**).

Table 10 Raw counts and abundance and density estimates (individuals per km2) of lesser-backed gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Dec-20	17	136	17	408	0.24	0.4
May-21	3	22	3	51	0.58	0.07
Jun-21	1	8	1	24	1.00	0.02
Jul-21	3	23	3	54	0.58	0.07
Aug-21	6	47	8	102	0.41	0.14
Sep-21	3	23	3	68	0.58	0.07
Feb-22	119	918	119	2,755	0.09	2.73

Mar-22	1	8	1	23	1.00	0.02
Apr-22	2	15	2	38	0.71	0.04
Jun-22	5	37	7	67	0.45	0.11
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-21	1	9	1	26	1.00	0.09
Aug-21	1	9	1	26	1.00	0.09
Feb-22	119	1,034	119	3,101	0.09	10.44
Mar-22	1	9	1	26	1.00	0.09
Apr-22	1	8	1	25	1.00	0.08
Jun-22	2	17	2	42	0.71	0.17
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Dec-20	17	130	17	391	0.24	0.55
May-21	3	21	3	49	0.58	0.09
Jun-21	1	8	1	23	1.00	0.03
Jul-21	2	15	2	37	0.71	0.06
Aug-21	5	37	5	90	0.45	0.16
Sep-21	3	22	3	65	0.58	0.09
Apr-22	1	7	1	22	1.00	0.03
Jun-22	3	21	3	50	0.58	0.09

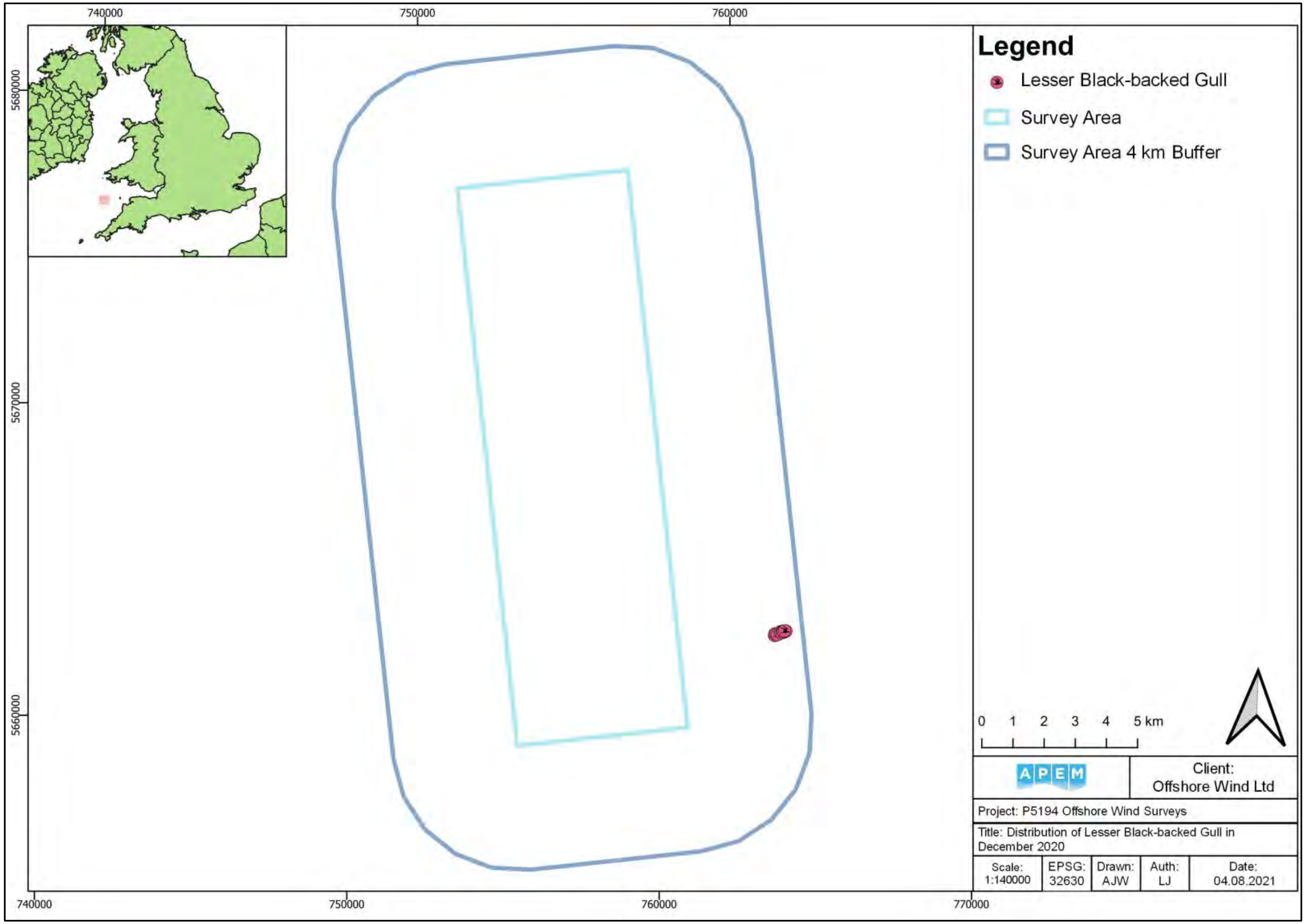


Figure 51 Distribution of lesser black-backed gulls in Survey Area during December 2020

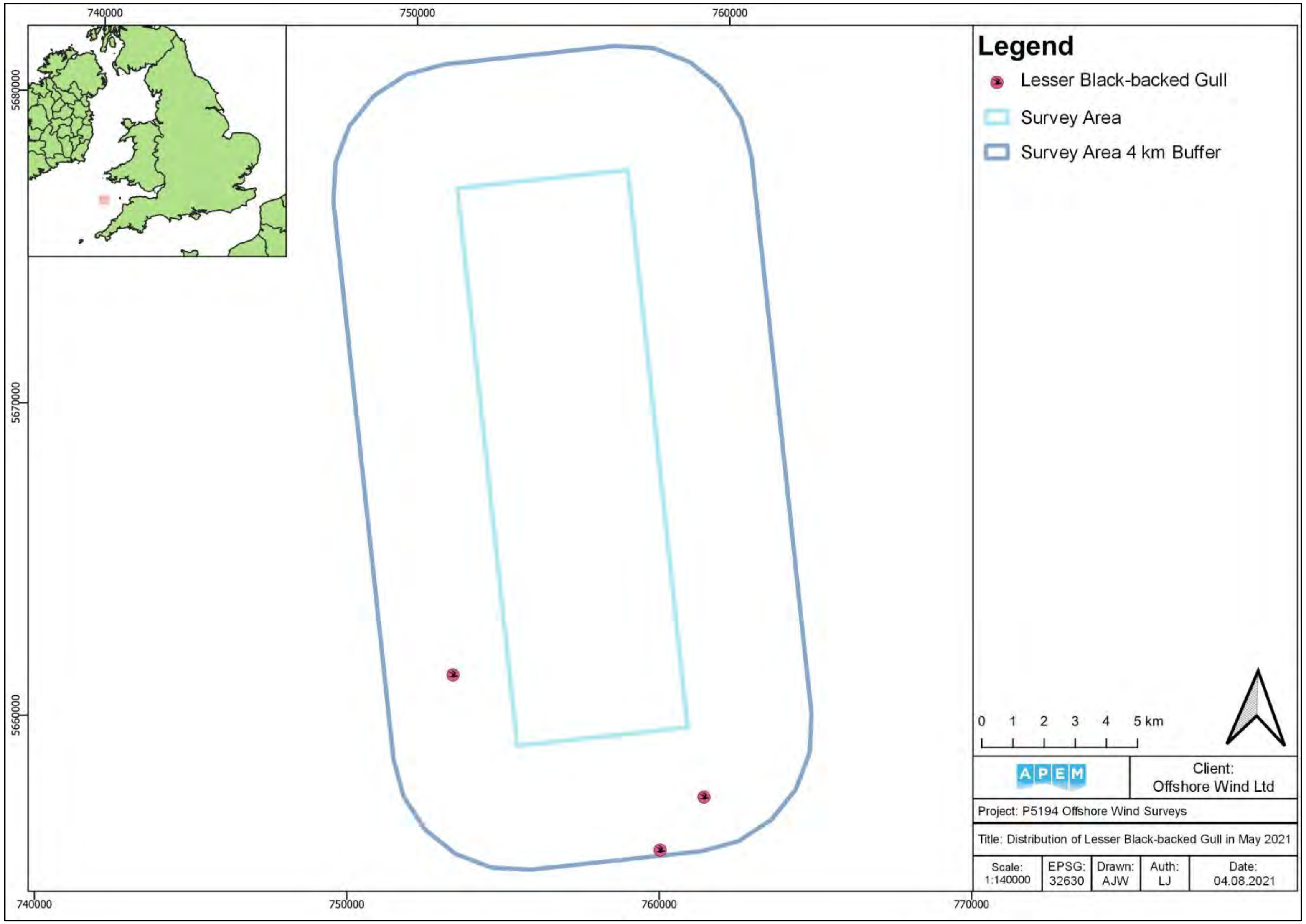


Figure 52 Distribution of lesser black-backed gulls in Survey Area during May 2021

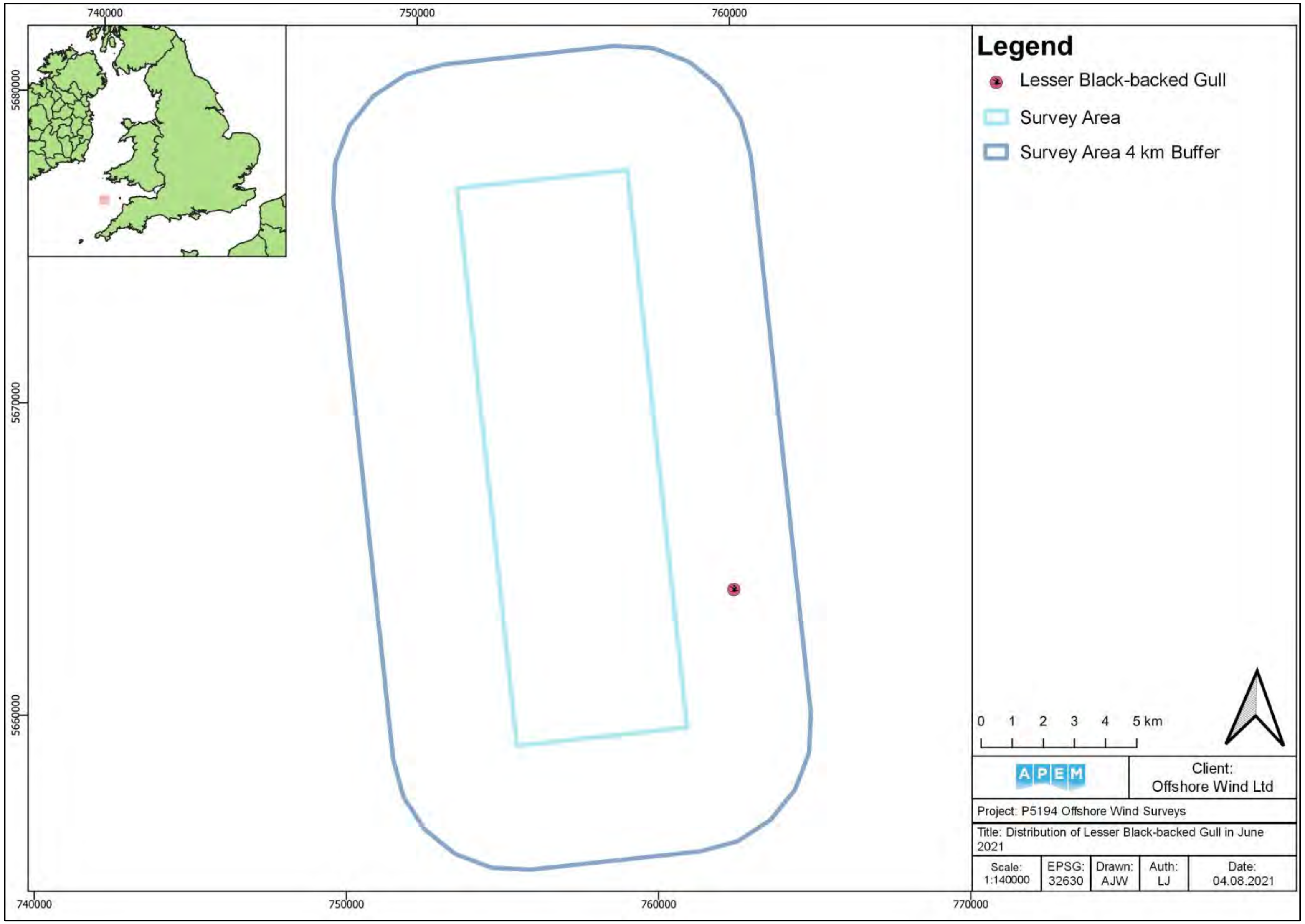


Figure 53 Distribution of lesser black-backed gulls in Survey Area during June 2021

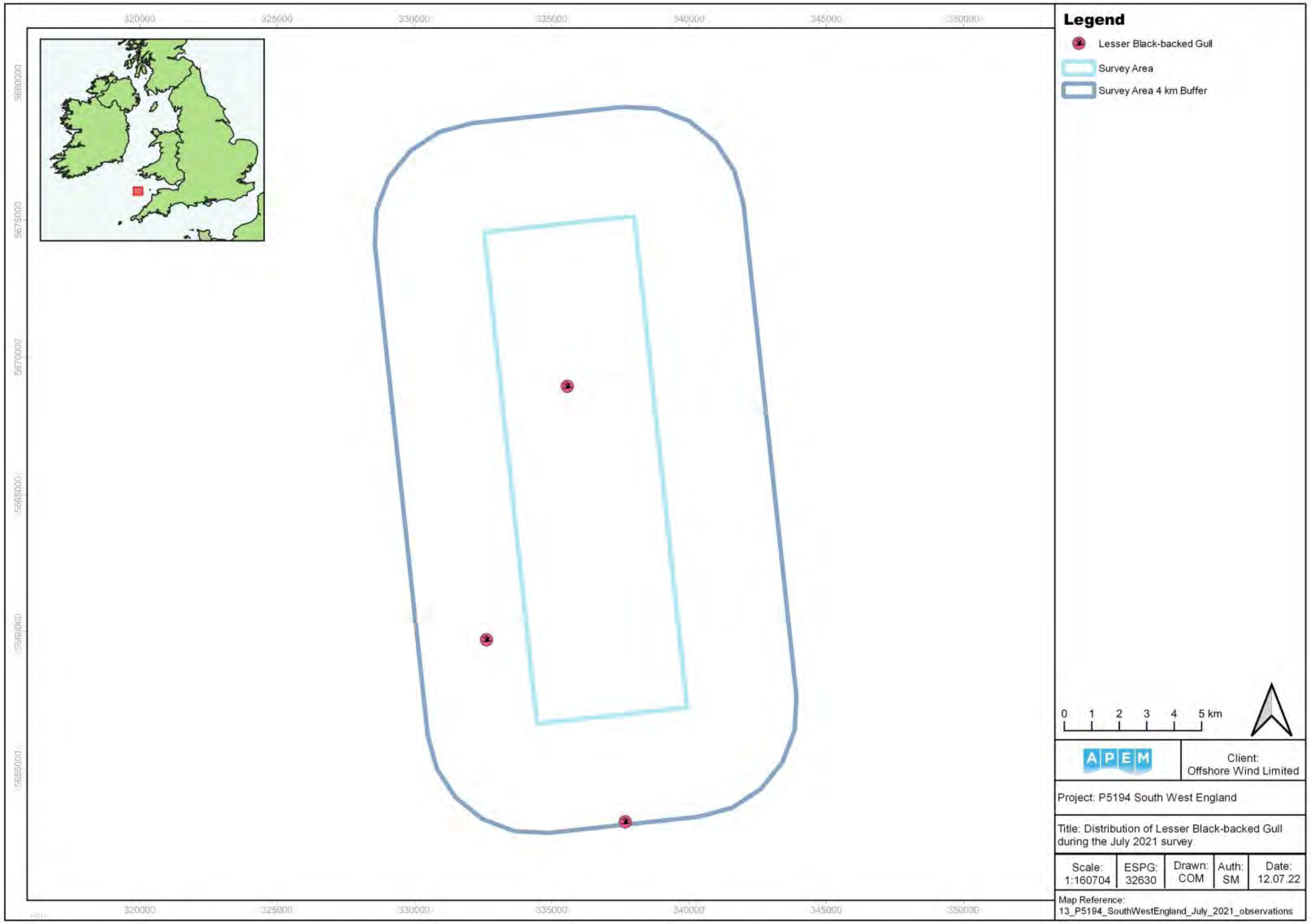


Figure 54 Distribution of lesser black-backed gulls in Survey Area during July 2021

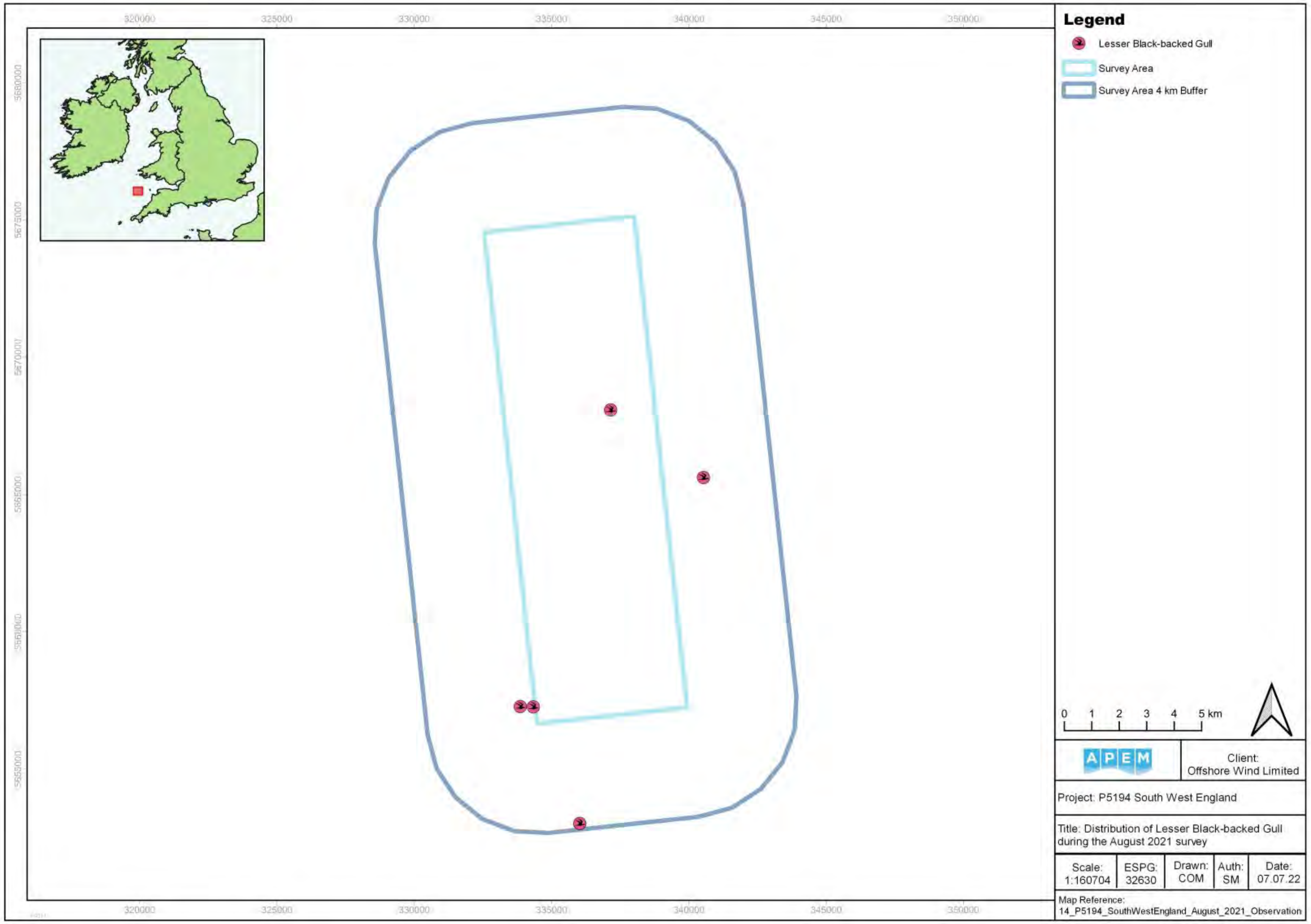


Figure 55 Distribution of lesser black-backed gulls in Survey Area during August 2021

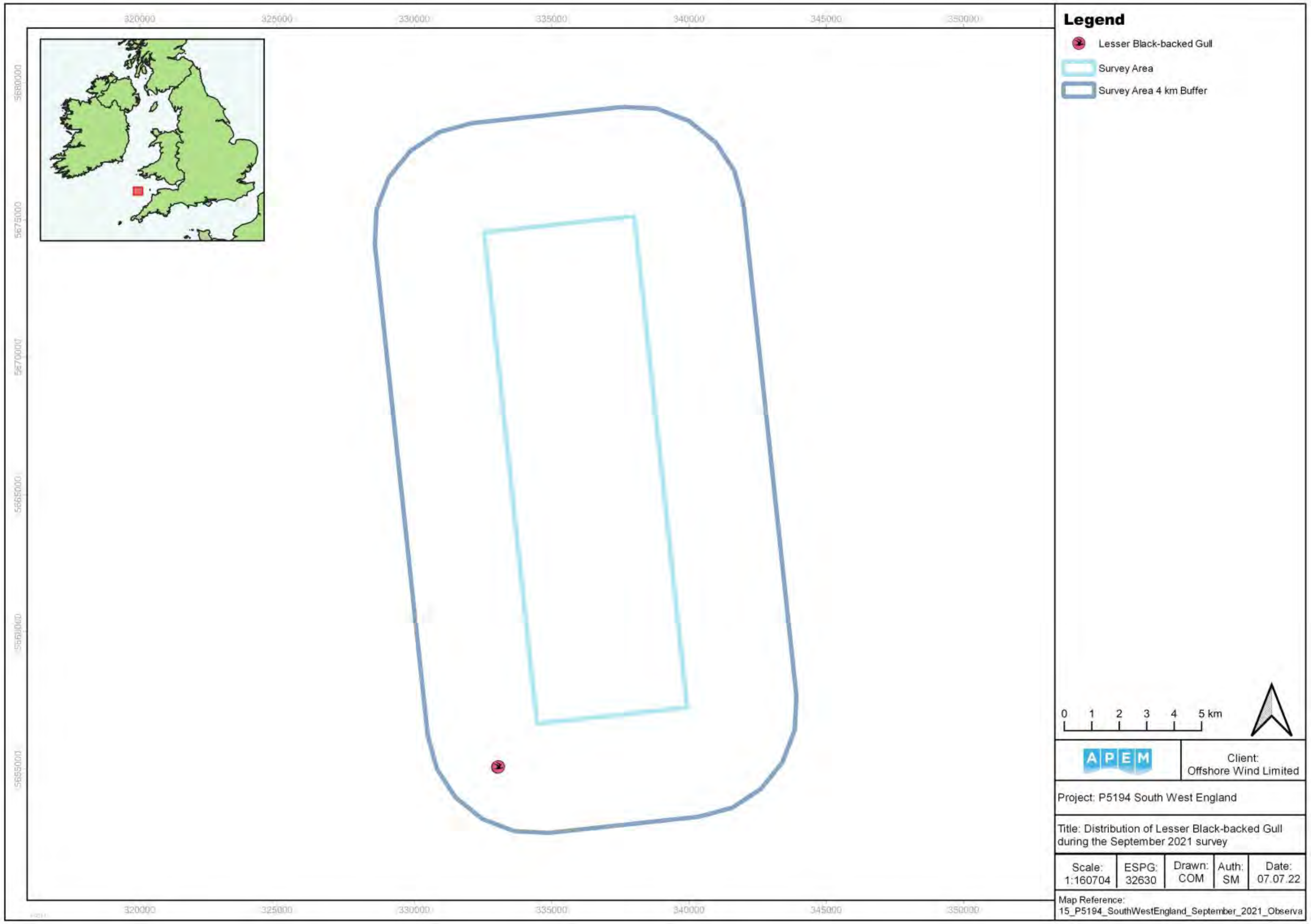


Figure 56 Distribution of lesser black-backed gulls in Survey Area during September 2021

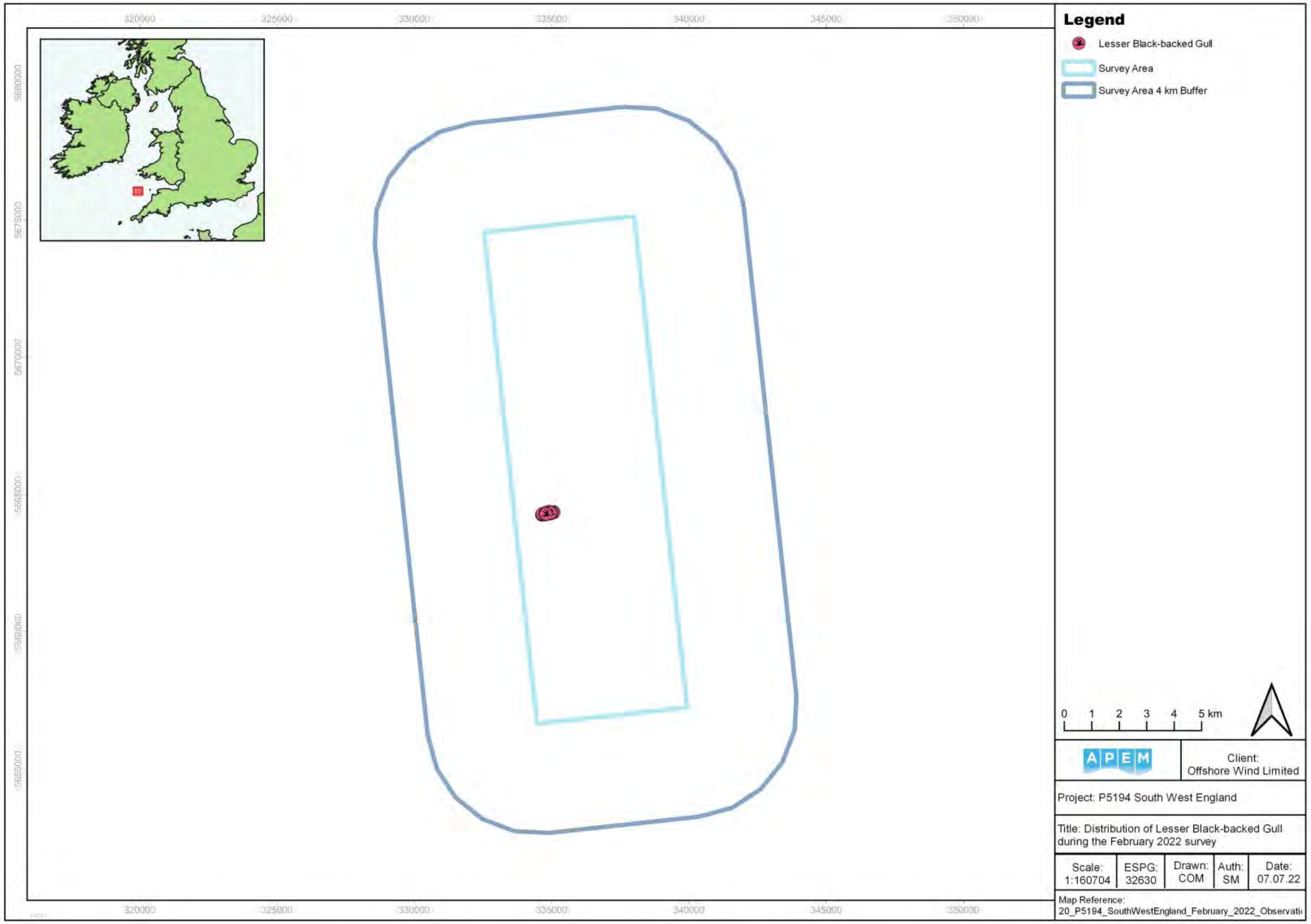


Figure 57 Distribution of lesser black-backed gulls in Survey Area during February 2022

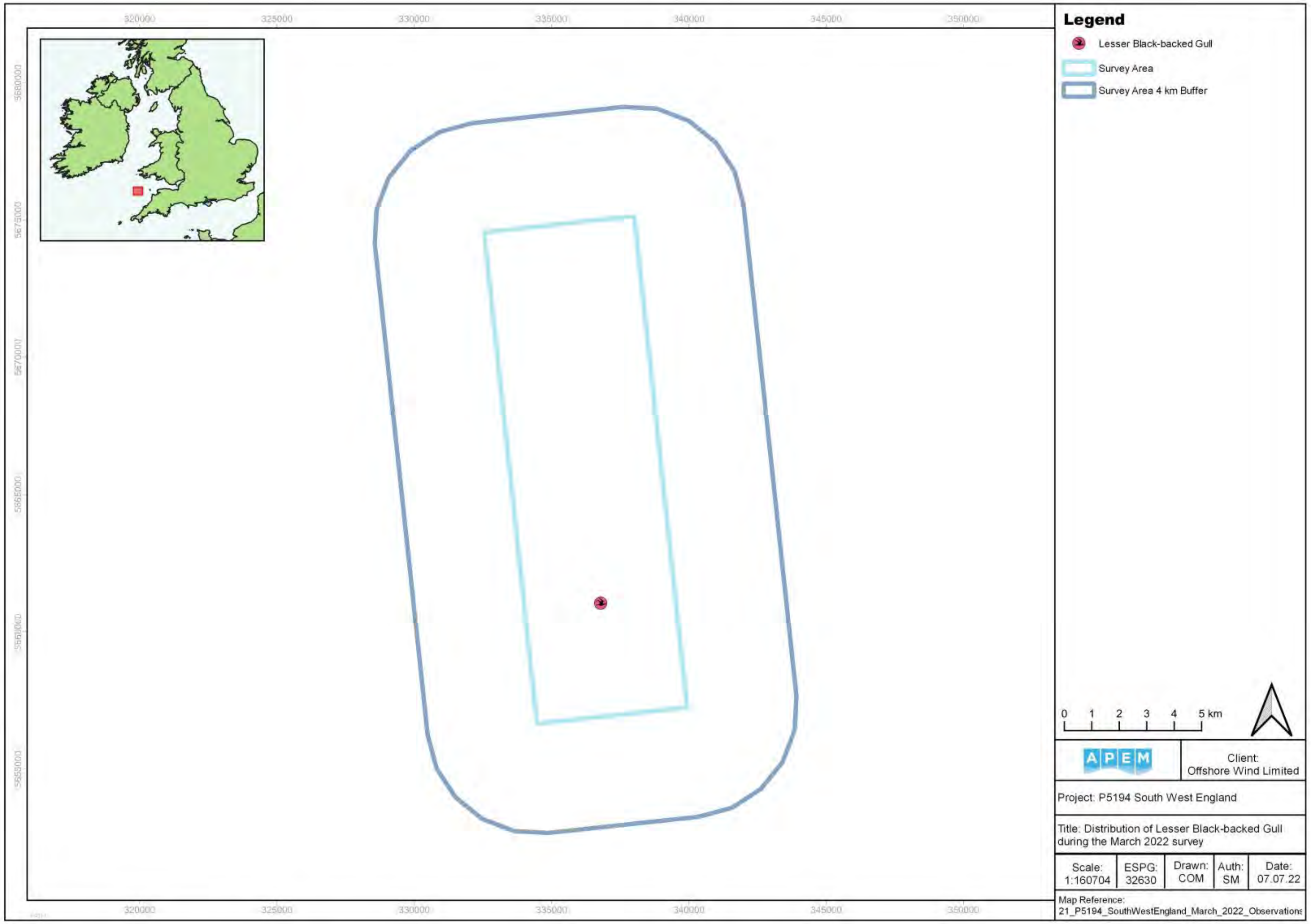


Figure 58 Distribution of lesser black-backed gulls in Survey Area during March 2022

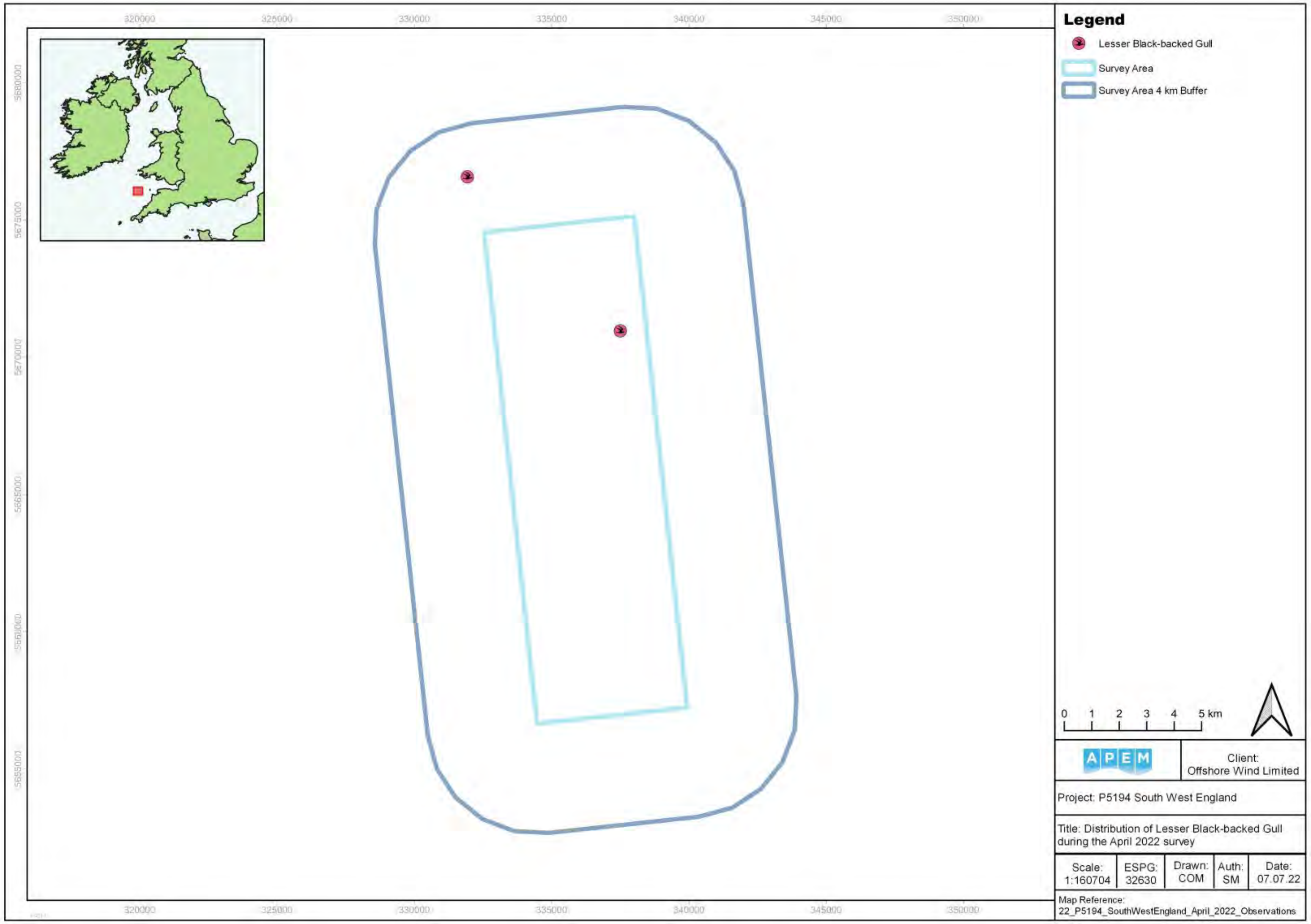


Figure 59 Distribution of lesser black-backed gulls in Survey Area during April 2022

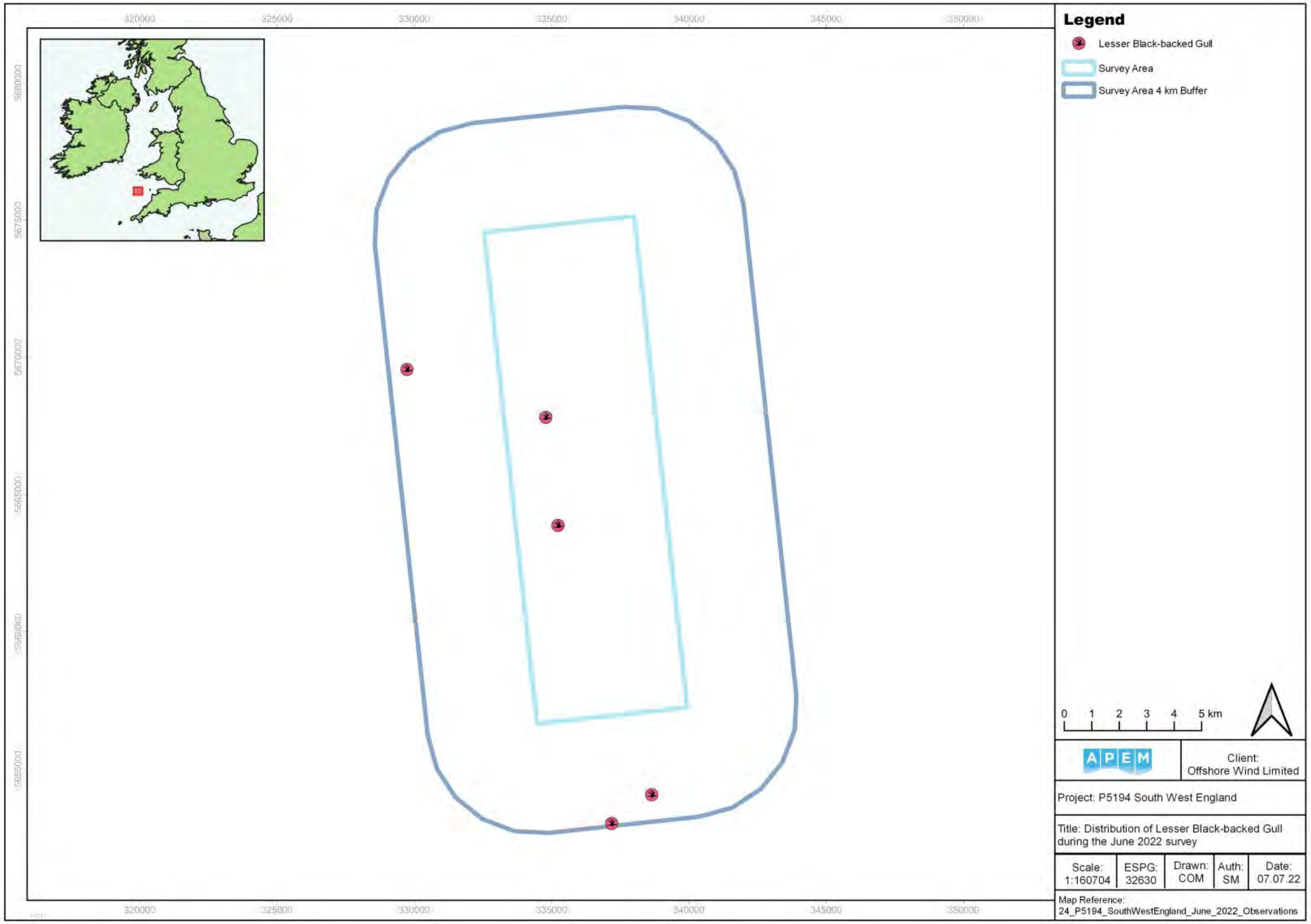
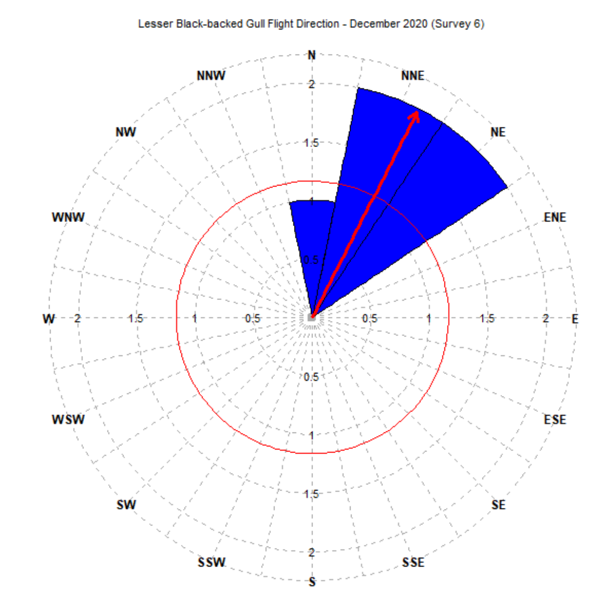
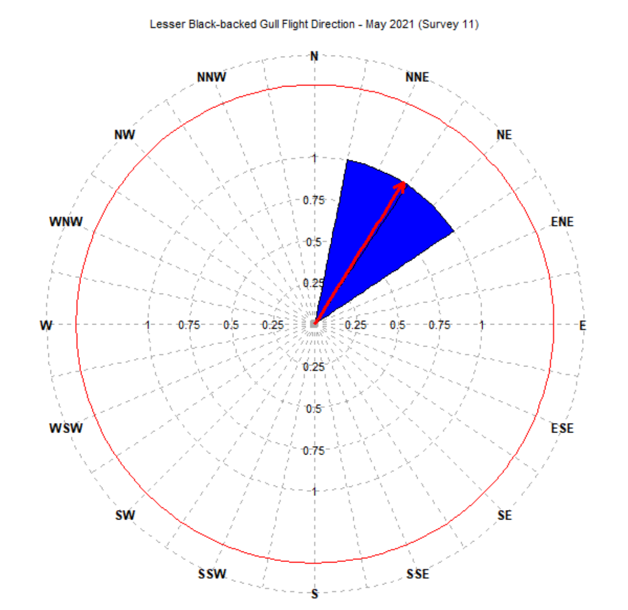


Figure 60 Distribution of lesser black-backed gulls in Survey Area during June 2022



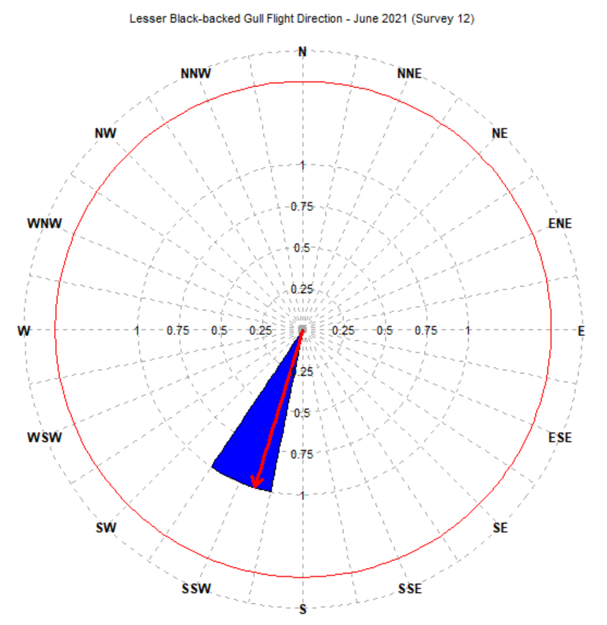
Number of Observations	5
Mean Vector (µ)	27.594
Length of Mean Vector (r)	0.983
Rayleigh Test (Z)	4.835
Rayleigh Test (p)	0.002

Figure 61a December 2020



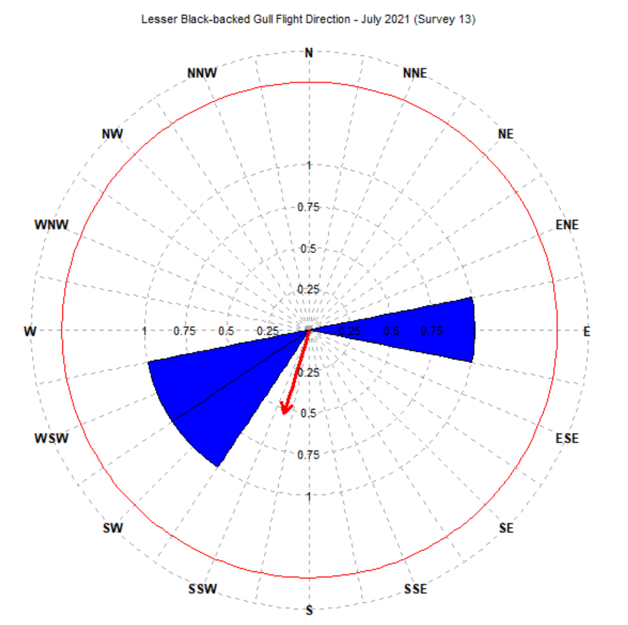
Number of Observations	2
Mean Vector (µ)	32.316
Length of Mean Vector (r)	0.999
Rayleigh Test (Z)	1.995
Rayleigh Test (p)	0.138

Figure 61b May 2021



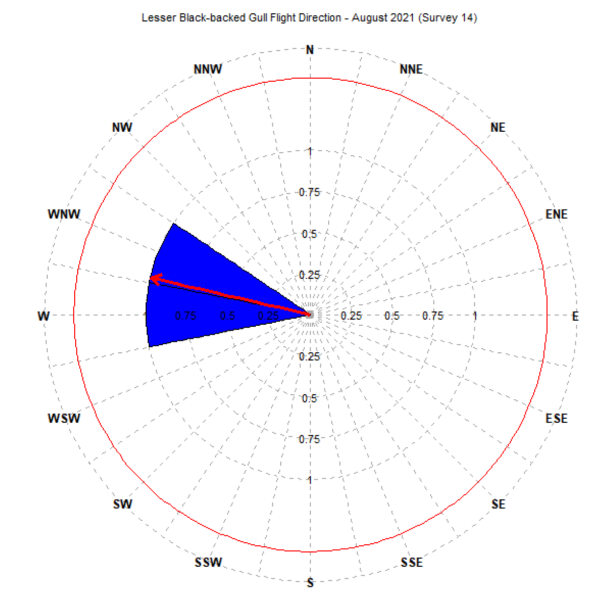
Number of Observations	1
Mean Vector (µ)	197.760
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 61c June 2021



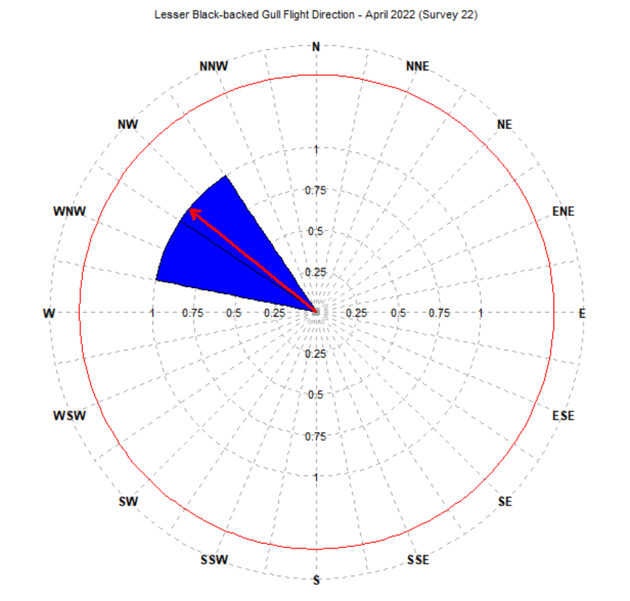
Number of Observations	3
Mean Vector (µ)	197.669
Length of Mean Vector (r)	0.530
Rayleigh Test (Z)	0.842
Rayleigh Test (p)	0.471

Figure 61d July 2021



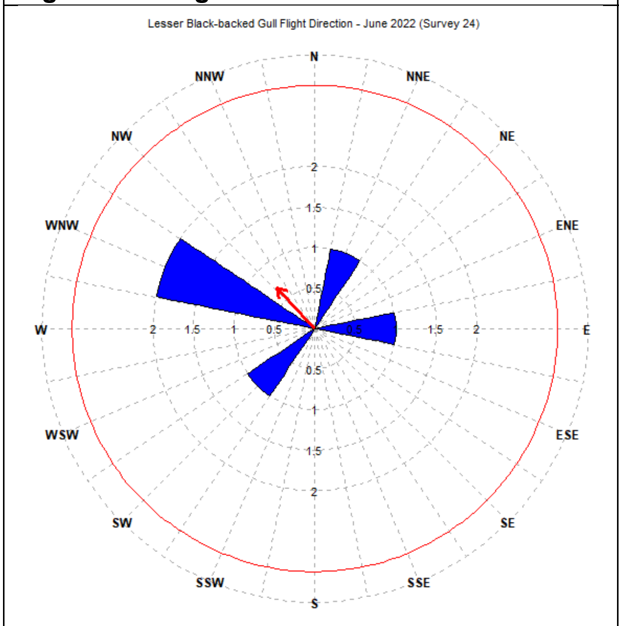
Number of Observations	2
Mean Vector (μ)	283.774
Length of Mean Vector (r)	0.994
Rayleigh Test (Z)	1.975
Rayleigh Test (p)	0.142

Figure 61e August 2021



Number of Observations	2
Mean Vector (μ)	309.351
Length of Mean Vector (r)	0.990
Rayleigh Test (Z)	1.959
Rayleigh Test (p)	0.145

Figure 61f April 2022



Number of Observations	5
Mean Vector (μ)	317.989
Length of Mean Vector (r)	0.345
Rayleigh Test (Z)	0.594
Rayleigh Test (p)	0.576

Figure 61g June 2022

Figure 61 Summary of flight direction of lesser black-backed gulls during survey period

4.6 Black-backed Gull – *Larus marinus / fuscus*

Unidentified black-backed gulls were recorded in May, June and September 2021, and February and April 2022. A peak raw count of six in February 2022 resulted in an abundance estimate of 52 for the Survey Area (**Table 11**).

In the South West England Site, the gulls were mostly scattered throughout the Buffer Zone. A single bird was recorded in the south of the Survey Area in May 2021 (**Figure 62**). In February 2022, six gulls were in the area (**Figure 65**). In June 2021, one individual was in the north-east of the Buffer Zone, and then in September 2021, six were observed in the Buffer's south-west (**Figure 63, Figure 64**). In April 2022, there was one individual in the south-east of the Buffer (**Figure 66**).

Unidentified black-backed gulls were recorded flying south-east in May and September 2021 (137.886°, p=0.5120 **Figure 67a**, 136.377°, p=0.241 **Figure 67b**), and west during February 2022 (259.241°, p=0.138 **Figure 67c**).

Table 11 Raw counts and abundance and density estimates (individuals per km^2) of unidentified black-backed gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
May-21	1	7	1	22	1.00	0.02
Jun-21	1	8	1	24	1.00	0.02
Sep-21	6	45	6	135	0.41	0.13
Feb-22	6	46	6	185	0.41	0.14
Apr-22	1	8	1	23	1.00	0.02
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
May-21	1	8	1	24	1.00	0.08
Feb-22	6	52	6	156	0.41	0.53
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jun-21	1	8	1	23	1.00	0.03
Sep-21	6	44	6	131	0.41	0.19
Apr-22	1	7	1	22	1.00	0.03

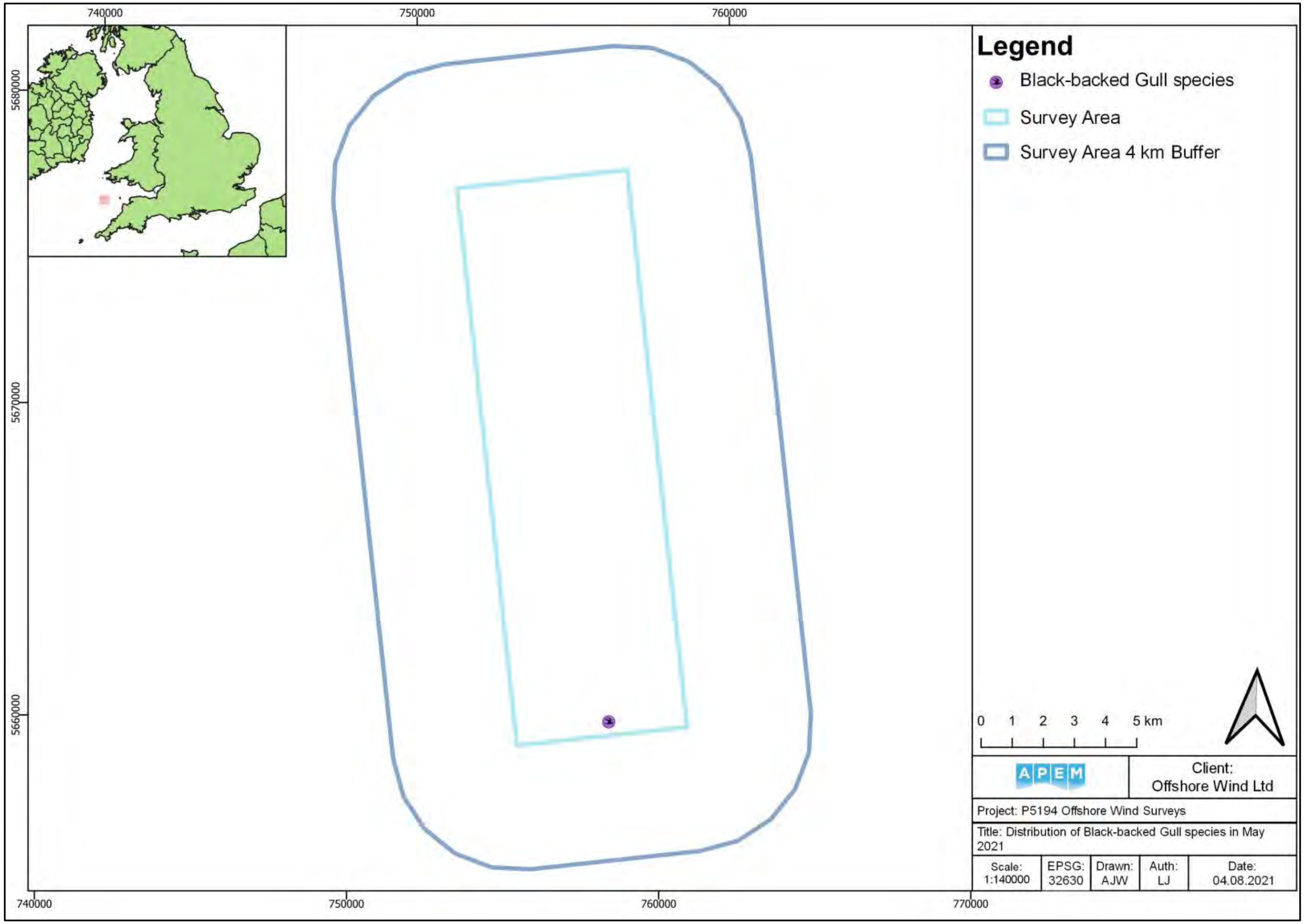


Figure 62 Distribution of black-backed gulls in Survey Area during May 2021

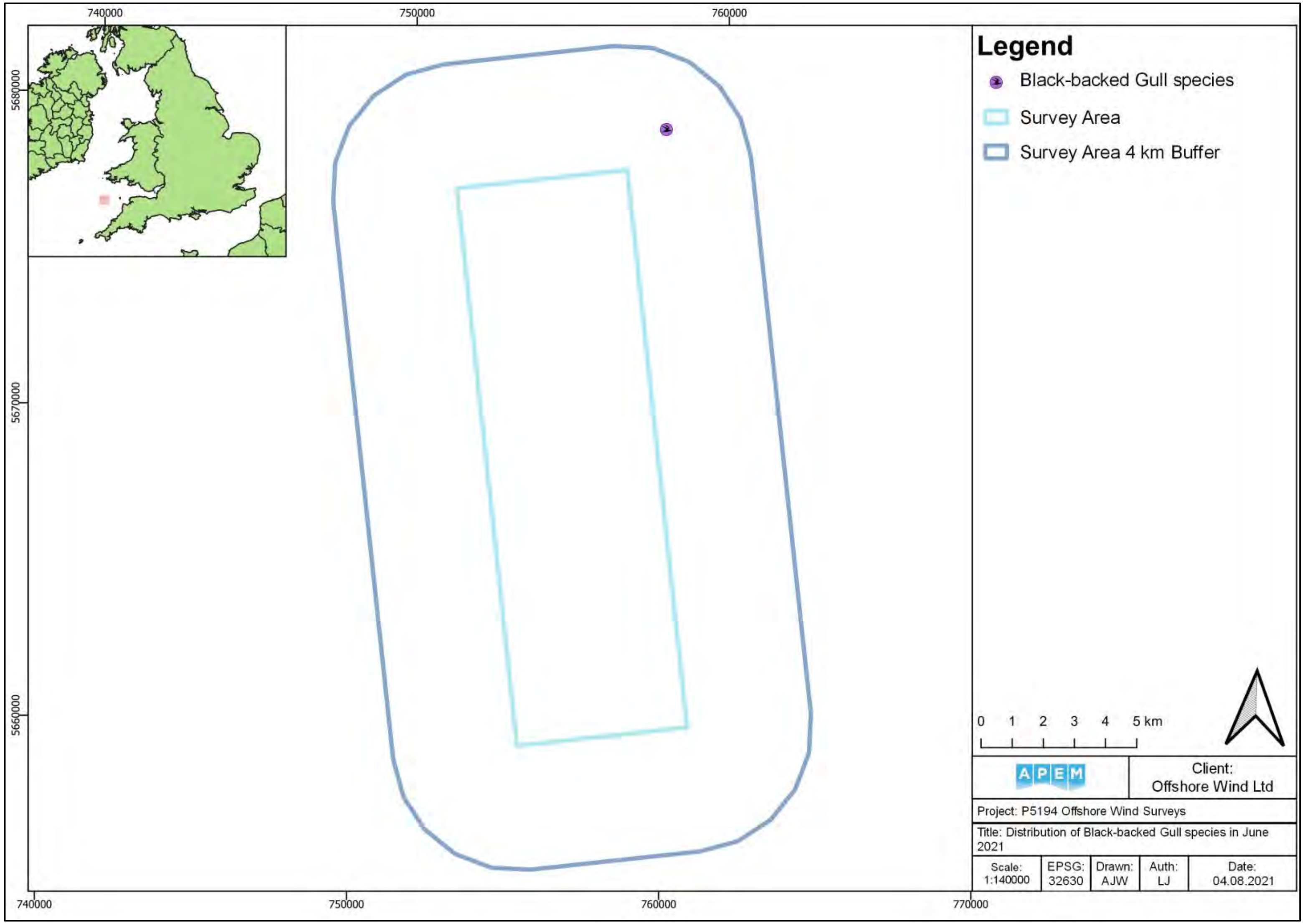


Figure 63 Distribution of black-backed gulls in Survey Area during June 2021

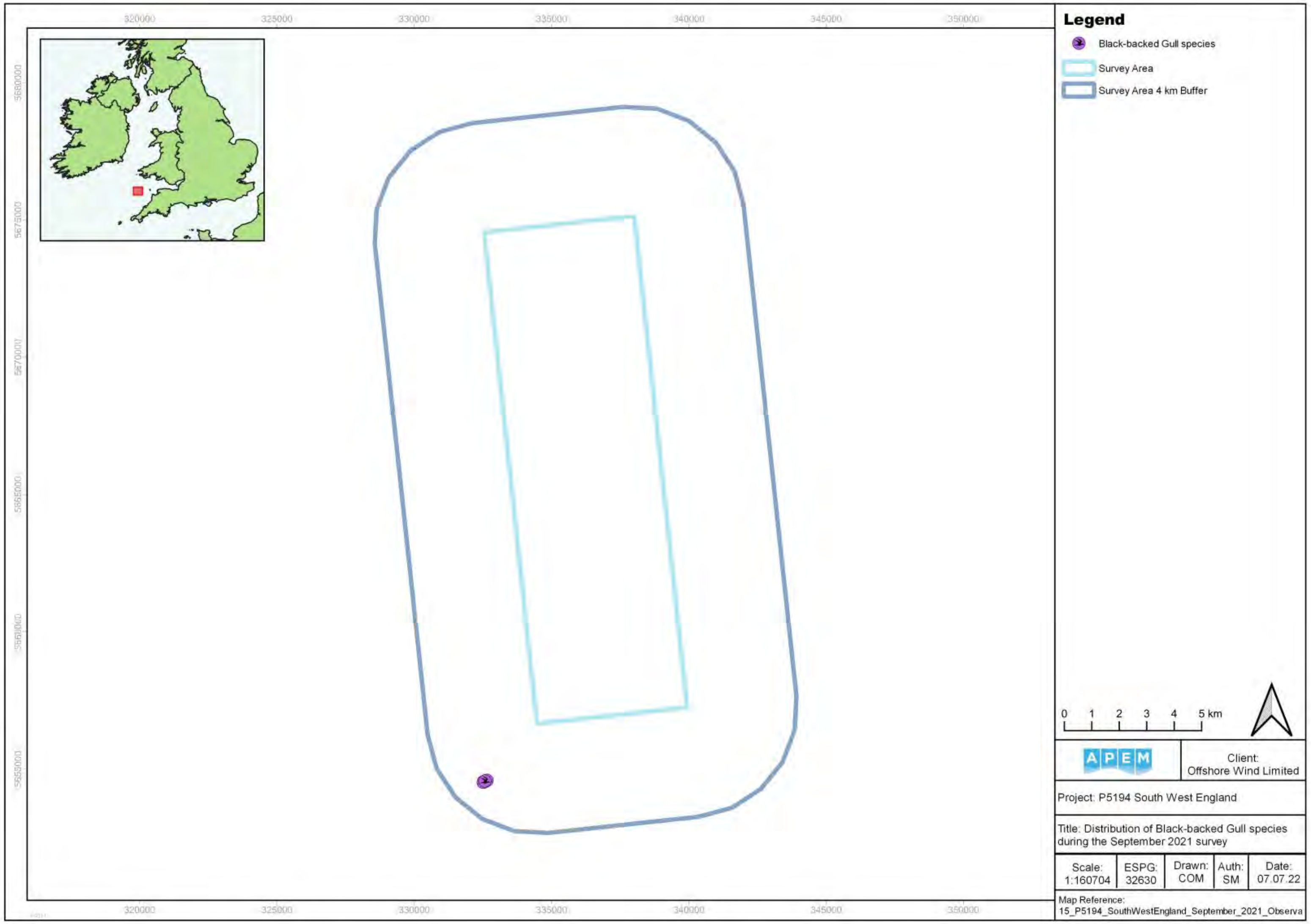


Figure 64 Distribution of black-backed gulls in Survey Area during September 2021

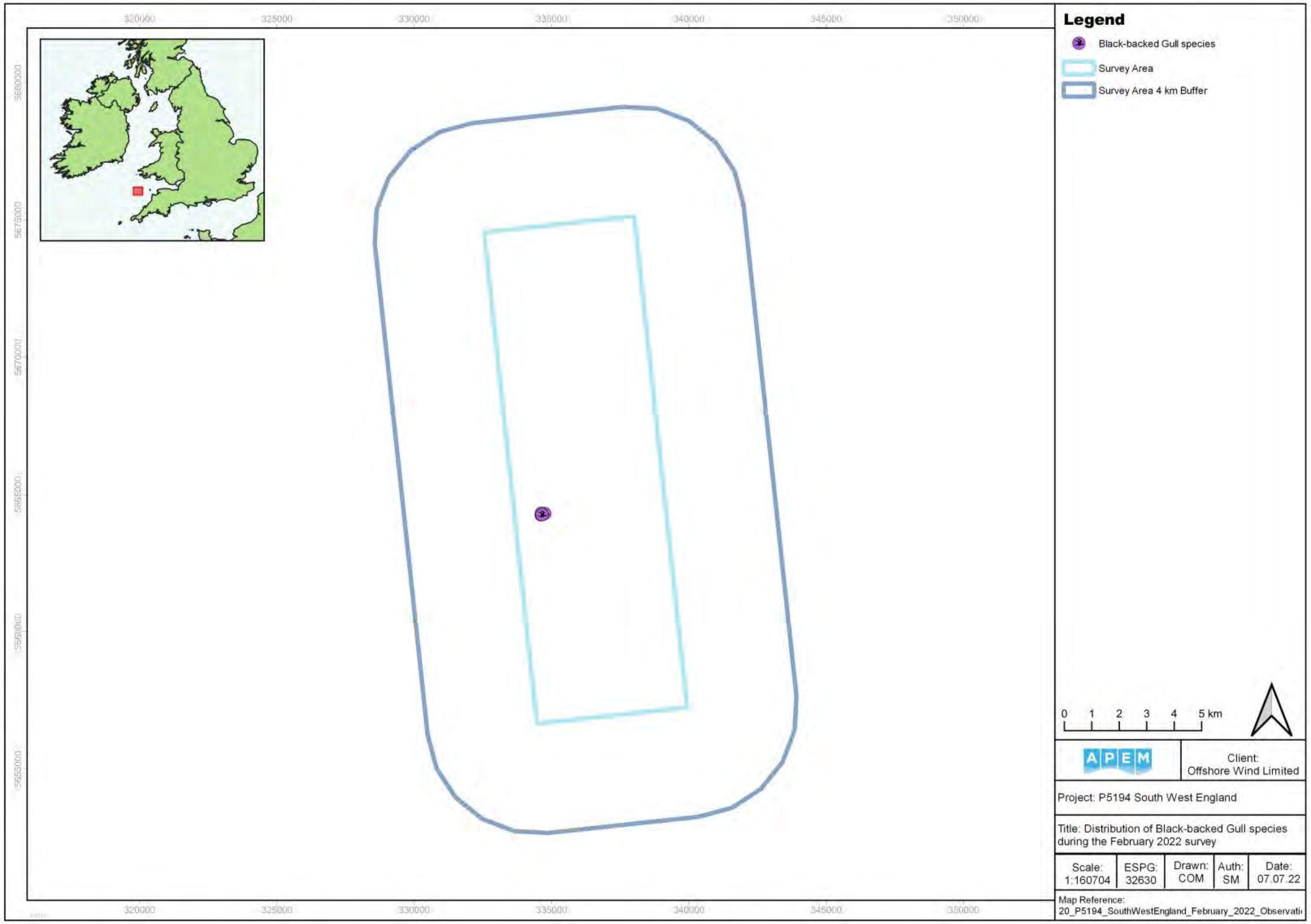


Figure 65 Distribution of black backed gulls in Survey Area during February 2022

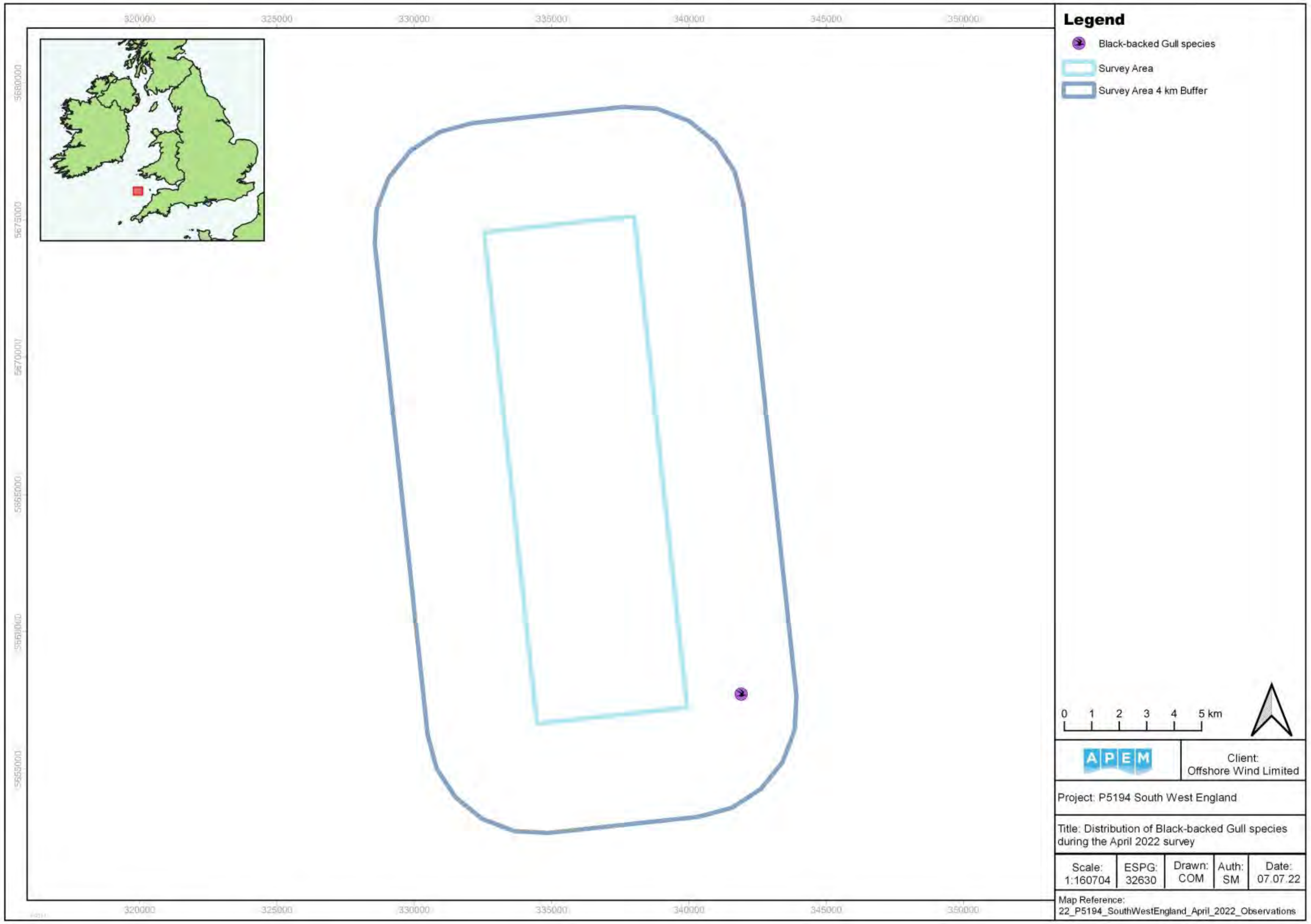
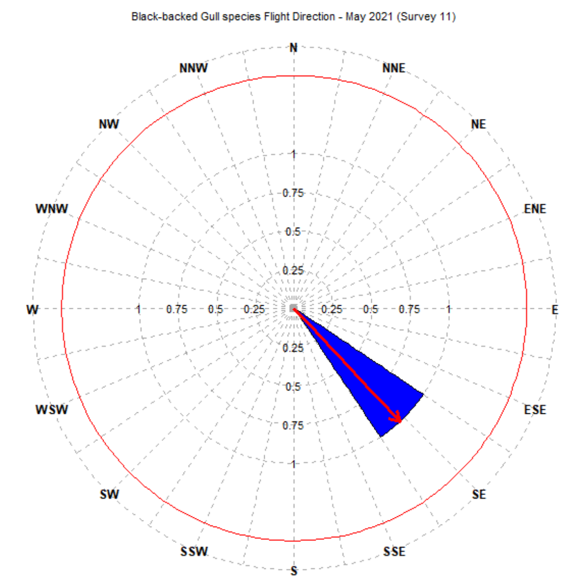
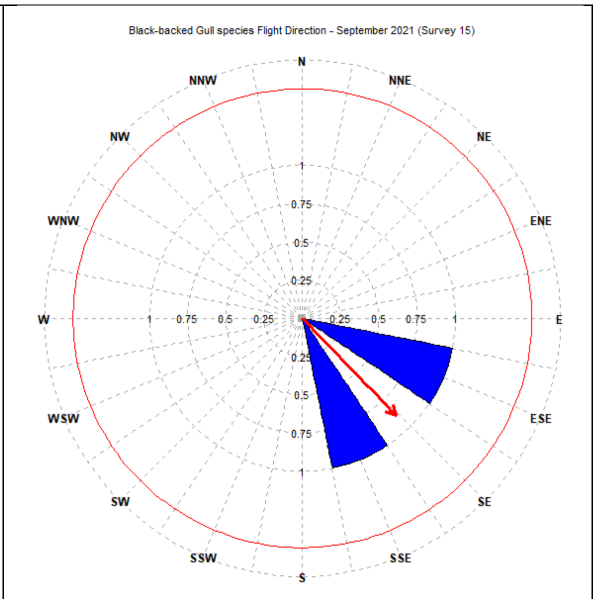


Figure 66 Distribution of black-backed gulls in Survey Area during April 2022



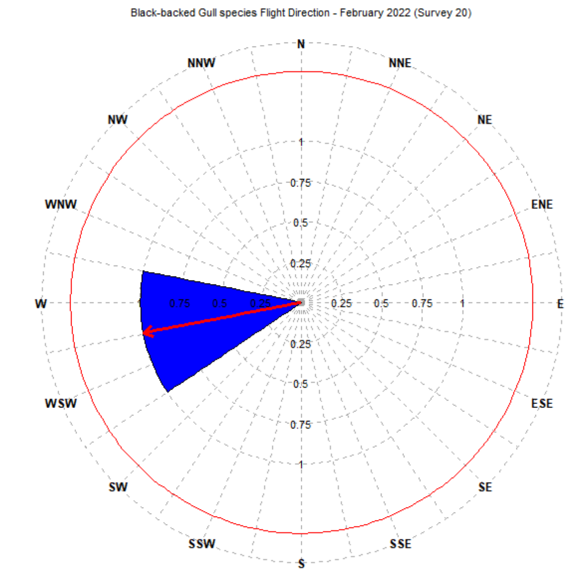
Number of Observations	1
Mean Vector (μ)	137.886
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 67a May 2021



Number of Observations	2
Mean Vector (μ)	136.377
Length of Mean Vector (r)	0.879
Rayleigh Test (Z)	1.547
Rayleigh Test (p)	0.241

Figure 67b September 2021



Number of Observations	2
Mean Vector (μ)	259.241
Length of Mean Vector (r)	0.998
Rayleigh Test (Z)	1.994
Rayleigh Test (p)	0.138

Figure 67c February 2022

Figure 67 Summary of flight direction of black-backed gulls during survey period

4.7 Unidentified Large Gull

Unidentified large gulls were recorded in July and December 2020, as well as in January, March and September 2021, and February, March and June 2022. The peak raw count of 20 in September 2021 resulted in an abundance estimate of 150 for the Survey Area (**Table 12**).

The gulls were mostly scattered throughout the Buffer Zone. A single individual was in the south-east in July 2020 (**Figure 68)** while a dense group of six individuals in the Buffer's south-east in December 2020 (**Figure 69**). A single bird was noted in the west of the Survey Area in January 2021 (**Figure 70**), and two individuals were recorded in March 2021 in the north and south-east of the Buffer (**Figure 71**). During September 2021, there were 20 individuals in the south-west of the Buffer (**Figure 72**), and in June 2022, a single individual in the Buffer's south (**Figure 75**).

Seven individuals were in the west of the Southwest England Site during February 2022 (**Figure 73**), while one individual was located in the south of the Site during March 2022 (Error! Reference source not found.).

In July 2020, an unidentified large gull flew east-southeast (121.801°, p=0.512; **Figure 76a**), and in September 2021, eight individuals were recorded mostly flying south-southeast (155.776°, p<0.01; **Figure 76b**).

Table 12 Raw counts and abundance and density estimates (individuals per km²) of large gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	1	8	1	23	1.00	0.02
Dec-20	6	48	6	144	0.41	0.14
Jan-21	1	8	1	24	1.00	0.02
Mar-21	2	15	2	38	0.71	0.04
Sep-21	20	150	20	421	0.22	0.45
Feb-22	7	54	7	147	0.38	0.16
Mar-22	1	8	1	23	1.00	0.02
June-22	1	7	1	22	1.00	0.02
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Feb-22	7	61	7	174	0.38	0.62
Mar-22	1	9	1	26	1.00	0.09
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	1	7	1	22	1.00	0.03
Dec-20	6	46	6	138	0.41	0.19
Jan-21	1	8	1	23	1.00	0.03
Mar-21	2	15	2	37	0.71	0.06

Sep-21	20	145	20	399	0.22	0.61
June-22	1	7	1	21	1.00	0.03

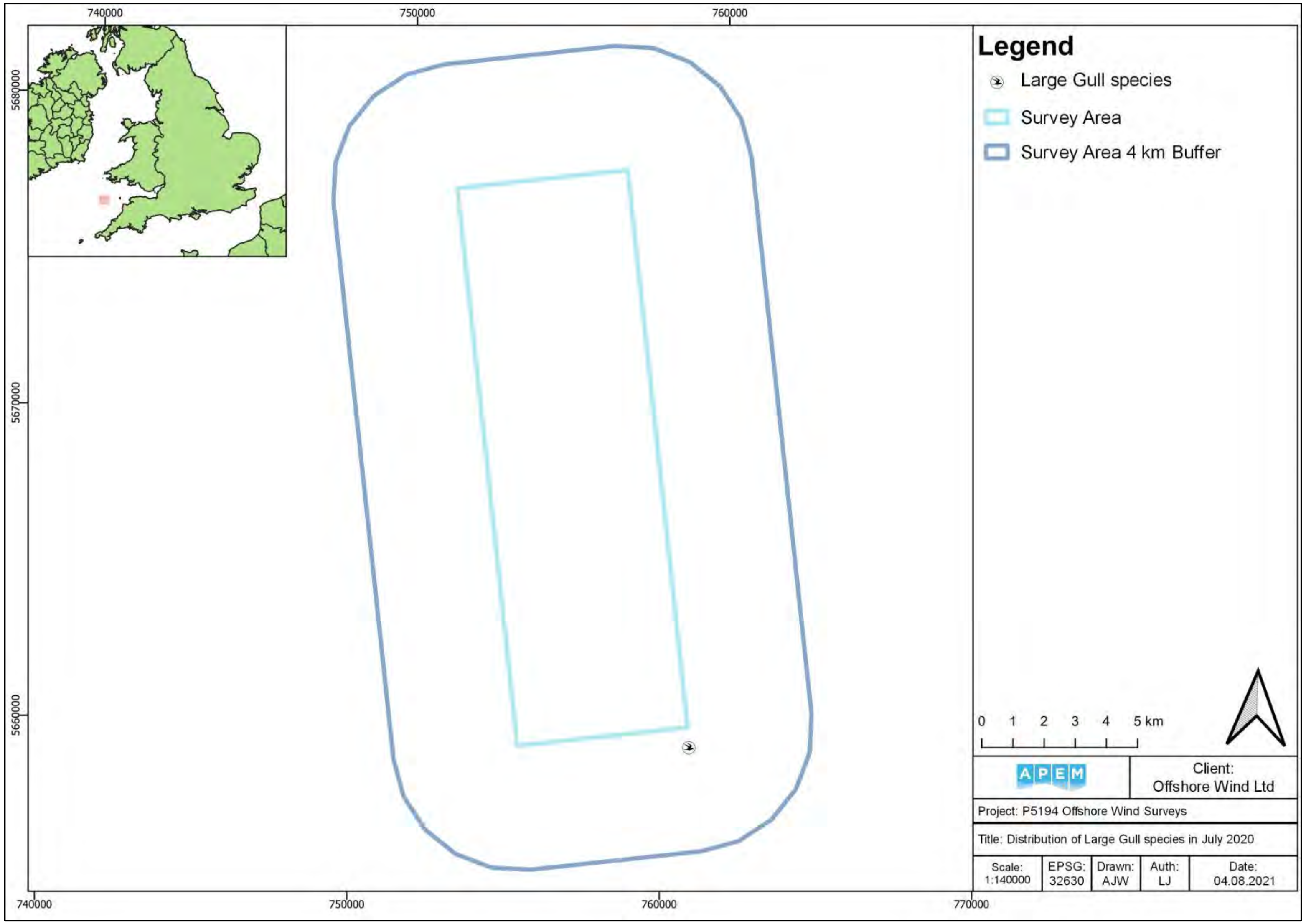


Figure 68 Distribution of large gulls in Survey Area during July 2020

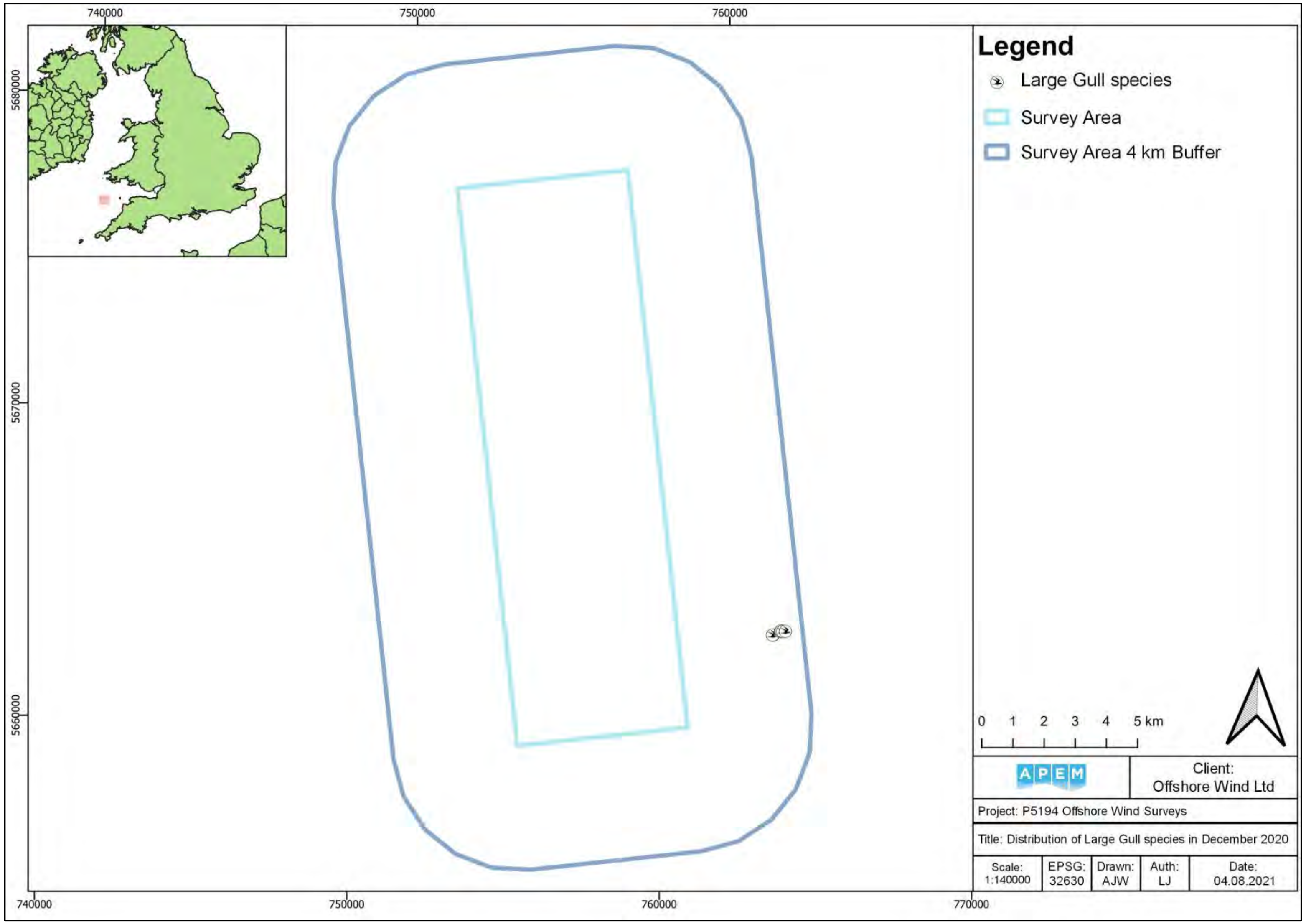


Figure 69 Distribution of large gulls in Survey Area during December 2020

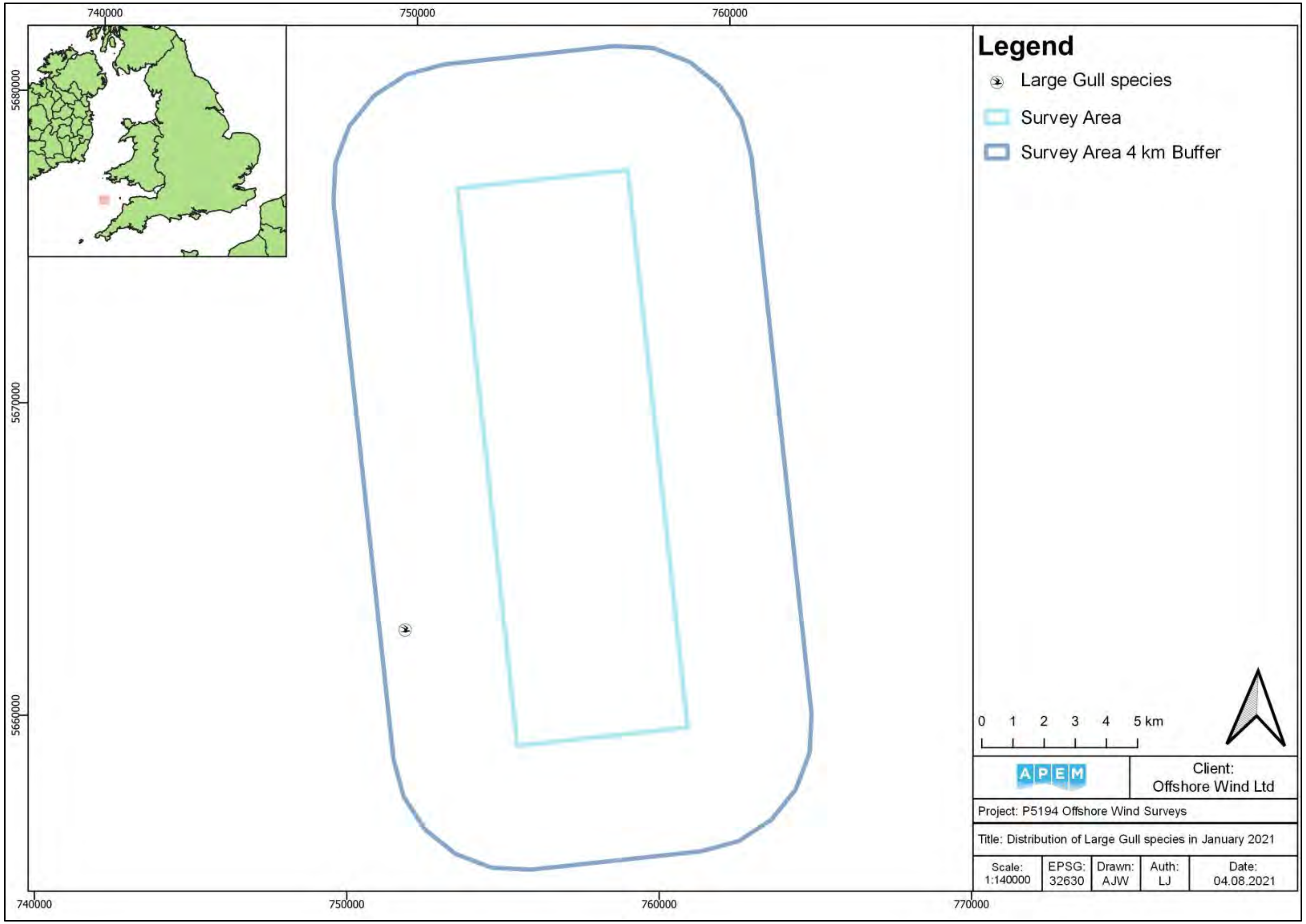


Figure 70 Distribution of large gulls in Survey Area during January 2021

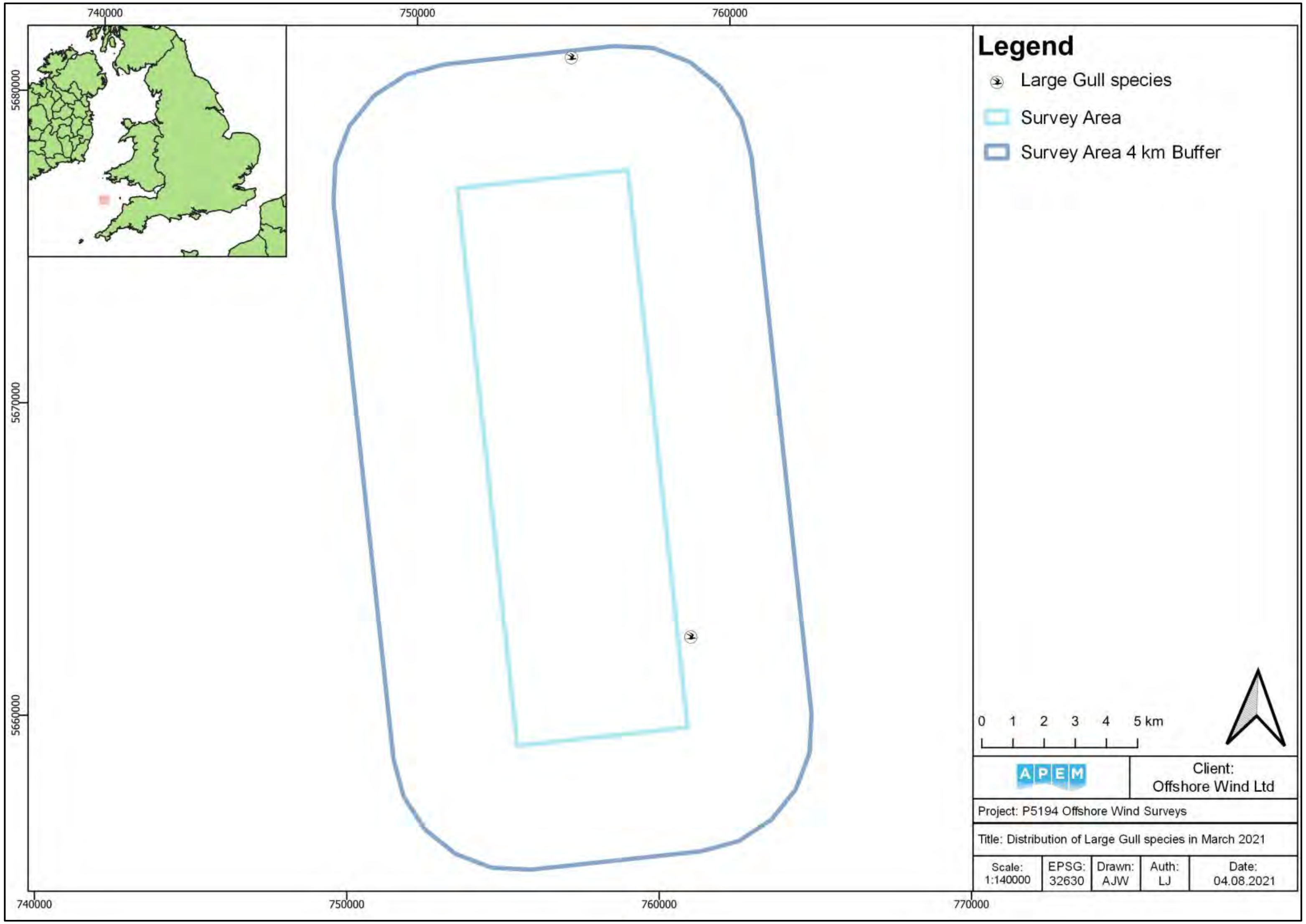


Figure 71 **Distribution of large gulls in Survey Area during March 2021**

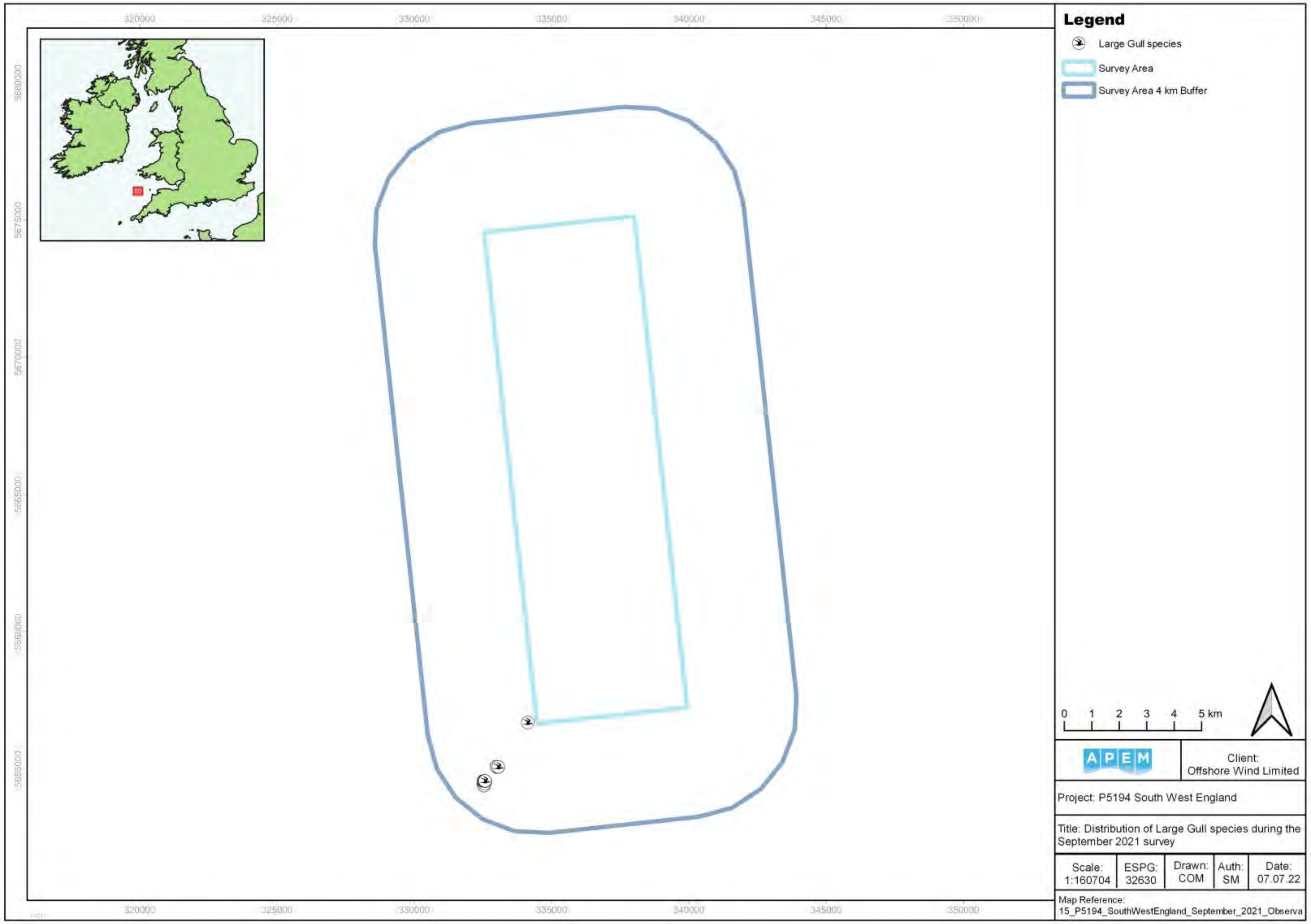


Figure 72 Distribution of large gulls in Survey Area during September 2021

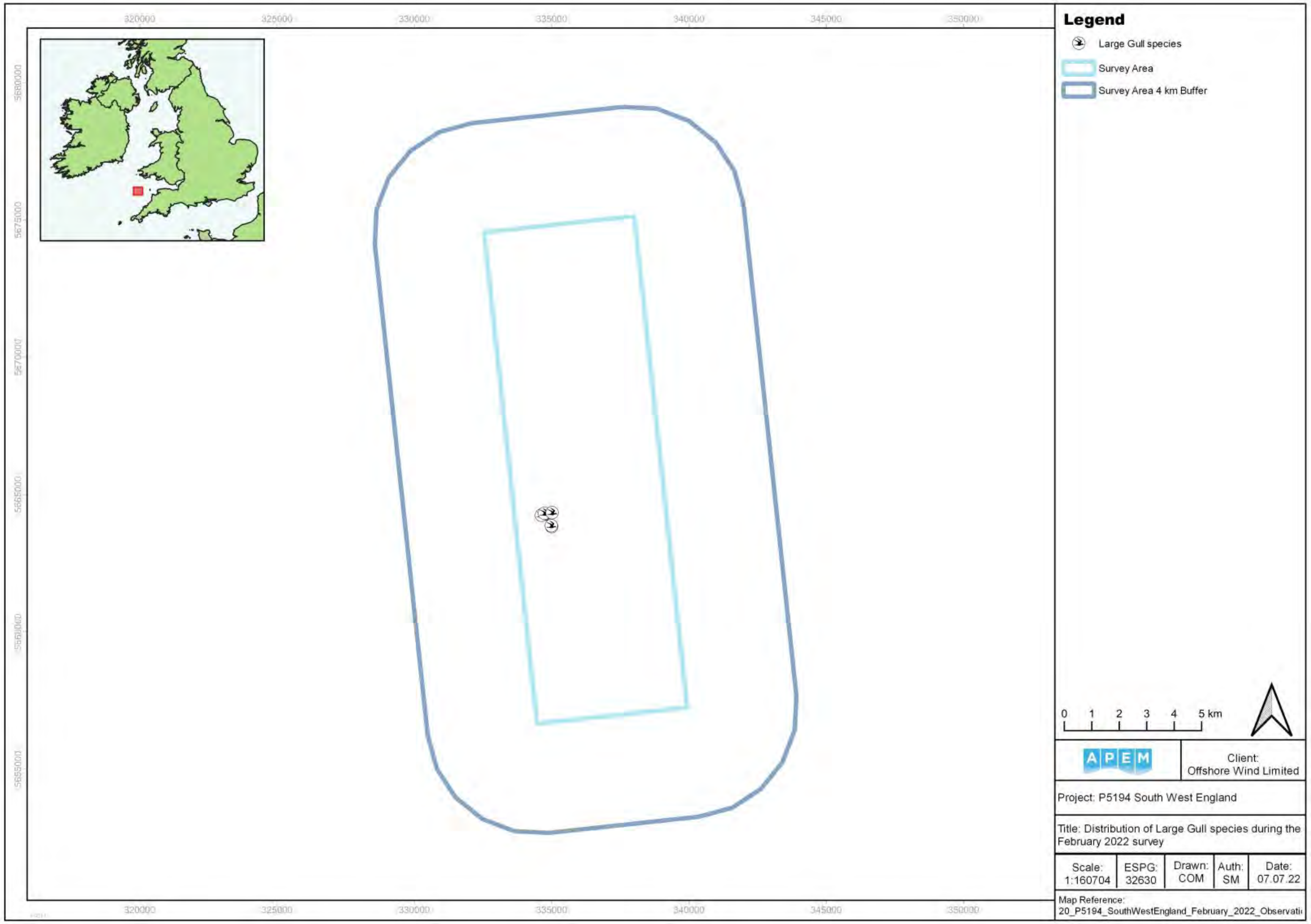


Figure 73 Distribution of large gulls in Survey Area during February 2022

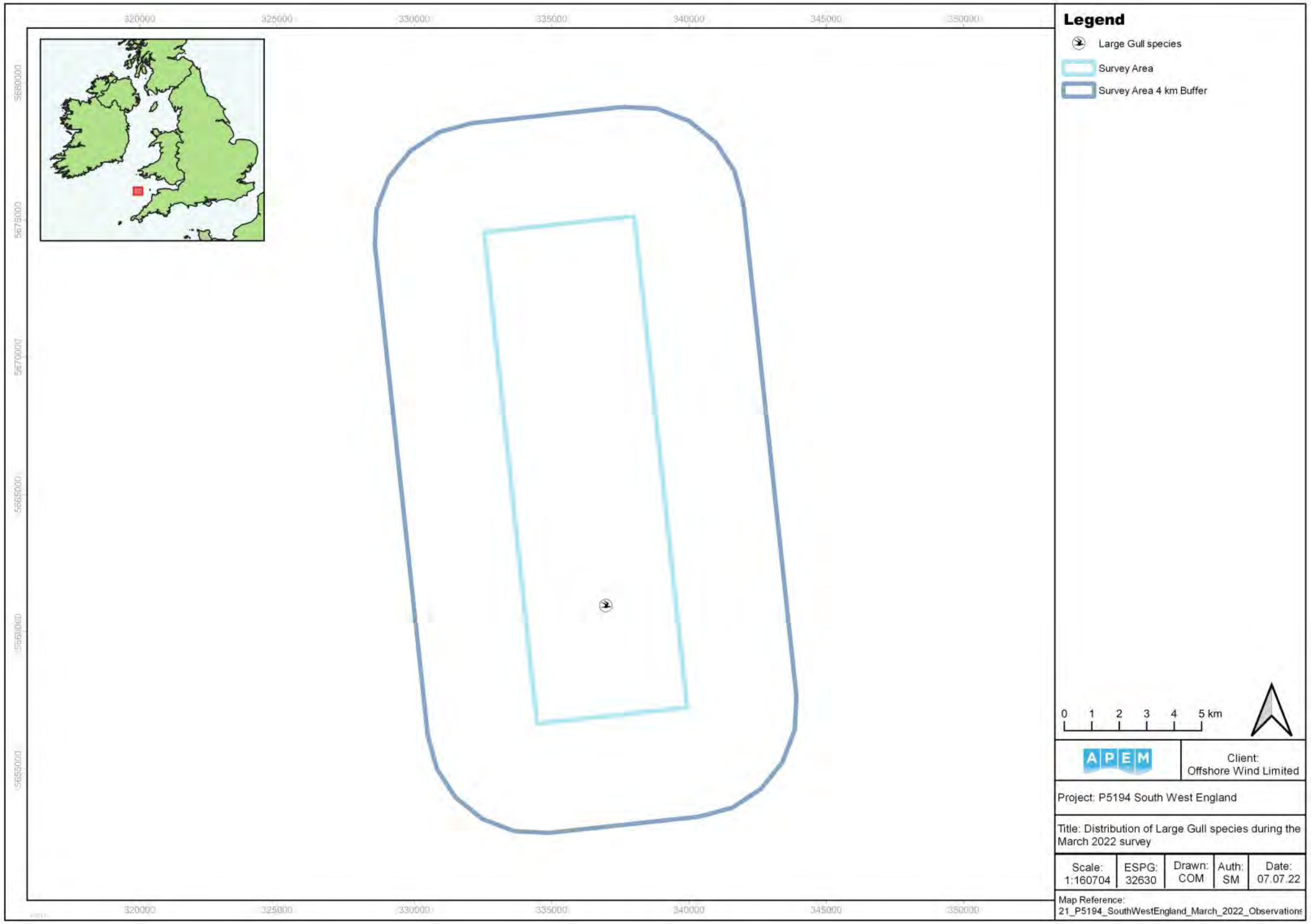


Figure 74 Distribution of large gulls in Survey Area during March 2022

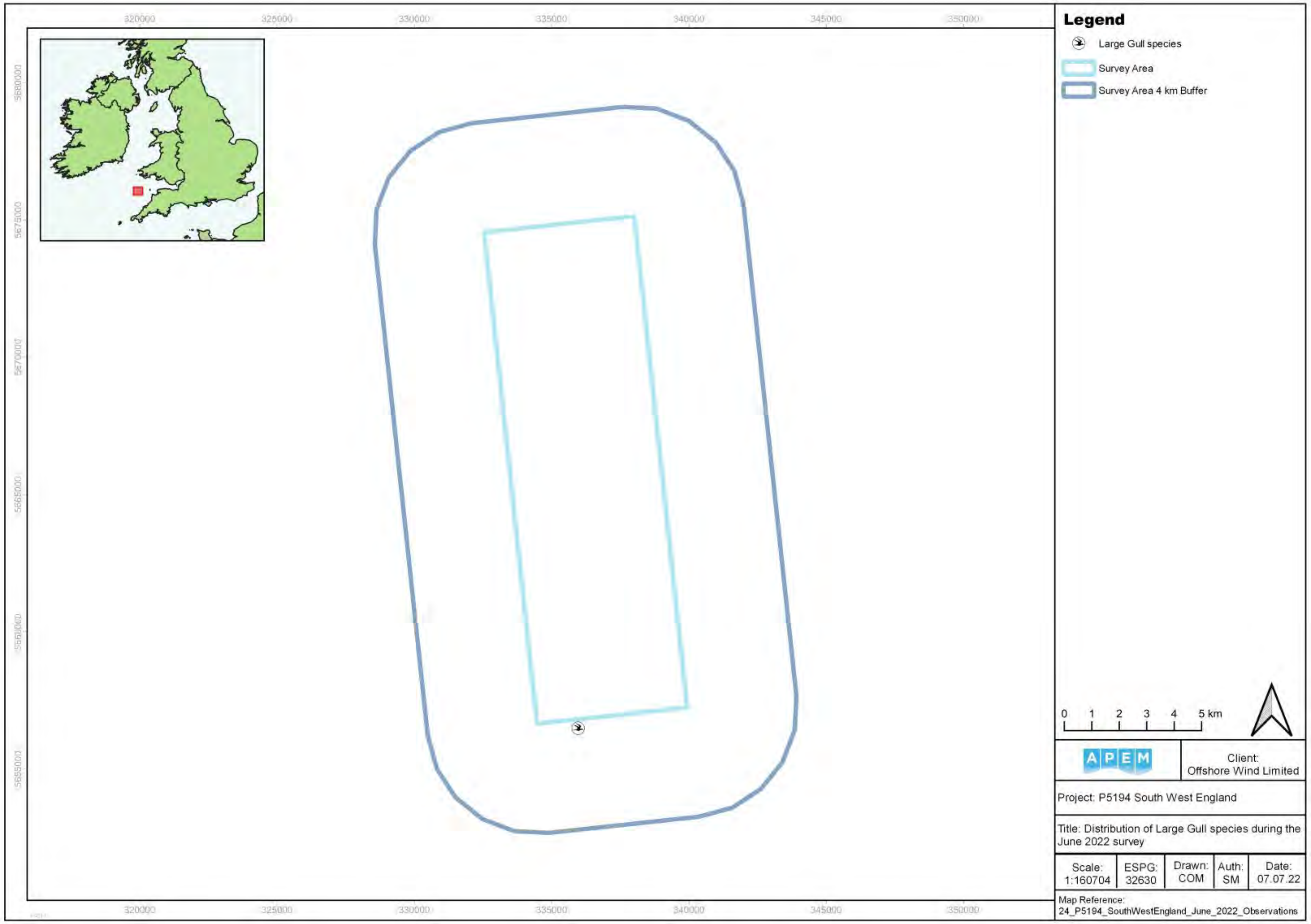
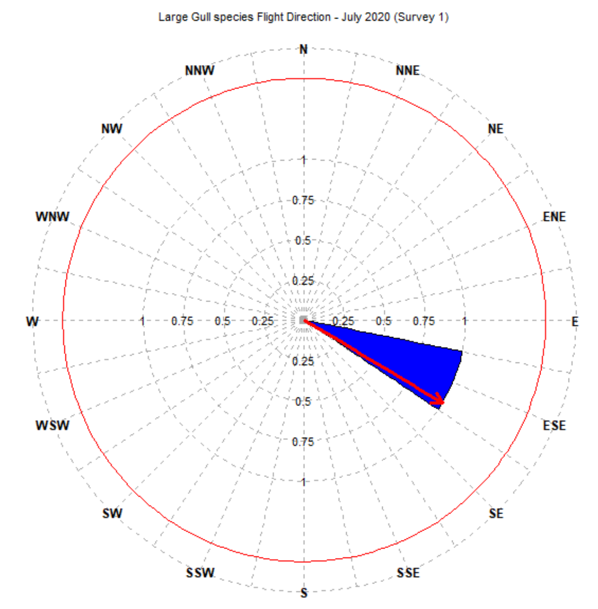
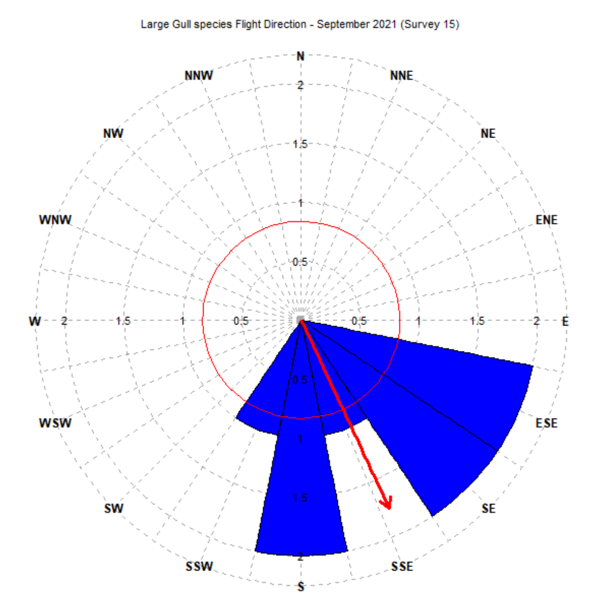


Figure 75 Distribution of large gulls in Survey Area during June 2022





Number of Observations	1	Number of Observations	8
Mean Vector (μ)	121.801	Mean Vector (μ)	155.776
Length of Mean Vector (r)	1.000	Length of Mean Vector (r)	0.880
Rayleigh Test (Z)	1.000	Rayleigh Test (Z)	6.189
Rayleigh Test (p)	0.512	Rayleigh Test (p)	<0.01
Figure 76a July 2020		**Figure 76b September 2021**	

Figure 76 Summary of flight direction of large gulls during survey period

4.8 Unidentified Gulls

Single unidentified gulls were recorded in August 2020 and February 2022, resulting in an abundance estimate of eight for the Survey Area (**Table 13**). The first was in the west of the 4 km Buffer Zone (**Figure 77**), flying south (175.037°, p=0.512; **Figure 79**), the latter in the west of the Southwest England Site (**Figure 78**).

Table 13 Raw counts and abundance and density estimates (individuals per km²) of unidentified gull in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Aug-20	1	8	1	23	1.00	0.02
Feb-22	1	8	1	23	1.00	0.02
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Feb-22	1	9	1	26	1.00	0.09
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Aug-20	1	7	1	22	1.00	0.03

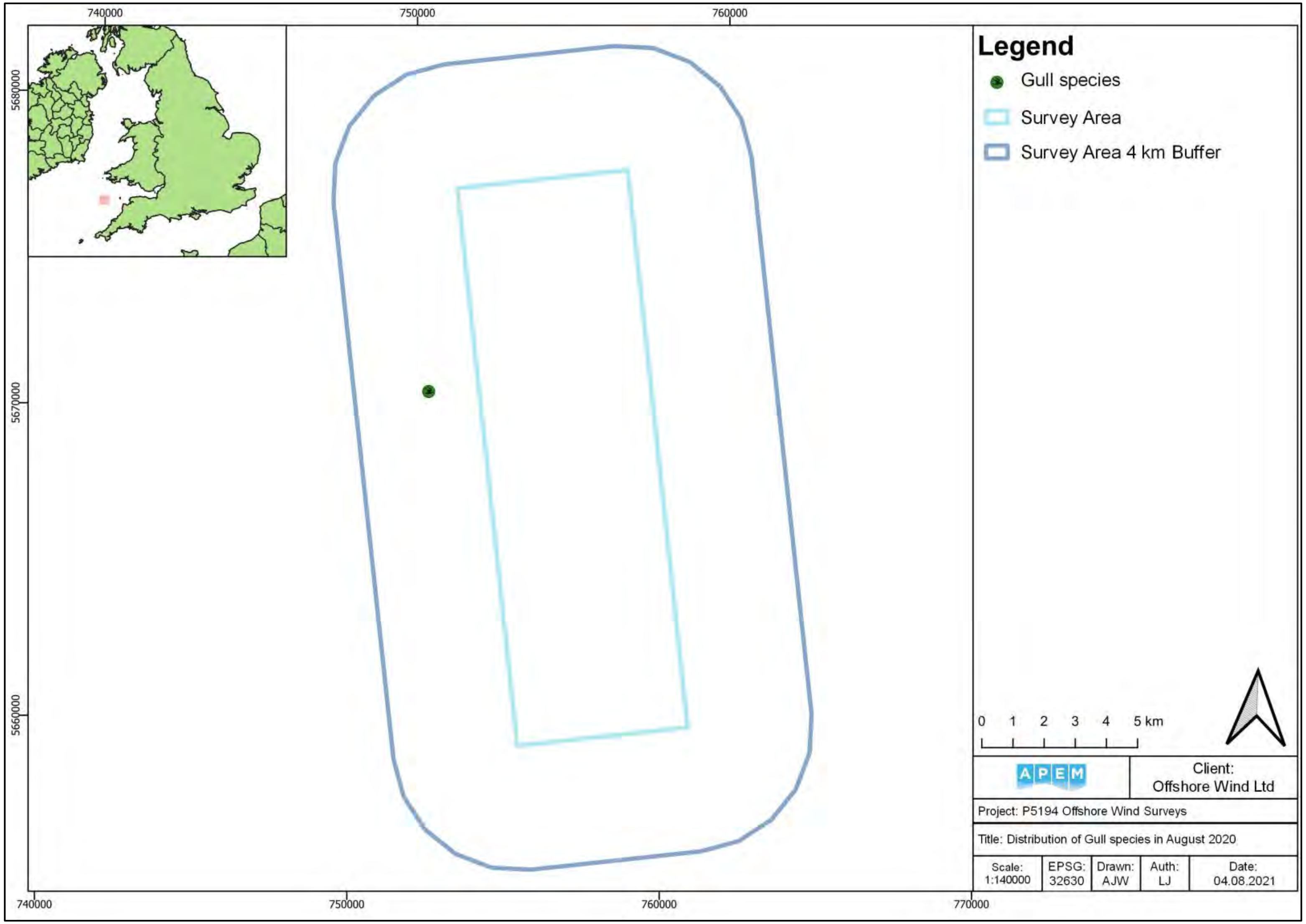


Figure 77 Distribution of unidentified gulls in Survey Area during August 2020

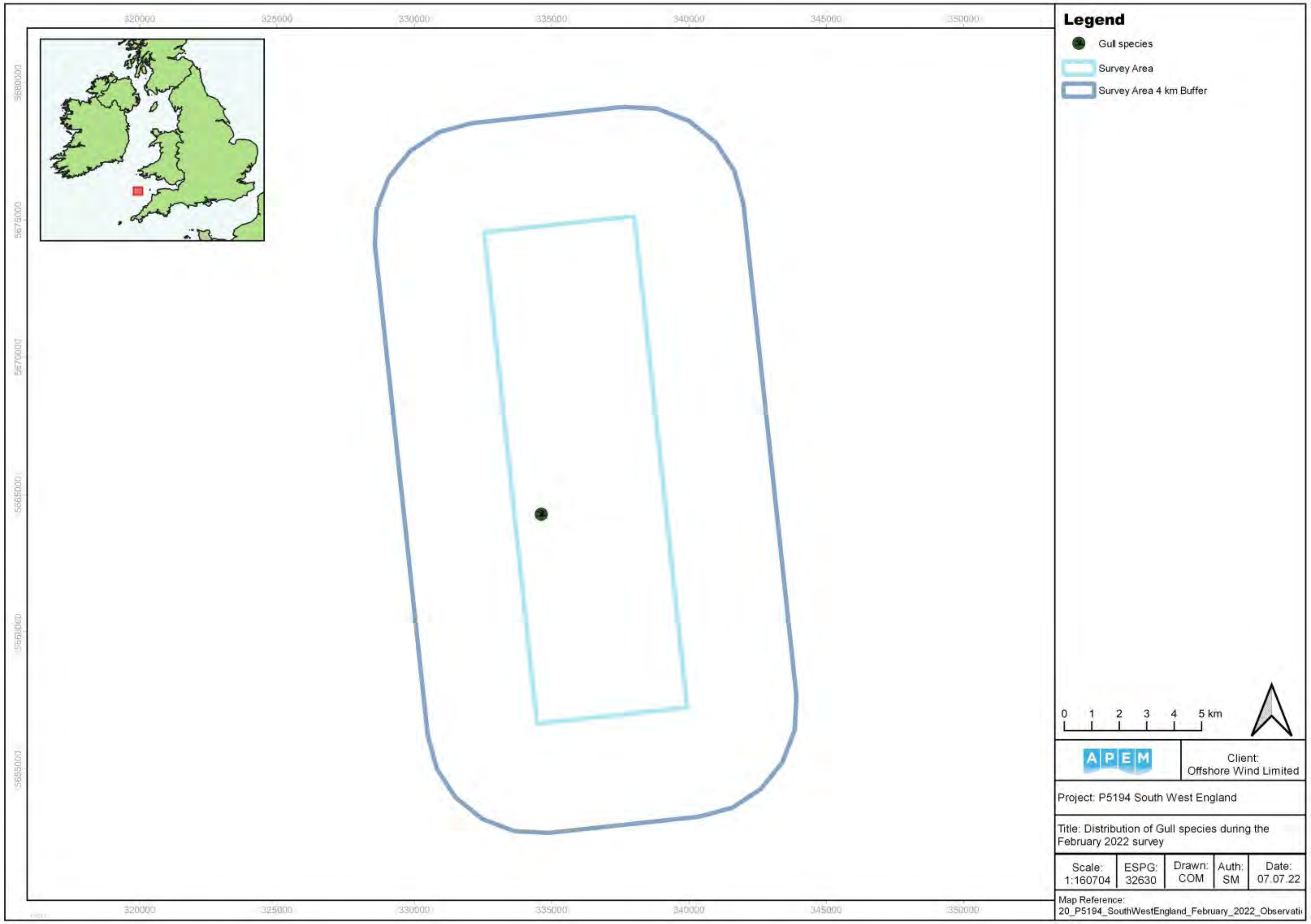
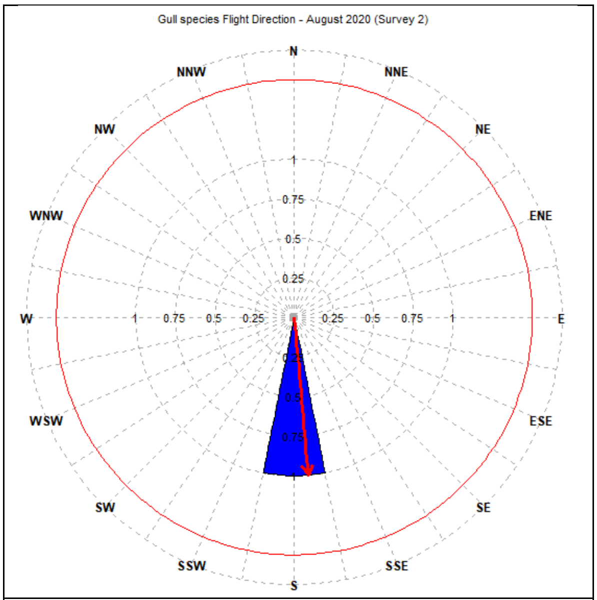


Figure 78 Distribution of unidentified gulls recorded in Survey Area during February 2022



Number of Observations	1
Mean Vector (μ)	175.037
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 79 August 2020

Figure 79 Summary of flight direction of unidentified gulls during survey period

4.9 Sandwich Tern – *Thalasseus sandvicensis*

A single Sandwich tern was recorded in September 2020, resulting in an abundance estimate of eight for the Survey Area and 4 km Buffer Zone (**Table 14**). It was in the west of the Buffer (**Figure 80**), flying south (171.204°, p=0.512; **Figure 81**).

Table 14 Raw counts and abundance and density estimates (individuals per km^2) of Sandwich tern in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Sep-20	1	8	1	24	1.00	0.02
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
None recorded.						
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Sep-20	1	8	1	23	1.00	0.03

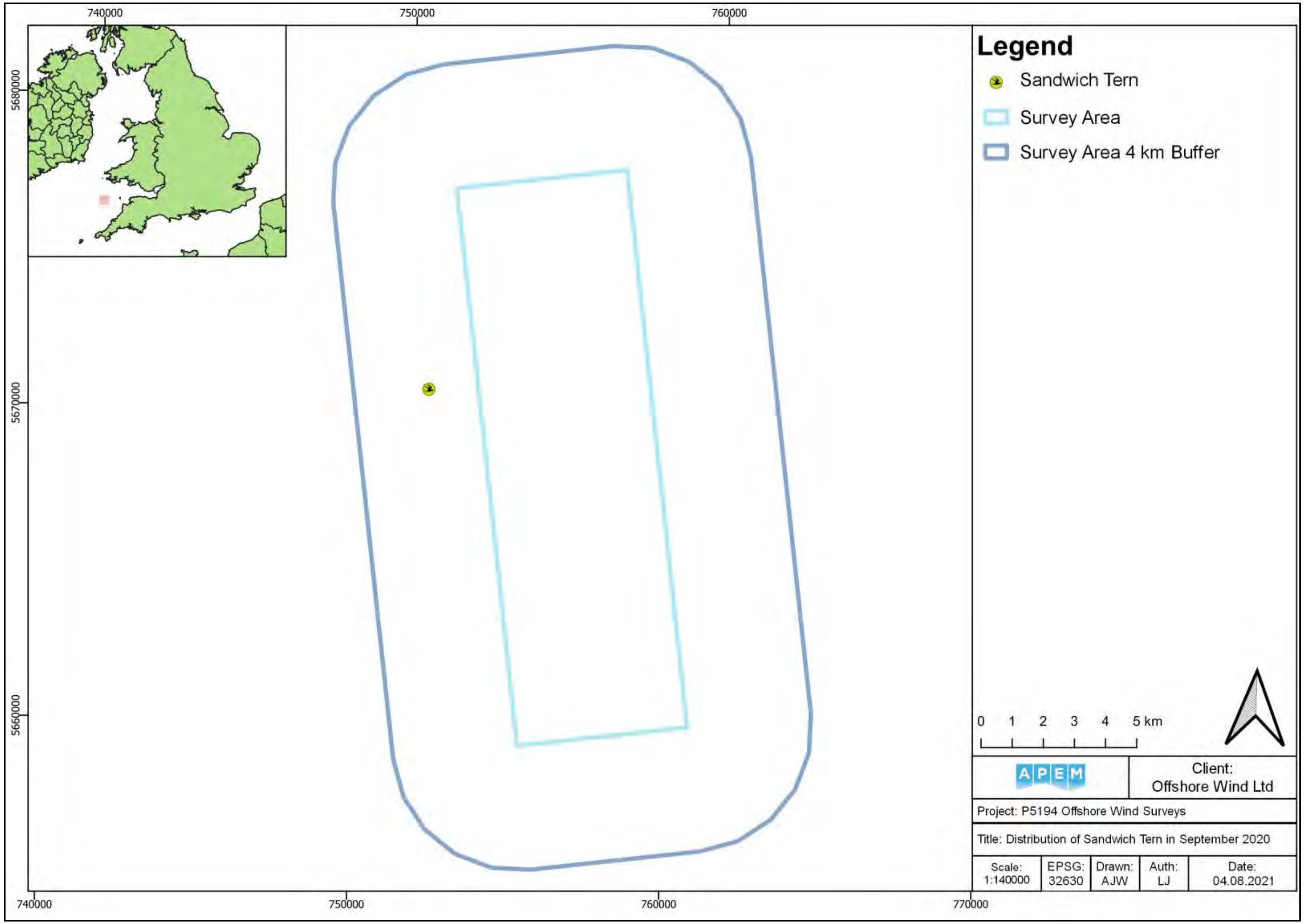
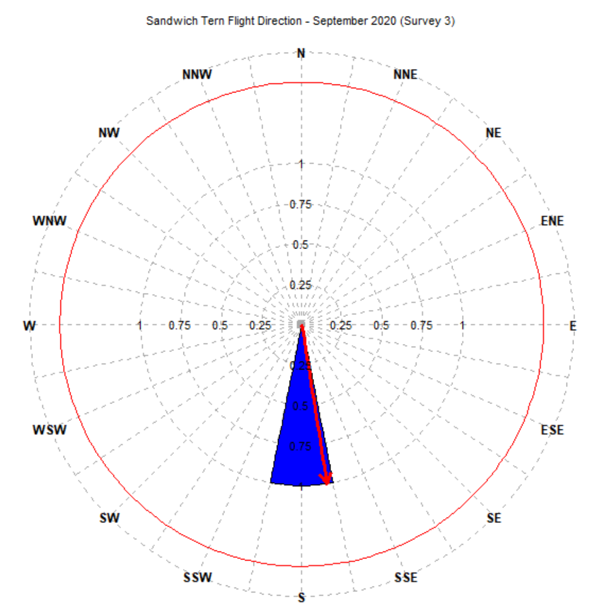


Figure 80 Distribution of Sandwich terns in Survey Area during September 2020



Number of Observations	1
Mean Vector (µ)	171.204
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 81 September 2020

Figure 81 Summary of flight direction of Sandwich terns during survey period

4.10 Common Tern – *Sterna hirundo*

Four common terns were recorded in August 2020, resulting in an abundance estimate of 30 (**Table 15**). All individuals were in the centre of the Site (**Figure 82**), flying west-southwest (236.406°, p=0.016; **Figure** 84**a**). A single individual was in the north-west area of the Buffer Zone (**Figure 83**) in May 2022, flying west (258.599°, p=0.512, **Figure 84b**).

Table 15 Raw counts and abundance and density estimates (individuals per km²) of common tern in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Aug-20	4	30	4	83	0.50	0.09
May-22	1	8	1	21	1.00	0.02
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Aug-20	4	33	4	92	0.50	0.33
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
May-22	1	7	1	22	1.00	0.03

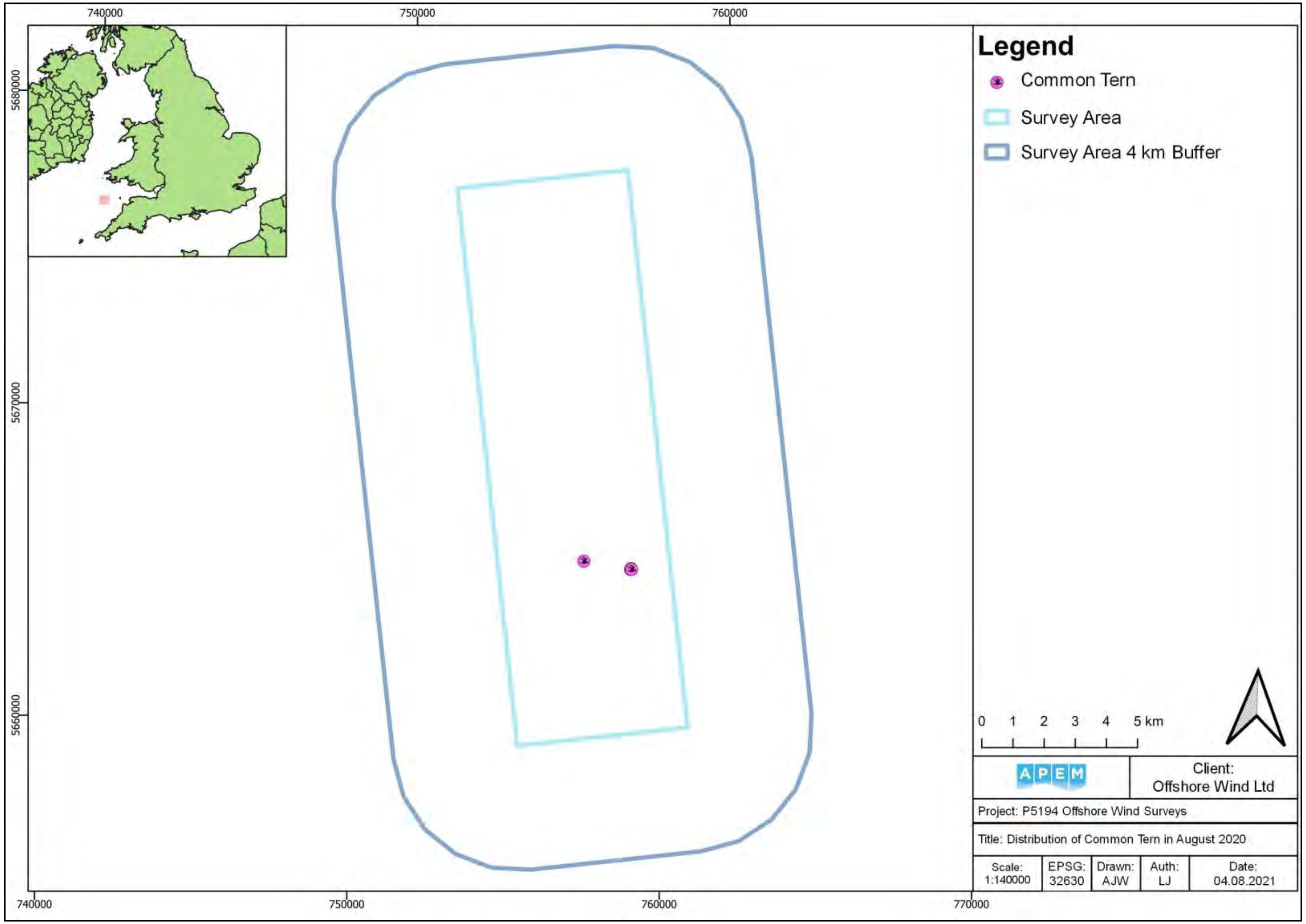


Figure 82 Distribution of common terns in Survey Area during August 2020

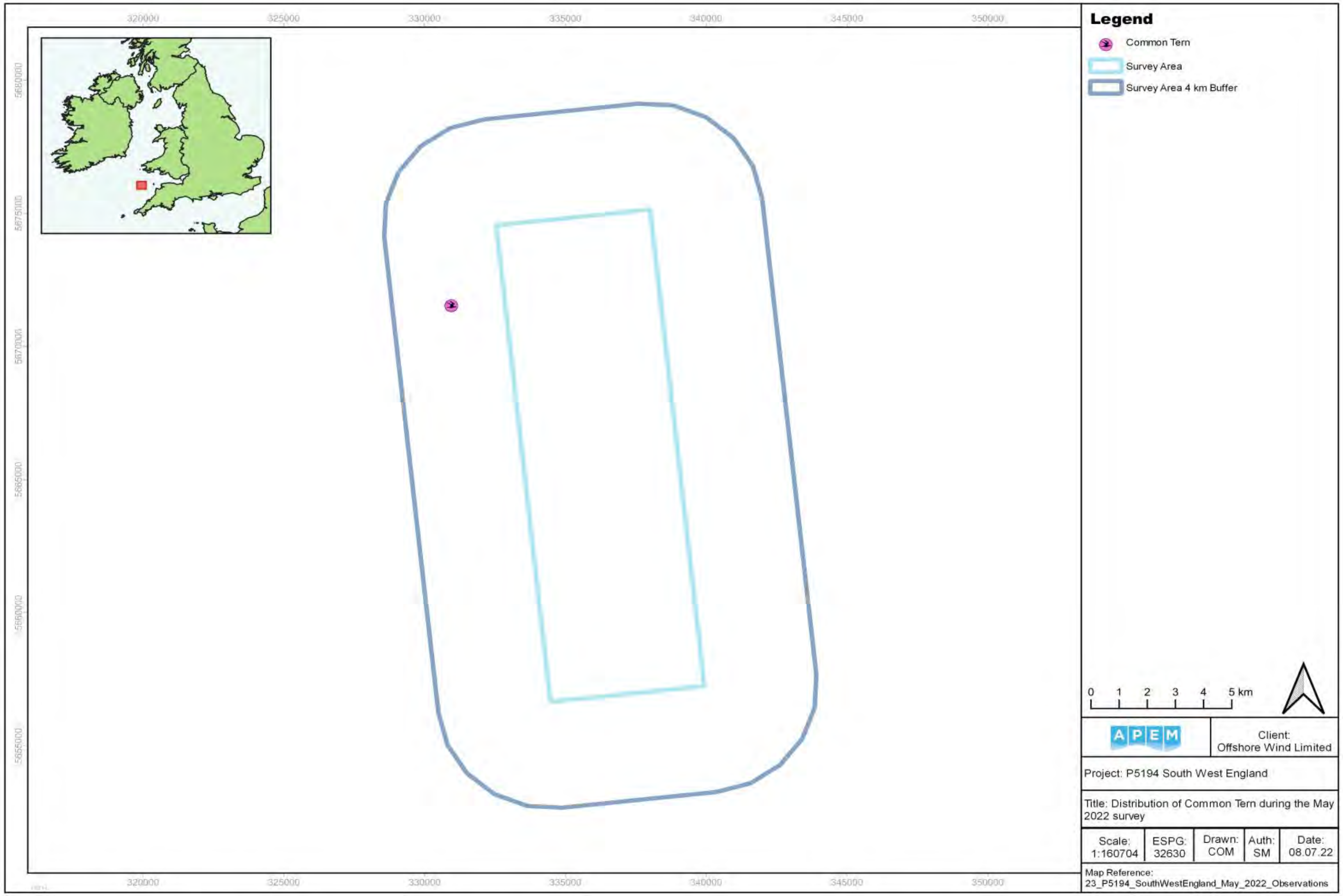
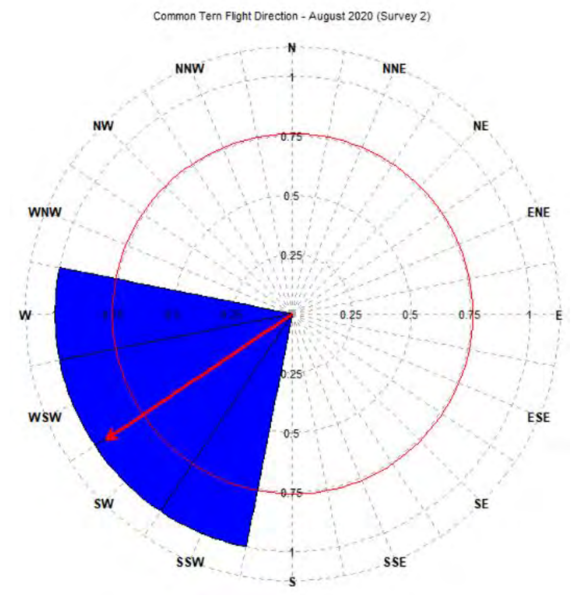
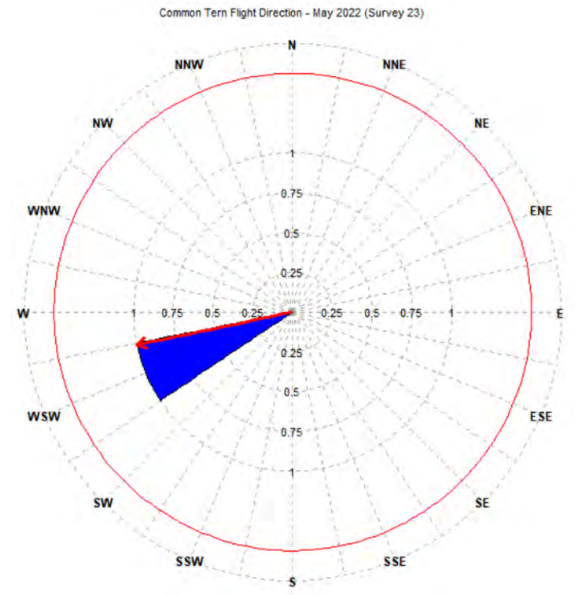


Figure 83 Distribution of common terns in Survey Area during May 2022



Number of Observations	4
Mean Vector (µ)	236.403
Length of Mean Vector (r)	0.943
Rayleigh Test (Z)	3.555
Rayleigh Test (p)	0.016

Figure 84a August 2020



Number of Observations	1
Mean Vector (µ)	258.599
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 84b May 2022

Figure 84 Summary of flight direction of common terns during survey period

4.11 'Commic' Tern – *Sterna hirundo / paradisaea*

'Commic' terns were recorded in August and September 2020, with a peak raw count of seven in August, resulting in an abundance estimate of 53 for the Survey Area (**Table 16**).

They were seen in August 2020 only in the Southwest England Site – a peak of five, resulting in an abundance estimate of 42 (**Table 16**).

In the 4 km Buffer Zone, they were recorded in August and September 2020, with a peak raw count of six in September, resulting in an abundance estimate of 45 (**Table 16**).

In August 2020, the terns were loosely distributed across the north, north-west, centre, and east of the Survey Area (**Figure 85**), whilst in September they were in the east and west regions of the Buffer (**Figure 86**). On average, in August, they flew west-southwest (237.010°, $p<0.001$; **Figure 87a**), and in September southeast (136.371°, $p=0.135$; **Figure 87b**).

Table 16 Raw counts and abundance and density estimates (individuals per km^2) of 'commic' tern in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Aug-20	7	53	15	114	0.38	0.16
Sep-20	6	47	8	102	0.41	0.14
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Aug-20	5	42	5	100	0.45	0.42
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Aug-20	2	15	2	37	0.71	0.06
Sep-20	6	45	8	90	0.41	0.19

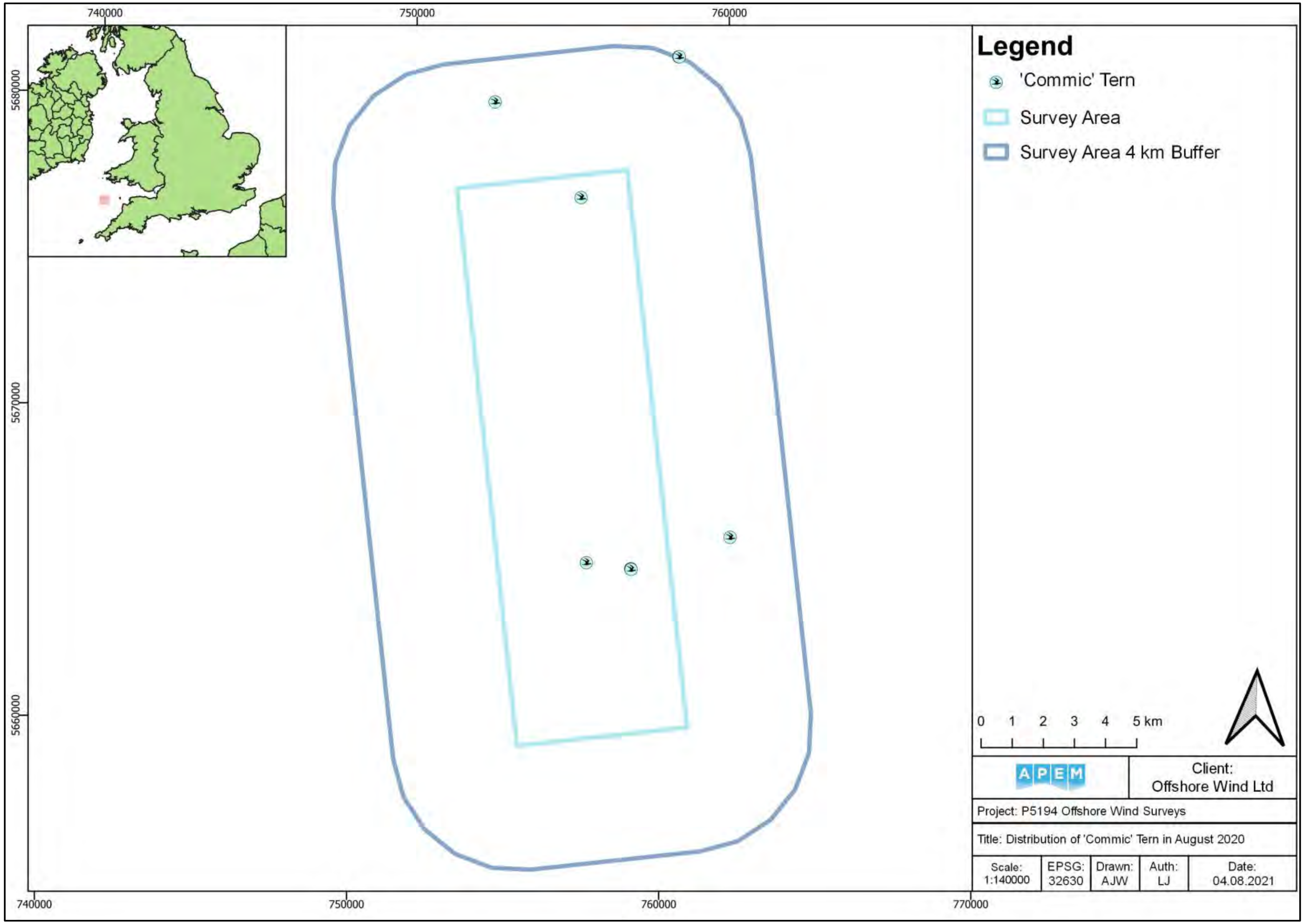


Figure 85 Distribution of 'commic' terns in Survey Area during August 2020

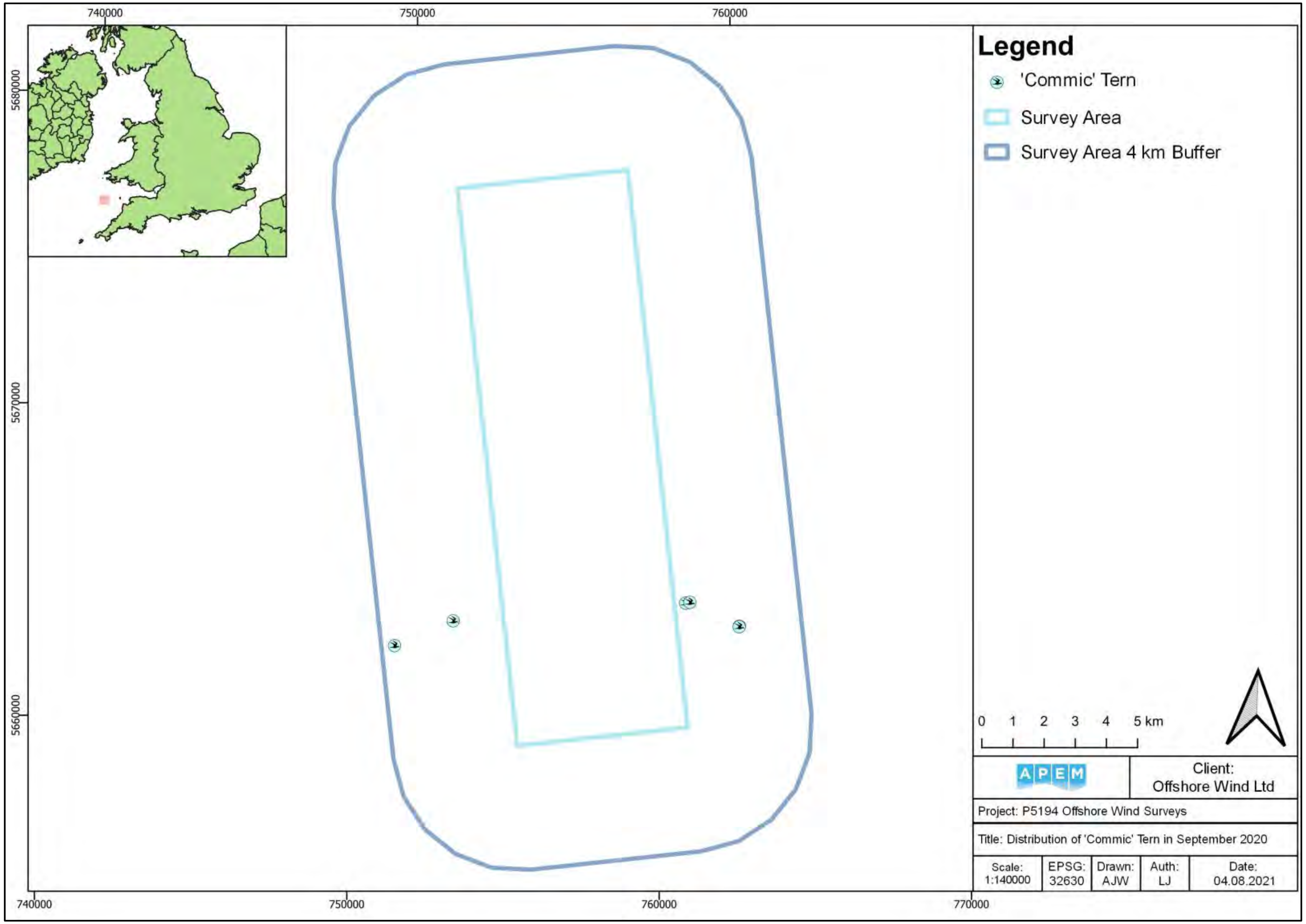


Figure 86 Distribution of 'commic' terns recorded in the Survey Area from September 2020

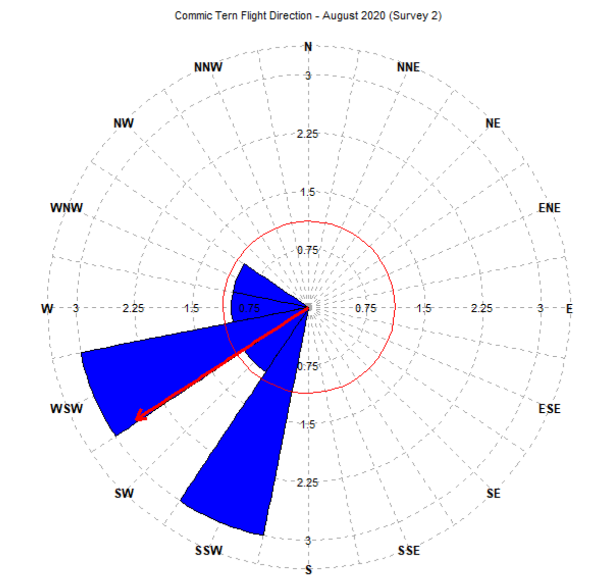
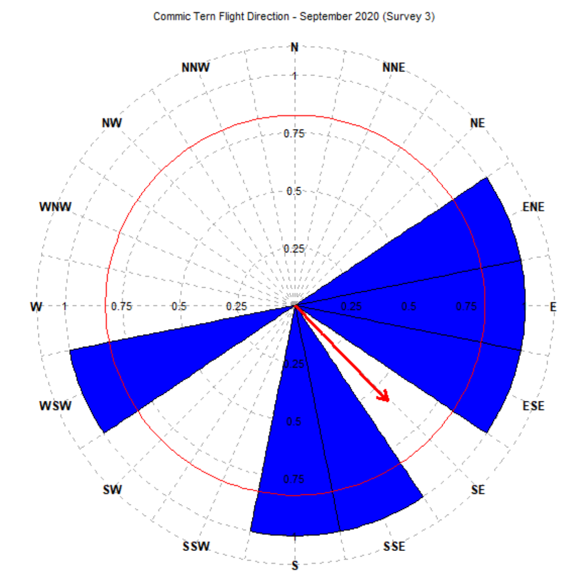
			
Number of Observations	9	Number of Observations	6
Mean Vector (µ)	237.010	Mean Vector (µ)	136.371
Length of Mean Vector (r)	0.885	Length of Mean Vector (r)	0.578
Rayleigh Test (Z)	7.048	Rayleigh Test (Z)	2.006
Rayleigh Test (p)	<0.001	Rayleigh Test (p)	0.135
Figure 87a August 2020		**Figure 87b September 2020**	

Figure 87 Summary of flight direction of 'commic' terns during survey period

4.12 Tern – Unidentified *Sternidae*

Unidentified terns were recorded in August 2020, May and September 2021, and May 2022, when the peak raw count of four was recorded. This resulted in an abundance estimate of 30 for the Survey Area (**Table 17**).

During August 2020, a single unidentified tern was in the northeast of the 4 km Buffer Zone (**Figure 88**). In May 2021 survey, two individuals were located in the Buffer's north-northeast, plus individual in the south-west (**Figure 89**). During the September 2021 survey, two unidentified terns were recorded in the north-west area of the site (**Figure 90**), while in May 2022, there were four terns in the south-west area of the Buffer (**Figure 91**).

In May, they flew west-southwest (251.934°, p=0.336; **Figure 92a**), and in September, southwest (127.982°, p=0.141; **Figure 92b**).

Table 17 Raw counts and abundance and density estimates (individuals per km^2) of unidentified tern in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Aug-20	1	8	1	30	1.00	0.02
May-21	3	22	3	58	0.58	0.07
Sep-21	2	15	2	45	0.71	0.04
May-22	4	30	4	91	0.50	0.09
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Sep-21	2	16	2	49	0.71	0.16
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Aug-20	1	7	1	22	1.00	0.03
May-21	3	21	3	56	0.58	0.09
May-22	4	29	5	87	0.50	0.12

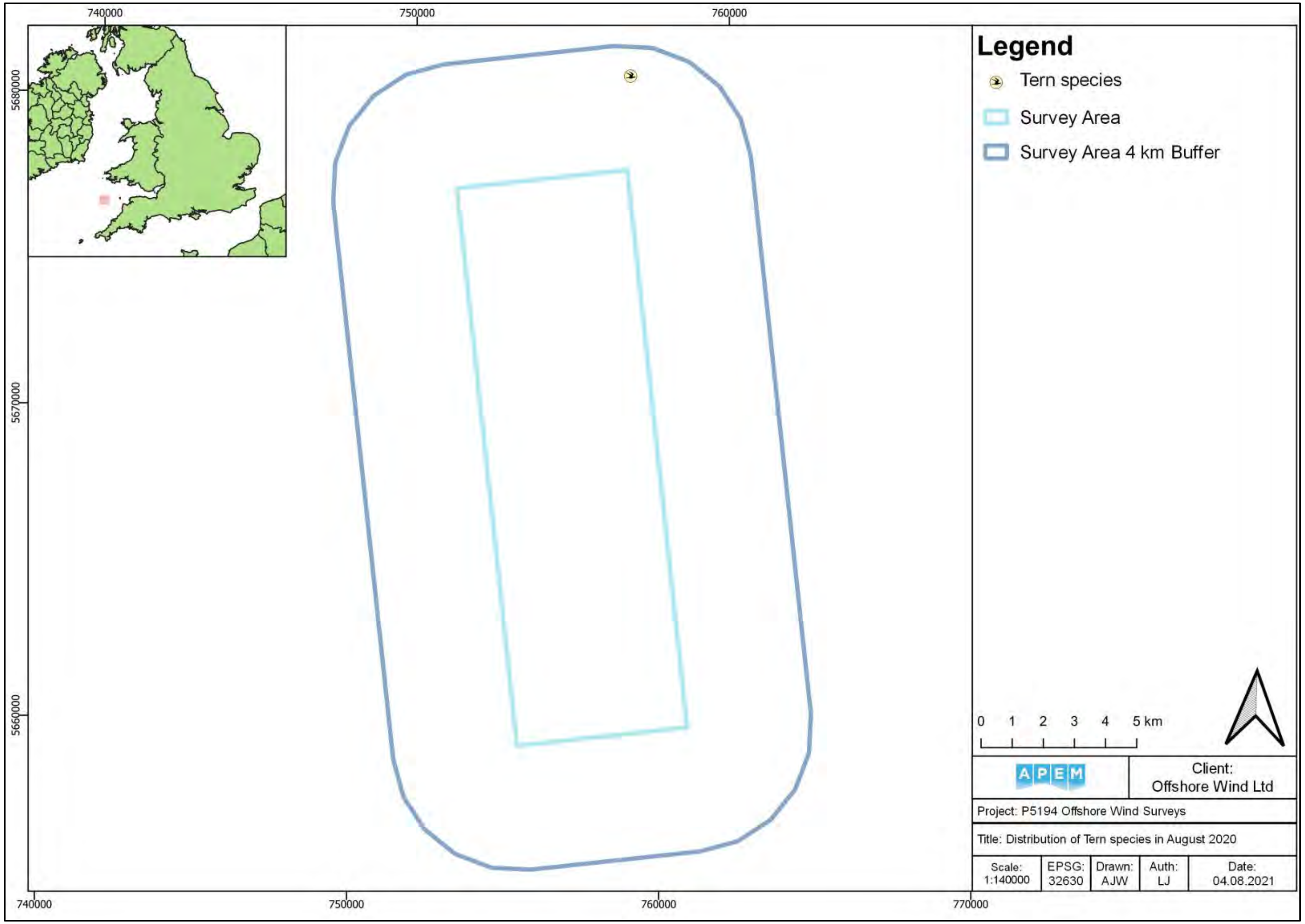


Figure 88 Distribution of terns in Survey Area during August 2020

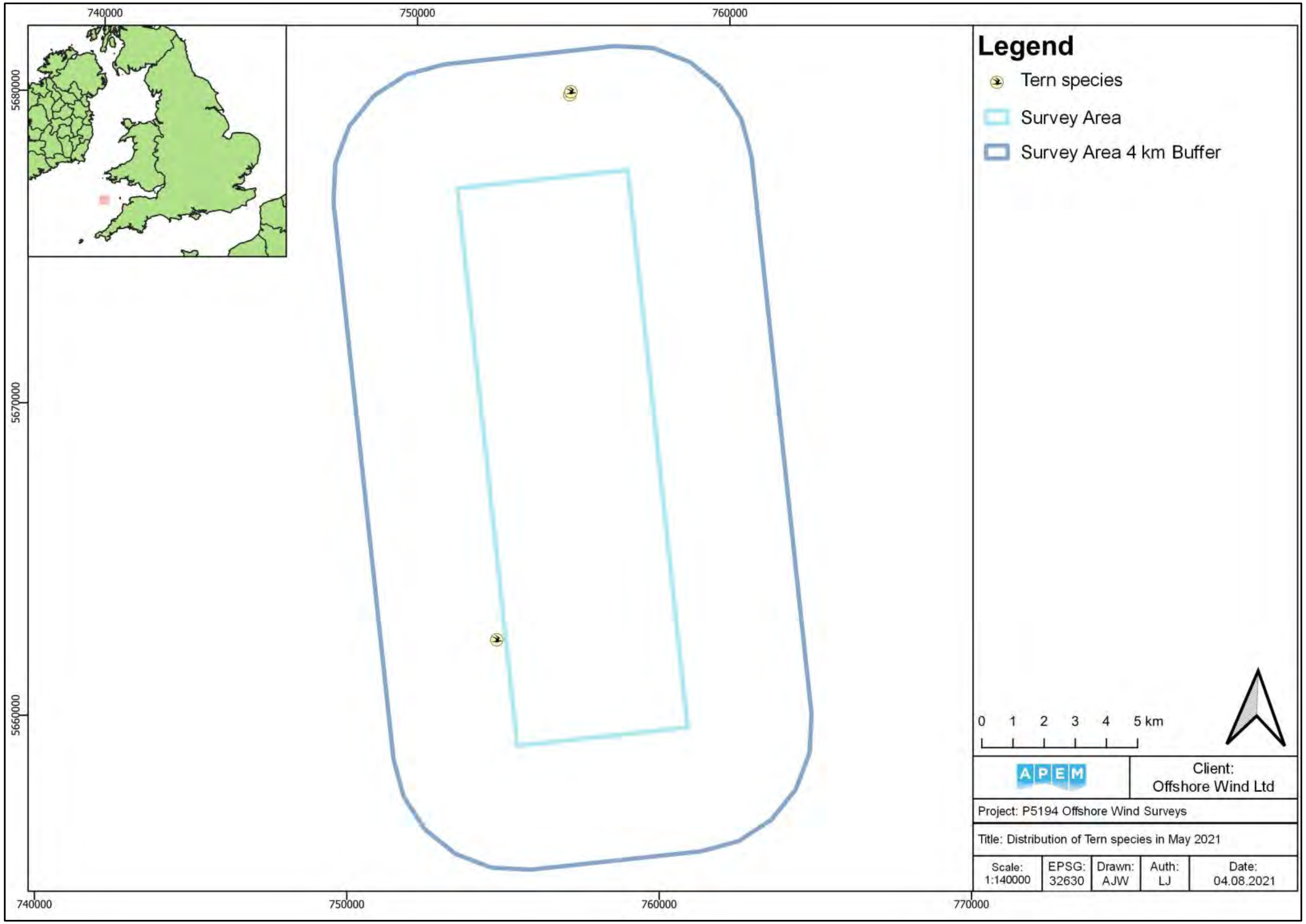


Figure 89 Distribution of terns in Survey Area during May 2021

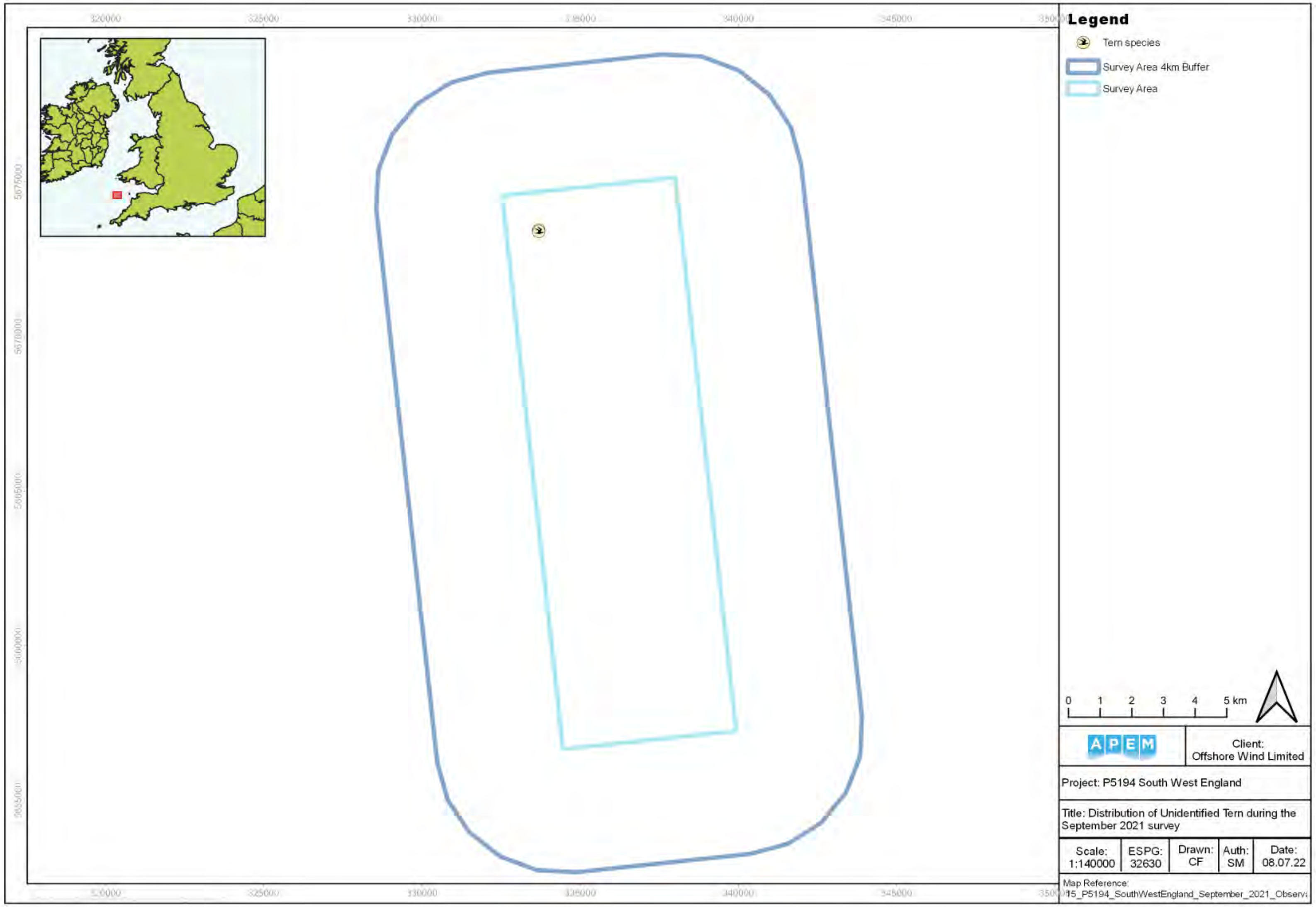


Figure 90 Distribution of terns in Survey Area during September 2021

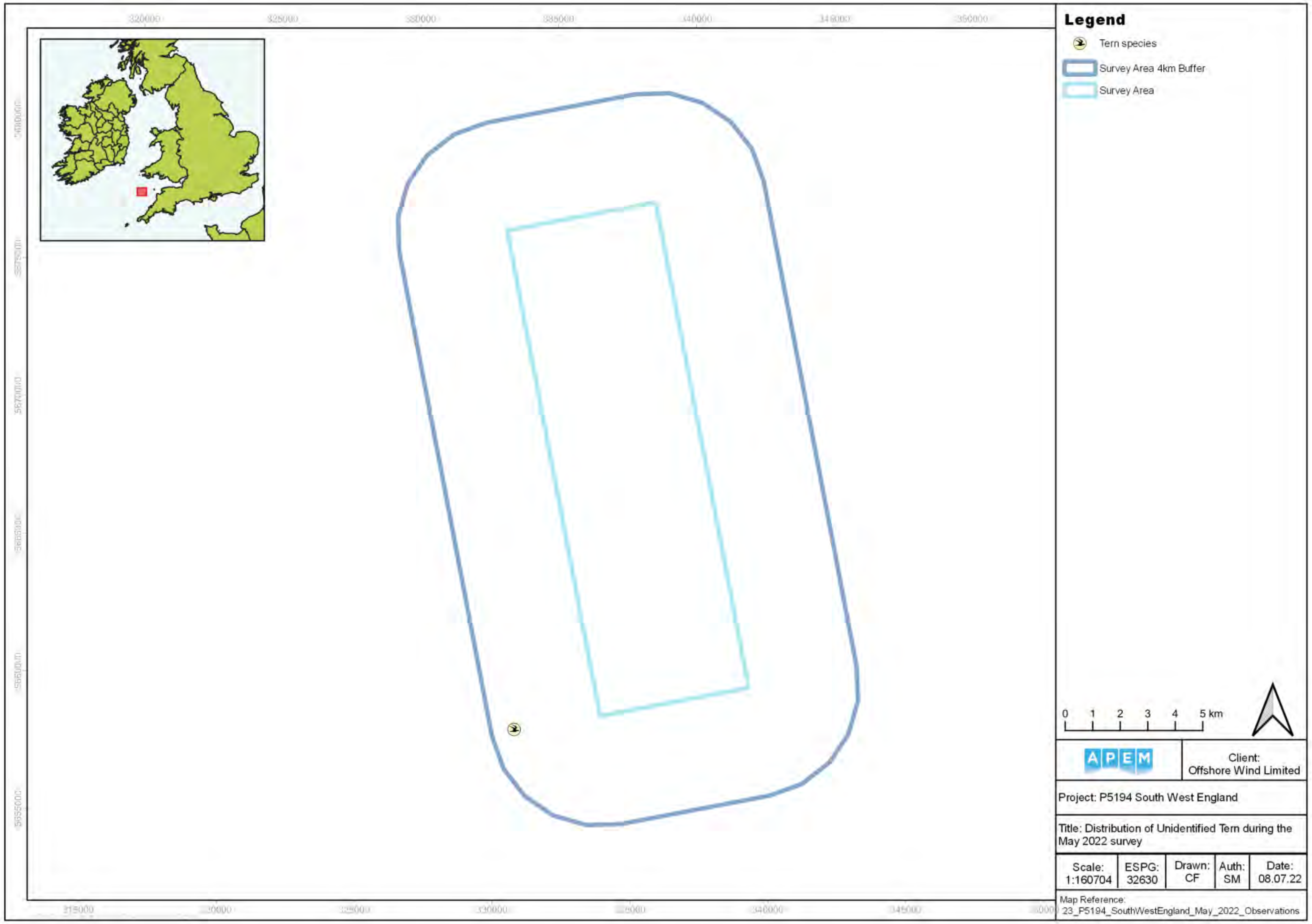
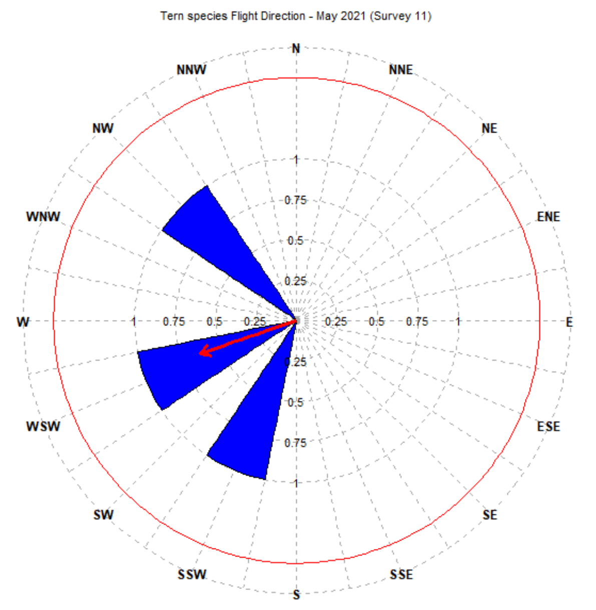
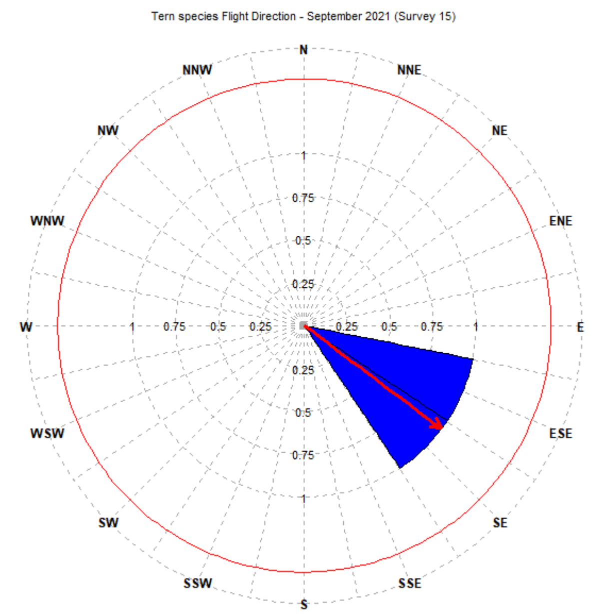


Figure 91 Distribution of terns in Survey Area during May 2022





Number of Observations	3	Number of Observations	2
Mean Vector (µ)	251.934	Mean Vector (µ)	127.982
Length of Mean Vector (r)	0.628	Length of Mean Vector (r)	0.996
Rayleigh Test (Z)	1.185	Rayleigh Test (Z)	1.982
Rayleigh Test (p)	0.336	Rayleigh Test (p)	0.141
Figure 92a May 2021		**Figure 92b September 2021**	

Figure 92 Summary of flight direction of terns during survey period

4.13 Great Skua – *Catharacta skua*

Great skuas were recorded only during October 2021 – two individuals in the Survey Area, resulting in an abundance estimate of 16 (**Table 18).**

One of the individuals was in the north-east area of the Southwest England Site (**Figure 93**), resulting in an abundance estimate of 9 (**Table 18**), while the other was in the west of the Buffer Zone (**Figure 93**), resulting in an abundance estimate of 7 (**Table 18**).

One great skua was flying in a west-southwest direction (256.153°, p=0.512; **Figure 94**).

Table 18 **Raw counts and abundance and density estimates (individuals per km^2) of great skua in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone**

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Oct-21	2	16	2	39	0.71	0.05
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Oct-21	1	9	1	26	1.00	0.09
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Oct-21	1	7	1	22	1.00	0.03

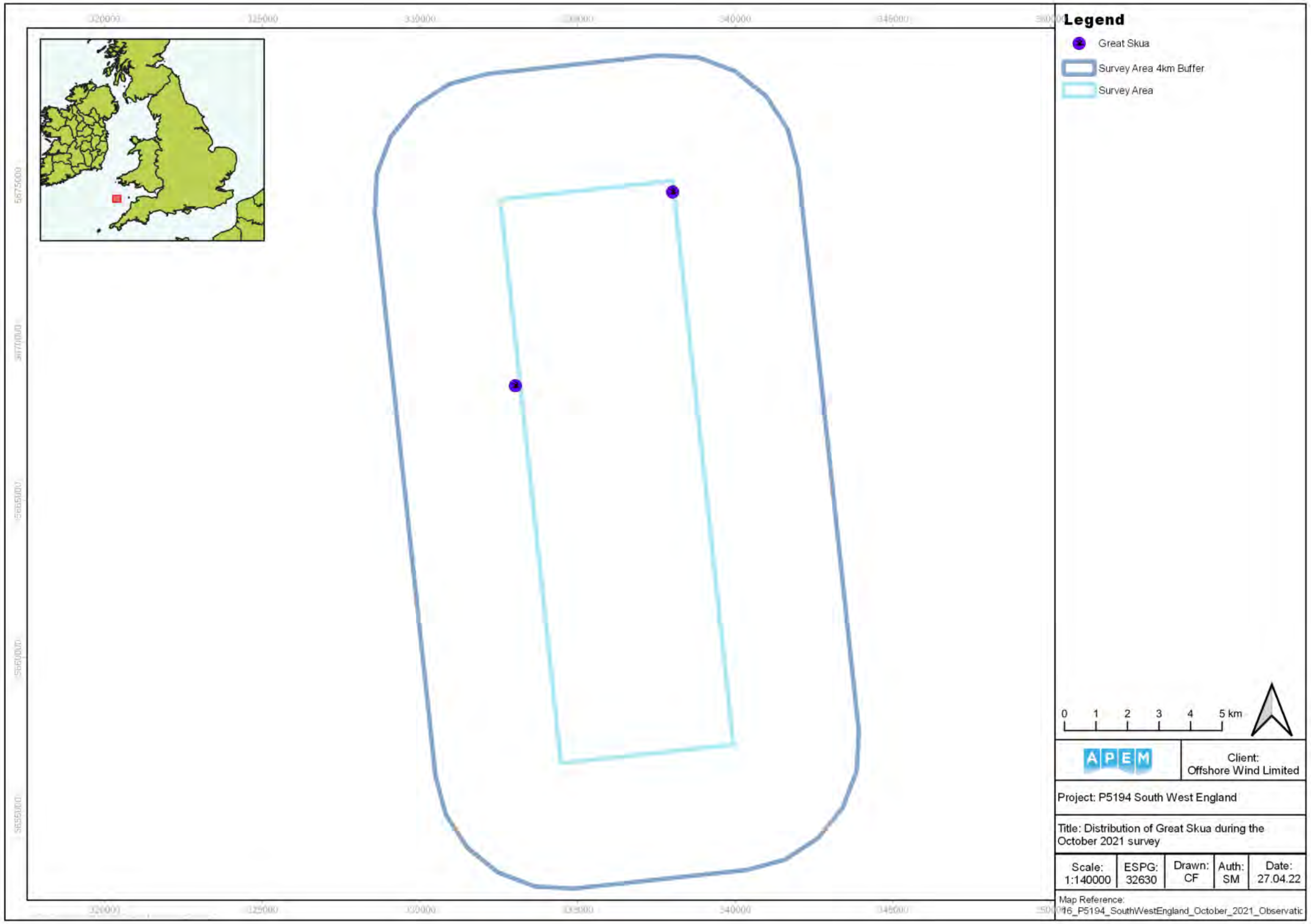
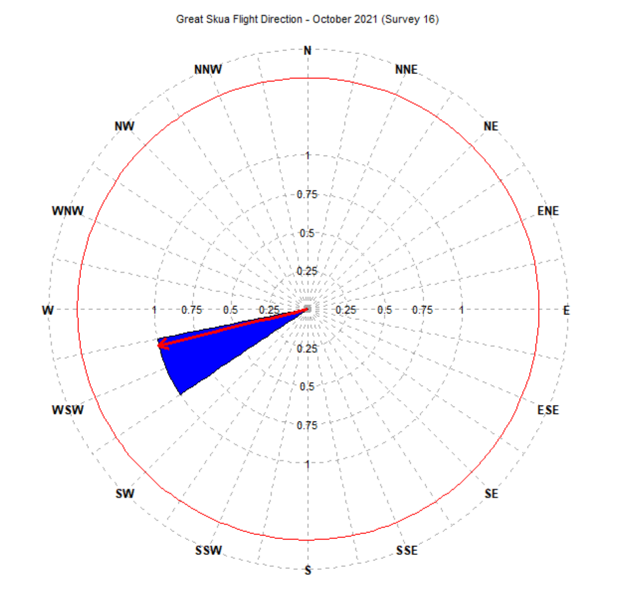


Figure 93 Distribution of great skua in Survey Area during October 2021



Number of Observations	1
Mean Vector (µ)	256.153
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 94 October 2021

Figure 94 Summary of flight direction of great skua during survey period

4.14 Guillemot – *Uria aalge*

Guillemots were recorded in all surveys with the exception of August 2020, August 2021 and September 2021. The peak raw count of 981 in May 2021 resulted in an abundance estimate of 7,139 for the Survey Area (**Table 19**).

In the Southwest England Site, they were present in July, September, November and December 2020, January to July and October to December 2021, and January to June 2022. The 301 peak raw count in May 2021 resulted in an abundance estimate of 2,437 (**Table 19**).

In the 4 km Buffer Zone, guillemots were recorded in July, September, October, November and December 2020, in all 2021 surveys with the exception of August and September, and in January to June 2022. The peak raw count of 680 in May 2021 resulted in an abundance estimate of 4,749 (**Table 19**).

Guillemots were loosely distributed across the Survey Area in varying densities during the majority of surveys with the exception of October 2020, during which a single individual was noted in the west-south-west of the 4 km Buffer Zone (**Figure 97**). For September 2020, December 2020, April 2021, May 2021, June 2021, October 2021 and November 2021 the distribution data has a central/northern skew (**Figure 96**; **Figure 99**; **Figure 103**; **Figure 104**; **Figure 105**; **Figure 107**; **Figure 108**), whereas during July 2020, November 2020, January to March 2021, July 2021, December 2021, and February to June 2022, guillemots were present equally across all regions of the Survey Area (**Figure 95**; **Figure 98**; **Figure 100**; **Figure 101**; **Figure 102**; **Figure 106**; **Figure 109**; **Figure 111 - 115**). In January 2022, the birds were distributed with a central/southern skew (**Figure 110**).

Across the surveys, guillemots flew in most directions: north in February 2021 (5.163°, p<0.001; **Figure 116f**); north-northeast in January and November 2021 (17.452°, p=0.006; **Figure 116e**; 32.152°, p=0.916; **Figure 116k**); northeast in December 2020 (39.785°, p=0.037; **Figure 116d**); east-northeast in September 2020 and March 2022 (76.881°, p=0.145; **Figure 116b**; 71.586°, p=0.019; **Figure 116l**); east-southeast in March 2021 and May 2022 (110.926°, p=0.001; **Figure 116g**; 101.390°, p=0.994; **Figure 116n**); southeast in May 2021 (144.165°, p=0.014; **Figure 116i**); west-northwest in July and November 2020 (298.406°, p=0.512; **Figure 116a**); northwest in April and October 2021 (322.671°, p=0.024; **Figure 116h**; 314.845°, p=0.75; **Figure 116j**); and north north-west in April (351.678°, p=0.654; **Figure 116m**).

Table 19 Raw counts and abundance and density estimates (individuals per km^2) of guillemot in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jul-20	47	364	240	496	0.15	1.08
Sep-20	225	1,767	1,264	2,285	0.07	5.25
Oct-20	1	8	1	23	1.00	0.02
Nov-20	15	118	47	205	0.26	0.35
Dec-20	37	296	184	416	0.16	0.88
Jan-21	58	459	293	673	0.13	1.36
Feb-21	185	1,420	1,075	1,812	0.07	4.22
Mar-21	126	965	735	1,202	0.09	2.87

Apr-21	40	307	200	438	0.16	0.91
May-21	981	7,139	6,317	7,969	0.03	21.22
Jun-21	15	119	48	215	0.26	0.35
Jul-21	40	306	191	429	0.16	0.91
Oct-21	85	658	488	875	0.11	1.96
Nov-21	168	1,288	736	2,094	0.08	3.83
Dec-21	4	31	8	61	0.50	0.09
Jan-22	54	417	309	557	0.14	1.24
Feb-22	67	517	401	656	0.12	1.54
Mar-22	343	2,605	2,195	3,038	0.05	7.74
Apr-22	332	2,528	2,177	2,931	0.05	7.51
May-22	177	1,344	1,086	1,617	0.08	3.99
Jun-22	75	561	397	748	0.12	1.67
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	10	85	34	145	0.32	0.86
Sep-20	59	515	253	829	0.13	5.2
Nov-20	2	18	2	44	0.71	0.18
Dec-20	16	142	62	231	0.25	1.43
Jan-21	12	105	44	176	0.29	1.06
Feb-21	37	322	191	452	0.16	3.25
Mar-21	26	223	146	309	0.20	2.25
Apr-21	11	94	34	180	0.30	0.95
May-21	301	2,437	1,951	3,019	0.06	24.62
Jun-21	2	17	2	43	0.71	0.17
Jul-21	6	52	9	103	0.41	0.53
Oct-21	29	255	123	405	0.19	2.58
Nov-21	17	147	69	233	0.24	1.48
Dec-21	1	9	1	26	1.00	0.09
Jan-22	5	44	9	87	0.45	0.44
Feb-22	10	87	35	156	0.32	0.88
Mar-22	108	933	657	1,270	0.10	9.42
Apr-22	76	643	440	888	0.11	6.49
May-22	44	379	241	525	0.15	3.83
Jun-22	20	168	76	286	0.22	1.70
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	37	276	164	395	0.16	1.16
Sep-20	166	1,251	844	1,689	0.07	5.27

Oct-20	1	7	1	22	1.00	0.03
Nov-20	13	98	38	181	0.28	0.41
Dec-20	21	161	77	261	0.22	0.68
Jan-21	46	350	198	540	0.15	1.47
Feb-21	148	1,083	783	1,478	0.08	4.56
Mar-21	100	733	542	952	0.1	3.09
Apr-21	29	213	125	324	0.19	0.9
May-21	680	4,749	4,016	5,496	0.04	0.06
Jun-21	13	100	39	85	0.28	0.42
Jul-21	34	249	146	359	0.17	1.05
Oct-21	56	413	288	561	0.13	1.74
Nov-21	151	1,107	601	1,833	0.08	4.66
Dec-21	3	22	3	51	0.58	0.09
Jan-22	49	362	244	480	0.14	1.52
Feb-22	57	420	310	538	0.13	1.77
Mar-22	235	1,699	1,381	2,024	0.07	7.16
Apr-22	256	1,871	1,557	2,222	0.06	7.88
May-22	133	962	731	1,216	0.09	4.05
Jun-22	55	394	265	537	0.13	1.66

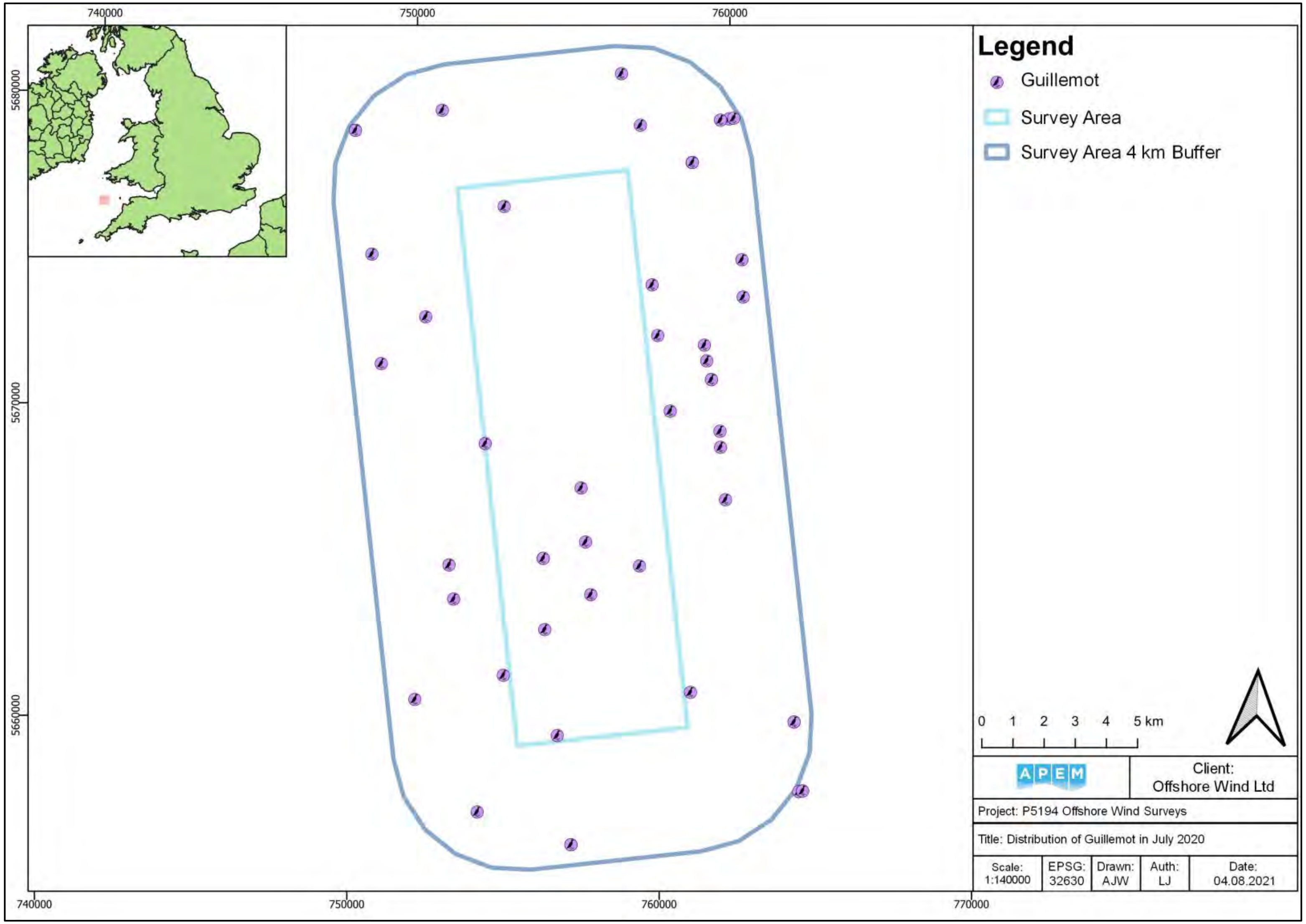


Figure 95 Distribution of guillemots in Survey Area during July 2020

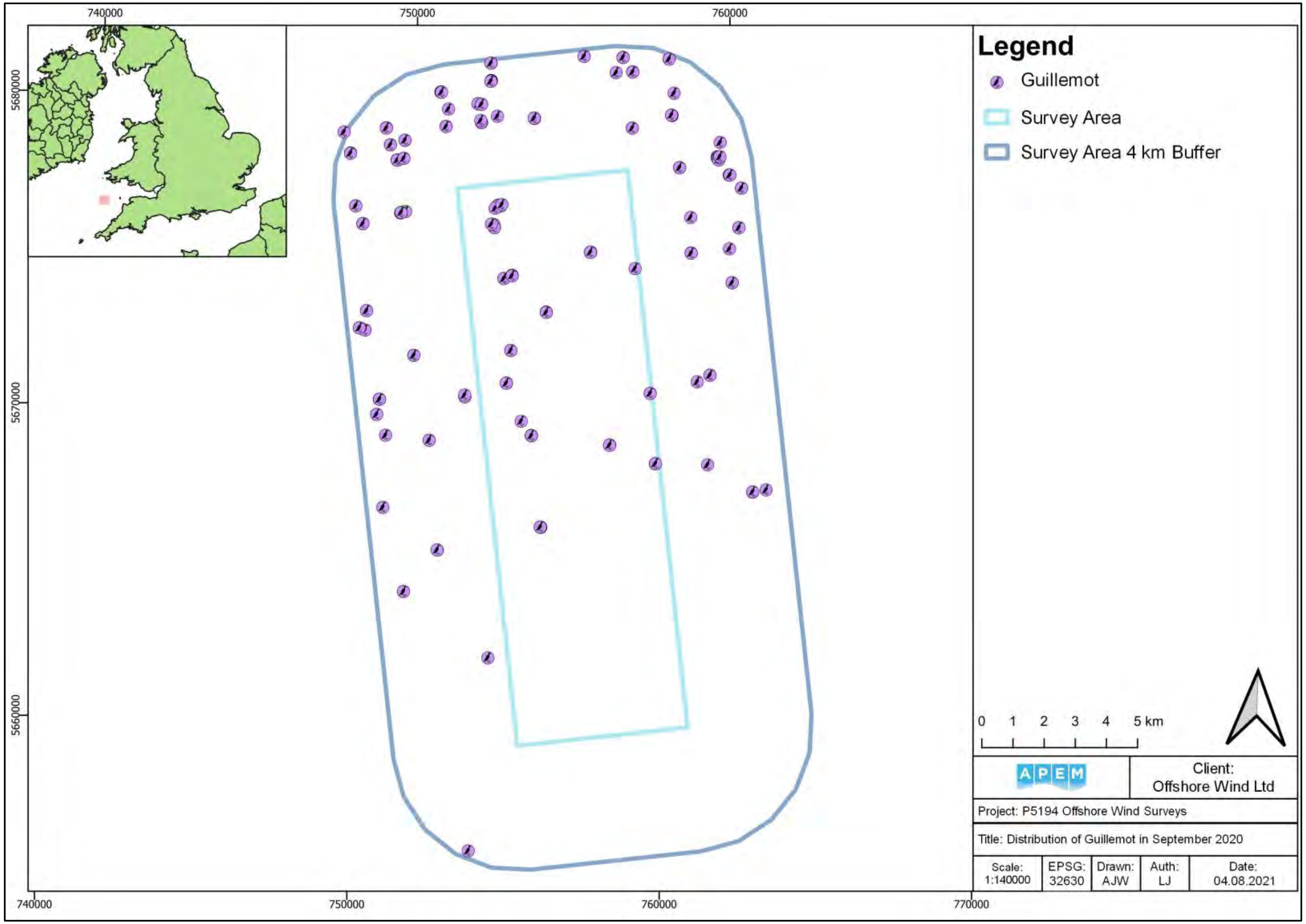


Figure 96 Distribution of guillemots in Survey Area during September 2020

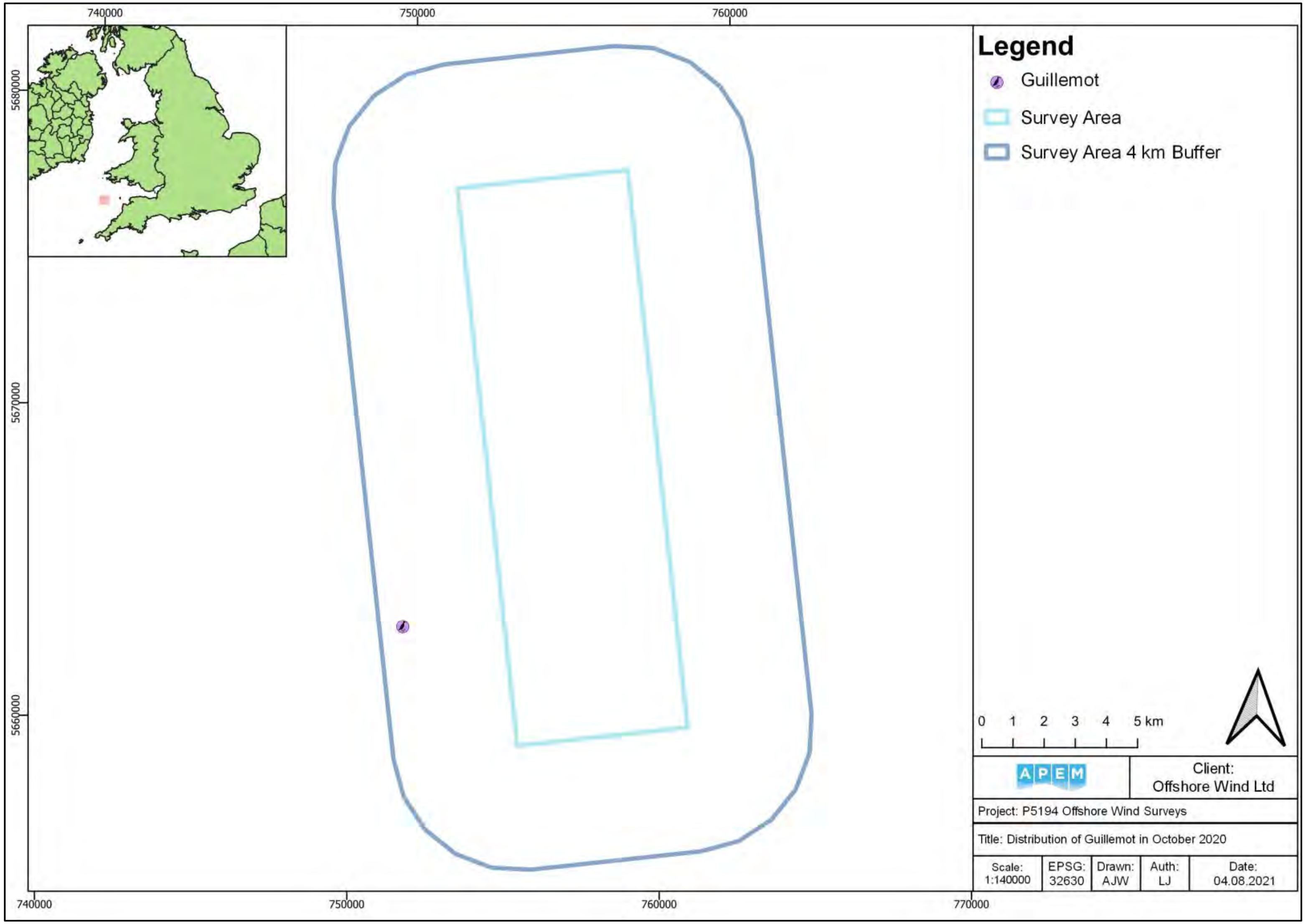


Figure 97 Distribution of guillemots in Survey Area during October 2020

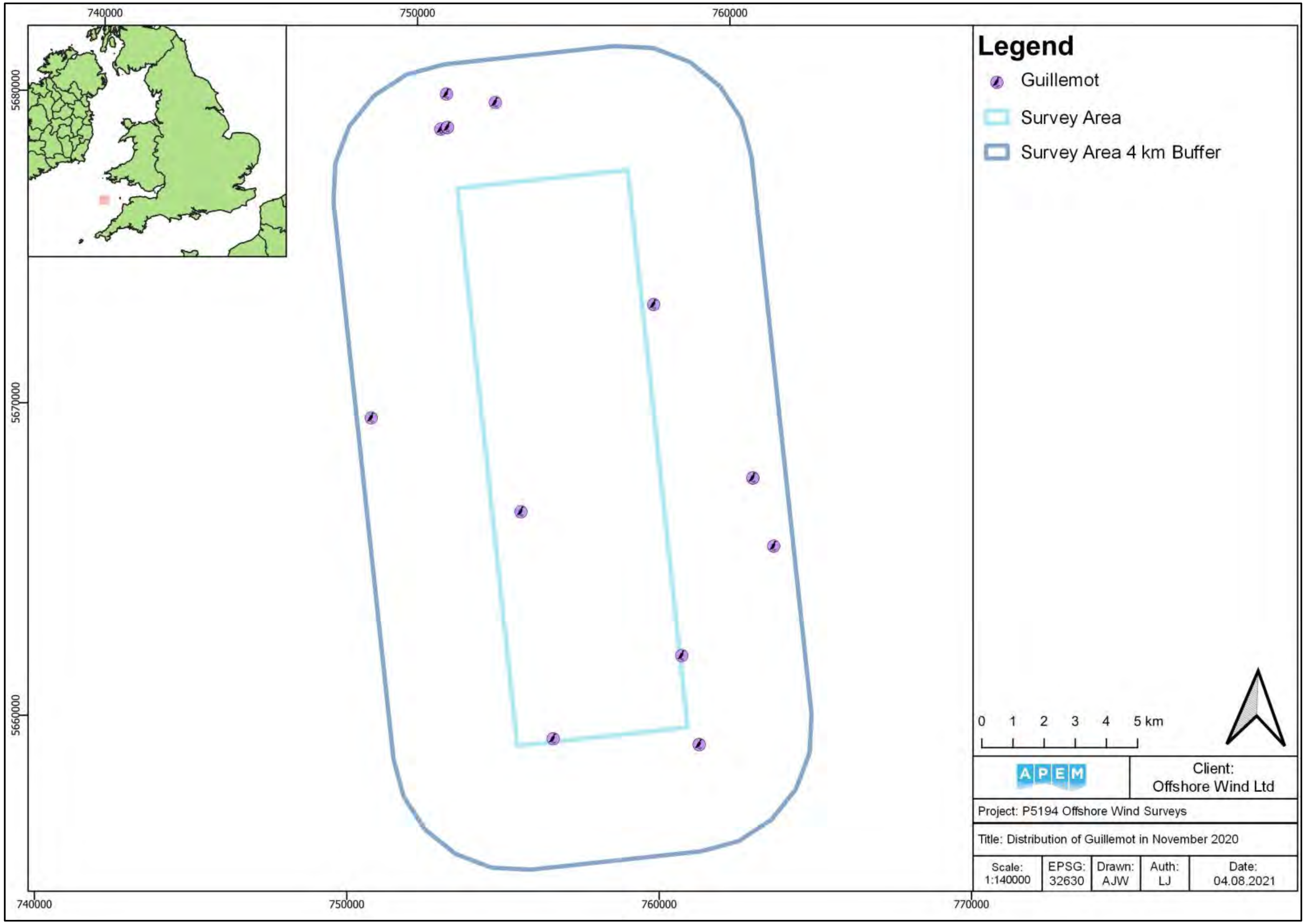


Figure 98 Distribution of guillemots in Survey Area during November 2020

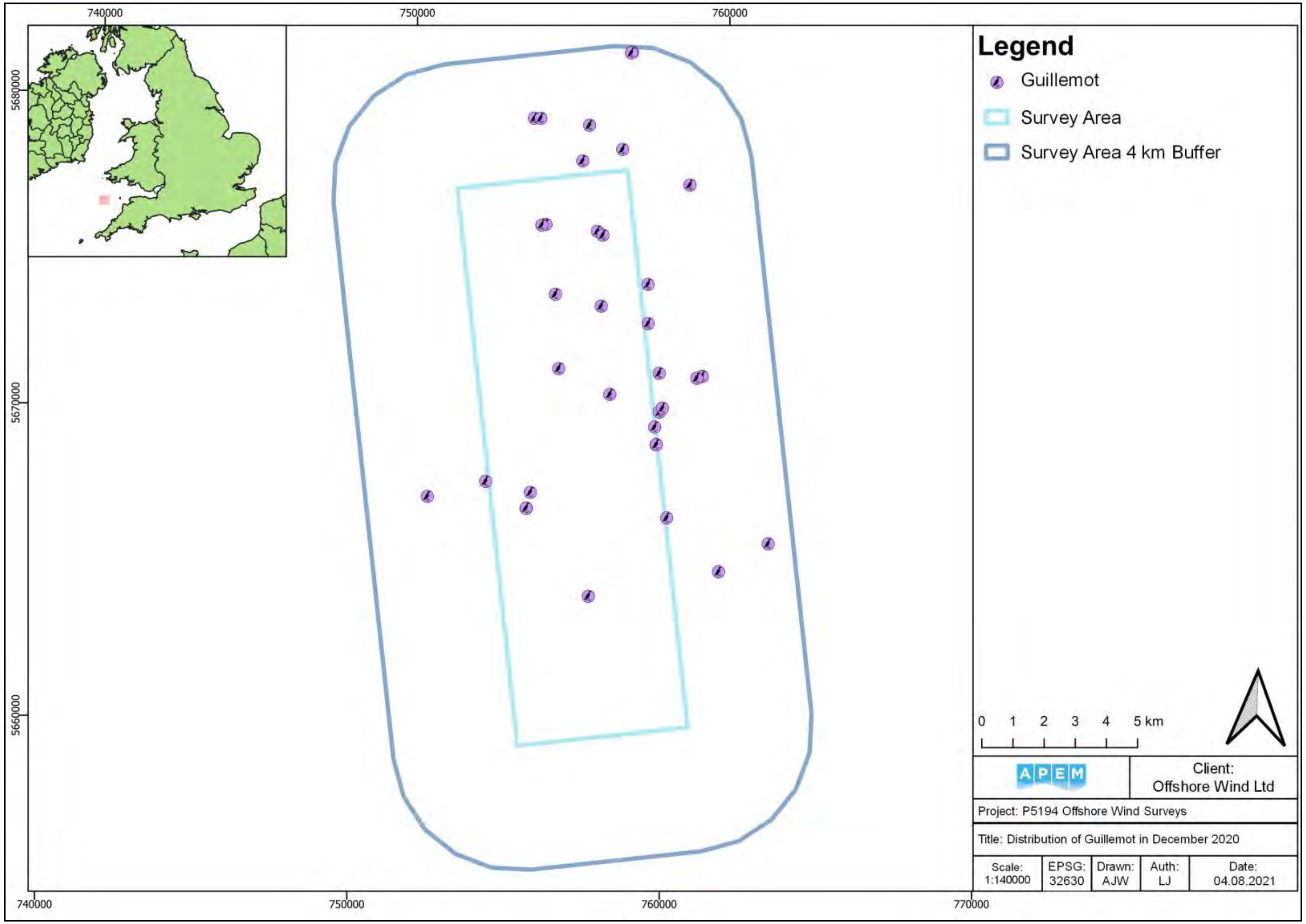


Figure 99 Distribution of guillemots in Survey Area during December 2020

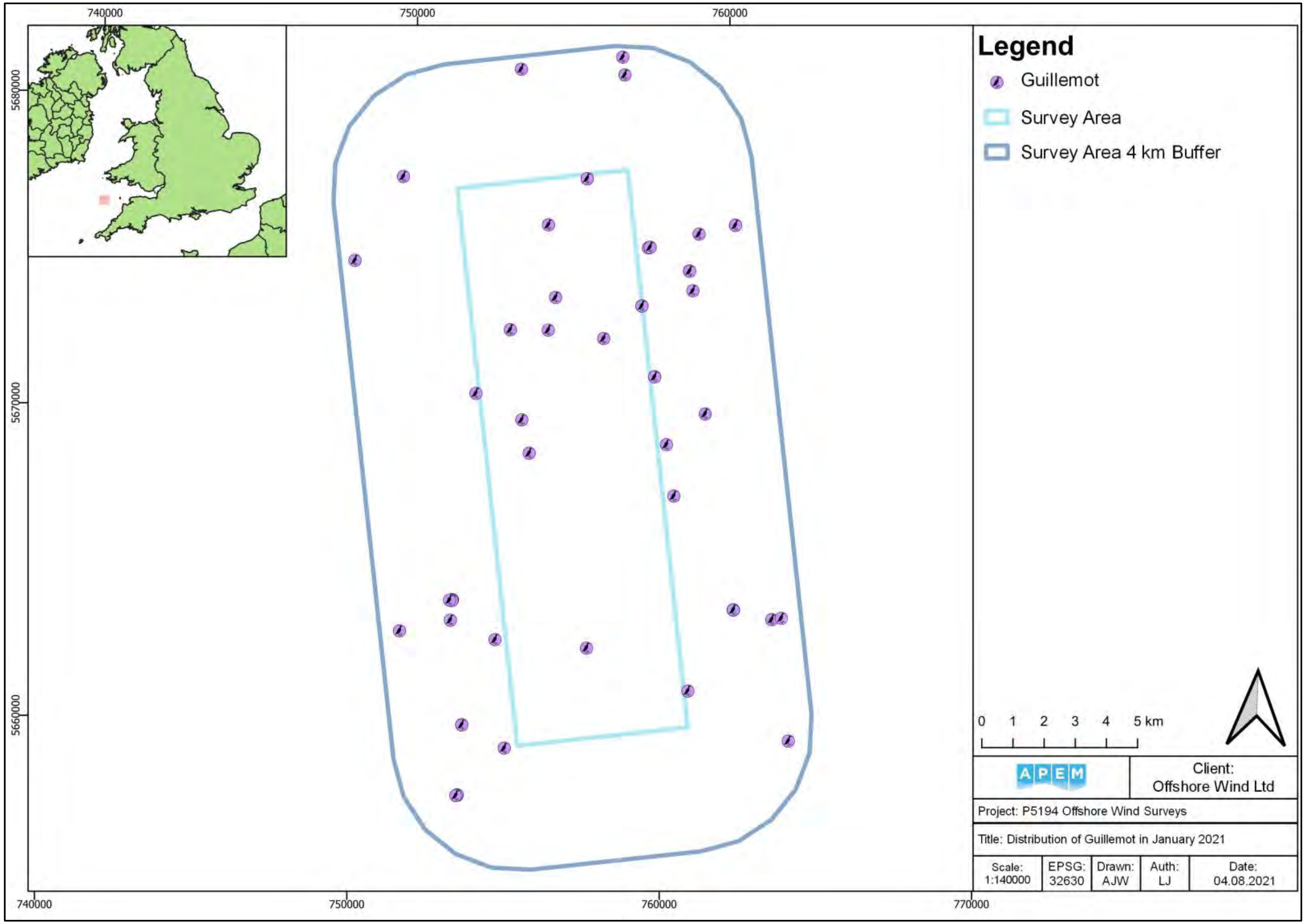


Figure 100 Distribution of guillemots in Survey Area during January 2021

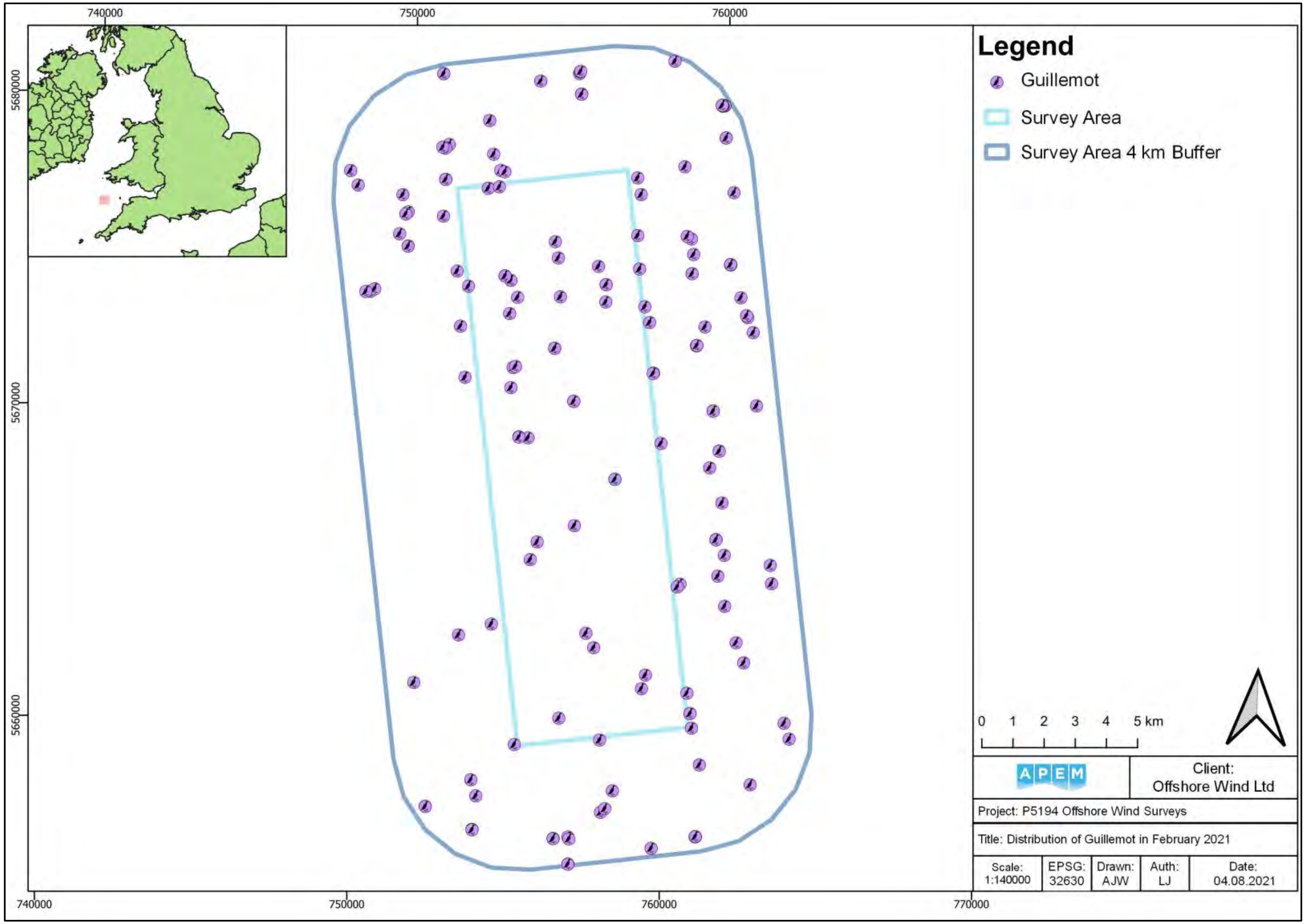


Figure 101 Distribution of guillemots in Survey Area during February 2021

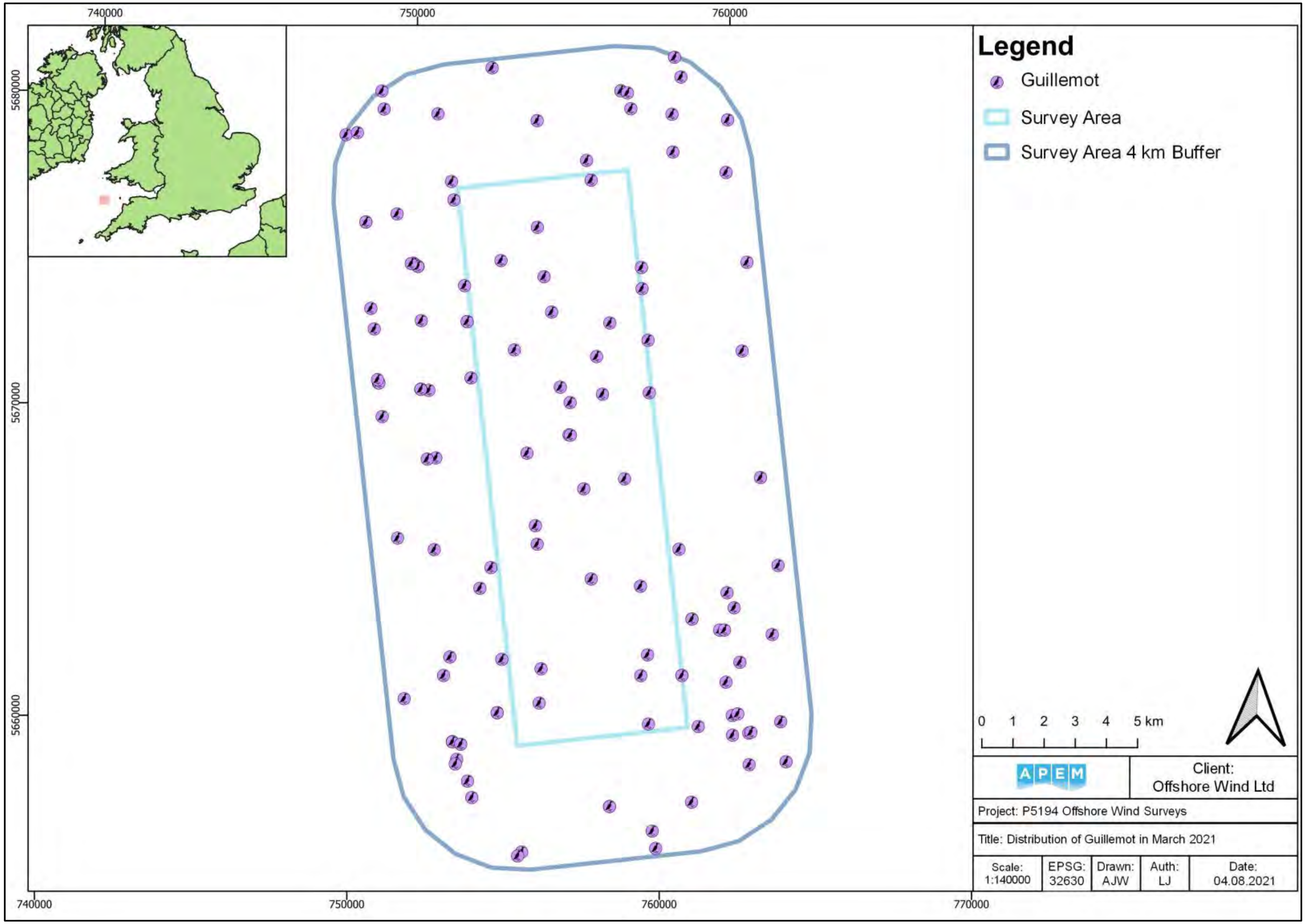


Figure 102 Distribution of guillemots in Survey Area during March 2021

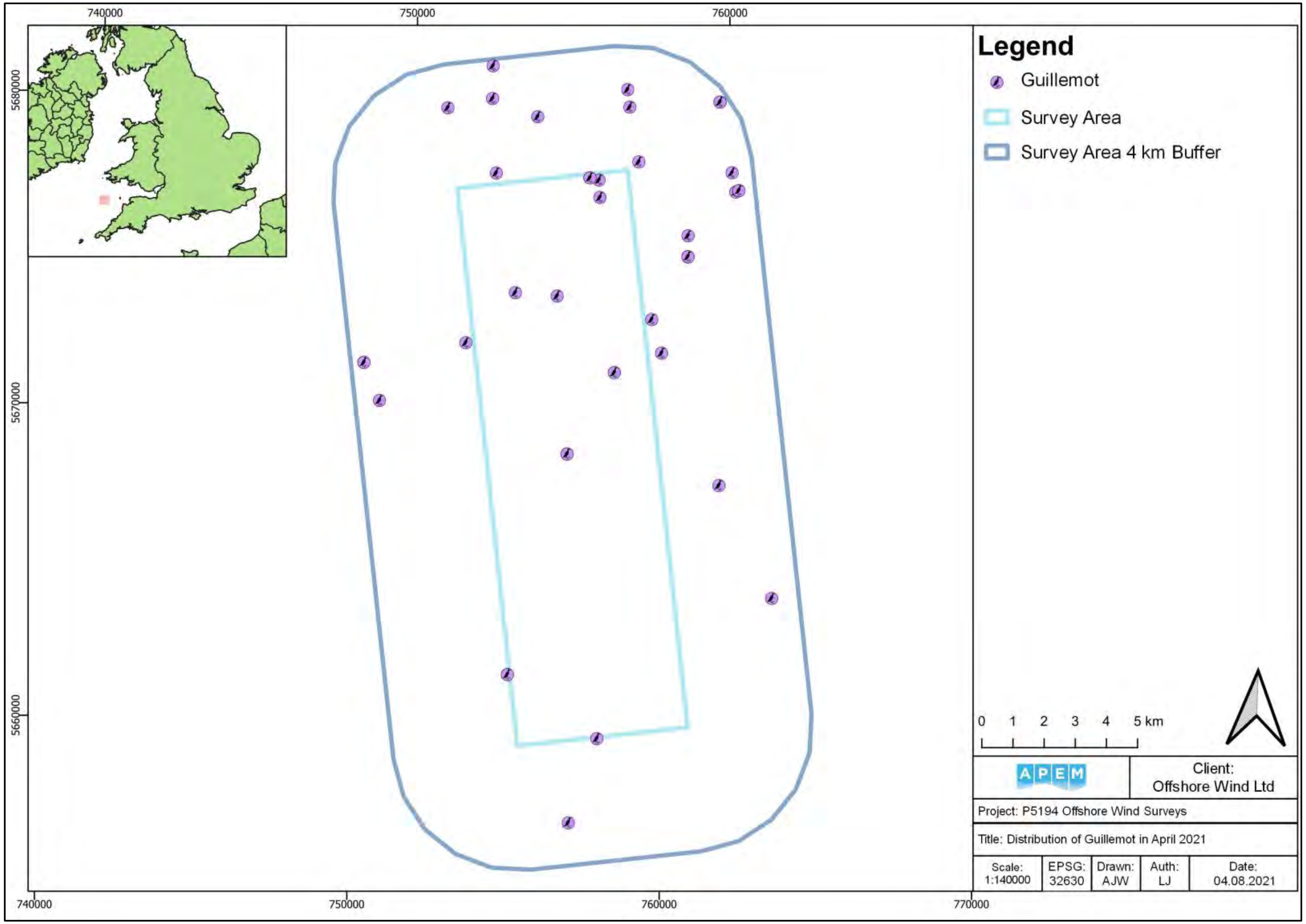


Figure 103 Distribution of guillemots in Survey Area during April 2021

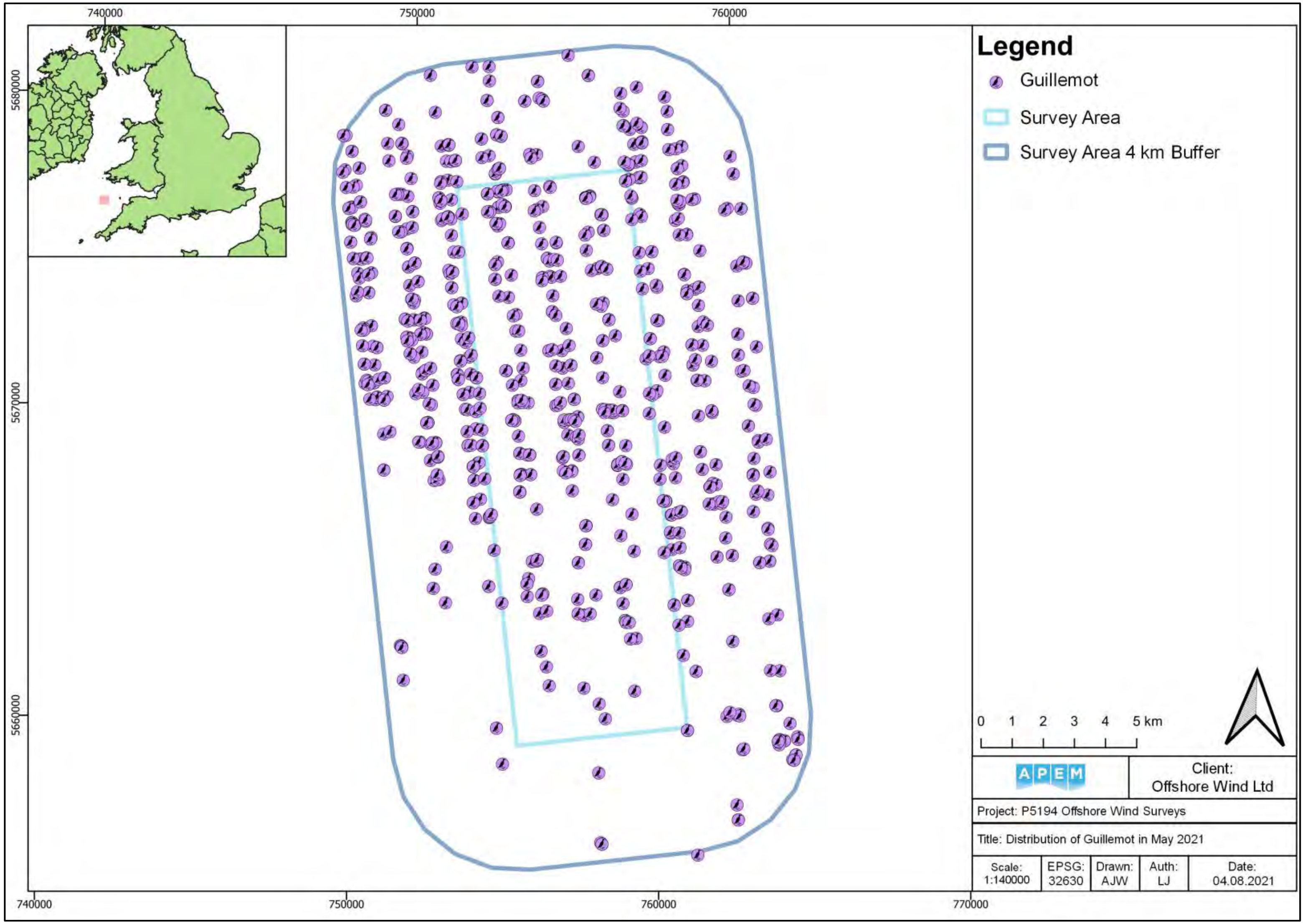


Figure 104 Distribution of guillemots in Survey Area during May 2021

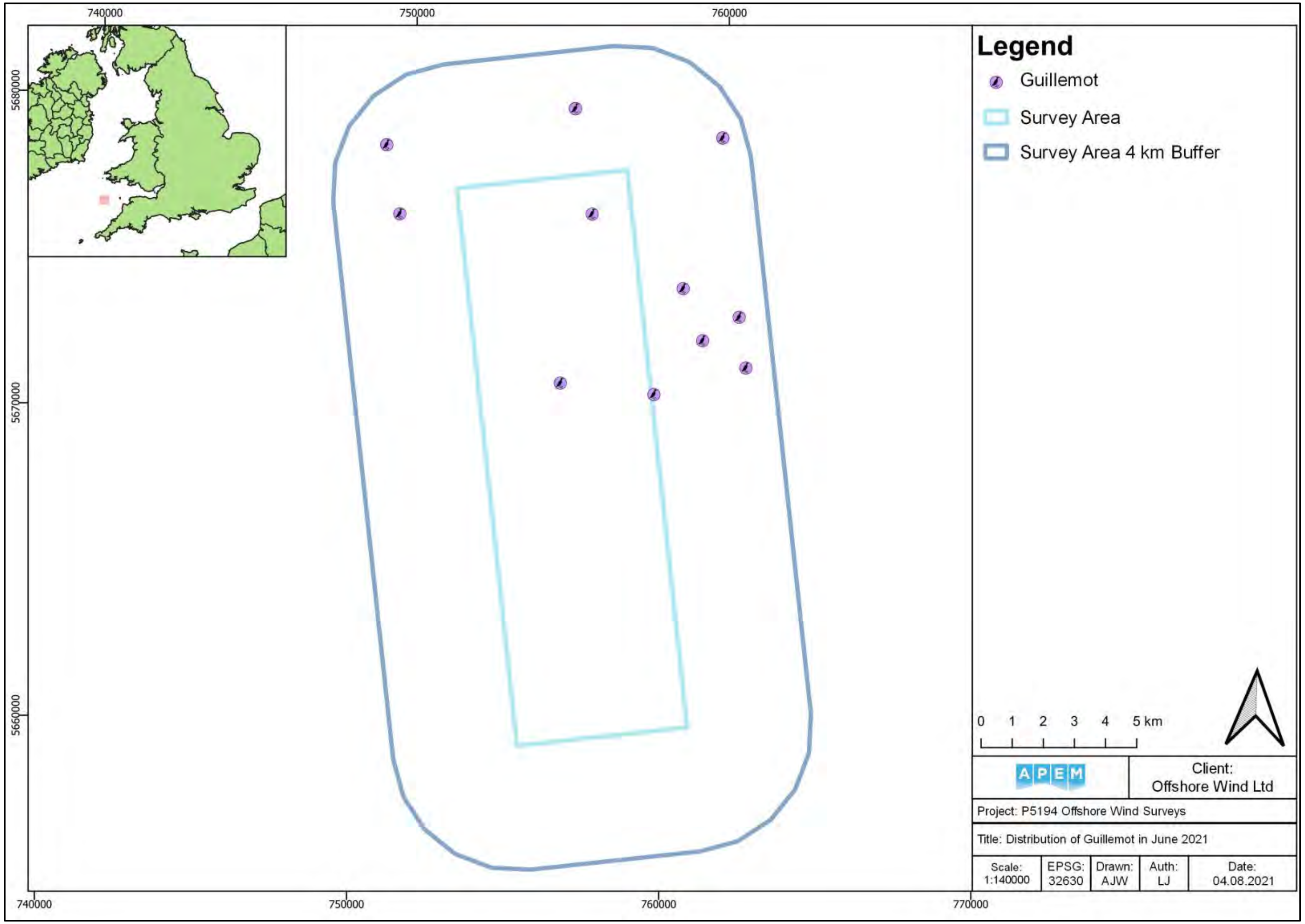


Figure 105 Distribution of guillemots in Survey Area during June 2021

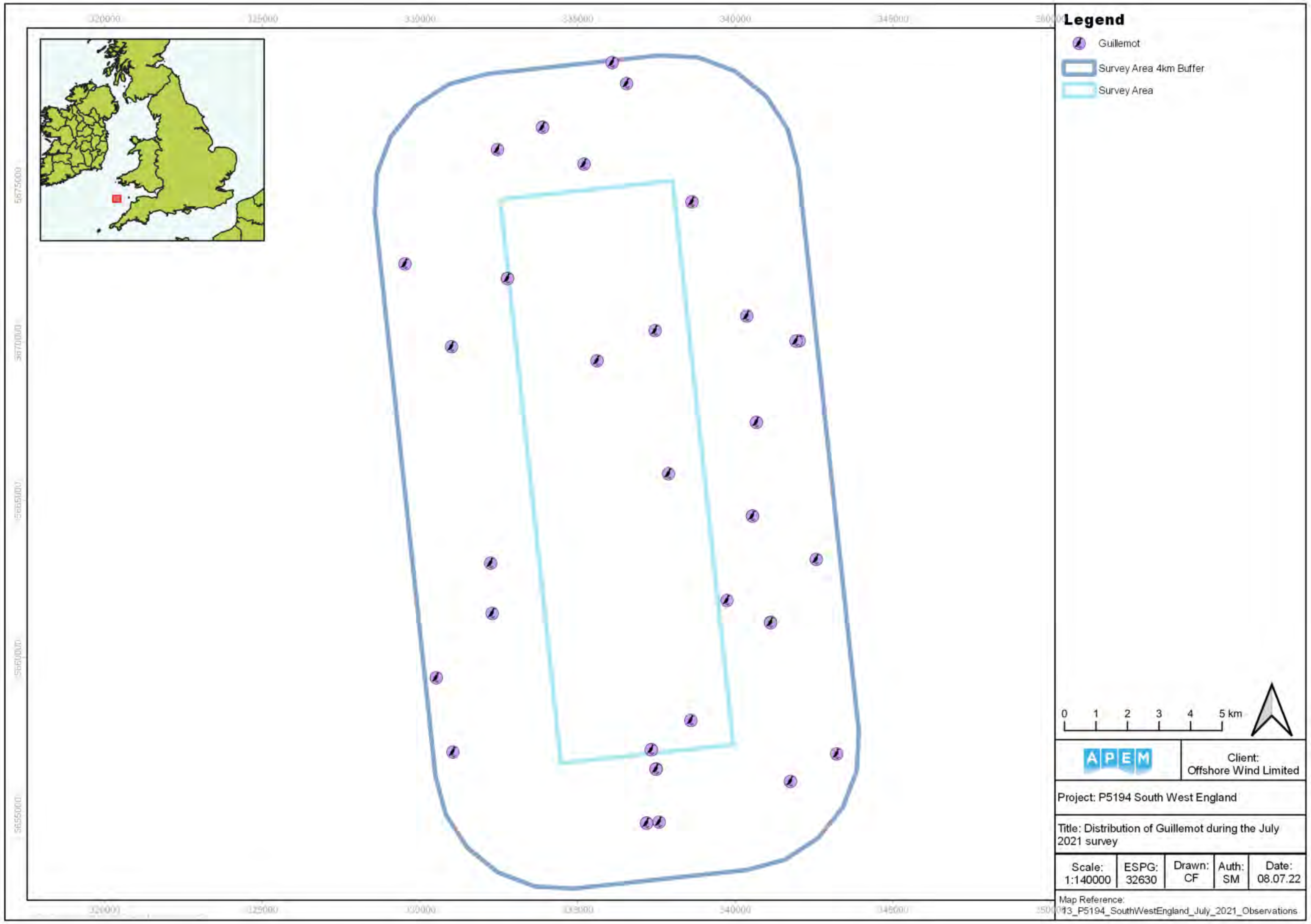


Figure 106 Distribution of guillemots in Survey Area during July 2021

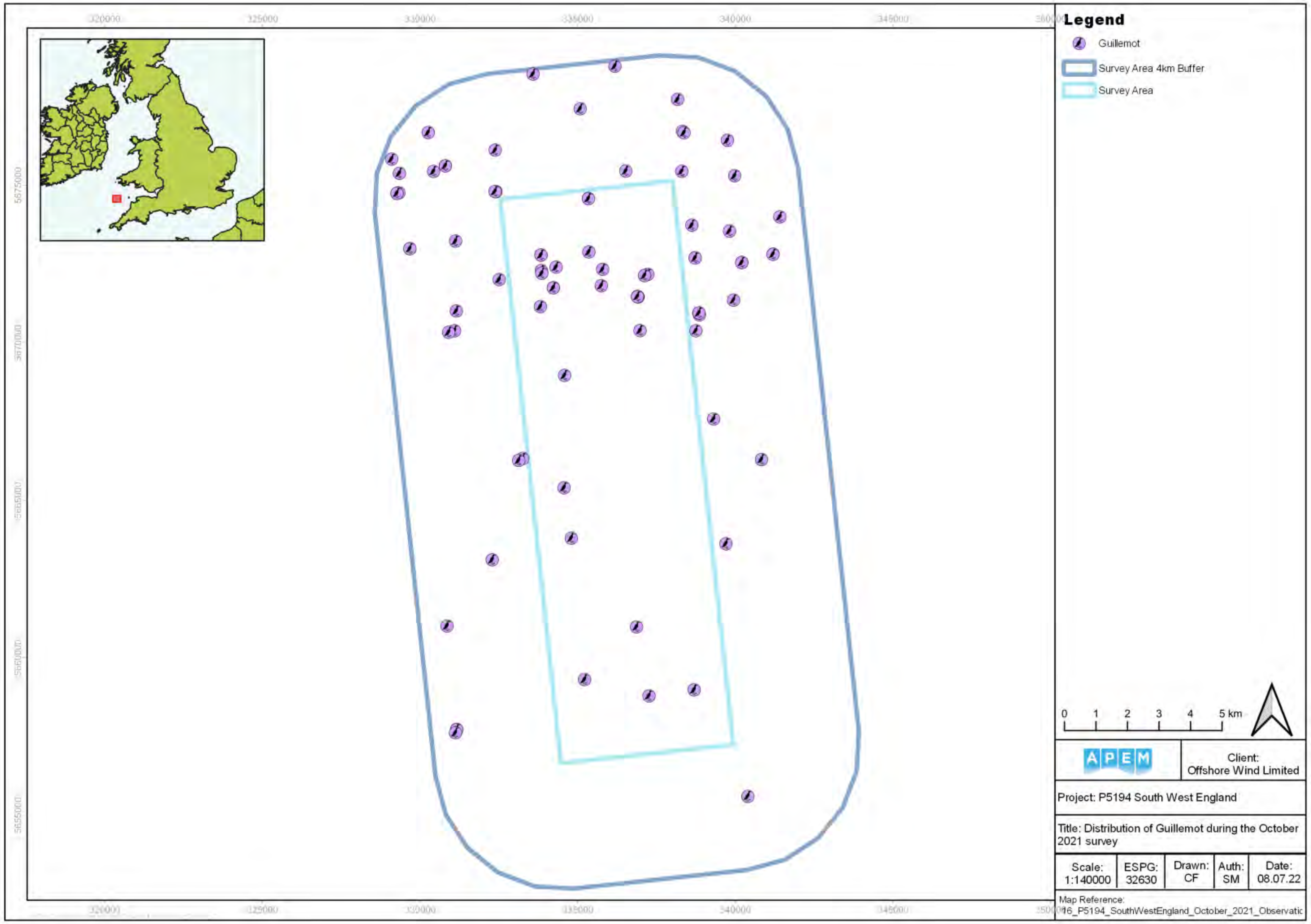


Figure 107 Distribution of guillemots in Survey Area during October 2021

Figure 108 Distribution of guillemots in Survey Area during November 2021

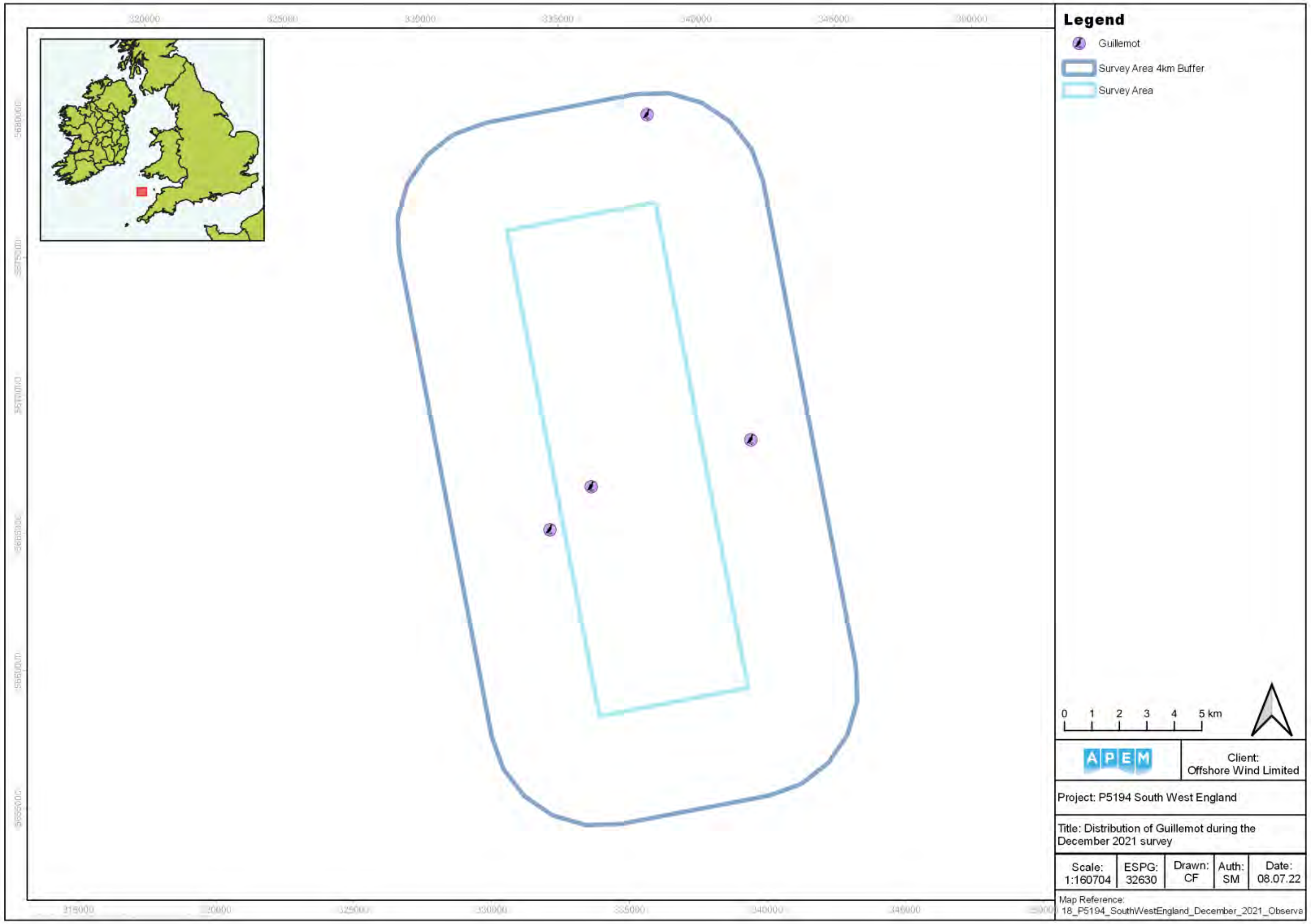


Figure 109 Distribution of guillemots in Survey Area during December 2021

Figure 110 Distribution of guillemots in Survey Area during January 2022

Figure 111 Distribution of guillemots in Survey Area during February 2022

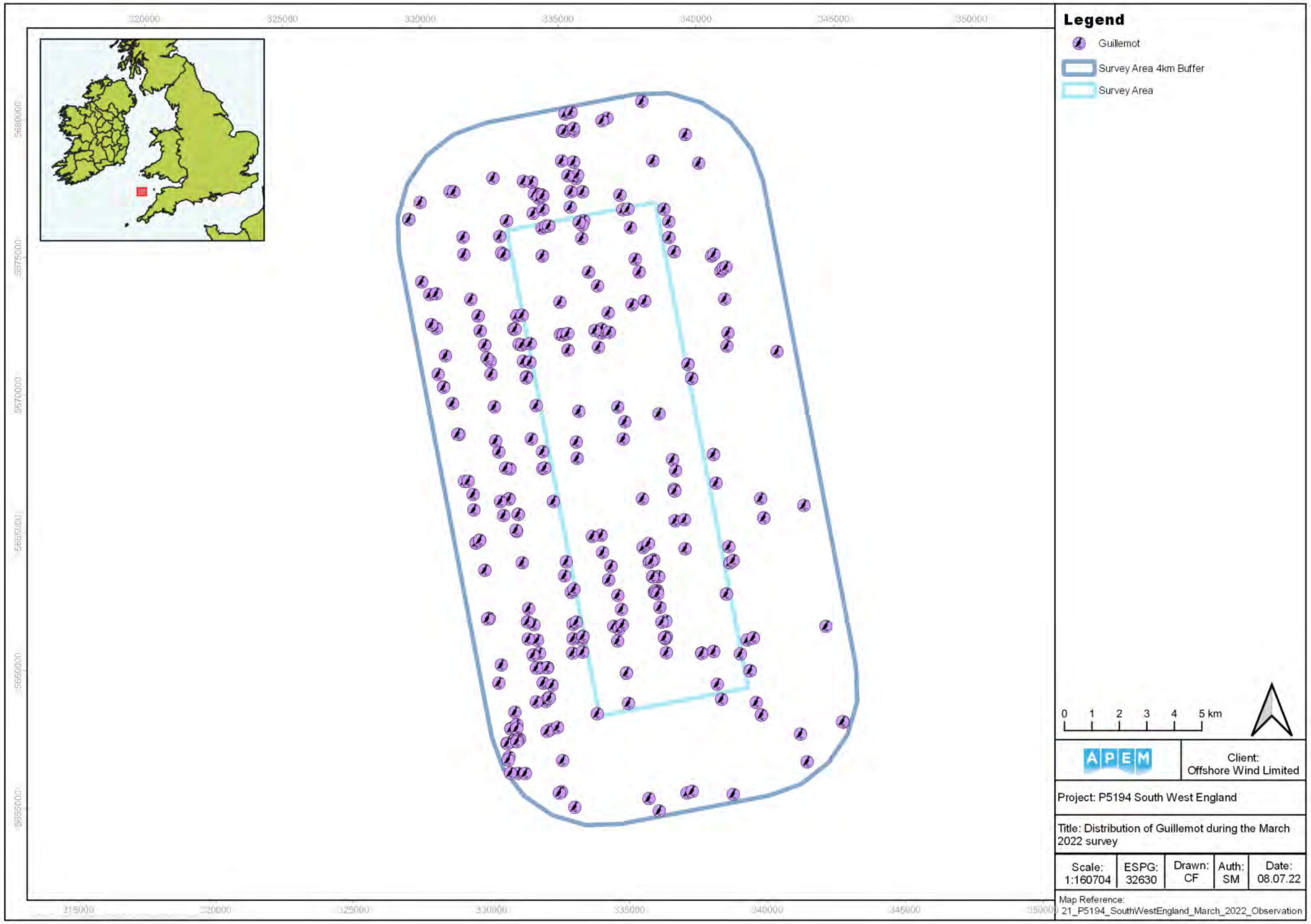


Figure 112 Distribution of guillemots in Survey Area during March 2022

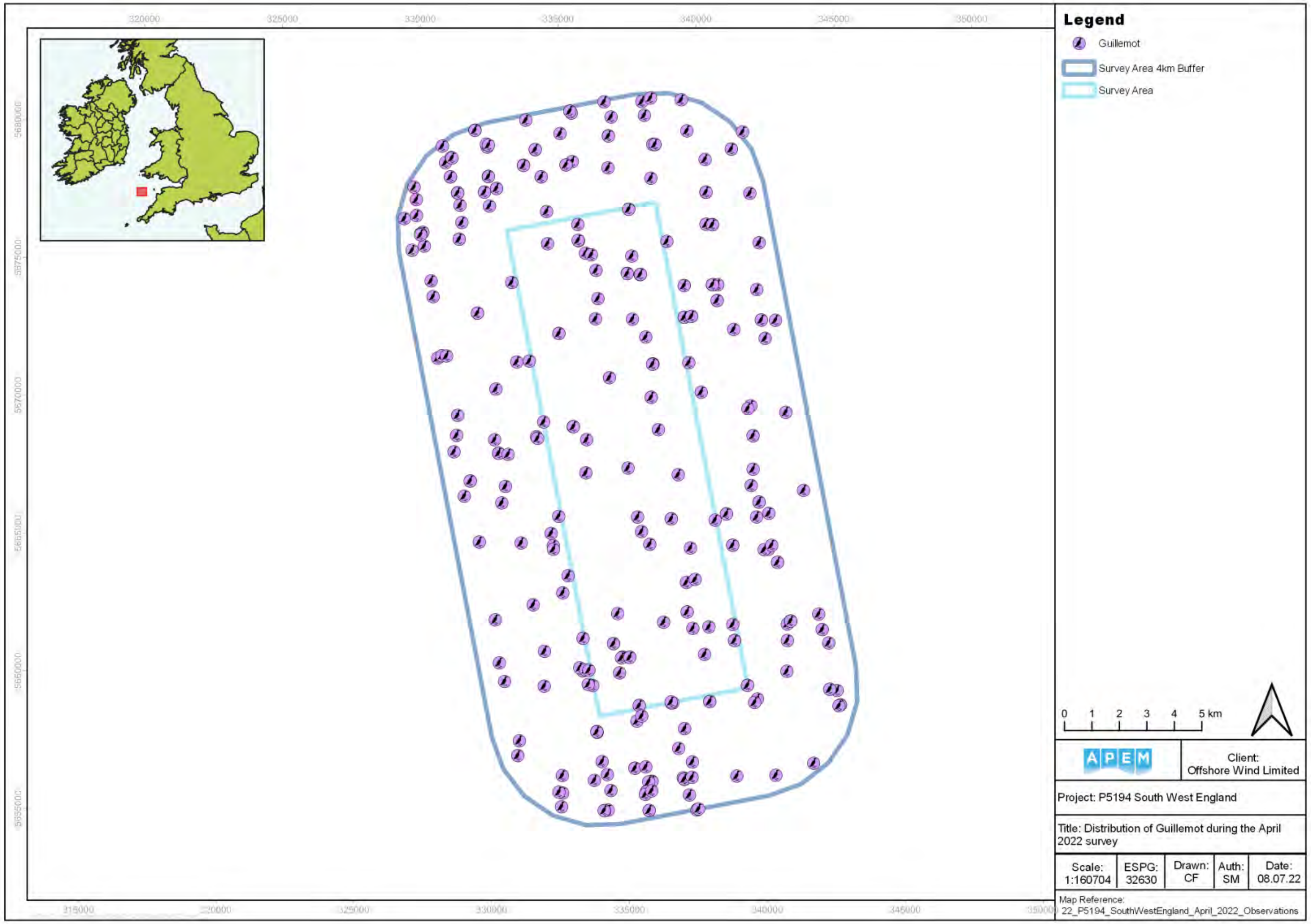


Figure 113 Distribution of guillemots in Survey Area during April 2022

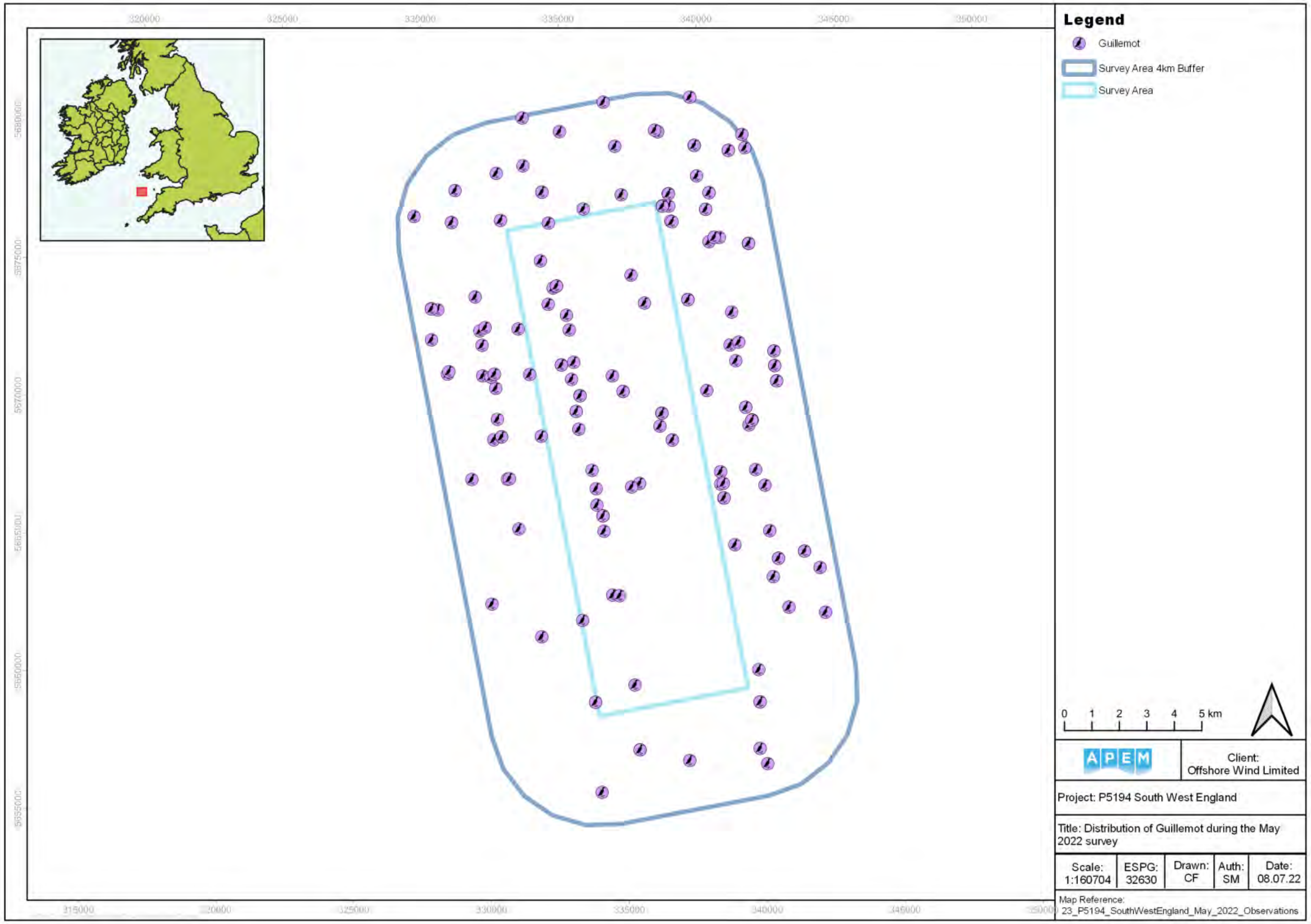
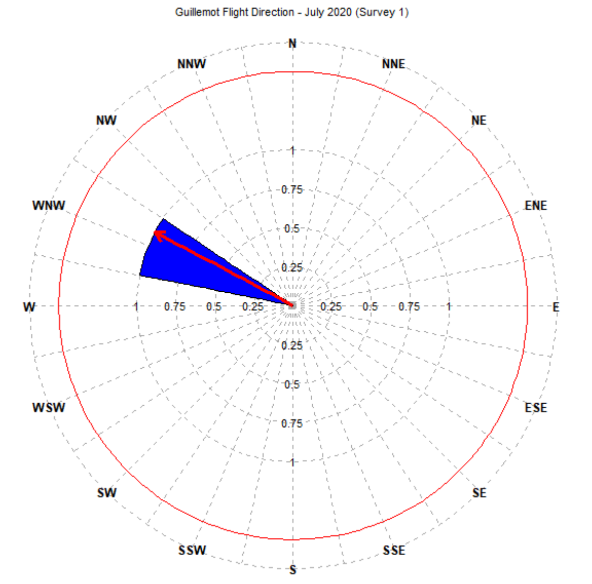


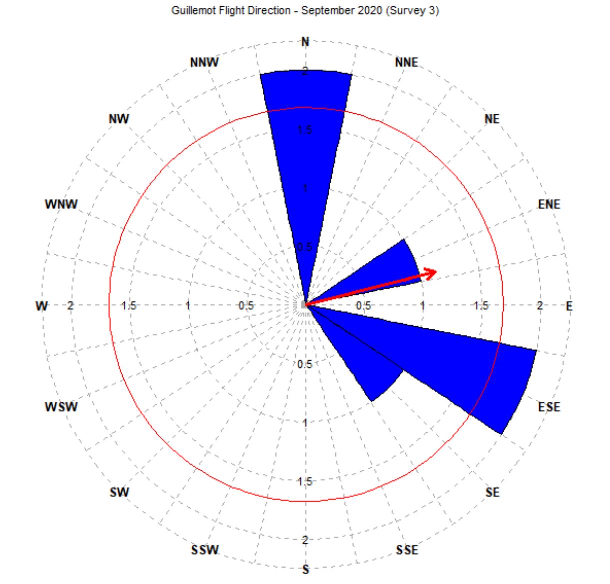
Figure 114 Distribution of guillemots in Survey Area during May 2022

Figure 115 Distribution of guillemots in Survey Area during June 2022



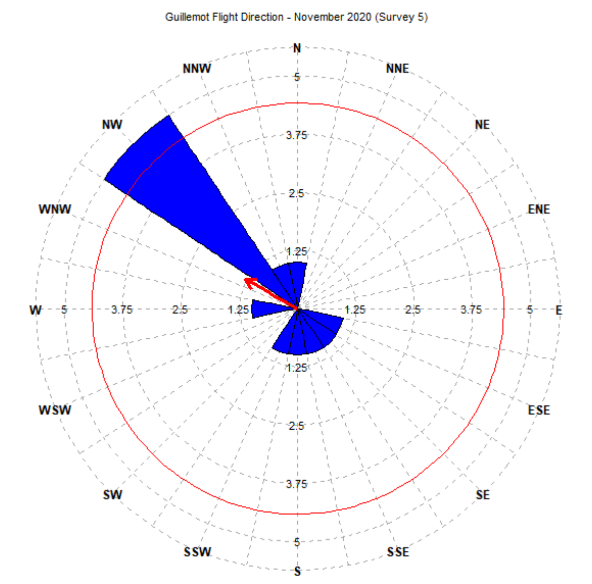
Number of Observations	1
Mean Vector (μ)	298.406
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 116a July 2020



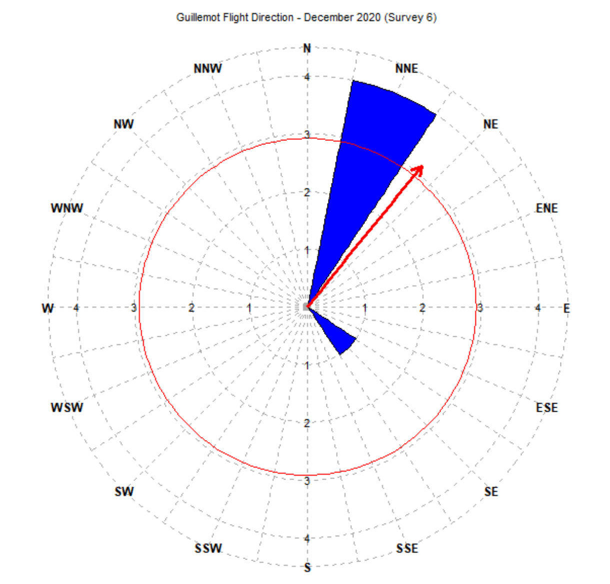
Number of Observations	6
Mean Vector (μ)	76.881
Length of Mean Vector (r)	0.568
Rayleigh Test (Z)	1.936
Rayleigh Test (p)	0.145

Figure 116b September 2020



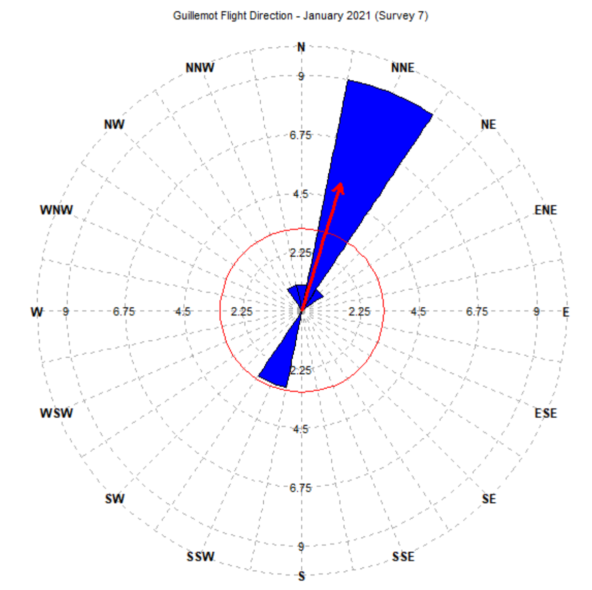
Number of Observations	13
Mean Vector (μ)	299.428
Length of Mean Vector (r)	0.256
Rayleigh Test (Z)	0.852
Rayleigh Test (p)	0.435

Figure 116c November 2020



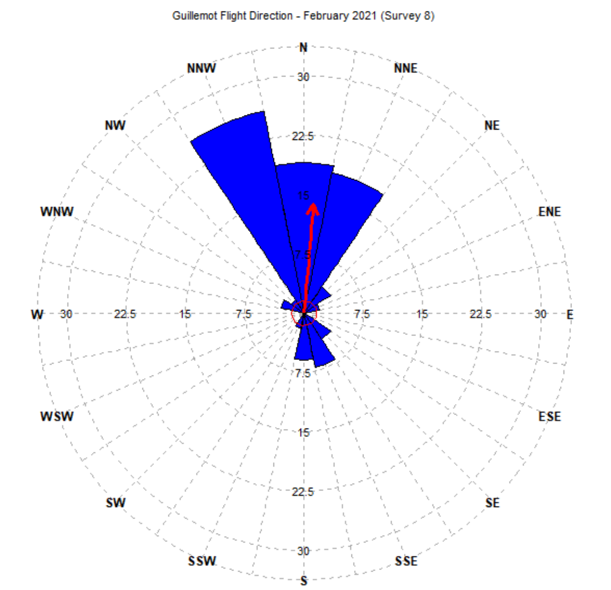
Number of Observations	5
Mean Vector (μ)	39.785
Length of Mean Vector (r)	0.784
Rayleigh Test (Z)	3.075
Rayleigh Test (p)	0.037

Figure 116d December 2020



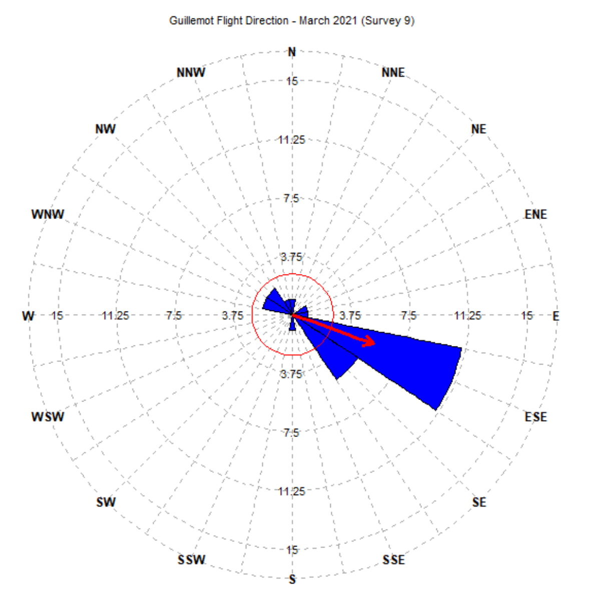
Number of Observations	15
Mean Vector (µ)	17.452
Length of Mean Vector (r)	0.564
Rayleigh Test (Z)	4.775
Rayleigh Test (p)	0.006

Figure 116e January 2021



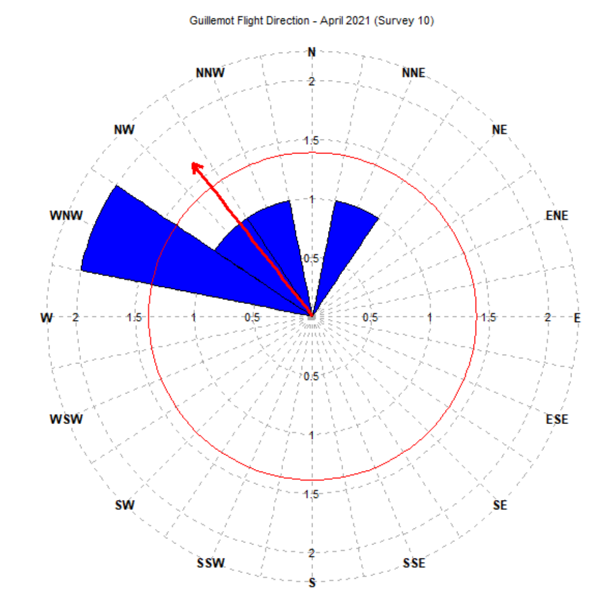
Number of Observations	93
Mean Vector (µ)	5.163
Length of Mean Vector (r)	0.530
Rayleigh Test (Z)	26.094
Rayleigh Test (p)	<0.001

Figure 116f February 2021



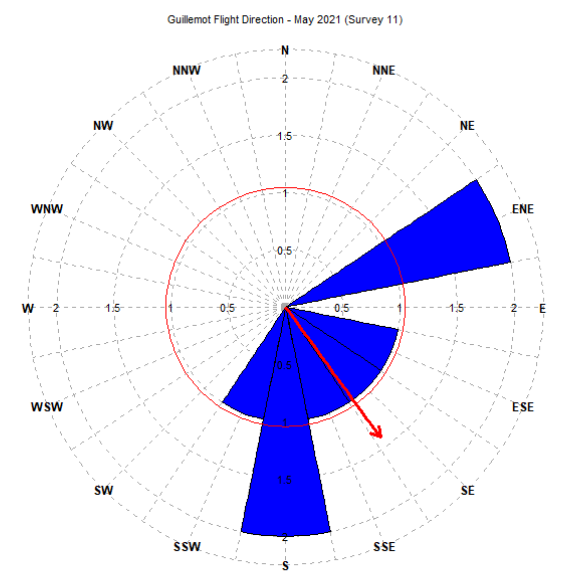
Number of Observations	25
Mean Vector (µ)	110.926
Length of Mean Vector (r)	0.502
Rayleigh Test (Z)	6.290
Rayleigh Test (p)	0.001

Figure 116g March 2021



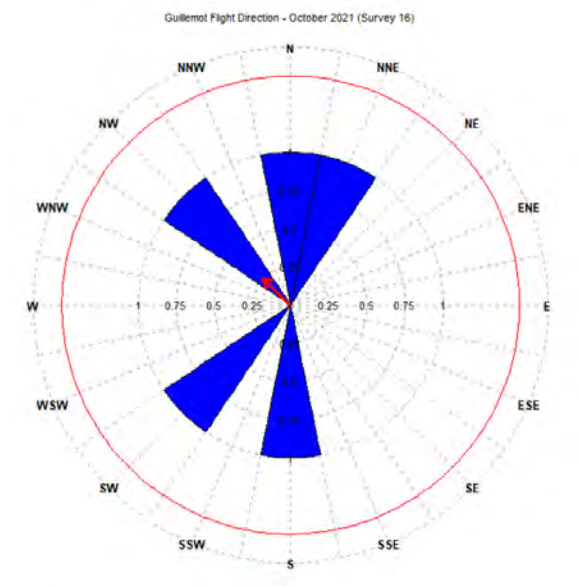
Number of Observations	5
Mean Vector (µ)	322.671
Length of Mean Vector (r)	0.824
Rayleigh Test (Z)	3.396
Rayleigh Test (p)	0.024

Figure 116h April 2021



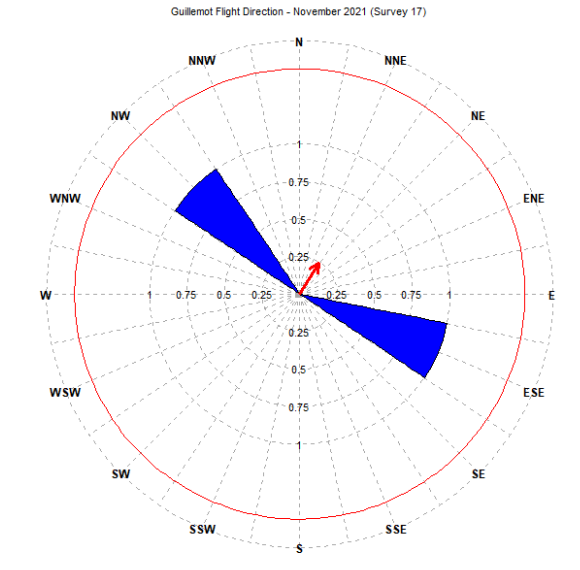
Number of Observations	8
Mean Vector (µ)	144.165
Length of Mean Vector (r)	0.704
Rayleigh Test (Z)	3.961
Rayleigh Test (p)	0.014

Figure 116i May 2021



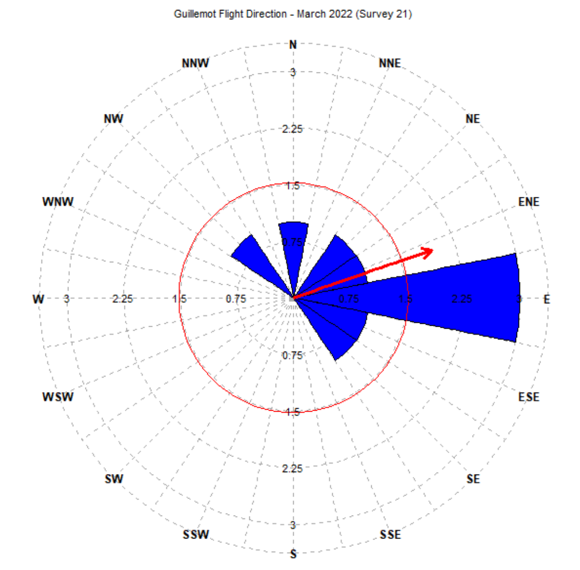
Number of Observations	5
Mean Vector (µ)	314.845
Length of Mean Vector (r)	0.250
Rayleigh Test (Z)	0.314
Rayleigh Test (p)	0.750

Figure 116j October 2021



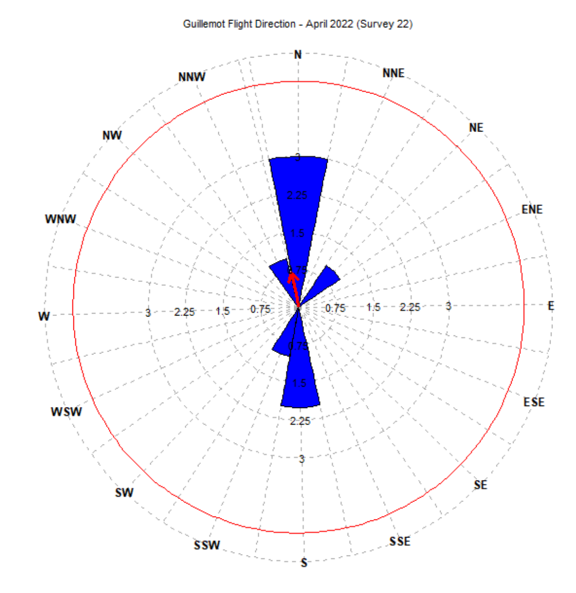
Number of Observations	2
Mean Vector (µ)	32.152
Length of Mean Vector (r)	0.238
Rayleigh Test (Z)	0.114
Rayleigh Test (p)	0.916

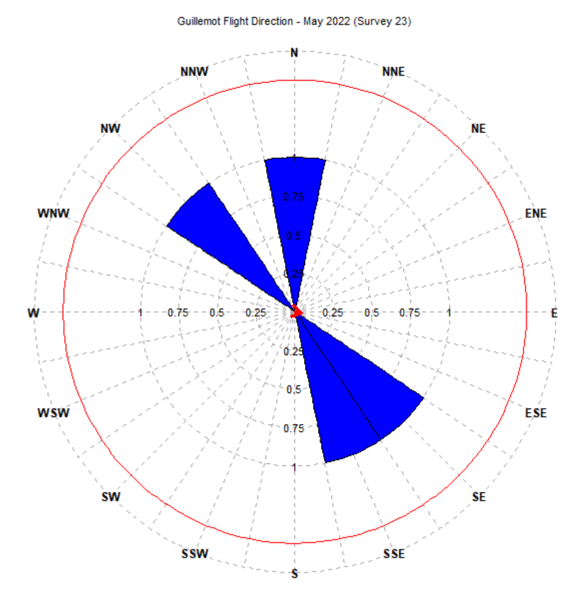
Figure 116k November 2021



Number of Observations	9
Mean Vector (µ)	71.586
Length of Mean Vector (r)	0.645
Rayleigh Test (Z)	3.739
Rayleigh Test (p)	0.019

Figure 116l March 2022





Number of Observations	8	Number of Observations	4
Mean Vector (μ)	351.678	Mean Vector (μ)	101.390
Length of Mean Vector (r)	0.236	Length of Mean Vector (r)	0.042
Rayleigh Test (Z)	0.446	Rayleigh Test (Z)	0.007
Rayleigh Test (p)	0.654	Rayleigh Test (p)	0.994
Figure 116m April 2022		**Figure 116n May 2022**	

Figure 116 Summary of flight direction of guillemots during survey period

4.15 Razorbill – *Alca torda*

Razorbills were recorded September, November and December 2020, January to May, July, October and November 2021, plus January to June 2022. The peak raw count of 105 in December 2020 resulted in an abundance estimate of 840 for the Survey Area (**Table 20**).

In the Southwest England Site, the birds were seen in September, November and December 2020; January, March, May and October 2021; January to April 2022 and June 2022. The peak raw count of 37 in January 2021 resulted in an abundance estimate of 325 (**Table 20**).

In the 4 km Buffer Zone, they were recorded in September, November and December 2020, in January to May, July, October and November 2021, and January to June 2022. The peak raw count of 89 in December 2020 resulted in an abundance estimate of 683 (**Table 20**).

Razorbills were recorded throughout the Survey Area during most months, with two individuals in the Buffer Zone during July 2021 (**Figure 125**). Individuals were loosely distributed across the Site and 4 km Buffer in September 2020 (**Figure 117**). During November 2020, there were small numbers recorded, primarily in the centre, east, and southwest of the Survey Area (**Figure 118**). In December 2020, the razorbills were throughout the Survey Area, with higher densities in the centre, north, east and west (**Figure 119**). During January 2021, individuals were again throughout the Survey Area, with highest numbers in present in the centre, north-east and south (**Figure 120**). Low numbers were recorded in February 2021 in the west and south-west of the Survey Area (**Figure 121**). Low numbers were again recorded in March 2021, with a loose distribution through the Site and 4 km Buffer (**Figure 122**), and in April and May 2021, with concentrations in the north-west / north-east / east, and centre / east / south-west of the Survey Area, respectively (**Figure 123**; **Figure 124**).

In the October and November 2021 surveys, low numbers were recorded in the north of the Survey Area only, predominantly in the Buffer, except for one individual (**Figure 126**; **Figure 127**). In February, April, and June 2022, the birds were loosely distributed across the whole Survey Area, though in higher numbers in the north and centre in April and June (**Figure 129**; **Figure 131**; **Figure 133**). This northern / central skew was also observed in March 2022, with a dense group in the north of the Buffer (**Figure 130**). January 2022 and May 2022 also saw low numbers, with concentrations found in the southern Buffer Zone and one individual in the north in December, and only one individual recorded in the southern Buffer Zone in May (**Figure 128**; **Figure 132**).

Razorbills were recorded as flying north-northeast in January 2021 (32.722°, p=0.143; **Figure 134a**), southeast in March 2021 (125.490°, p=0.010; **Figure 134b**), and southeast in October 2021 (136.330°, p=0.512; **Figure 134c**).

Table 20 Raw counts and abundance and density estimates (individuals per km^2) of razorbills in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Sep-20	27	212	110	353	0.19	0.63
Nov-20	3	24	3	55	0.58	0.07
Dec-20	105	840	608	1,079	0.11	2.5
Jan-21	90	713	475	966	0.11	2.12
Feb-21	5	38	8	77	0.45	0.11

Mar-21	18	138	69	214	0.24	0.41
Apr-21	8	61	8	123	0.35	0.18
May-21	3	22	3	44	0.58	0.07
Jul-21	2	15	2	38	0.71	0.04
Oct-21	8	62	8	147	0.35	0.18
Nov-21	9	69	9	207	0.33	0.21
Jan-22	7	54	8	116	0.38	0.16
Feb-22	14	108	31	216	0.27	0.32
Mar-22	29	220	114	342	0.19	0.65
Apr-22	17	129	53	228	0.24	0.38
May-22	3	23	3	61	0.58	0.07
Jun-22	16	120	60	187	0.25	0.36
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Sep-20	3	26	3	61	0.58	0.26
Nov-20	1	9	1	26	1.00	0.09
Dec-20	16	142	71	231	0.25	1.43
Jan-21	37	325	176	527	0.16	3.28
Mar-21	4	34	4	77	0.50	0.34
May-21	1	8	1	24	1.00	0.08
Oct-21	2	18	2	53	0.71	0.18
Jan-22	1	9	1	35	1.00	0.09
Feb-22	2	17	2	43	0.71	0.17
Mar-22	2	17	2	43	0.71	0.17
Apr-22	5	42	5	102	0.45	0.42
Jun-22	6	50	8	109	0.41	0.51
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Sep-20	24	181	83	317	0.20	0.76
Nov-20	2	15	2	38	0.71	0.06
Dec-20	89	683	483	898	0.11	2.88
Jan-21	53	403	243	593	0.14	1.70
Feb-21	5	37	7	73	0.45	0.16
Mar-21	14	103	51	161	0.27	0.43
Apr-21	8	59	8	118	0.35	0.25
May-21	2	14	2	35	0.71	0.06
Jul-21	2	15	2	37	0.71	0.06
Oct-21	6	44	6	125	0.41	0.19
Nov-21	9	66	9	183	0.33	0.28

Jan-22	6	44	7	96	0.41	0.19
Feb-22	12	88	15	184	0.29	0.37
Mar-22	27	195	94	311	0.19	0.82
Apr-22	12	88	29	161	0.29	0.37
May-22	3	22	3	65	0.58	0.09
Jun-22	10	72	29	114	0.32	0.30

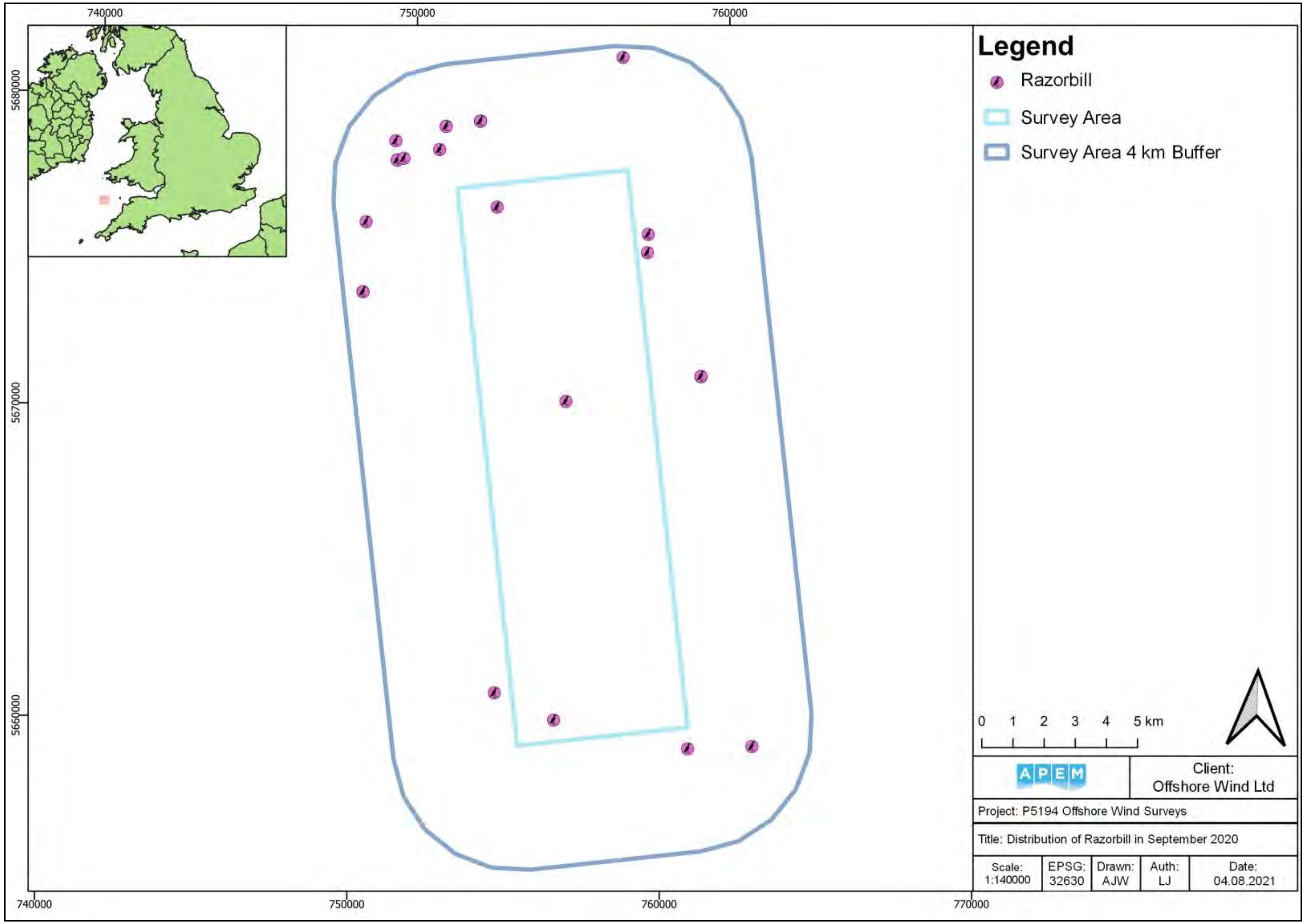


Figure 117 Distribution of razorbills in Survey Area during September 2020

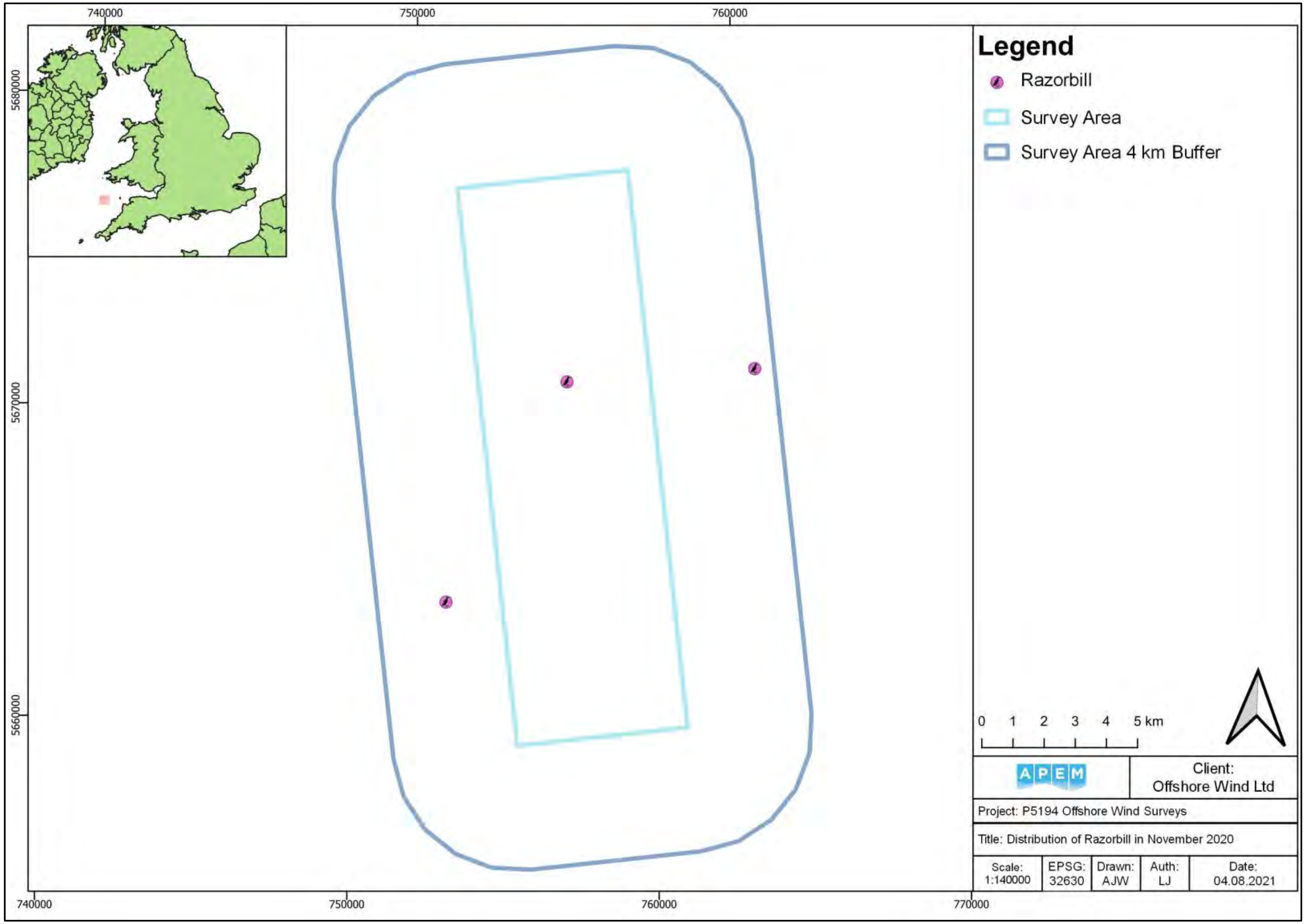


Figure 118 Distribution of razorbills in Survey Area during November 2020

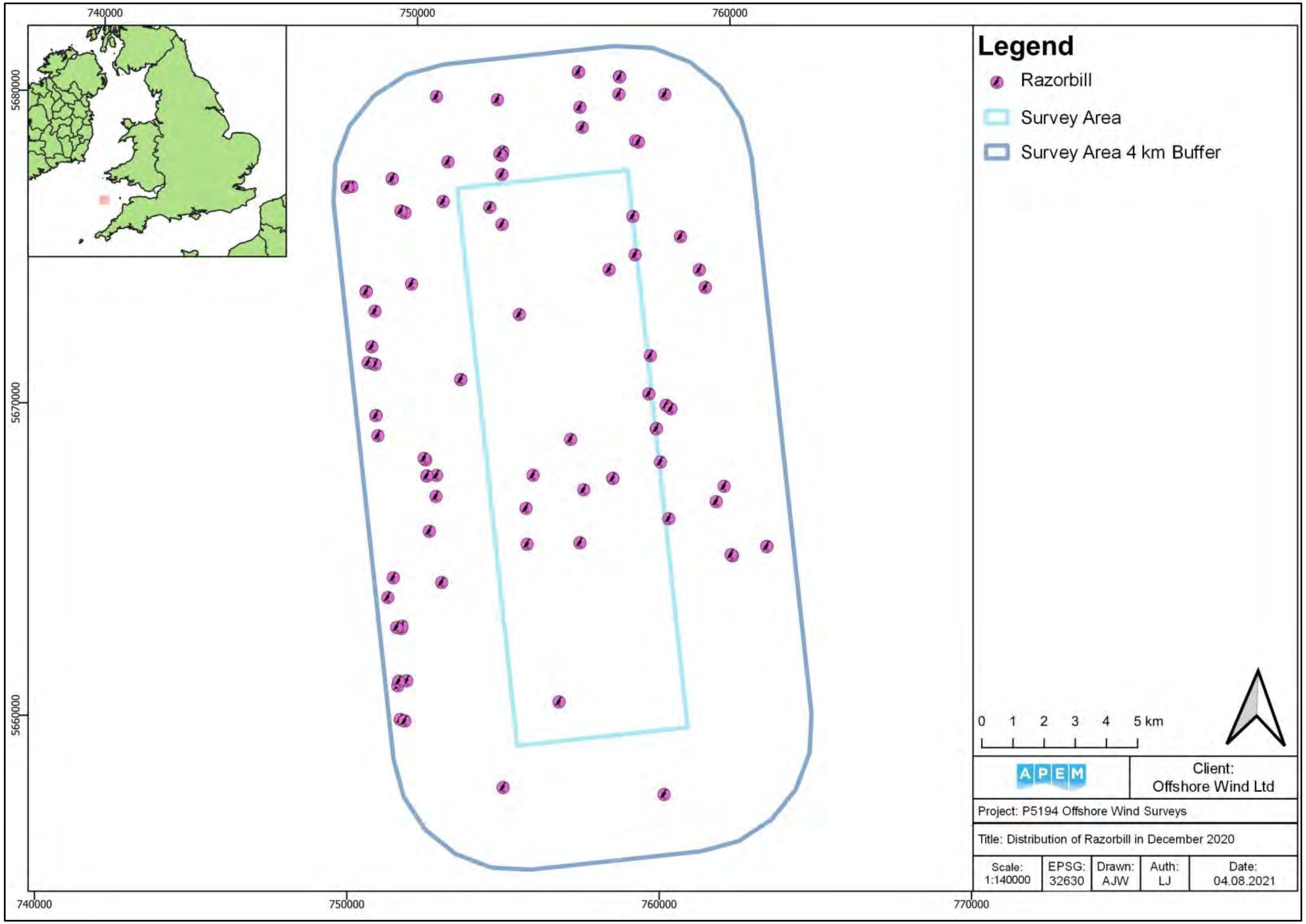


Figure 119 Distribution of razorbills in Survey Area during December 2020

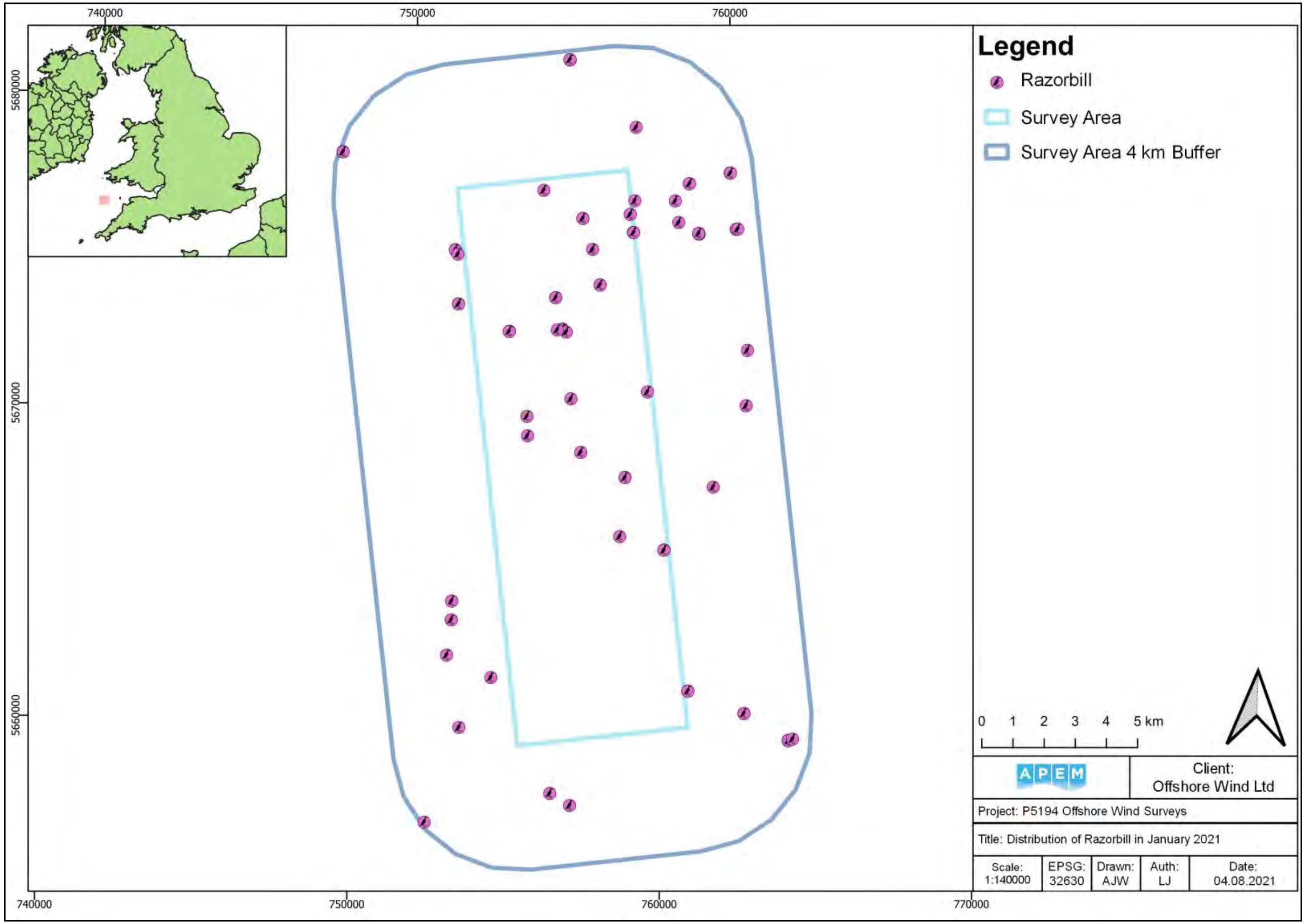


Figure 120 Distribution of razorbills in Survey Area during January 2021

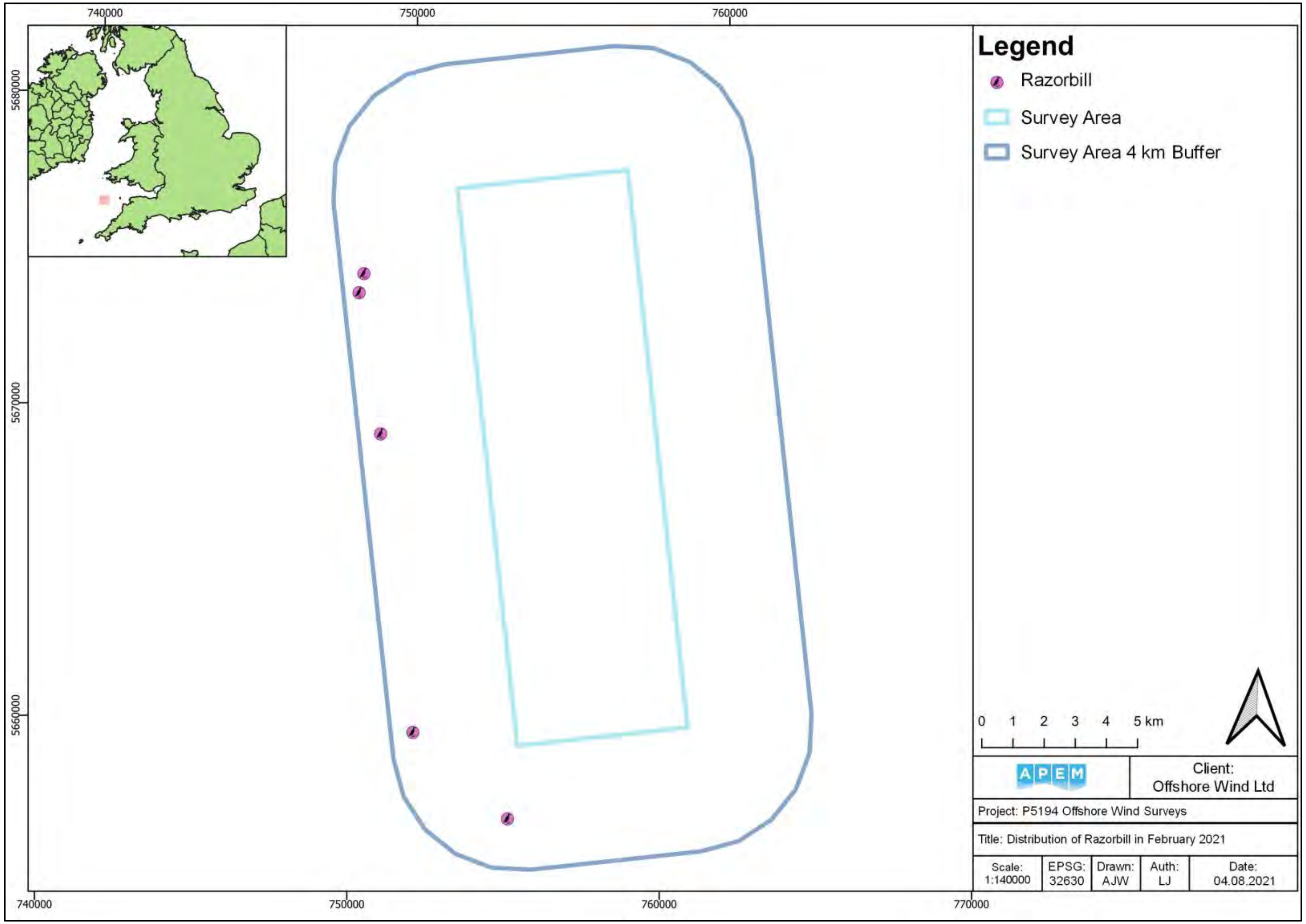


Figure 121 Distribution of razorbills in Survey Area during February 2021

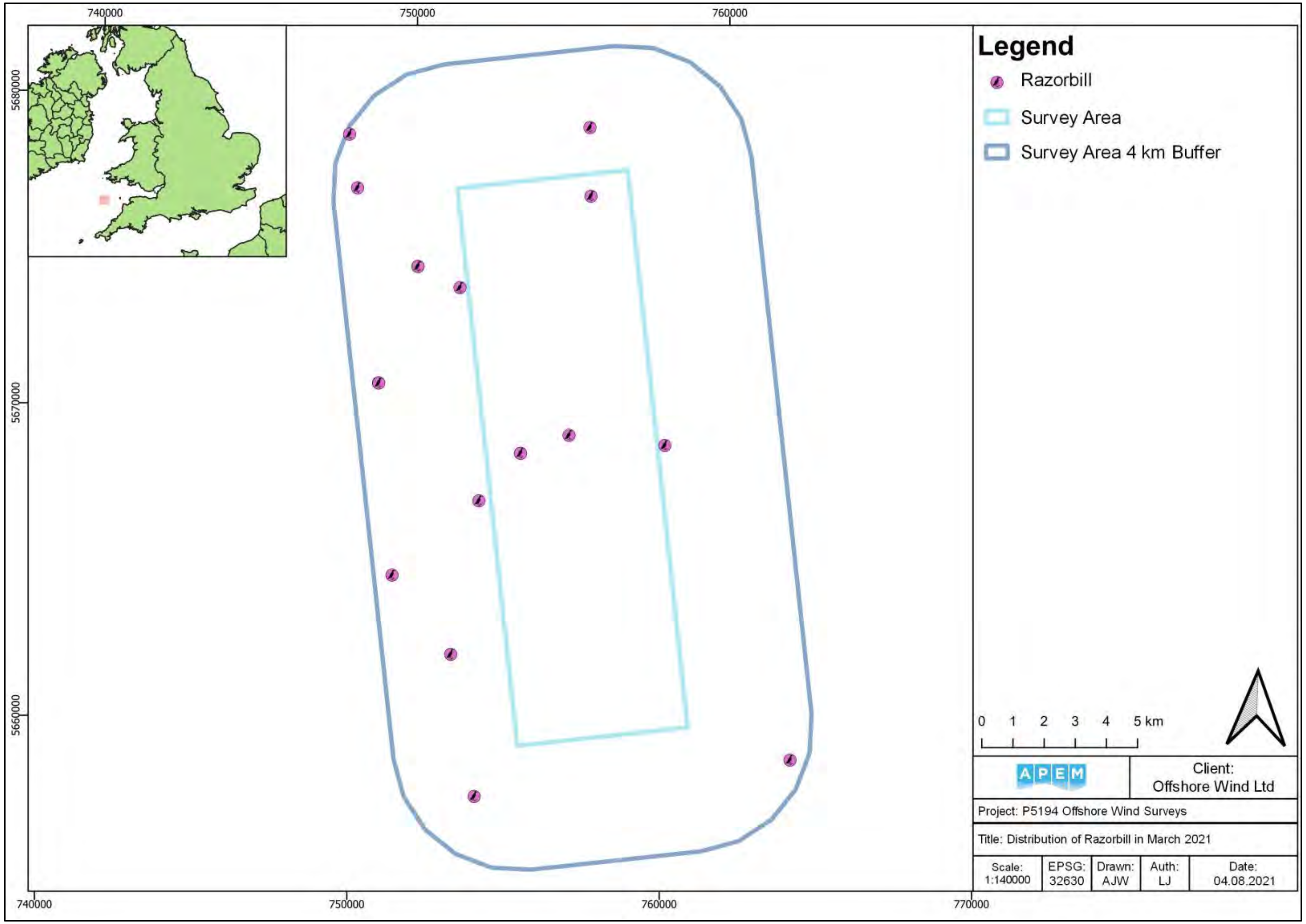


Figure 122 Distribution of razorbills in Survey Area during March 2021

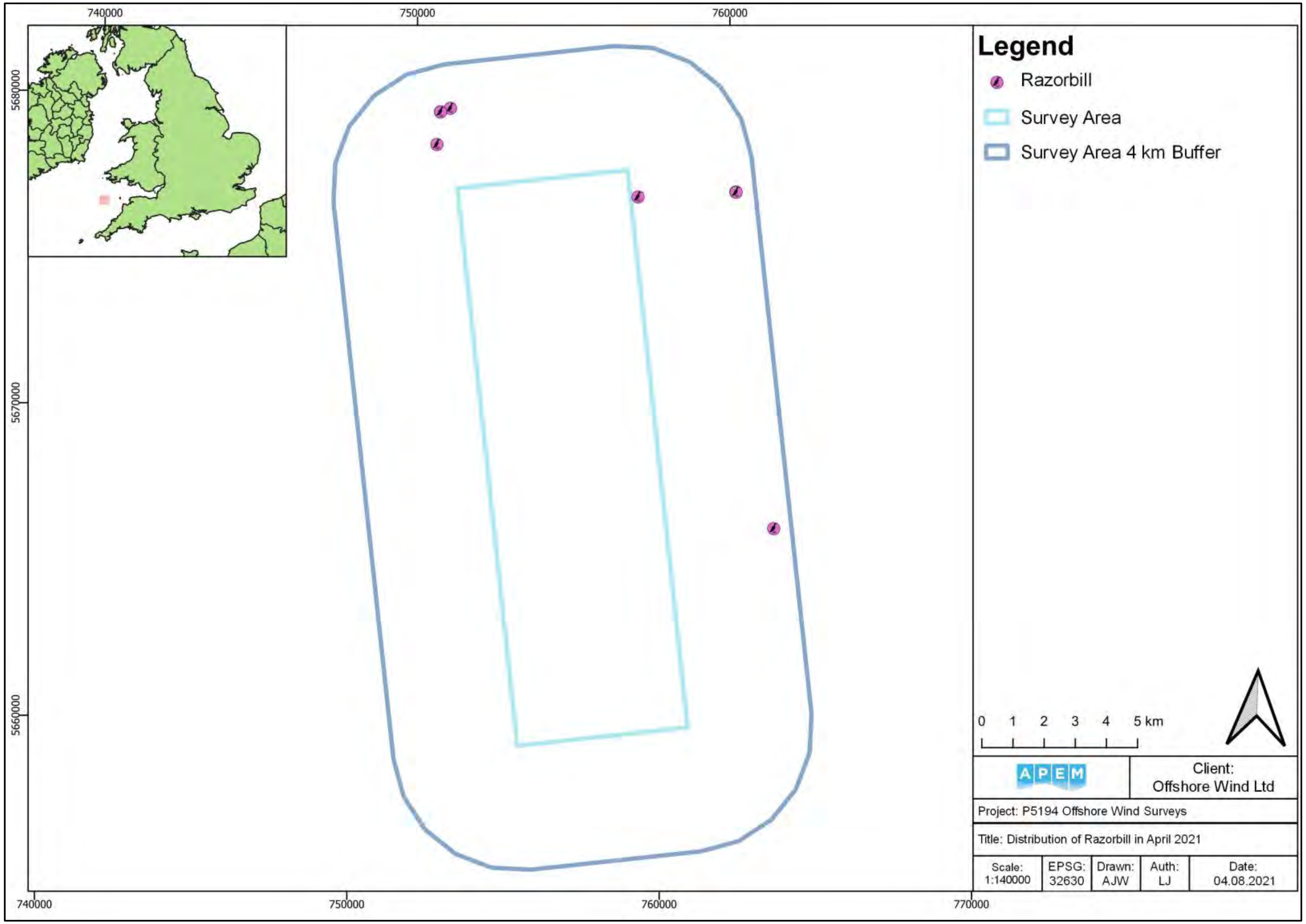


Figure 123 Distribution of razorbills in Survey Area during April 2021

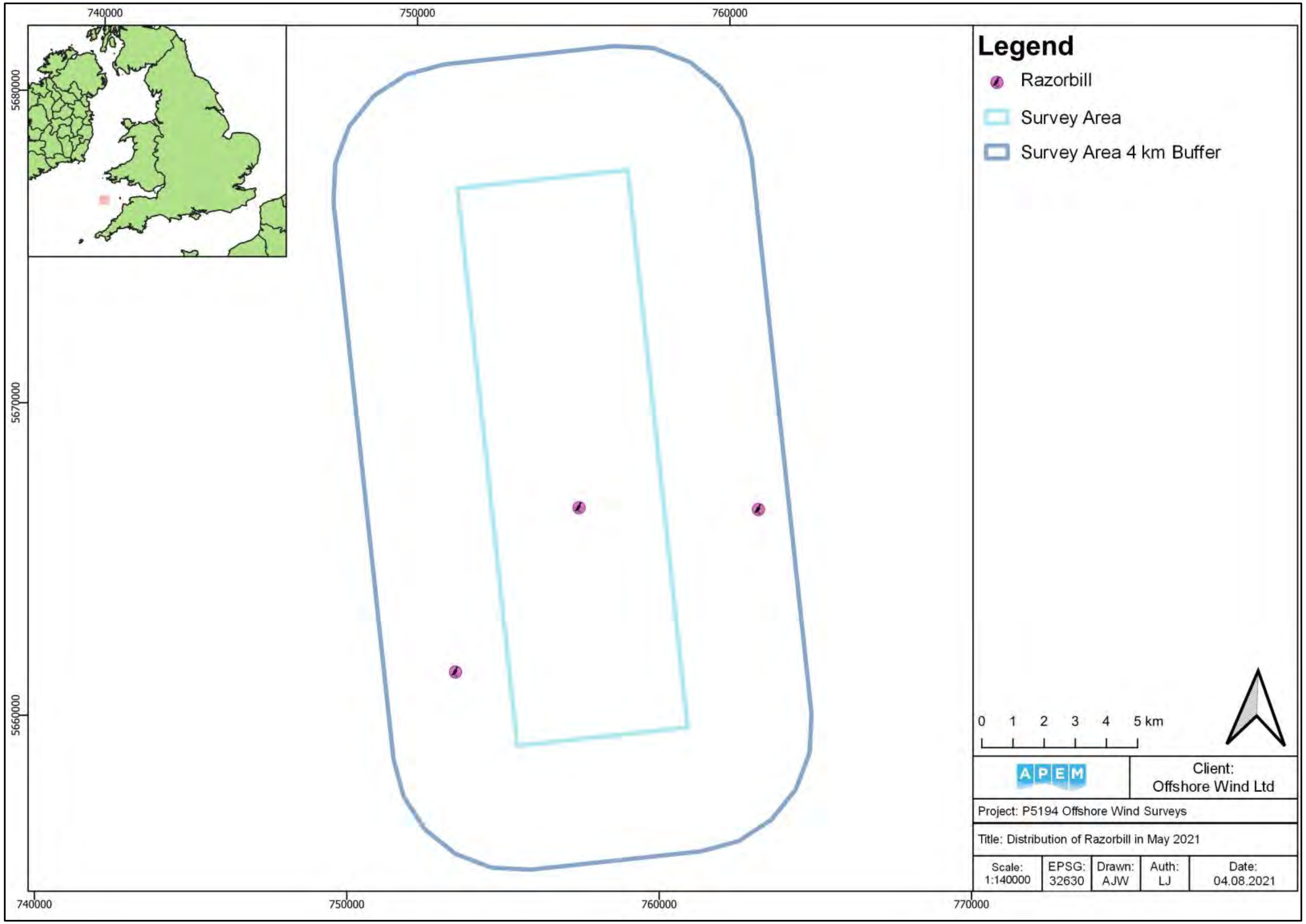


Figure 124 Distribution of razorbills in Survey Area during May 2021

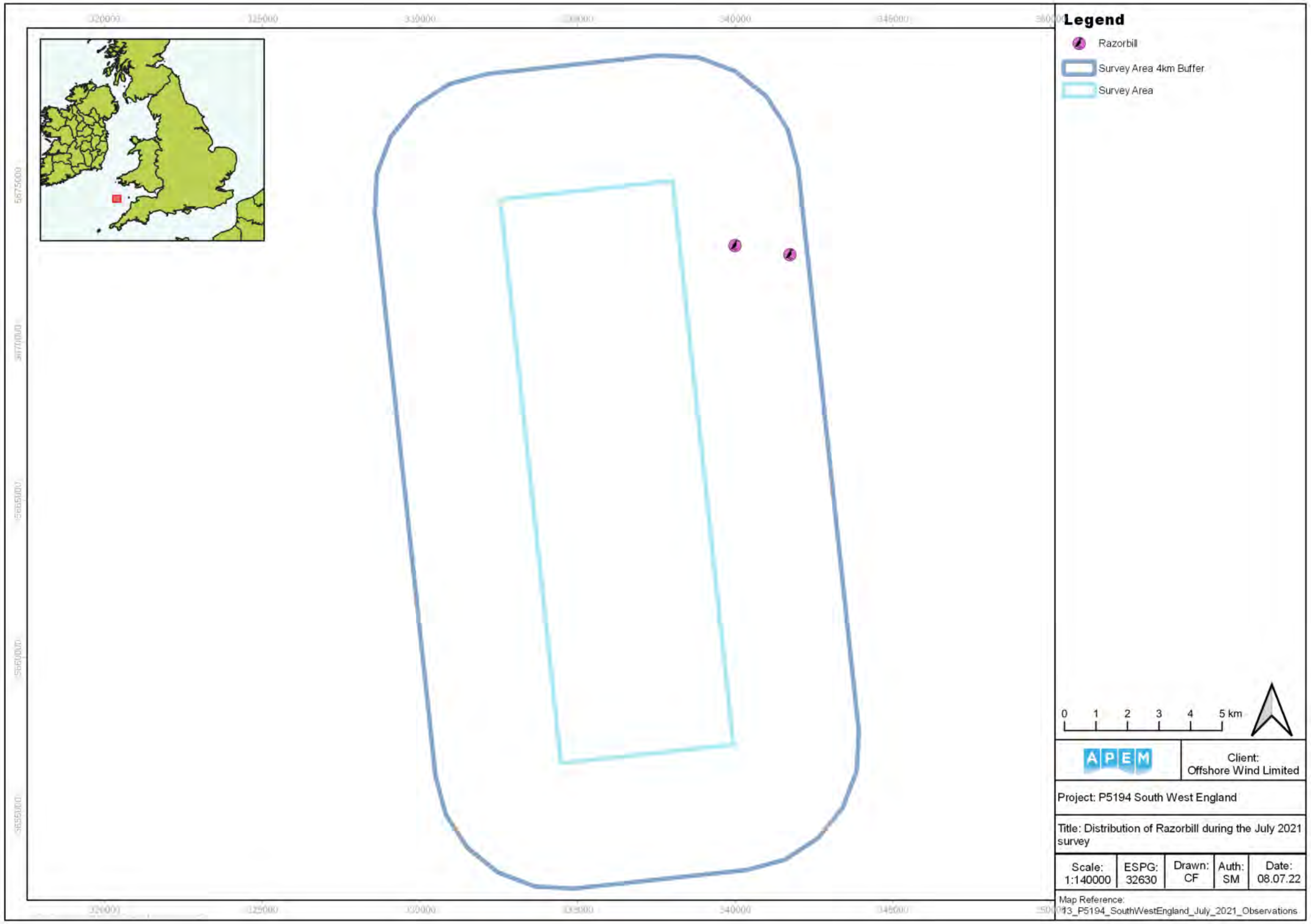


Figure 125 Distribution of razorbills in Survey Area during July 2021

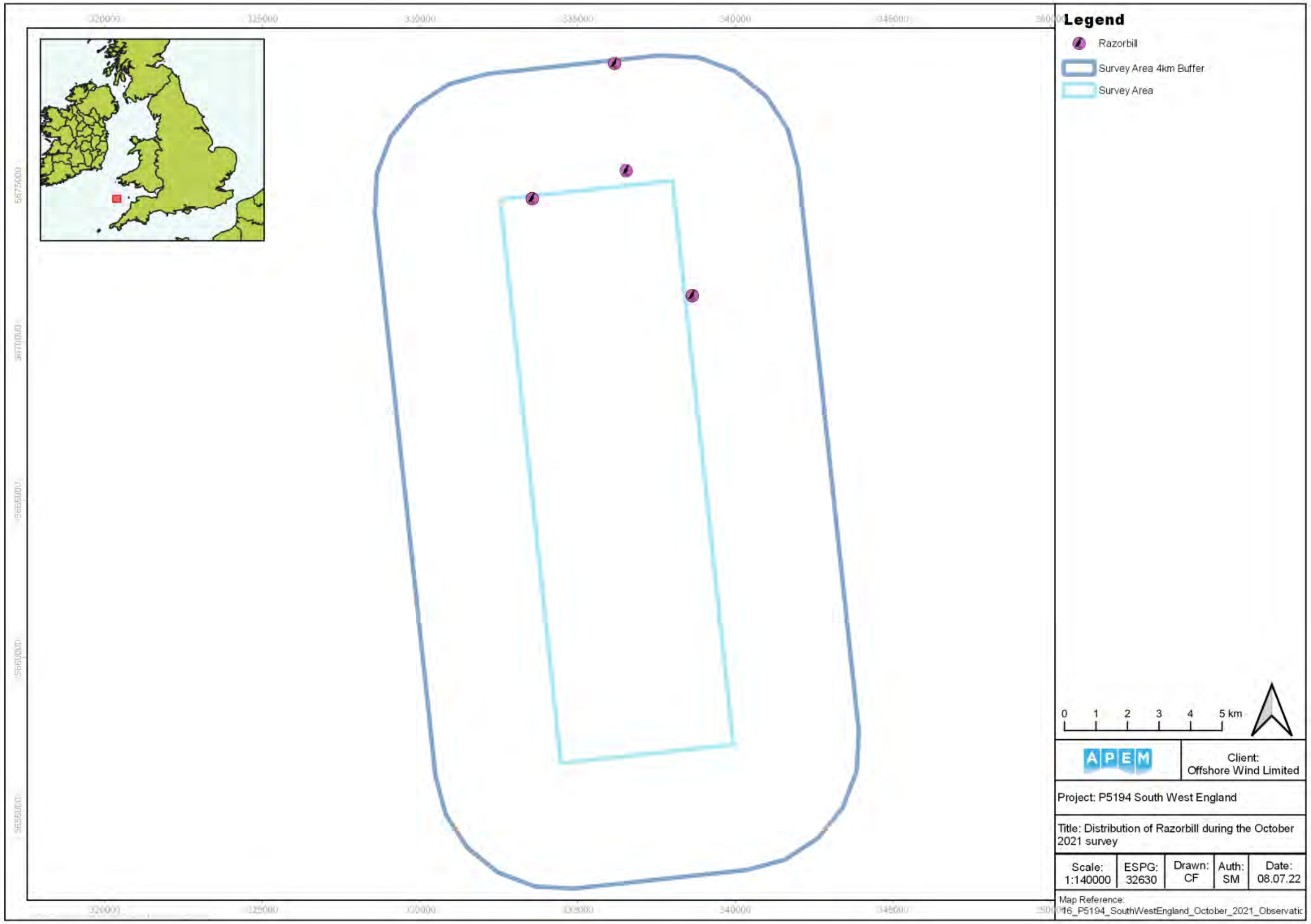


Figure 126 Distribution of razorbills in Survey Area during October 2021

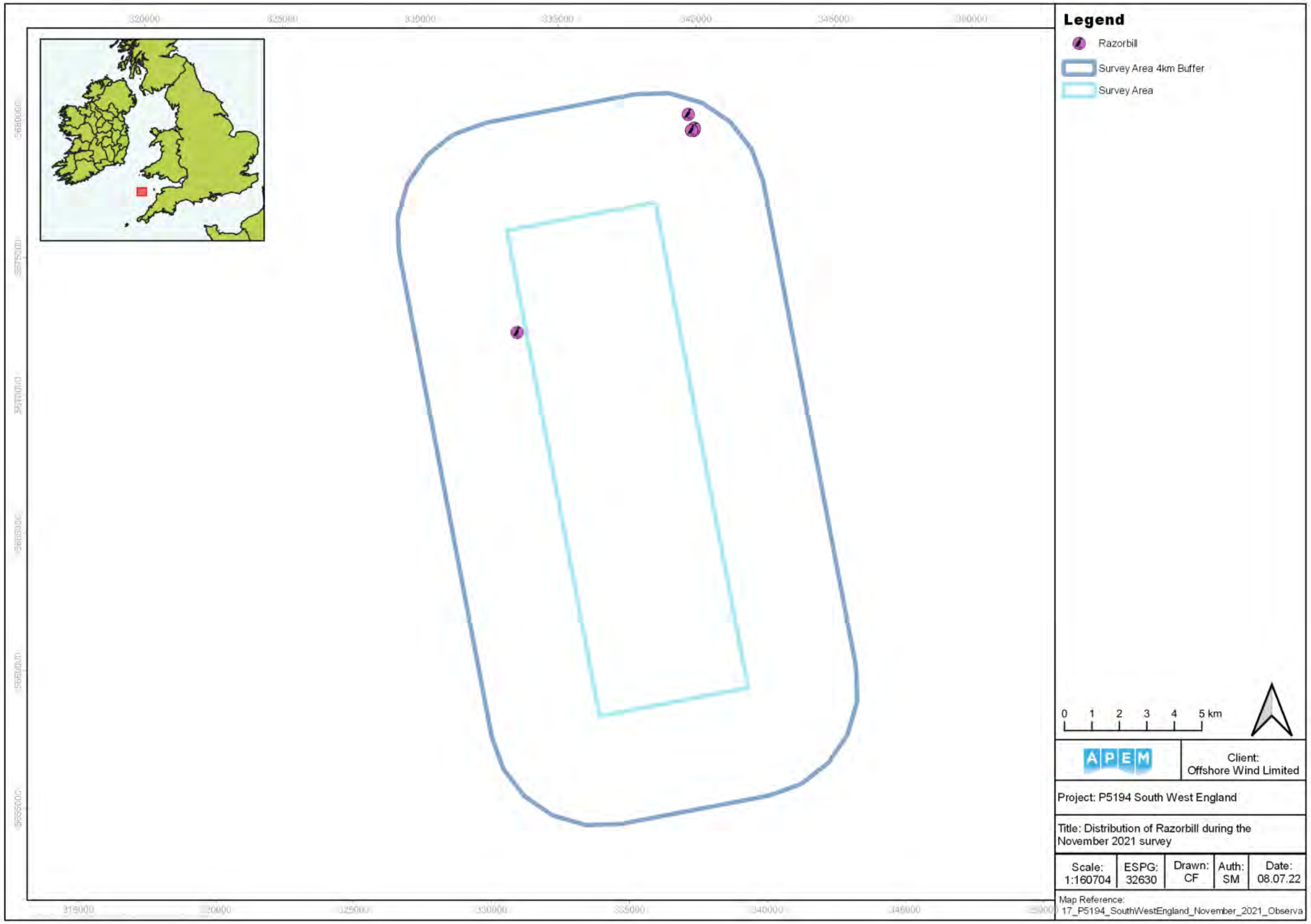


Figure 127 Distribution of razorbills in Survey Area during November 2021

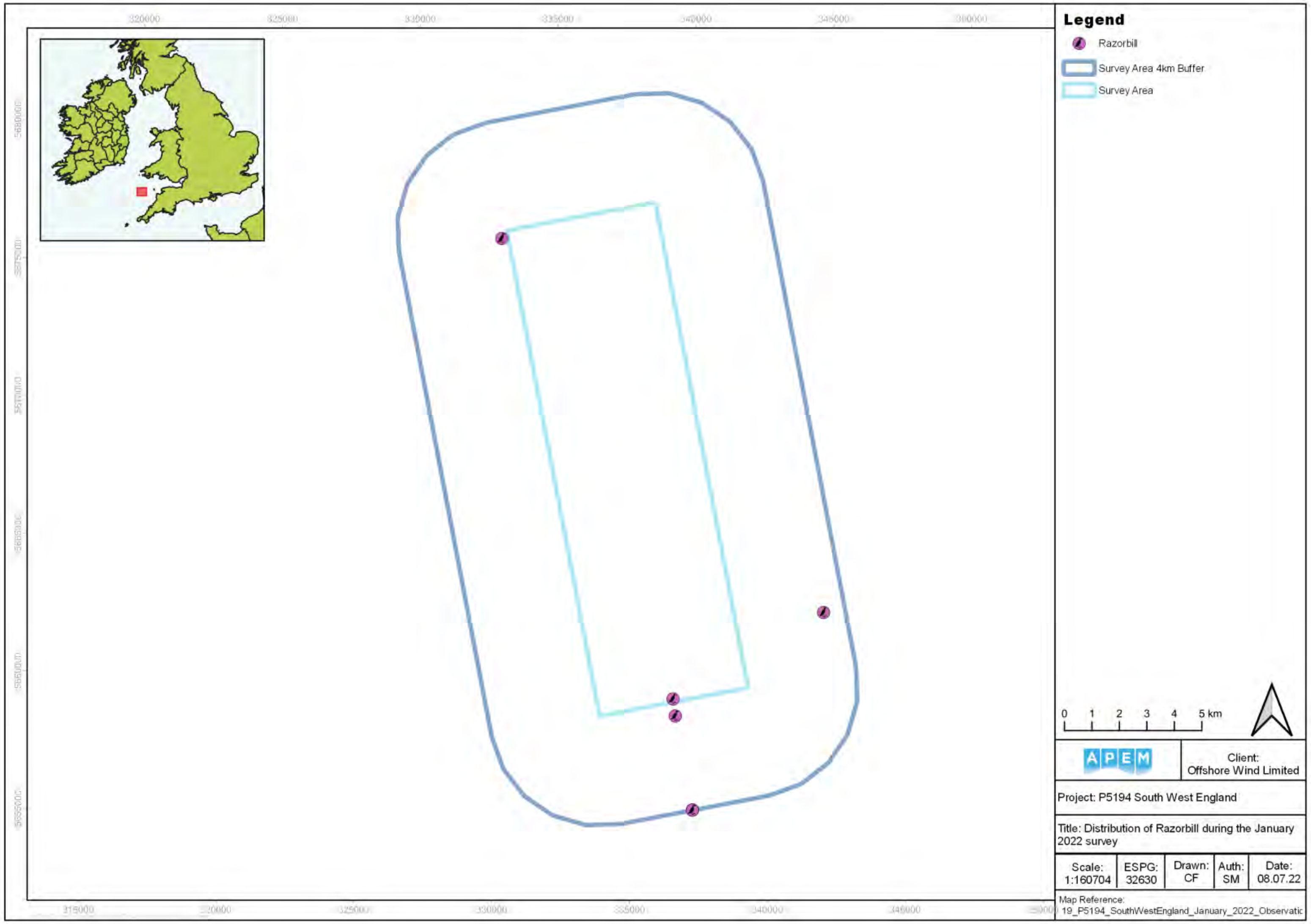


Figure 128 Distribution of razorbills in Survey Area during January 2022

Figure 129 Distribution of razorbills in Survey Area during February 2022

Figure 130 Distribution of razorbills in Survey Area during March 2022

Figure 131 Distribution of razorbills in Survey Area during April 2022

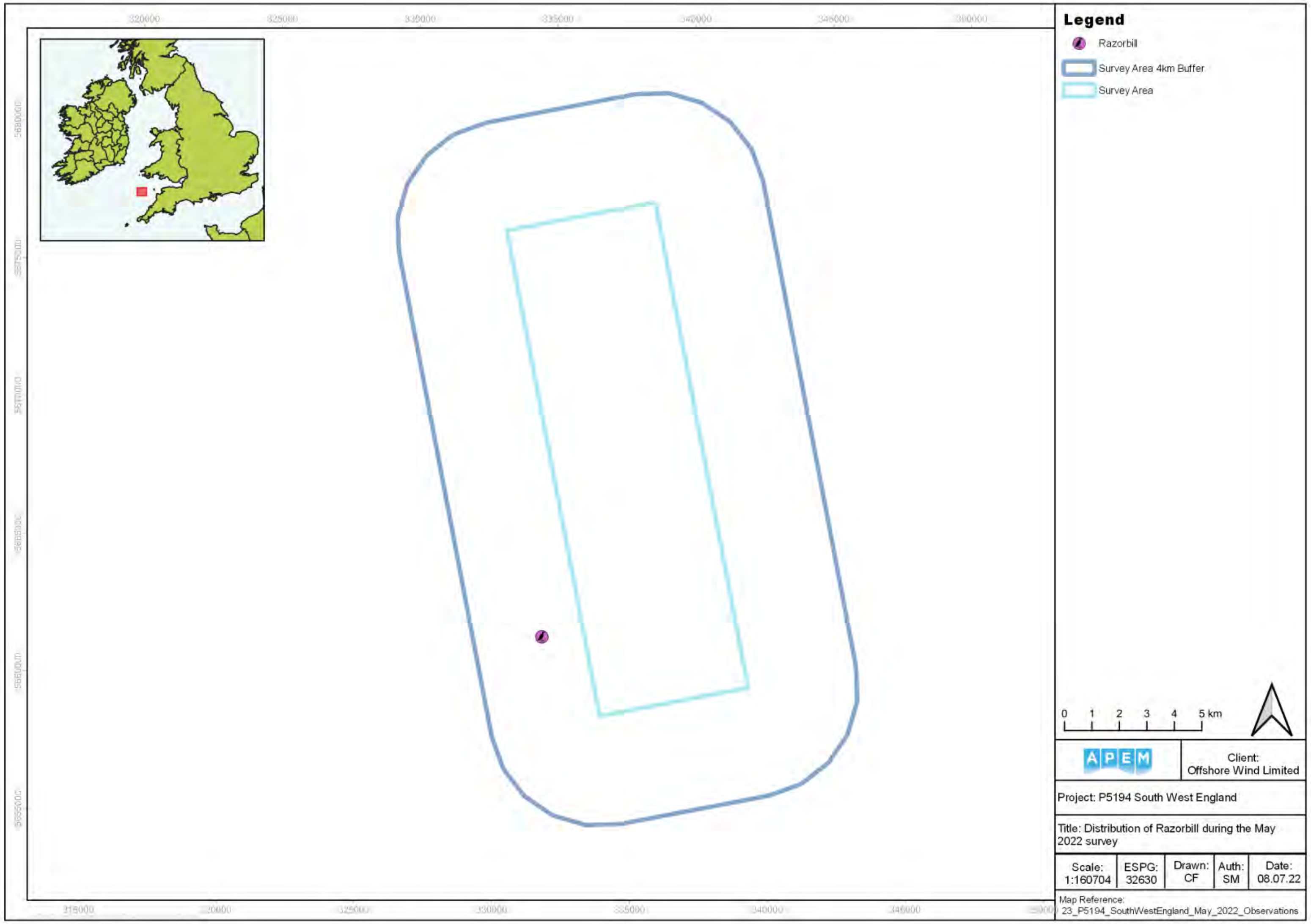
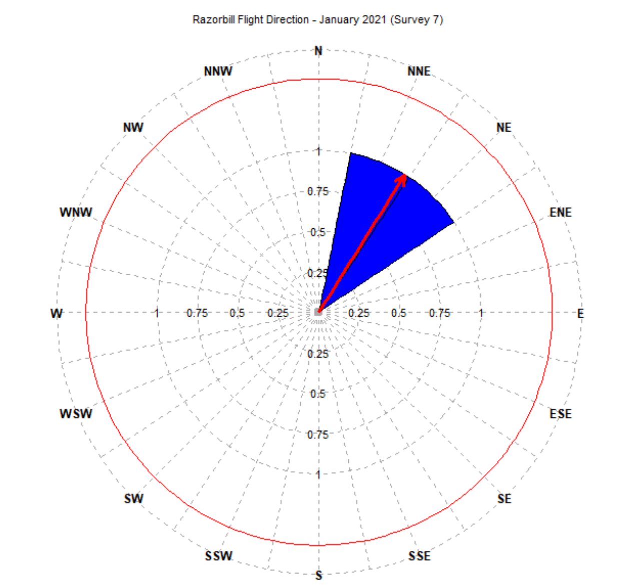


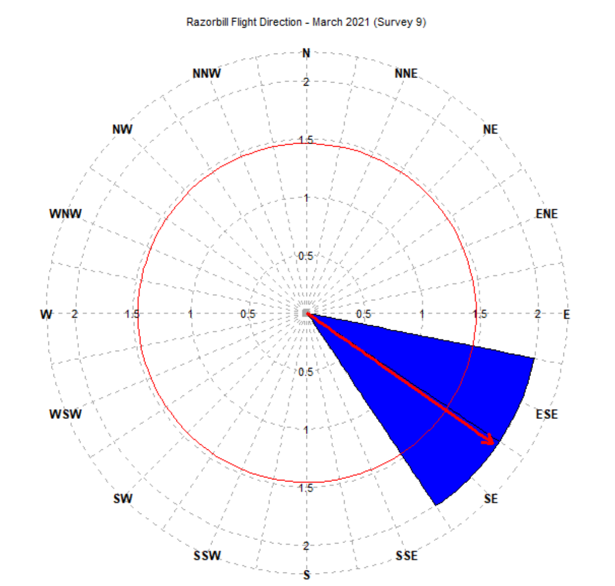
Figure 132 Distribution of razorbills in Survey Area during May 2022

Figure 133 Distribution of razorbills in Survey Area during June 2022



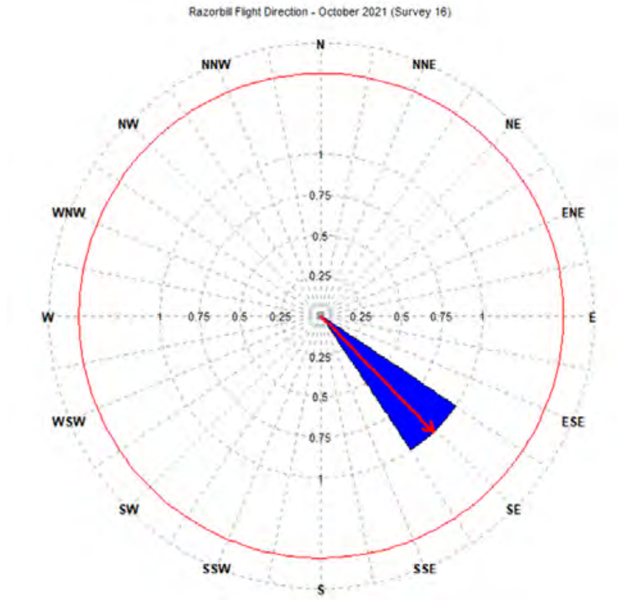
Number of Observations	2
Mean Vector (μ)	32.722
Length of Mean Vector (r)	0.993
Rayleigh Test (Z)	1.971
Rayleigh Test (p)	0.143

Figure 134a January 2021



Number of Observations	4
Mean Vector (μ)	125.490
Length of Mean Vector (r)	0.980
Rayleigh Test (Z)	3.839
Rayleigh Test (p)	0.010

Figure 134b March 2021



Number of Observations	1
Mean Vector (μ)	136.330
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 134c October 2021

Figure 134 Summary of flight direction of razorbills during survey period

4.16 Guillemot / Razorbill – *Uria aalge / Alca torda*

Birds which could not be identified to either guillemot or razorbill were placed in an guillemot / razorbill category. They recorded in every survey with the exception of August and September 2021. The peak raw count of 585 in March 2022 resulted in an abundance estimate of 4,443 for the Survey Area (**Table 21**).

In the Southwest England Site, the birds were present August to December 2020; January to March, May, June, and October to December 2021, as well as January to April 2022. The peak raw count of 95 in March 2022 resulted in an abundance estimate of 821 (**Table 21**).

In the 4 km Buffer Zone, guillemots / razorbills were present all months except August and September 2021, with a peak raw count of 199 in December 2020 resulting in an abundance estimate of 1527 for the area (**Table 21**).

Distribution and abundance varied considerably throughout the two years of surveys. During July 2021, a single individual was identified in the north of the 4 km Buffer Zone (**Figure 135**). In August 2020, the birds were primarily scattered throughout the north and south-west of the Survey Area (**Figure 136**). In September 2020 they were loosely distributed across the Survey Area, with fewer individuals in the south and south-west (**Figure 137**). Between October 2020 and March 2021, and during December 2021, and February and March 2022, they were across the Site and 4 km Buffer (**Figure 138**; **Figure 139**; **Figure 141**; **Figure 143**; **Figure 150**; **Figure 152**). Higher numbers were recorded in December 2021, February 2022 and March 2022 (**Figure 140**; **Figure 142**; **Figure 153**).

In April 2021, numbers dropped considerably to seven individuals in the north, north-east, east, and west, and Buffer (**Figure 144**). In May 2021, 16 individuals were scattered loosely in the north, centre and south of the Survey Area – primarily within the Site – with a single individual in the far west of the Buffer (**Figure 145**). Three birds were present during June 2021, one in the east of the Site, and two in the north-east of the Buffer (**Figure 146**). And in July 2021, there were two individuals in the Buffer's north and east (**Figure 147**).

High numbers were recorded in October 2021, November 2021, and January 2022, with the distribution skewed toward the north in October and November, and south in January (**Figure 148**; **Figure 149**; **Figure 151**). This northern skew was also witnessed in April 2022, but with lower numbers (**Figure 154**). There were fewer individuals recorded in May and June 2022, identified only in the Buffer Zone except for the northeast (**Figure 155**; **Figure 156**).

Across the surveys, guillemots / razorbills flew in various directions: north-northeast in March and October 2021 (16.797°, p=0.512; **Figure 157f;** 12.928°, p=0.512; **Figure 157h**); northeast in December 2020 (47.584°, p=0.003; **Figure 157c**); south-southeast in April 2021 and April 2022 (162.144°, p=0.512; **Figure 157g;** 161.619°, p=0.512; **Figure 157l**); south in January 2021(191.191°, p<0.001; **Figure 157d**)**,** west-southwest in November 2020 (230.295°, p=0.848; **Figure 157b**); north-northwest in October 2020, February 2021, and December 2021 (344.941°, p=0.815; **Figure 157a**; 350.005°, p=0.540; **Figure 157e** 331.510°, 331.510°, p<0.001; **Figure 157i**); west-northwest in February 2022 (296.155°, p=0.512; **Figure 157j**); and northwest in March 2022 (320.818°, p=0.462; **Figure 157k**).

Table 21 Raw counts and abundance and density estimates (individuals per km²) of guillemots / razorbills in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	1	8	1	23	1.00	0.02
Aug-20	19	144	76	220	0.23	0.43
Sep-20	112	880	613	1,209	0.09	2.62
Oct-20	163	1,248	927	1,562	0.08	3.71
Nov-20	43	339	221	481	0.15	1.01
Dec-20	265	2,119	1,807	2,463	0.06	6.30
Jan-21	173	1,370	998	1,805	0.08	4.07
Feb-21	201	1,543	1,313	1,804	0.07	4.59
Mar-21	116	888	689	1,110	0.09	2.64
Apr-21	7	54	15	100	0.38	0.16
May-21	16	116	36	218	0.25	0.34
Jun-21	3	24	3	64	0.58	0.07
Jul-21	2	15	2	38	0.71	0.04
Oct-21	72	558	411	728	0.12	1.66
Nov-21	322	2,470	1519	3827	0.06	7.34
Dec-21	173	1,330	1053	1622	0.08	3.95
Jan-22	139	1,075	804	1,376	0.08	3.20
Feb-22	192	1,482	1,204	1,790	0.07	4.40
Mar-22	585	4,443	3,737	5,225	0.04	13.21
Apr-22	29	221	114	335	0.19	0.66
May-22	3	23	3	61	0.58	0.07
Jun-22	10	75	22	142	0.32	0.22
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Aug-20	4	33	8	67	0.50	0.33
Sep-20	34	297	140	506	0.17	3.00
Oct-20	38	323	144	577	0.16	3.26
Nov-20	7	62	18	132	0.38	0.63
Dec-20	66	587	418	783	0.12	5.93
Jan-21	44	386	184	623	0.15	3.90
Feb-21	38	330	226	426	0.16	3.33
Mar-21	20	172	94	257	0.22	1.74
May-21	6	49	8	97	0.41	0.49
Jun-21	1	9	1	26	1.00	0.09
Oct-21	17	150	62	255	0.24	1.52

Nov-21	40	345	207	517	0.16	3.48
Dec-21	55	477	312	685	0.13	4.82
Jan-22	14	122	52	209	0.27	1.23
Feb-22	49	426	287	591	0.14	4.30
Mar-22	95	821	544	1,132	0.10	8.29
Apr-22	3	25	3	76	0.58	0.25

c) 4 km Buffer Zone

Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jul-20	1	7	1	22	1.00	0.03
Aug-20	15	110	51	183	0.26	0.46
Sep-20	78	588	362	875	0.11	2.48
Oct-20	125	920	677	1,170	0.09	3.87
Nov-20	36	272	166	392	0.17	1.15
Dec-20	199	1,527	1,266	1,818	0.07	6.43
Jan-21	129	981	685	1,354	0.09	4.13
Feb-21	163	1,193	988	1,434	0.08	5.02
Mar-21	94	689	520	901	0.10	2.90
Apr-21	7	52	22	88	0.38	0.22
May-21	10	70	10	161	0.32	0.29
Jun-21	2	15	2	46	0.71	0.06
Jul-21	2	15	2	37	0.71	0.06
Oct-21	55	406	280	546	0.13	1.71
Nov-21	282	2,068	1,107	3,344	0.06	8.71
Dec-21	118	866	660	1,093	0.09	3.65
Jan-22	125	923	664	1,203	0.09	3.89
Feb-22	143	1,055	811	1,313	0.08	4.44
Mar-22	490	3,543	2,928	4,186	0.05	14.92
Apr-22	26	190	102	292	0.20	0.80
May-22	3	22	3	58	0.58	0.09
Jun-22	10	72	21	136	0.32	0.30

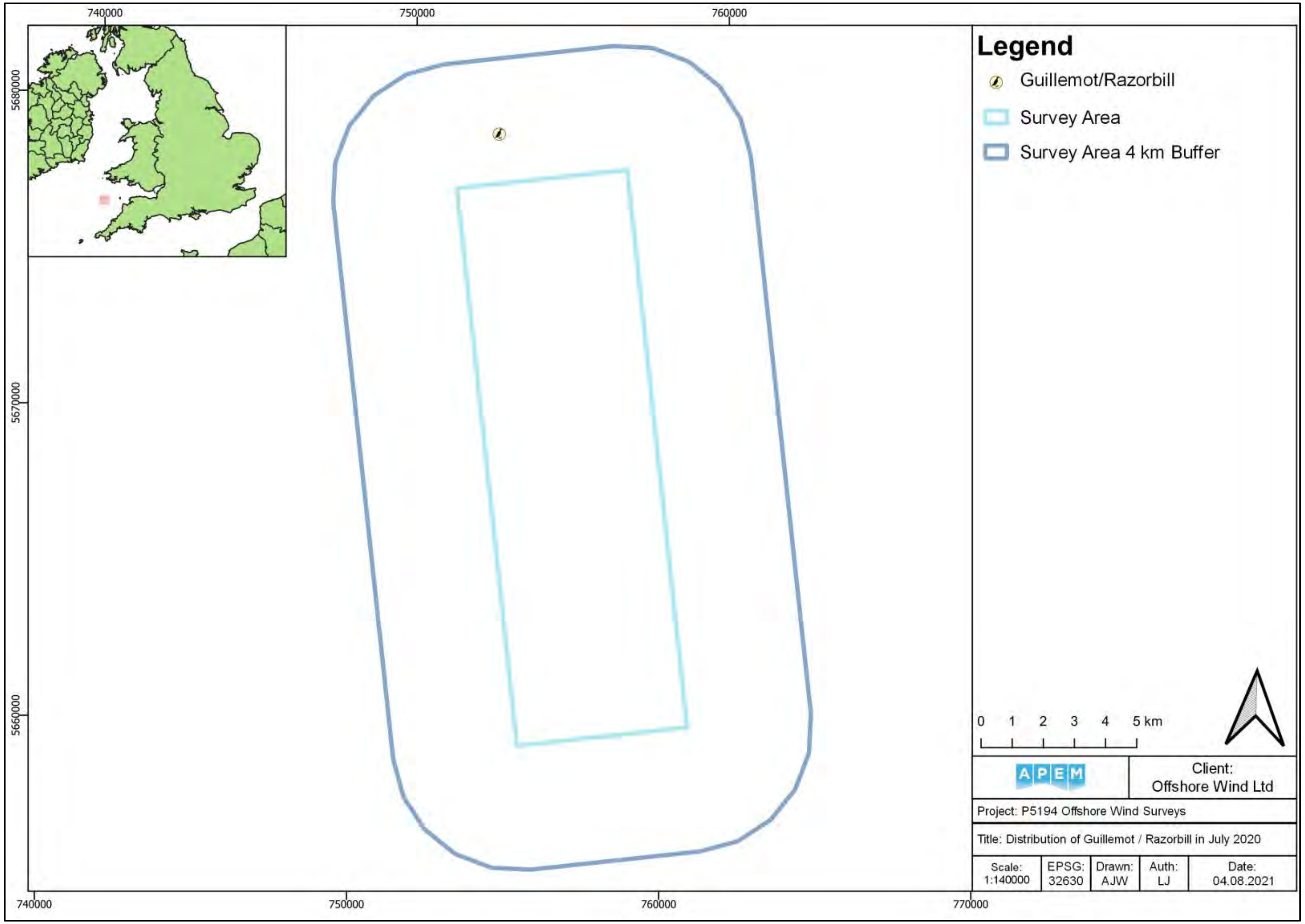


Figure 135 Distribution of guillemots / razorbills in Survey Area during July 2020

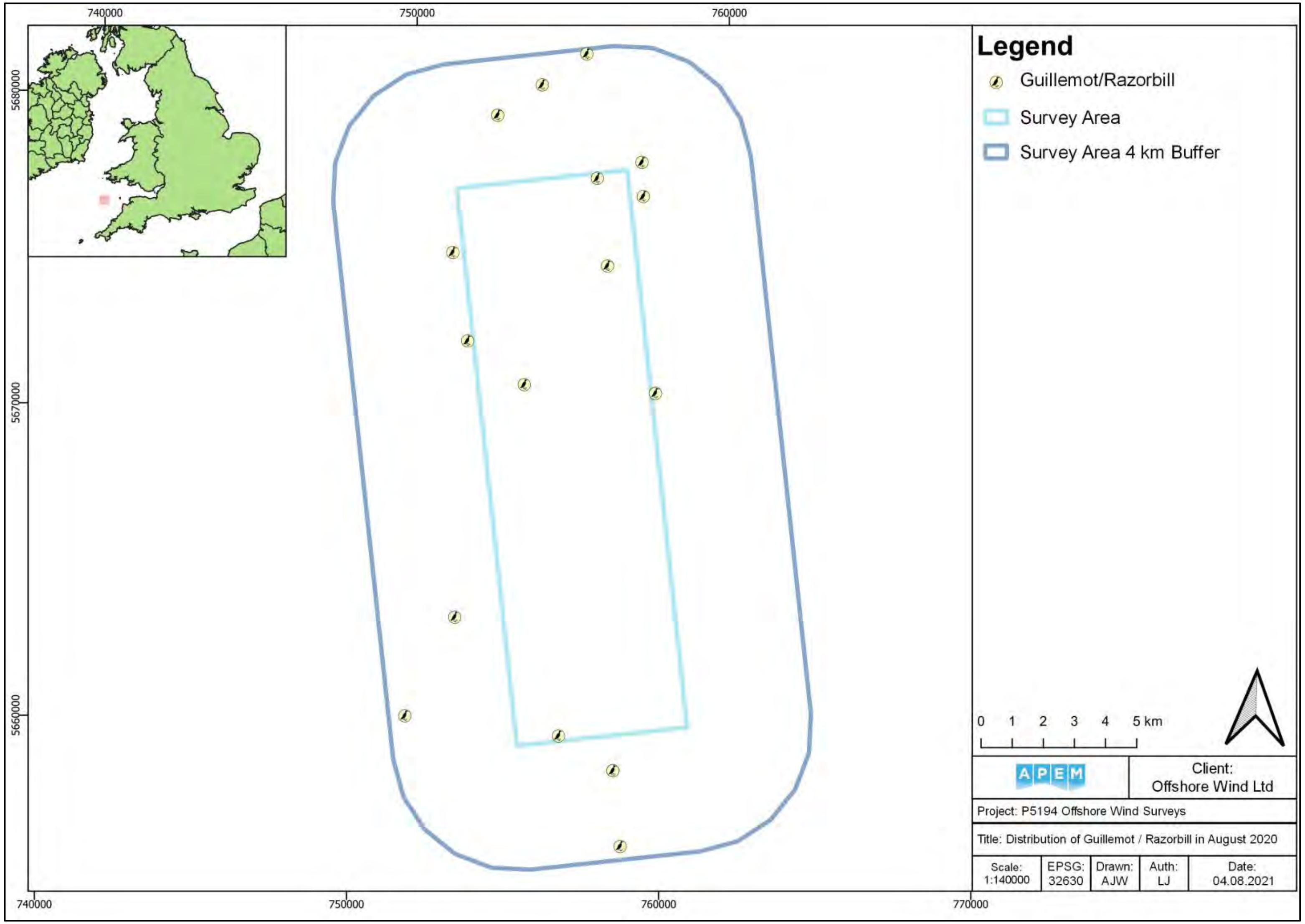


Figure 136 Distribution of guillemots / razorbills in Survey Area during August 2020

Figure 137 Distribution of guillemots / razorbills in Survey Area during September 2020

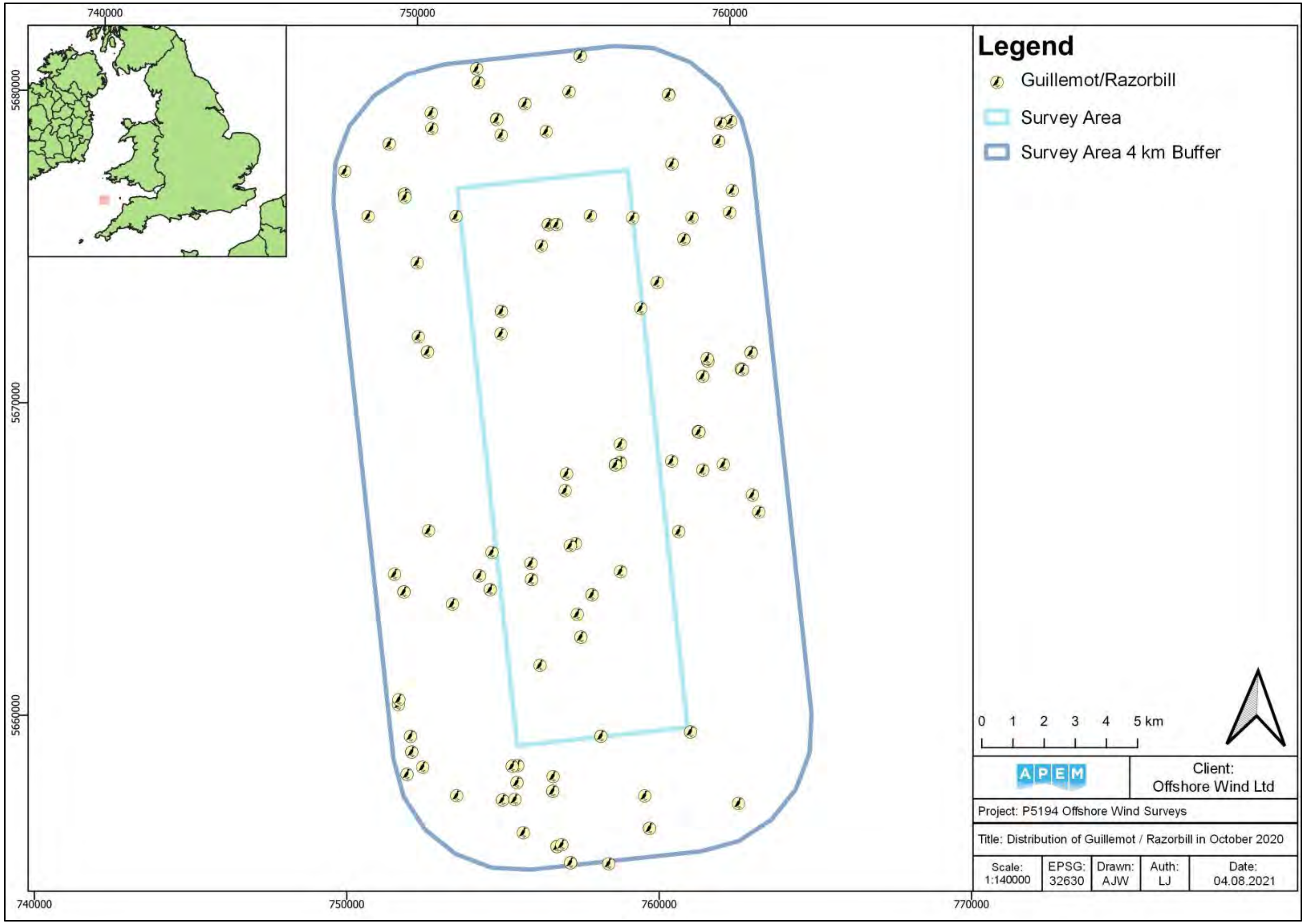


Figure 138 Distribution of guillemots / razorbills in Survey Area during October 2020

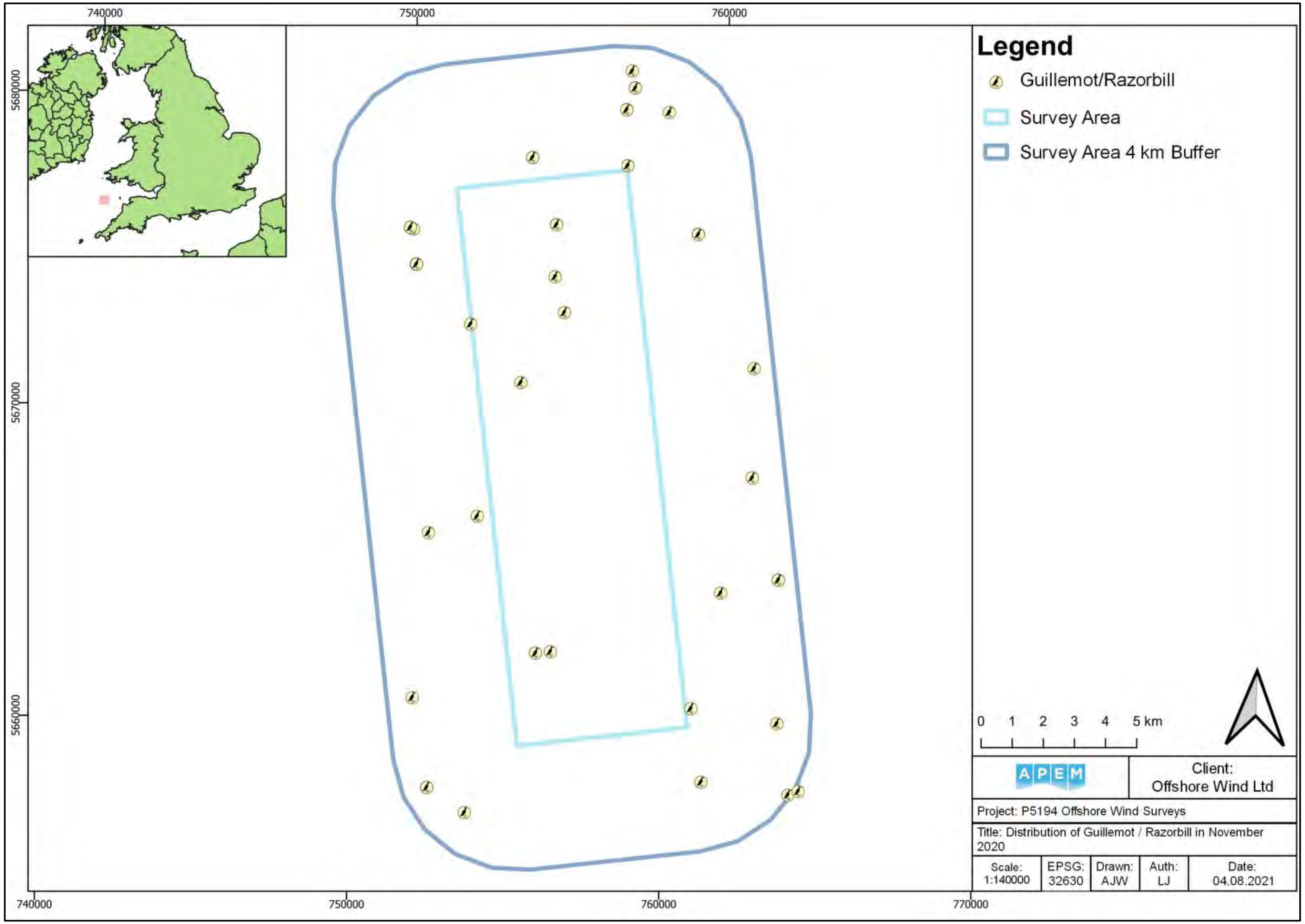


Figure 139 Distribution of guillemots / razorbills in Survey Area during November 2020

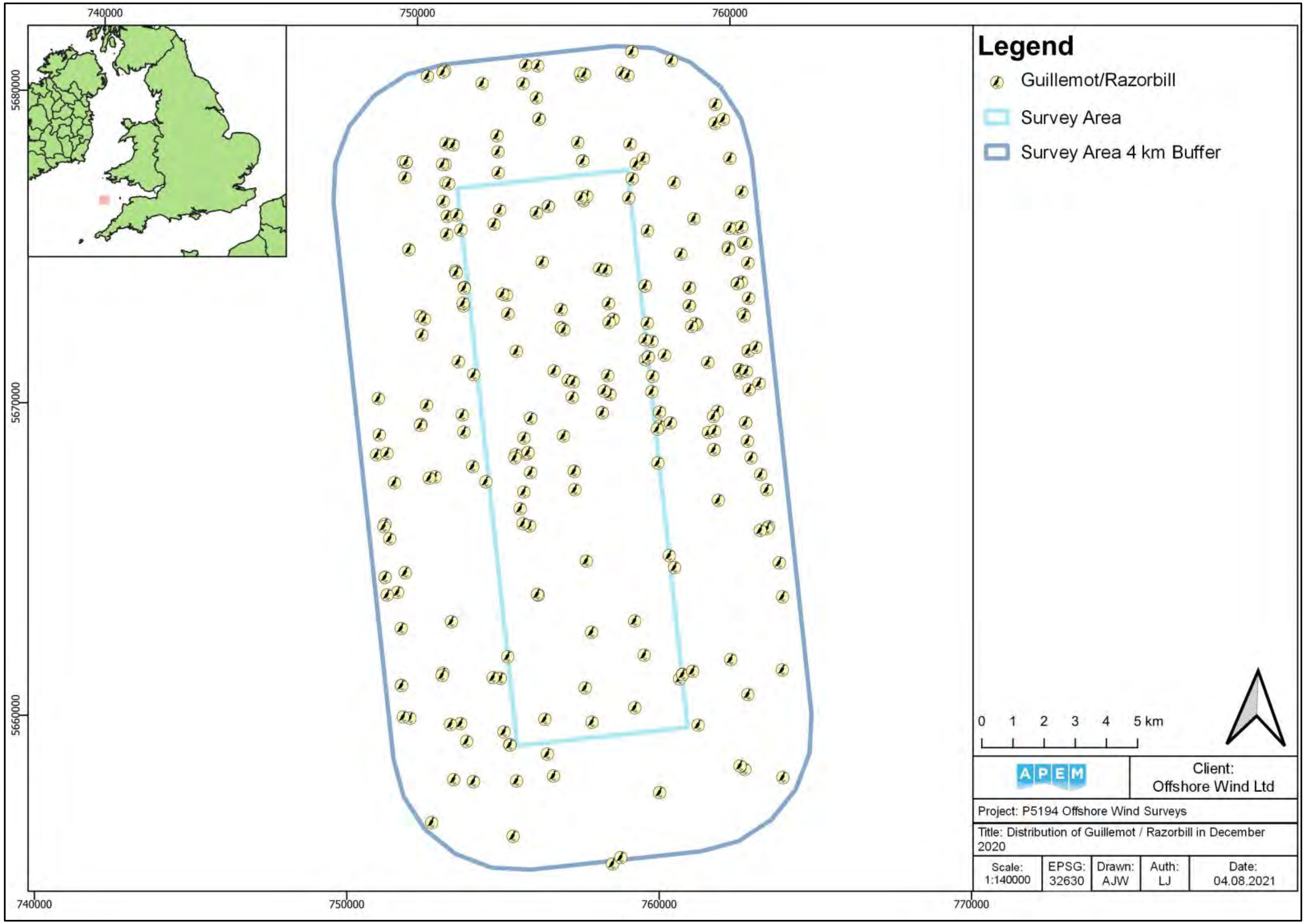


Figure 140 Distribution of guillemots / razorbills in Survey Area during December 2020

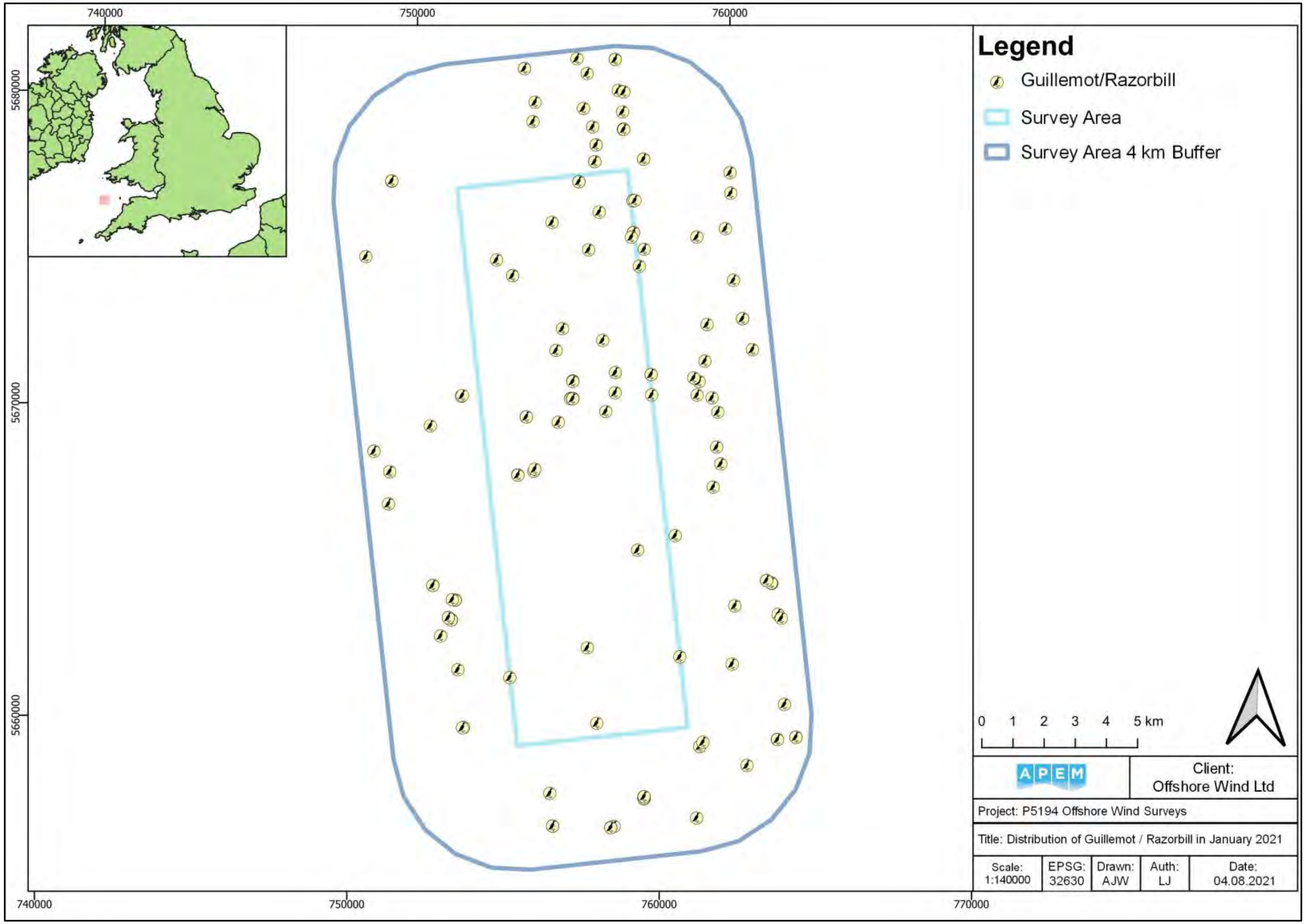


Figure 141 Distribution of guillemots / razorbills in Survey Area during January 2021

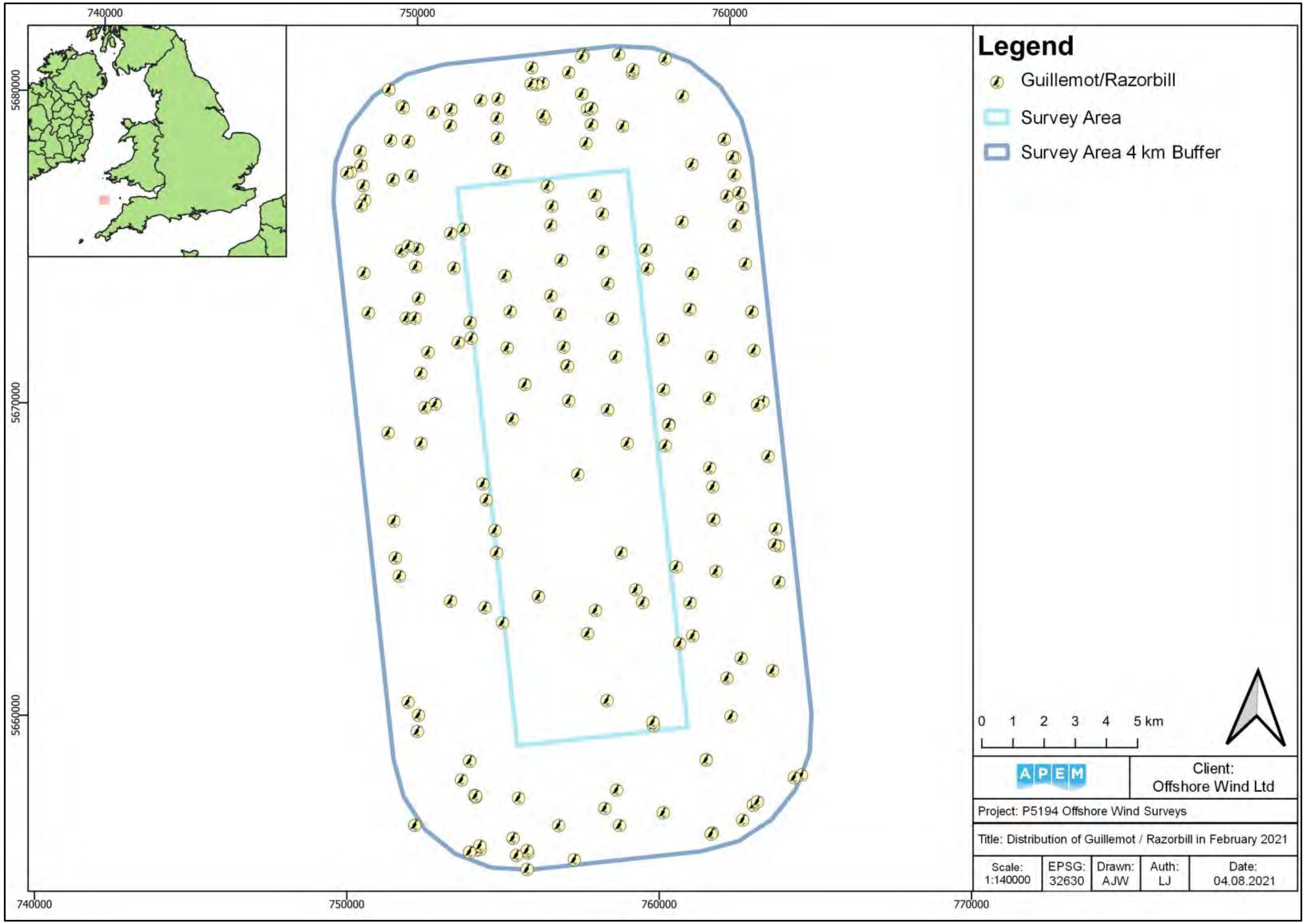


Figure 142 Distribution of guillemots / razorbills in Survey Area during February 2021

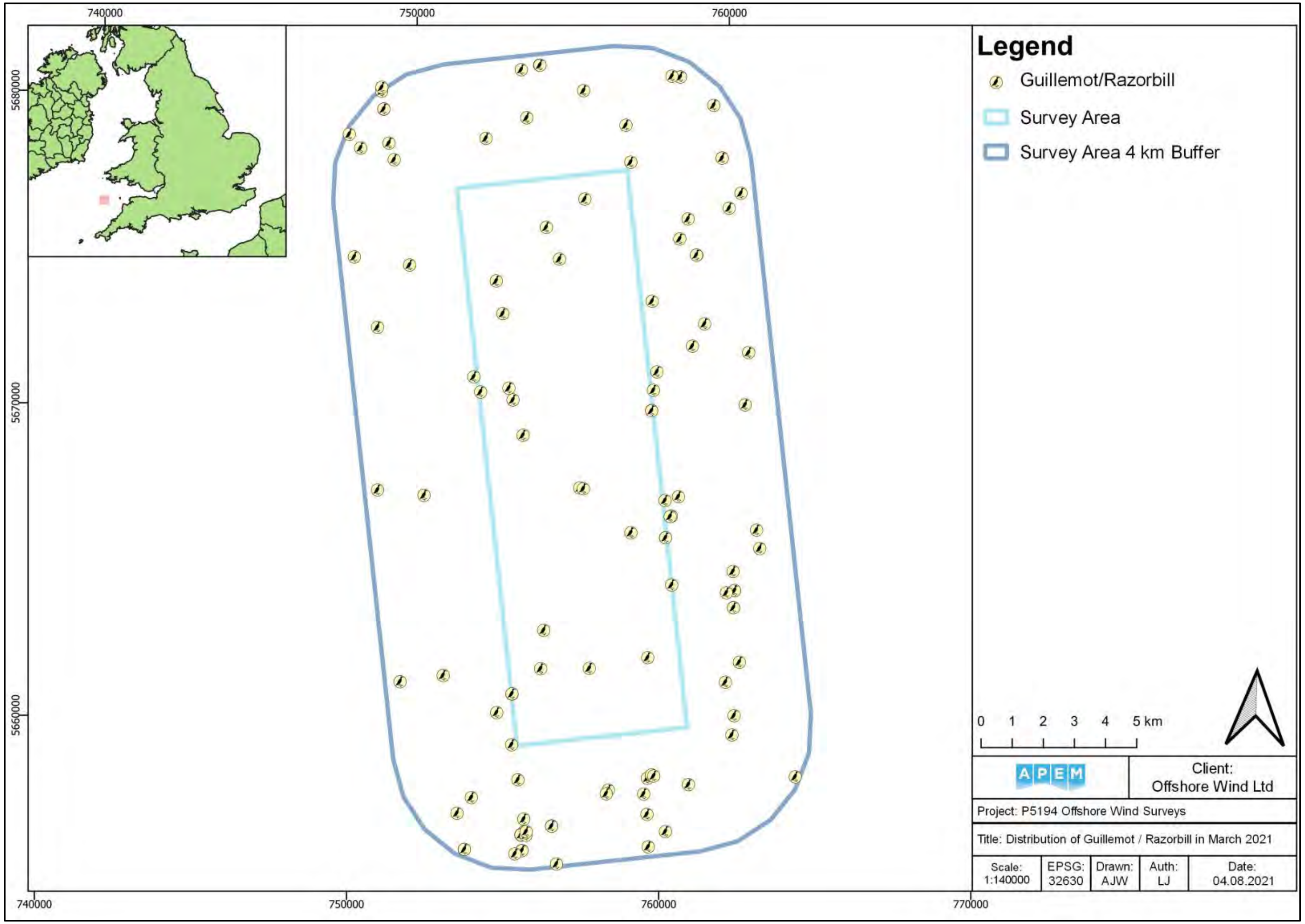


Figure 143 Distribution of guillemots / razorbills in Survey Area during March 2021

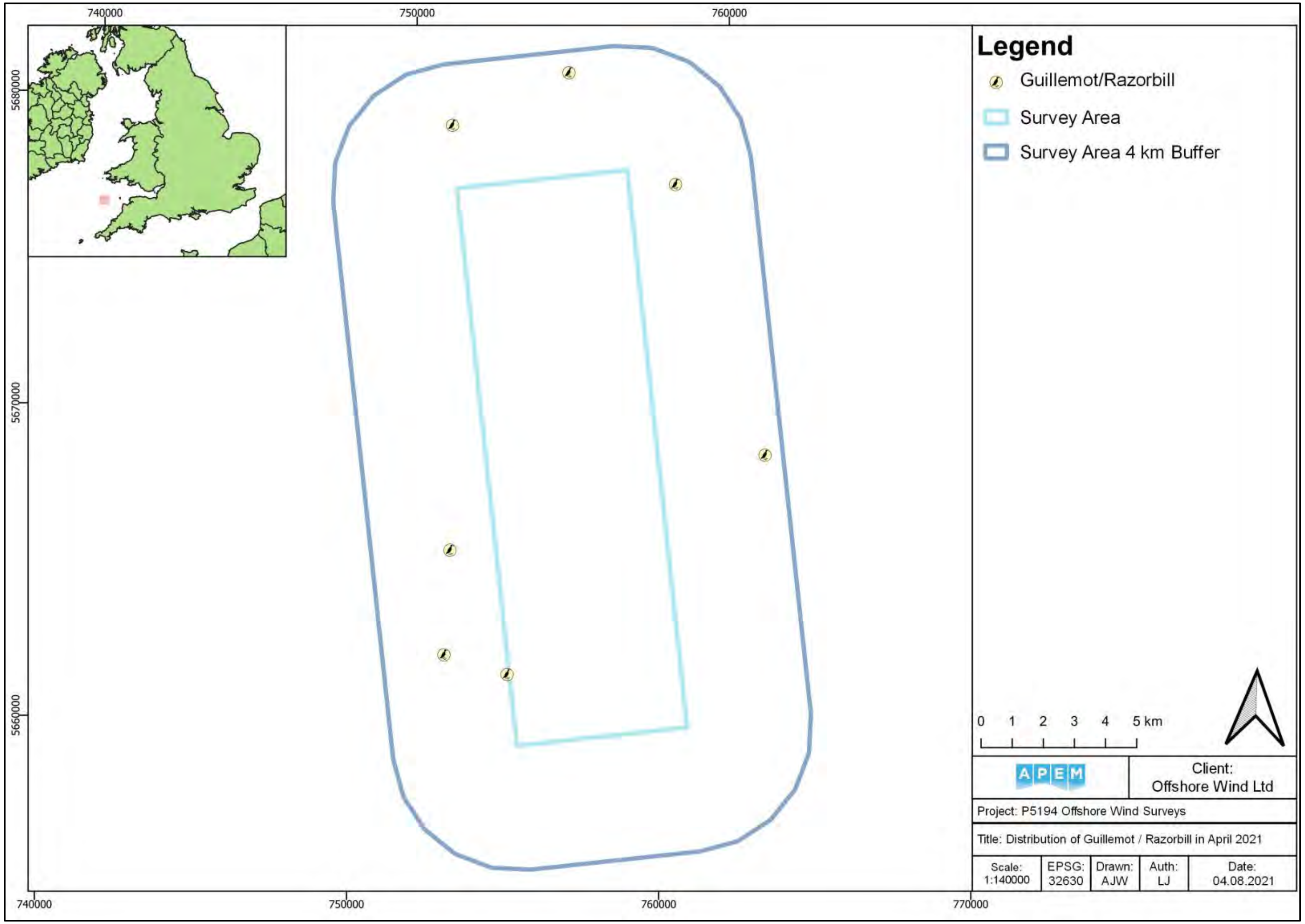


Figure 144 Distribution of guillemots / razorbills in Survey Area during April 2021

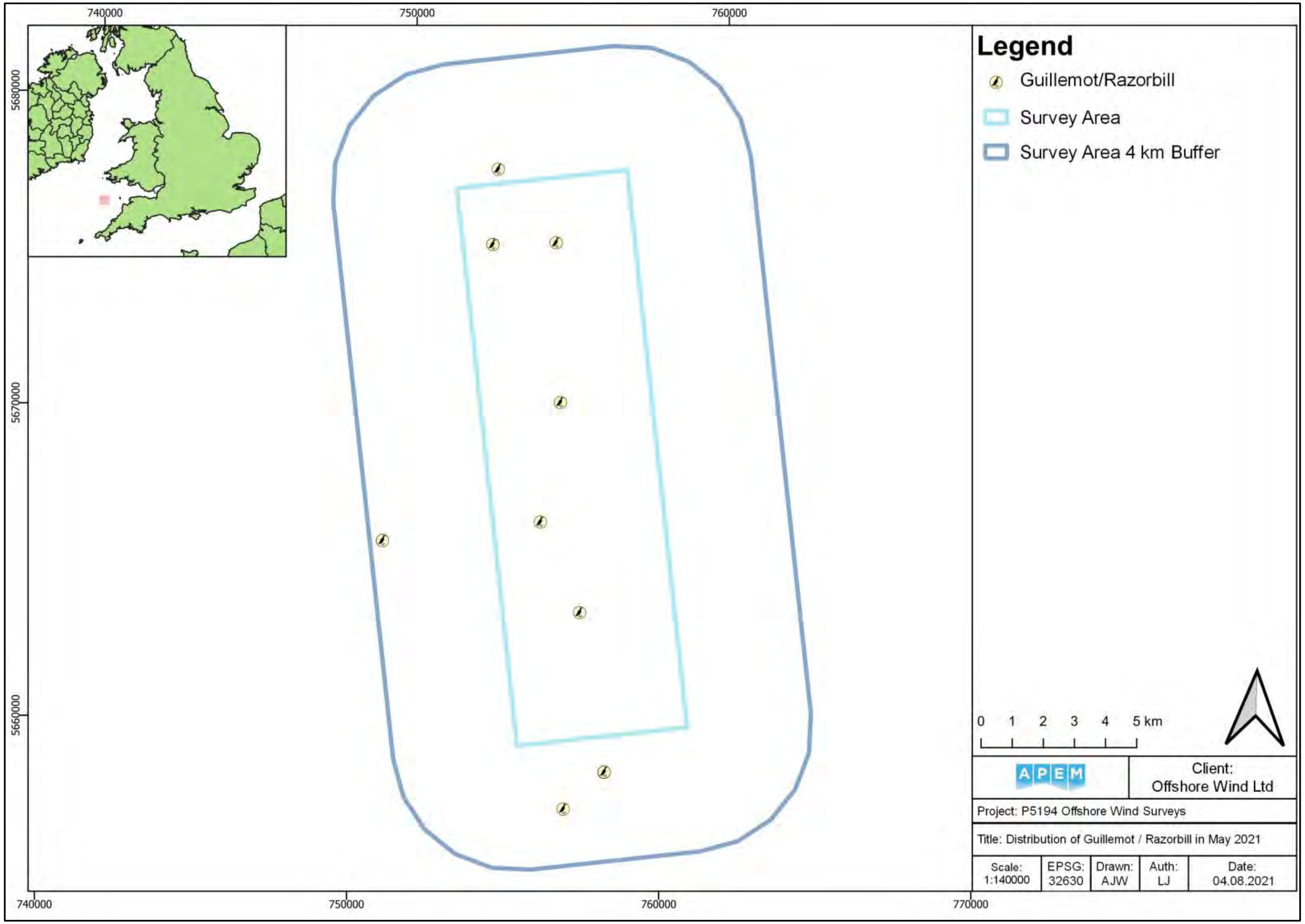


Figure 145 Distribution of guillemots / razorbills in Survey Area during May 2021

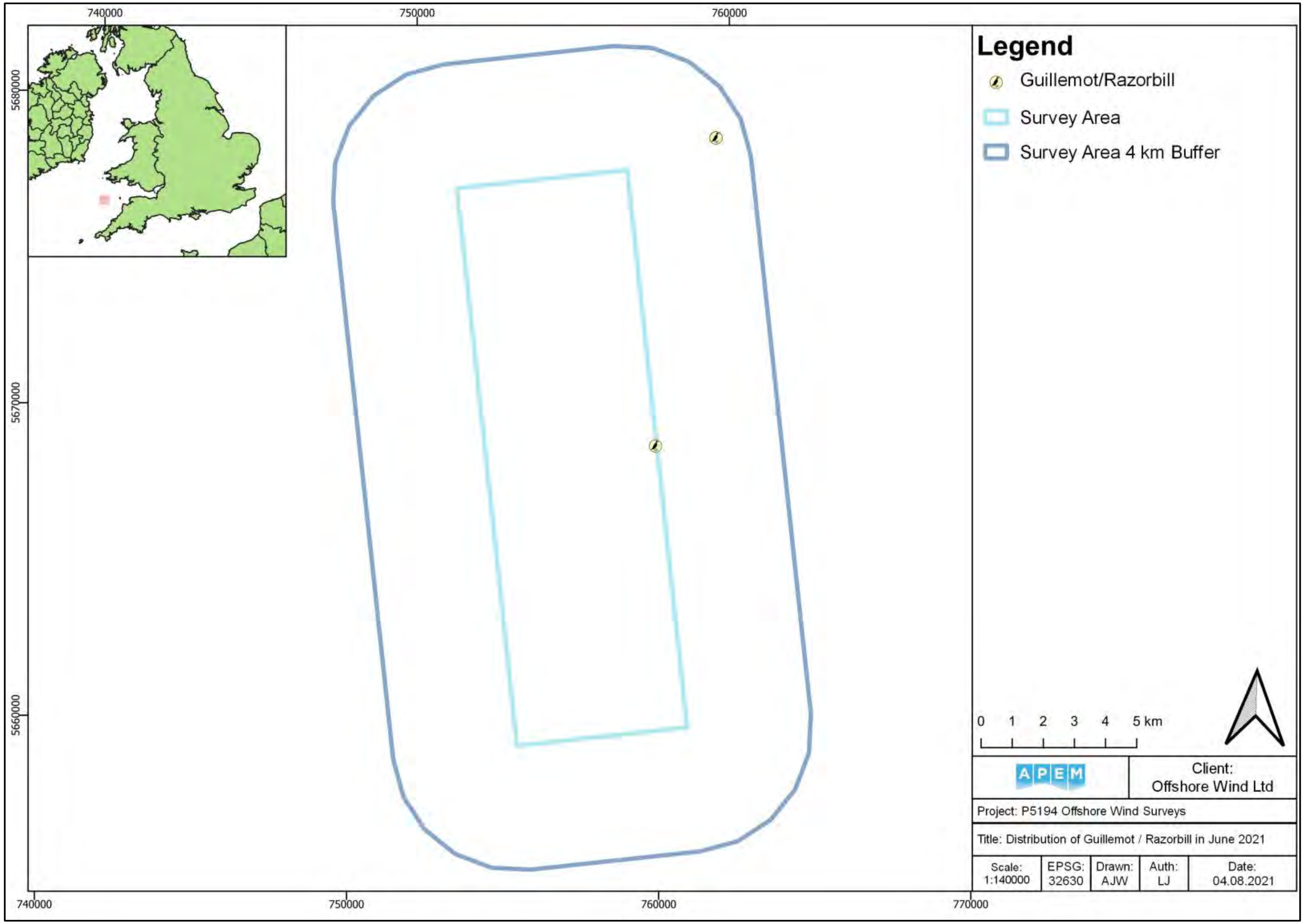


Figure 146 Distribution of guillemots / razorbills in Survey Area during June 2021

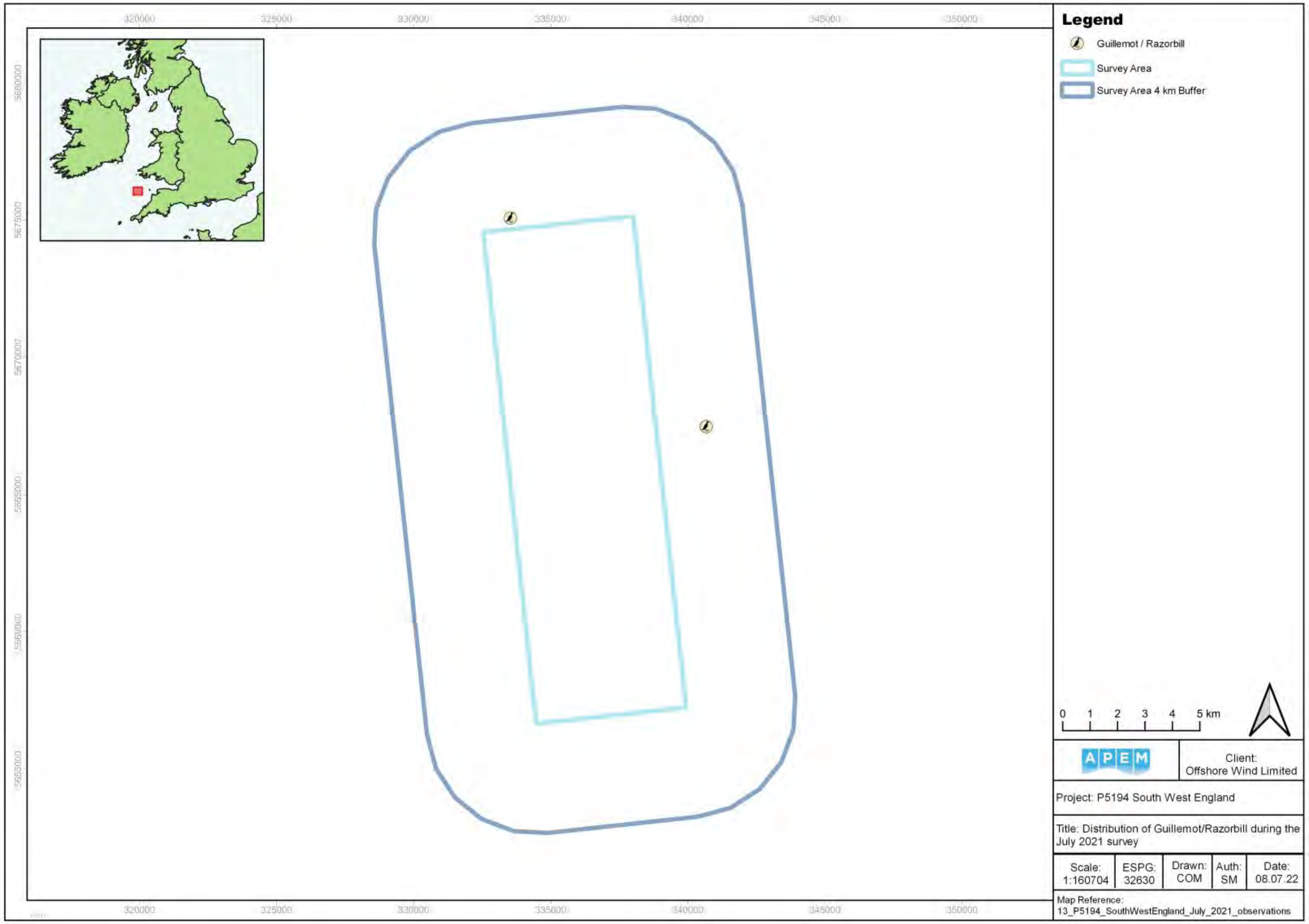


Figure 147 Distribution of guillemots / razorbills in Survey Area during July 2021

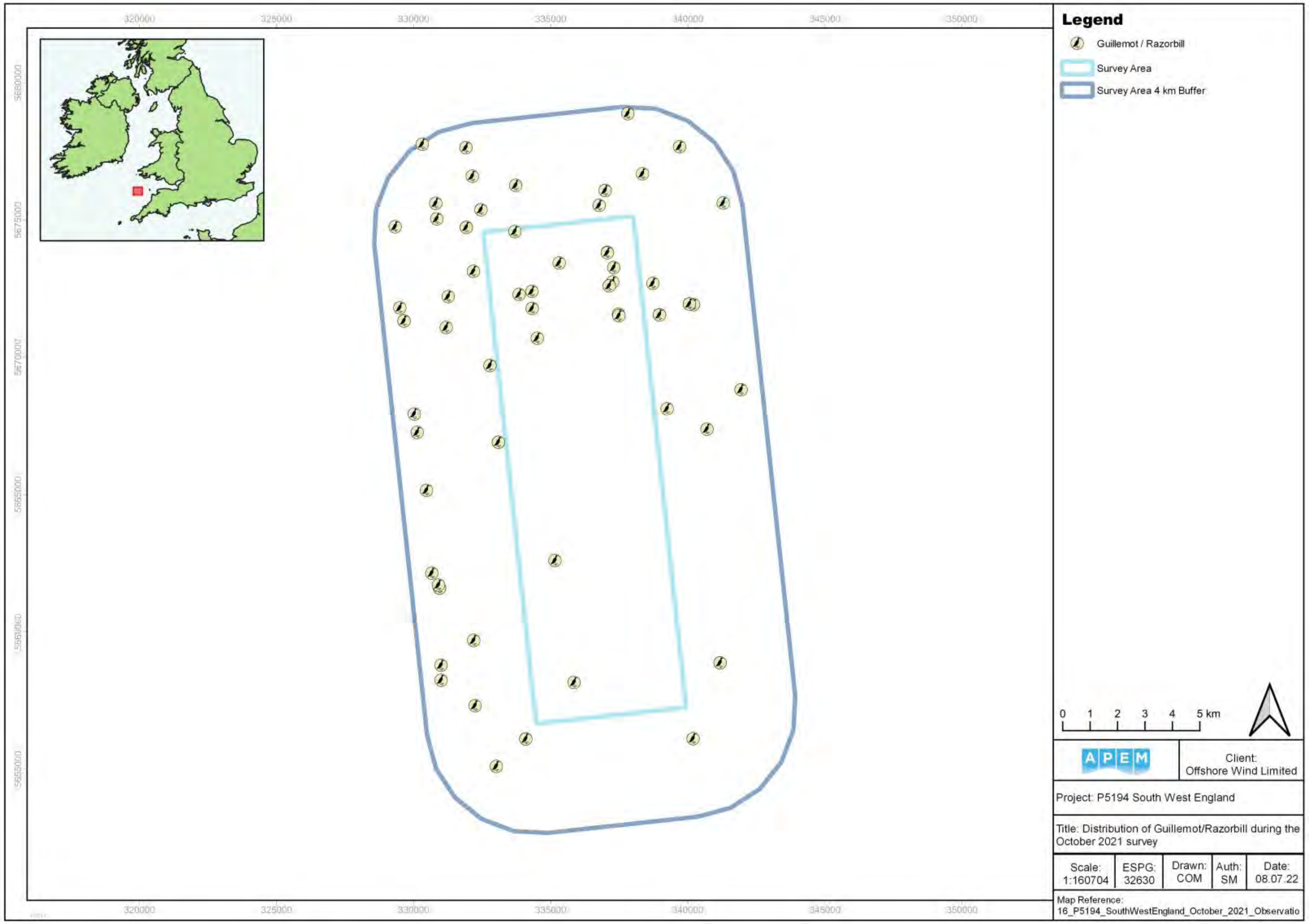


Figure 148 Distribution of guillemots / razorbills in Survey Area during October 2021

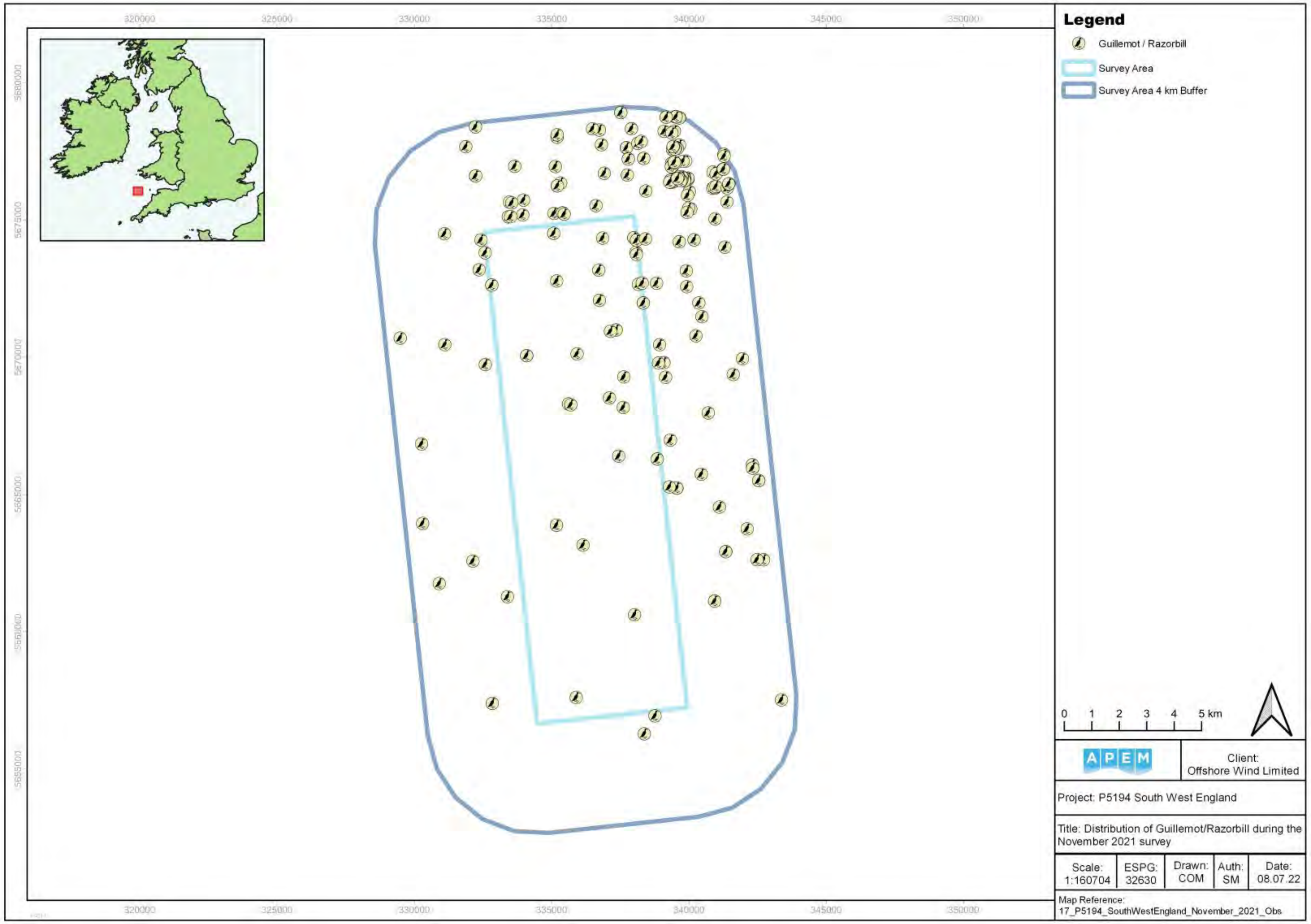


Figure 149 Distribution of guillemots / razorbills in Survey Area during November 2021

Figure 150 Distribution of guillemots / razorbills in Survey Area during December 2021

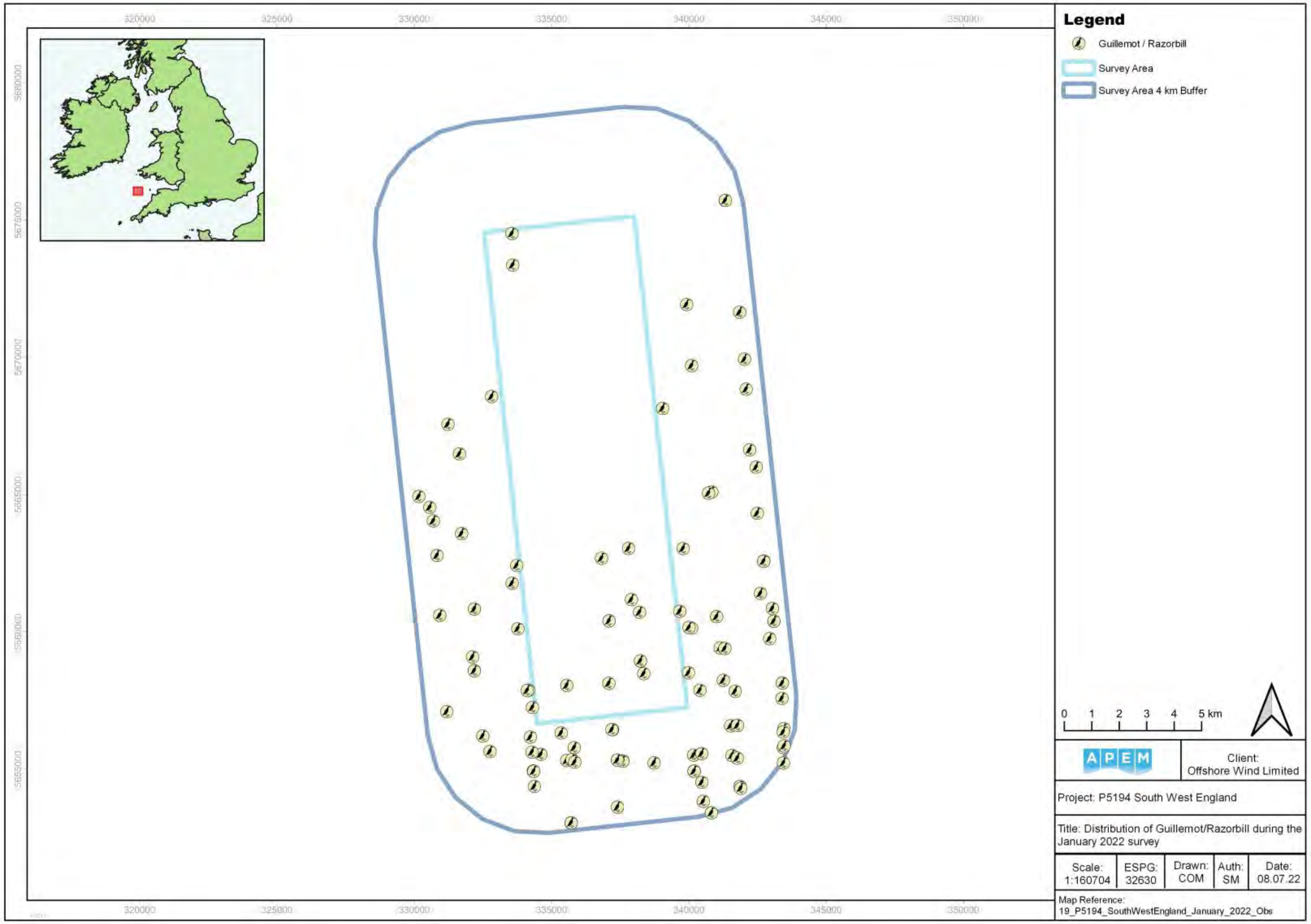


Figure 151 Distribution of guillemots and / or razorbills recorded in the Survey Area from January 2022

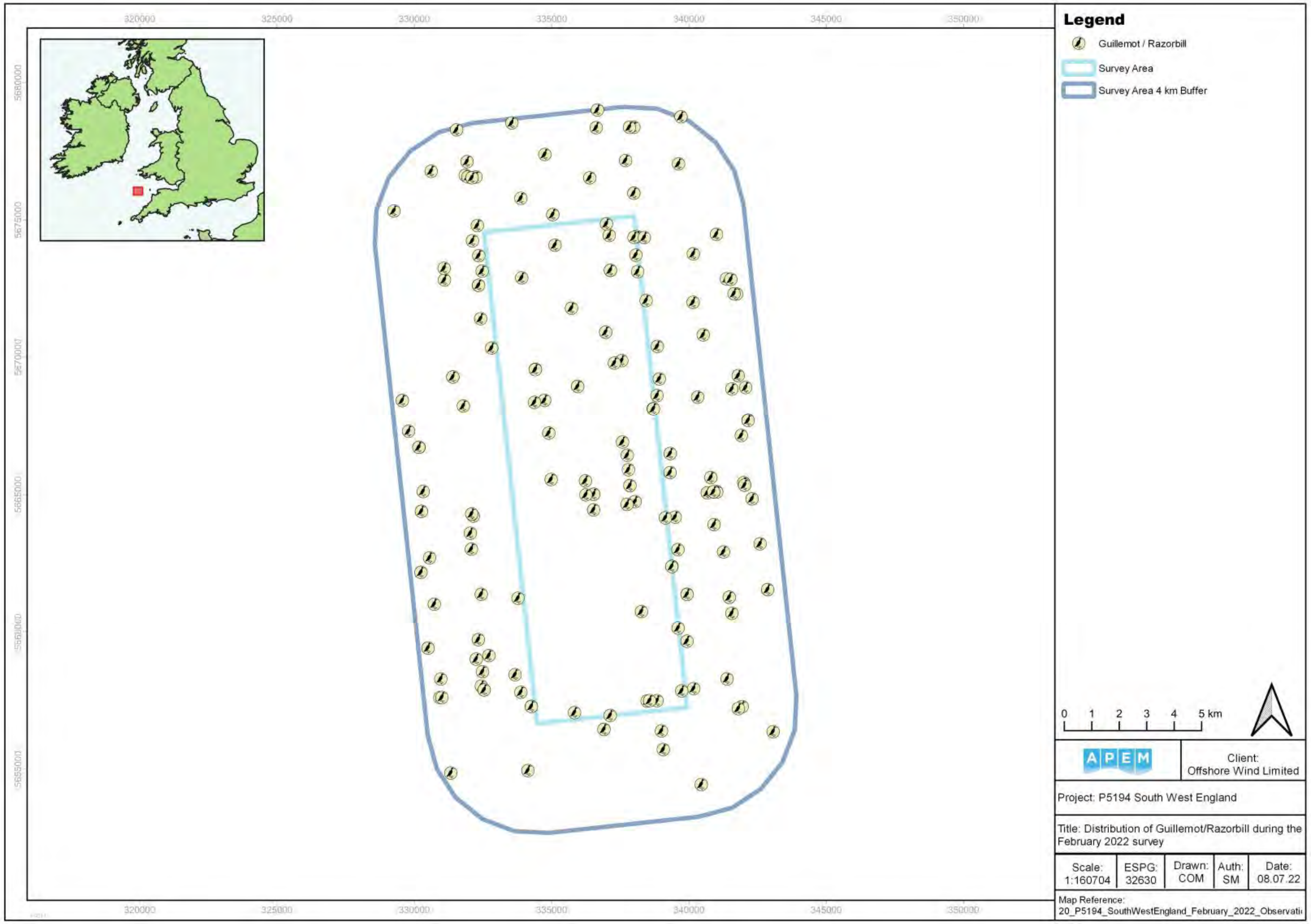


Figure 152 Distribution of guillemots / razorbills in Survey Area during February 2022

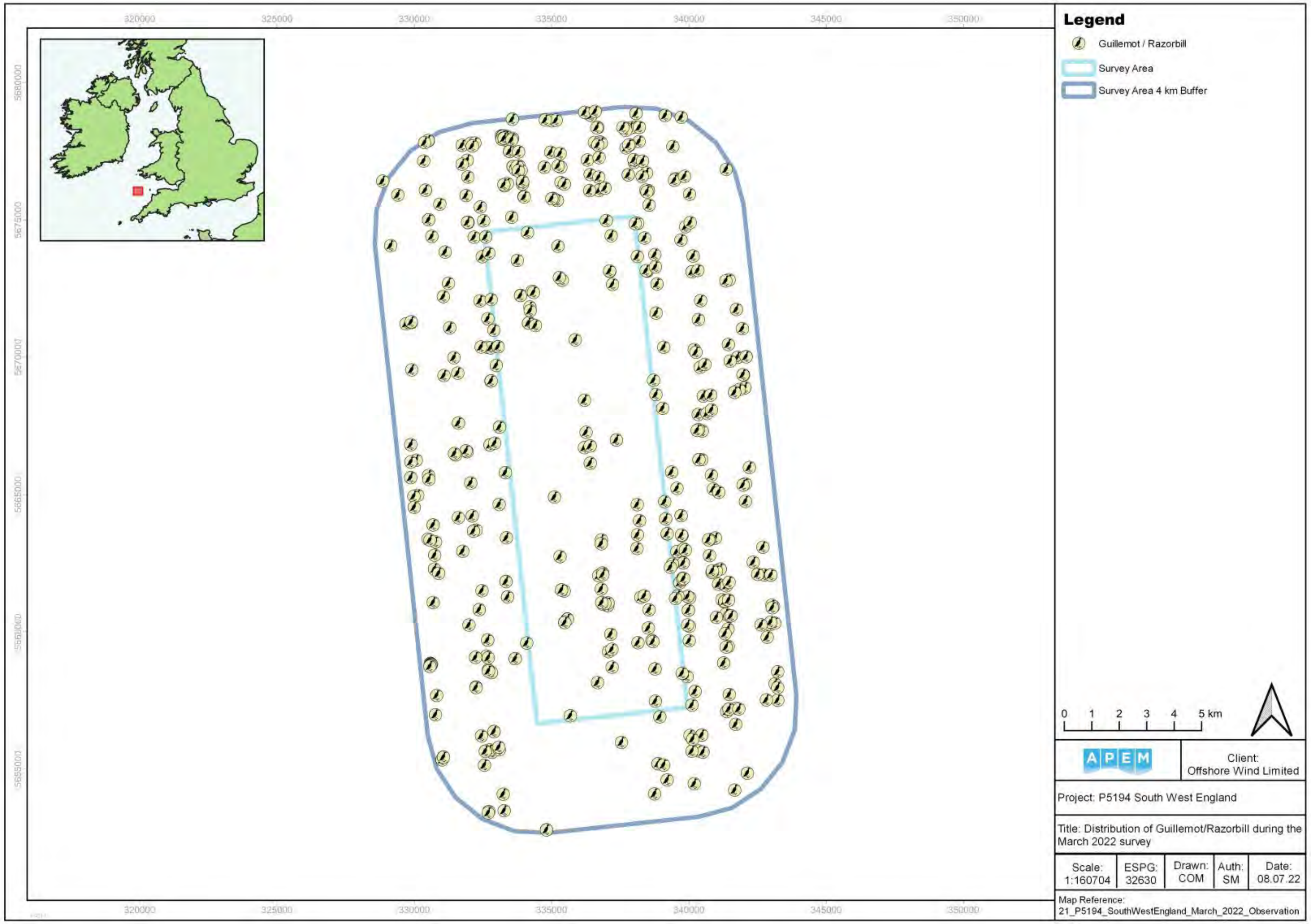


Figure 153 Distribution of guillemots / razorbills in Survey Area during March 2022

Figure 154 Distribution of guillemots / razorbills in Survey Area during April 2022

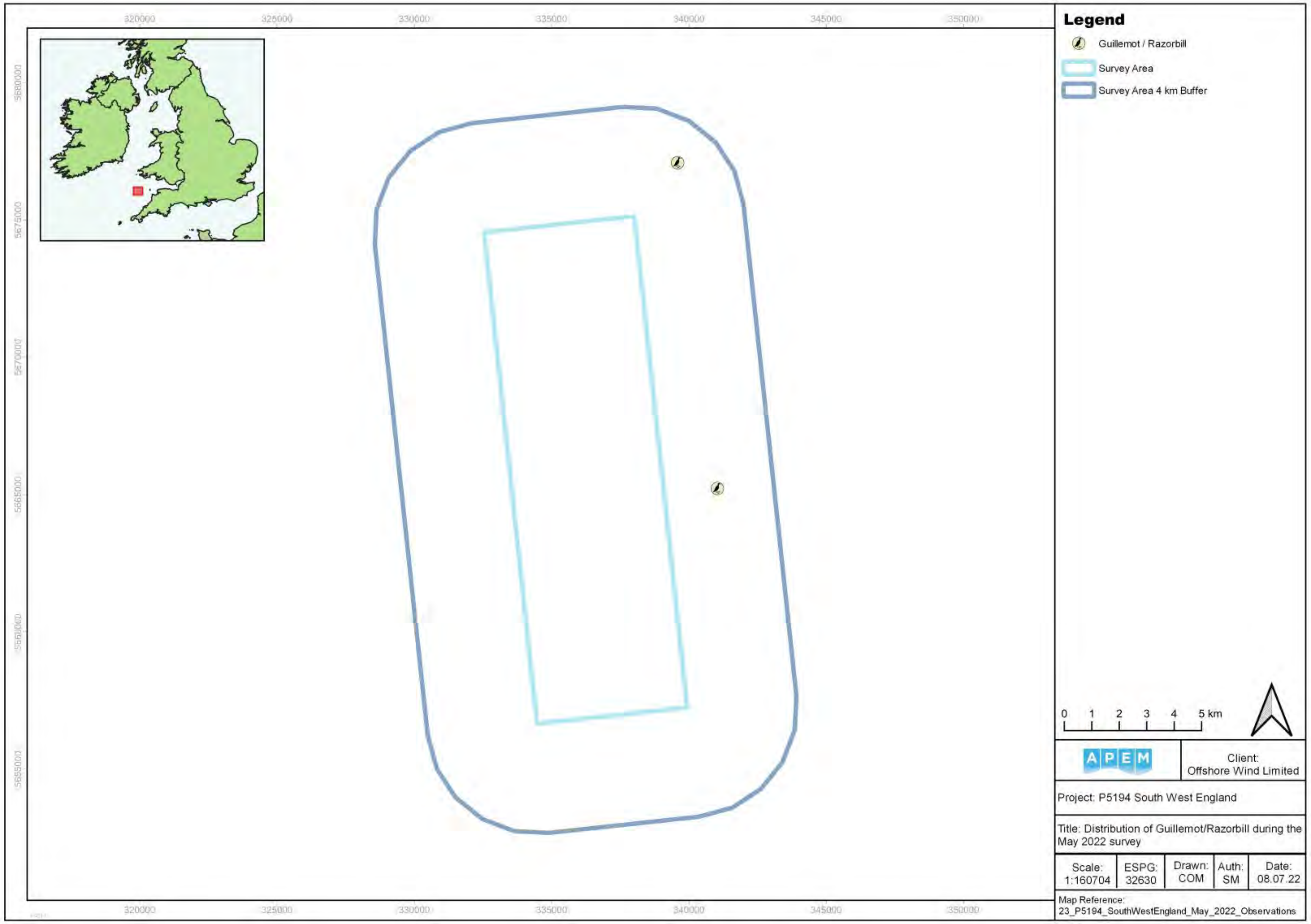


Figure 155 Distribution of guillemots / razorbills in Survey Area during May 2022

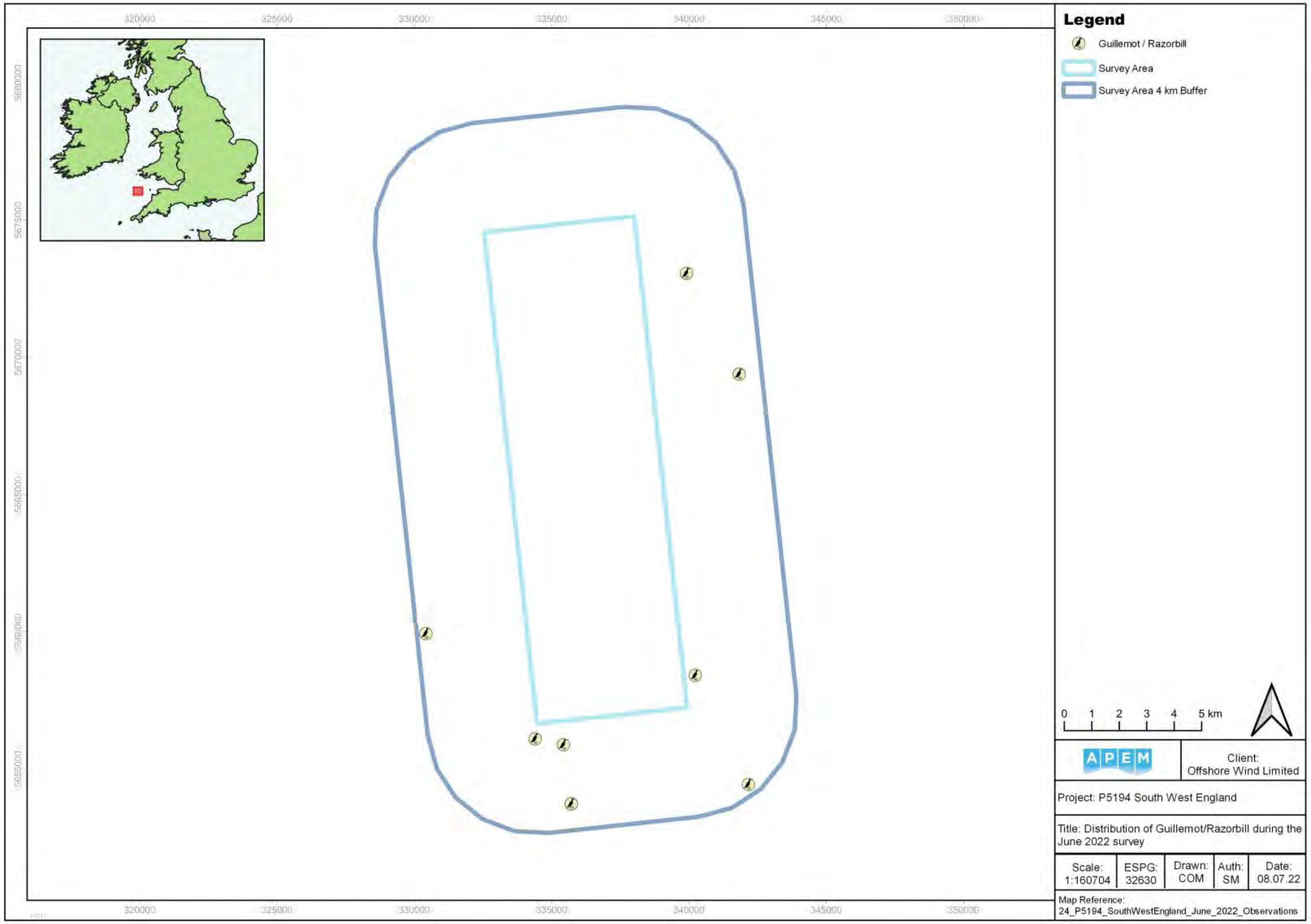
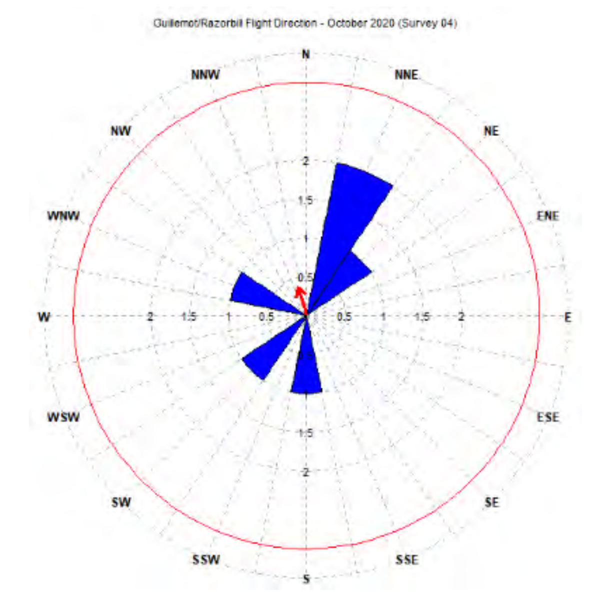
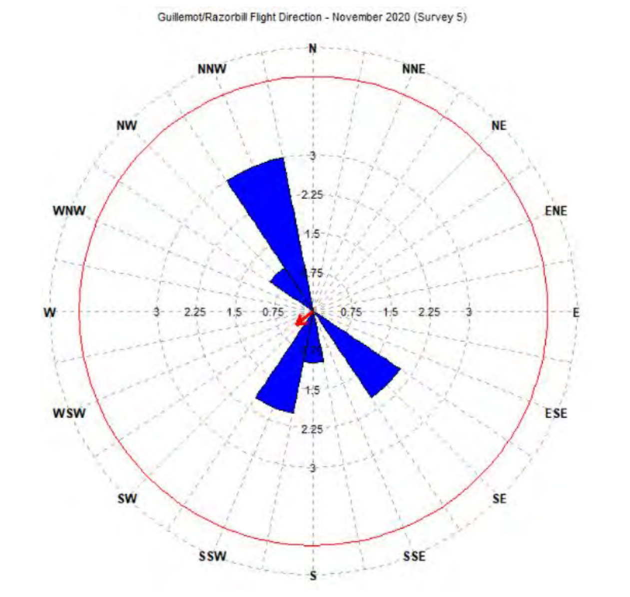


Figure 156 Distribution of guillemots / razorbills in Survey Area during June 2022



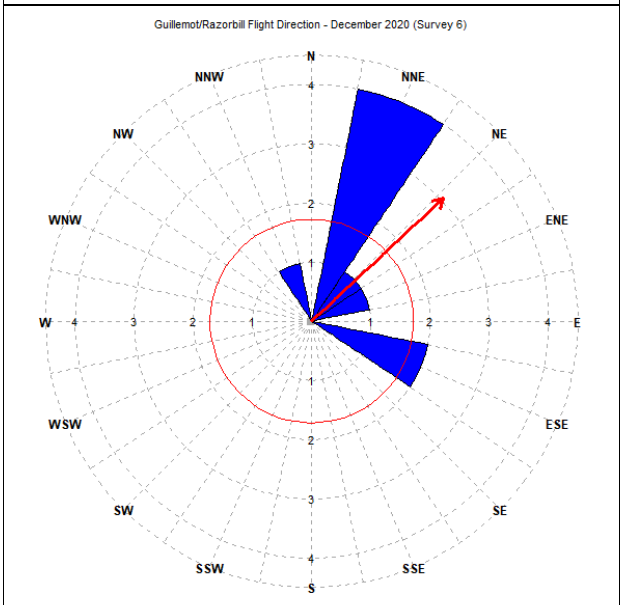
Number of Observations	6
22Mean Vector (μ)	344.941
Length of Mean Vector (r)	0.192
Rayleigh Test (Z)	0.221
Rayleigh Test (p)	0.815

Figure 157a October 2020



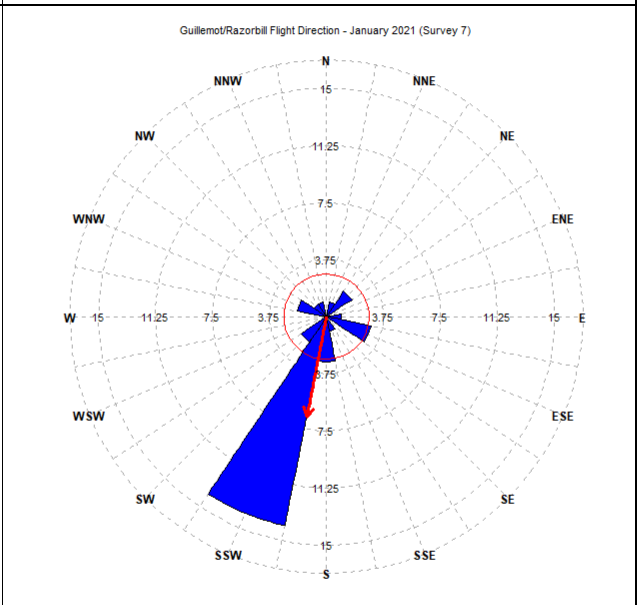
Number of Observations	9
Mean Vector (μ)	230.295
Length of Mean Vector (r)	0.139
Rayleigh Test (Z)	0.174
Rayleigh Test (p)	0.848

Figure 157b November 2020



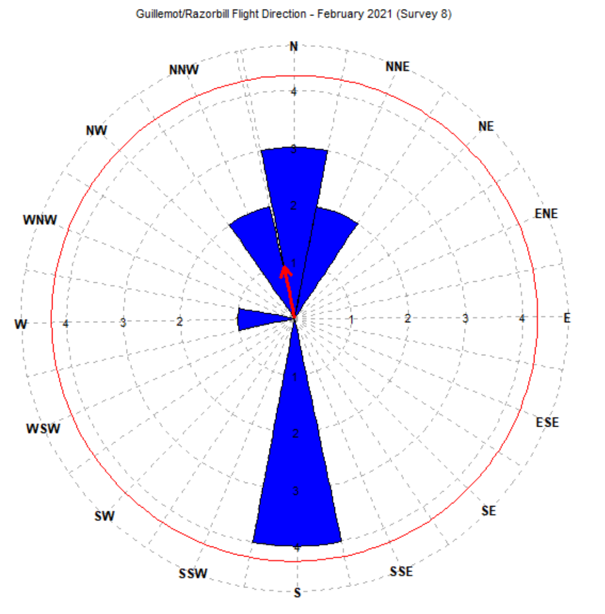
Number of Observations	9
Mean Vector (μ)	47.584
Length of Mean Vector (r)	0.760
Rayleigh Test (Z)	5.196
Rayleigh Test (p)	0.003

Figure 157c December 2020



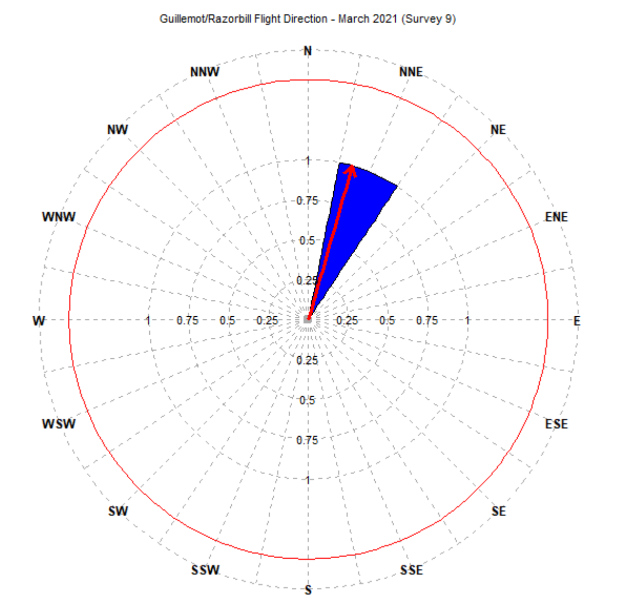
Number of Observations	31
Mean Vector (μ)	191.191
Length of Mean Vector (r)	0.480
Rayleigh Test (Z)	7.147
Rayleigh Test (p)	<0.001

Figure 157d January 2021



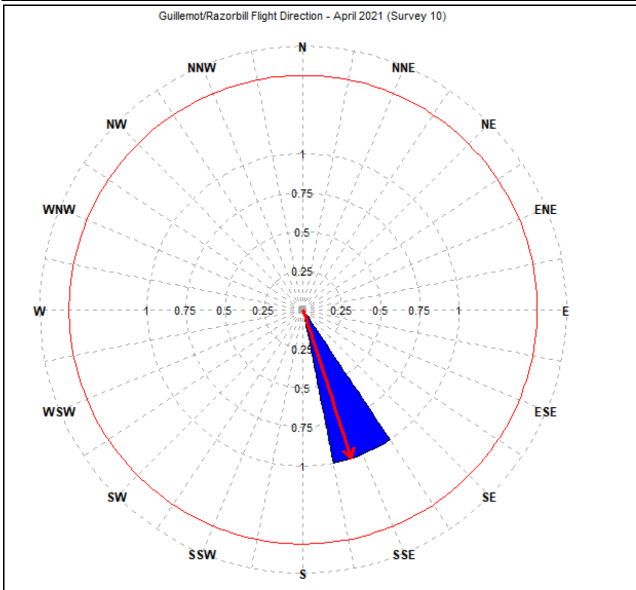
Number of Observations	12
Mean Vector (µ)	350.005
Length of Mean Vector (r)	0.230
Rayleigh Test (Z)	0.634
Rayleigh Test (p)	0.540

Figure 157e February 2021



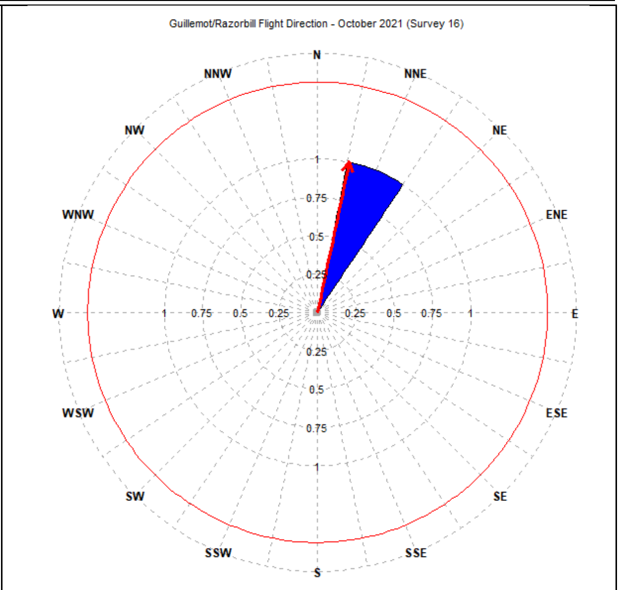
Number of Observations	1
Mean Vector (µ)	16.797
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 157f March 2021



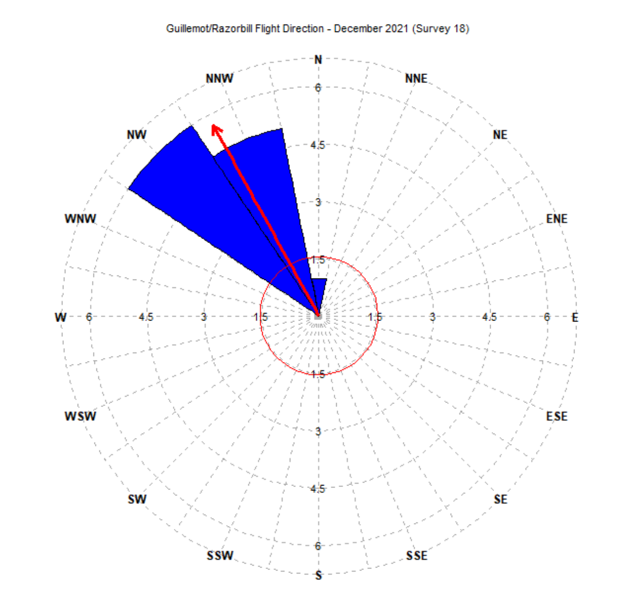
Number of Observations	1
Mean Vector (µ)	162.144
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 157g April 2021



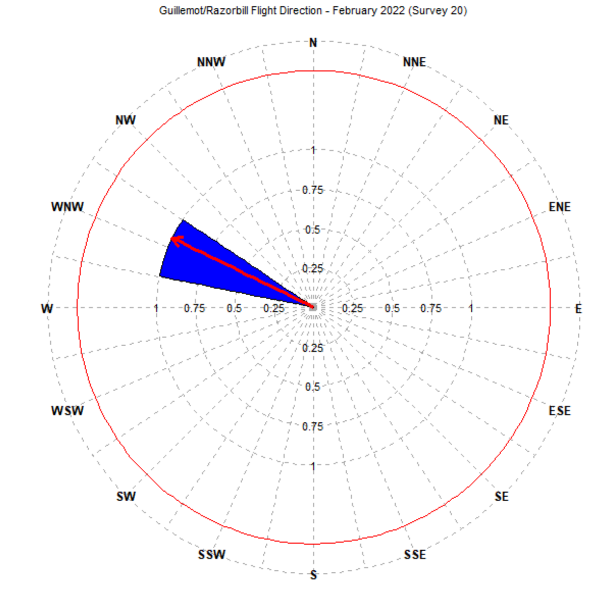
Number of Observations	1
Mean Vector (µ)	12.928
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 157h October 2021



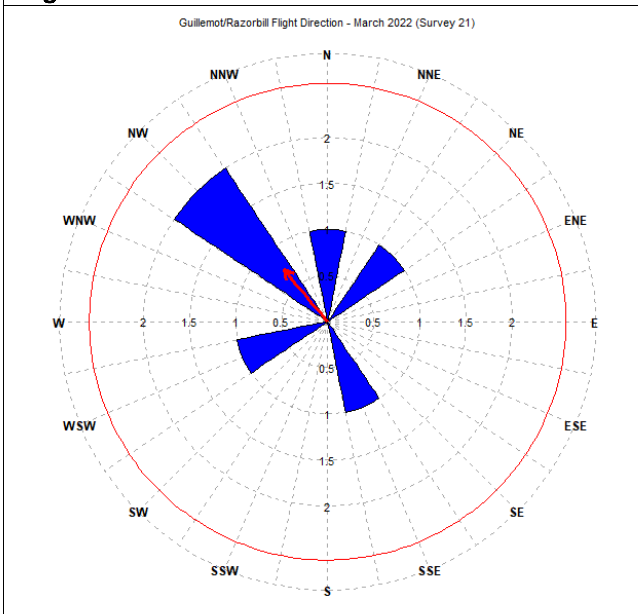
Number of Observations	12
Mean Vector (µ)	331.510
Length of Mean Vector (r)	0.950
Rayleigh Test (Z)	10.828
Rayleigh Test (p)	<0.001

Figure 157i December 2021



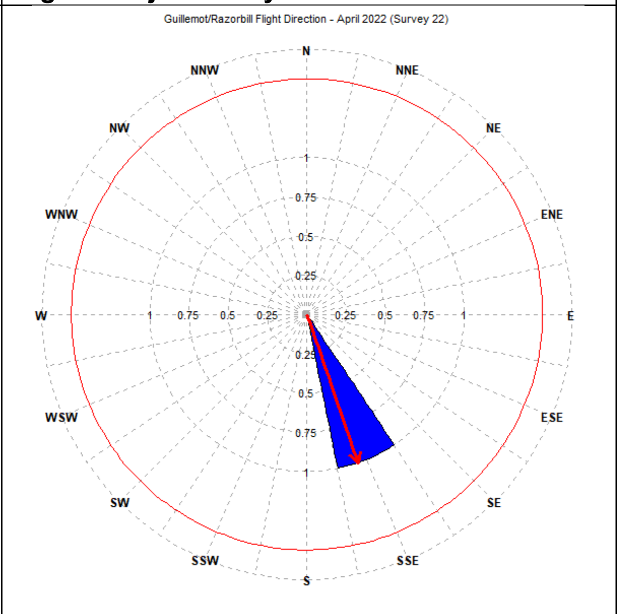
Number of Observations	1
Mean Vector (µ)	296.155
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 157j February 2022



Number of Observations	6
Mean Vector (µ)	320.818
Length of Mean Vector (r)	0.369
Rayleigh Test (Z)	0.815
Rayleigh Test (p)	0.462

Figure 157k March 2022



Number of Observations	1
Mean Vector (µ)	161.619
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 157l April 2022

Figure 157 Summary of flight direction of guillemots / razorbills during the survey period

4.17 Puffin – *Fratercula arctica*

Puffins were recorded in July and November 2020, from March to May 2021, and April to May 2022. The peak raw count of 38 in April 2022 resulted in an abundance estimate of 289 for the Survey Area (**Table 22**).

In the Southwest England Site, puffins they were seen in July and November 2020, May 2021, and April 2022, the month of a peak raw count of seven. This resulted in an abundance estimate of 59 **(Table 22**).

In the 4 km Buffer Zone, puffins were recorded in November 2020, in March to May 2021, and during April and May 2022. The peak raw count of 31 in April resulted in an abundance estimate of 227 for the area (**Table 22**).

Puffins were present in low numbers with no discernible distribution patterns across the Survey Area during July 2020, March to May 2021, and May 2022 (**Figure 158**; Error! Reference source not found.; **Figure 161**; **Figure 162, Figure 164**). In November 2020 and April 2022, the birds were primarily concentrated in the north-west of the Survey Area, with one individual in the south-east in November, and small groups in the south, centre and northeast during April (**Figure 159**; **Figure 163**). In May 2022, two individuals were in the east and west of the Buffer Zone (**Figure 164**).

One puffin was recorded flying in a northerly direction in April 2022 (356.395°, p=0.512; **Figure 165**).

Table 22 Raw counts and abundance and density estimates (individuals per km^2) of puffins in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	1	8	1	23	1.00	0.02
Nov-20	13	102	32	189	0.28	0.3
Mar-21	2	15	2	38	0.71	0.04
Apr-21	3	23	3	61	0.58	0.07
May-21	6	44	7	95	0.41	0.13
Apr-22	38	289	175	419	0.16	0.86
May-22	3	23	3	61	0.58	0.07
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	1	9	1	34	1.00	0.09
Nov-20	4	35	4	97	0.5	0.35
May-21	3	24	3	65	0.58	0.24
Apr-22	7	59	8	118	0.38	0.6

c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Nov-20	9	68	23	128	0.33	0.29
Mar-21	2	15	2	37	0.71	0.06
Apr-21	3	22	3	59	0.58	0.09
May-21	3	21	3	56	0.58	0.09
Apr-22	31	227	124	336	0.18	0.96
May-22	3	22	3	65	0.58	0.09

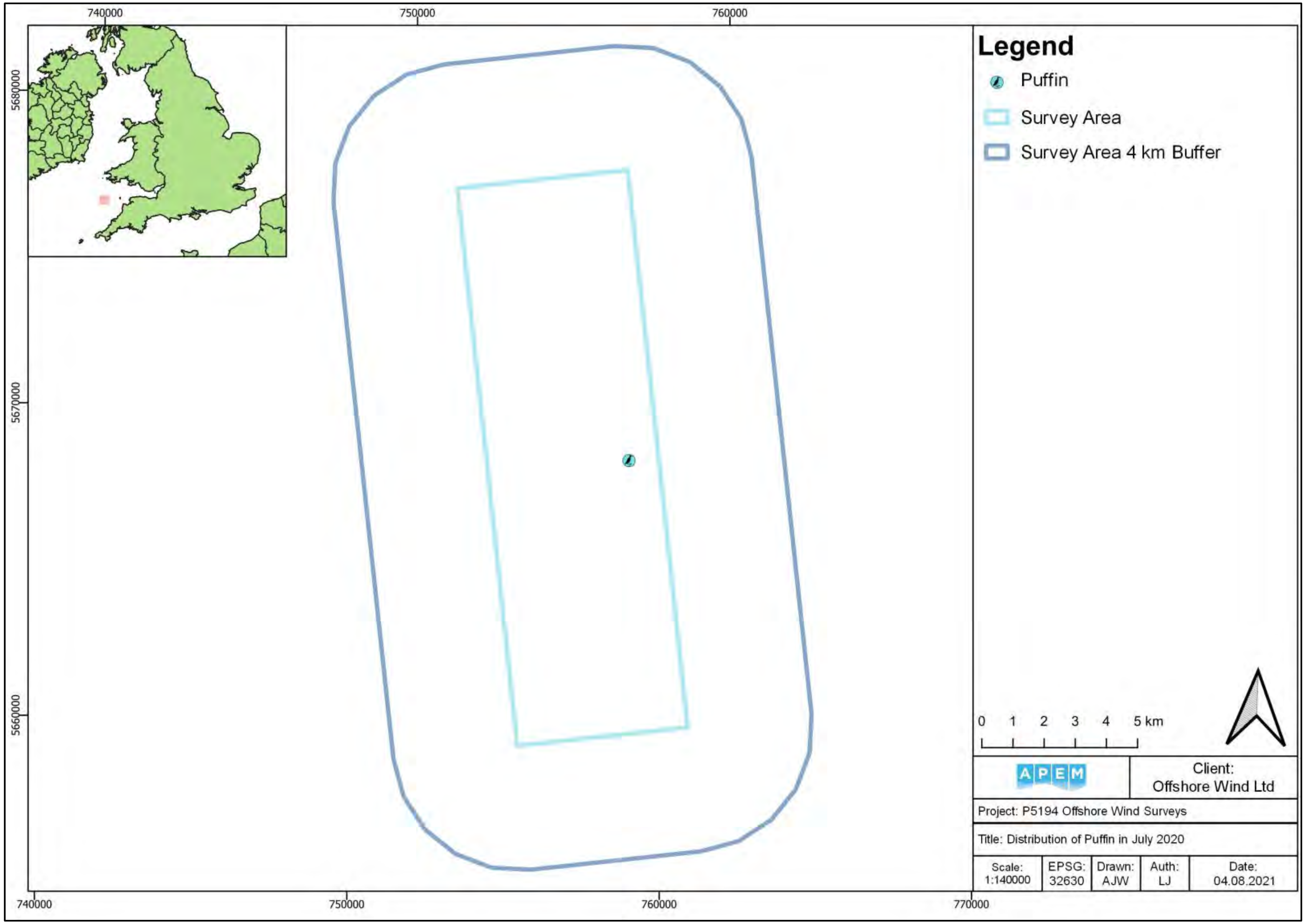


Figure 158 Distribution of puffins in Survey Area during July 2020

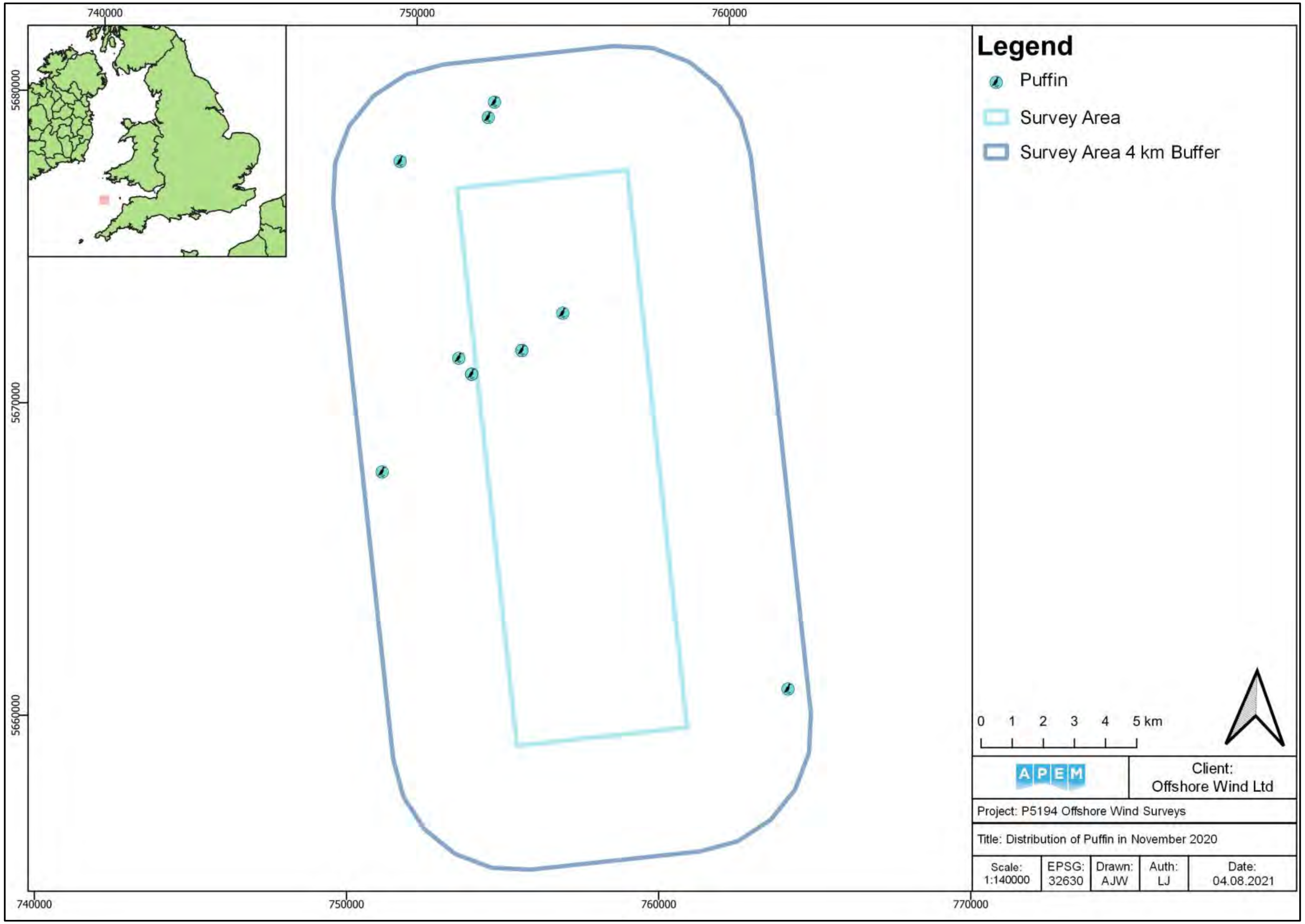


Figure 159 Distribution of puffins in Survey Area during November 2020

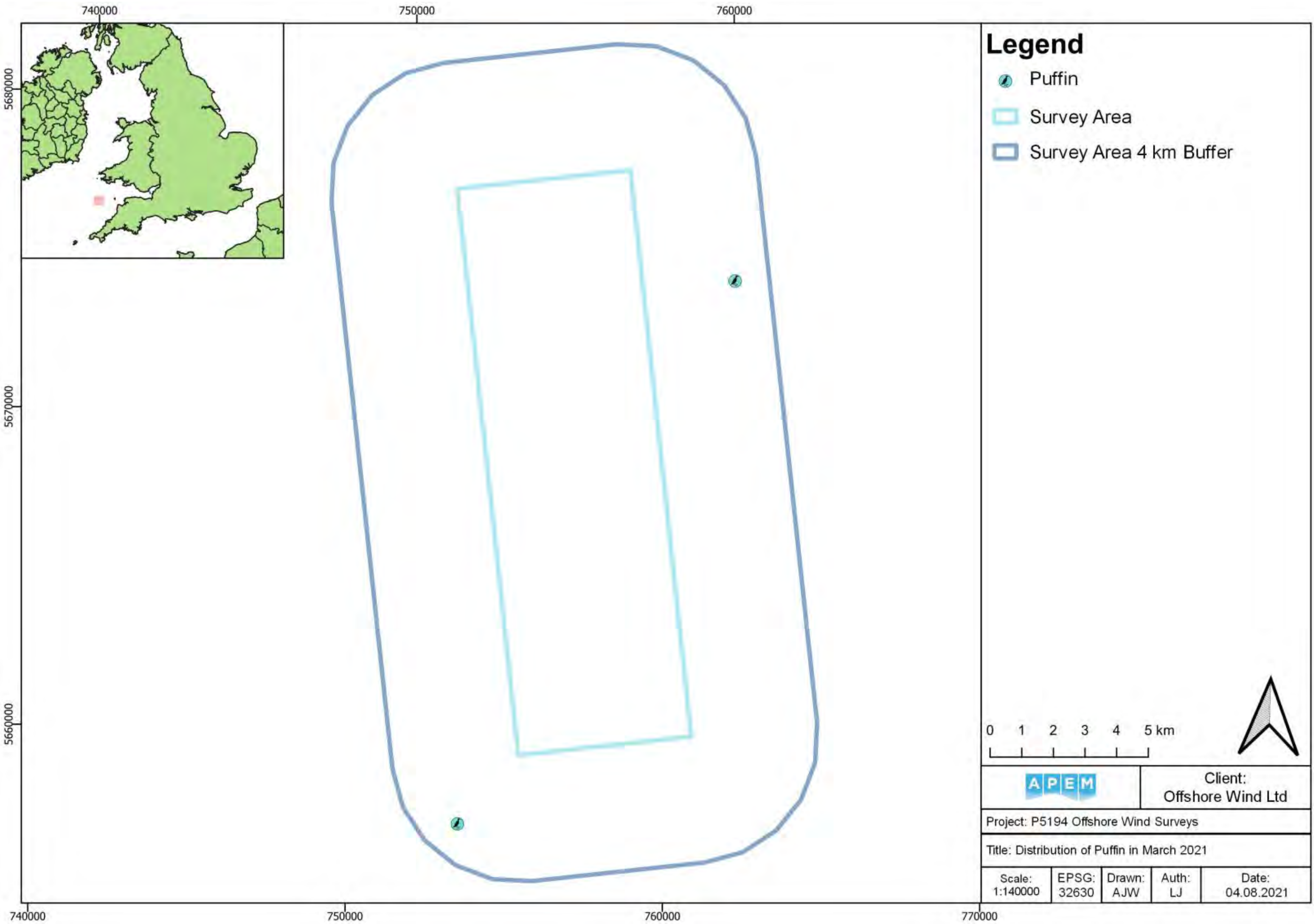


Figure 160 Distribution of puffins in Survey Area during March 2021

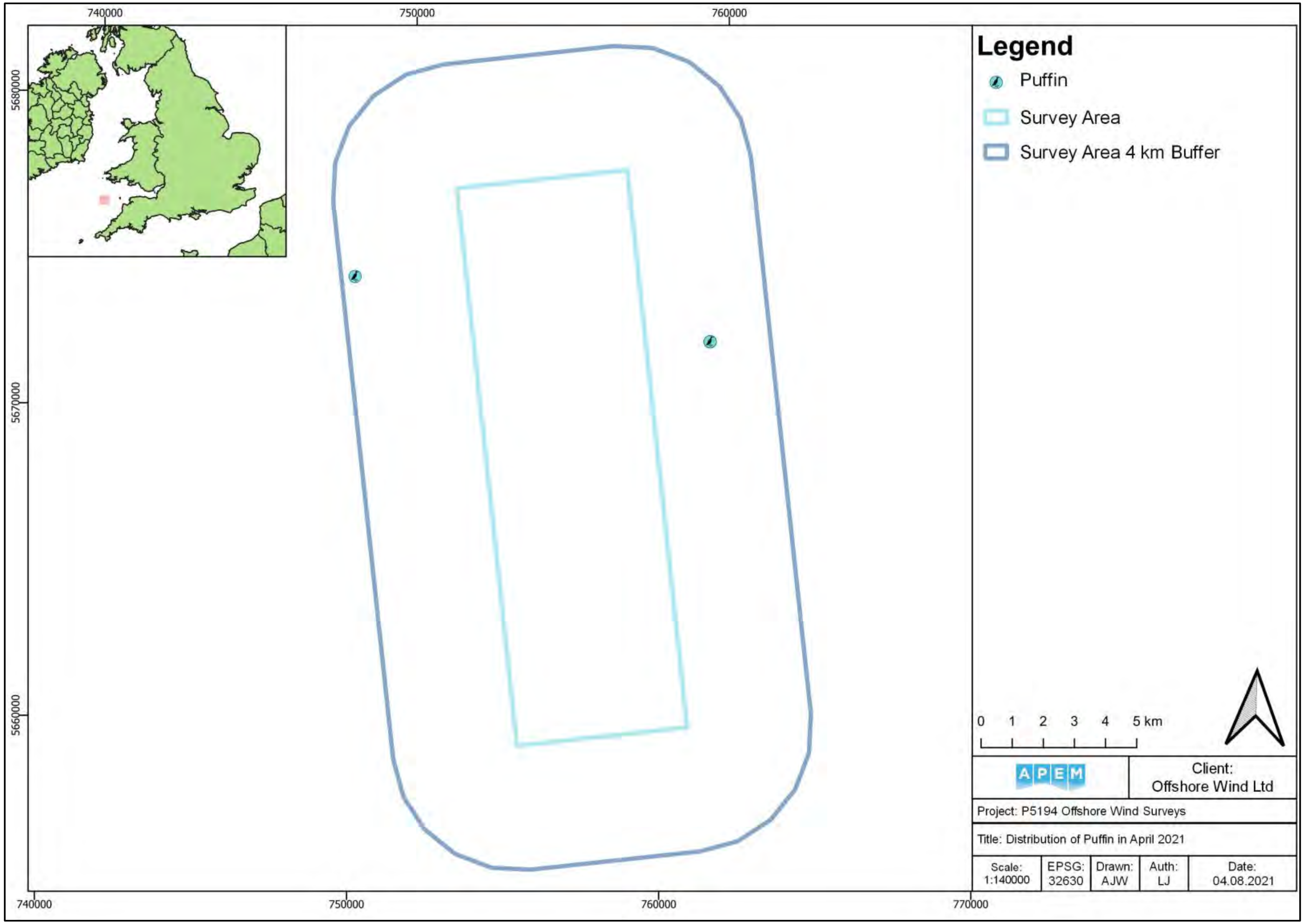


Figure 161 Distribution of puffins in Survey Area during April 2021

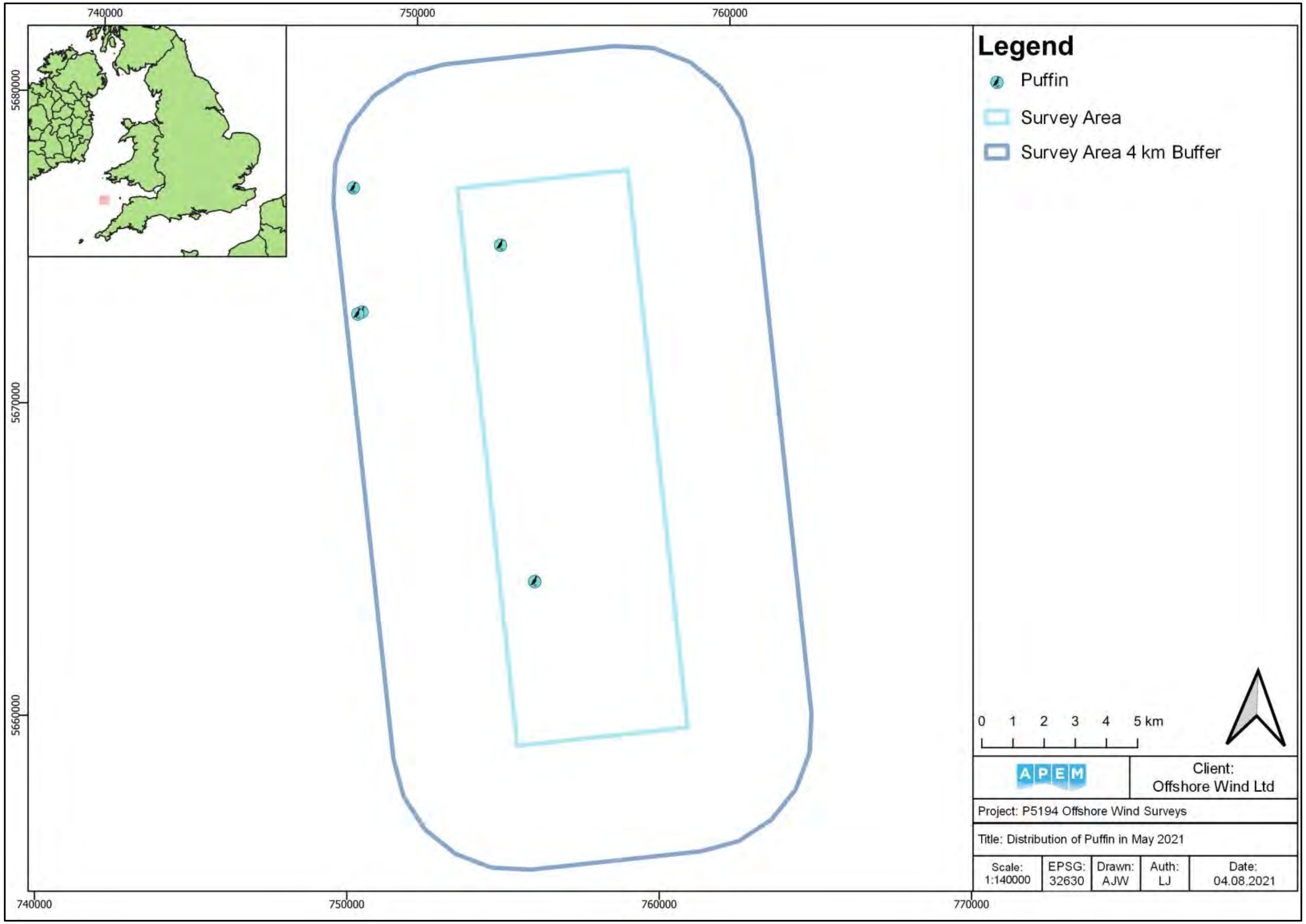


Figure 162 Distribution of puffins in Survey Area during May 2021

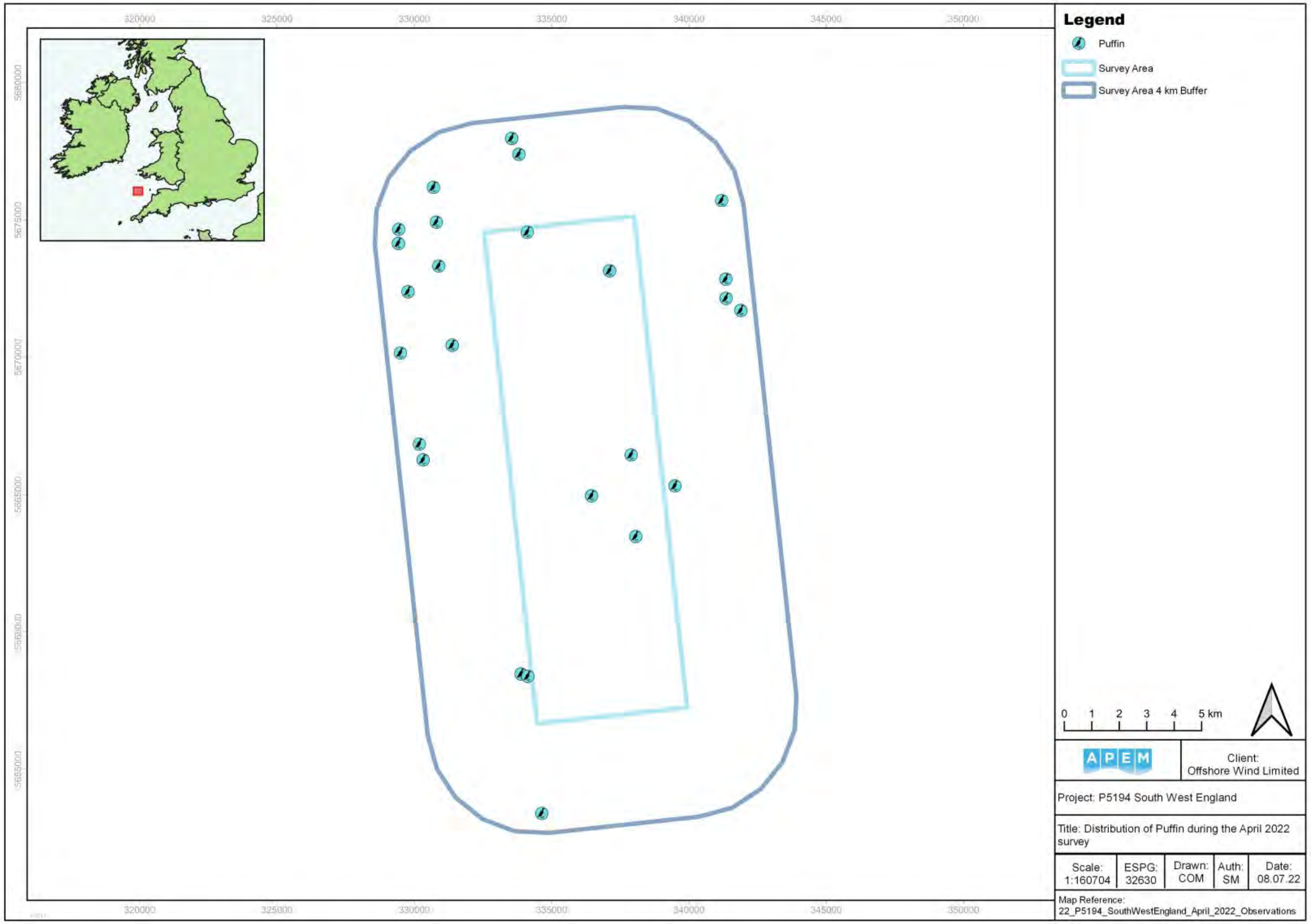


Figure 163 Distribution of puffins in Survey Area during April 2022

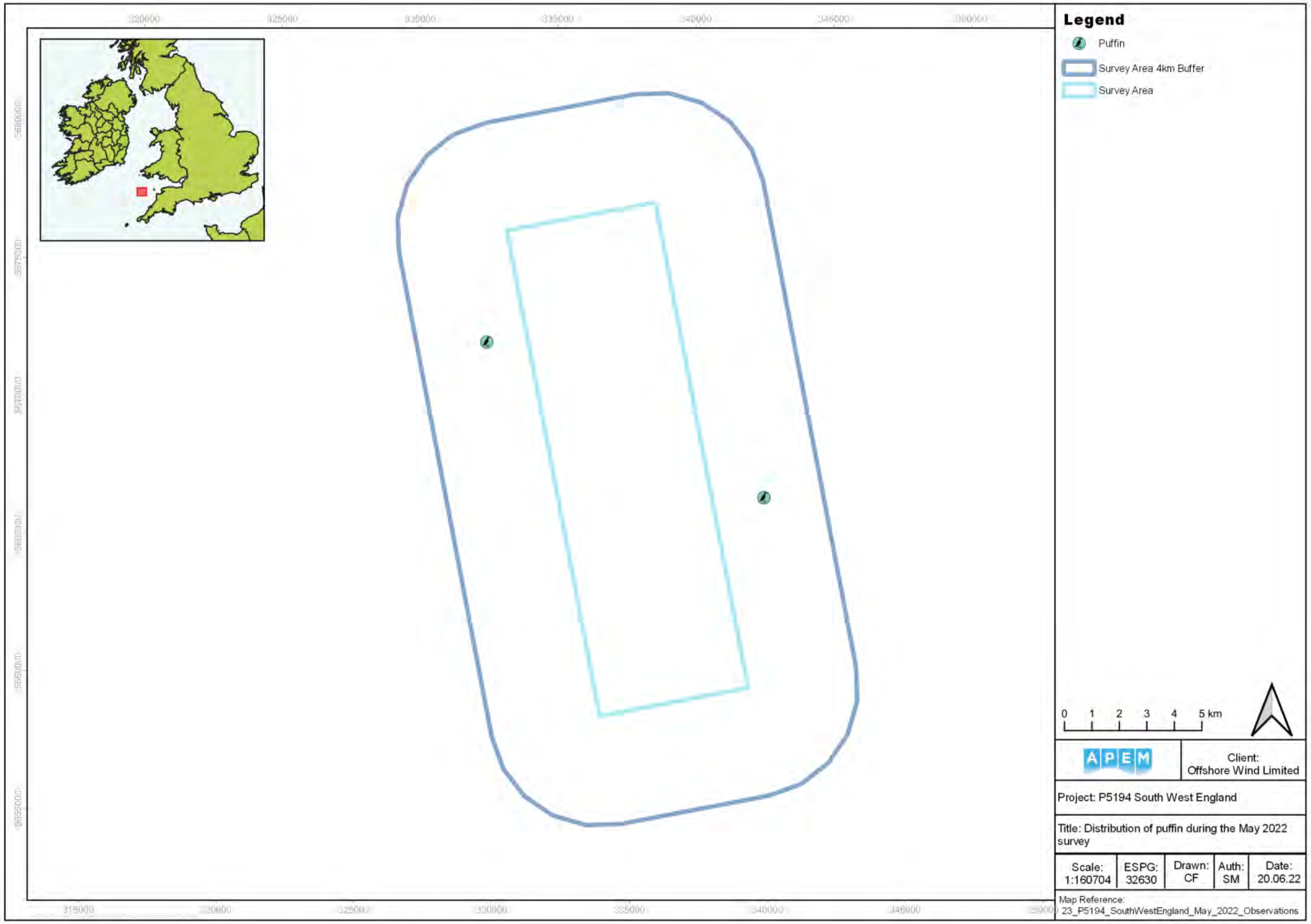
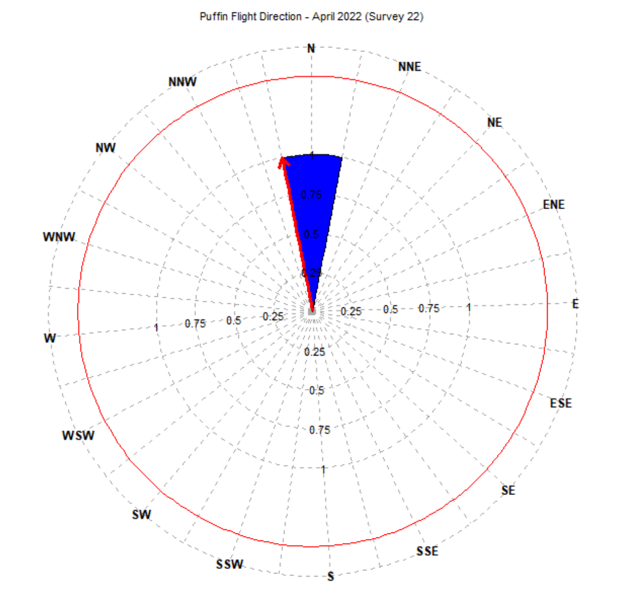


Figure 164 Distribution of puffins in Survey Area during May 2022



Number of Observations	1
Mean Vector (µ)	356.395
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 165 Summary of flight direction of puffins during survey period

4.18 Auk – Unidentified *Alcidae*

Auks were recorded in December 2020, January, February, March, June and November 2021, and during March to May 2022. The peak raw count of 16 in April 2022 resulted in an abundance estimate of 122 for the Survey Area (**Table 23**).

In the Southwest England Site, they were seen in February and November 2021, as well as during March to May 2022, with a peak raw count of four in April 2022, resulting in an abundance estimate of 34 for the area (**Table 23**).

In the 4 km Buffer Zone, they were present in December 2020, in January, February, March, June, and November 2021, and during March to May 2022. The peak raw count of 12 in April 2022 resulted in an abundance estimate of 88 for the area (**Table 23**).

Low numbers were recorded during the winter. And a single individual and small group were present in June 2021 and May 2022, respectively. In December 2020, there were six auks in the north and east of the Buffer (**Figure 166**). Six individuals were also present in the east of the Buffer in January 2021 (**Figure 167**). During February 2021, two birds were recorded in the north-eastern Buffer, and a single auk in the south-west of the Site (**Figure 168**). Two auks were noted in the northeast of the Buffer in March 2021 (**Figure 169**), and a single individual in June 2021 in the Buffer's north (**Figure 170**). In November 2021 and March 2022, individuals presented across the Survey Area with no apparent distribution pattern (**Figure 171; Figure 172**). In April 2022, four individuals were in the north, with four more individuals concentrated in the southeast (**Figure 173**). A small group in May 2022 was present in the northwest at the edge of the buffer-site (**Figure 174**).

A single auk flew east-southeast during February (124.533°, p=0.512; **Figure 175**).

Table 23 Raw counts and abundance and density estimates (individuals per km^2) of unidentified auks in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Dec-20	6	48	6	120	0.41	0.14
Jan-21	6	48	6	111	0.41	0.14
Feb-21	3	23	3	54	0.58	0.07
Mar-21	2	15	2	38	0.71	0.04
Jun-21	1	8	1	24	1.00	0.02
Nov-21	6	46	15	84	0.41	0.14
Mar-22	4	30	8	68	0.50	0.09
Apr-22	16	122	46	221	0.25	0.36
May-22	4	30	4	76	0.50	0.09
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Feb-21	1	9	1	26	1.00	0.09
Nov-21	2	17	2	43	0.71	0.17
Mar-22	1	9	1	26	1.00	0.09
Apr-22	4	34	4	85	0.50	0.34
May-22	2	17	2	52	0.71	0.17
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Dec-20	6	46	6	130	0.41	0.19
Jan-21	6	46	6	114	0.41	0.19
Feb-21	2	15	2	37	0.71	0.06
Mar-21	2	15	2	37	0.71	0.06
Jun-21	1	8	1	23	1.00	0.03
Nov-21	4	29	7	59	0.50	0.12
Mar-22	3	22	3	51	0.58	0.09
Apr-22	12	88	22	168	0.29	0.37
May-22	2	14	2	43	0.71	0.06

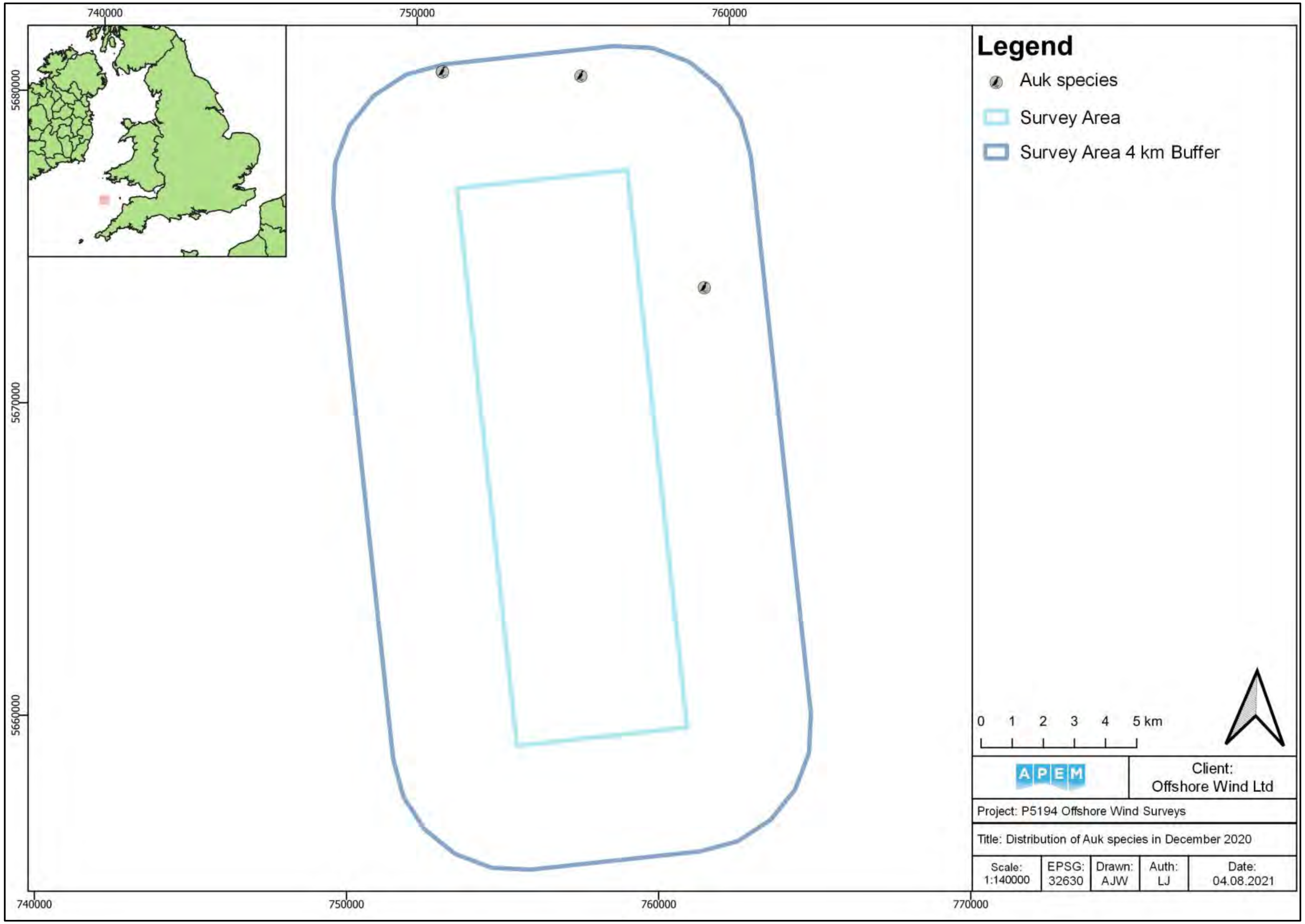


Figure 166 Distribution of auks recorded in Survey Area during December 2020

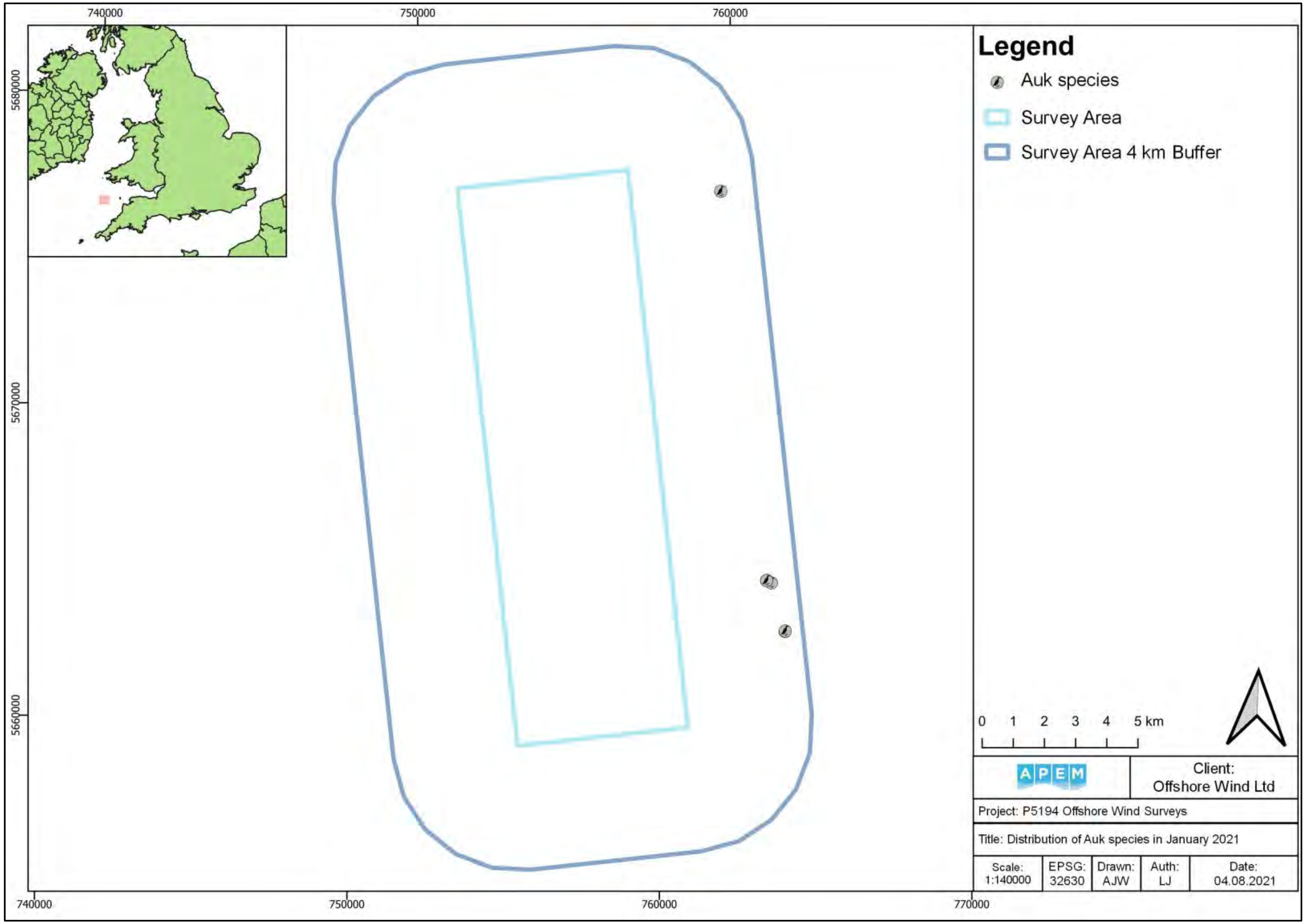


Figure 167 Distribution of auks in Survey Area during January 2021

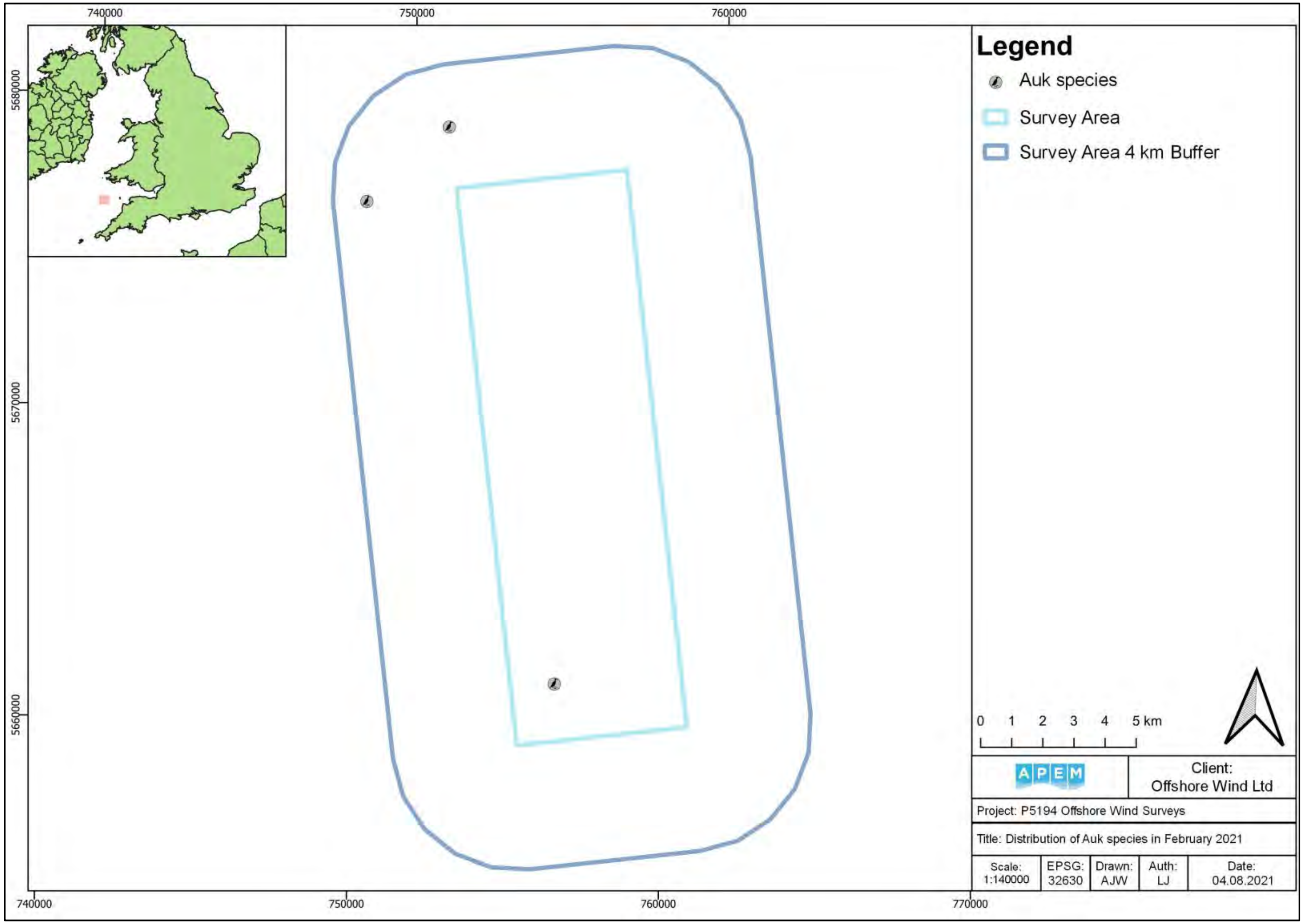


Figure 168 Distribution of auks in Survey Area during February 2021

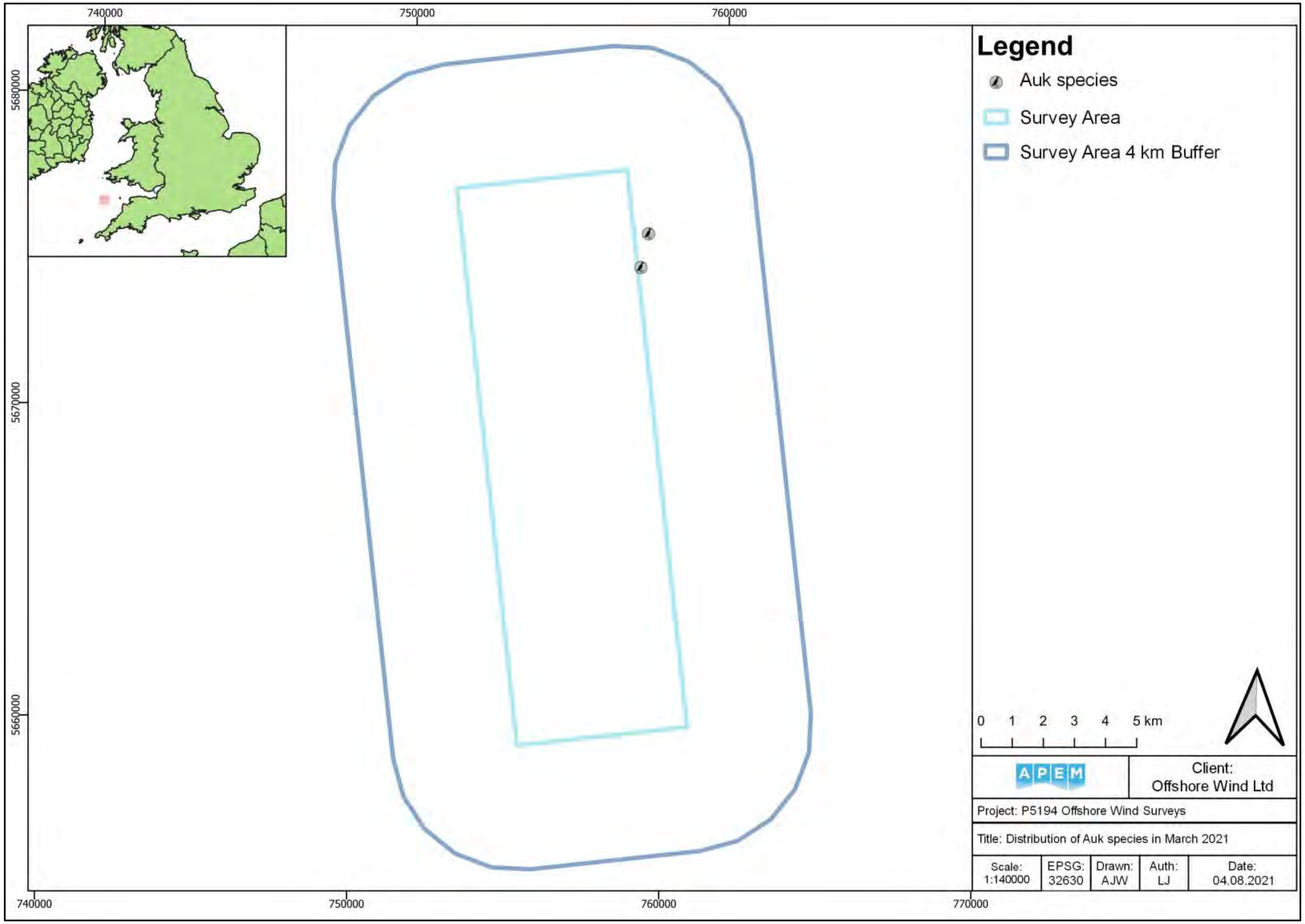


Figure 169 Distribution of auks in Survey Area during March 2021

Figure 170 Distribution of auks in Survey Area during June 2021

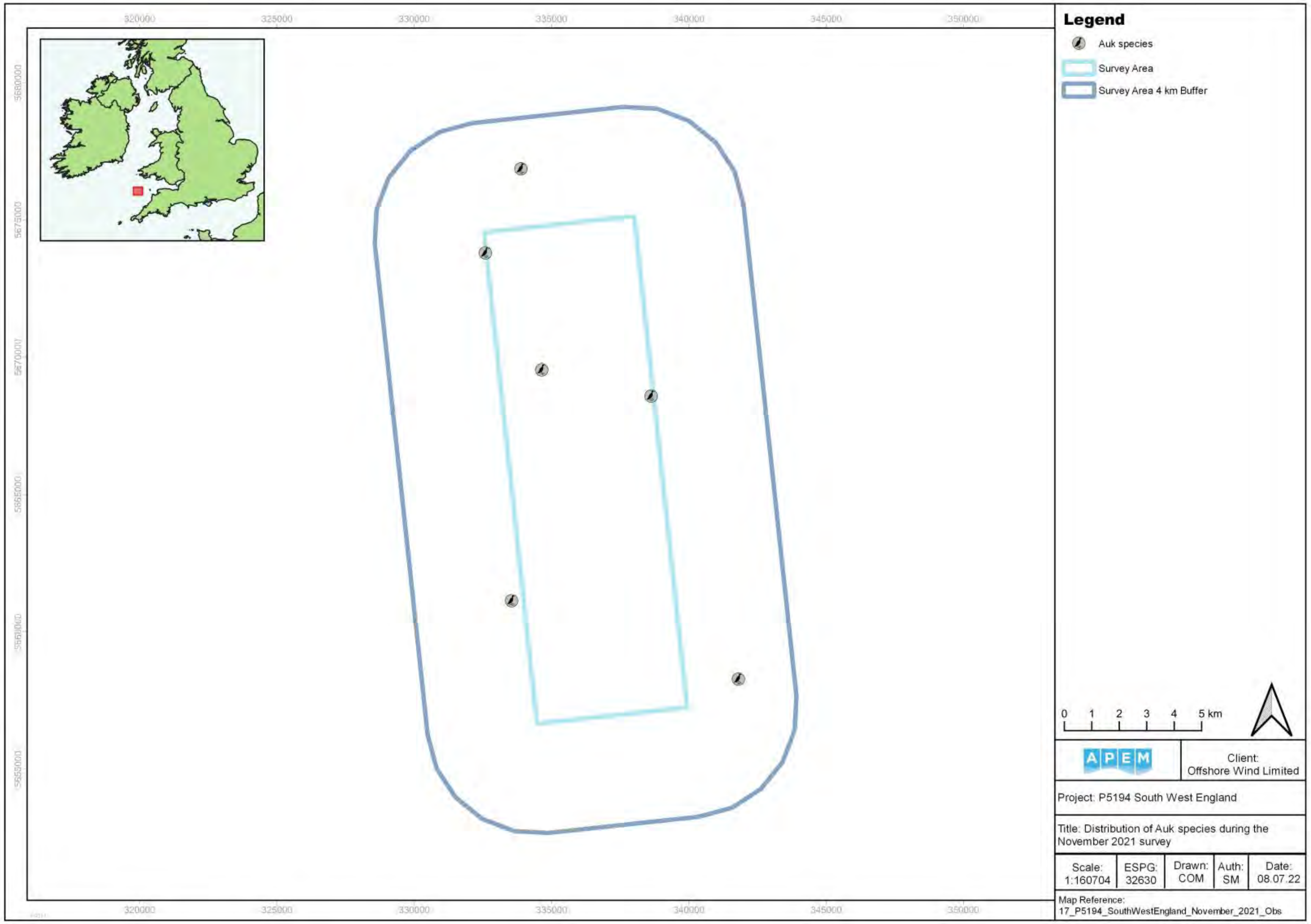


Figure 171 Distribution of auks in Survey Area during November 2021

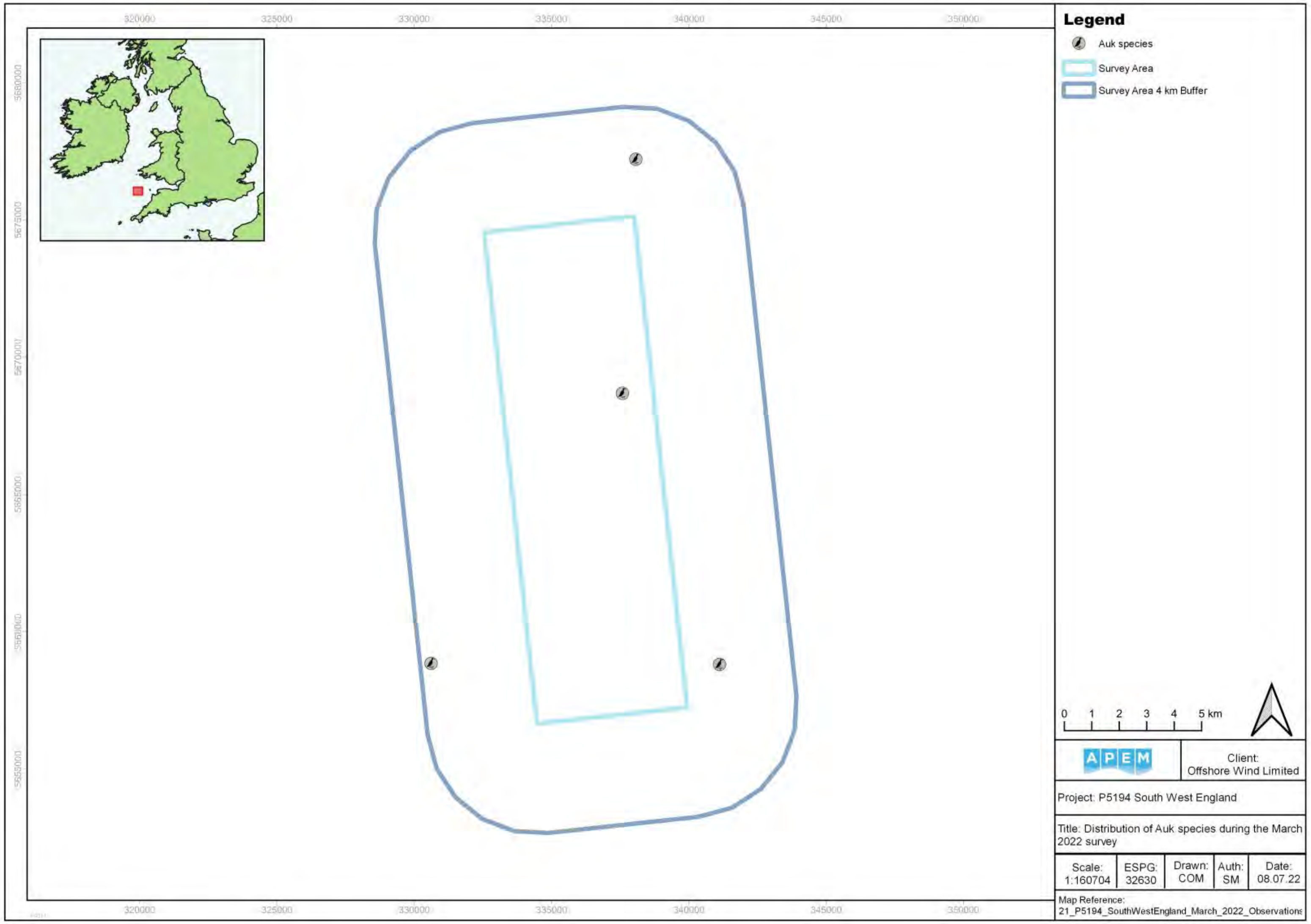


Figure 172 Distribution of auks in Survey Area during March 2022

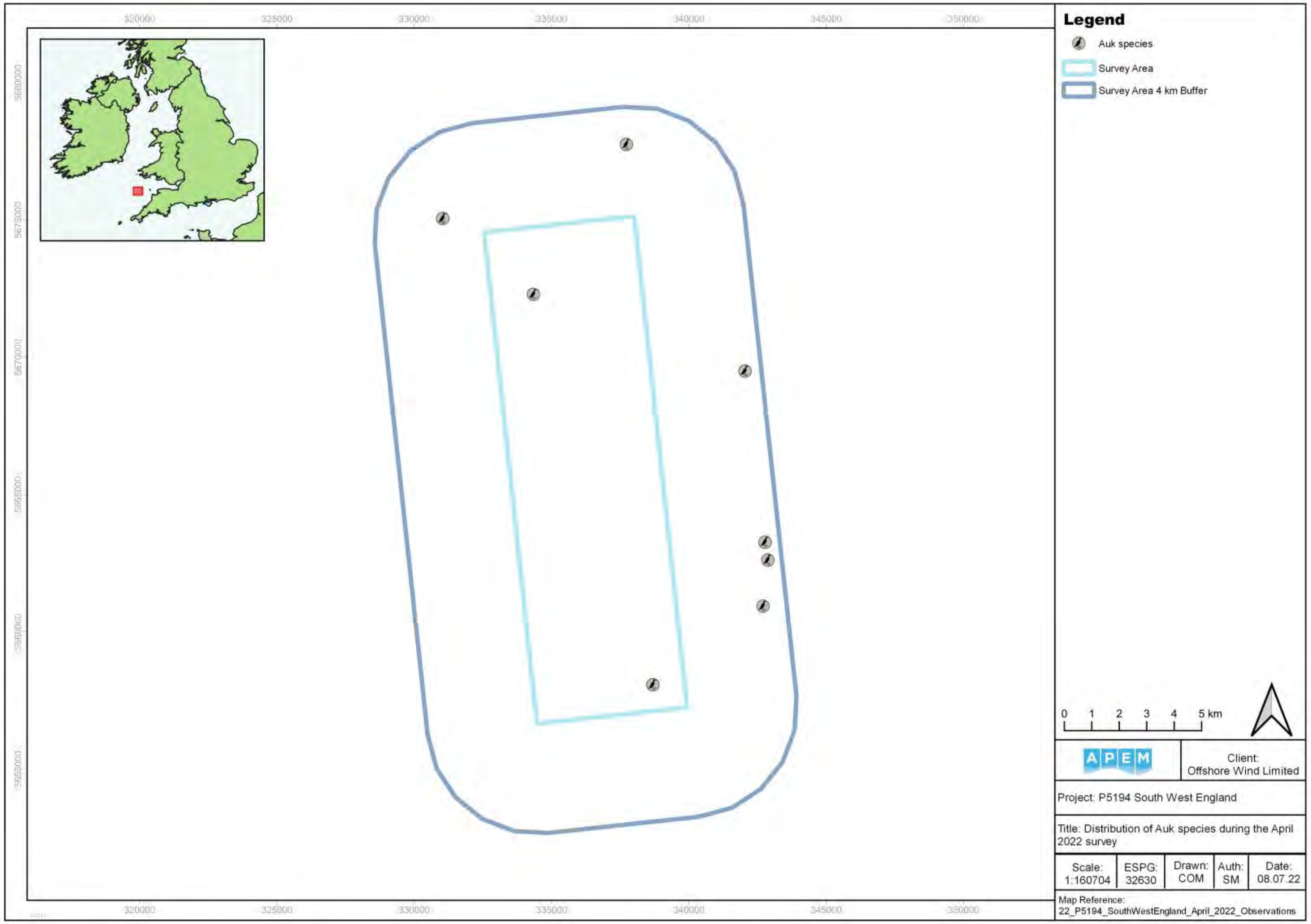


Figure 173 **Distribution of auks in Survey Area during April 2022**

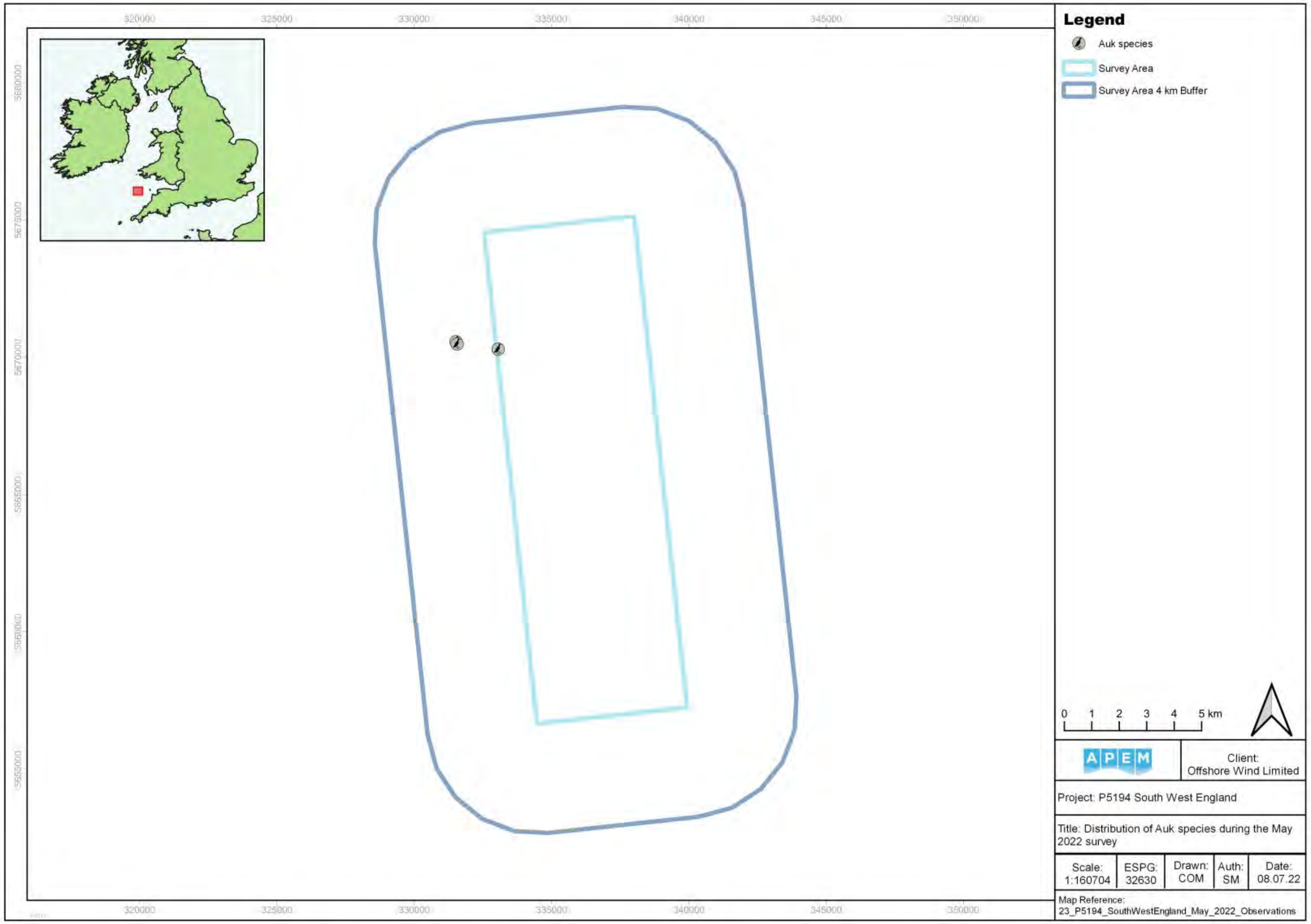
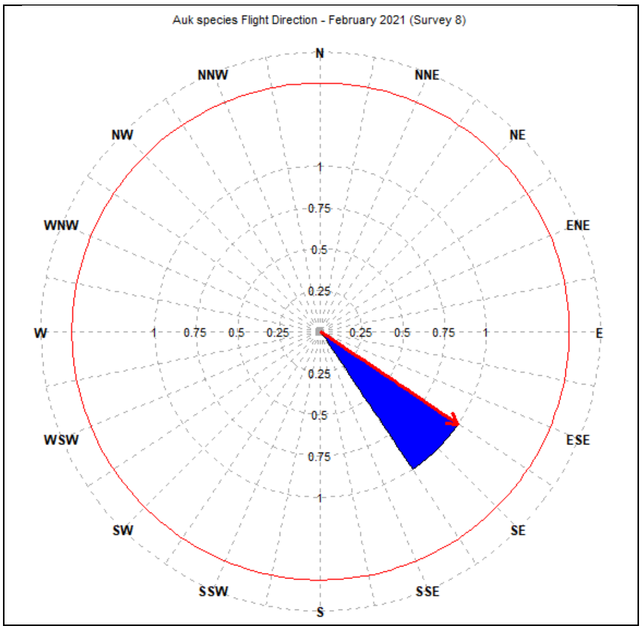


Figure 174 **Distribution of auks in Survey Area during May 2022**



Number of Observations	1
Mean Vector (µ)	124.533
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 175 February 2021

Figure 175 Summary of flight direction of auks during survey period

4.19 Fulmar – *Fulmarus glacialis*

Fulmars were present in August, September and December 2020, January to March, May, August, September, November and December 2021, and January to June 2022. The peak raw count of 77 in December 2020 resulted in an abundance estimate of 616 for the Survey Area (**Table 24**).

In the Southwest England Site, fulmars were recorded in August, September and December 2020, February and August 2021, and February, March, May and June 2022. The peak raw count of 15 in December 2020 resulted in an abundance estimate of 133 (**Table 24**).

In the 4 km Buffer Zone, fulmars were recorded in August, September and December 2020, in January to May, August, September, November and December 2021, and during January to May 2022. The peak raw count of 62 in December 2020 resulted in an abundance estimate of 476 (**Table 24**).

In Year One, low numbers were centrally present during August and within the southwest of the Site, as well as in the northwest, northeast, and east of the Buffer Zone (**Figure 176**). September similarly yielded low numbers, with individuals in the northeast of the Site, and the west and northwest Buffer Zone (**Figure 177**). In December 2020, they were loosely distributed in the west and southeast of the Site, and in the west and north of the Buffer (**Figure 178**). A dense group of individuals was also present in the southeast of the Buffer Zone during this survey.

In January 2021, a single individual was present in the southeast of the Buffer (**Figure 179**), whilst during February 2021, fulmars were identified in the east and southeast of the Buffer, as well as in the centre and northwest of the Site (**Figure 180**). In March 2021, the birds were recorded on the northern Buffer boundary, western Site boundary, and grouped in the southwest of the Buffer (**Figure 181**). In May 2021 a single fulmar was recorded in the southwest of the Buffer (**Figure 182**). The birds were recorded in low numbers for the remaining survey months, with the exception of February 2022. In September and November 2021, and January and April 2022, one individual was recorded each month in the Buffer's southeast, north, southwest and east respectively (**Figure 184**; **Figure 185**; **Figure 187**; **Figure 190**).

In August 2021, three individuals were located in the south of the Site, and at the northern edge of the Buffer (**Figure 183**). In December 2021, three individuals were in the north, east, and southwest of the Buffer (**Figure 186**). And three individuals were located in the central Site and the eastern edge of the Buffer in March 2022 (**Figure 189**). In February 2022, there was a greater density of fulmars with a central-eastern skew across the Site and Buffer (**Figure 188**).

Fulmars flew in various directions: north-northeast in December 2020 and June 2022 (21.554°, p<0.001; **Figure 193c;** 19.251°, p=0.512; **Figure 193l**); east in February, March, November, and December 2021 (95.696°, p=0.512; **Figure 193d**; 96.289°, p=0.015; **Figure 193e;** 86.731°, p=0.512; **Figure 193g;** 81.414°, p=0.588; **Figure 193h**); south-southeast in September 2020 (149.521°, p=0.195; **Figure 193b**); west in May 2021 (279.177°, p=0.512; **Figure 193f**); west-northwest in August 2020 (306.590°, p=0.567; **Figure 193a**); southwest in August 2021 (215.822°, p=0.212; **Figure 193e**), north-northwest in September 2021 and February 2022 (343.048°, p=0.512; **Figure 193f;** 340.574°, p=0.167; **Figure 193j**); north in January 2022 (4.833°, p=0.512; **Figure 193i**); and east-northeast in March 2022 (56.558°, p=0.512; **Figure 193k**).

Table 24 **Raw counts and abundance and density estimates (individuals per km^2) of fulmar in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone**

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Aug-20	6	46	15	83	0.41	0.14
Sep-20	8	63	8	181	0.35	0.19
Dec-20	77	616	88	1479	0.11	1.83
Jan-21	1	8	1	24	1.00	0.02
Feb-21	9	69	9	161	0.33	0.21
Mar-21	10	77	23	153	0.32	0.23
May-21	1	7	1	22	1.00	0.02
Aug-21	3	24	3	55	0.58	0.07
Sep-21	1	8	1	23	1.00	0.02
Nov-21	1	8	1	23	1.00	0.02
Dec-21	3	23	3	54	0.58	0.07
Jan-22	1	8	1	23	1.00	0.02
Feb-22	19	147	54	278	0.23	19.00
Mar-22	3	23	3	53	0.58	0.07
Apr-22	1	8	1	30	1.00	0.02
May-22	2	15	2	38	0.71	0.04
Jun-22	2	15	2	37	0.71	0.04
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Aug-20	3	25	3	58	0.58	0.25
Sep-20	1	9	1	35	1.00	0.09
Dec-20	15	133	15	383	0.26	1.34
Feb-21	2	17	2	43	0.71	0.17
Aug-21	2	18	2	44	0.71	0.18
Feb-22	13	113	17	243	0.28	1.14
Mar-22	1	9	1	26	1.00	0.09
May-22	1	9	1	26	1.00	0.09
Jun-22	2	17	2	42	0.71	0.17
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Aug-20	3	22	3	44	0.58	0.09
Sep-20	7	53	7	173	0.38	0.22
Dec-20	62	476	62	1235	0.13	2.00
Jan-21	1	8	1	23	1.00	0.03

Feb-21	7	51	7	146	0.38	0.21
Mar-21	10	73	15	139	0.32	0.31
May-21	1	7	1	21	1.00	0.03
Aug-21	1	8	1	23	1.00	0.03
Sep-21	1	7	1	29	1.00	0.03
Nov-21	1	7	1	22	1.00	0.03
Dec-21	3	22	3	51	0.58	0.09
Jan-22	1	7	1	22	1.00	0.03
Feb-22	6	44	7	88	0.41	0.19
Mar-22	2	14	2	36	0.71	0.06
Apr-22	1	7	1	22	1.00	0.03
May-22	1	7	1	22	1.00	0.03

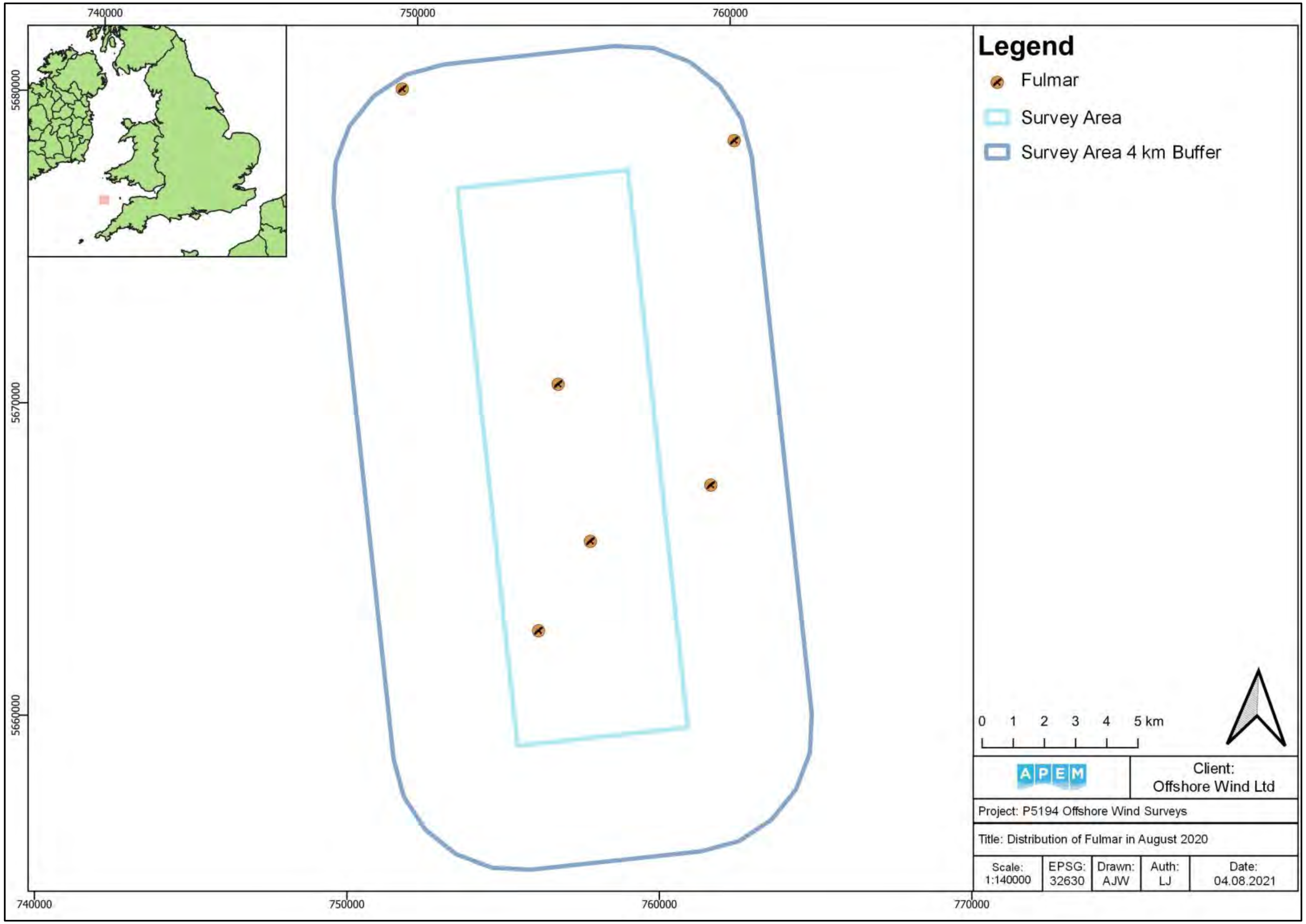


Figure 176 Distribution of fulmars in Survey Area during August 2020

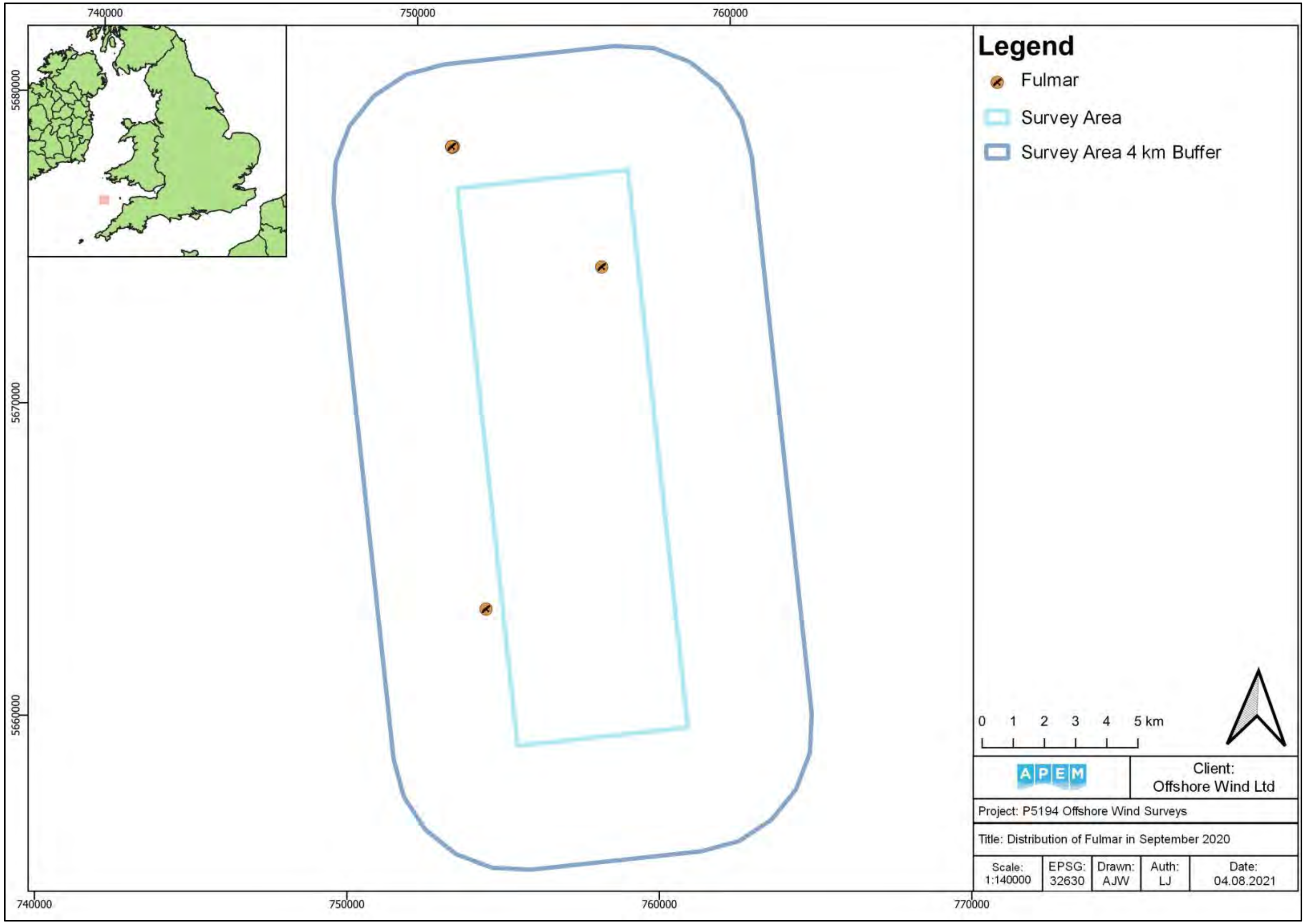


Figure 177 Distribution of fulmars in Survey Area during September 2020

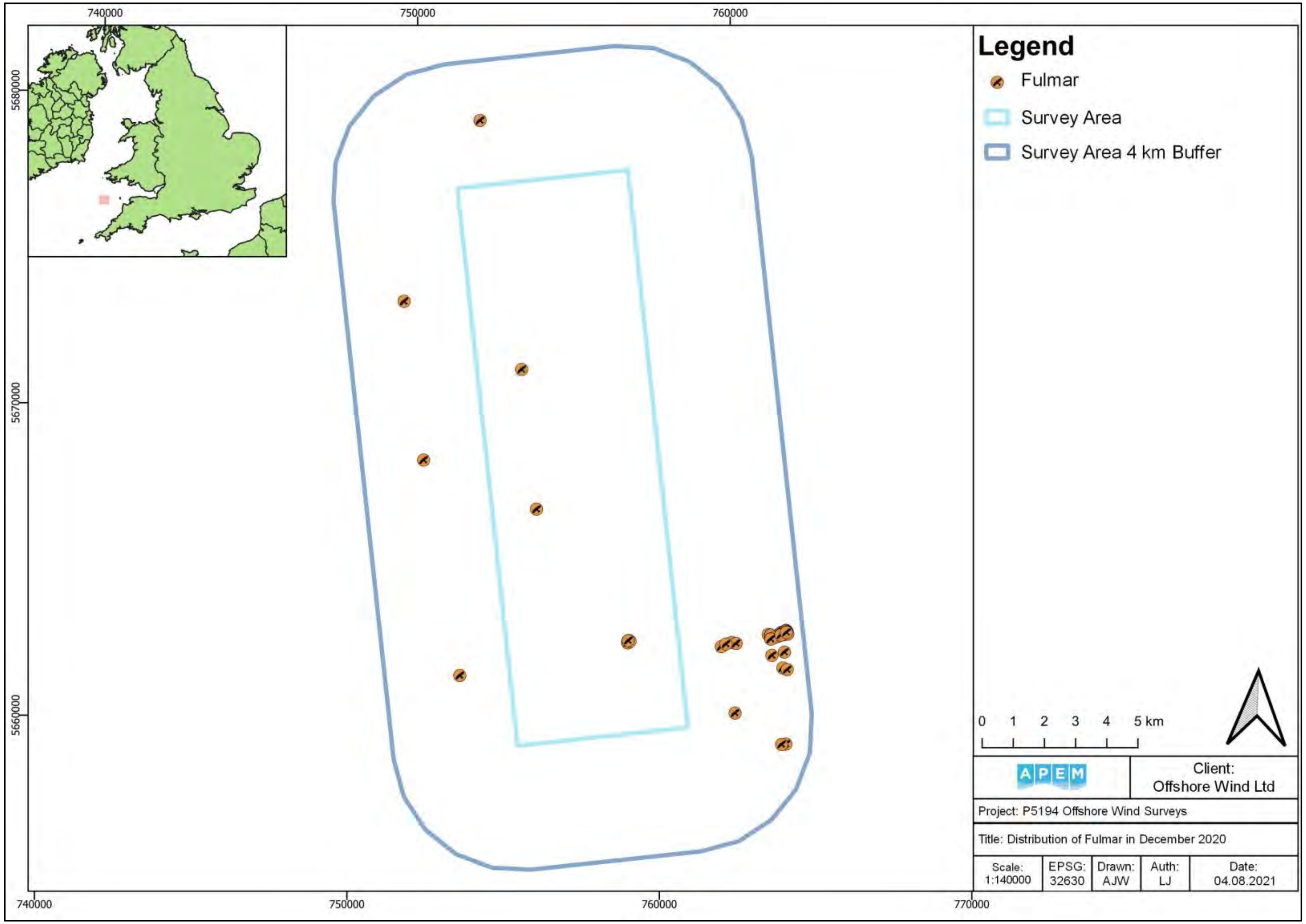


Figure 178 Distribution of fulmars in Survey Area during December 2020

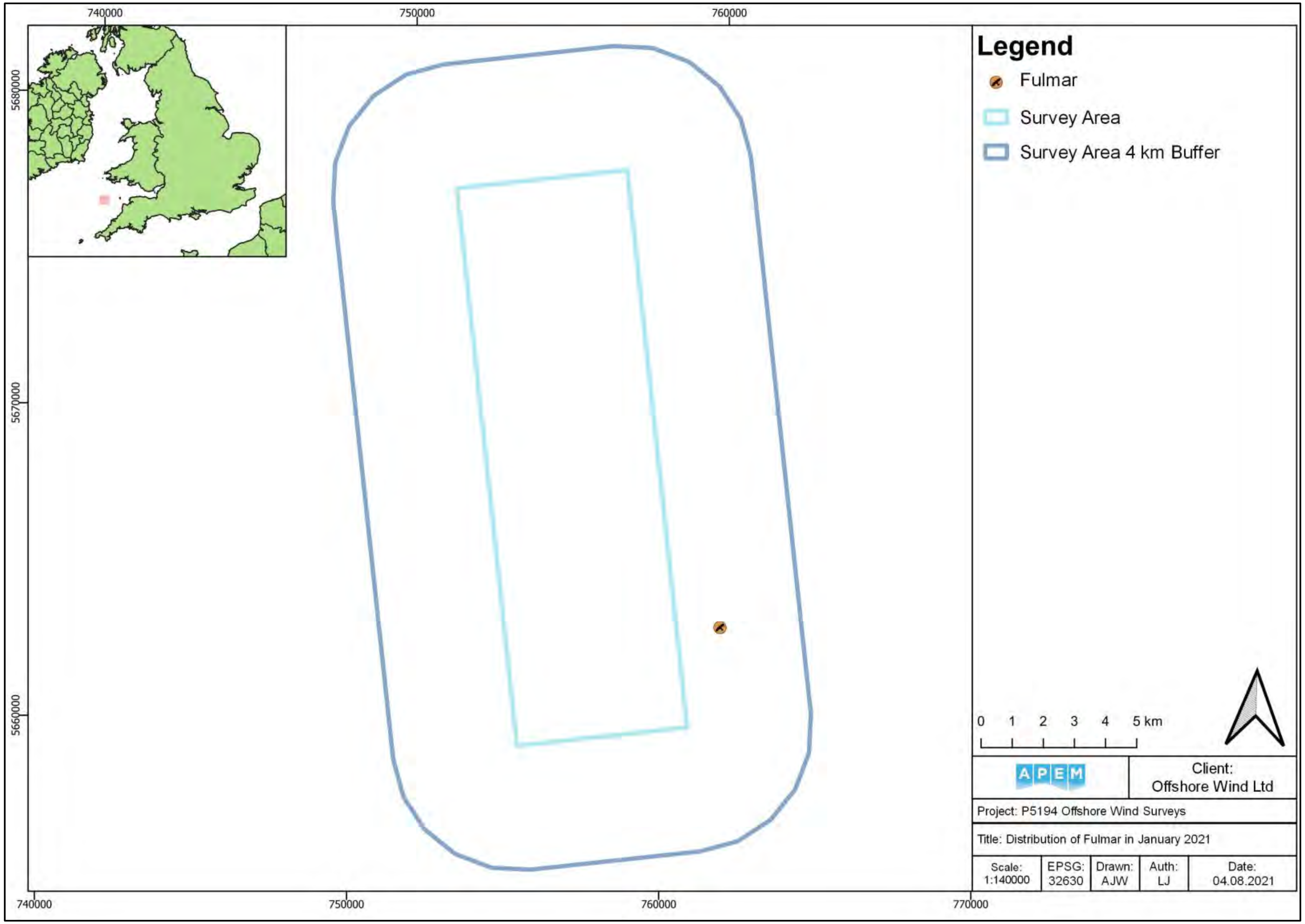


Figure 179 Distribution of fulmars in Survey Area during January 2021

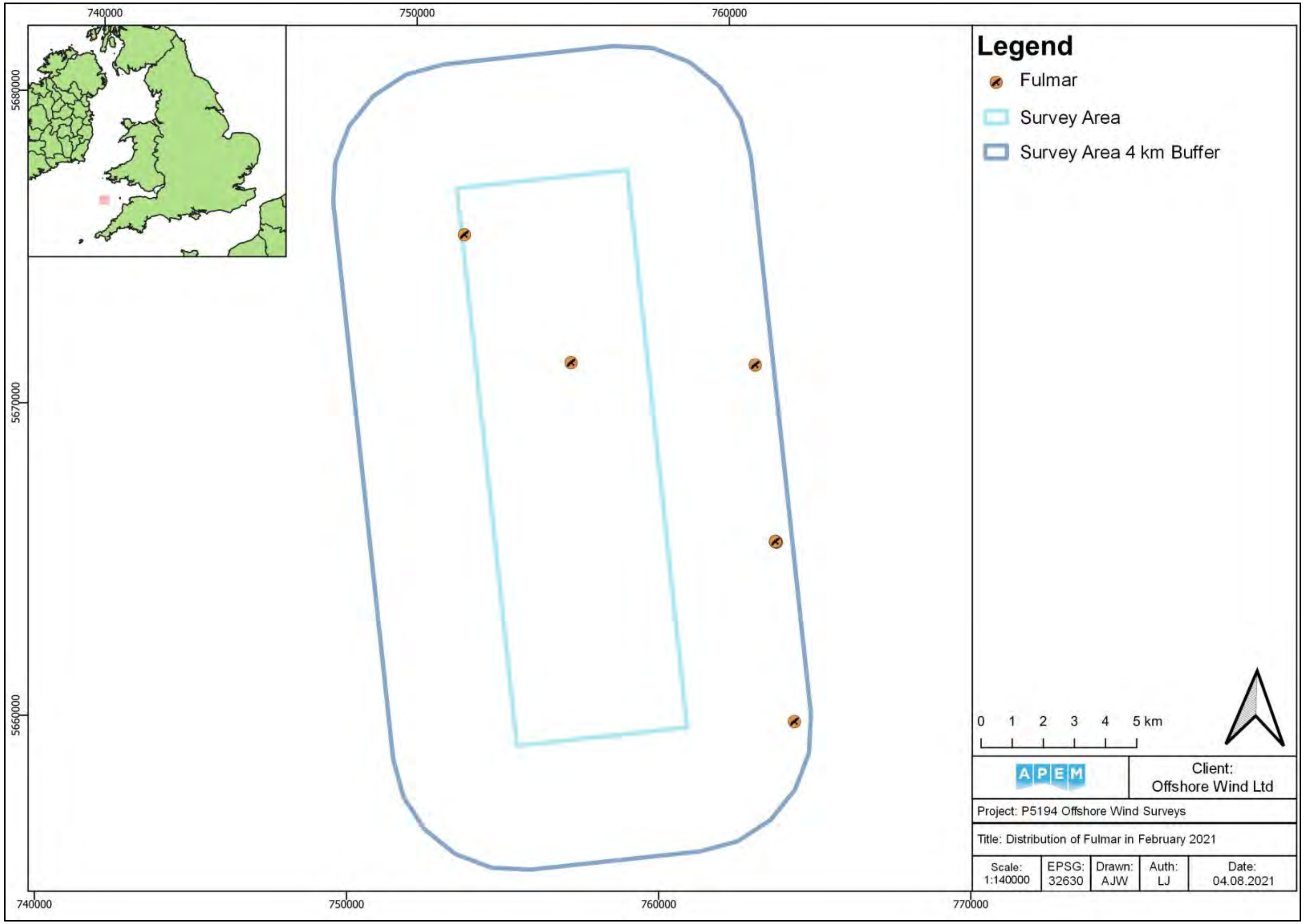


Figure 180 Distribution of fulmars in Survey Area during February 2021

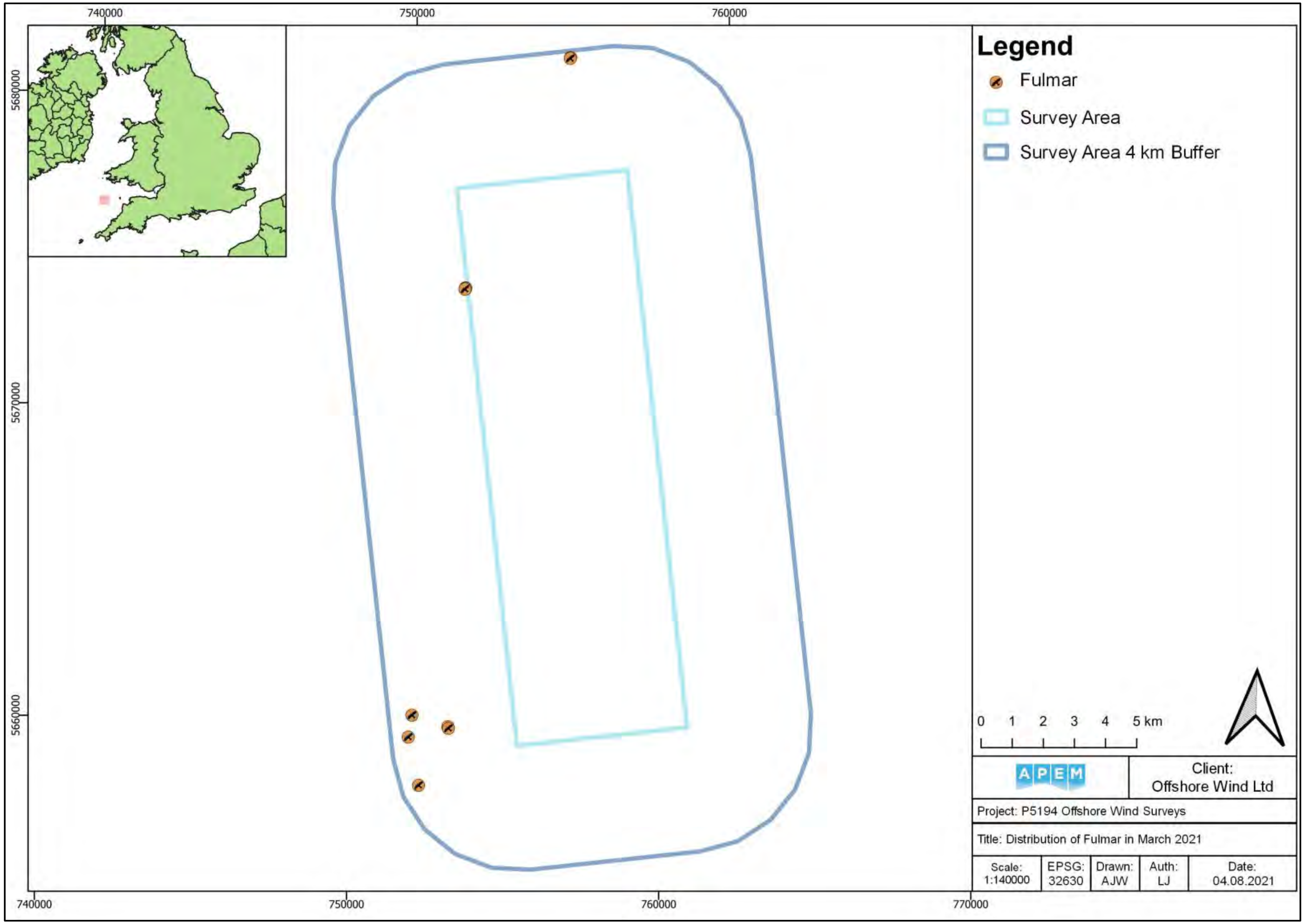


Figure 181 Distribution of fulmars in Survey Area during March 2021

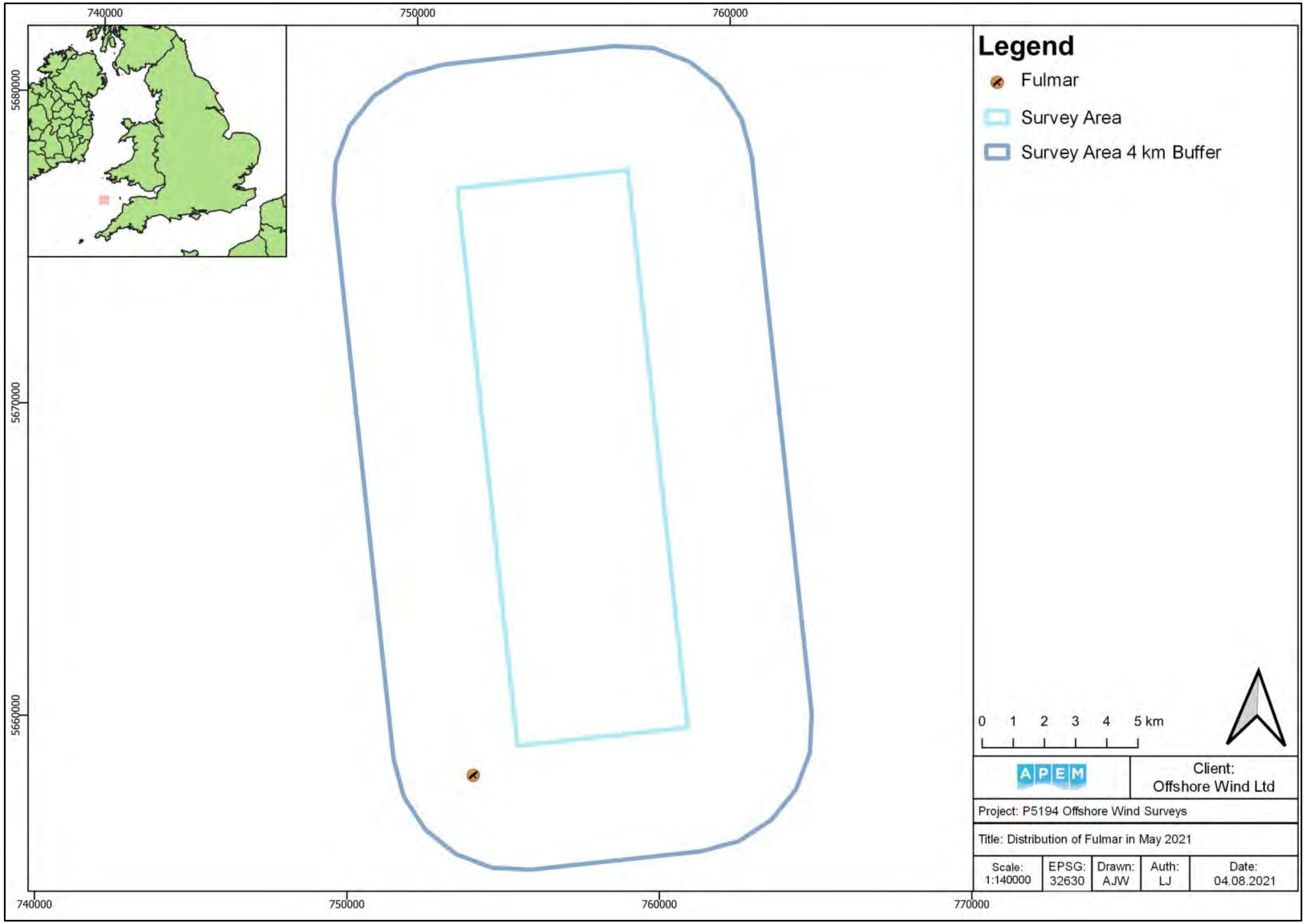


Figure 182 Distribution of fulmars in Survey Area during May 2021

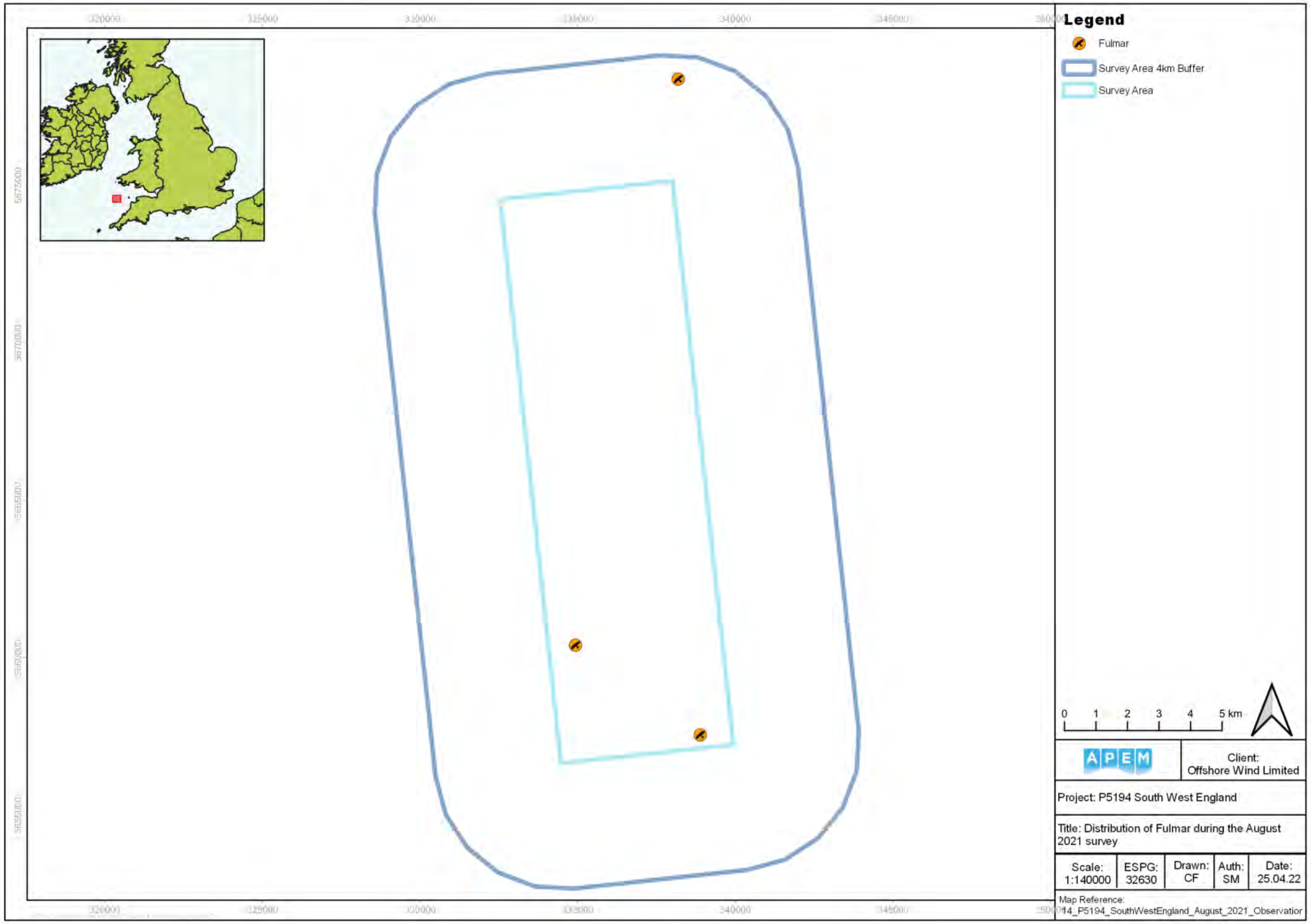


Figure 183 **Distribution of fulmars in Survey Area during August 2021**

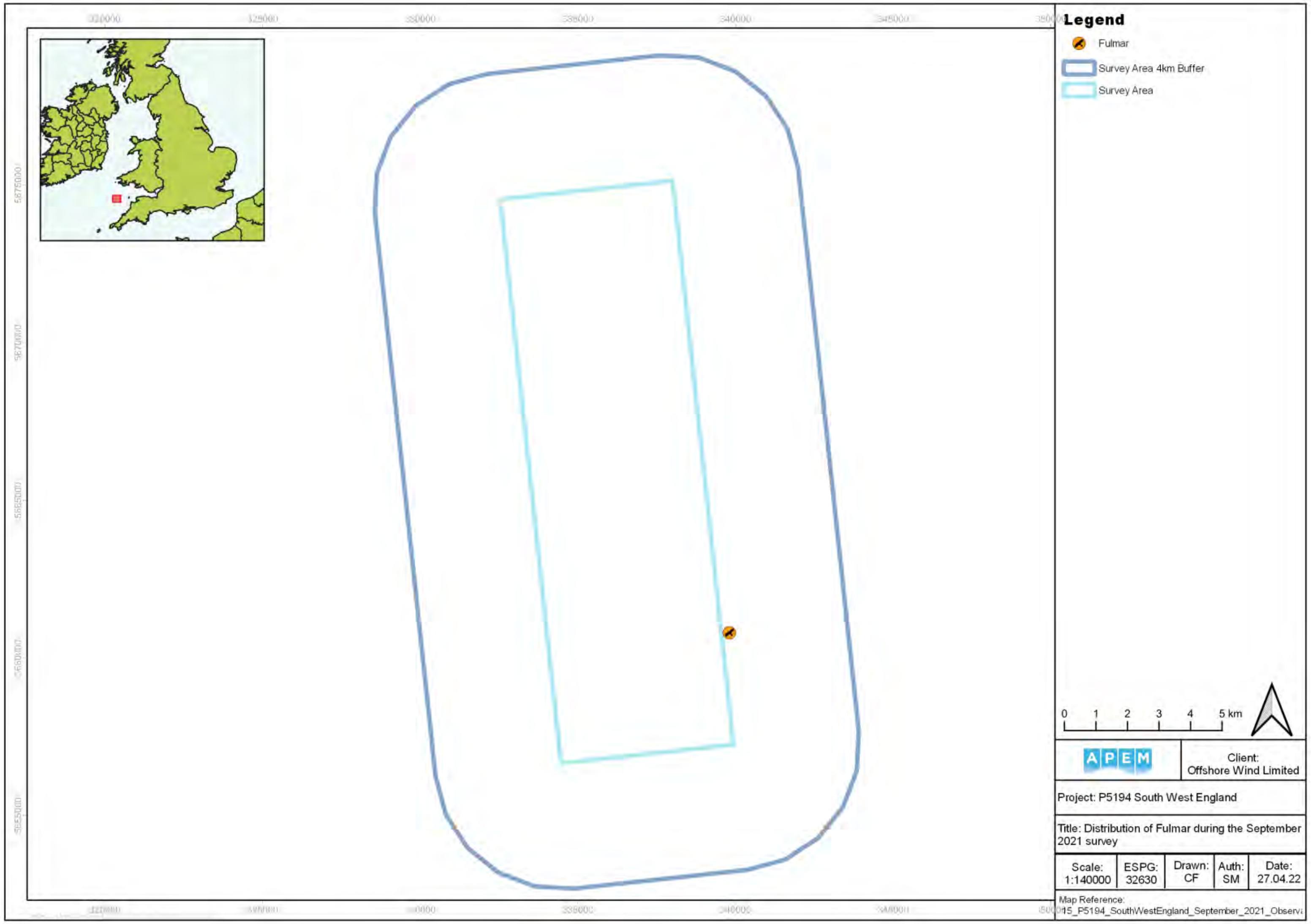


Figure 184 Distribution of fulmars in Survey Area during September 2021

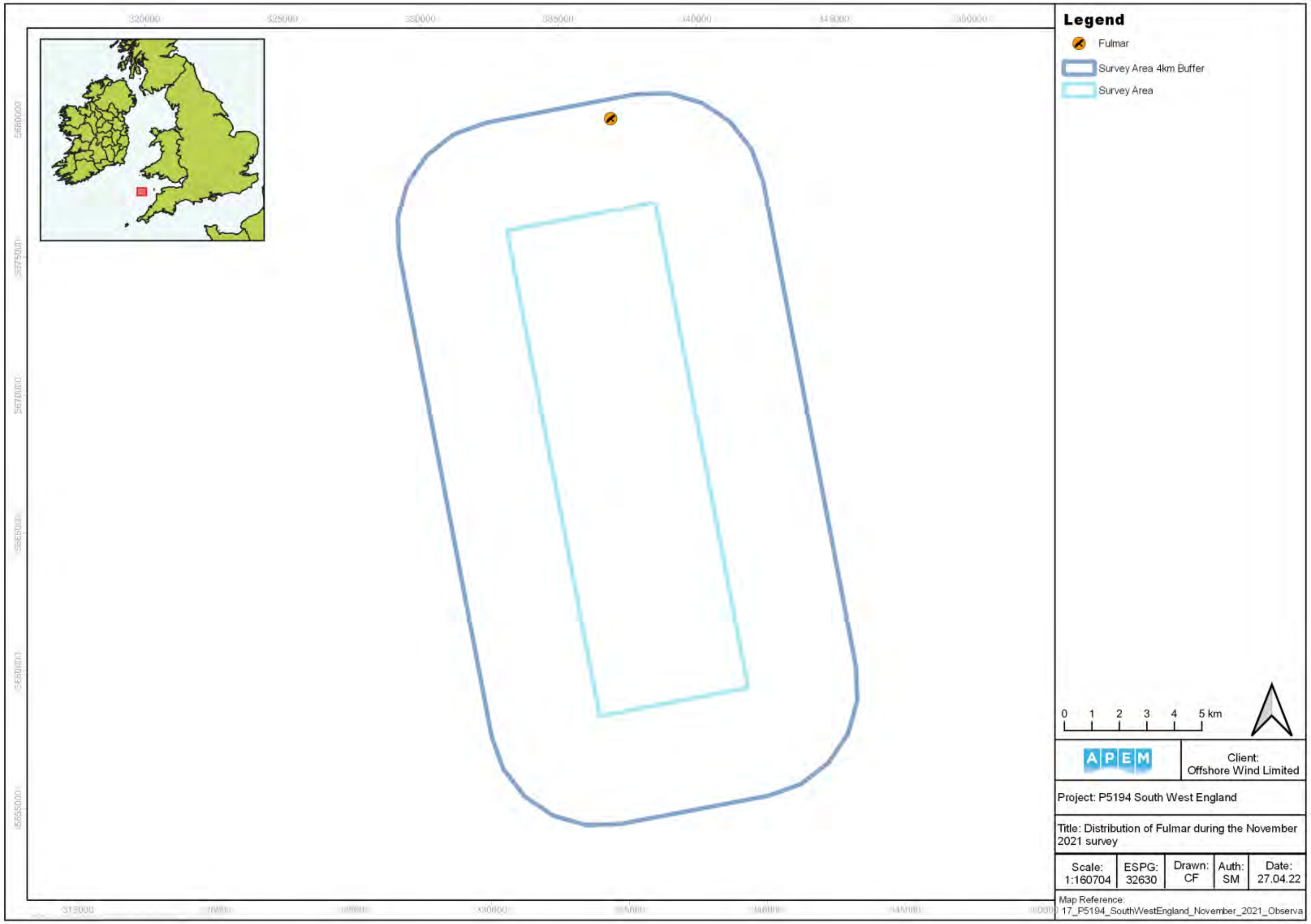


Figure 185 Distribution of fulmars in Survey Area during November 2021

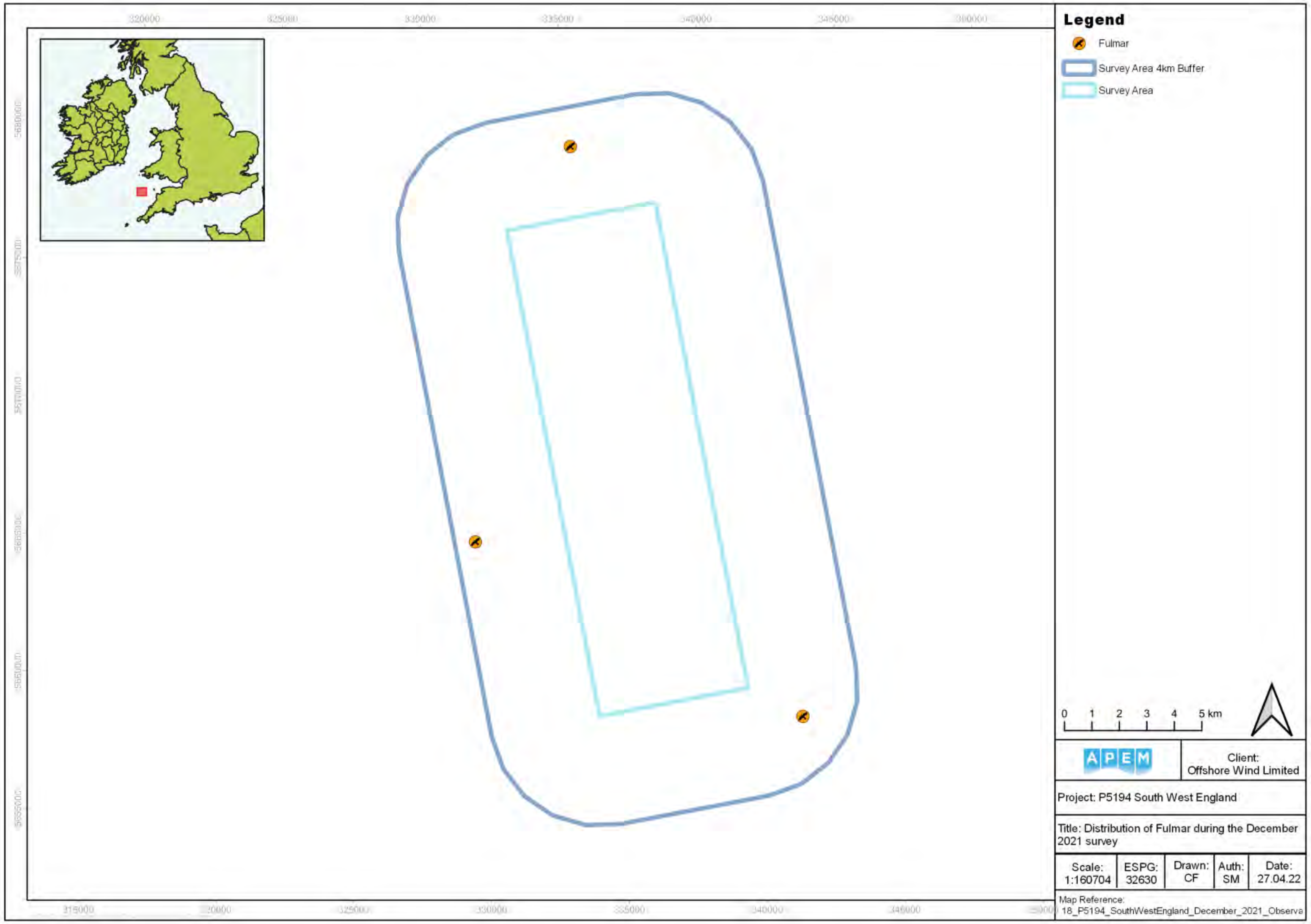


Figure 186 Distribution of fulmars in Survey Area during December 2021

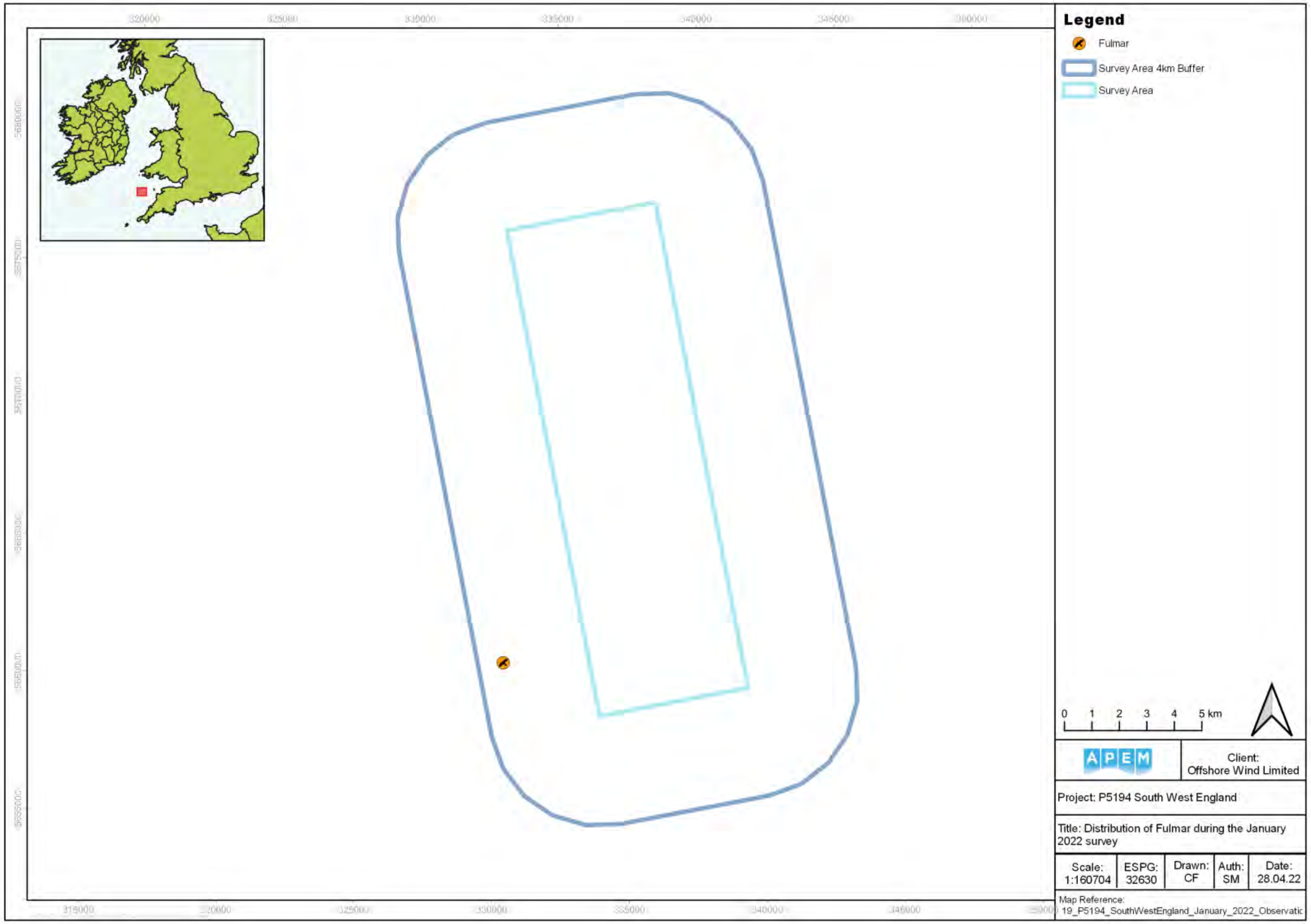


Figure 187 Distribution of fulmars in Survey Area during January 2022

Figure 188 Distribution of fulmars in Survey Area during February 2022

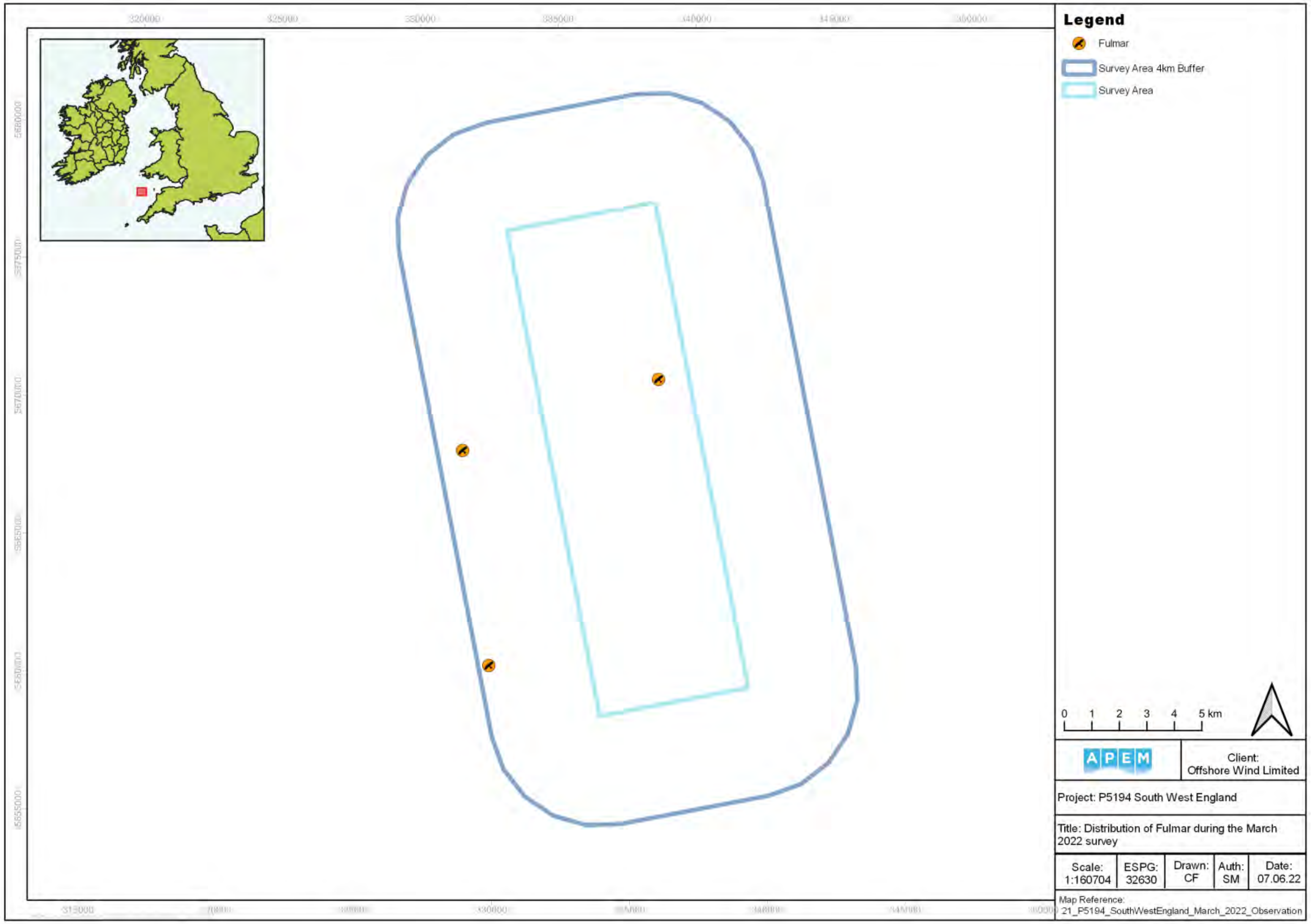


Figure 189 Distribution of fulmars in Survey Area during March 2022

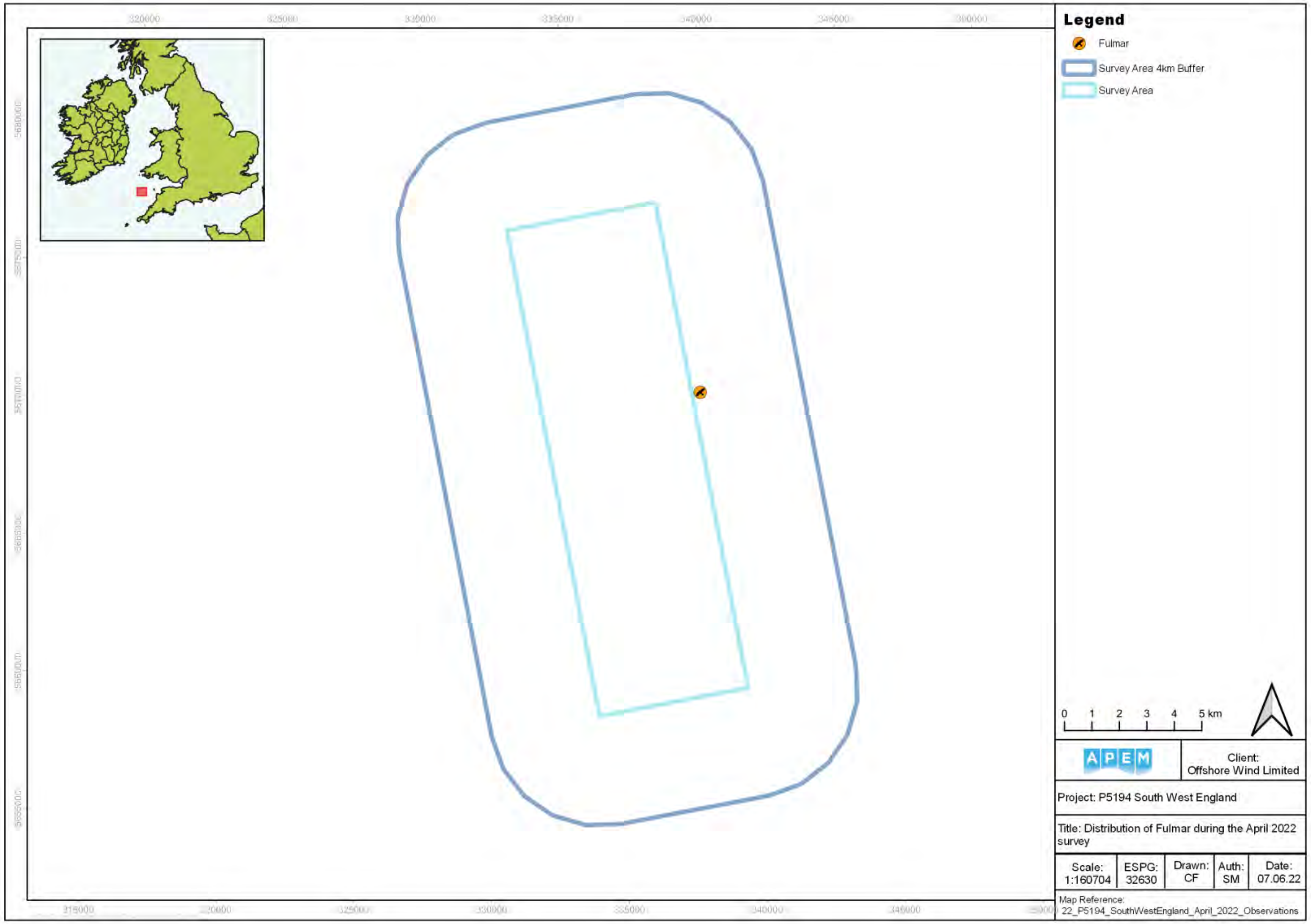


Figure 190 Distribution of fulmars in Survey Area during April 2022

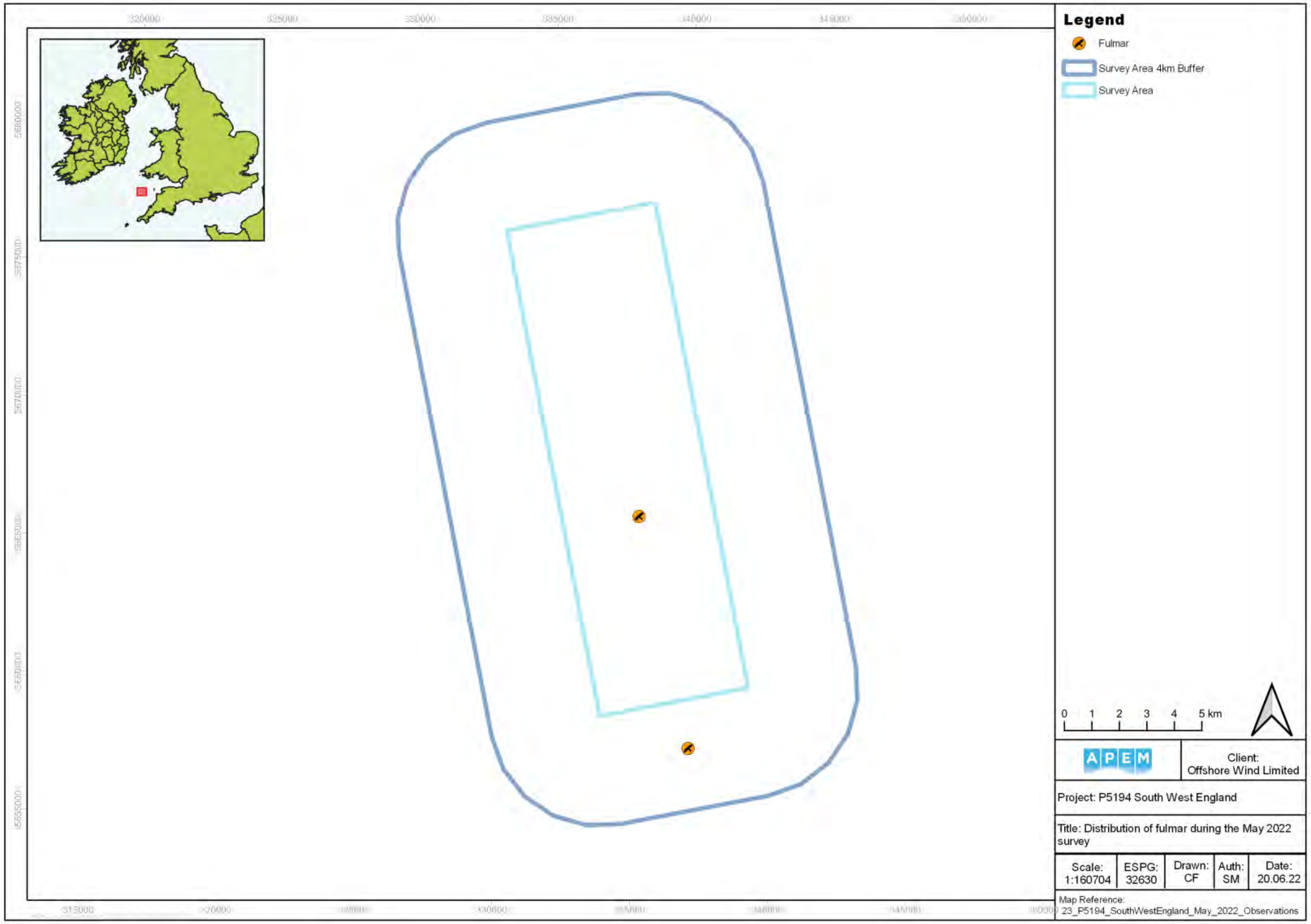


Figure 191 Distribution of fulmars in Survey Area during May 2022

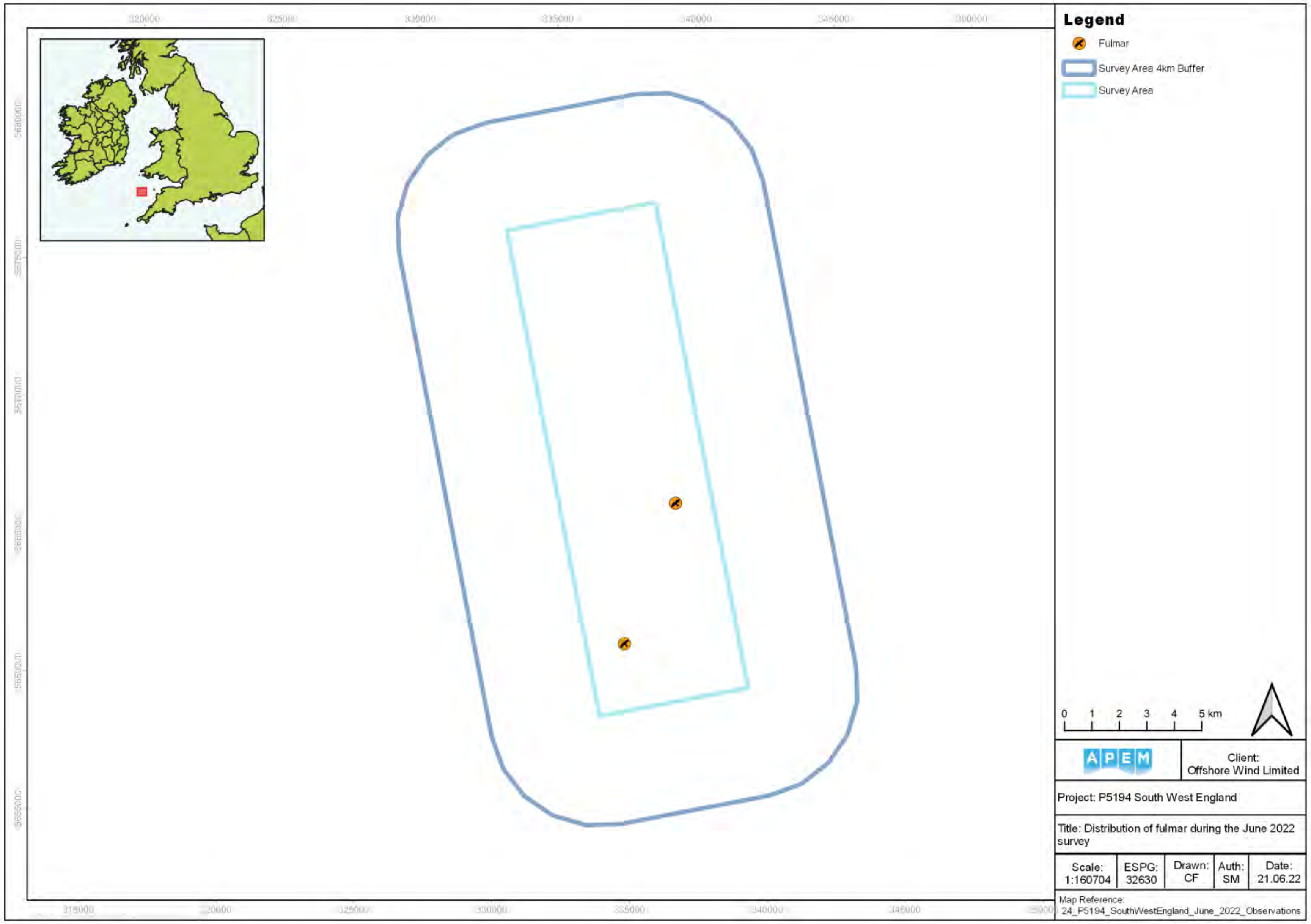
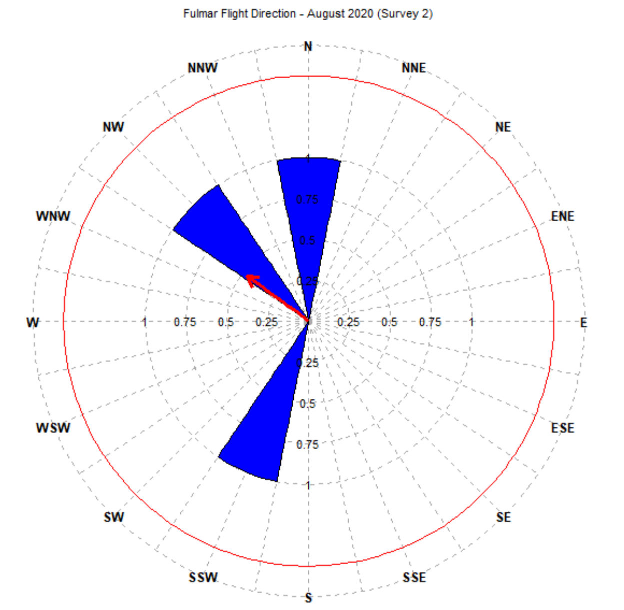
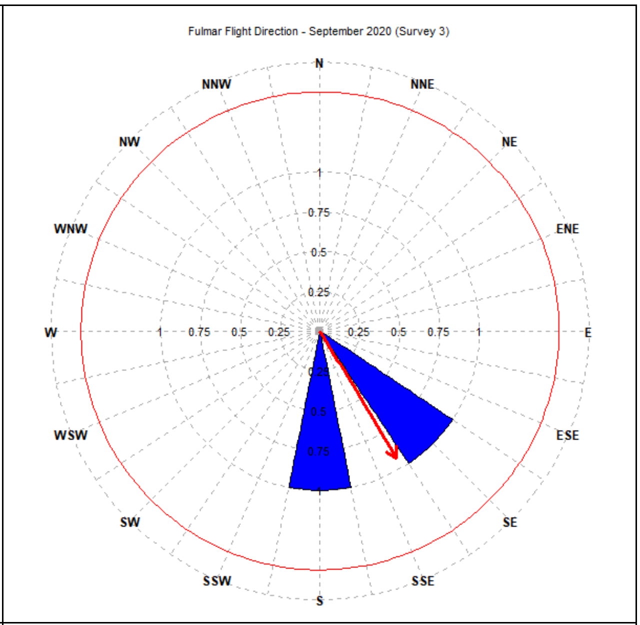


Figure 192 Distribution of fulmars in Survey Area during June 2022



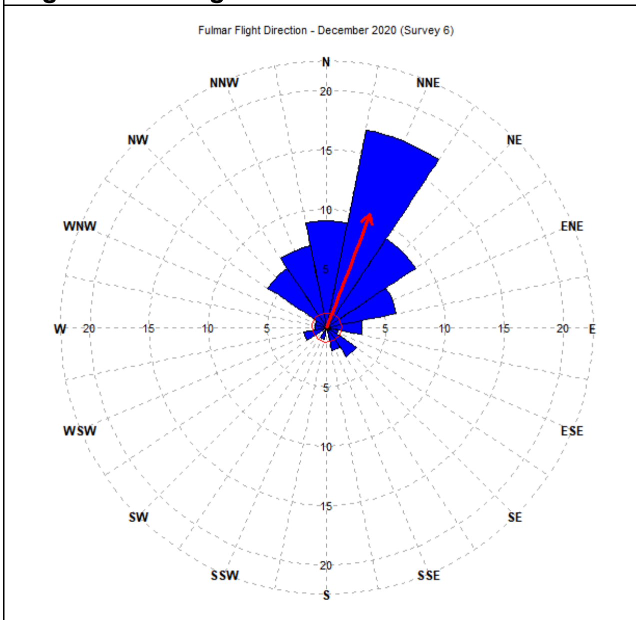
Number of Observations	3
Mean Vector (μ)	306.590
Length of Mean Vector (r)	0.464
Rayleigh Test (Z)	0.646
Rayleigh Test (p)	0.567

Figure 193a August 2020



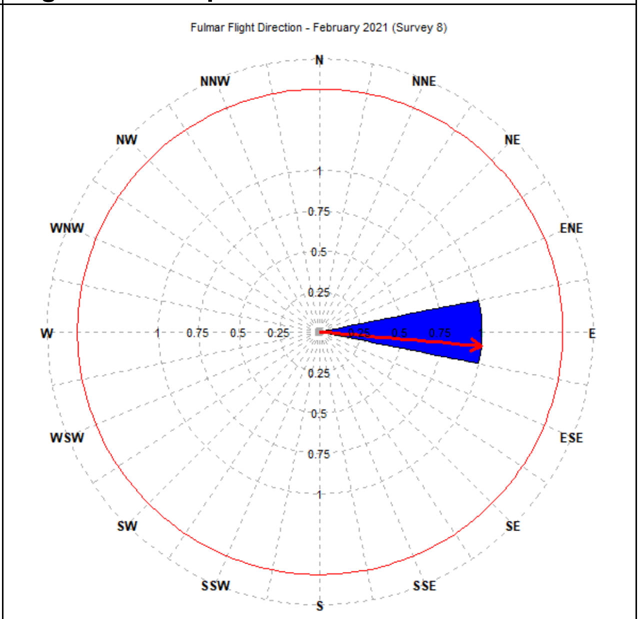
Number of Observations	2
Mean Vector (μ)	149.521
Length of Mean Vector (r)	0.929
Rayleigh Test (Z)	1.725
Rayleigh Test (p)	0.195

Figure 193b September 2020



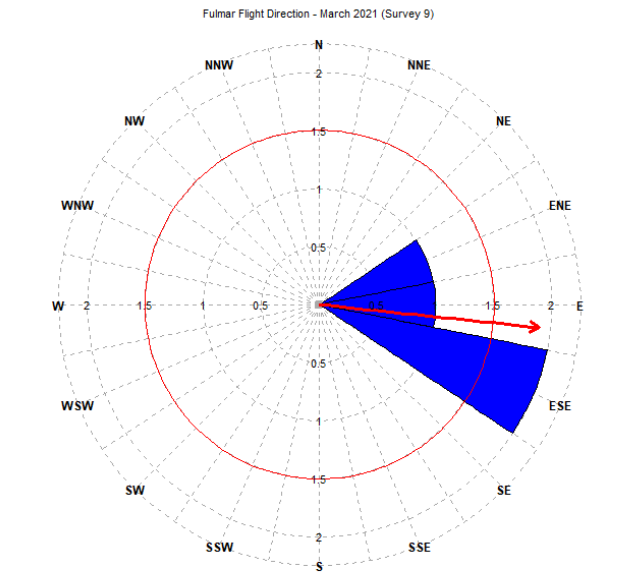
Number of Observations	68
Mean Vector (μ)	21.554
Length of Mean Vector (r)	0.599
Rayleigh Test (Z)	24.413
Rayleigh Test (p)	<0.001

Figure 193c December 2020



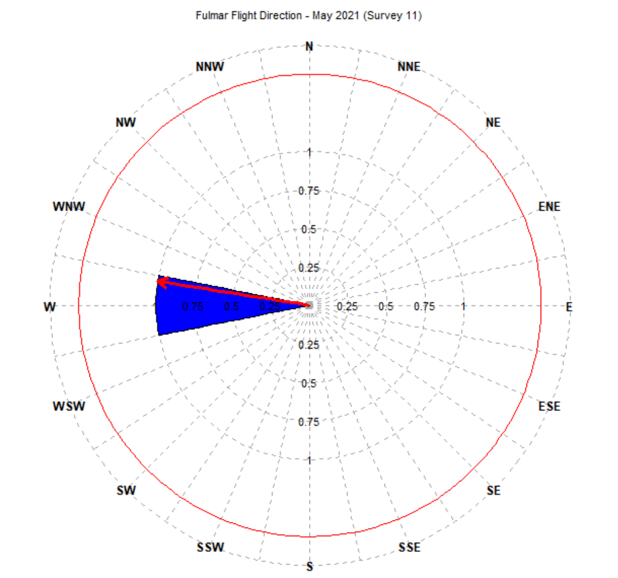
Number of Observations	1
Mean Vector (μ)	95.696
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 193d February 2021



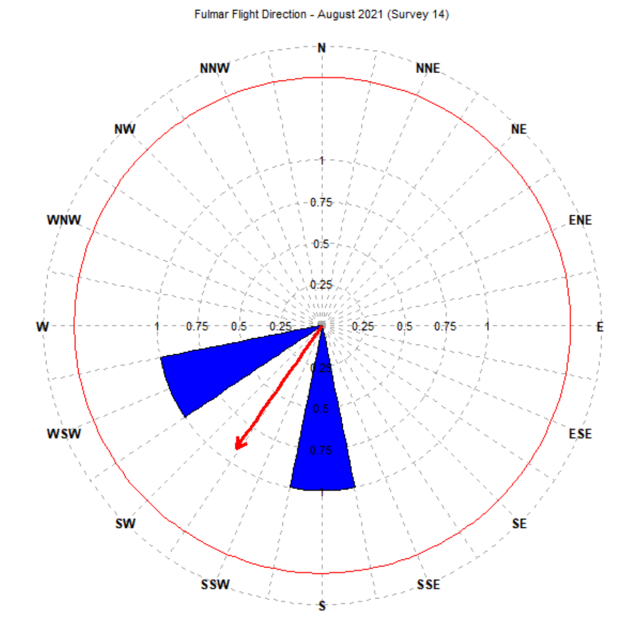
Number of Observations	4
Mean Vector (μ)	96.289
Length of Mean Vector (r)	0.951
Rayleigh Test (Z)	3.618
Rayleigh Test (p)	0.015

Figure 193e March 2021



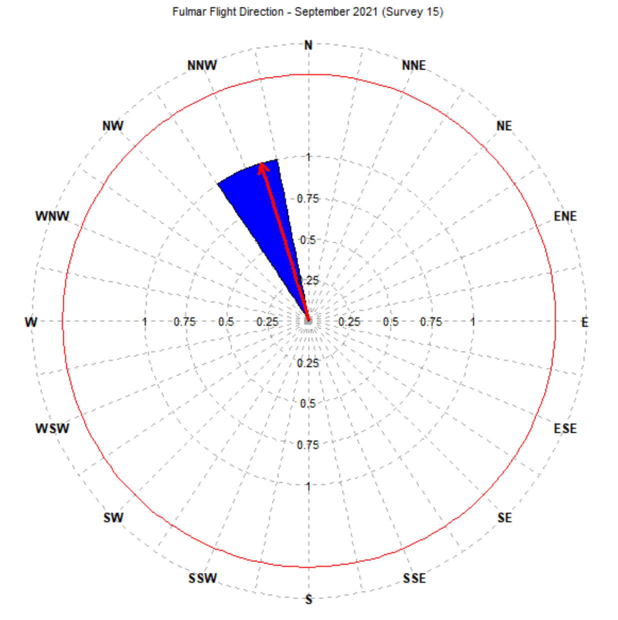
Number of Observations	1
Mean Vector (μ)	279.177
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 193f May 2021



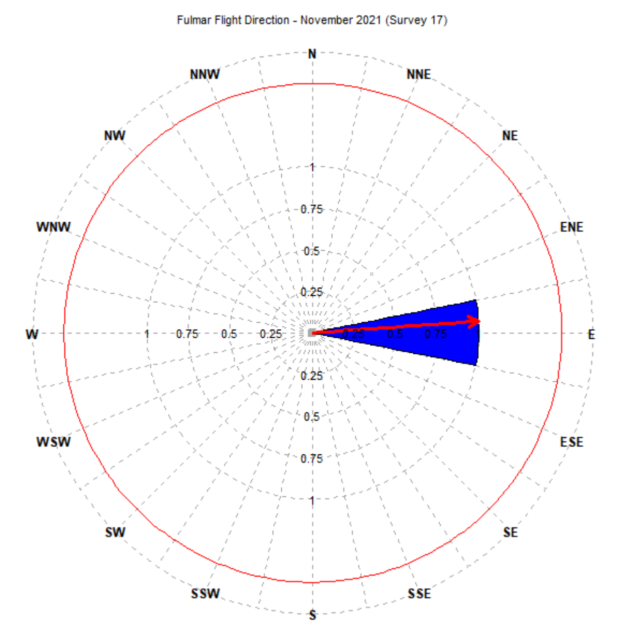
Number of Observations	2
Mean Vector (μ)	215.822
Length of Mean Vector (r)	0.909
Rayleigh Test (Z)	1.654
Rayleigh Test (p)	0.212

Figure 193g August 2021



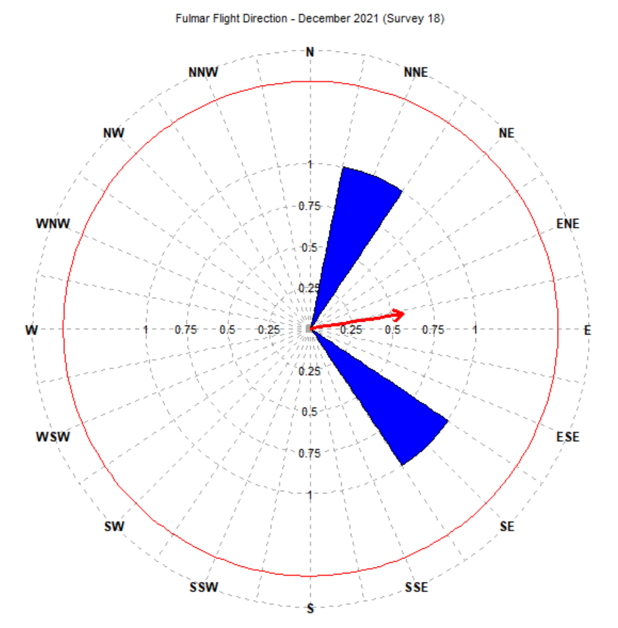
Number of Observations	1
Mean Vector (μ)	343.048
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 193h September 2021



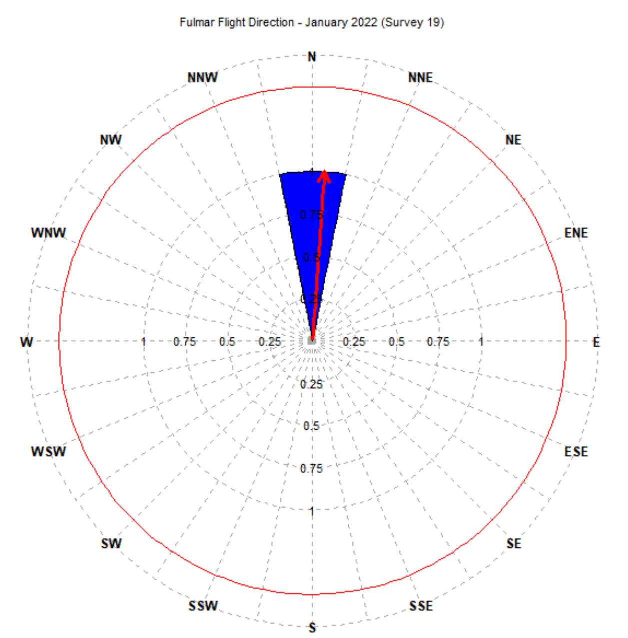
Number of Observations	1
Mean Vector (μ)	86.731
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 193i November 2021



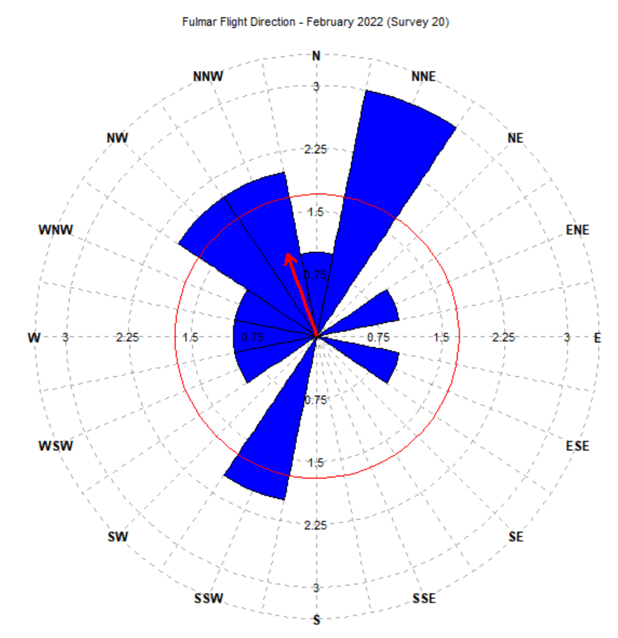
Number of Observations	2
Mean Vector (μ)	81.414
Length of Mean Vector (r)	0.570
Rayleigh Test (Z)	0.651
Rayleigh Test (p)	0.588

Figure 193j December 2021



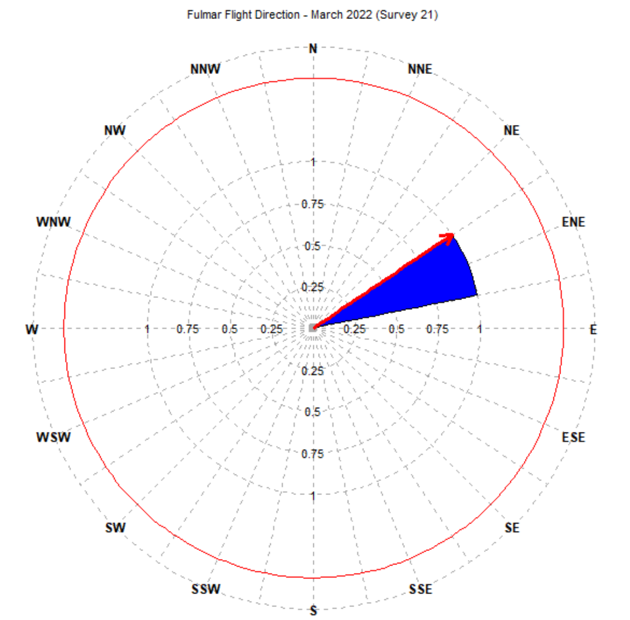
Number of Observations	1
Mean Vector (μ)	4.833
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

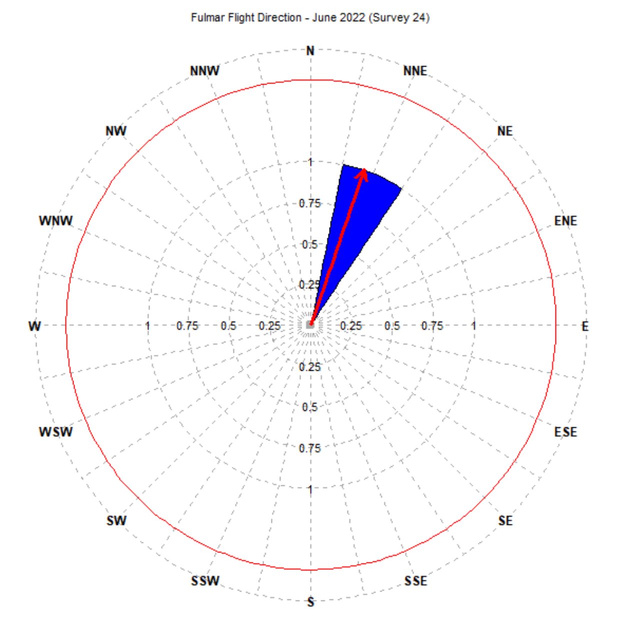
Figure 193k January 2022



Number of Observations	15
Mean Vector (μ)	340.574
Length of Mean Vector (r)	0.346
Rayleigh Test (Z)	1.798
Rayleigh Test (p)	0.167

Figure 193l February 2022





Number of Observations	1	Number of Observations	1
Mean Vector (µ)	56.558	Mean Vector (µ)	19.251
Length of Mean Vector (r)	1.000	Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000	Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512	Rayleigh Test (p)	0.512
Figure 193m March 2022		**Figure 193n June 2022**	

Figure 193 Summary of flight direction of fulmars during survey period

4.20 Storm Petrel – *Hydrobates*

A single storm petrel was recorded in May 2021 in the northwest of the Buffer Zone (**Figure 194**), resulting in an abundance estimate of seven for the Survey Area and Buffer (**Table 25**).

Table 25 Raw counts and abundance and density estimates individuals per km^2) of unidentified storm petrels in: a) Survey Area b) Southwest England Site and 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
May-21	1	7	1	22	1.00	0.02
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
None recorded.						
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
May-21	1	7	1	21	1.00	0.03

Figure 194 Distribution of storm petrels in Survey Area during May 2021

4.21 Manx Shearwater – *Puffinus puffinus*

Manx shearwaters were present from July to September 2020, March to July 2021, and September 2021, as well as between March and June 2022. The peak raw count of 4,624 in May 2021 resulted in an abundance estimate of 33,652 for the Survey Area (**Table 26**).

In the Southwest England Site, the birds were recorded from July to September 2020, March to July 2021, and March to June 2022. The peak raw count of 1,960 in May 2021 resulted in an abundance estimate of 15,866 for the area (**Table 26**).

In the 4 km Buffer Zone, Manx shearwaters were recorded during July to September 2020, in March to July 2021, and September 2021, as well as between March and June 2022. The peak raw count of 2,664 in May 2021 resulted in an abundance estimate of 18,604 for the area (**Table 26**).

There was a presence in the Site and Buffer from July to September 2020, April to September 2021 (with the exception of August), and March to June 2022 (**Figure 195**; **Figure 196**; **Figure 199**; **Figure 200**; **Figure 201**; **Figure 202**; **Figure 205**; **Figure 206**; **Figure 207**). Of these months, lower numbers were in the September 2020, March 2021, and September 2021 surveys (**Figure 197**; **Figure 198**; **Figure 203**). March 2022 saw low numbers of Manx shearwaters, with three individuals in the east of the Site and east and south of the Buffer Zone (**Figure 204**).

The Manx shearwaters flew in various directions across the Survey Area: northeast in May and September 2021 (35.478°, $p<0.001$; **Figure 208f**; 41.306°, $p=0.137$; **Figure 208i**); east-northeast in April 2021 (78.224°, $p<0.001$; **Figure 208e**); southeast in March 2021 (137.231°, $p=0.512$; **Figure 208d**); south-southwest in June 2021 (198.128°, $p<0.001$; **Figure 208g**); northwest in July 2020 and May 2022 (21.554°, $p<0.001$; **Figure 208c;** 312.461°, $p<0.001$; **Figure 208l**); west in August 2020 and July 2021 (256.448°, $p<0.001$; **Figure 208b;** 278.313°, $p=0.073$; **Figure 208h**); south-southeast in March 2022 (161.783°, $p=0.509$; **Figure 208j**); and north-northwest in June 2022 (341.270°, $p<0.001$; **Figure 208m**). There was no predominant direction of flight in September 2020 or April 2022 ($p=0.538$; **Figure 208c;** $p=0.015$; **Figure 208k**).

Table 26 **Raw counts and abundance and density estimates (individuals per km²) of Manx shearwater in: a) Survey Area b) Southwest England Site and 4 km Buffer Zone**

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jul-20	1,752	13,571	10,883	16,886	0.02	40.34
Aug-20	695	5,273	2,473	9,840	0.04	15.67
Sep-20	198	1,555	198	4,421	0.07	4.62
Mar-21	4	31	4	77	0.50	0.09
Apr-21	324	2,488	1,766	3,310	0.06	7.40
May-21	4,624	33,652	26,032	41,904	0.01	100.02
Jun-21	445	3,543	1,879	5,765	0.05	10.53
Jul-21	42	322	145	605	0.15	0.96
Sep-21	3	23	3	53	0.58	0.07
Mar-22	11	84	23	152	0.30	0.25

Apr-22	415	3,159	1,926	4,614	0.05	9.39
May-22	144	1,093	592	1,761	0.08	3.25
Jun-22	323	2,417	539	5,050	0.06	7.18
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	428	3,651	2,167	5,443	0.05	36.88
Aug-20	127	1,060	300	2,178	0.09	10.71
Sep-20	185	1,614	185	4,563	0.07	16.30
Mar-21	2	17	2	43	0.71	0.17
Apr-21	83	712	257	1424	0.11	7.19
May-21	1,960	15,866	9,341	23,669	0.02	160.26
Jun-21	29	251	78	511	0.19	2.54
Jul-21	6	52	9	103	0.41	0.53
Sep-21	1	8	1	25	1.00	0.08
Mar-22	3	26	3	69	0.58	0.26
Apr-22	68	575	186	1,235	0.12	5.81
May-22	33	284	120	482	0.17	2.87
Jun-22	18	151	18	311	0.24	1.53
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	1,324	9,877	7,557	12,674	0.03	41.6
Aug-20	568	4,152	1,572	8,026	0.04	17.49
Sep-20	13	98	38	173	0.28	0.41
Mar-21	2	15	2	44	0.71	0.06
Apr-21	241	1,773	1,273	2,347	0.07	7.47
May-21	2,664	18,604	14,191	24,324	0.02	78.35
Jun-21	416	3,205	1,610	5,154	0.05	13.5
Jul-21	36	263	102	483	0.17	1.11
Sep-21	2	15	2	36	0.71	0.06
Mar-22	8	58	14	123	0.35	0.24
Apr-22	347	2,536	1,542	3,815	0.05	10.68
May-22	111	803	362	1,397	0.09	3.38
Jun-22	305	2,182	522	4,515	0.06	9.19

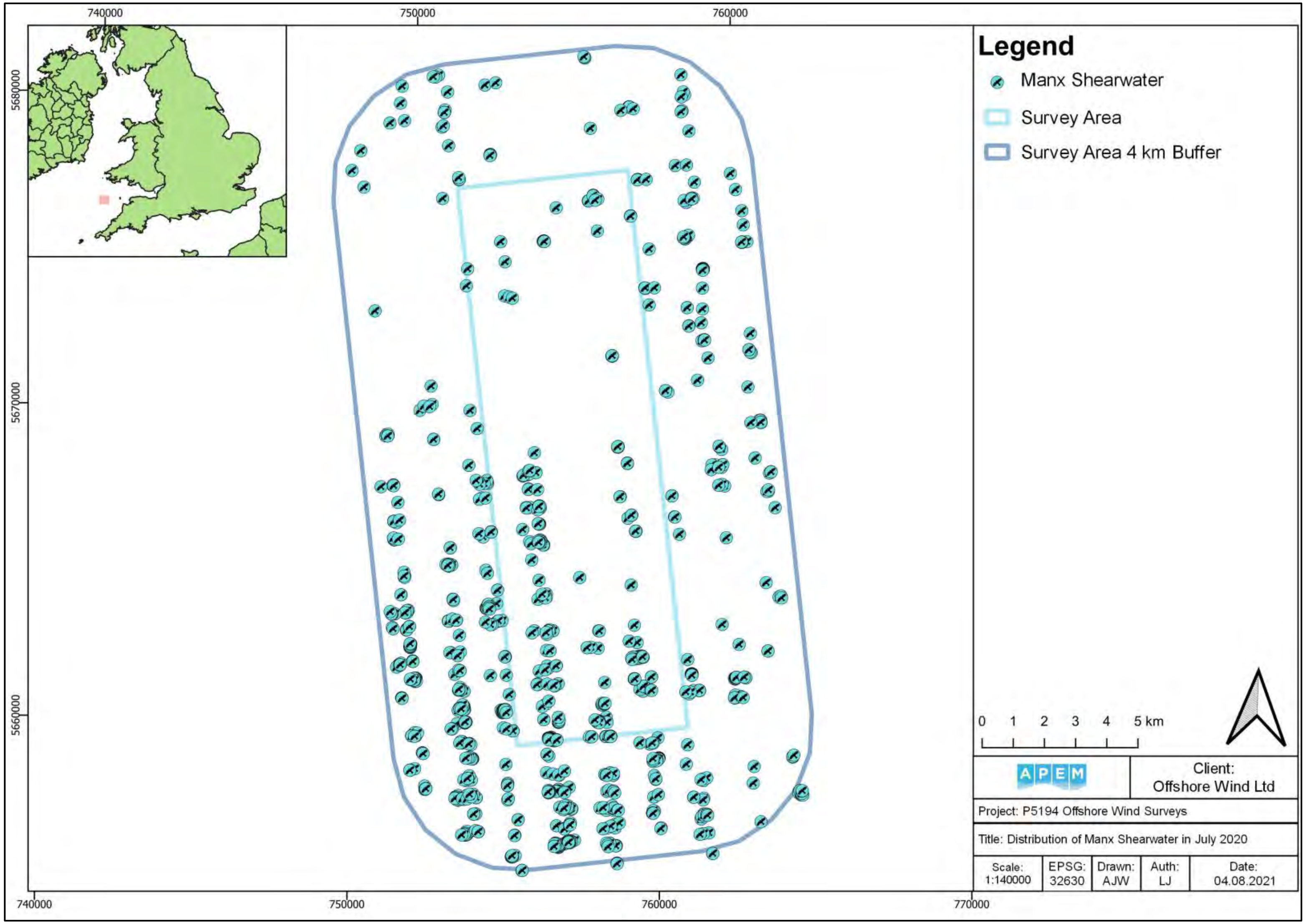


Figure 195 Distribution of Manx shearwaters in Survey Area during July 2020

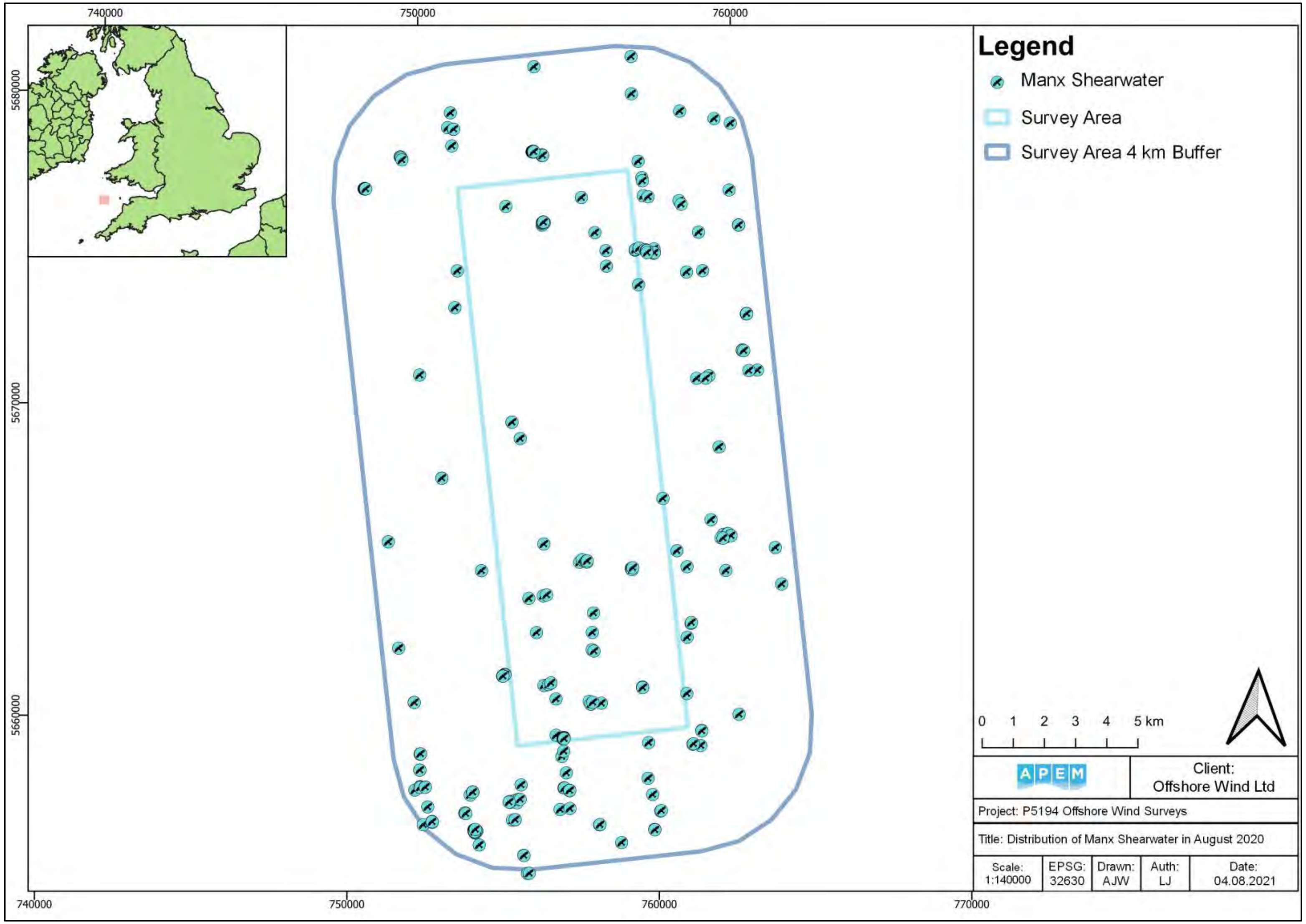


Figure 196 Distribution of Manx shearwaters in Survey Area during August 2020

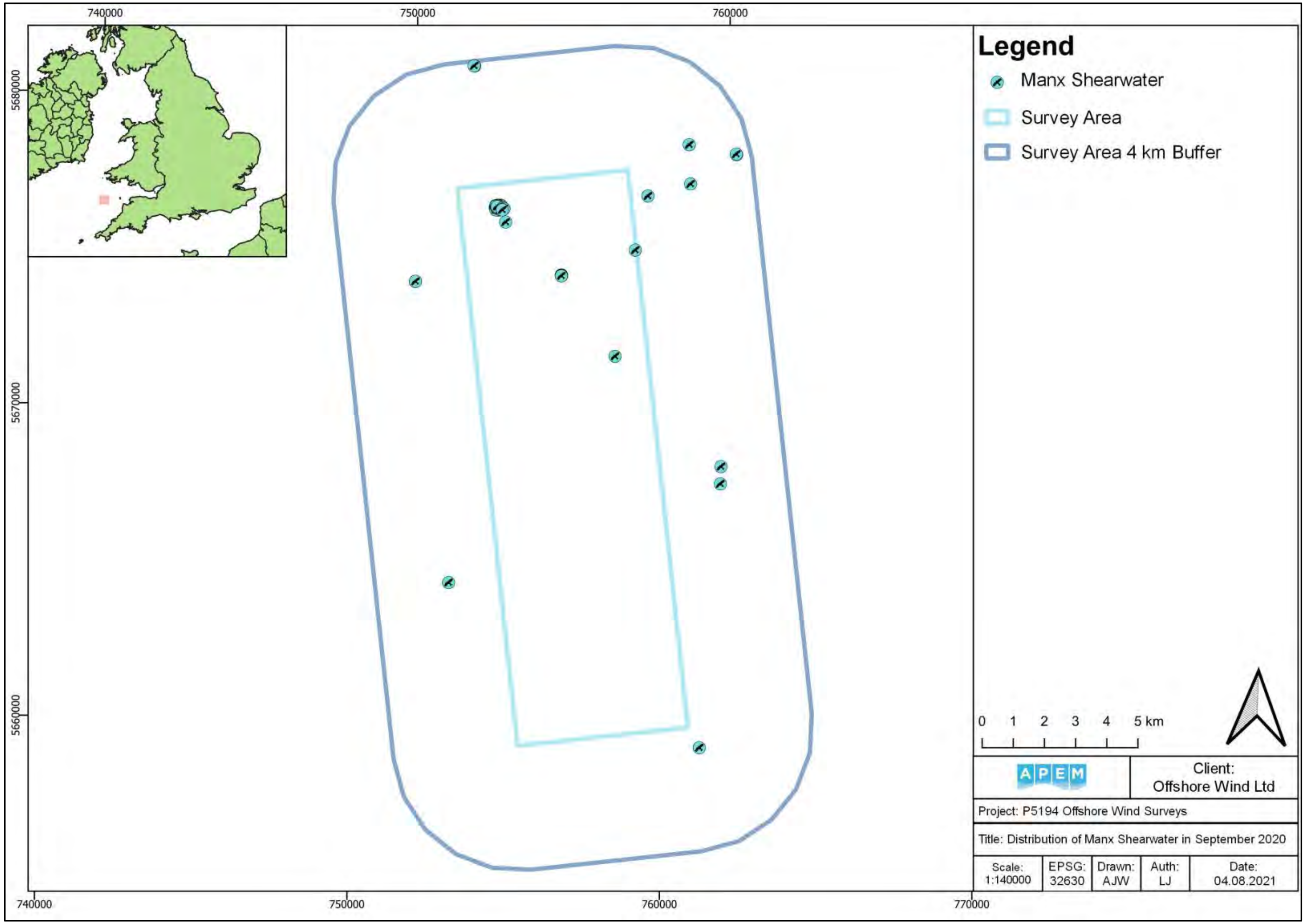


Figure 197 Distribution of Manx shearwaters in Survey Area during September 2020

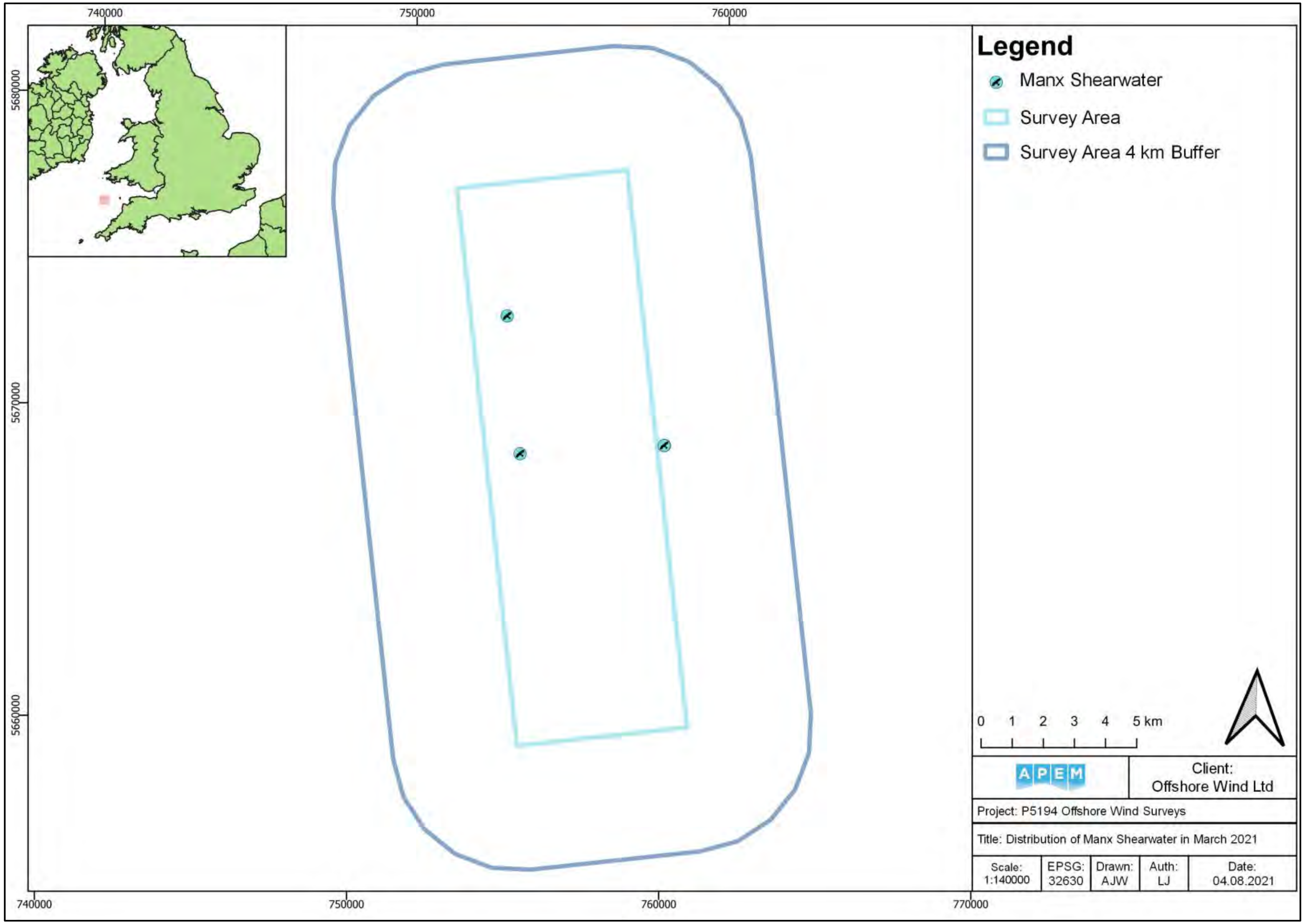


Figure 198 Distribution of Manx shearwaters in Survey Area during March 2021

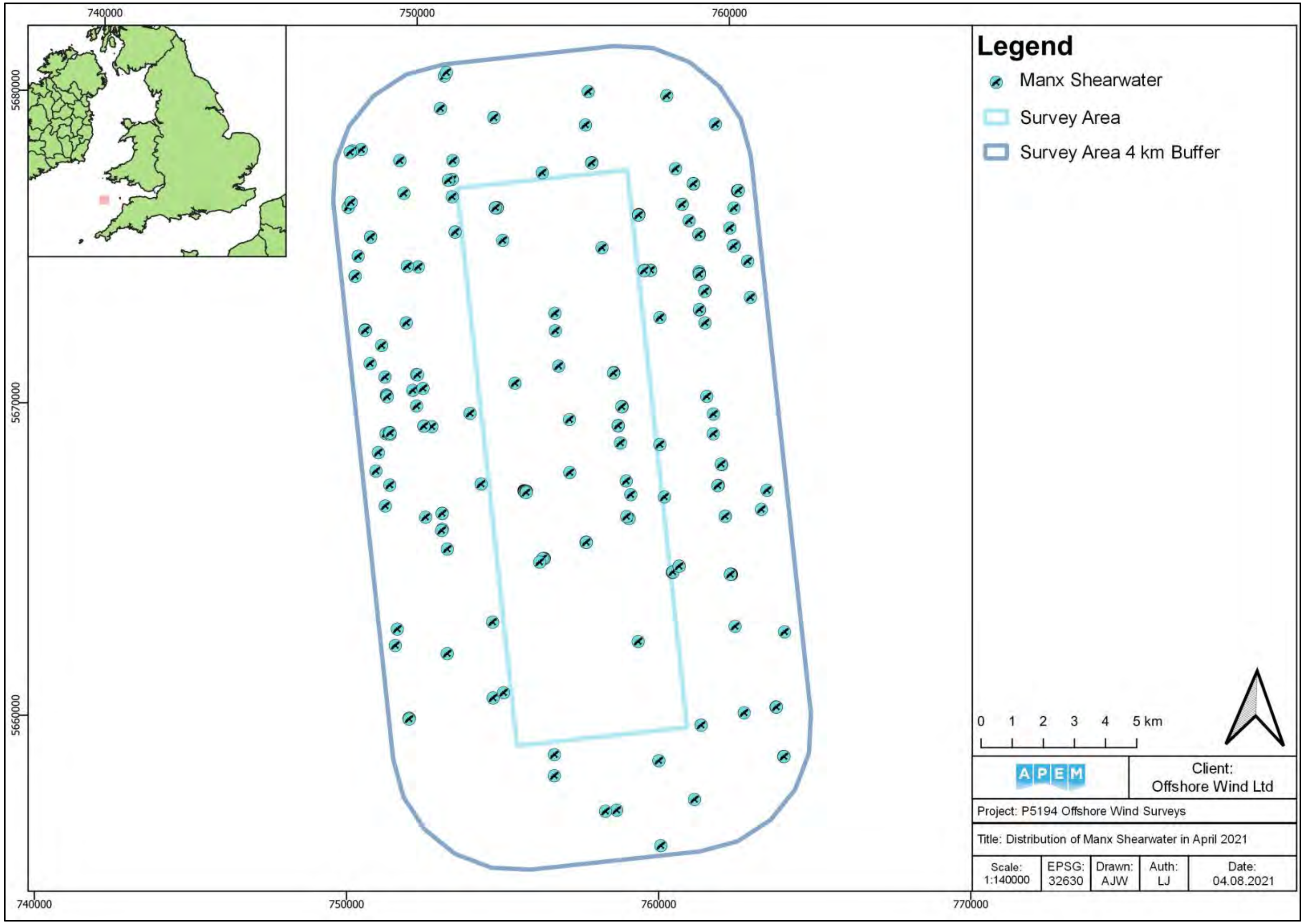


Figure 199 Distribution of Manx shearwaters in Survey Area during April 2021

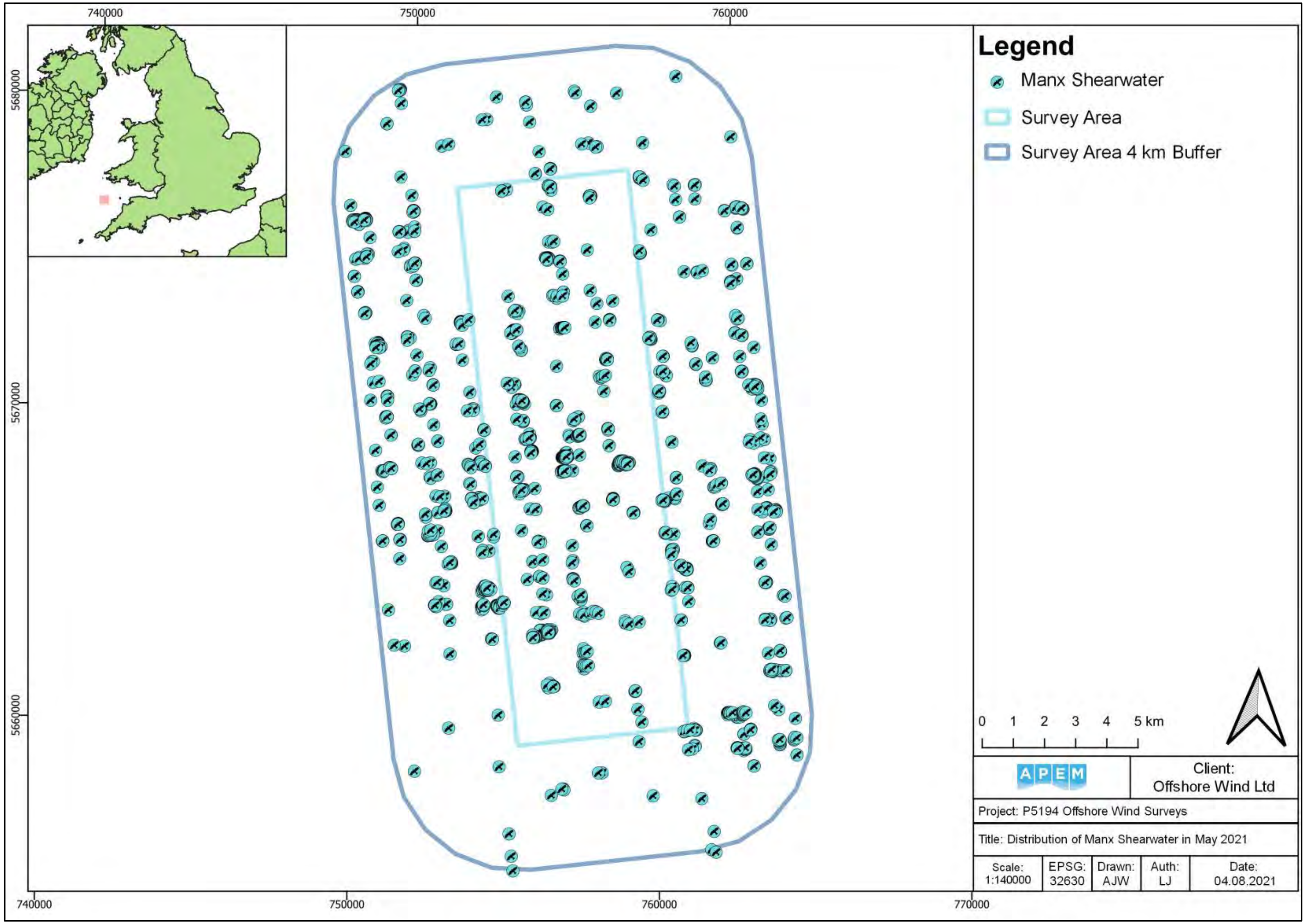


Figure 200 Distribution of Manx shearwaters in Survey Area during May 2021

Figure 201 Distribution of Manx shearwaters in Survey Area during June 2021

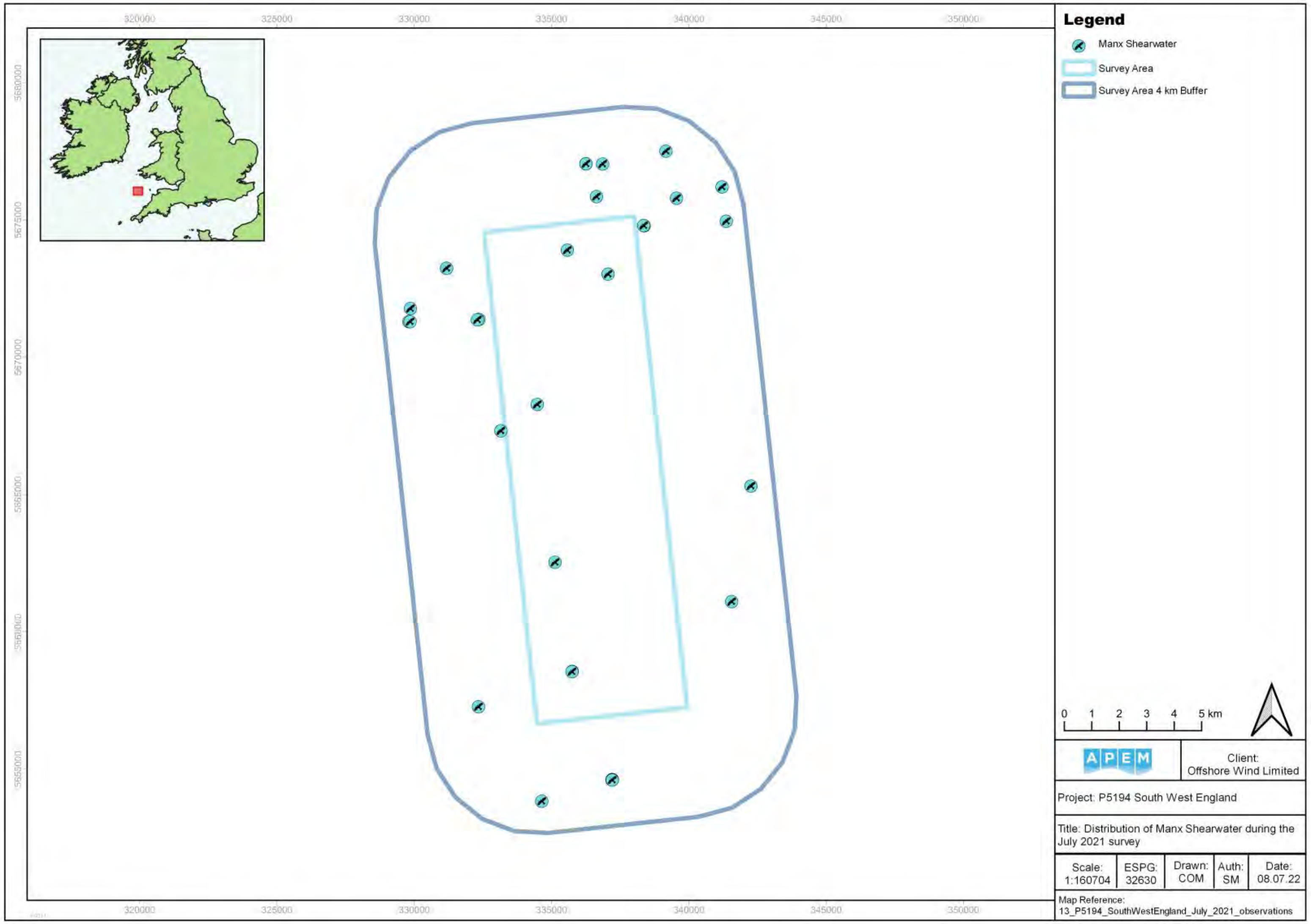


Figure 202 Distribution of Manx shearwaters in Survey Area during July 2021

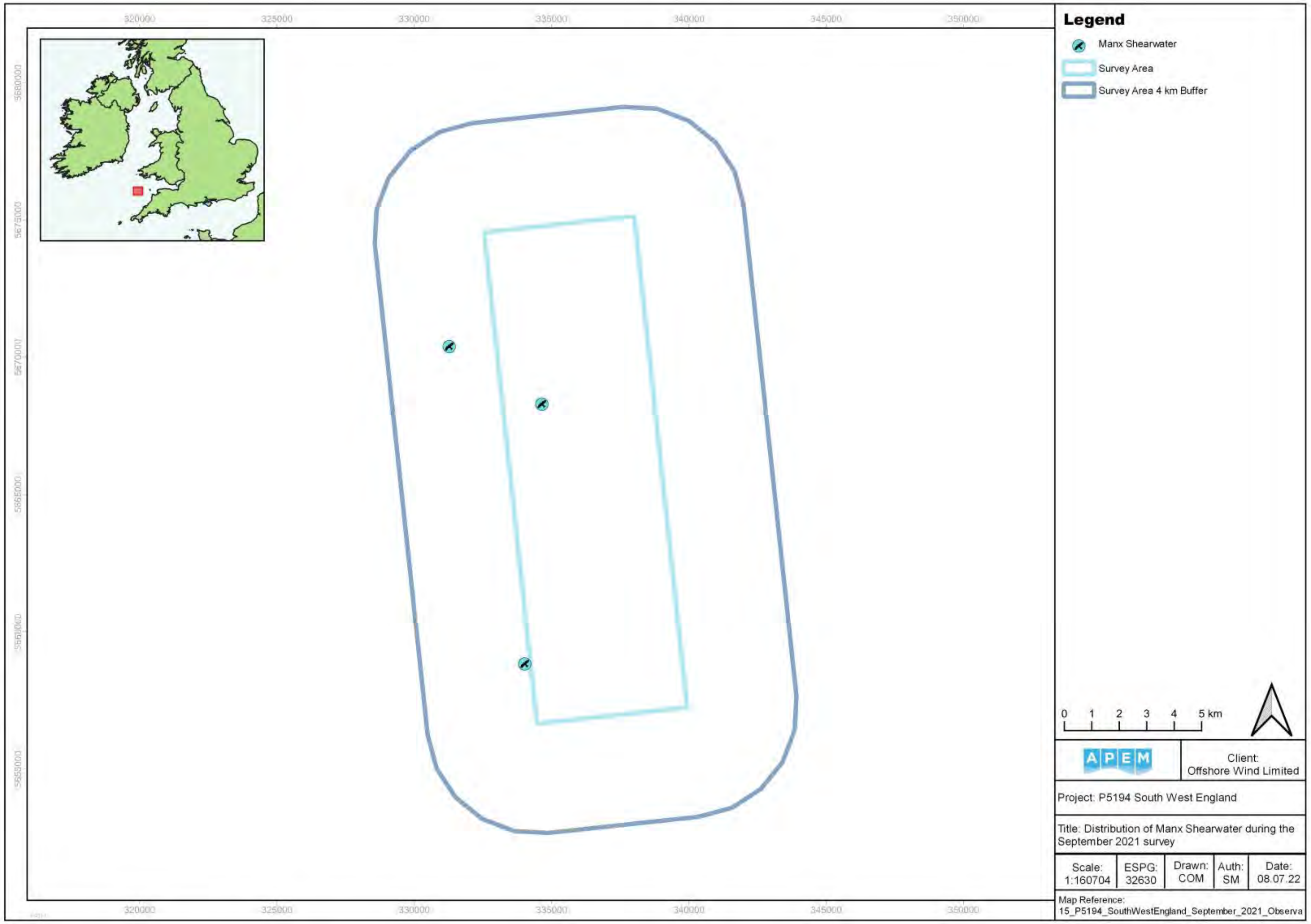


Figure 203 Distribution of Manx shearwaters in Survey Area during September 2021

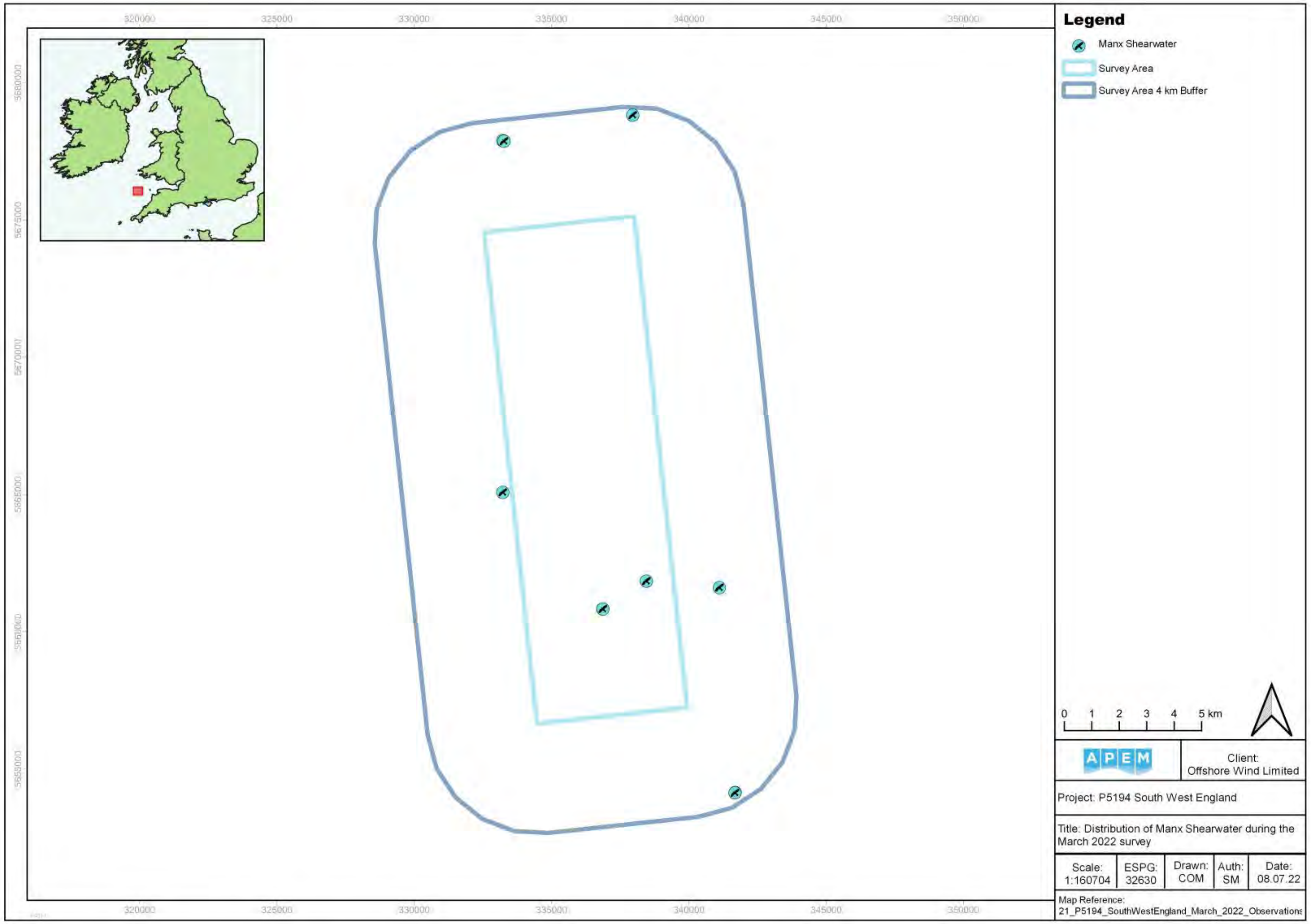


Figure 204 Distribution of Manx shearwaters in Survey Area during March 2022

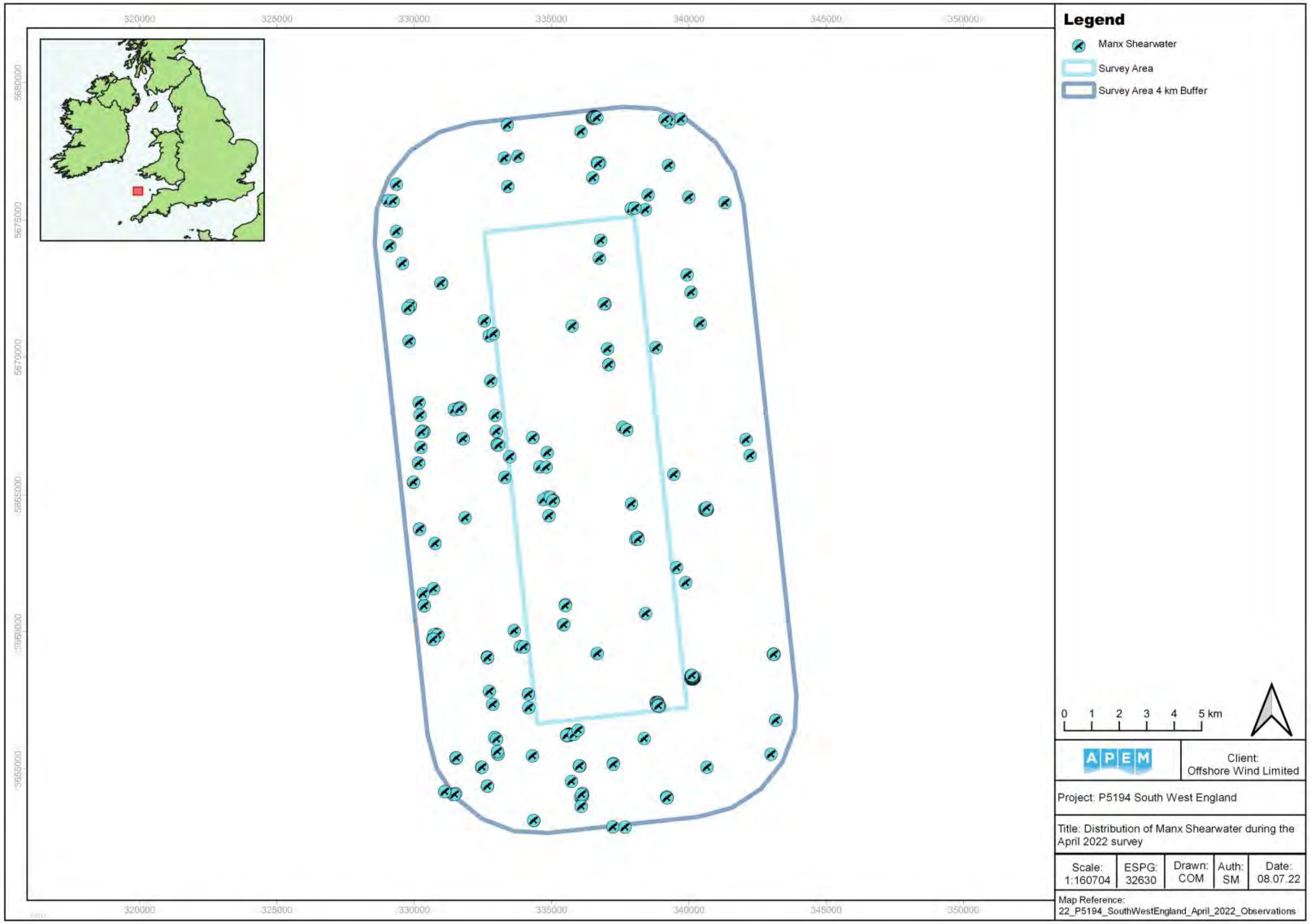


Figure 205 **Distribution of Manx shearwaters in Survey Area during April 2022**

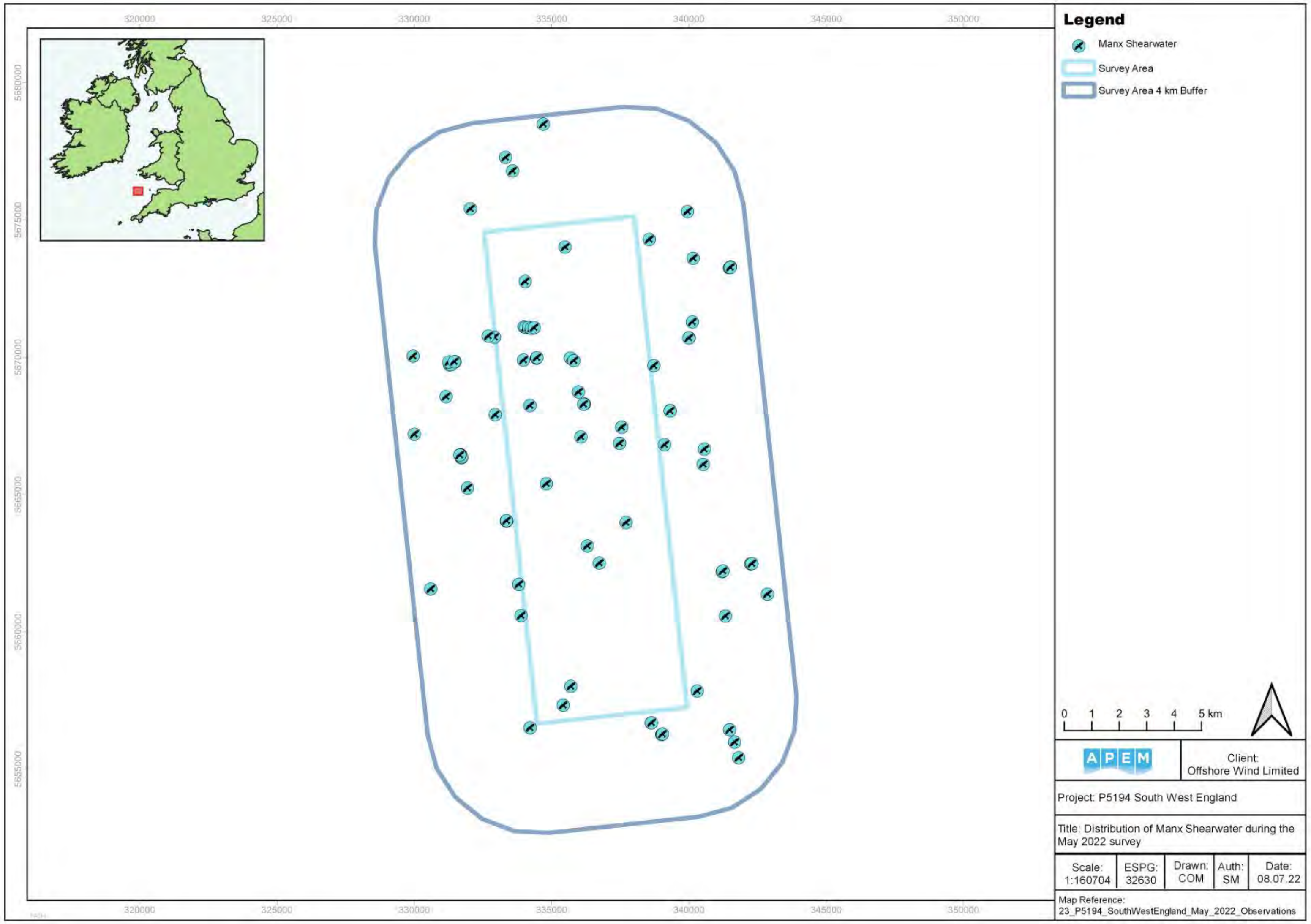


Figure 206 Distribution of Manx shearwaters in Survey Area during May 2022

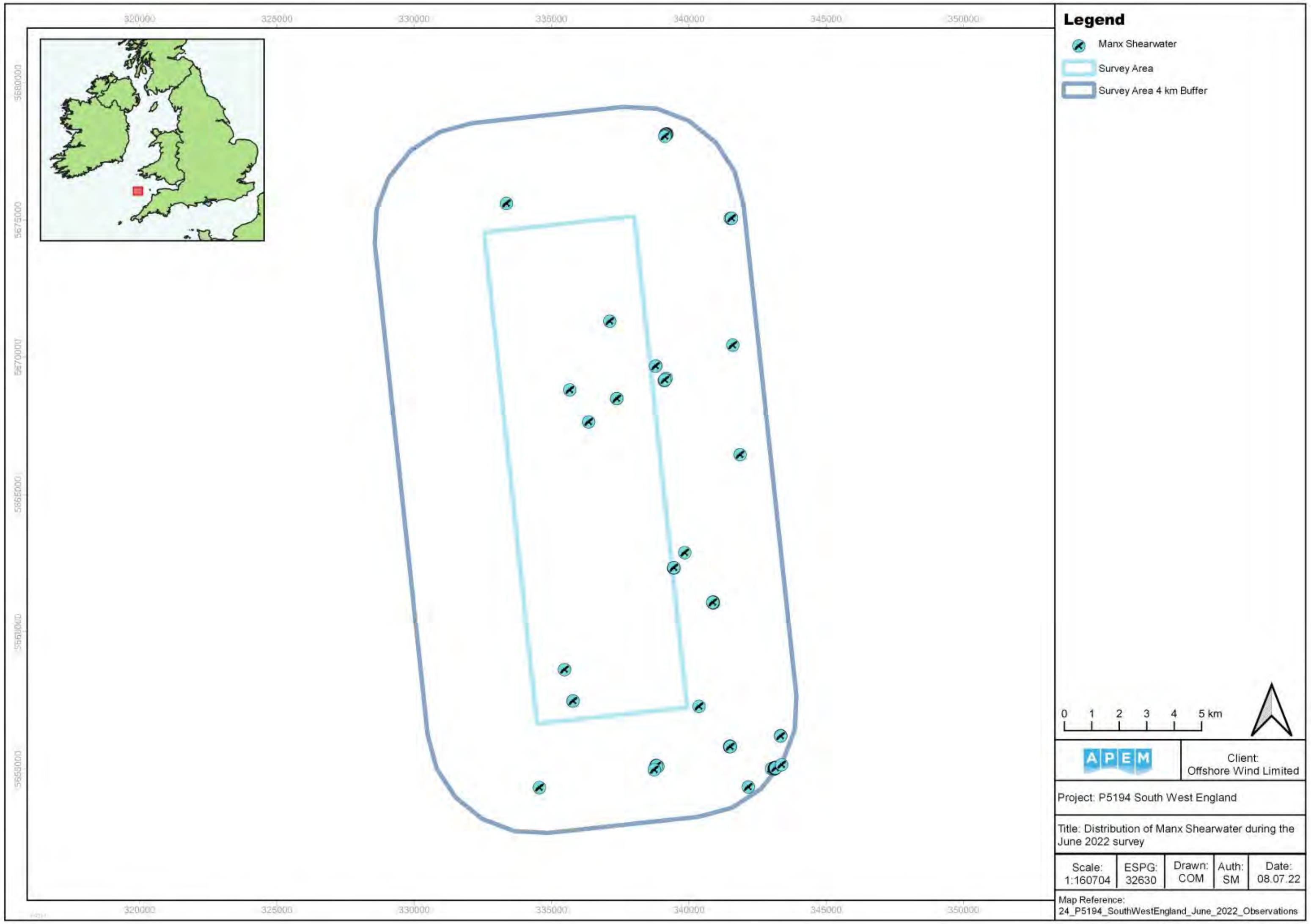
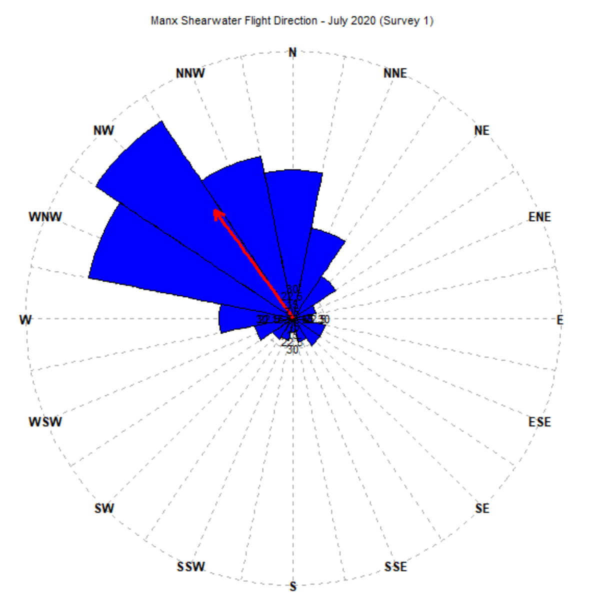
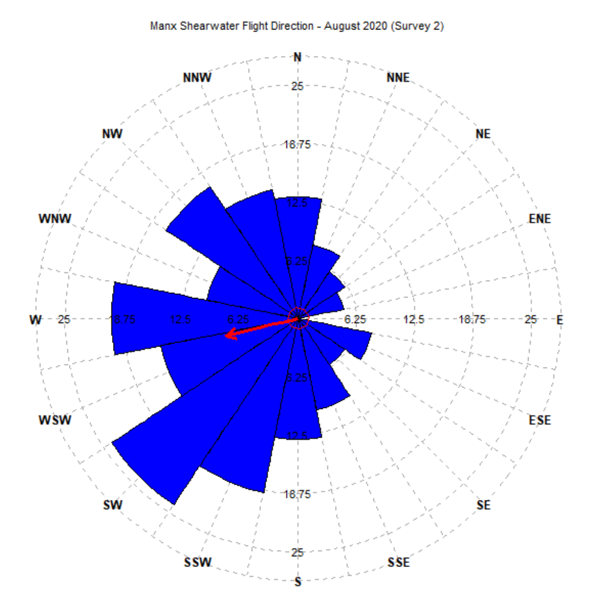


Figure 207 **Distribution of Manx shearwaters in Survey Area during June 2022**



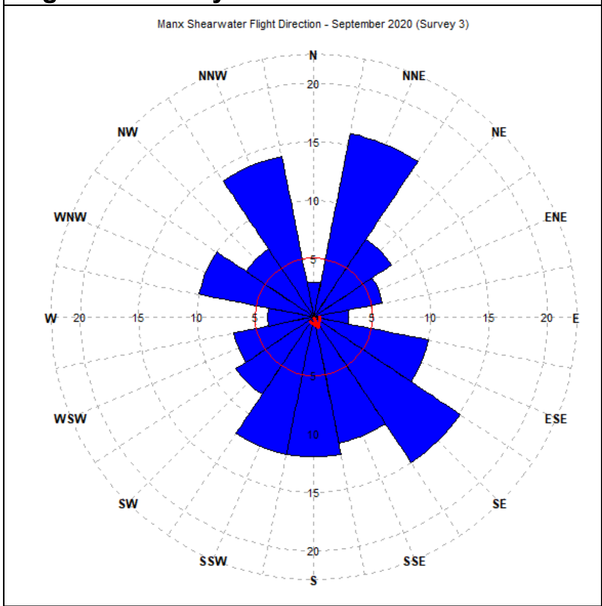
Number of Observations	1,191
Mean Vector (μ)	32.921
Length of Mean Vector (r)	0.561
Rayleigh Test (Z)	375.467
Rayleigh Test (p)	<0.001

Figure 208a July 2020



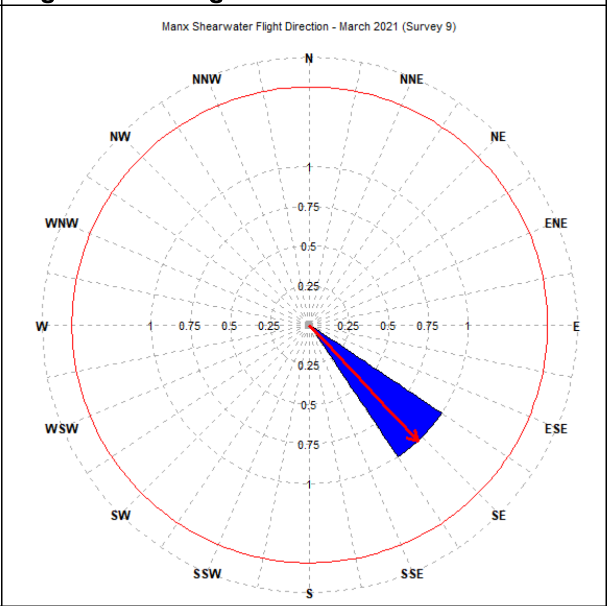
Number of Observations	188
Mean Vector (μ)	256.448
Length of Mean Vector (r)	0.329
Rayleigh Test (Z)	20.347
Rayleigh Test (p)	<0.001

Figure 208b August 2020



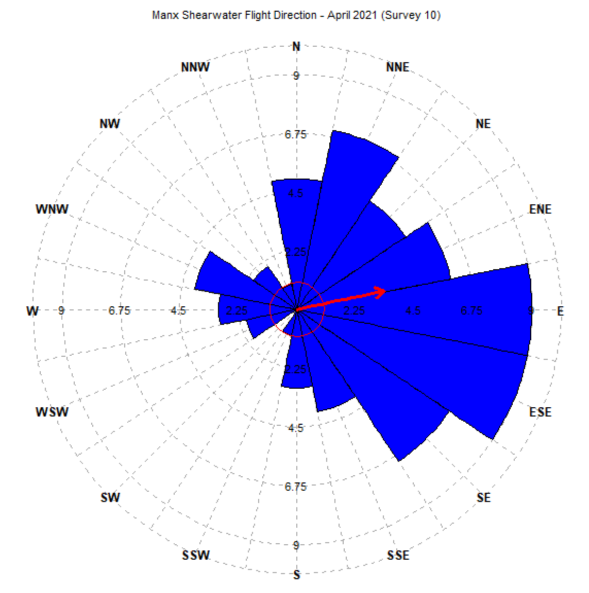
Number of Observations	146
Mean Vector (μ)	155.064
Length of Mean Vector (r)	0.065
Rayleigh Test (Z)	0.620
Rayleigh Test (p)	0.538

Figure 208c September 2020



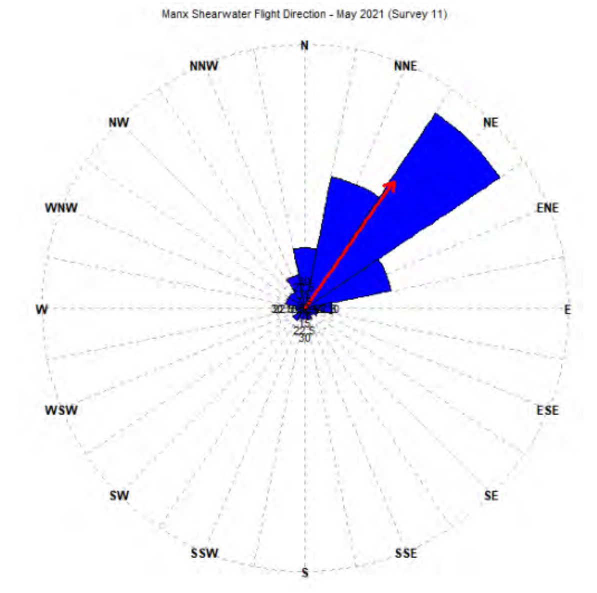
Number of Observations	1
Mean Vector (μ)	137.231
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 208d March 2021



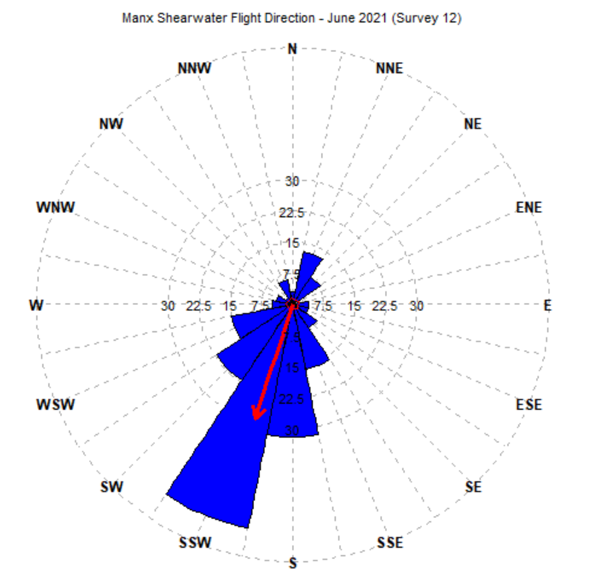
Number of Observations	68
Mean Vector (μ)	78.224
Length of Mean Vector (r)	0.381
Rayleigh Test (Z)	9.891
Rayleigh Test (p)	<0.001

Figure 208e April 2021



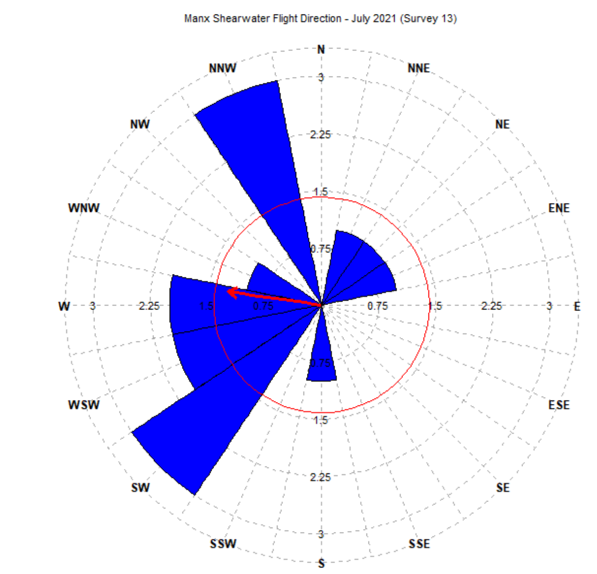
Number of Observations	748
Mean Vector (μ)	35.478
Length of Mean Vector (r)	0.659
Rayleigh Test (Z)	324.827
Rayleigh Test (p)	<0.001

Figure 208f May 2021



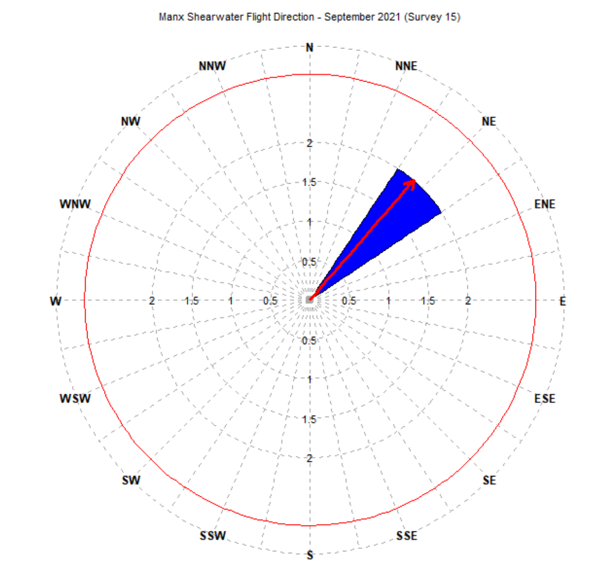
Number of Observations	196
Mean Vector (μ)	198.128
Length of Mean Vector (r)	0.525
Rayleigh Test (Z)	54.052
Rayleigh Test (p)	<0.001

Figure 208g June 2021



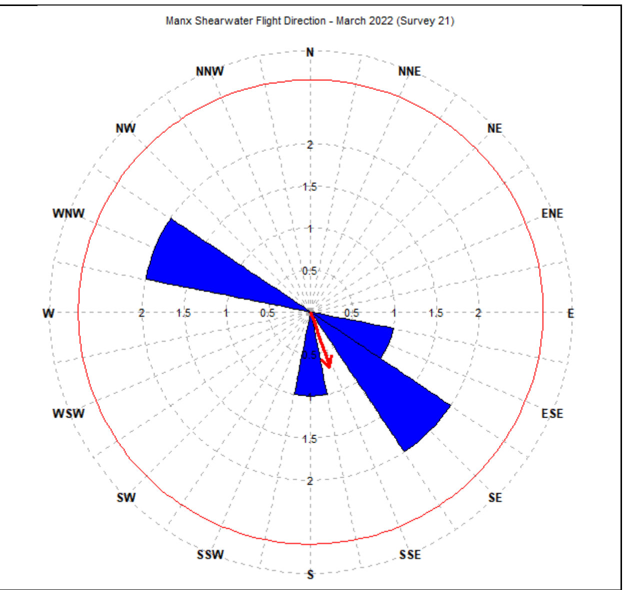
Number of Observations	15
Mean Vector (μ)	278.313
Length of Mean Vector (r)	0.416
Rayleigh Test (Z)	2.592
Rayleigh Test (p)	0.073

Figure 208h July 2021



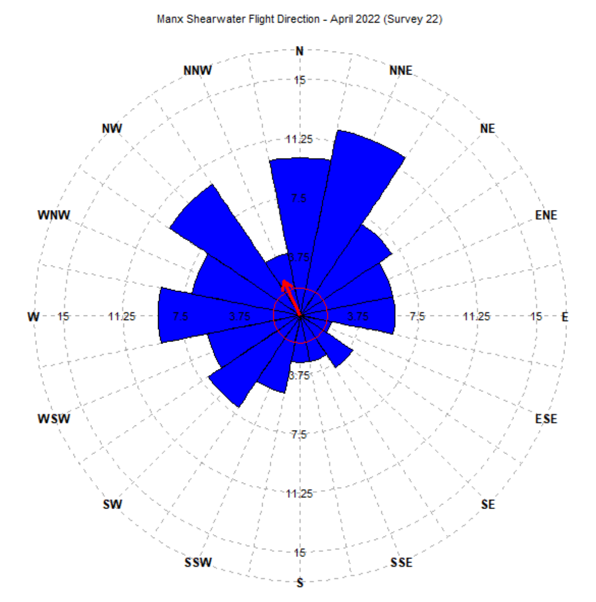
Number of Observations	2
Mean Vector (μ)	41.306
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.999
Rayleigh Test (p)	0.137

Figure 208i September 2021



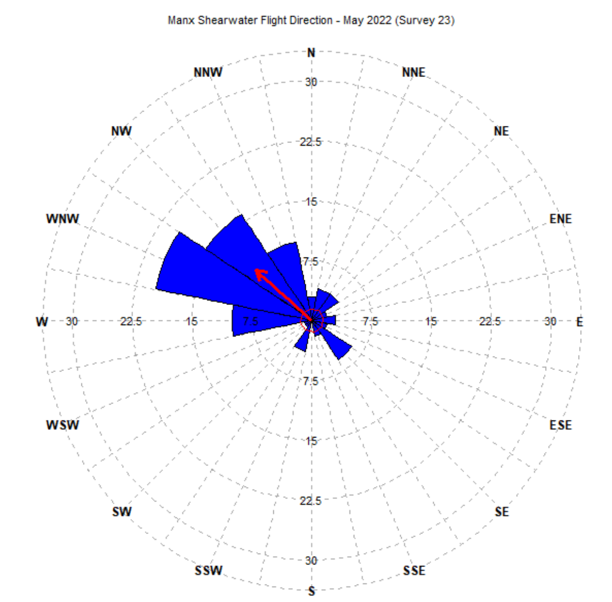
Number of Observations	6
Mean Vector (μ)	161.783
Length of Mean Vector (r)	0.345
Rayleigh Test (Z)	0.715
Rayleigh Test (p)	0.509

Figure 208j March 2022



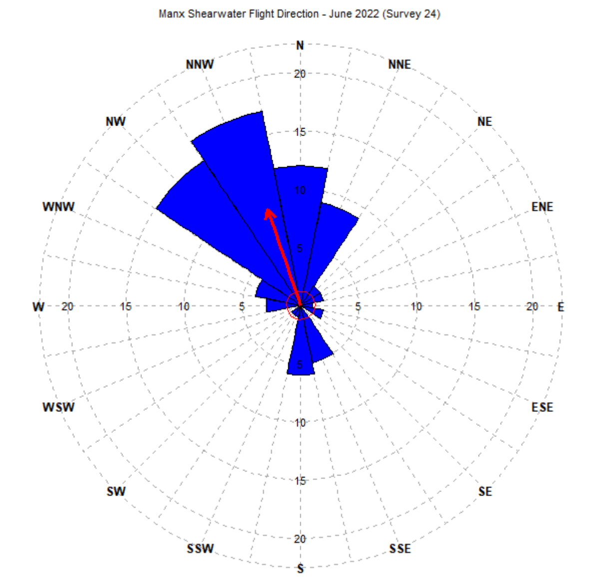
Number of Observations	101
Mean Vector (μ)	334.543
Length of Mean Vector (r)	0.204
Rayleigh Test (Z)	4.204
Rayleigh Test (p)	0.015

Figure 208k April 2022



Number of Observations	88
Mean Vector (μ)	312.461
Length of Mean Vector (r)	0.469
Rayleigh Test (Z)	19.341
Rayleigh Test (p)	<0.001

Figure 208l May 2022



Number of Observations	80
Mean Vector (µ)	341.270
Length of Mean Vector (r)	0.512
Rayleigh Test (Z)	20.985
Rayleigh Test (p)	<0.001
Figure 208m June 2022	

Figure 208 Summary of flight direction of Manx shearwaters during survey period

4.22 Small Shearwater – *Procellariidae*

Small shearwaters were recorded in September 2021 and March 2022, with a peak raw count of six in September 2021, resulting in an abundance estimate of 45 for the Survey Area (**Table 27**).

In the Southwest England site, four unidentified shearwaters were observed during September 2021 resulting in an abundance estimate of 33 for the area (**Table 27**).

In the 4 km Buffer Zone, they were present in September 2021 and March 2022, with a peak raw count of four in March 2021 resulting in an abundance estimate of 29 (**Table 27**).

Numbers were low in the north of the Site Area and the south of the Buffer in September 2021, and in the north and east of the Buffer in March 2022 (**Figure 209**; **Figure 210**).

The birds flew south across the Survey Area – south-southeast in September 2021 (150.846°, p=0.440; **Figure 211a**), and south in March 2022 (174.908°, p=0.014; **Figure 211b**).

Table 27 Raw counts and abundance and density estimates (individuals per km^2) of small shearwater in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Sep-21	6	45	6	98	0.41	0.13
Mar-22	4	30	8	61	0.50	0.09
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Sep-21	4	33	4	82	0.50	0.33
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Sep-21	2	15	2	36	0.71	0.06
Mar-22	4	29	7	58	0.5	0.12

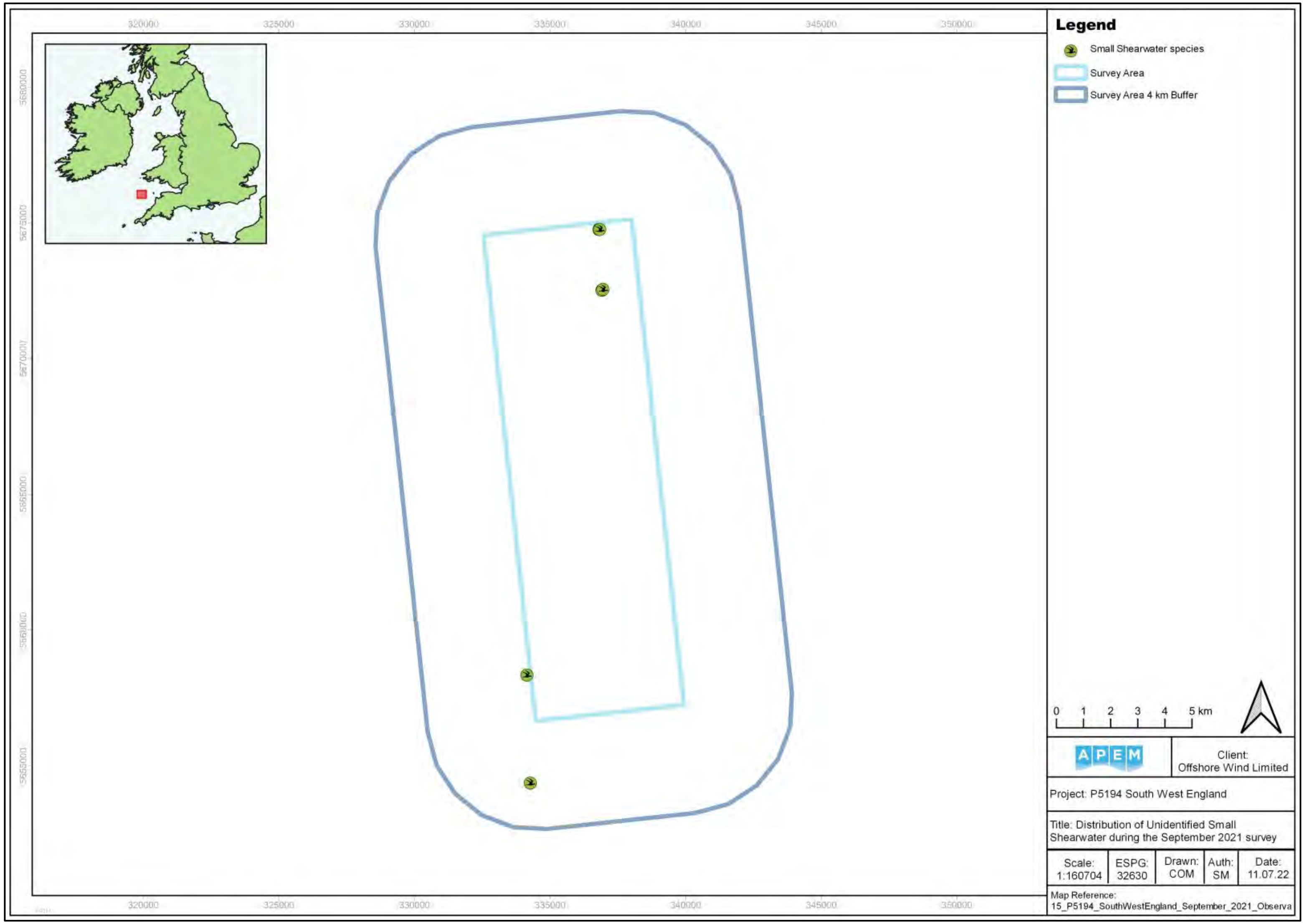


Figure 209 Distribution of small shearwaters in Survey Area during September 2021

Figure 210 Distribution of small shearwaters in Survey Area during March 2022

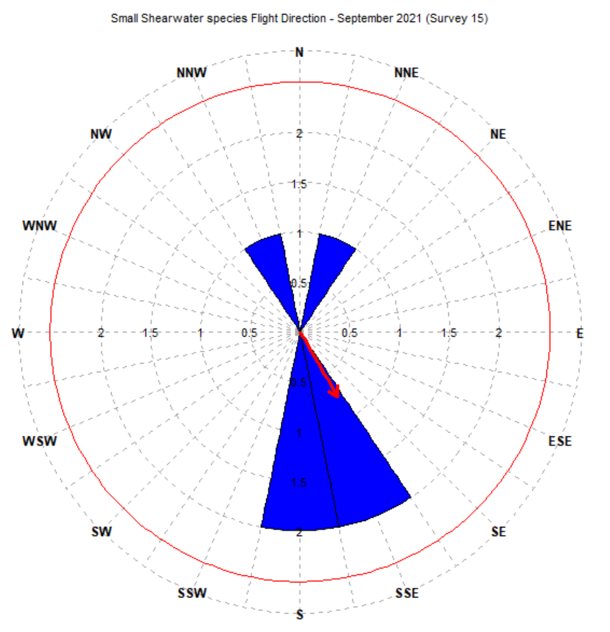
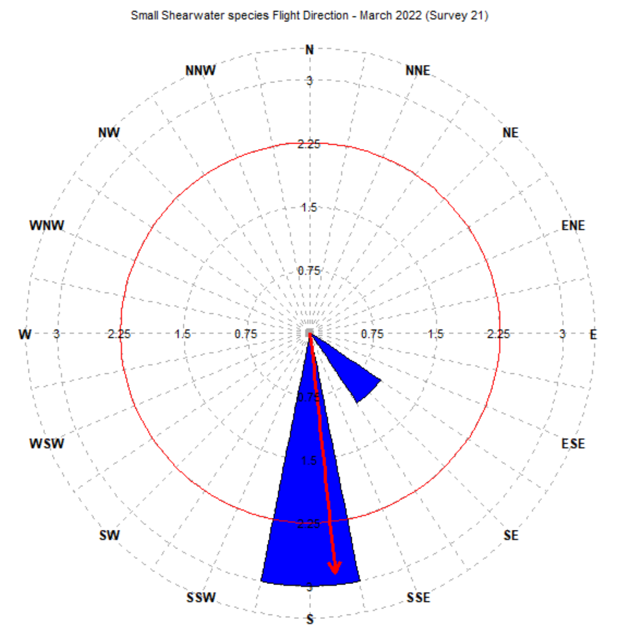
			
Number of Observations	6	Number of Observations	4
Mean Vector (µ)	150.846	Mean Vector (µ)	174.908
Length of Mean Vector (r)	0.380	Length of Mean Vector (r)	0.953
Rayleigh Test (Z)	0.864	Rayleigh Test (Z)	3.630
Rayleigh Test (p)	0.440	Rayleigh Test (p)	0.014
Figure 211a September 2021		**Figure 211b March 2022**	

Figure 211 Summary of flight direction of small shearwaters during survey period

4.23 Shearwater Species – Unidentified *Procellariidae*

Shearwaters were recorded in October 2020 only, with a peak raw count of 10 resulting in an abundance estimate of 77 for the Survey Area (**Table 28**).

No individuals were recorded in the Southwest England Site (**Table 28**).

In the 4 km Buffer Zone, the birds were present in October 2020 only, with a peak raw count of 10 resulting in an abundance estimate of 74 for the area (**Table 28**).

They were densely clustered in the northeast of the Buffer (**Figure 212**) and all were sitting.

Table 28 **Raw counts and abundance and density estimates (individuals per km²) of shearwaters in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone**

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Oct-20	10	77	10	230	0.32	0.23
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
None recorded.						
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Oct-20	10	74	10	221	0.32	0.31

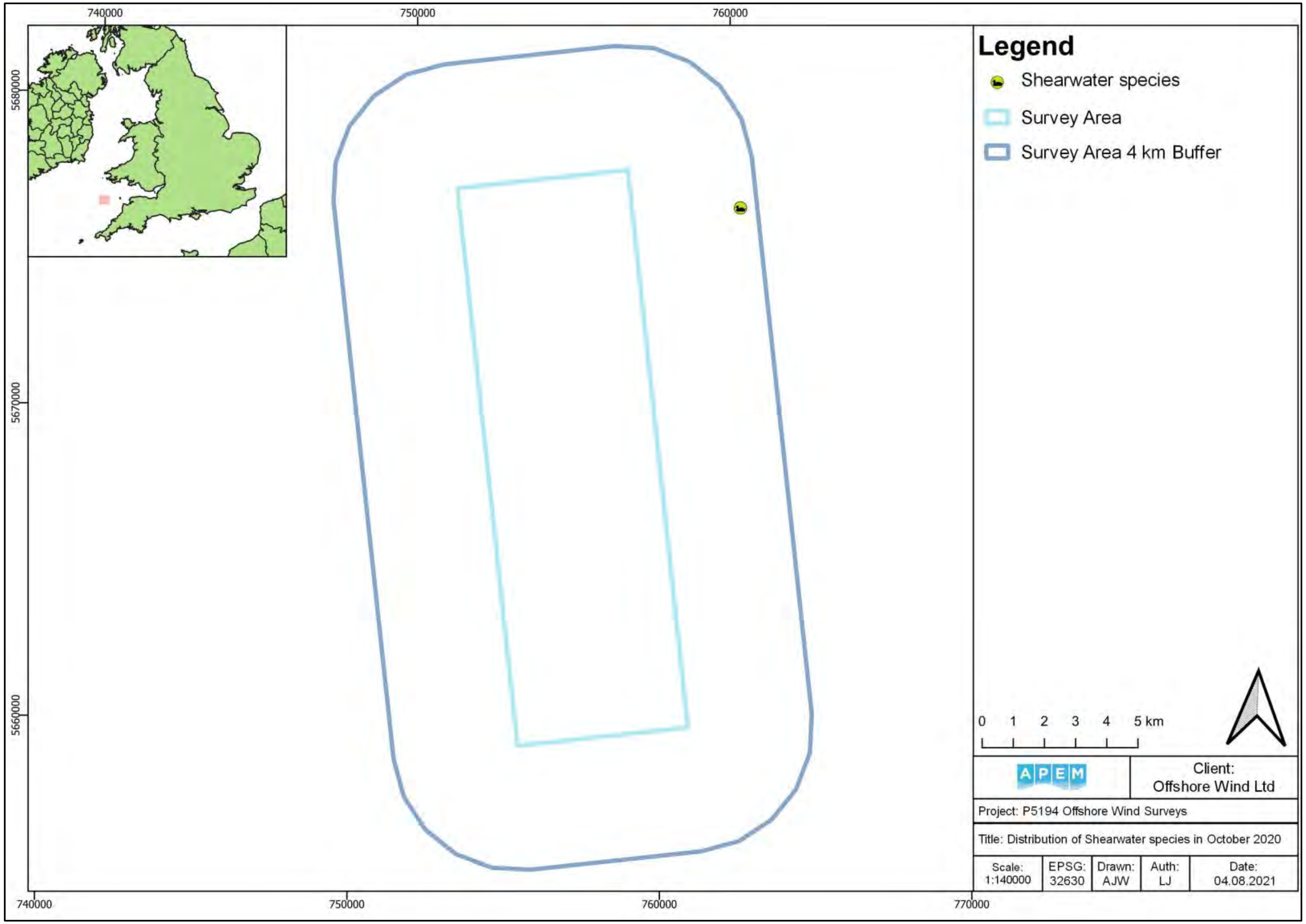


Figure 212 Distribution of shearwaters in Survey Area during October 2020

4.24 Auk / Shearwater – *Alcidae / Procellariidae*

Birds which could not be identified to species level as either an auk or shearwater were placed in a an auk / shearwater category. They were recorded between March to August 2021, as well as during March to June 2022. The peak raw count of 34 in April 2022 resulted in an abundance estimate of 259 for the Survey Area (**Table 29**).

In the Southwest England Site, they were present during April, May, July and August 2021, as well as between March and June 2022. The peak raw count of 10 in May 2021 resulted in an abundance estimate of 81 (**Table 29**).

In the 4 km Buffer Zone, the birds were recorded from March to June 2021, as well as in March to June 2022. The peak raw count of 30 in April 2022 resulted in an abundance estimate of 219 (**Table 29**).

Low numbers were recorded in the southwestern Buffer only during the March 2021 survey (**Figure 213**). During April, auks / shearwaters were present in the southeast of both Site and Buffer, as well as the western and northeastern regions of the Buffer (**Figure 214**). In May 2021 they were loosely distributed across Site and Buffer, but noticeably absent in the southwest and far northeast of the Survey Area (**Figure 215**). During June 2021, they were only recorded in the southeast, south, and southwest of the Buffer (**Figure 216**).

In July and August 2021, low numbers were recorded in the centre and south of the Site area (**Figure 217**; **Figure 218**). In March 2022, low numbers of individuals were in the central Site and the north/west of the Buffer (**Figure 219**). Then between April to June 2022, they were present in higher numbers across the Survey Area, though predominantly distributed in the Buffer (**Figure 220**; **Figure 221**; **Figure 222**).

The birds flew in all directions: east north-east in June 2021 (70.221°, p=0.512; **Figure 223a**); south east in August 2021 (129.528°, p=0.512; **Figure 223b**); south south-west in March 2022 (204.667°, p=0.512; **Figure 223c**); north west in April 2022 (325.135°, p=0.125; **Figure 223d**): and north north-west in May 2022 (344.036°, p=0.399; **Figure 223e**).

Table 29 Raw counts, abundance & density estimates (individuals per km^2) of auks / shearwaters in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Mar-21	4	31	4	92	0.50	0.09
Apr-21	16	123	23	292	0.25	0.37
May-21	29	211	131	291	0.19	0.63
Jun-21	6	48	16	96	0.41	0.14
Jul-21	2	15	2	38	0.71	0.04
Aug-21	1	8	1	24	1.00	0.02
Mar-22	3	23	3	53	0.58	0.07
Apr-22	34	259	152	381	0.17	0.77
May-22	8	61	23	114	0.35	0.18

Jun-22	16	120	60	187	0.25	0.36
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Apr-21	8	69	8	275	0.35	0.70
May-21	10	81	32	146	0.32	0.82
Jul-21	2	17	2	43	0.71	0.17
Aug-21	1	9	1	35	1.00	0.09
Mar-22	1	9	1	26	1.00	0.09
Apr-22	4	34	8	68	0.50	0.34
May-22	1	9	1	26	1.00	0.09
Jun-22	2	17	2	42	0.71	0.17
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Mar-21	4	29	4	81	0.50	0.12
Apr-21	8	59	8	125	0.35	0.25
May-21	19	133	70	203	0.23	0.56
Jun-21	6	46	15	85	0.41	0.19
Mar-22	2	14	2	36	0.71	0.06
Apr-22	30	219	117	322	0.18	0.92
May-22	7	51	14	94	0.38	0.21
Jun-22	14	100	50	165	0.27	0.42

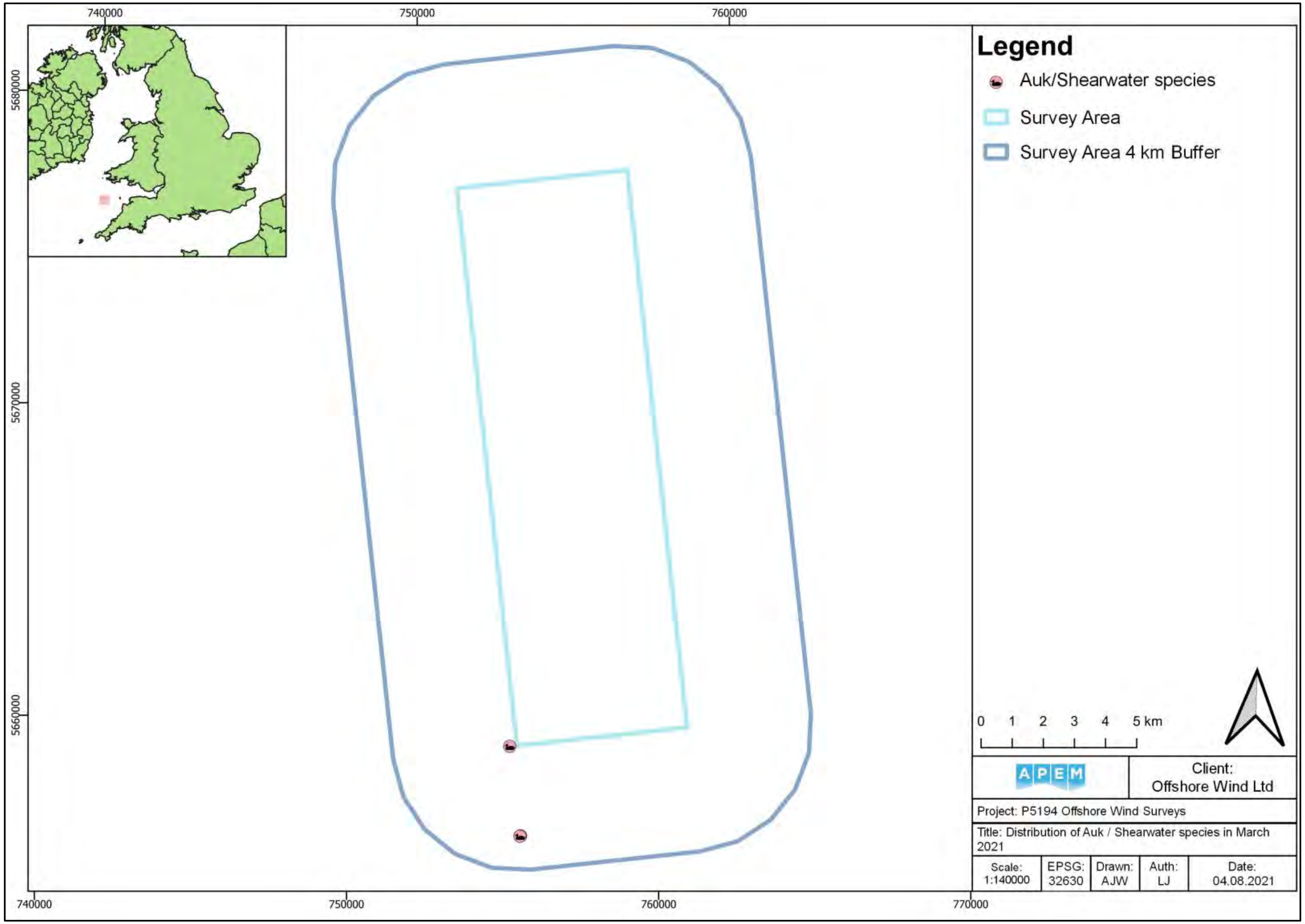


Figure 213 Distribution of auks / shearwaters in Survey Area during March 2021

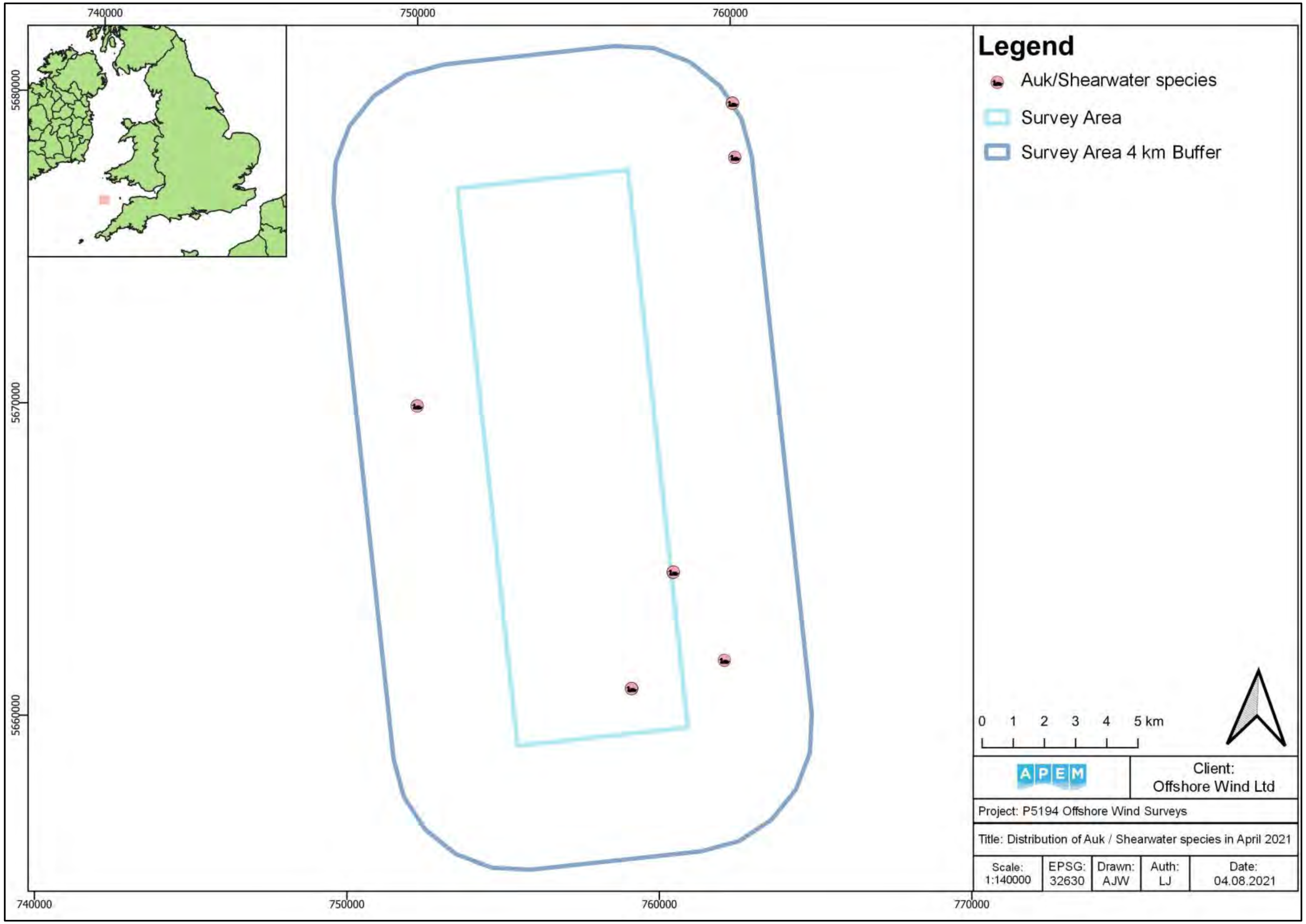


Figure 214 Distribution of auks / shearwaters in Survey Area during April 2021

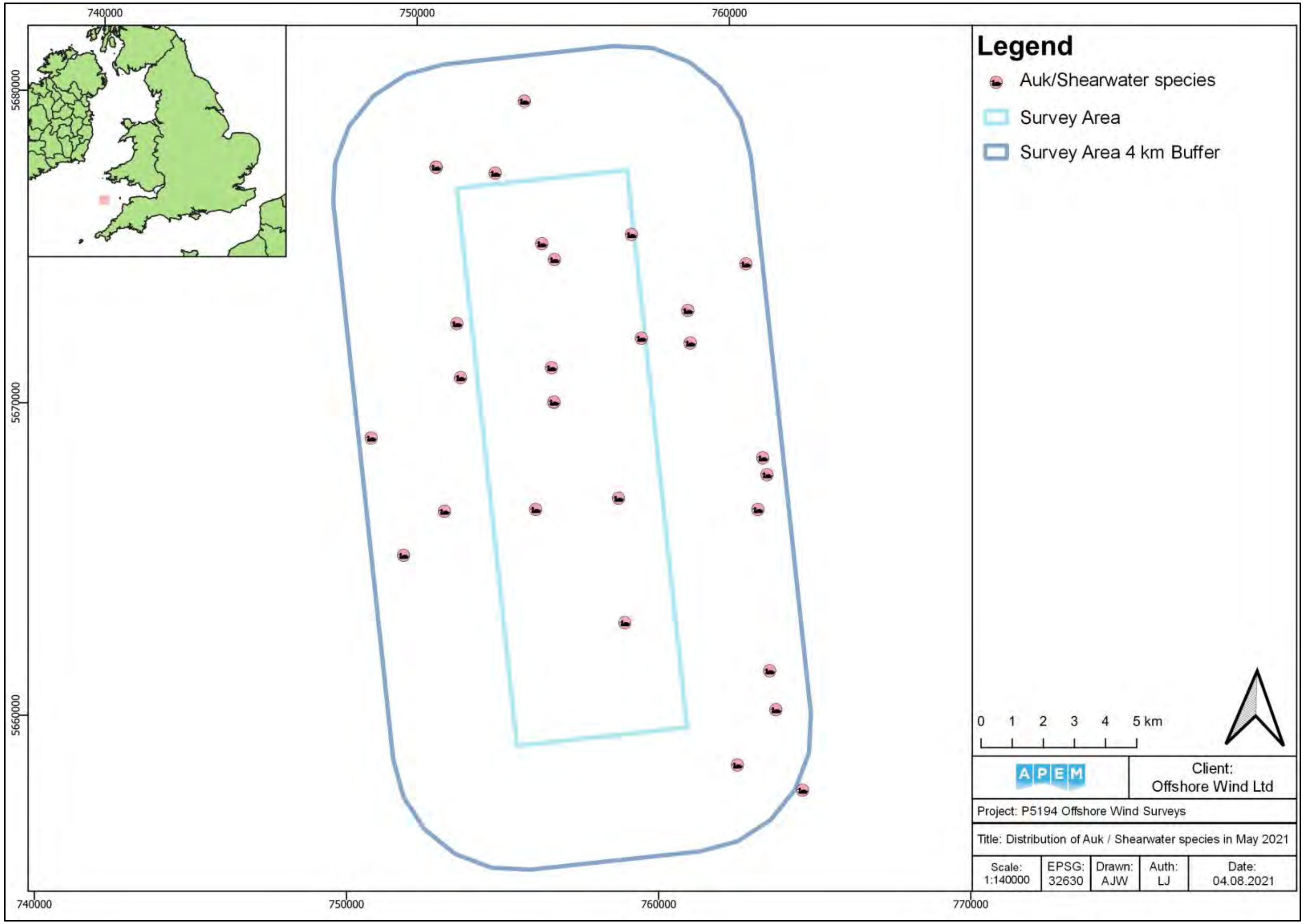


Figure 215 Distribution of auks / shearwaters in Survey Area during May 2021

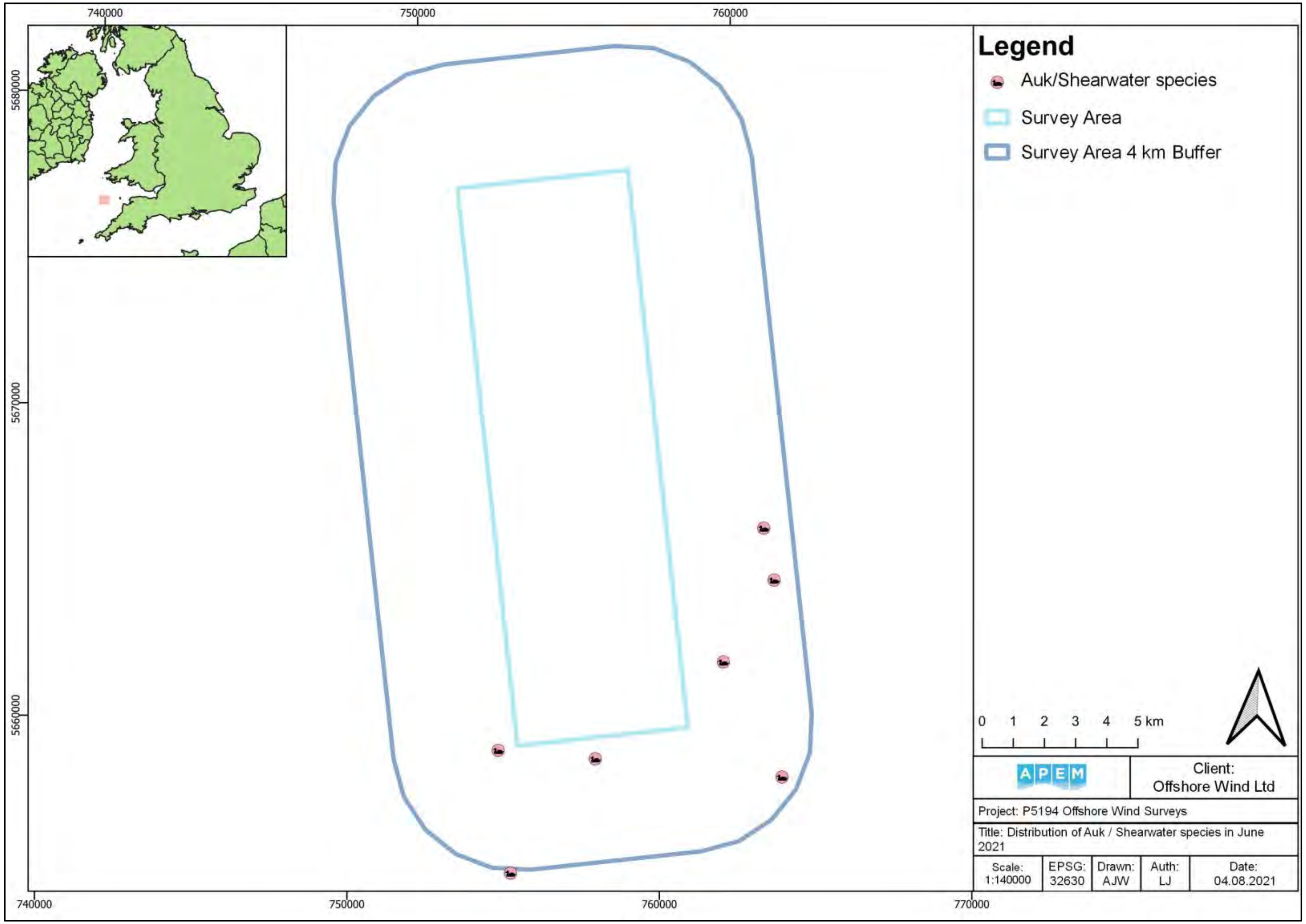


Figure 216 Distribution of auks / shearwaters in Survey Area during June 2021

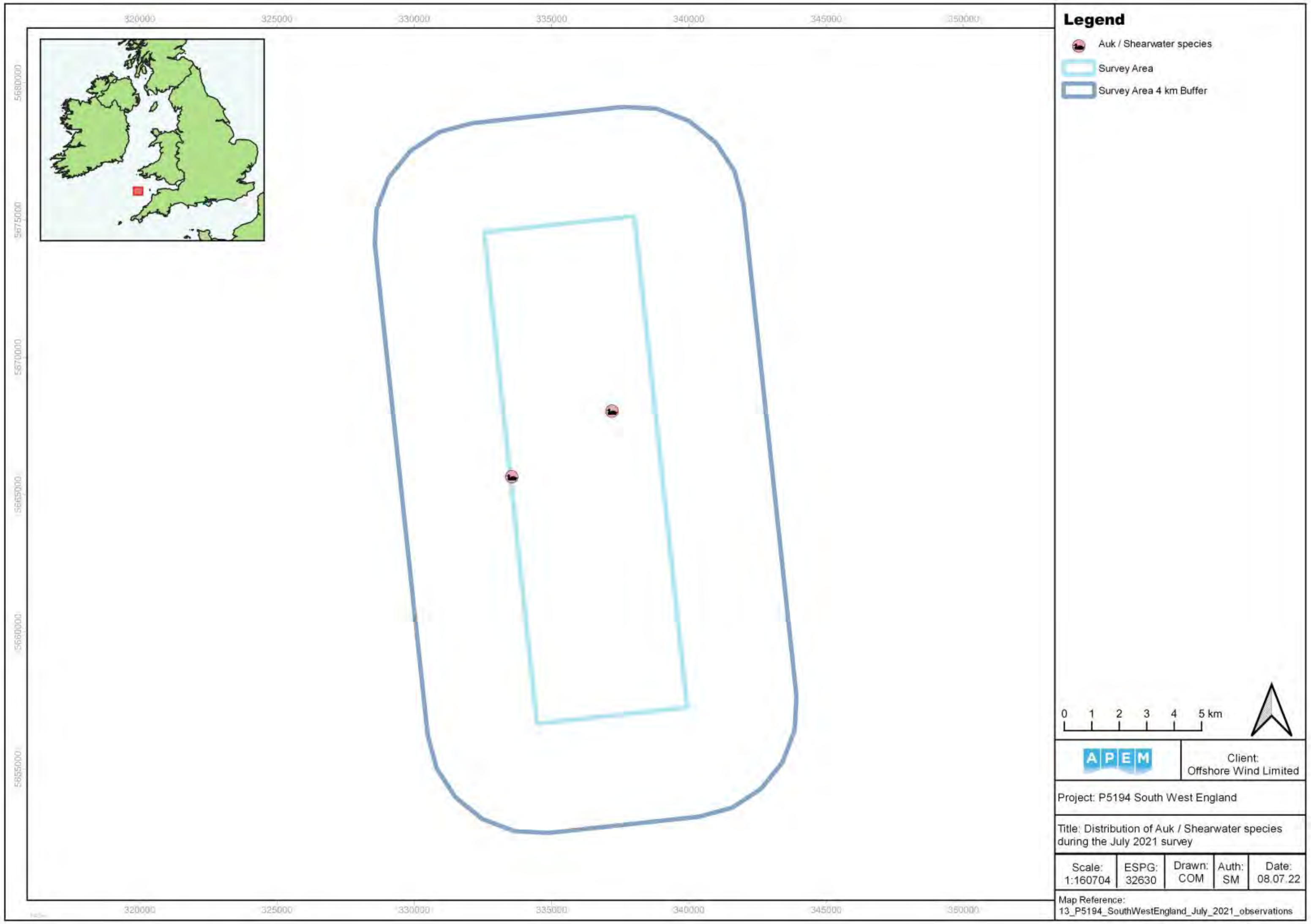


Figure 217 Distribution of auks / shearwaters in Survey Area during July 2021

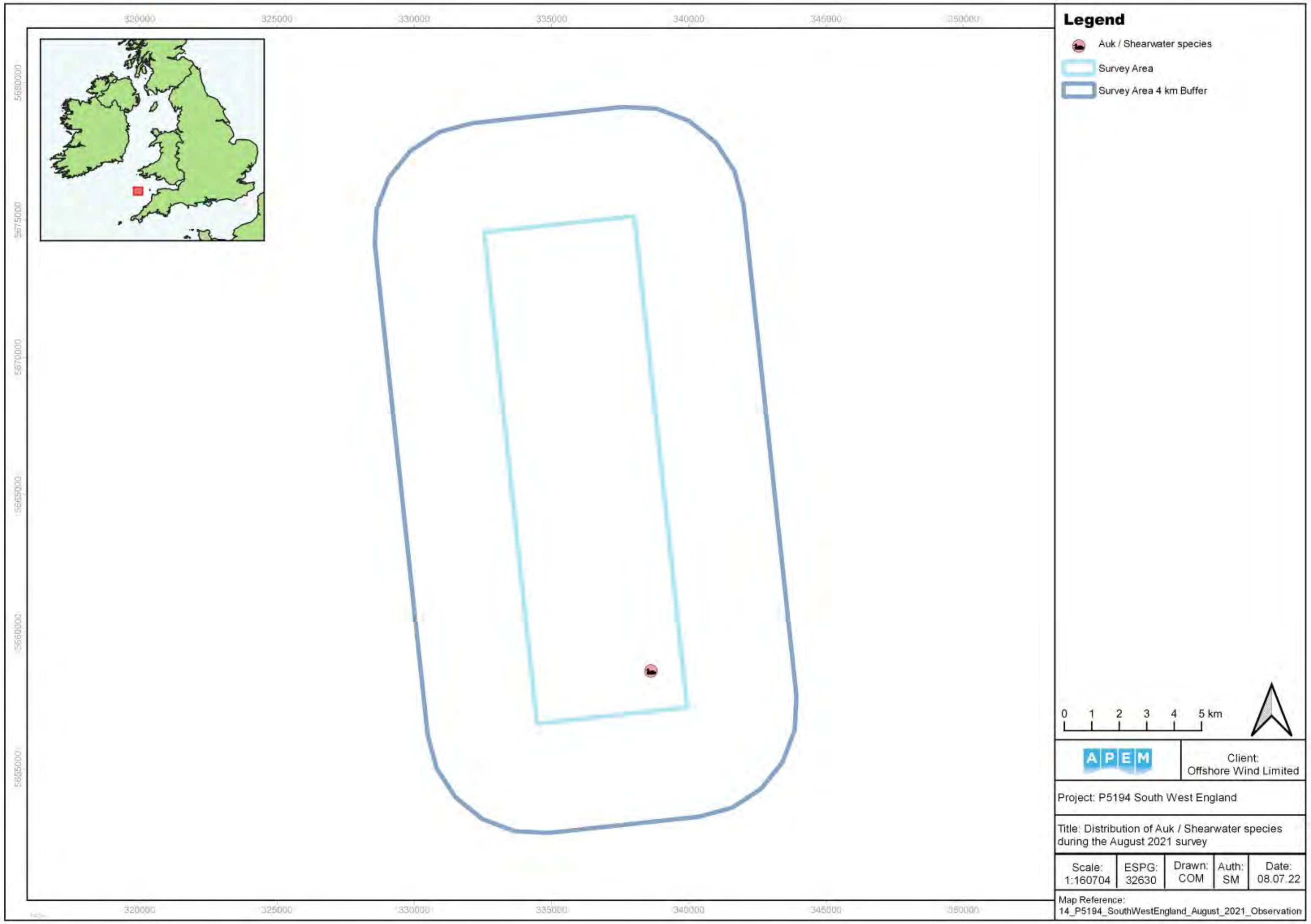


Figure 218 Distribution of auks / shearwaters in Survey Area during August 2021

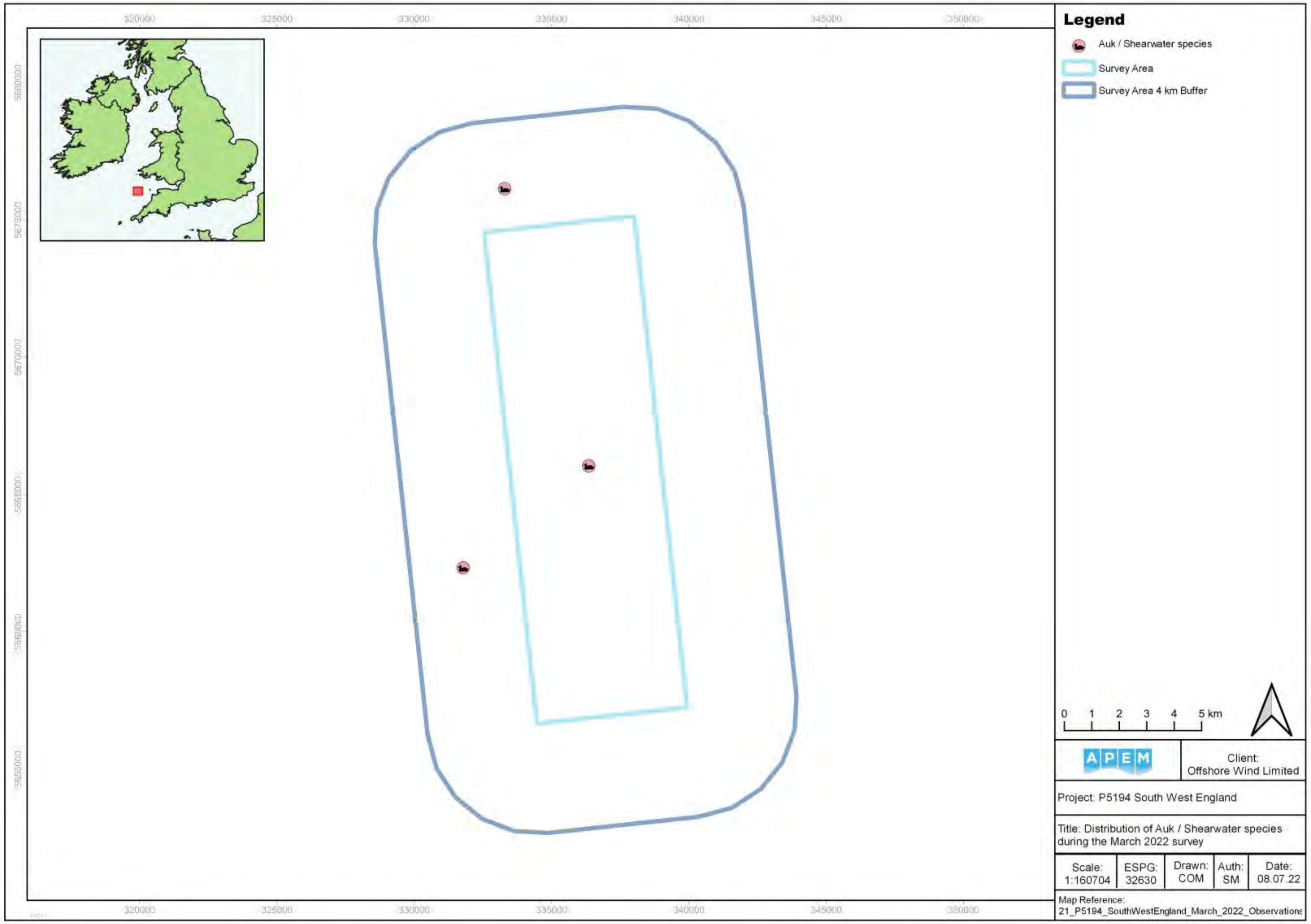


Figure 219 **Distribution of auks / shearwaters in Survey Area during March 2022**

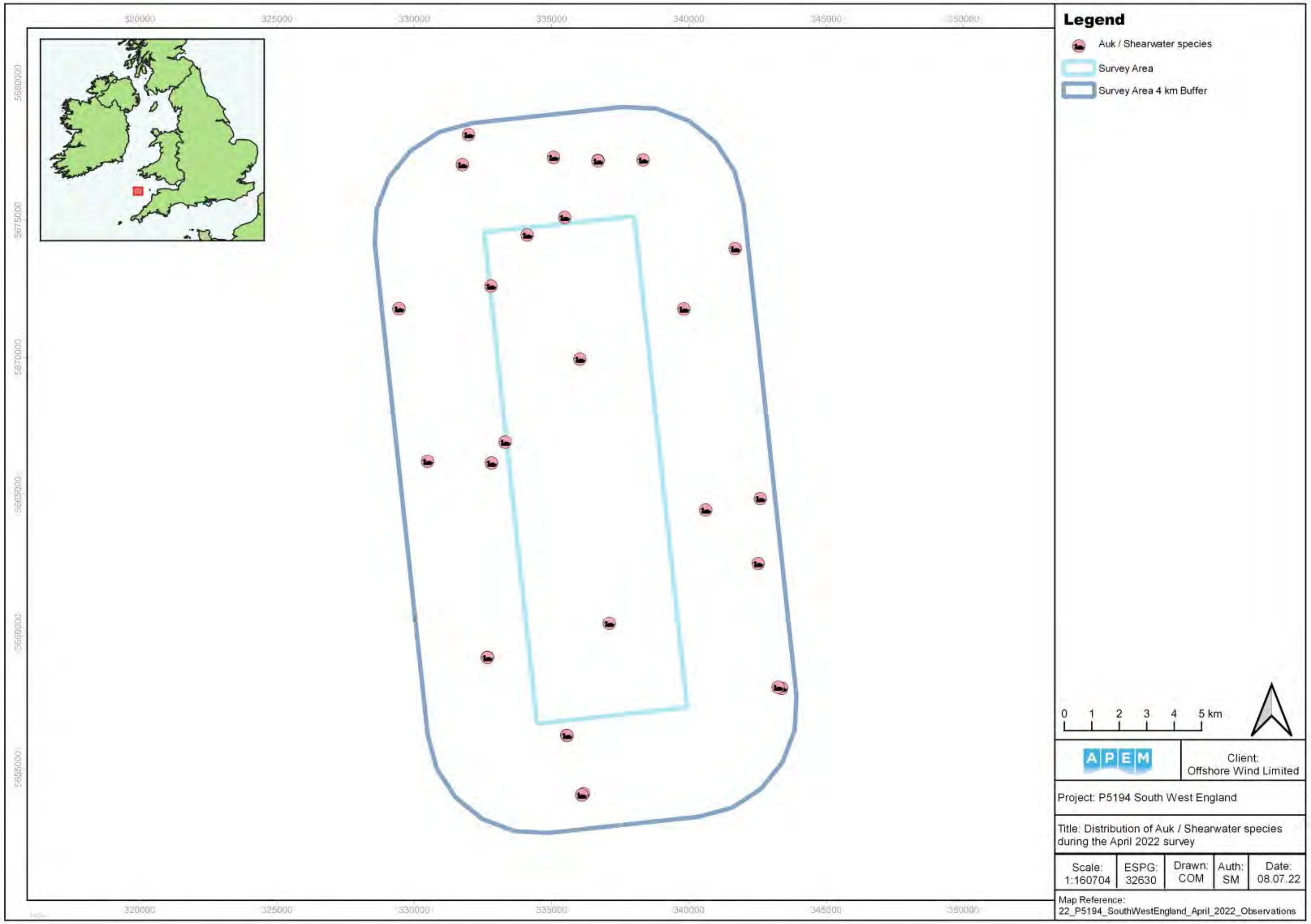


Figure 220 Distribution of auks / shearwaters in Survey Area during April 2022

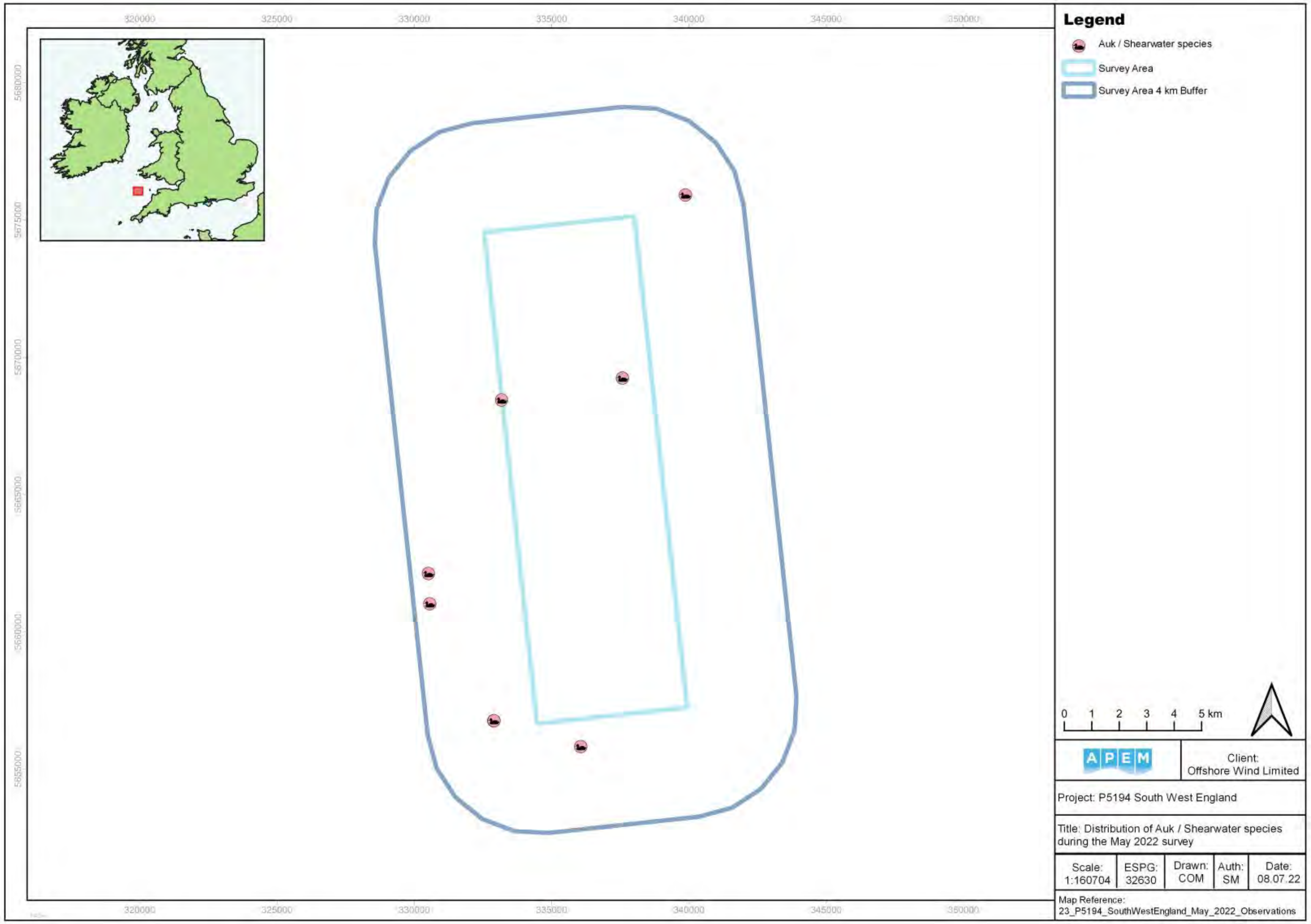
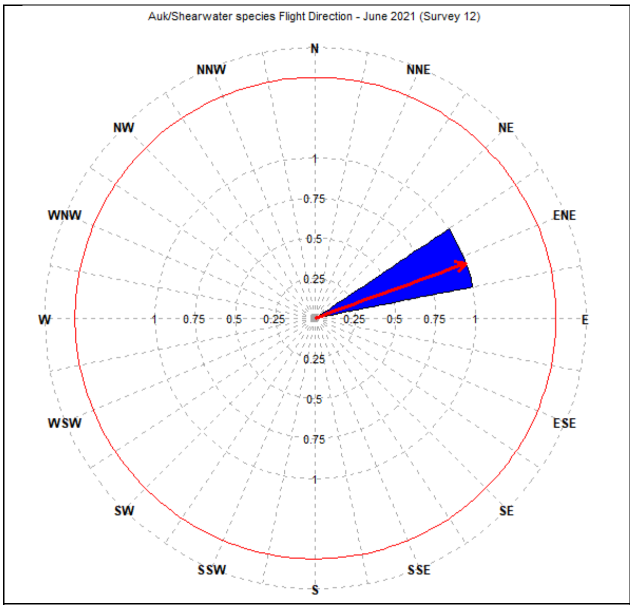


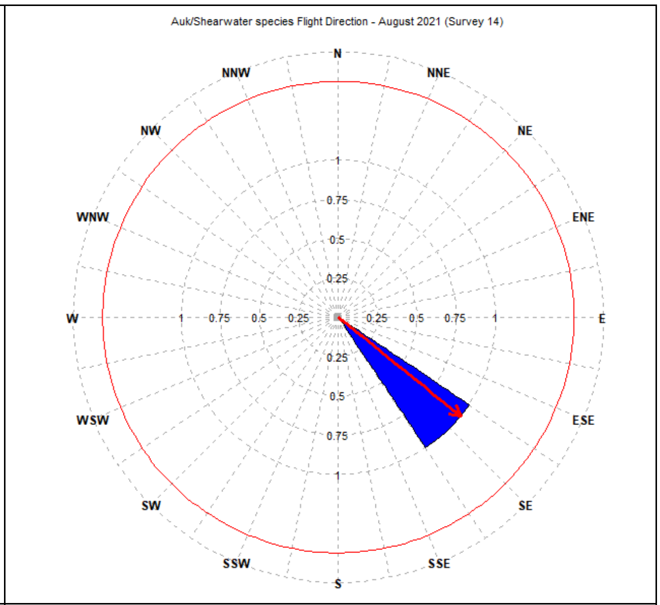
Figure 221 **Distribution of auks / shearwaters in Survey Area during May 2022**

Figure 222 Distribution of auks / shearwaters in Survey Area during June 2022



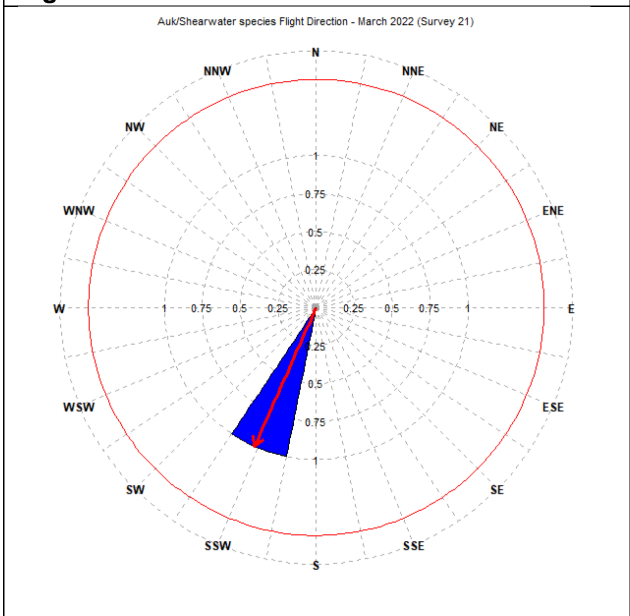
Number of Observations	1
Mean Vector (µ)	70.221
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 223a June 2021



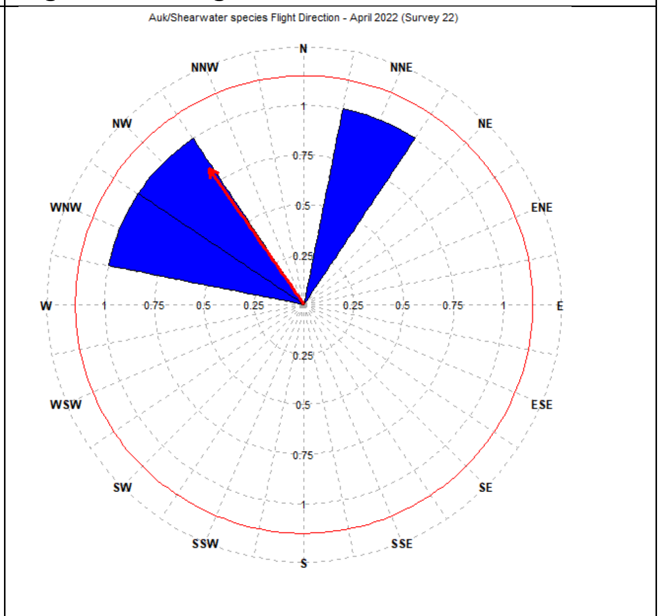
Number of Observations	1
Mean Vector (µ)	129.528
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 223b August 2021



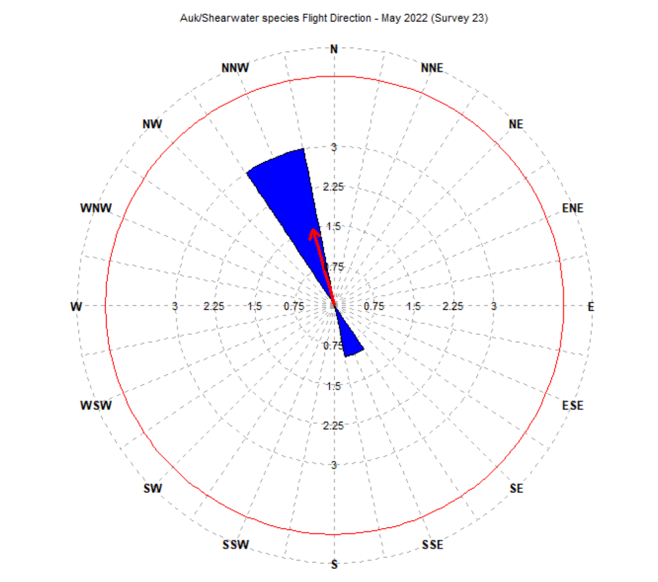
Number of Observations	1
Mean Vector (µ)	204.667
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 223c March 2022



Number of Observations	3
Mean Vector (µ)	325.135
Length of Mean Vector (r)	0.831
Rayleigh Test (Z)	2.073
Rayleigh Test (p)	0.125

Figure 223d April 2022



Number of Observations	4
Mean Vector (µ)	344.036
Length of Mean Vector (r)	0.497
Rayleigh Test (Z)	0.988
Rayleigh Test (p)	0.399

Figure 223e May 2022

Figure 223 Summary of flight direction of auks / shearwaters during survey period

4.25 Gannet – *Morus bassanus*

Gannets were recorded in all surveys, with a peak raw count of 126 in June 2021, resulting in an abundance estimate of 1,003 for the Survey Area (**Table 30**).

In the Southwest England Site, they were present from July to November 2020, in all 2021 surveys except July, November and December, and between February and June 2022. The peak raw count of 24 in September 2020 resulted in an abundance estimate of 209 (**Table 30**).

In the 4 km Buffer Zone, gannets were present in July, August, September, October and December 2020, as well as in all 2021 and 2022 surveys. The peak raw count of 116 in June 2021 resulted in an abundance estimate of 894 for the area (**Table 30**).

Gannets were predominantly loosely distributed across the Survey Area throughout July-October 2020, March-May 2021, and January-June 2022 (**Figure 224**; **Figure 225**; **Figure 227**; **Figure 232**; **Figure 233**; **Figure 236**; **Figure 237**; **Figure 238**; **Figure 239**; **Figure 243**; **Figure 244**; **Figure 246**). Some months experienced higher densities, particularly September 2020, when a group was identified in the northwest of the Site, plus another group in the southwest of the Site and Buffer in May 2021. And during April 2022 the gannets were densely distributed in the west of the Buffer (**Figure 226**; **Figure 234**; **Figure 245**). A single individual was present in November 2020 in the east of the Site (**Figure 228**).

Gannets were recorded in the Buffer Zone only during December 2020, with a dense group in the southeast, and individuals outside this group further east near the Survey Area boundary (**Figure 229**). Two individuals were present in January 2021, centrally within the Site and the west of the Buffer (**Figure 230**). In February 2021 they were in the northwest, south and northwest, as well as grouped in the Buffer's northeast (**Figure 231**). In June, they exhibited a northerly distribution with individuals primarily in the Buffer. A number of birds were also captured in the north, east, and south of the Site, with low numbers in the southeast of the Buffer (**Figure 247**). Two individuals were present in each of the June 2021 and January 2022 surveys, in the northeast and southeast of the Buffer, respectively (**Figure 234**; **Figure 242**). In November and December 2021, gannets were in the Buffer – as a dense group in the northeast corner, and single individual in the southeast during November, and as four individuals across the south during December (**Figure 240**; **Figure 241**).

Gannets were recorded flying in all directions: north in August, September and January 2020 (351.128°, p<0.001; **Figure 248b**; 9.088°, p<0.001; **Figure 248c**; 350.686°, p=0.512; **Figure 248f**); north-northeast in October 2020 (11.929°, p<0.001; **Figure 248d**); east-northeast in December 2020 (60.719°, p=0.550; **Figure 248e**); east in April 2021 (79.837°, p=0.312; **Figure 248i**); southeast in May 2021 (126.175°, p=0.295; **Figure 248j**); south-southeast in February 2021 (166.133°, p<0.001; **Figure 248g**; 79.837°, p=0.312; **Figure 248i**); south in March and June 2021(184.697°, p=0.118; **Figure 248h**; 186.983°, p<0.001; **Figure 248k**); and north-northwest in July 2020 (336.518°, p<0.001; **Figure 248a**).

In January, February, and May 2022, the birds flew approximately west (279.040°, p=0.512; **Figure 248r**; 277.247°, p=0.138; **Figure 248s**; 272.428°, p=0.117; **Figure 248v**). In August and November 2021 they flew approximately north (350.770°, p<0.001; **Figure 248m**; 5.522°, p=0.058; **Figure 248p**); south in September 2021 and March 2022 (187.211°, p=0.313; **Figure 248n**; 181.628°, p=0.089; **Figure 248t**); south-west in October 2021 and April 2022 (220.334°, p=0.007; **Figure 248o**; 215.616°, p=0.243; **Figure 248u**); south-southeast in July 2021 (160.742°, p=0.512; **Figure 248l**); east-southeast in December 2021 (109.335°, p=0.114; **Figure 248q**); and west-northwest in June 2022 (301.884°, p=0.435; **Figure 248w**).

Table 30 **Raw counts and abundance and density estimates (individuals per km^2) of gannet in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone**

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jul-20	71	550	85	1,387	0.12	1.63
Aug-20	42	319	144	554	0.15	0.95
Sep-20	94	738	401	1,186	0.10	2.19
Oct-20	44	337	184	521	0.15	1.00
Nov-20	1	8	1	24	1.00	0.02
Dec-20	15	120	15	288	0.26	0.36
Jan-21	2	16	2	40	0.71	0.05
Feb-21	17	130	38	253	0.24	0.39
Mar-21	26	199	122	291	0.20	0.59
Apr-21	23	177	92	284	0.21	0.50
May-21	45	327	211	473	0.15	0.97
Jun-21	126	1,003	502	1,648	0.09	2.98
Jul-21	2	15	2	38	0.71	0.04
Aug-21	32	251	118	400	0.18	0.75
Sep-21	59	444	105	1,007	0.13	1.32
Oct-21	22	170	108	248	0.21	0.51
Nov-21	22	169	23	429	0.21	0.5
Dec-21	4	31	8	69	0.50	0.09
Jan-22	2	15	2	39	0.71	0.04
Feb-22	16	123	16	386	0.25	0.37
Mar-22	22	167	99	235	0.21	0.50
Apr-22	74	563	228	997	0.12	1.67
May-22	5	38	8	68	0.45	0.11
Jun-22	24	180	82	299	0.20	0.54
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jul-20	5	43	9	85	0.45	0.43
Aug-20	2	17	2	42	0.71	0.17
Sep-20	24	209	52	445	0.20	2.11
Oct-20	13	110	25	212	0.28	1.11
Nov-20	1	9	1	26	1.00	0.09
Jan-21	1	9	1	26	1.00	0.09
Feb-21	1	9	1	26	1.00	0.09
Mar-21	6	51	17	94	0.41	0.52

Apr-21	9	77	17	154	0.33	0.78
May-21	18	146	65	243	0.24	1.47
Jun-21	10	87	26	147	0.32	0.88
Aug-21	8	70	26	132	0.35	0.71
Sep-21	5	41	8	82	0.45	0.41
Oct-21	12	106	53	167	0.29	1.07
Feb-22	12	104	12	313	0.29	1.05
Mar-22	8	69	26	121	0.35	0.70
Apr-22	6	51	17	102	0.41	0.52
May-22	1	9	1	26	1.00	0.09
Jun-22	13	109	17	227	0.28	1.1
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	66	492	66	1,283	0.12	2.07
Aug-20	40	292	124	519	0.16	1.23
Sep-20	70	528	241	980	0.12	2.22
Oct-20	31	228	110	390	0.18	0.96
Dec-20	15	115	15	284	0.26	0.48
Jan-21	1	8	1	23	1.00	0.03
Feb-21	16	117	29	242	0.25	0.49
Mar-21	20	147	81	227	0.22	0.62
Apr-21	14	103	44	177	0.27	0.43
May-21	27	189	98	293	0.19	0.80
Jun-21	116	894	354	1479	0.09	3.77
Jul-21	2	15	2	37	0.71	0.06
Aug-21	24	180	68	315	0.20	0.76
Sep-21	54	392	73	993	0.14	1.65
Oct-21	10	74	30	118	0.32	0.31
Nov-21	22	161	22	389	0.21	0.68
Dec-21	4	29	7	59	0.50	0.12
Jan-22	2	15	2	37	0.71	0.06
Feb-22	4	29	7	59	0.50	0.12
Mar-22	14	101	51	159	0.27	0.43
Apr-22	68	497	183	892	0.12	2.09
May-22	4	29	7	65	0.50	0.12
Jun-22	11	79	29	129	0.30	0.33

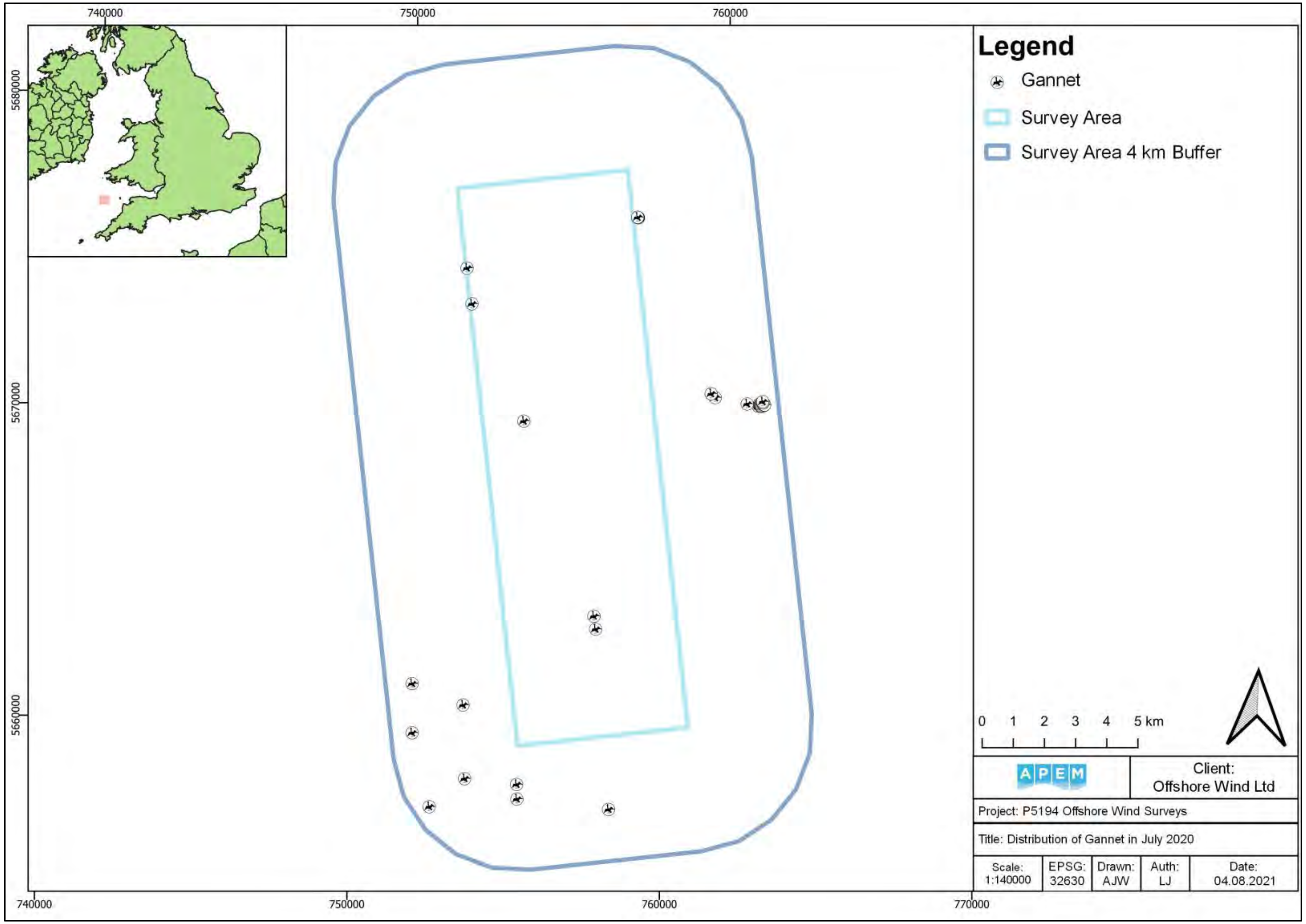


Figure 224 Distribution of gannets in Survey Area during July 2020

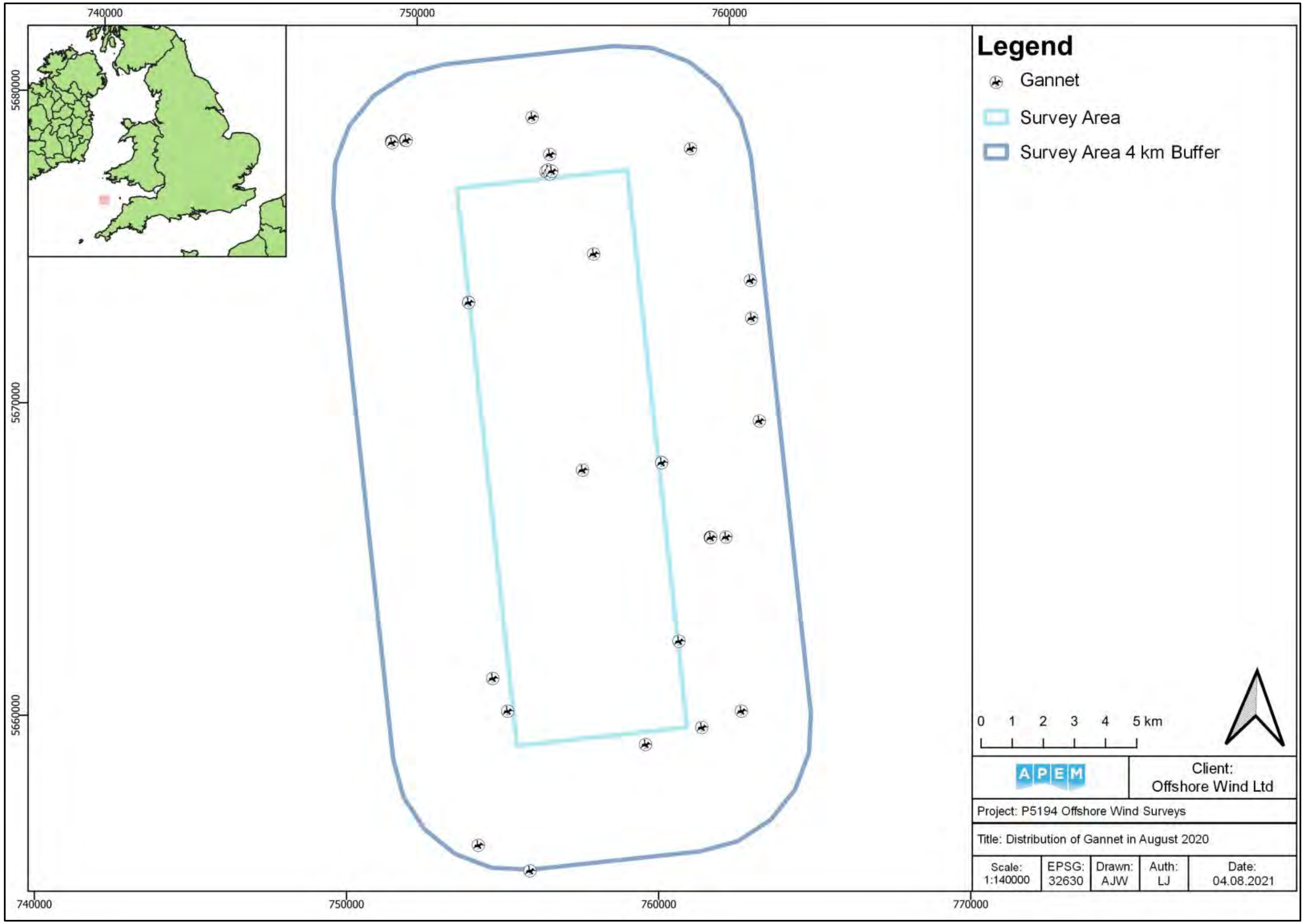


Figure 225 Distribution of gannets in Survey Area during August 2020

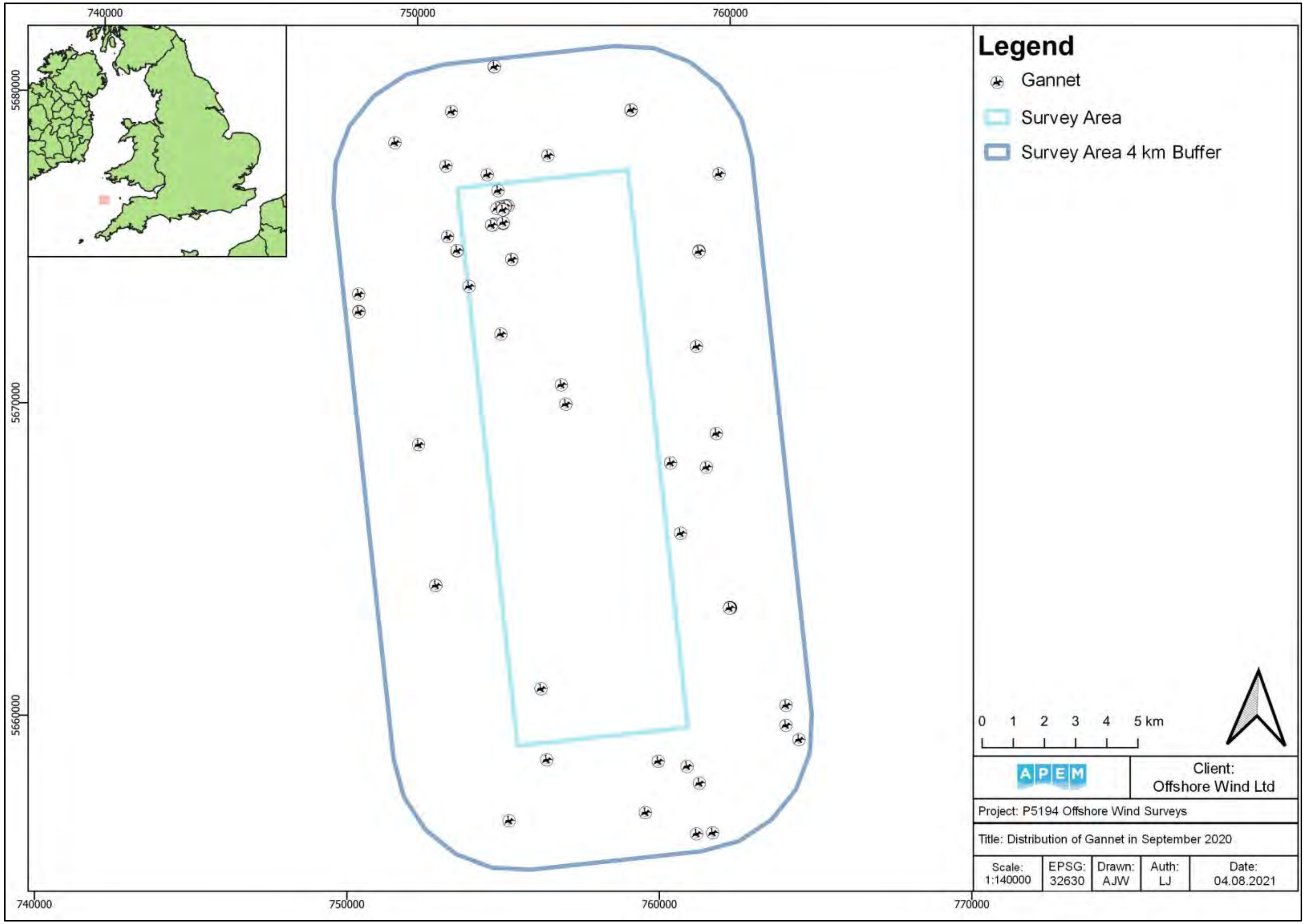


Figure 226 Distribution of gannets in Survey Area during September 2020

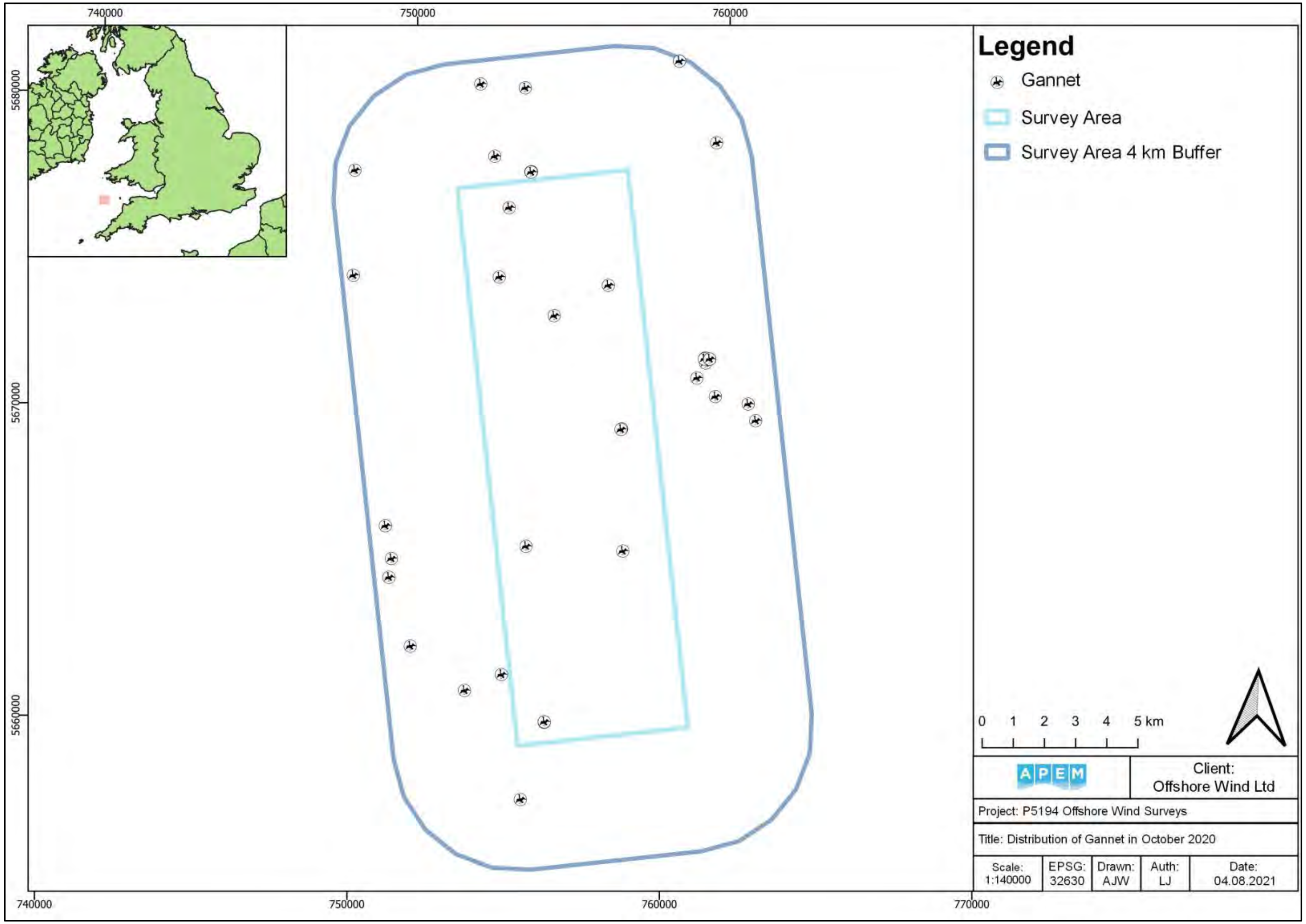


Figure 227 Distribution of gannets in Survey Area during October 2020

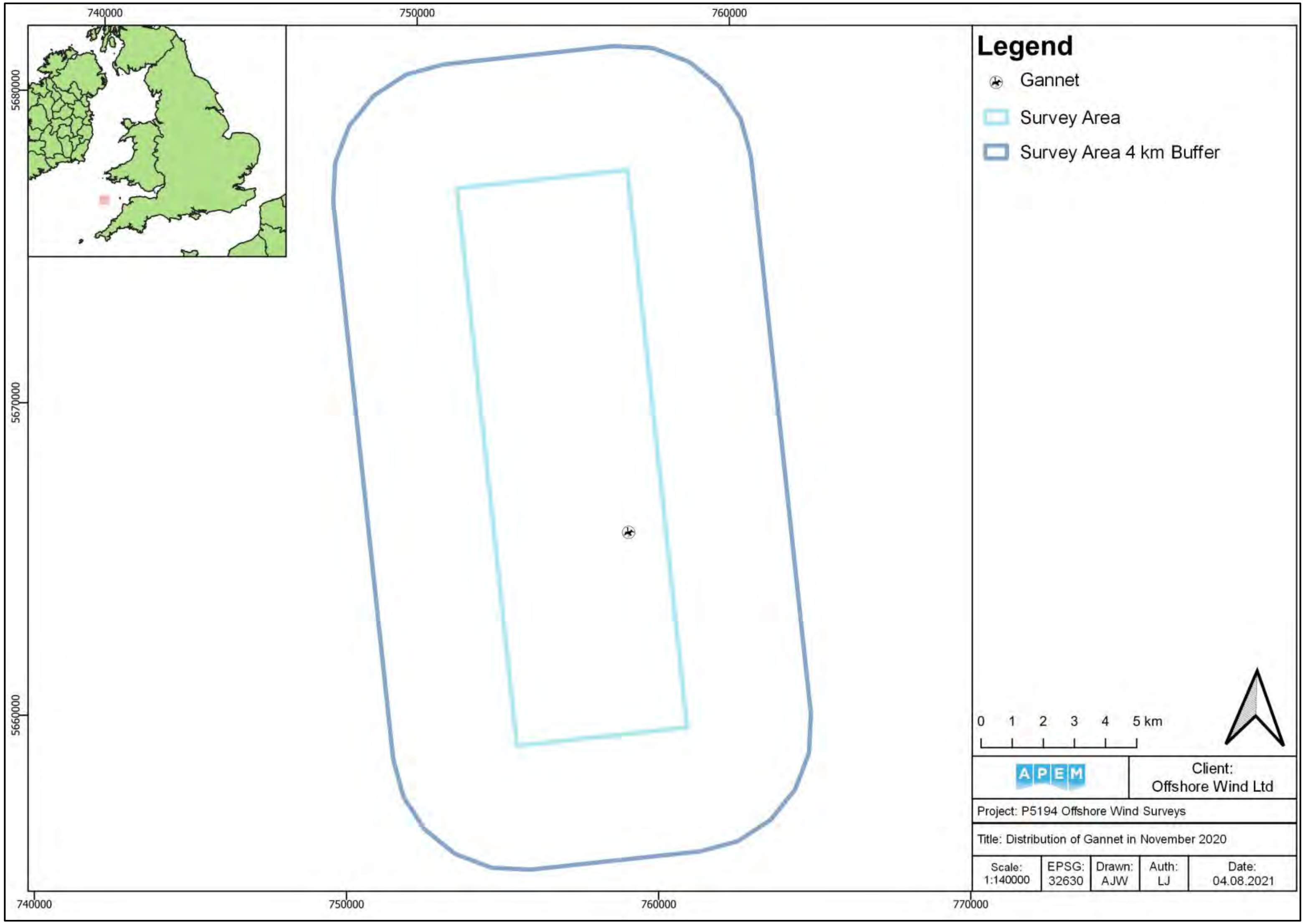


Figure 228 Distribution of gannets in Survey Area during November 2020

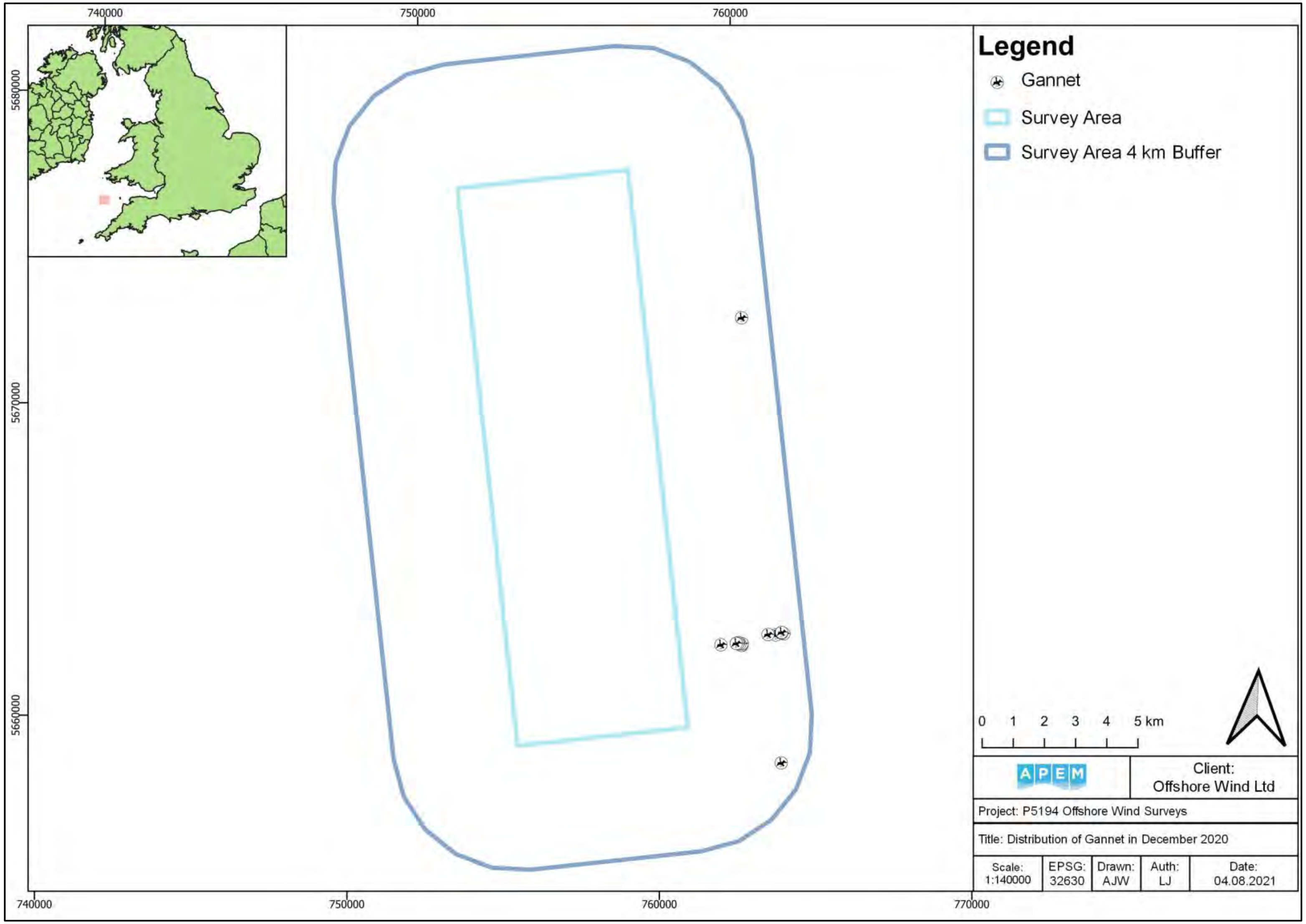


Figure 229 Distribution of gannets in Survey Area during December 2020

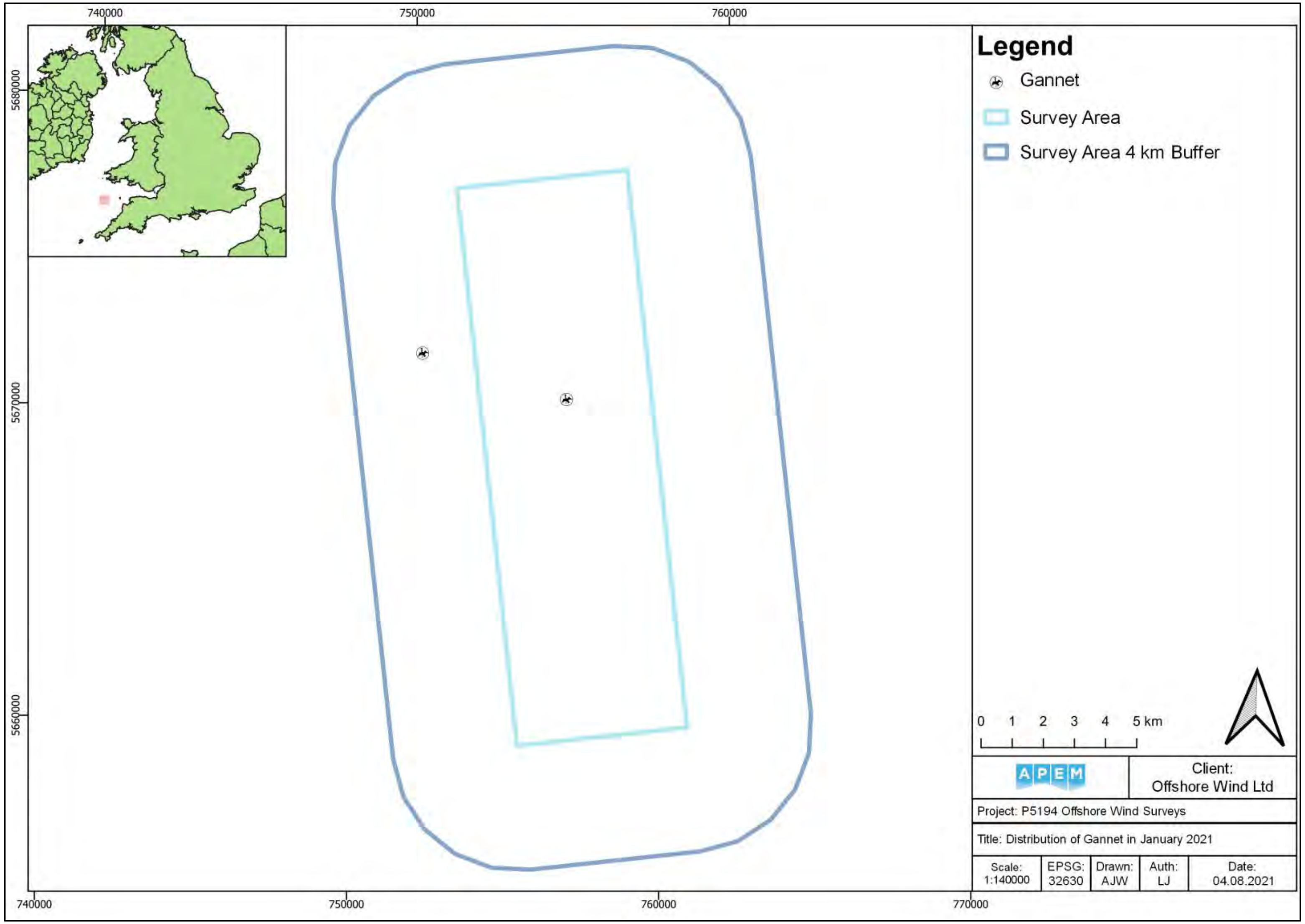


Figure 230 Distribution of gannets in Survey Area during January 2021

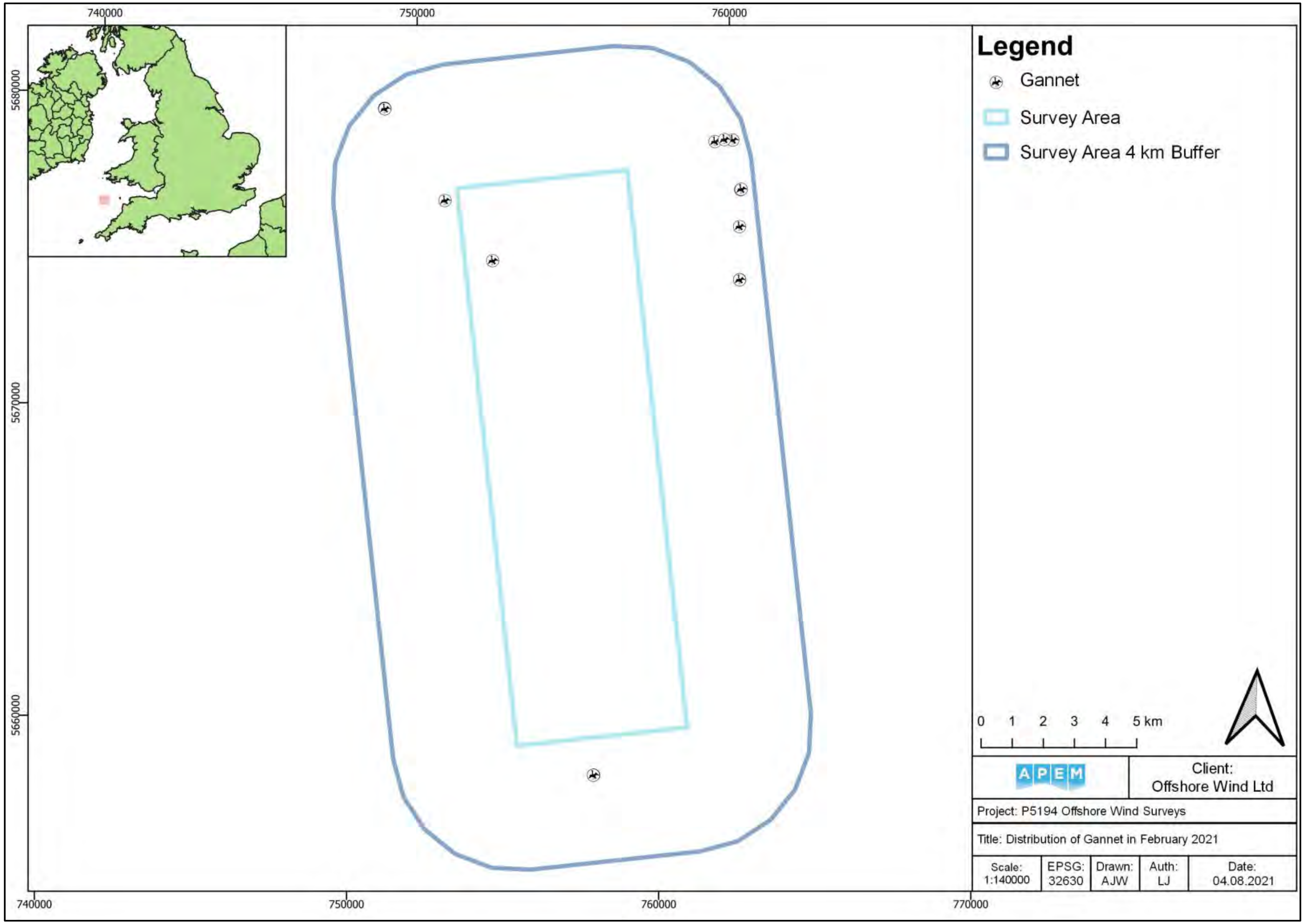


Figure 231 Distribution of gannets in Survey Area during February 2021

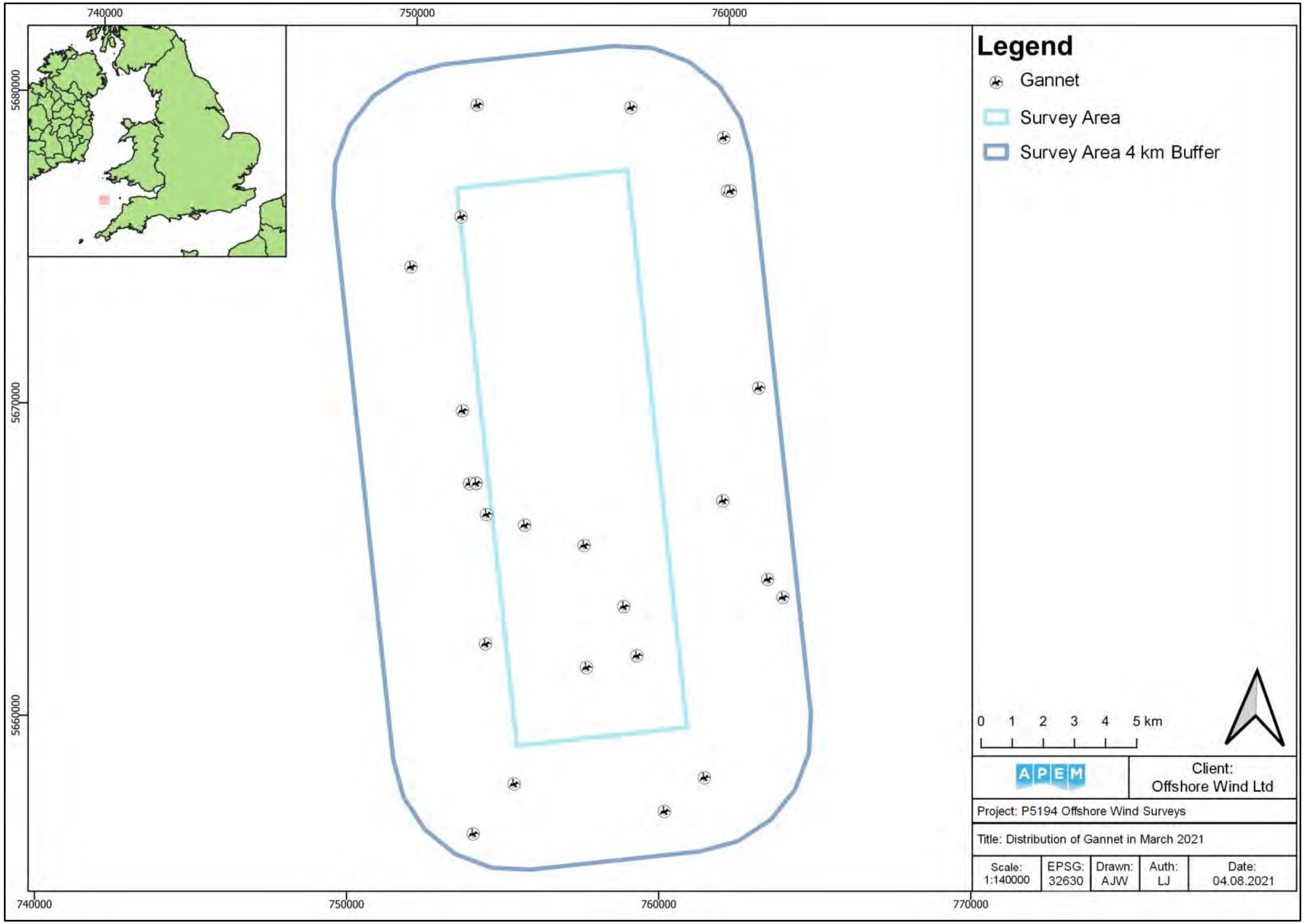


Figure 232 Distribution of gannets in Survey Area during March 2021

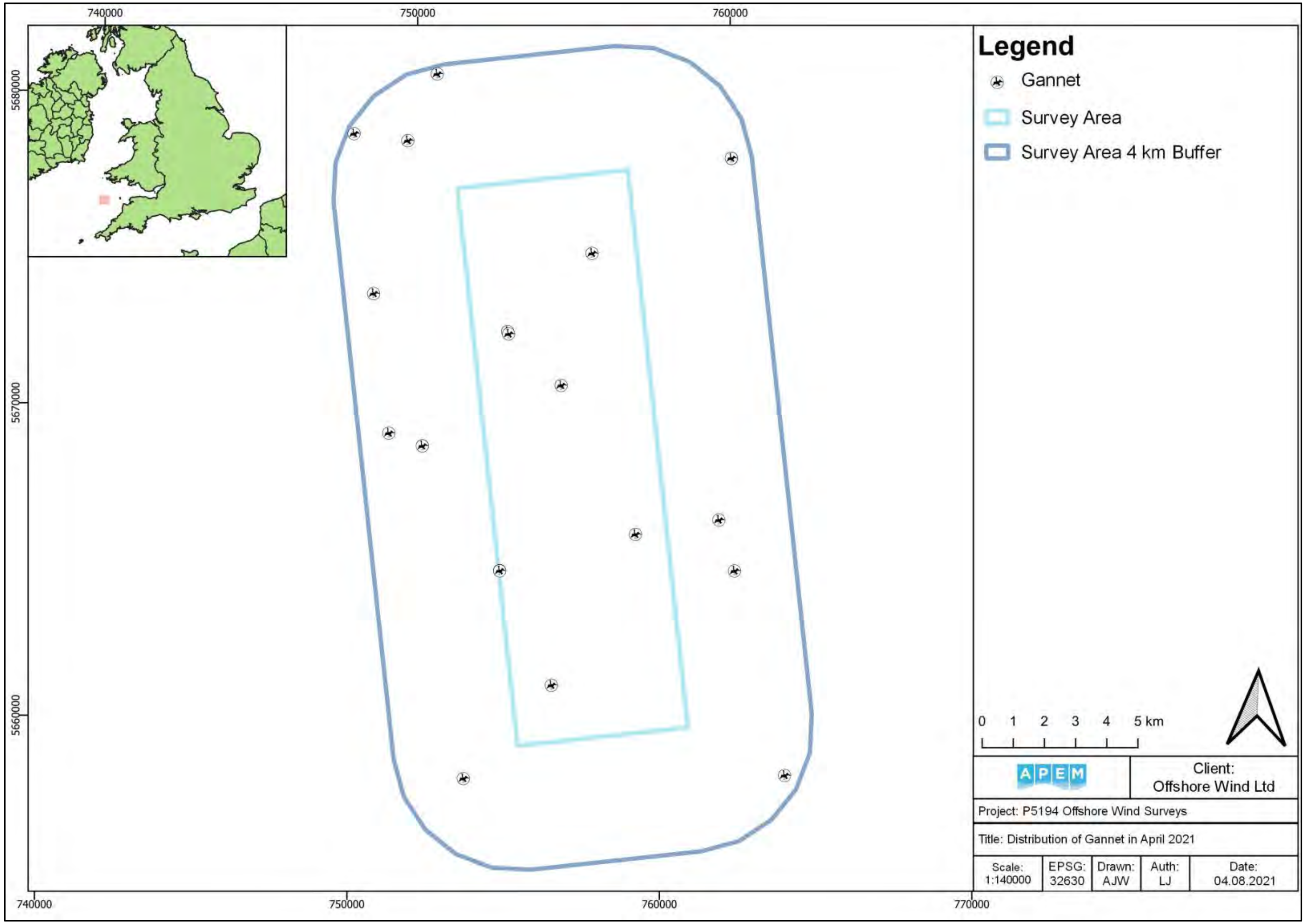


Figure 233 Distribution of gannets in Survey Area during April 2021

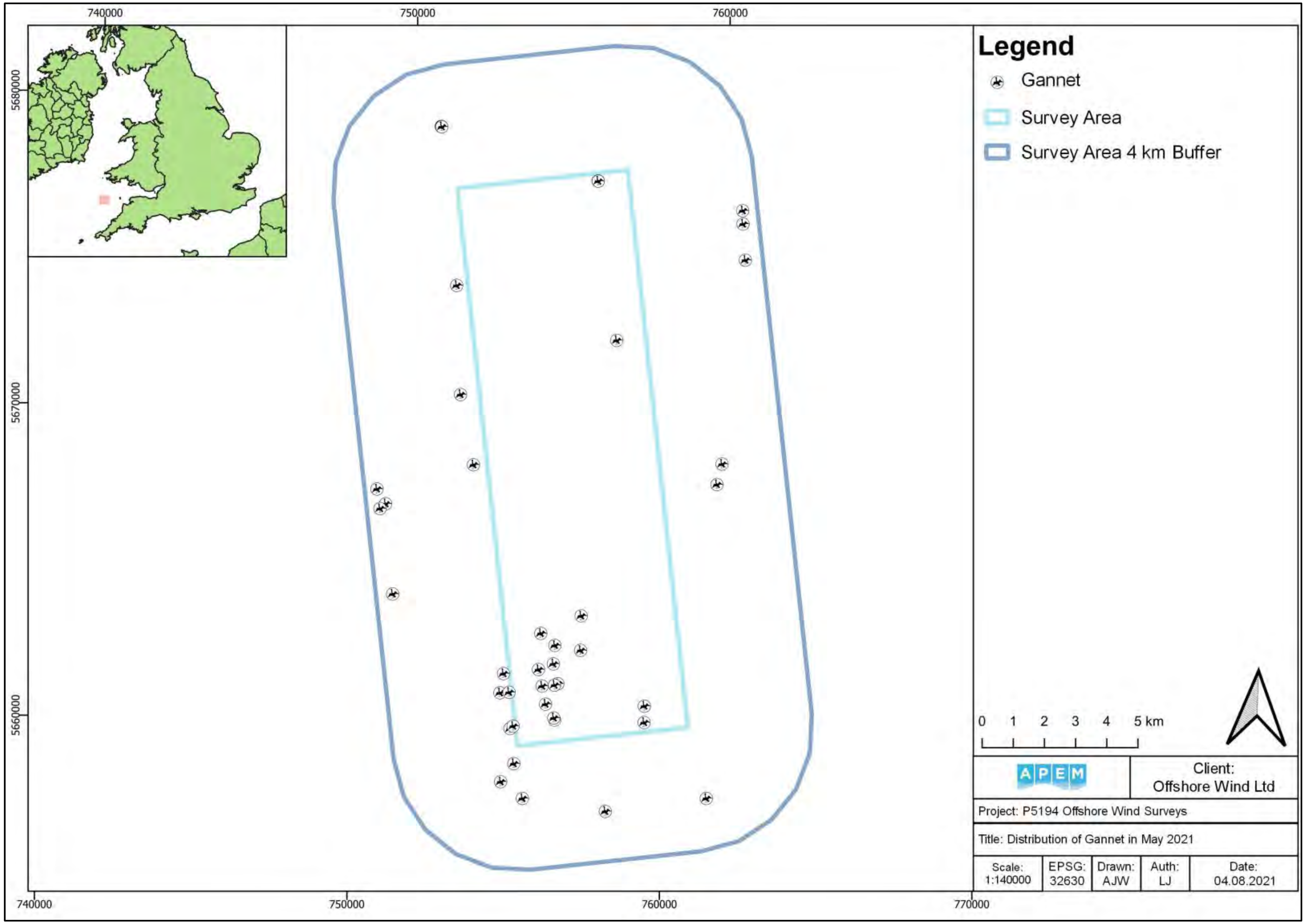


Figure 234 Distribution of gannets in Survey Area during May 2021

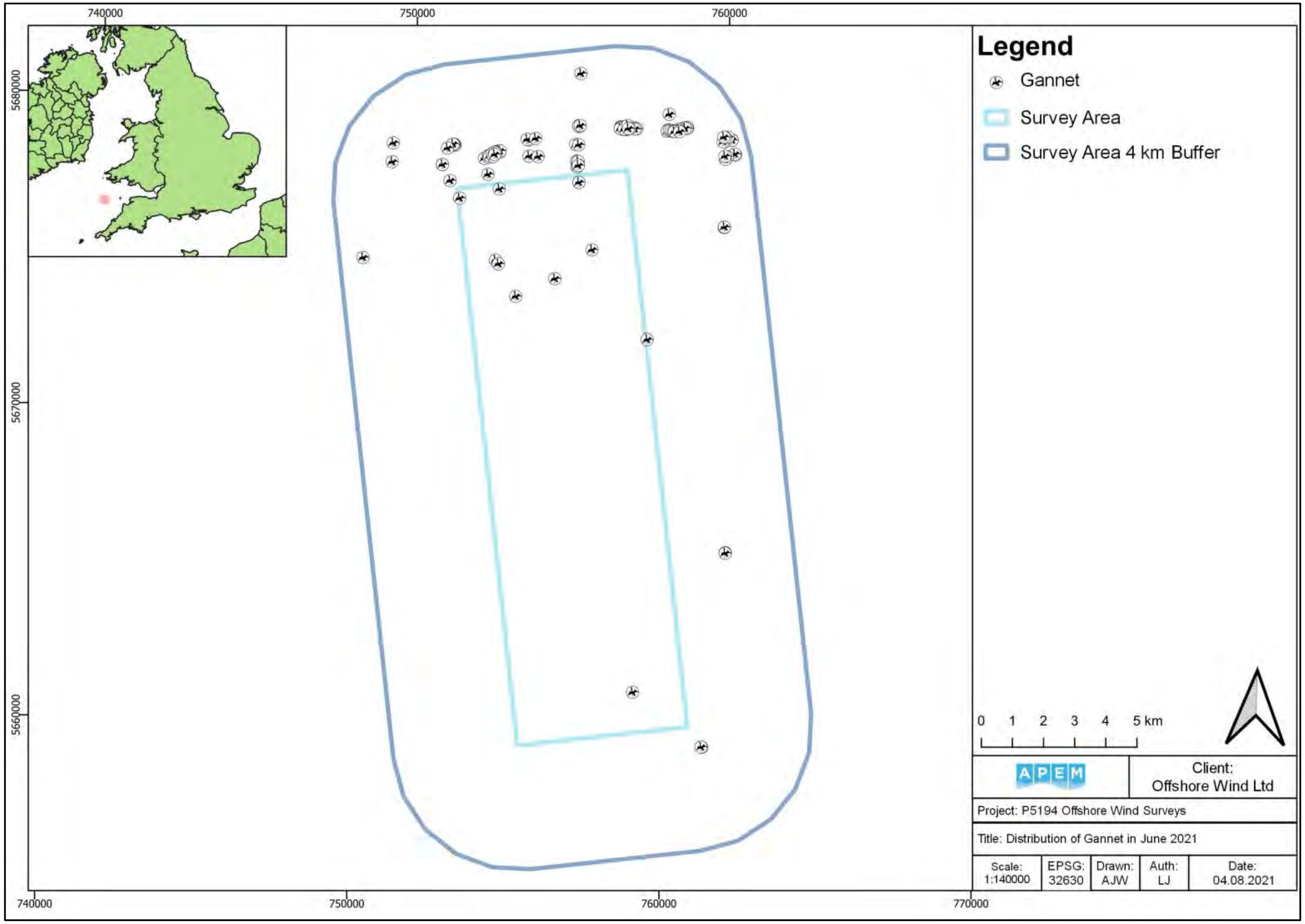


Figure 235 Distribution of gannets in Survey Area during June 2021

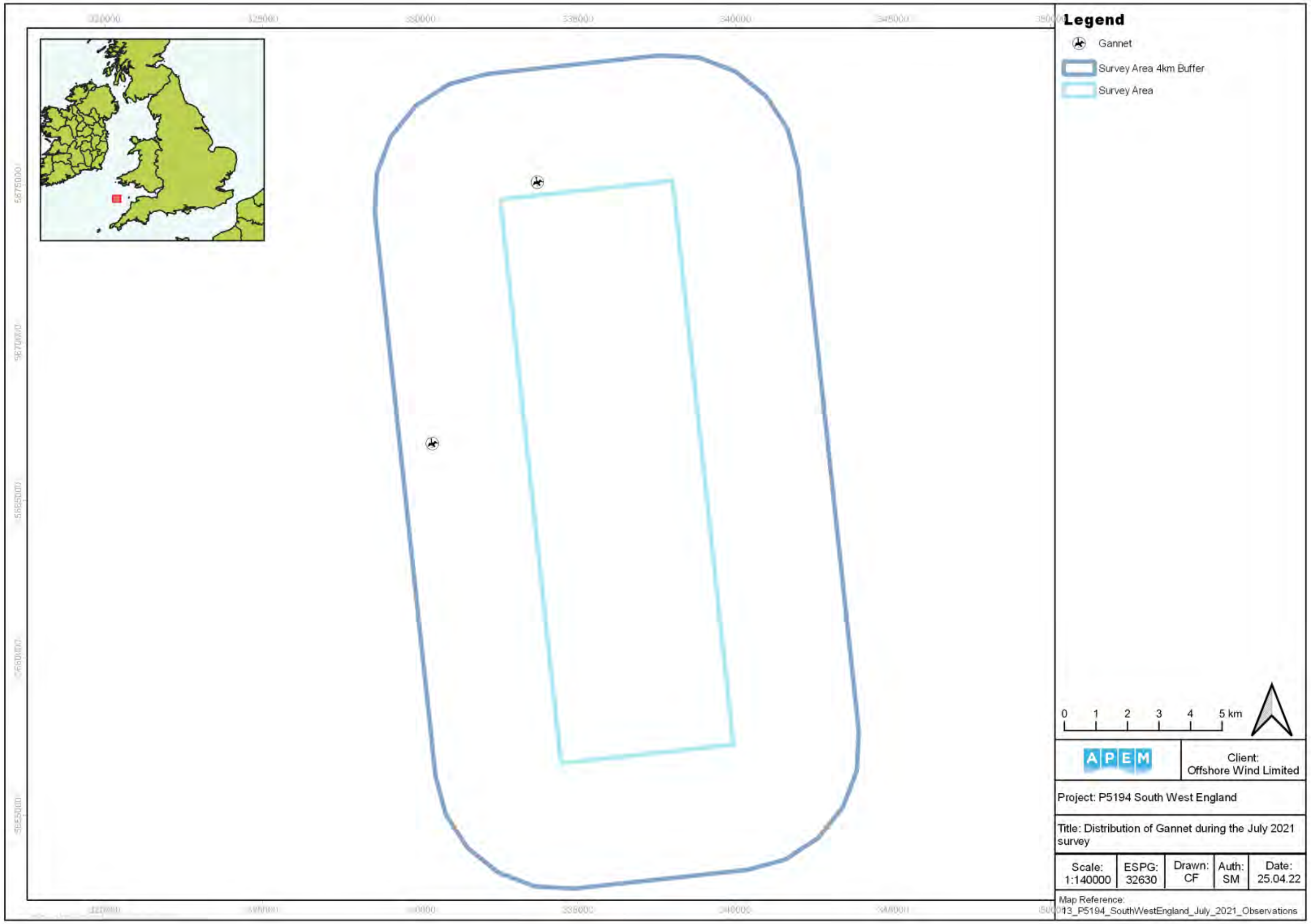


Figure 236 Distribution of gannets in Survey Area during July 2021

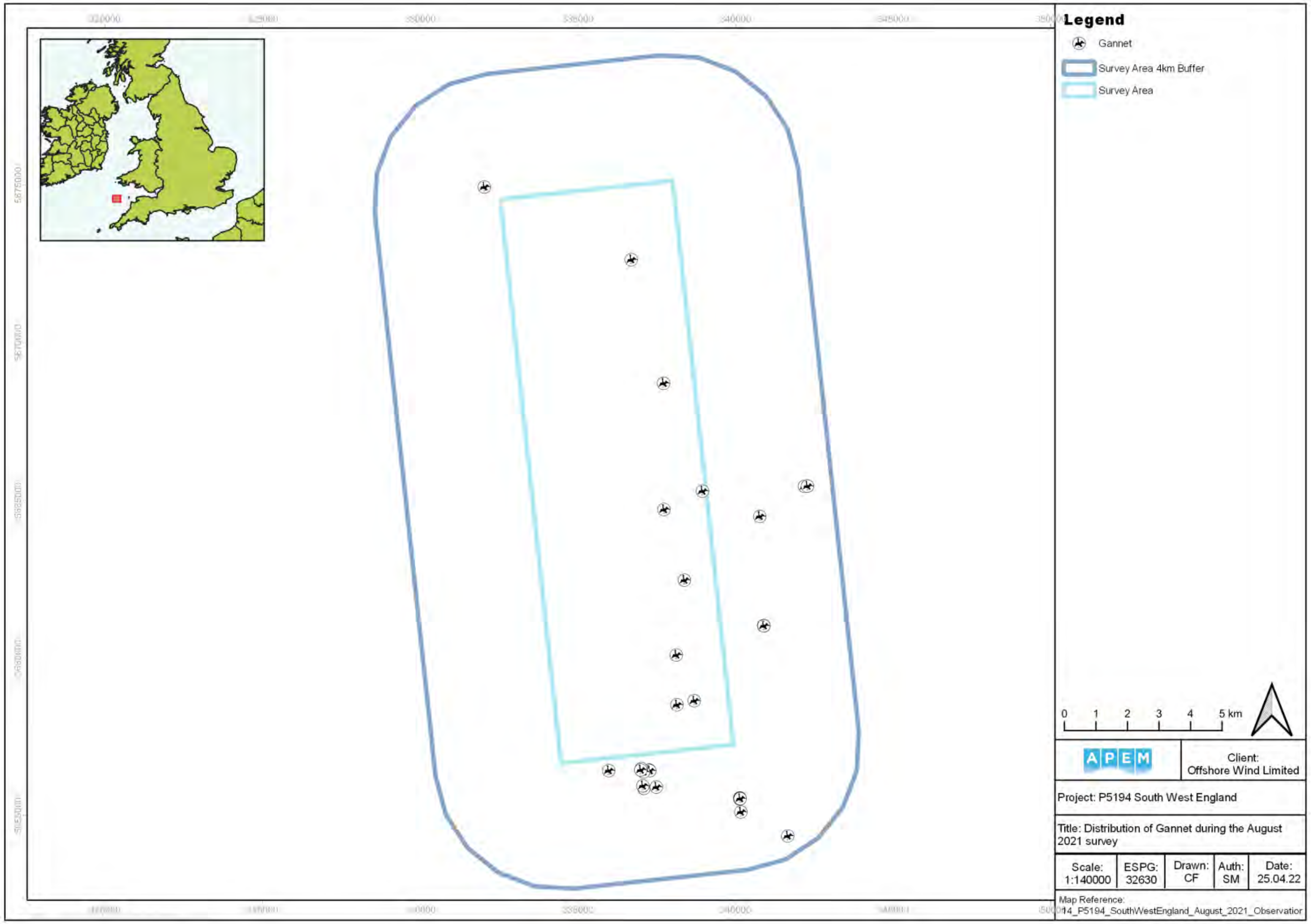


Figure 237 Distribution of gannets in Survey Area during August 2021

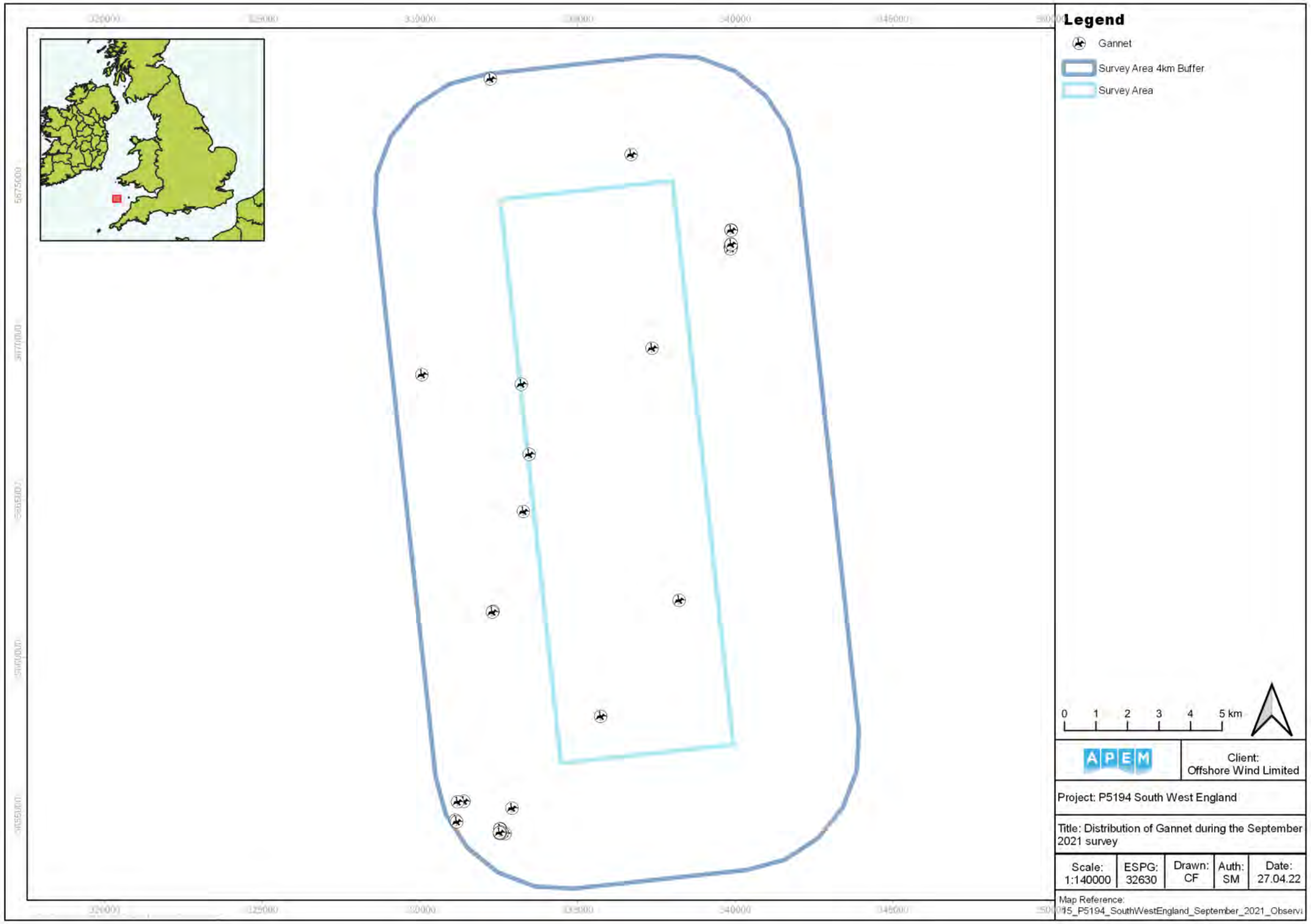


Figure 238 Distribution of gannets in Survey Area during September 2021

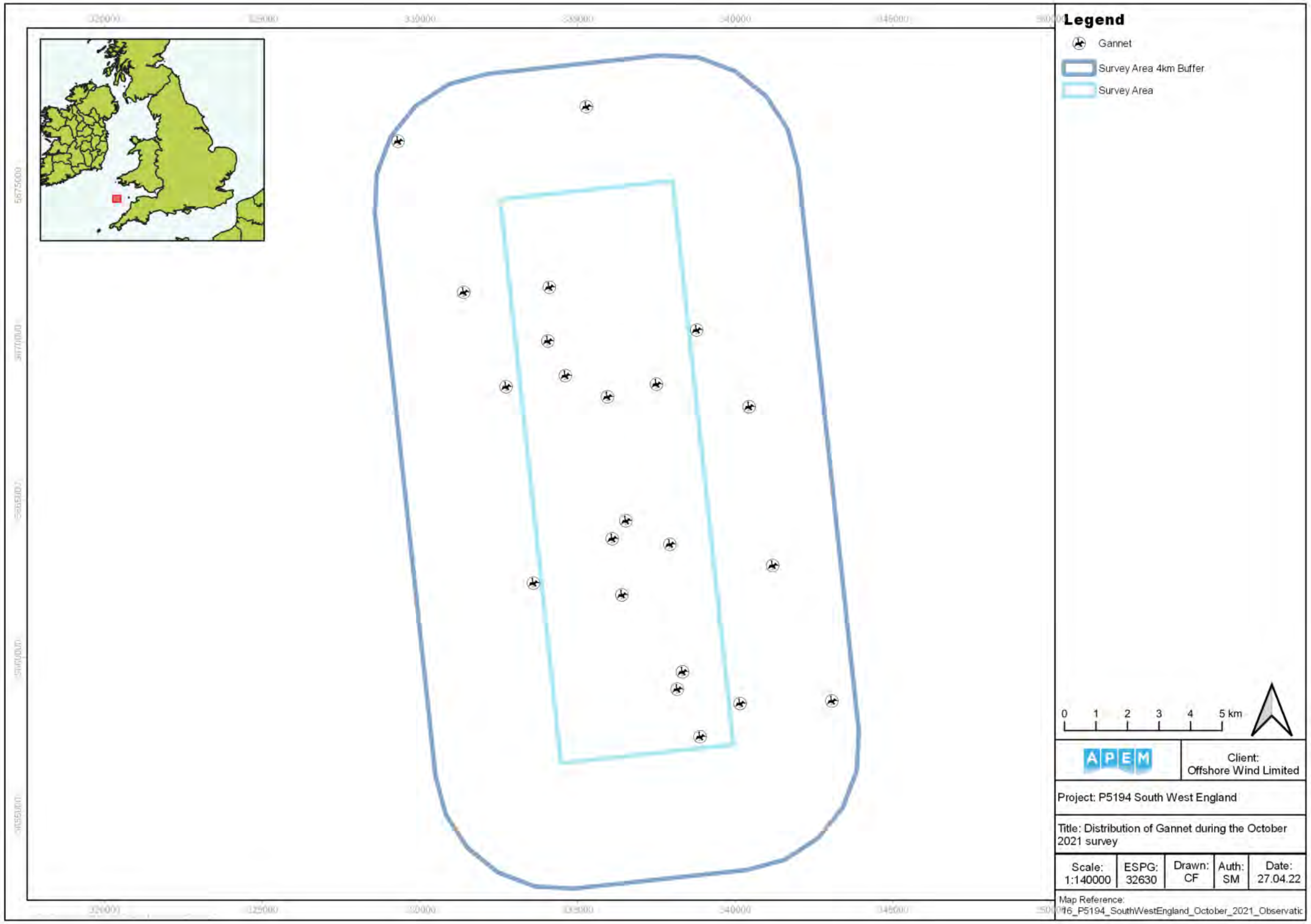


Figure 239 Distribution of gannets in Survey Area during October 2021

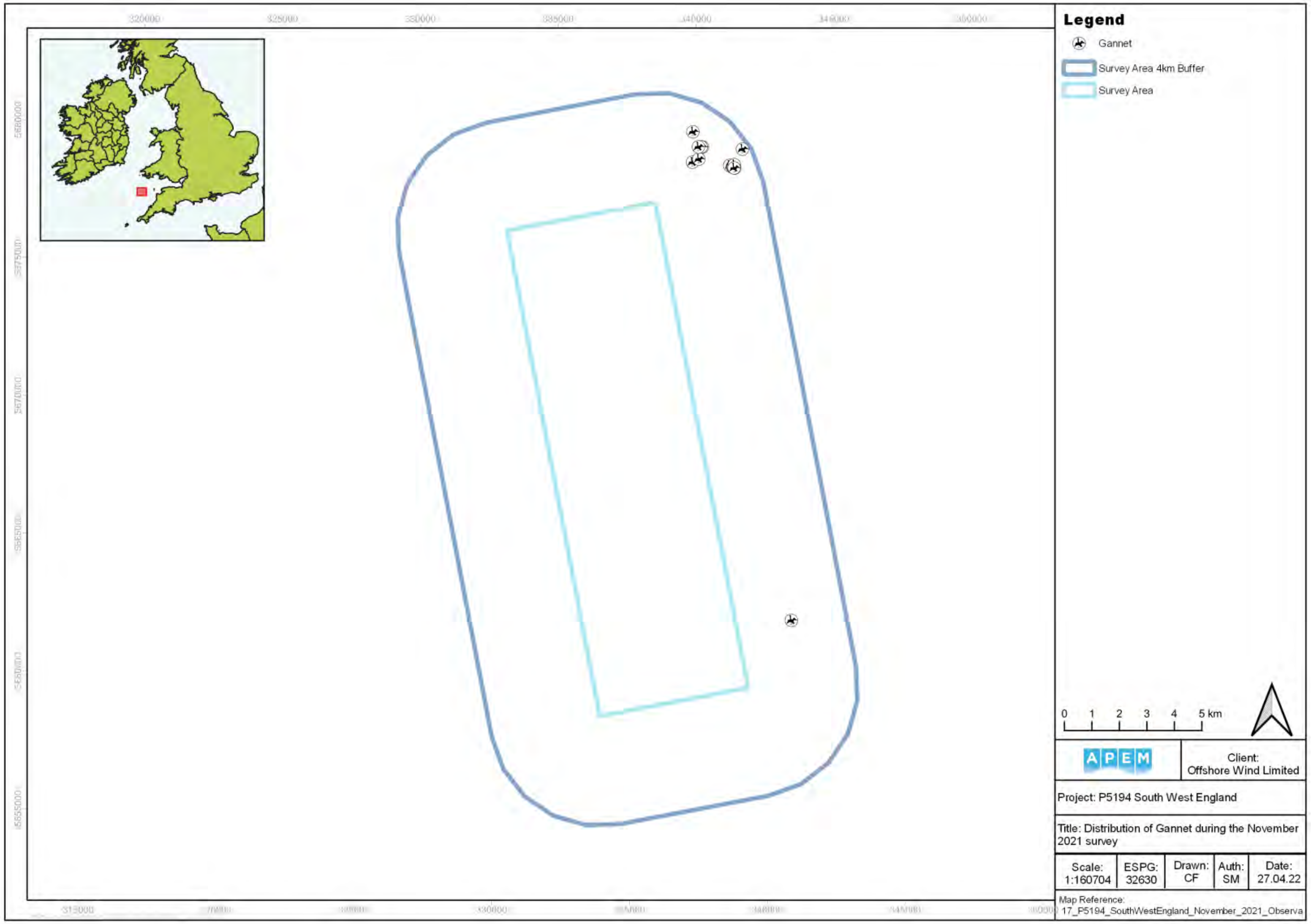


Figure 240 Distribution of gannets in Survey Area during November 2021

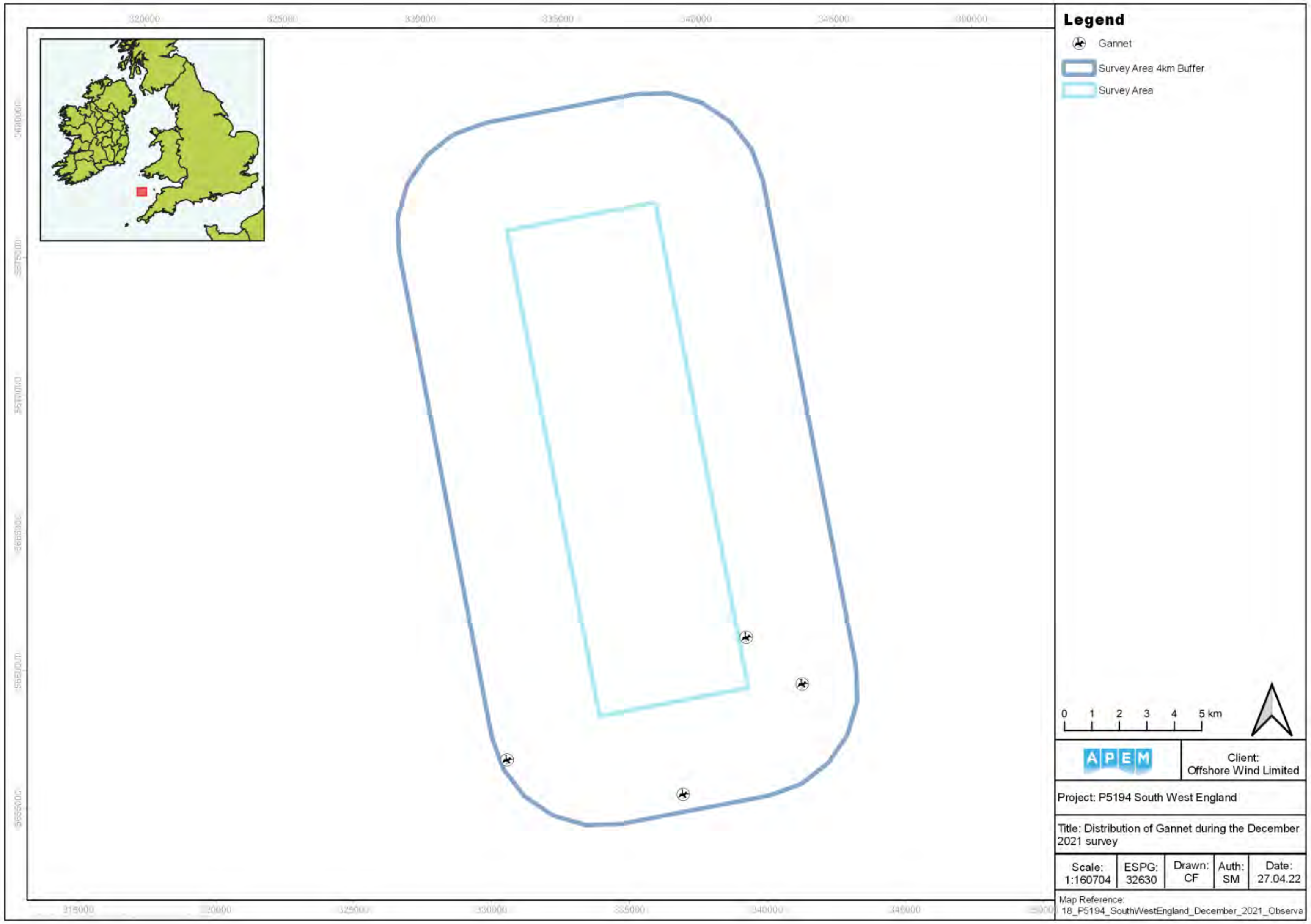


Figure 241 Distribution of gannets in Survey Area during December 2021

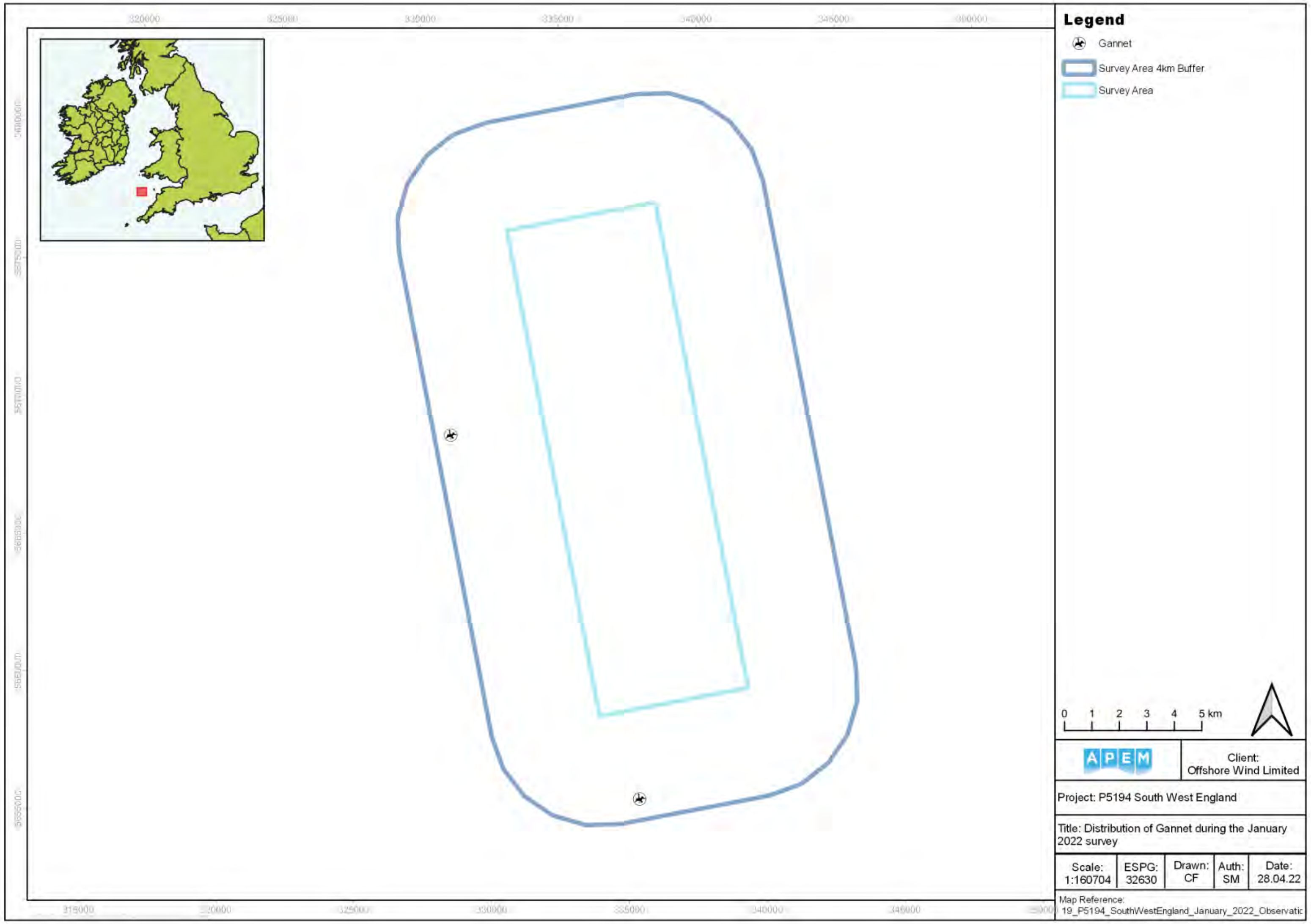


Figure 242 Distribution of gannets in Survey Area during January 2022

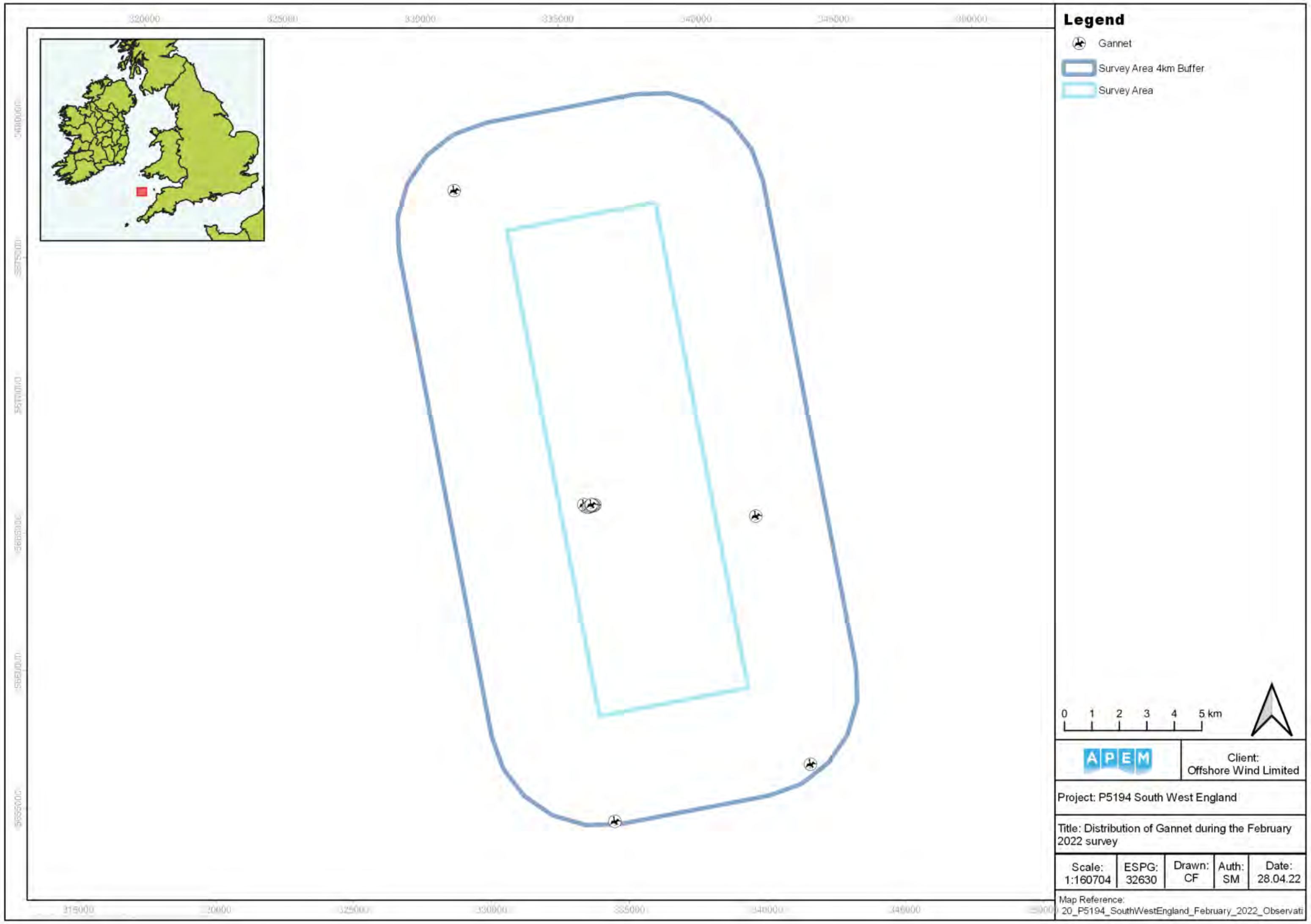


Figure 243 Distribution of gannets in Survey Area during February 2022

Figure 244 **Distribution of gannets in Survey Area during March 2022**

Figure 245 Distribution of gannets in Survey Area during April 2022

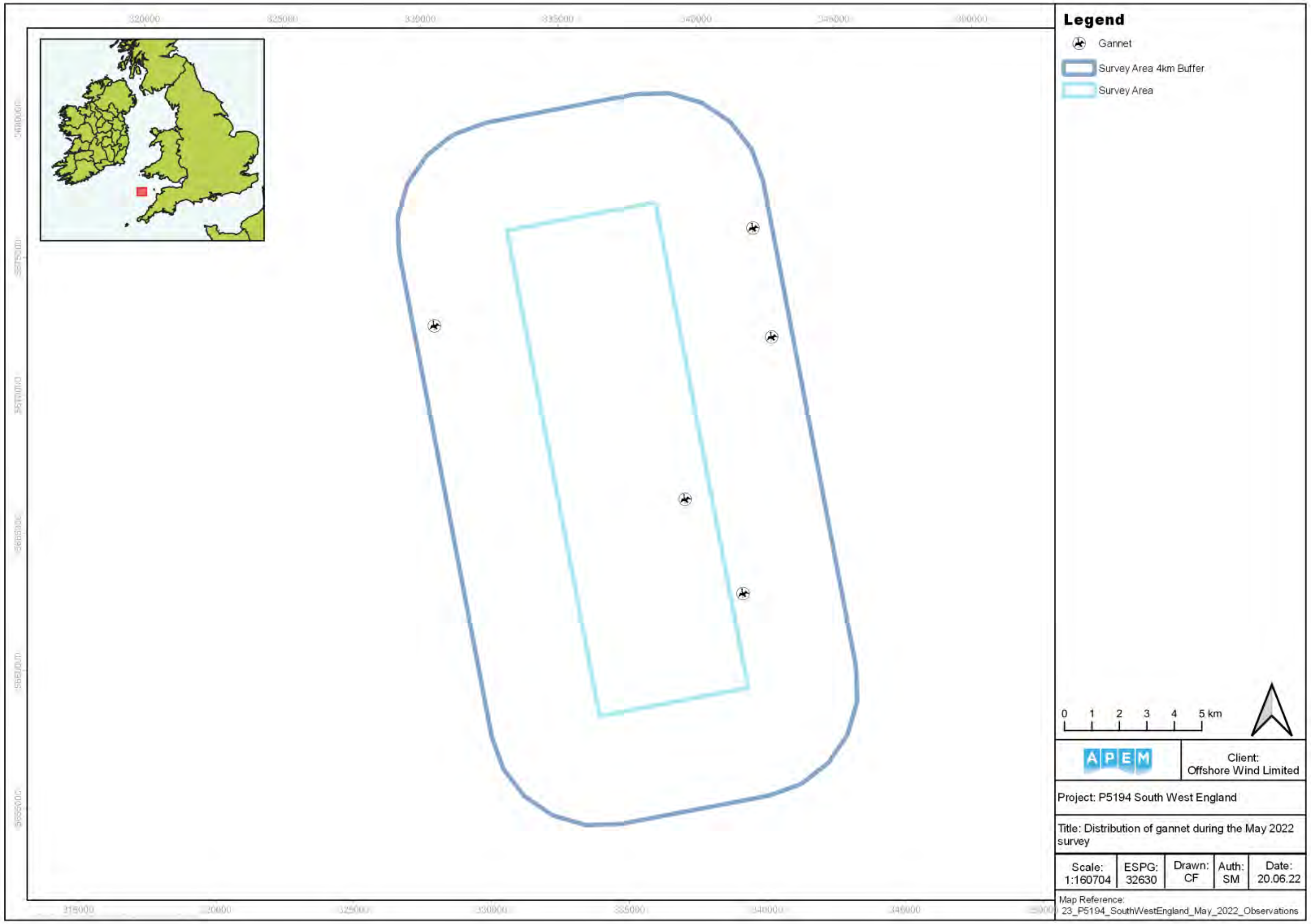


Figure 246 Distribution of gannets in Survey Area during May 2022

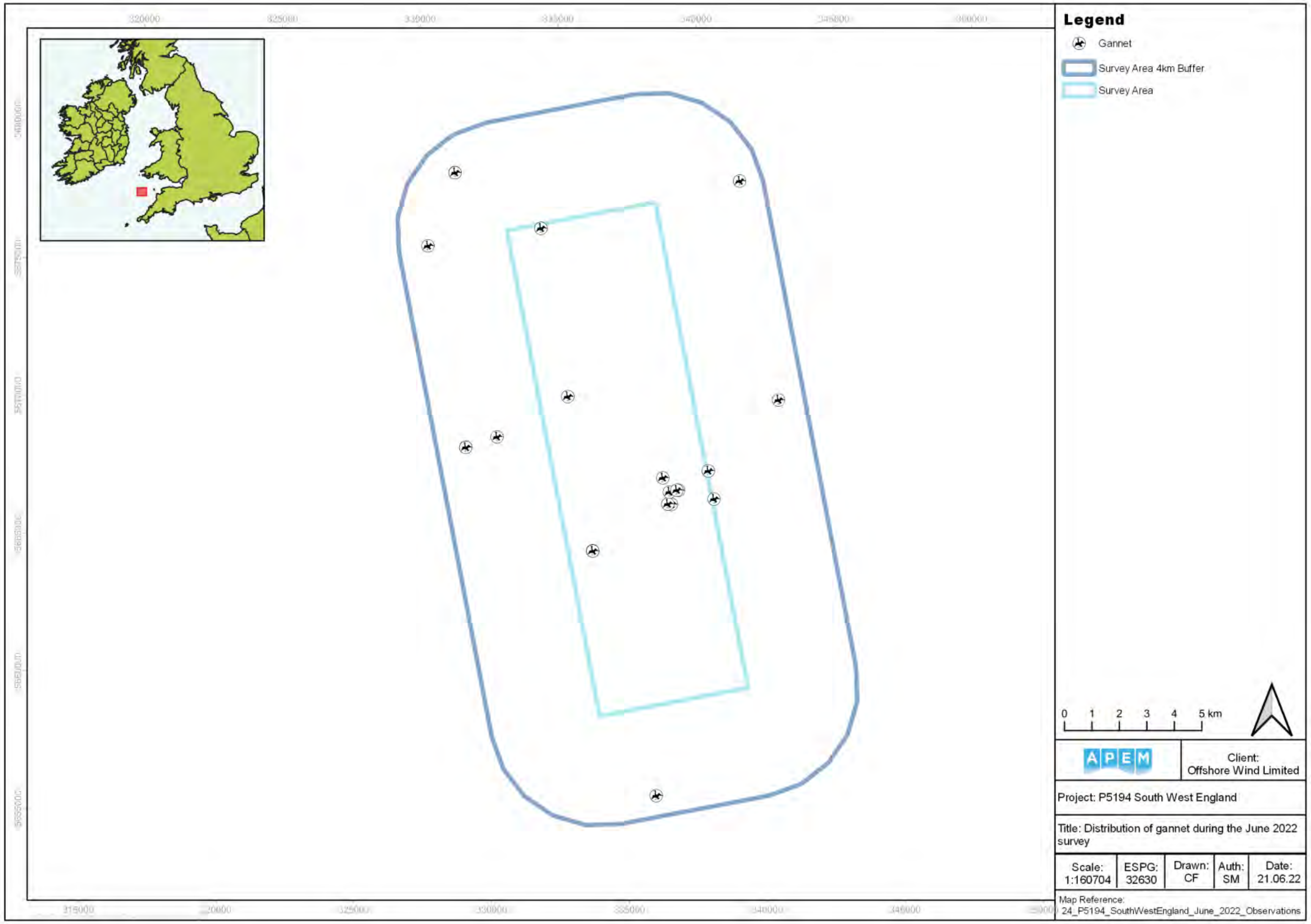
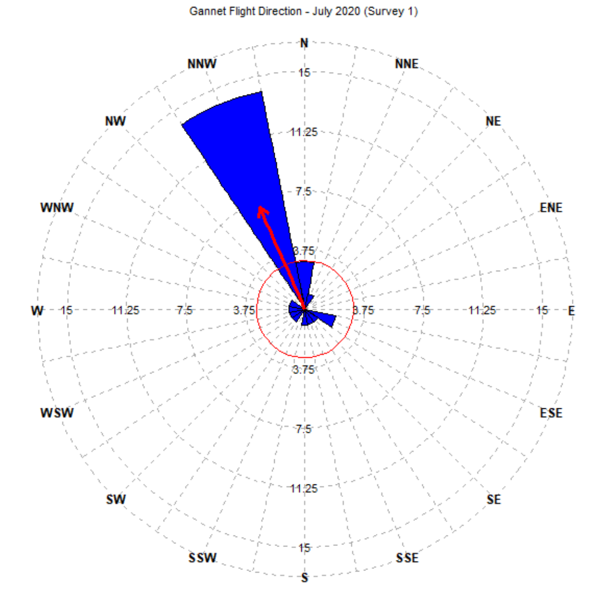
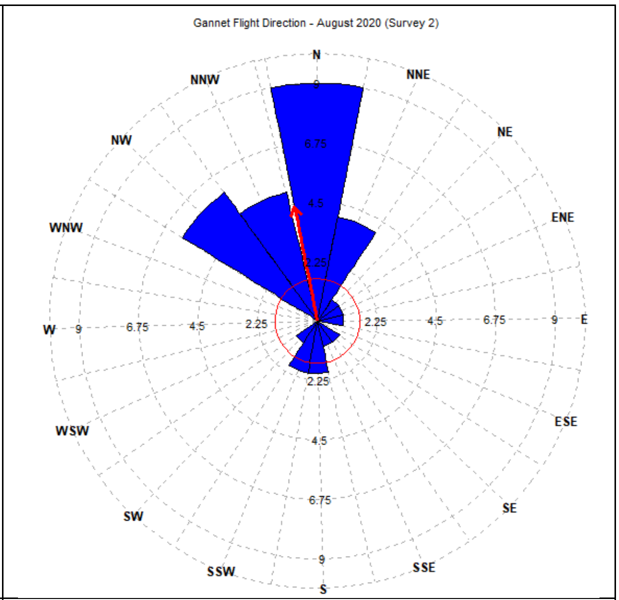


Figure 247 **Distribution of gannets in Survey Area during June 2022**



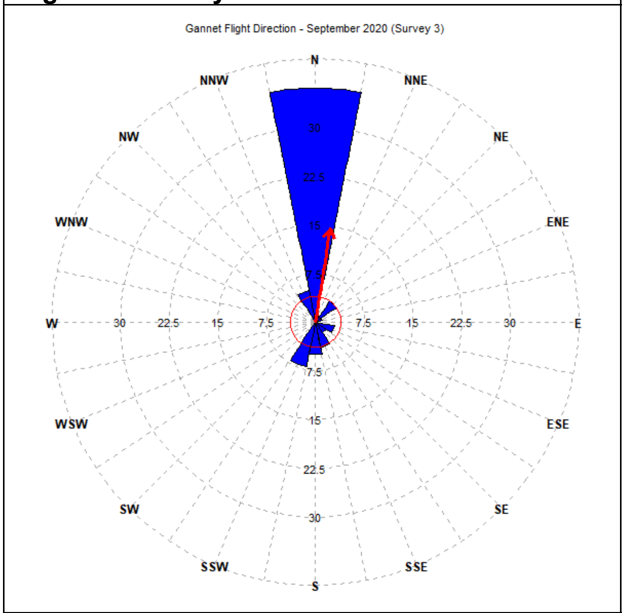
Number of Observations	27
Mean Vector (µ)	336.518
Length of Mean Vector (r)	0.504
Rayleigh Test (Z)	6.859
Rayleigh Test (p)	<0.001

Figure 248a July 2020



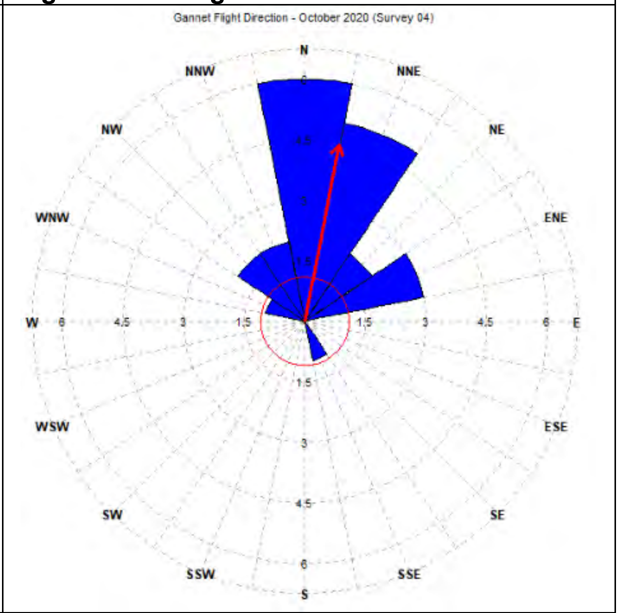
Number of Observations	34
Mean Vector (µ)	351.128
Length of Mean Vector (r)	0.492
Rayleigh Test (Z)	8.241
Rayleigh Test (p)	<0.001

Figure 248b August 2020



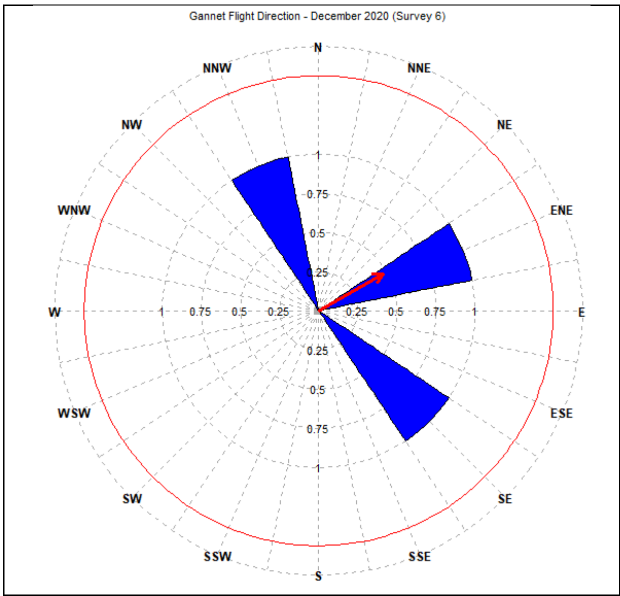
Number of Observations	68
Mean Vector (µ)	9.088
Length of Mean Vector (r)	0.404
Rayleigh Test (Z)	11.107
Rayleigh Test (p)	<0.001

Figure 248c September 2020



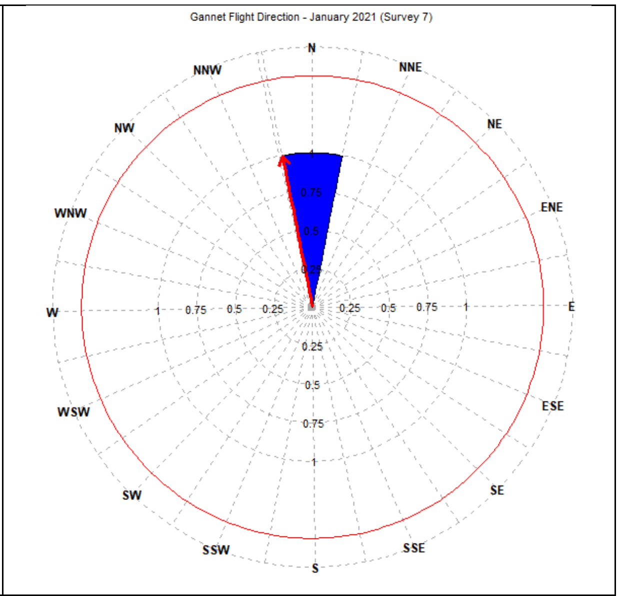
Number of Observations	22
Mean Vector (µ)	11.929
Length of Mean Vector (r)	0.741
Rayleigh Test (Z)	12.075
Rayleigh Test (p)	<0.001

Figure 248d October 2020



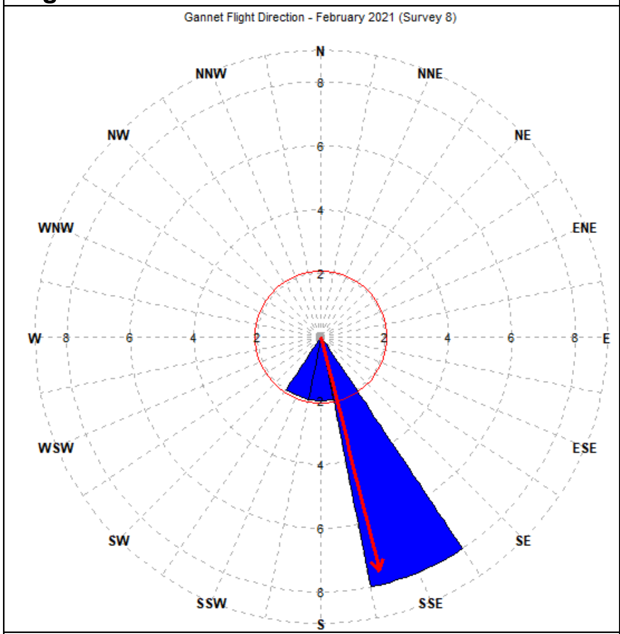
Number of Observations	3
Mean Vector (μ)	60.719
Length of Mean Vector (r)	0.475
Rayleigh Test (Z)	0.677
Rayleigh Test (p)	0.550

Figure 248e December 2020



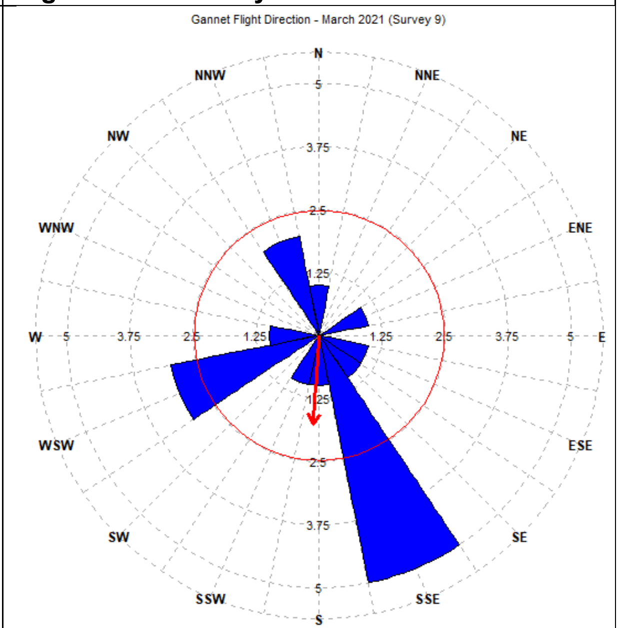
Number of Observations	1
Mean Vector (μ)	350.686
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 248f January 2021



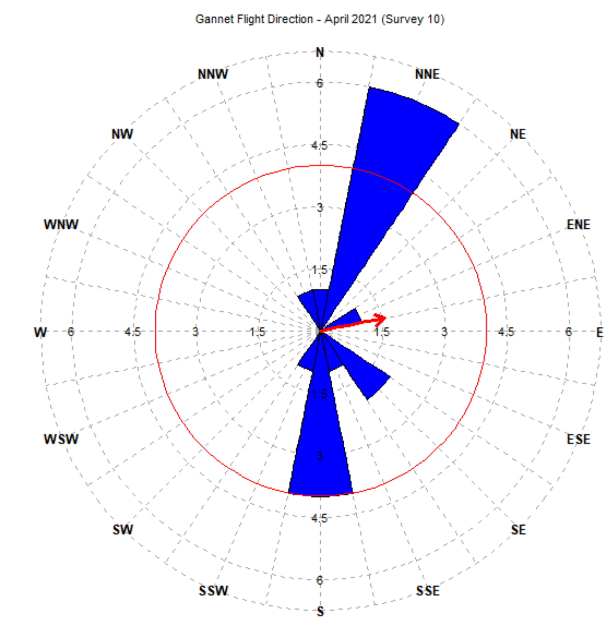
Number of Observations	12
Mean Vector (μ)	166.133
Length of Mean Vector (r)	0.945
Rayleigh Test (Z)	10.726
Rayleigh Test (p)	<0.001

Figure 248g February 2021



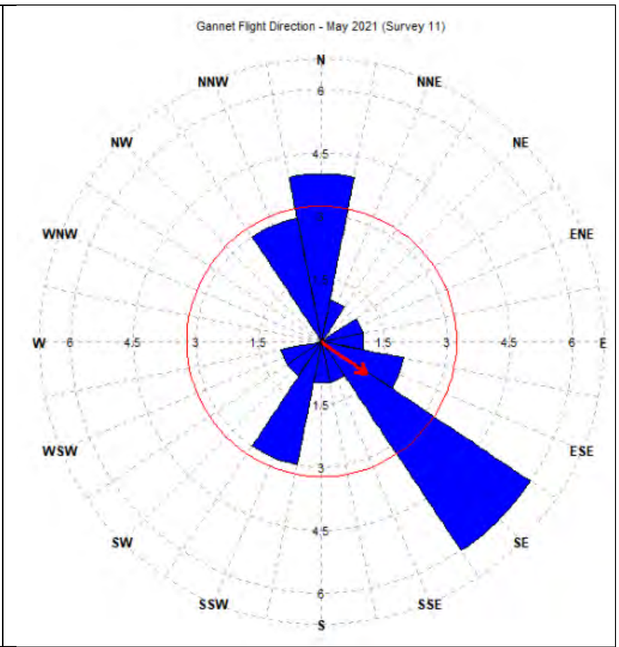
Number of Observations	17
Mean Vector (μ)	184.697
Length of Mean Vector (r)	0.354
Rayleigh Test (Z)	2.130
Rayleigh Test (p)	0.118

Figure 248h March 2021



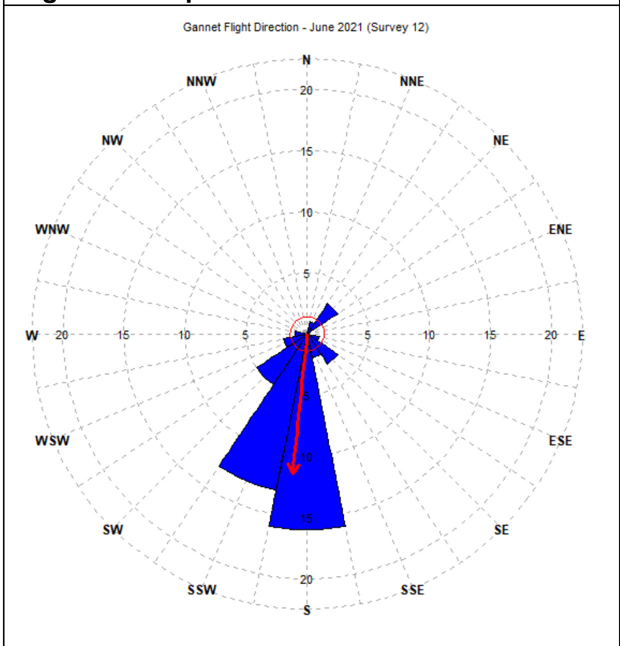
Number of Observations	17
Mean Vector (μ)	79.837
Length of Mean Vector (r)	0.263
Rayleigh Test (Z)	1.179
Rayleigh Test (p)	0.312

Figure 248i April 2021



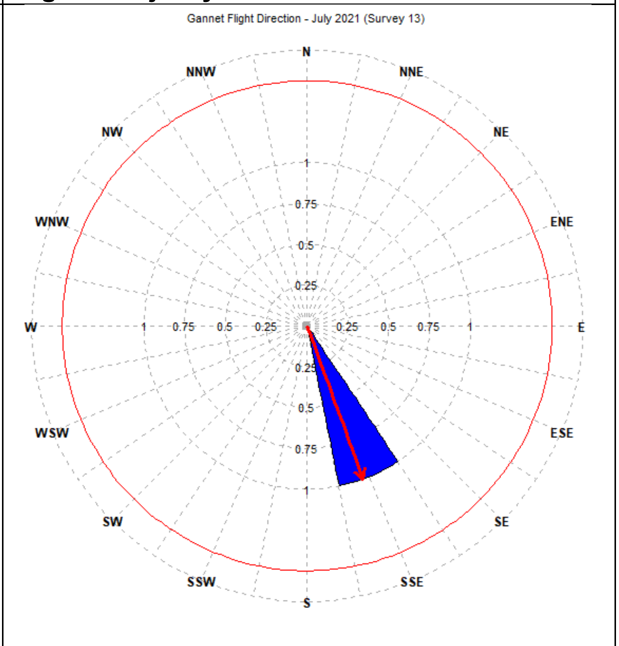
Number of Observations	25
Mean Vector (μ)	126.175
Length of Mean Vector (r)	0.222
Rayleigh Test (Z)	1.229
Rayleigh Test (p)	0.295

Figure 248j May 2021



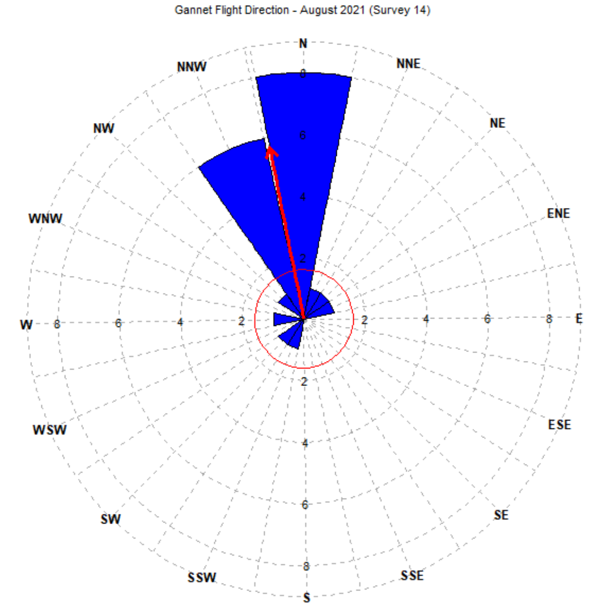
Number of Observations	47
Mean Vector (μ)	186.983
Length of Mean Vector (r)	0.721
Rayleigh Test (Z)	24.430
Rayleigh Test (p)	<0.001

Figure 248k June 2021



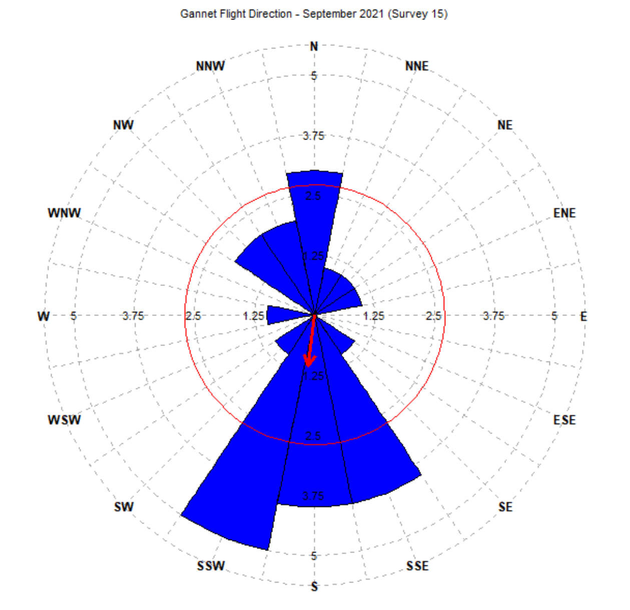
Number of Observations	1
Mean Vector (μ)	160.742
Length of mean vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 248l July 2021



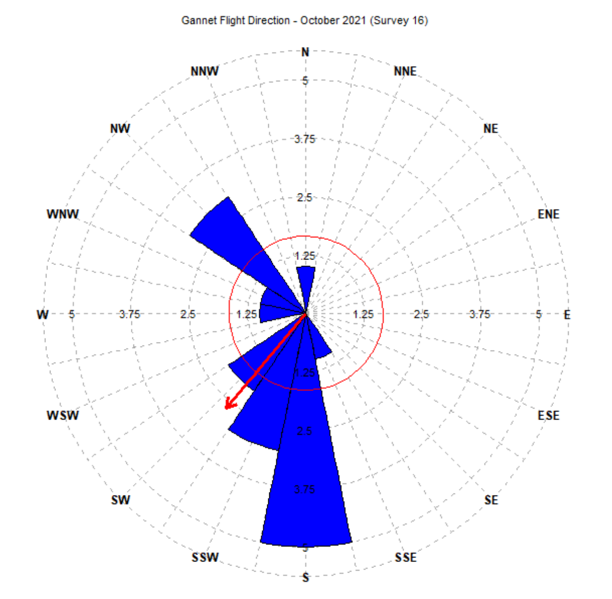
Number of Observations	21
Mean Vector (μ)	350.770
Length of Mean Vector (r)	0.709
Rayleigh Test (Z)	10.564
Rayleigh Test (p)	<0.001

Figure 248m August 2021



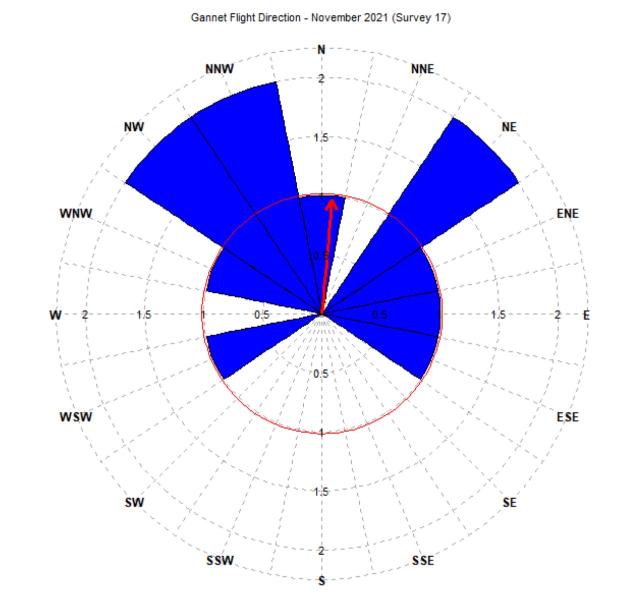
Number of Observations	26
Mean Vector (μ)	187.211
Length of Mean Vector (r)	0.212
Rayleigh Test (Z)	1.170
Rayleigh Test (p)	0.313

Figure 248n September 2021



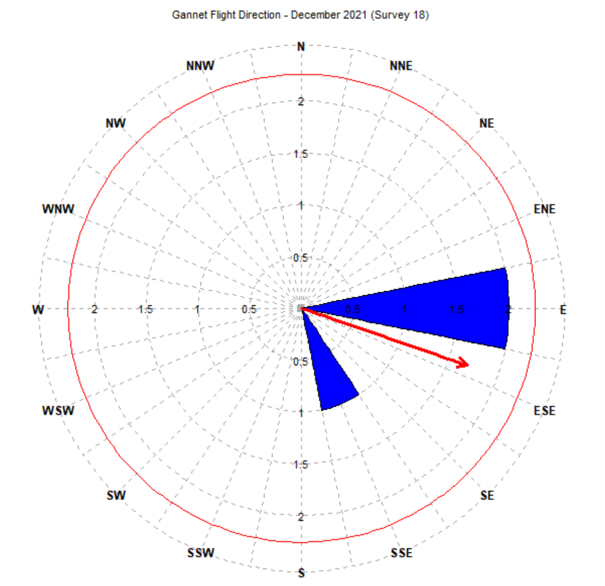
Number of Observations	17
Mean Vector (μ)	220.334
Length of Mean Vector (r)	0.531
Rayleigh Test (Z)	4.794
Rayleigh Test (p)	0.007

Figure 248o October 2021



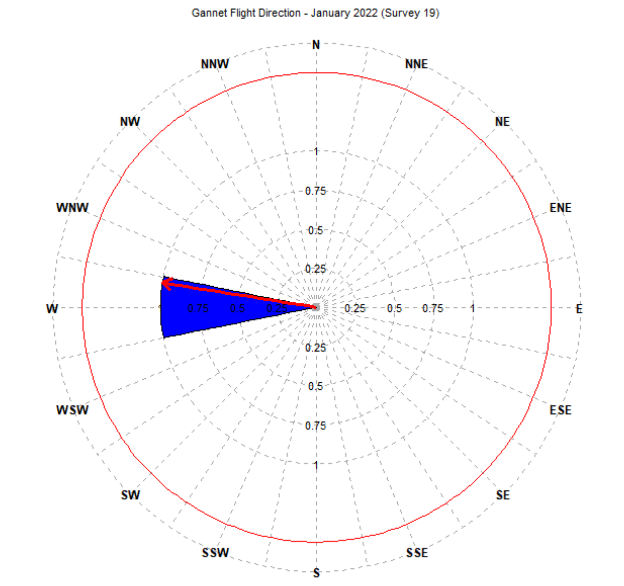
Number of Observations	12
Mean Vector (μ)	5.522
Length of Mean Vector (r)	0.482
Rayleigh Test (Z)	2.789
Rayleigh Test (p)	0.058

Figure 248p November 2021



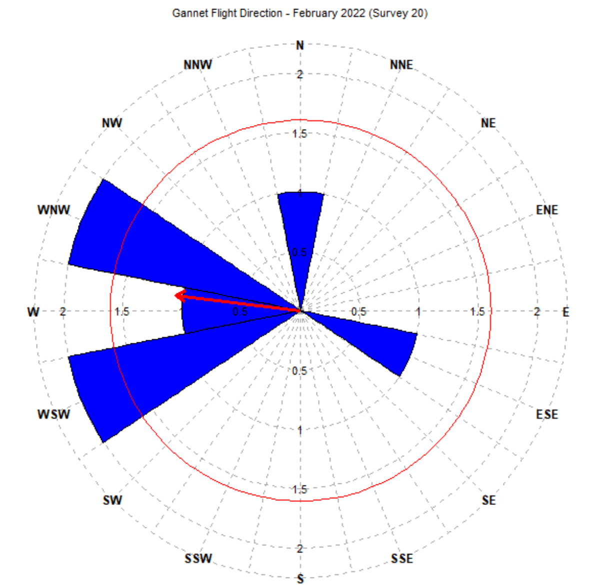
Number of Observations	3
Mean Vector (µ)	109.335
Length of Mean Vector (r)	0.845
Rayleigh Test (Z)	2.143
Rayleigh Test (p)	0.114

Figure 248q December 2021



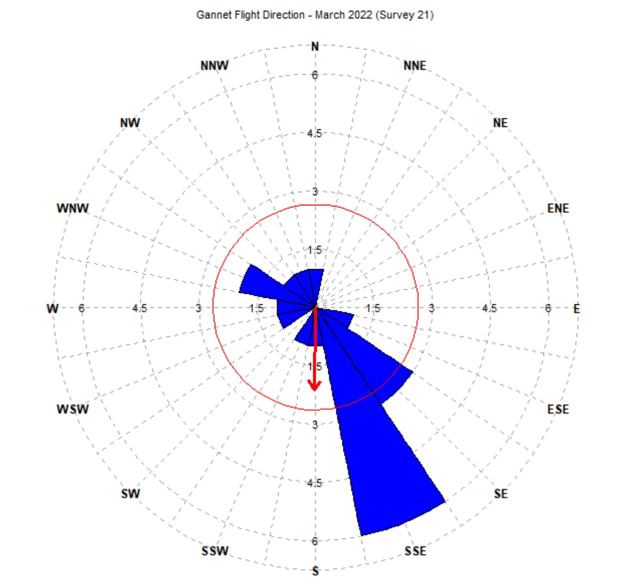
Number of Observations	1
Mean Vector (µ)	279.040
Length of Mean Vector (r)	1.000
Rayleigh Test (Z)	1.000
Rayleigh Test (p)	0.512

Figure 248r January 2022



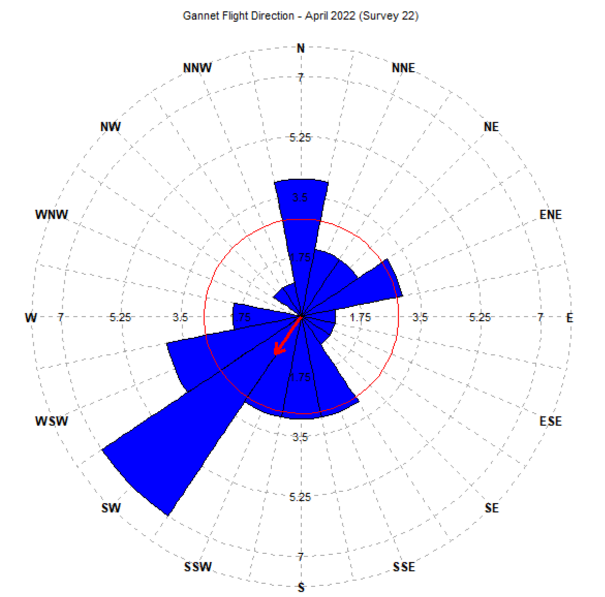
Number of Observations	7
Mean Vector (µ)	277.247
Length of Mean Vector (r)	0.532
Rayleigh Test (Z)	1.982
Rayleigh Test (p)	0.138

Figure 248s February 2022



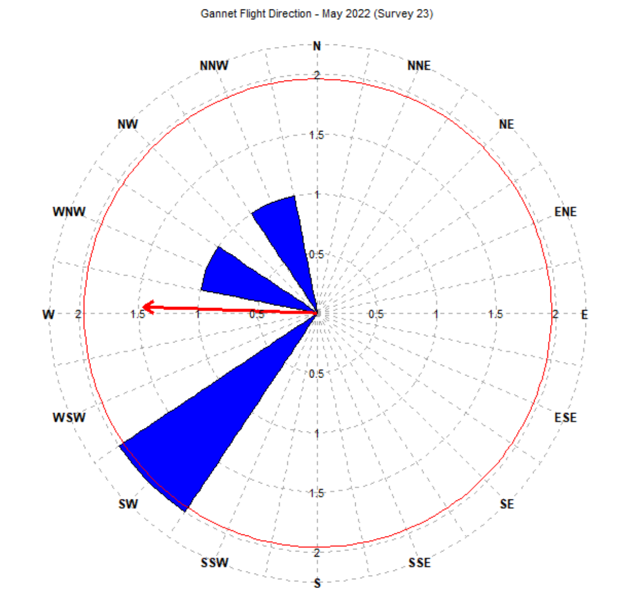
Number of Observations	19
Mean Vector (µ)	181.628
Length of Mean Vector (r)	0.356
Rayleigh Test (Z)	2.411
Rayleigh Test (p)	0.089

Figure 248t March 2022



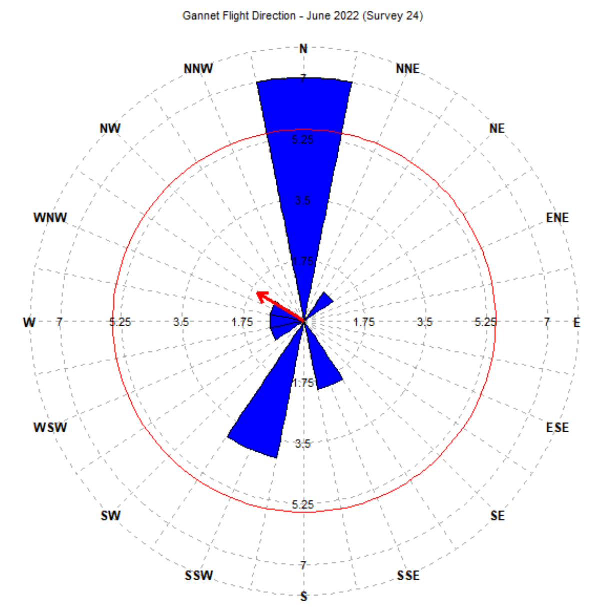
Number of Observations	38
Mean Vector (μ)	215.616
Length of Mean Vector (r)	0.193
Rayleigh Test (Z)	1.420
Rayleigh Test (p)	0.243

Figure 248u April 2022



Number of Observations	4
Mean Vector (μ)	272.423
Length of Mean Vector (r)	0.730
Rayleigh Test (Z)	2.130
Rayleigh Test (p)	0.117

Figure 248v May 2022



Number of Observations	17
Mean Vector (μ)	301.884
Length of Mean Vector (r)	0.223
Rayleigh Test (Z)	0.846
Rayleigh Test (p)	0.435

Figure 248w June 2022

Figure 248 Summary of flight direction of gannets during survey period

4.26 Bird – *Aves*

Unidentified birds were recorded in the Survey Area in January and February 2022, with a peak raw count of six in February 2022, resulting in an abundance estimate of 46 (**Table 31**).

In the Southwest England Site, a single unidentified bird was seen February 2022, in the central west area of the site (**Figure 250**). This resulted in an abundance estimate of nine (**Table 31**).

In the 4 km Buffer Zone, unidentified birds were recorded in January 2022 – two individuals in the south-west corner, and February 2022 – five individuals (**Figure 249**). During January, This resulted in an abundance estimate of 37 (**Table 31**). The February birds were spread between the northwest, southwest and east (**Figure 250**).

The birds observed flying in February 2022 were heading in a south-southeast direction (151.647°, p=0.792; **Figure 251**).

Table 31 **Raw counts and abundance and density estimates (individuals per km^2) of unidentified birds in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone**

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jan-22	2	15	2	46	0.71	0.04
Feb-22	6	46	8	108	0.41	0.14
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Feb-22	1	9	1	26	1.00	0.09
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jan-22	2	15	2	44	0.71	0.06
Feb-22	5	37	5	103	0.45	0.16

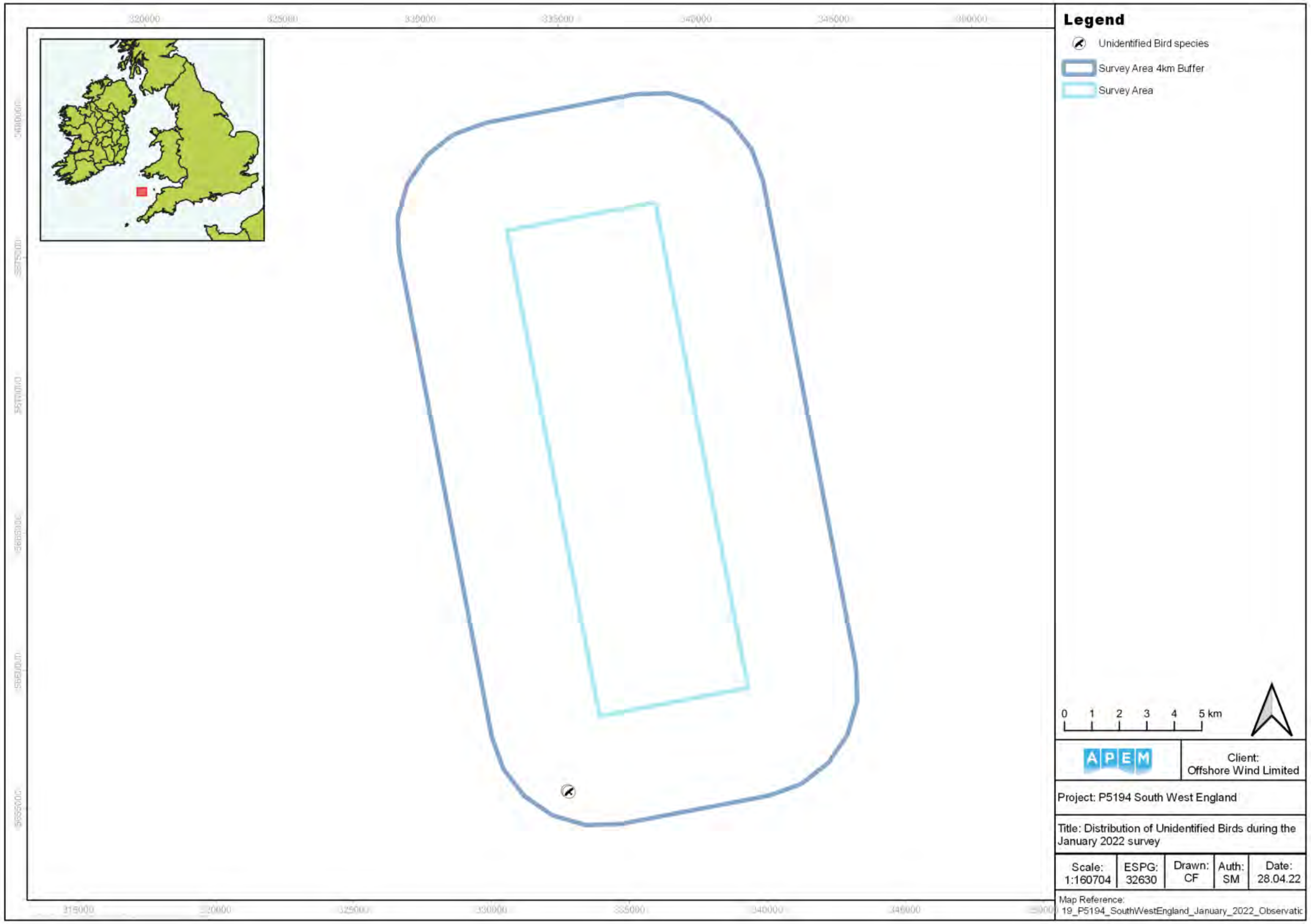


Figure 249 Distribution of unidentified birds in Survey Area during January 2022

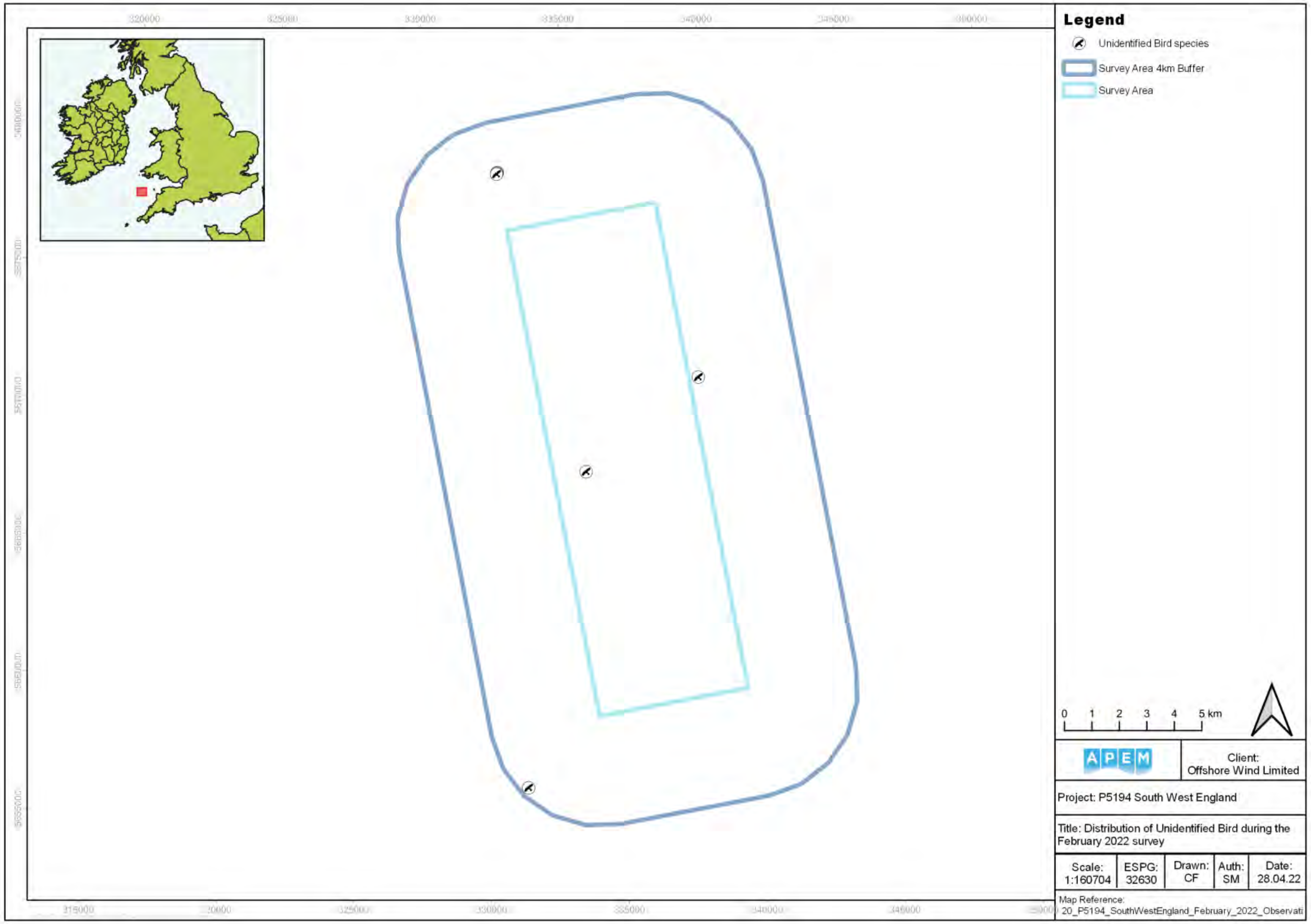
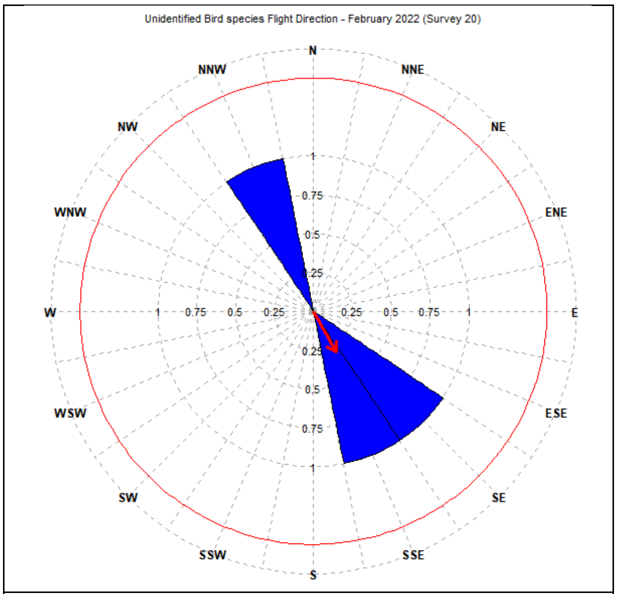


Figure 250 Distribution of unidentified birds in Survey Area during February 2022



Number of Observations	3
Mean Vector (μ)	151.647
Length of Mean Vector (r)	0.302
Rayleigh Test (Z)	0.273
Rayleigh Test (p)	0.792

Figure 251 February 2022

Figure 251 Summary of flight direction of unidentified birds during survey period

4.27 Grey Seal – *Halichoerus grypus*

Grey seals were recorded in March, May and September 2021, with a peak raw count of three in March 2021, resulting in an abundance estimate of 23 for the Survey Area (**Table 32**).

In the Southwest England Site, a single grey seal was recorded in March 2021, resulting in an abundance estimate of nine. A single grey seal was also recorded in September 2021, resulting in an abundance estimate of eight (**Table 32**).

In the 4 km Buffer Zone, two grey seals were recorded in each of March and May 2021, resulting abundance estimates of 15 and 14 (**Table 32**).

During March 2021, grey seals were located in the east of the Buffer, and one in the east-southeast of the Southwest England Site (**Figure 252**). In May 2021, they were located in the northeast of the Buffer (**Figure 253**). In September 2021, a single individual was present in the south of the Southwest England Site (**Figure 254**)

Table 32 Raw counts and abundance and density estimates (individuals per km^2) of grey seal in: a) Survey Area b) Southwest England Site c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Mar-21	3	23	3	61	0.58	0.07
May-21	2	15	2	44	0.71	0.04
Sep-21	1	8	1	23	1.00	0.02
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Mar-21	1	9	1	26	1.00	0.09
Sep-21	1	8	1	25	1.00	0.08
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Mar-21	2	15	2	59	0.71	0.06
May-21	2	14	2	42	0.71	0.06

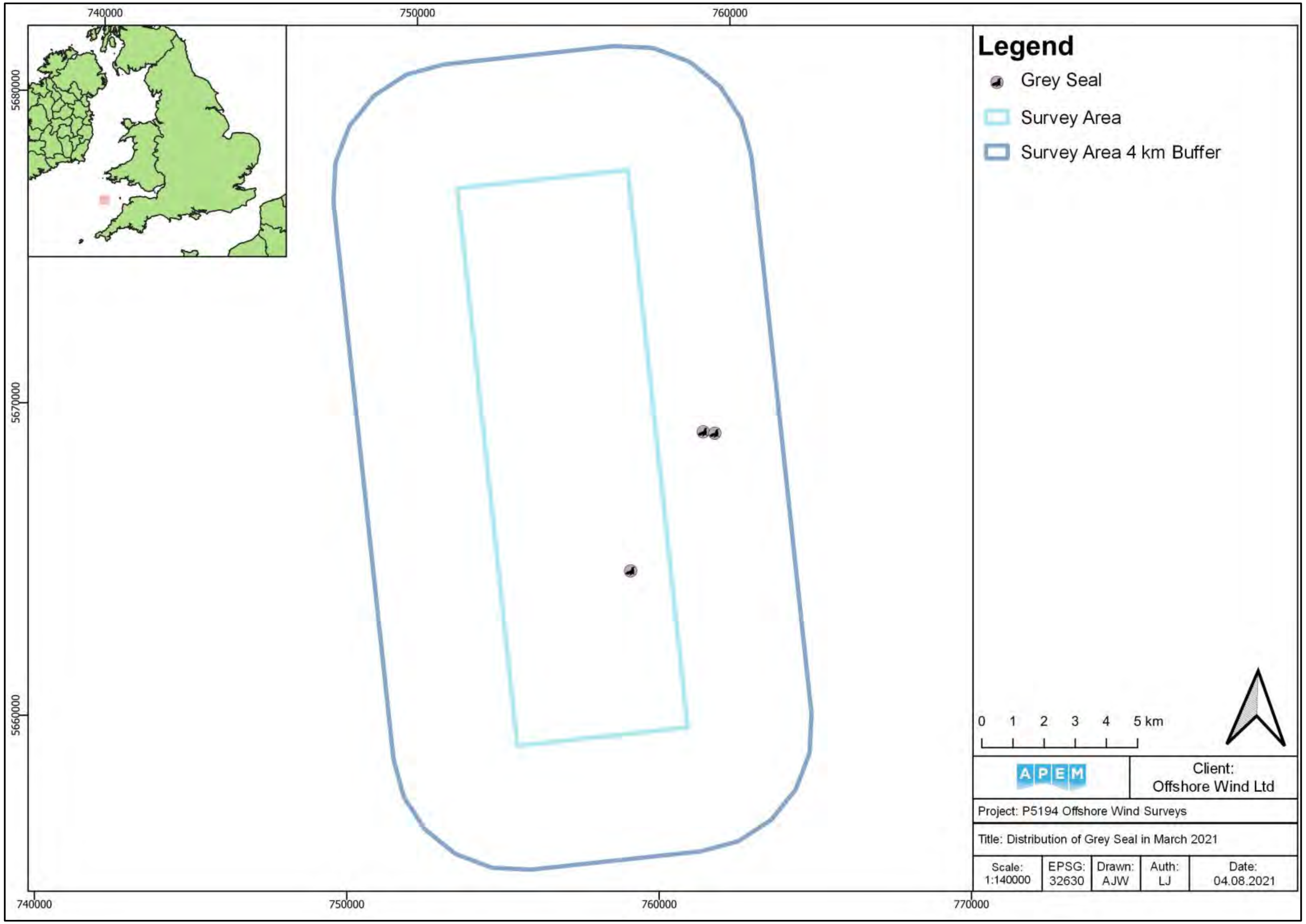


Figure 252 Distribution of grey seals in Survey Area during March 2021

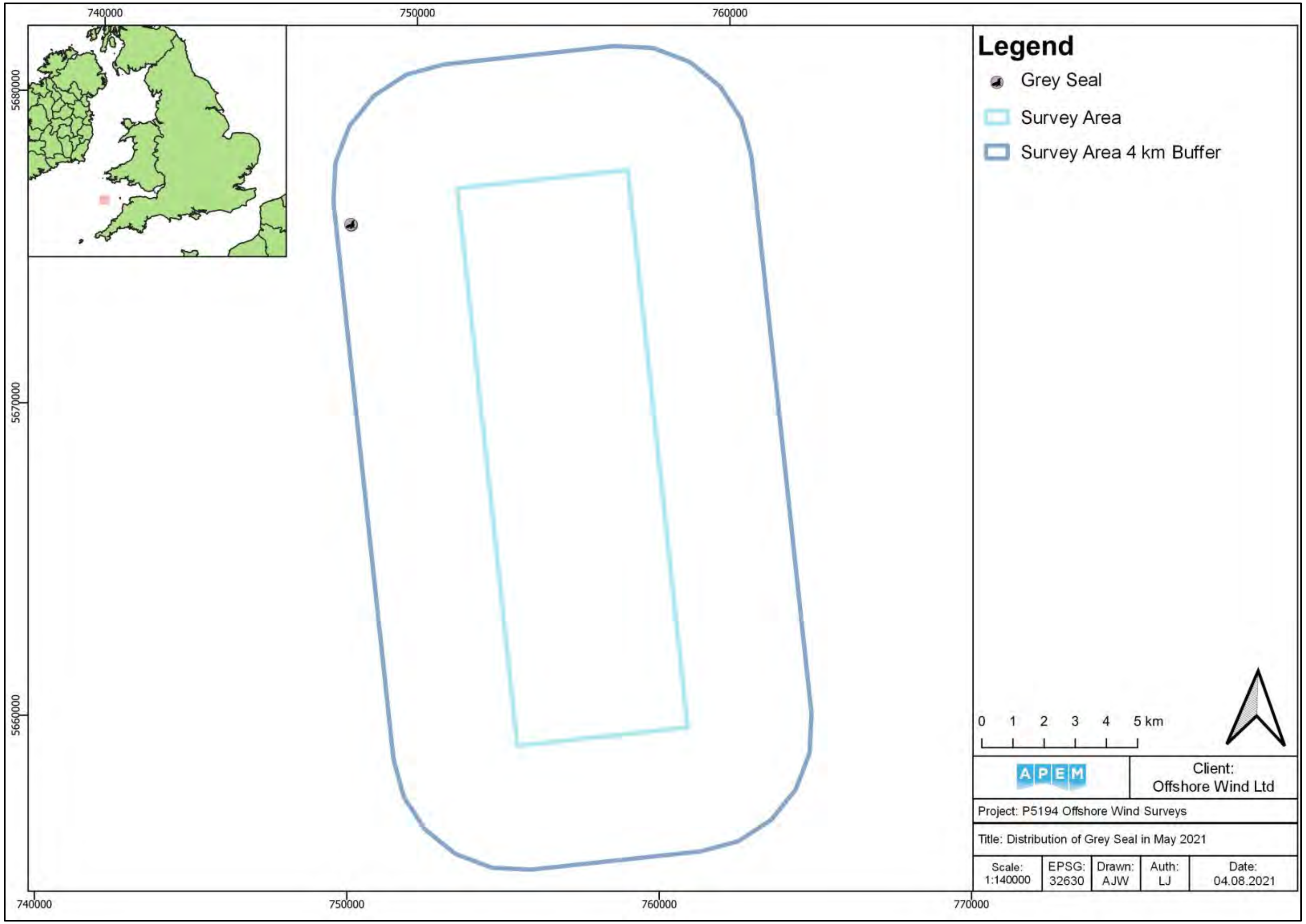


Figure 253 Distribution of grey seals in Survey Area during May 2021

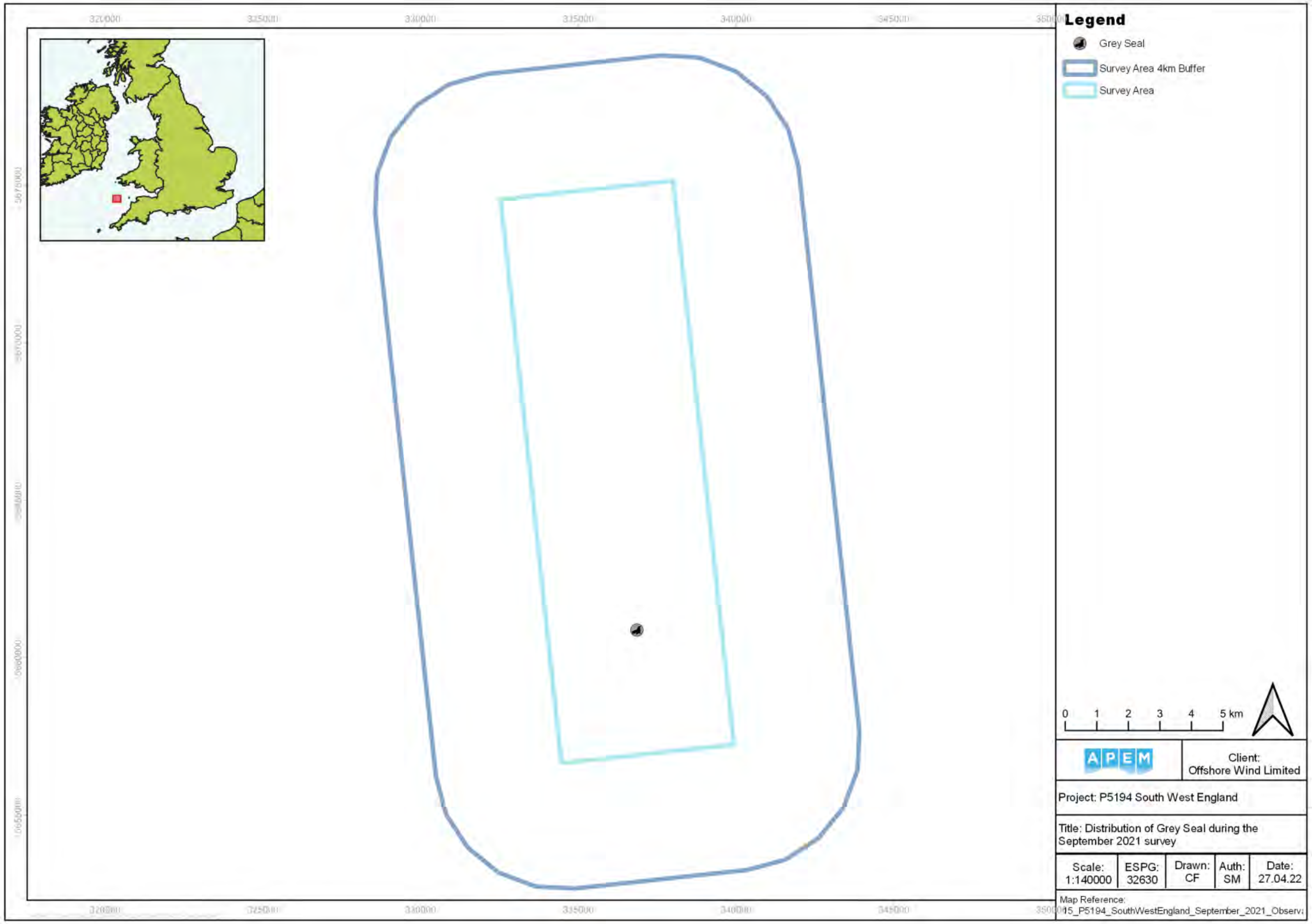


Figure 254 Distribution of grey seals in Survey Area during September 2021

4.28 Seal – Unidentified *Phocidae*

Unidentified seals were recorded in August and December 2020, as well as March 2021, January 2022 and June 2022. The peak raw count of two in August 2020 resulted in an abundance estimate of 15 for the Survey Area (**Table 33**).

In the Southwest England Site, a single seal was present in August 2020 resulting in an abundance estimate of eight (**Table 33**).

In the 4 km Buffer Zone, one seal was recorded in each of August and December 2020, as well as in March 2021, January 2022 and June 2022. This resulted in abundance estimates of seven, eight, seven, seven and seven for the area, respectively. (**Table 33**).

During August 2020, seals were located in the north of the Buffer, and south of the Southwest England Site (**Figure 255**). In the December 2020 survey, there was one seal in the east-southeast of the Buffer (**Figure 256**). During March 2021, an individual was in the southwest of the Buffer (**Figure 257**). One individual was also in this area during January 2022 (**Figure 258**). In June 2022, a seal was present in the east of the Buffer (**Figure 259**).

Table 33 Raw counts and abundance and density estimates (individuals per km^2) of seals in: a) Survey Area b) Southwest England Site c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Aug-20	2	15	2	38	0.71	0.04
Dec-20	1	8	1	24	1.00	0.02
Mar-21	1	8	1	31	1.00	0.02
Jan-22	1	8	1	23	1.00	0.02
June-22	1	7	1	22	1.00	0.02
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Aug-20	1	8	1	25	1.00	0.08
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Aug-20	1	7	1	29	1.00	0.03
Dec-20	1	8	1	23	1.00	0.03
Mar-21	1	7	1	22	1.00	0.03
Jan-22	1	7	1	22	1.00	0.03
June-22	1	7	1	21	1.00	0.03

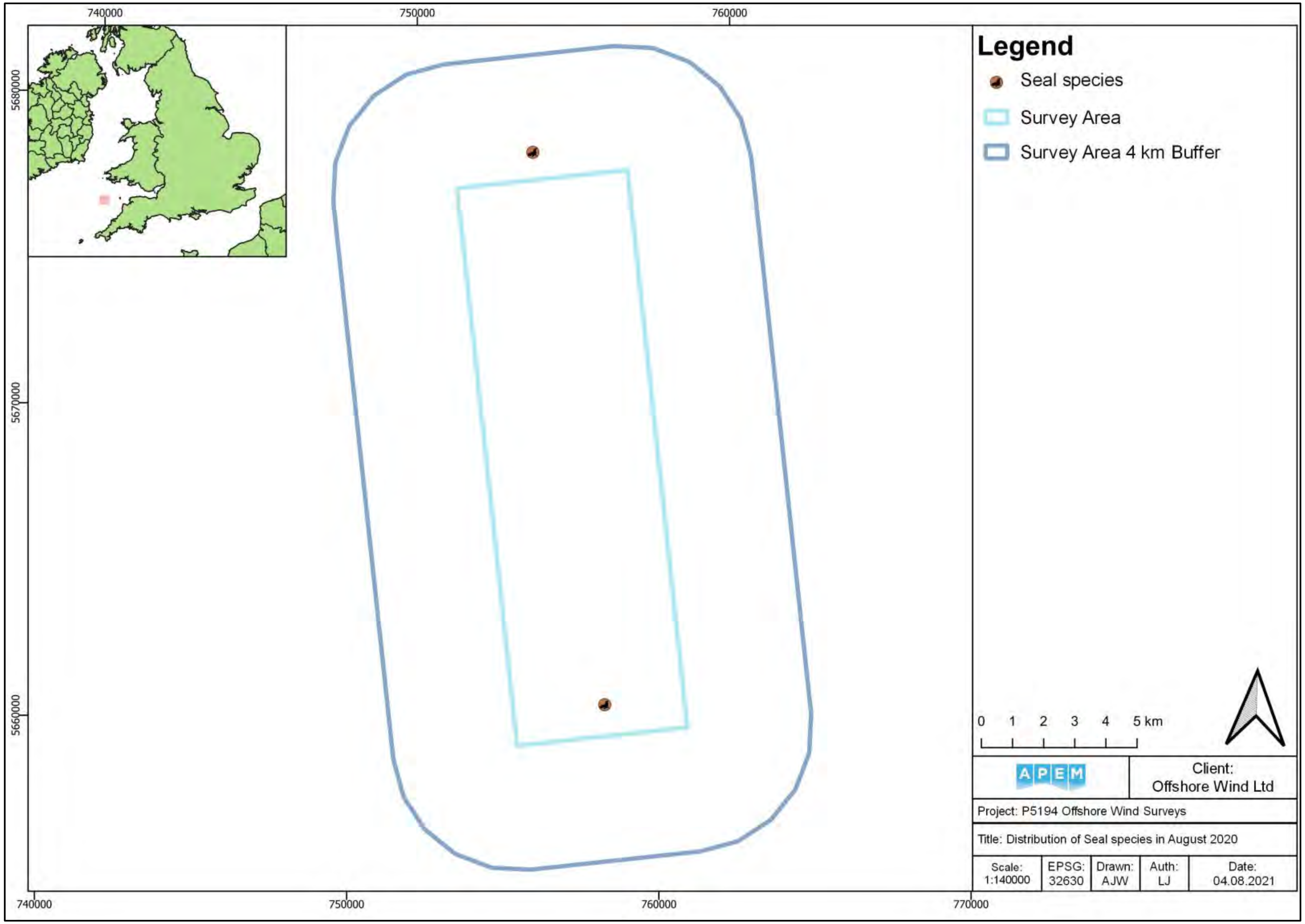


Figure 255 Distribution of seals in Survey Area during August 2020

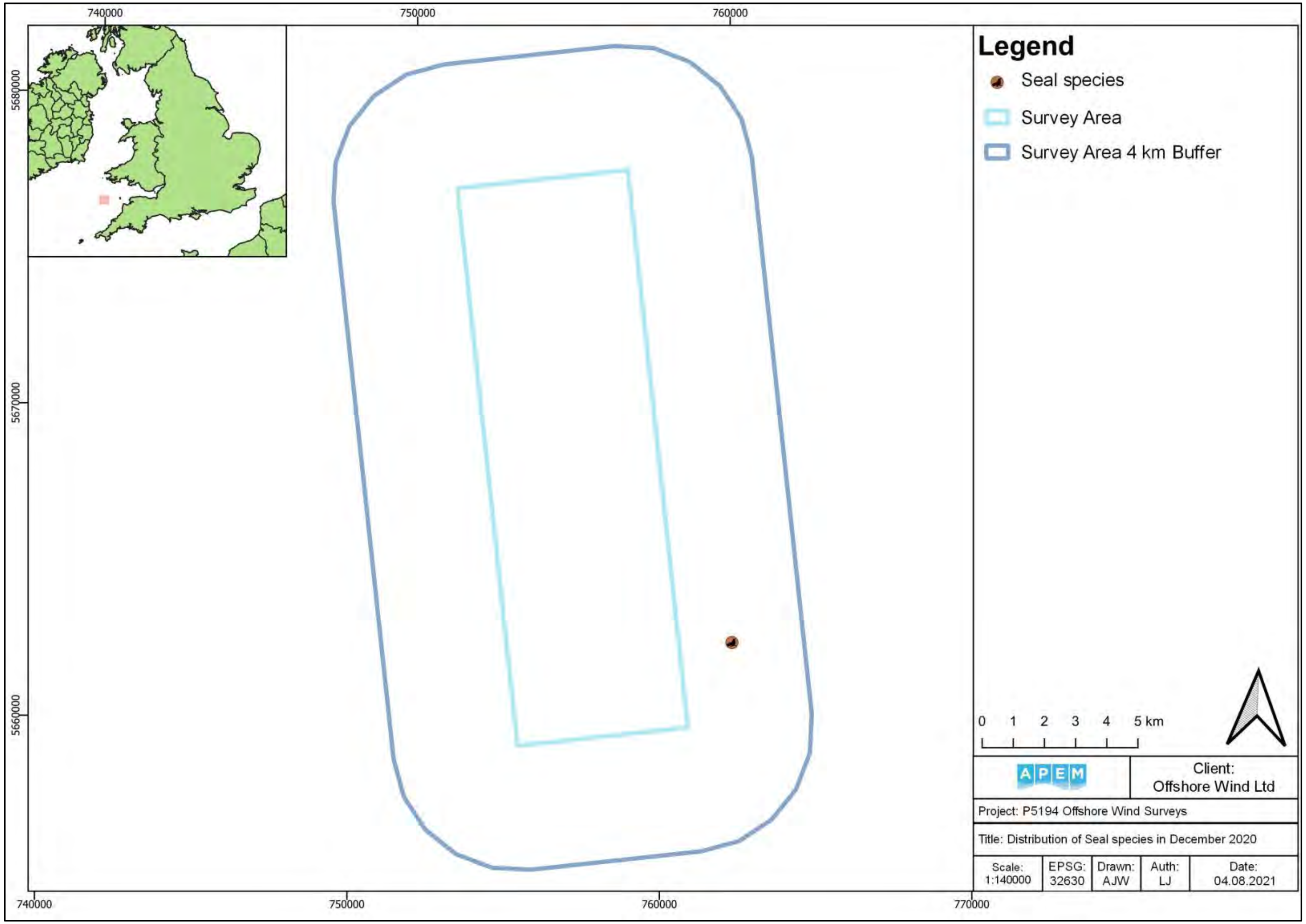


Figure 256 Distribution of seals in Survey Area during December 2020

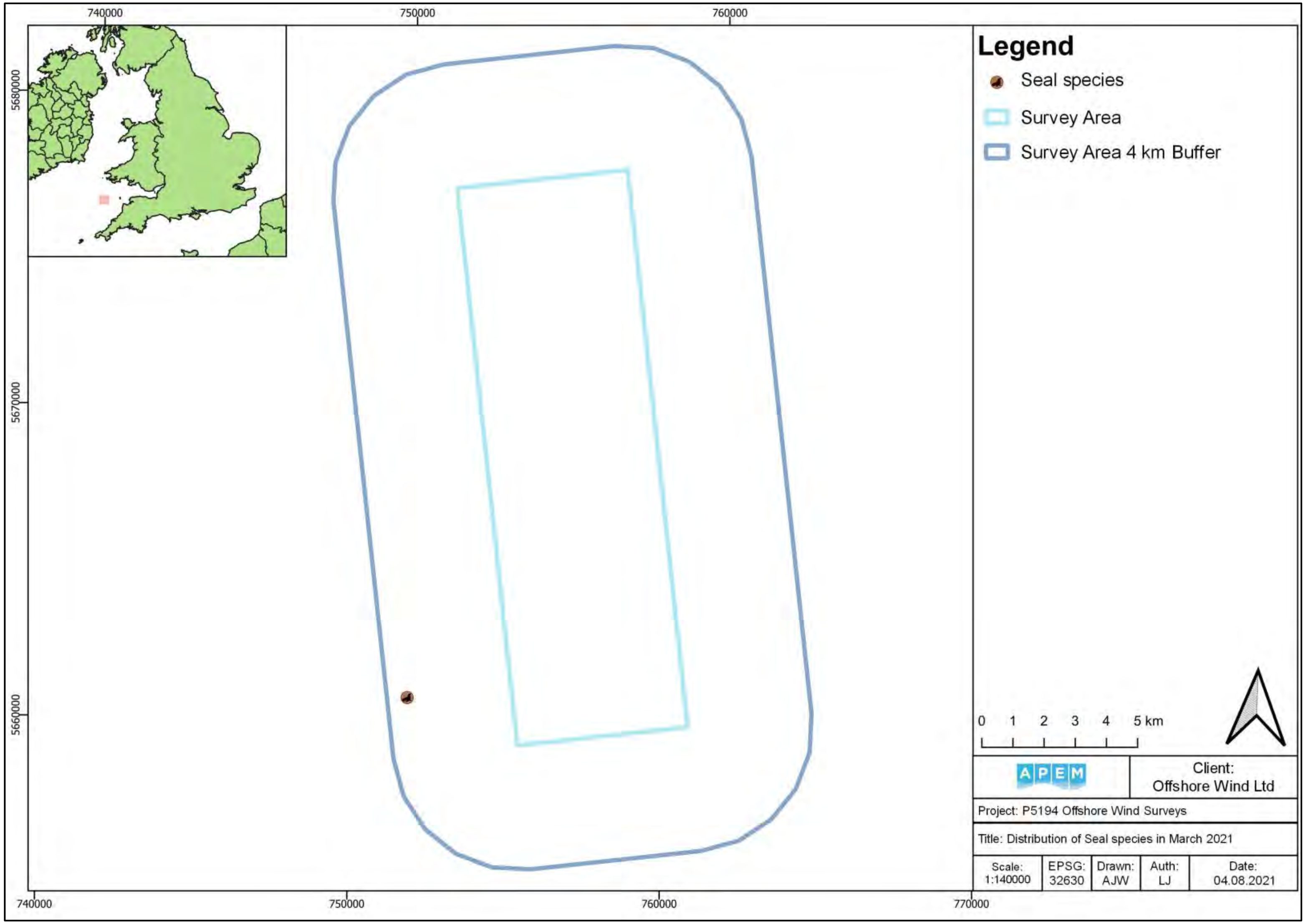


Figure 257 Distribution of seals in Survey Area during March 2021

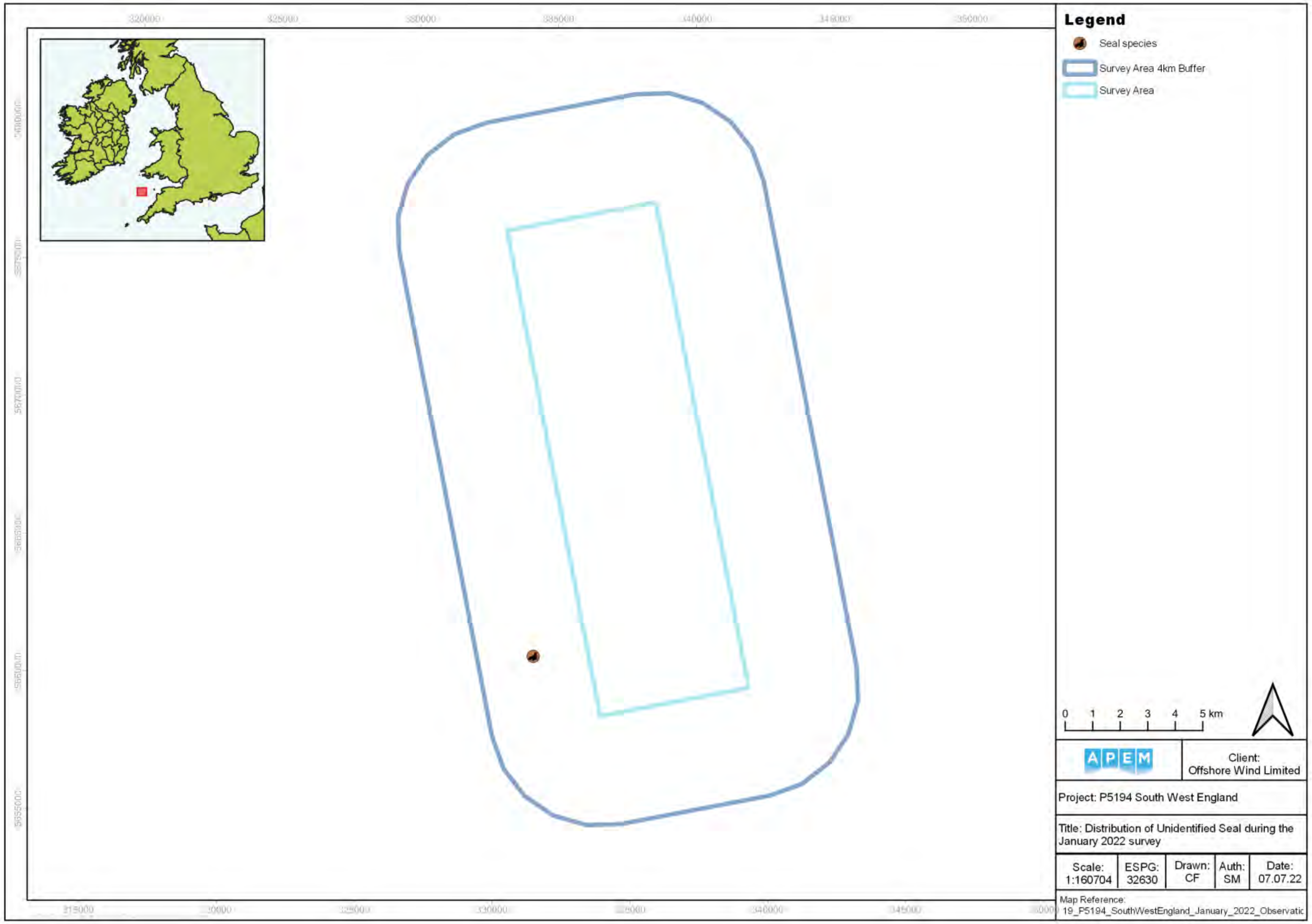


Figure 258 Distribution of seals in Survey Area during January 2022

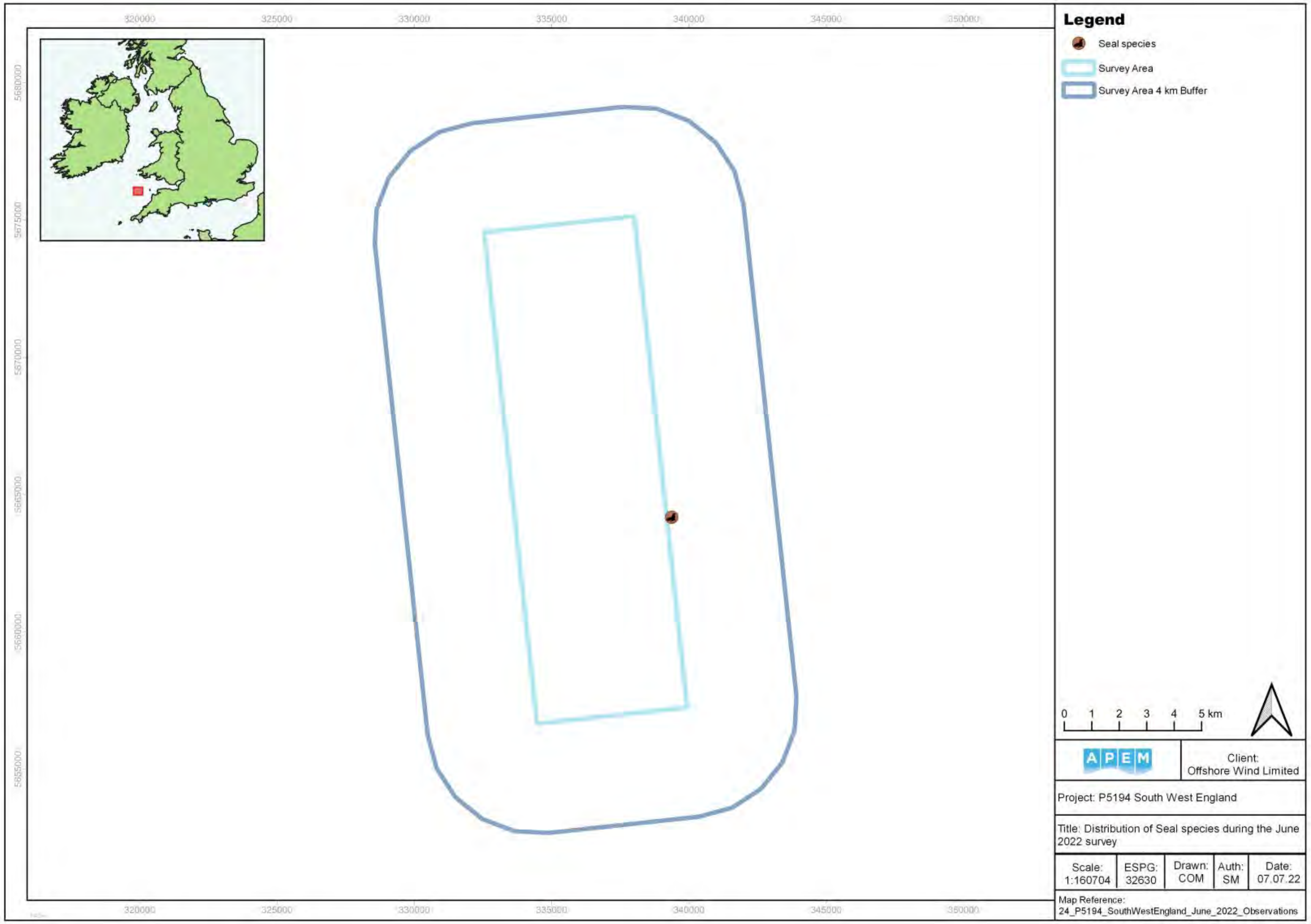


Figure 259 Distribution of seals in Survey Area during June 2022

4.29 Common Minke Whale – *Balaenoptera acutorostrata*

Common minke whales were present in August 2020 and May 2021, with a peak raw count of two in August 2020, resulting in an abundance estimate of 15 for the Survey Area (**Table 34**).

In the Southwest England Site, a single common minke whale was recorded in August 2020, resulting in an abundance estimate of eight (**Table 34**).

In the 4 km Buffer Zone, two individuals were recorded in May 2021, resulting in an abundance estimate of 14 (**Table 34**).

The single whale in August 2020 was in the southwest of the Southwest England Site (**Figure 260**), whilst in the May 2021 survey, one individual was recorded in the Buffer's west, and one in the southeast (**Figure 261**).

Table 34 Raw counts and abundance and density estimates (individuals per km^2) of common minke whale in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Aug-20	1	8	1	23	1.00	0.02
May-21	2	15	2	36	0.71	0.04
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Aug-20	1	8	1	25	1.00	0.08
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
May-21	2	14	2	35	0.71	0.06

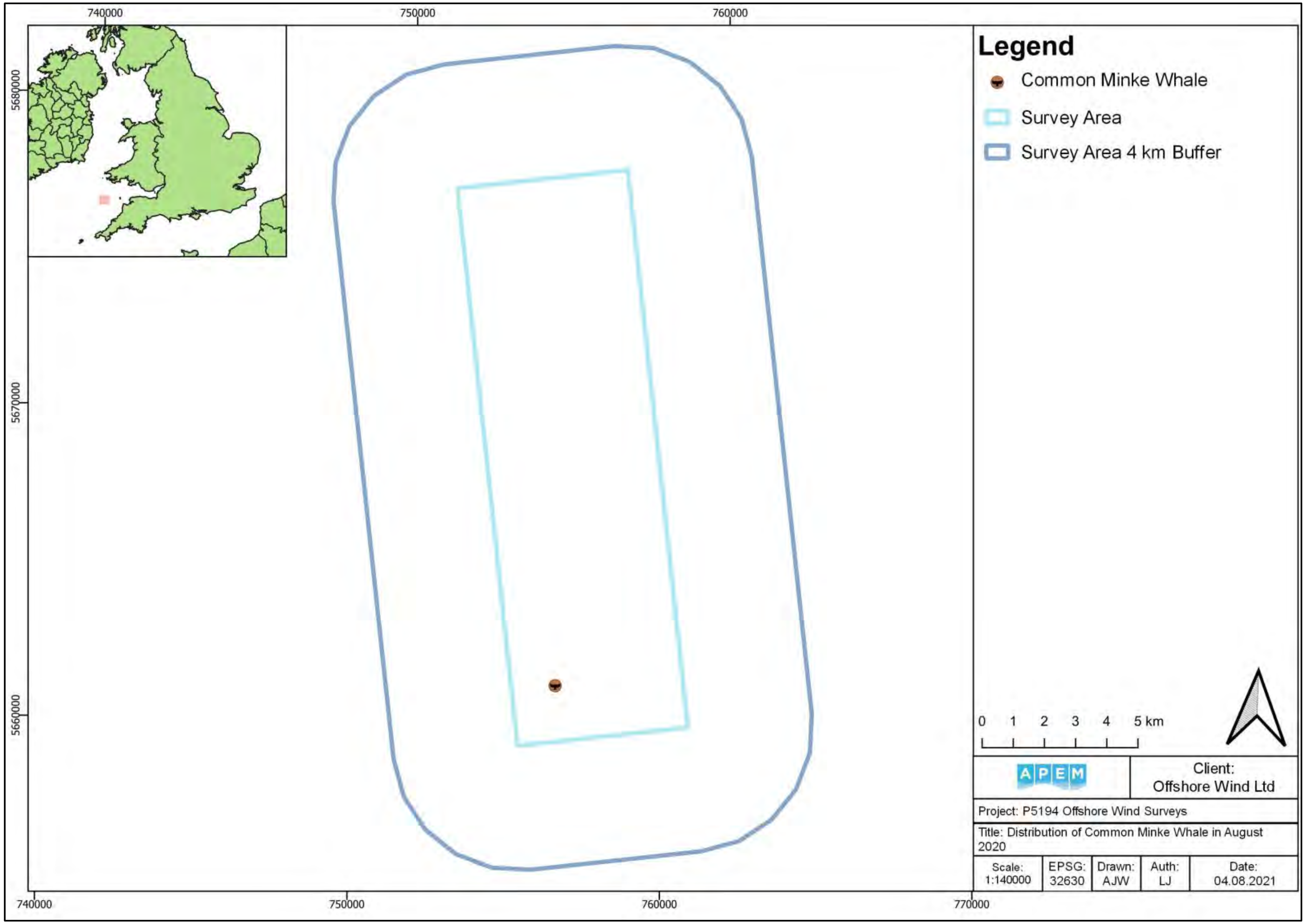


Figure 260 Distribution of common minke whales in Survey Area during August 2020

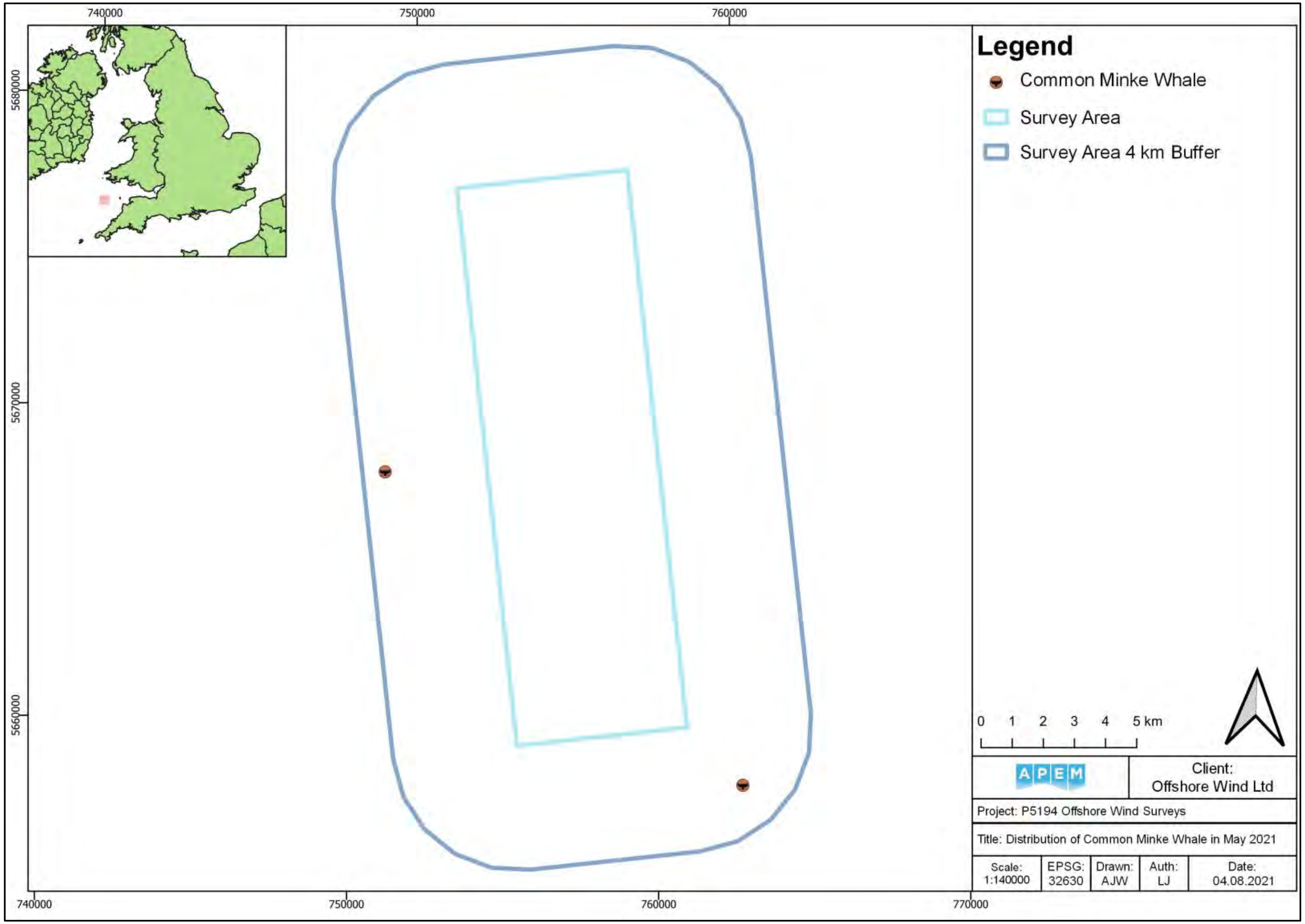


Figure 261 Distribution of common minke whales in Survey Area during May 2021

4.30 Common Dolphin – *Delphinus delphis*

Common dolphins were recorded in July, August, September, November and December 2020, January, April, May and September 2021, and January, February, April and May 2022. The peak raw count of 285 in May 2021 resulted in an abundance estimate of 2,074 for the Survey Area (**Table 35**).

In the Southwest England Site, common dolphins were recorded in August, September and November 2020 as well as in May 2021, January, February and April 2022. The peak raw count of 94 in May 2021 resulted in an abundance estimate of 761 (**Table 35**).

In the 4 km Buffer Zone, they were present in July, August, September, November and December 2020, as well as January, April, May and September 2021, and January, February, April and May 2022. The peak raw count of 191 in May 2021 resulted in an abundance estimate of 1,334 (**Table 35**).

Common dolphins were recorded in low numbers in July 2020, December 2020, January 2021, April 2021, September 2021, January 2022 and February 2022, with individuals noted in the east, north-east, north-east, and east/north-west, south-east, north, and east during these surveys, respectively (**Figure 262**; **Figure 266**; **Figure 267**; **Figure 268**; **Figure 270**; **Figure 271**; **Figure 272**). Distribution of common dolphins during the August 2020 survey was sporadic (**Figure 263**), with records emanating from the east, south-east, south, south-west, and north-west of the Survey Area. Similarly, individuals recorded in the May 2021 survey were both numerous and loosely distributed, comprising records from the north-east, east, south-east, west, north-west, and centre of the Survey Area (**Figure 269**). Likewise, common dolphins were recorded in April 2022 south-east, south-west, south and north (**Figure 273**), and in May 2022 mostly on the south-east area, but also south-west and north-east (**Figure 274**). Records from both the September and November 2020 surveys were more concentrated, comprising the east/south-east and west/north-west of the Survey Area, respectively (**Figure 264**; **Figure 265**).

Table 35 **Raw counts and abundance and density estimates (individuals per km^2) of common dolphin in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone**

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	4	31	4	77	0.50	0.09
Aug-20	33	250	99	432	0.17	0.74
Sep-20	12	94	12	236	0.29	0.28
Nov-20	20	158	24	339	0.22	0.47
Dec-20	1	8	1	24	1.00	0.02
Jan-21	1	8	1	24	1.00	0.02
Apr-21	4	31	4	69	0.50	0.09
May-21	285	2,074	1,499	2,729	0.06	6.16
Sep-21	1	8	1	23	1.00	0.02
Jan-22	19	147	39	294	0.23	0.44
Feb-22	20	154	20	370	0.22	0.46
Apr-22	24	183	76	297	0.20	0.54

May-22	37	281	53	577	0.16	0.84
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Aug-20	16	134	16	300	0.25	1.35
Sep-20	7	61	7	244	0.38	0.62
Nov-20	4	35	4	141	0.50	0.35
May-21	94	761	437	1,117	0.10	7.69
Jan-22	8	70	8	209	0.35	0.71
Feb-22	2	17	2	52	0.71	0.17
Apr-22	2	17	2	42	0.71	0.17
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	4	30	4	82	0.50	0.13
Aug-20	17	124	37	234	0.24	0.52
Sep-20	5	38	5	90	0.45	0.16
Nov-20	16	121	16	287	0.25	0.51
Dec-20	1	8	1	31	1.00	0.03
Jan-21	1	8	1	23	1.00	0.03
Apr-21	4	29	4	66	0.50	0.12
May-21	191	1,334	887	1,795	0.07	5.62
Sep-21	1	7	1	22	1.00	0.03
Jan-22	11	81	11	185	0.30	0.34
Feb-22	18	133	18	354	0.24	0.56
Apr-22	22	161	66	285	0.21	0.68
May-22	37	268	58	550	0.16	1.13

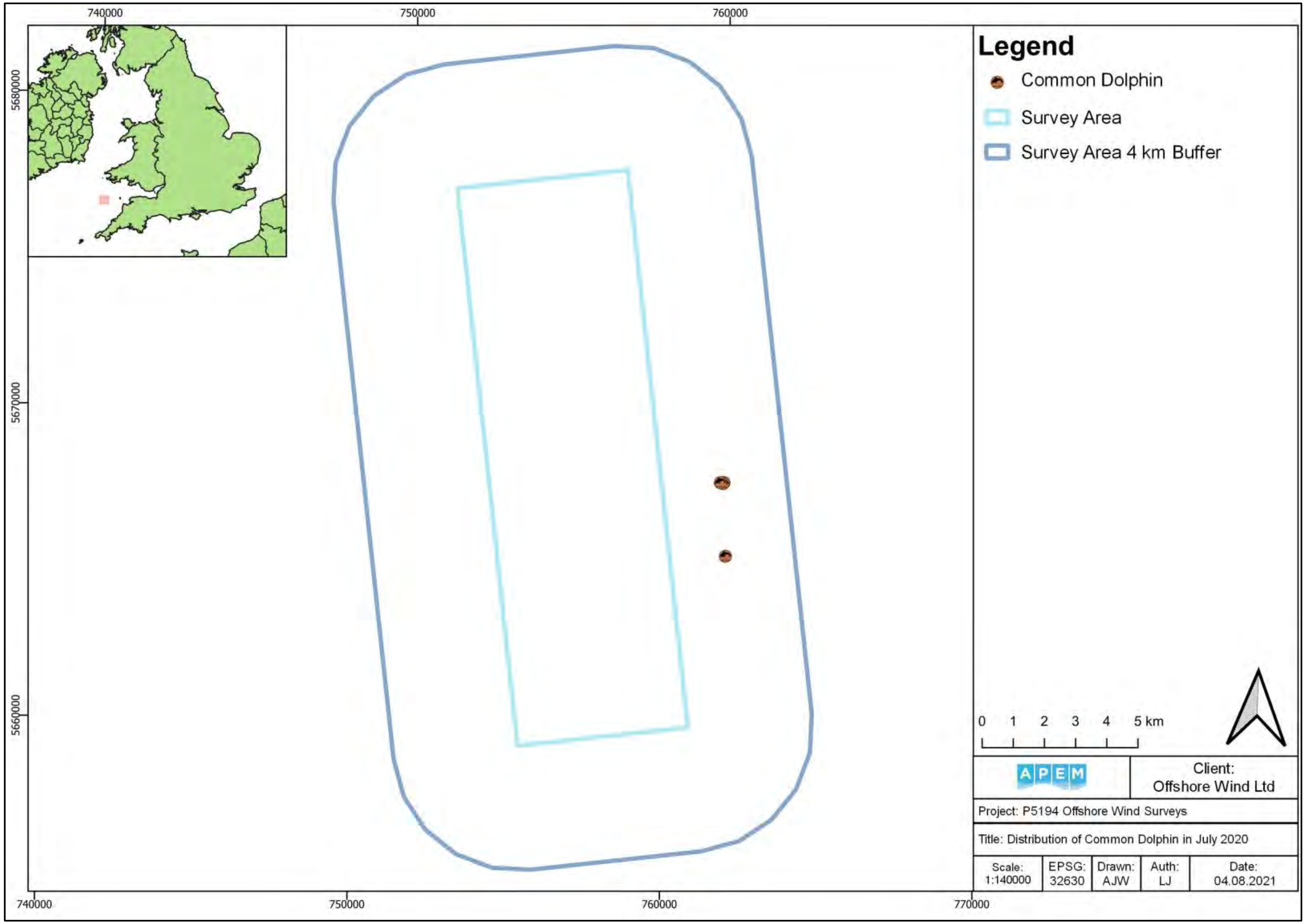


Figure 262 Distribution of common dolphins in Survey Area during July 2020

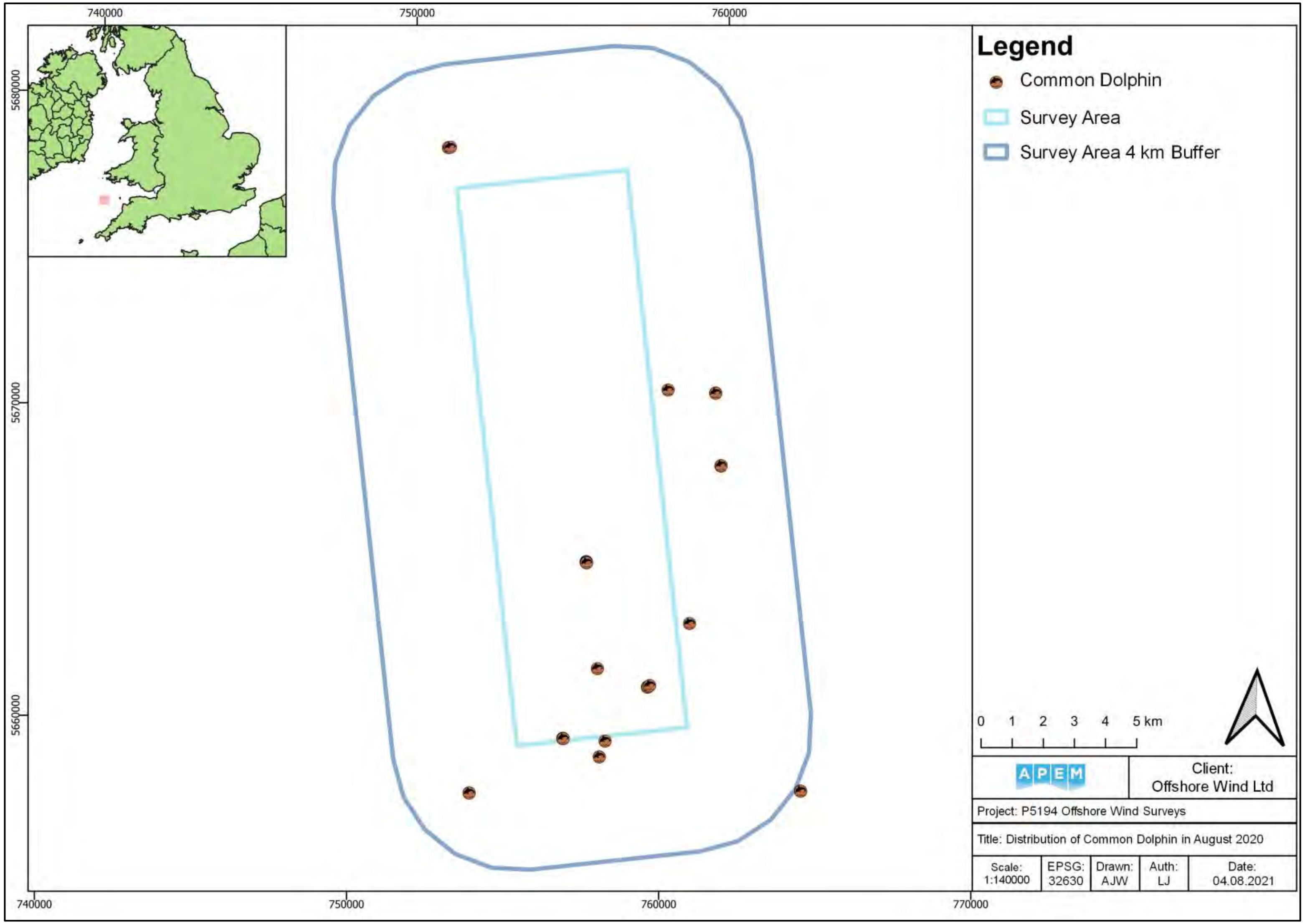


Figure 263 Distribution of common dolphins in Survey Area during August 2020

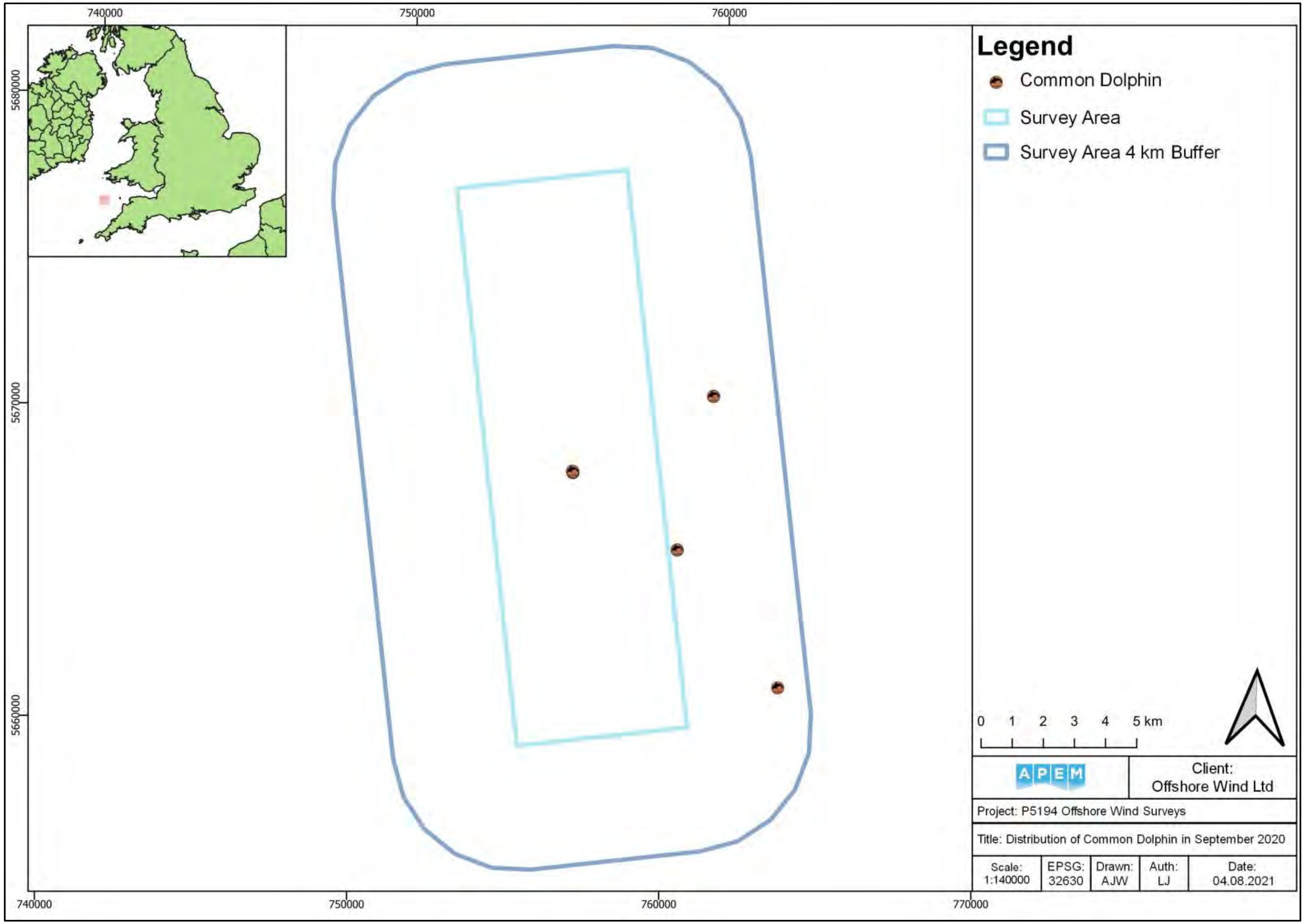


Figure 264 Distribution of common dolphins in Survey Area during September 2020

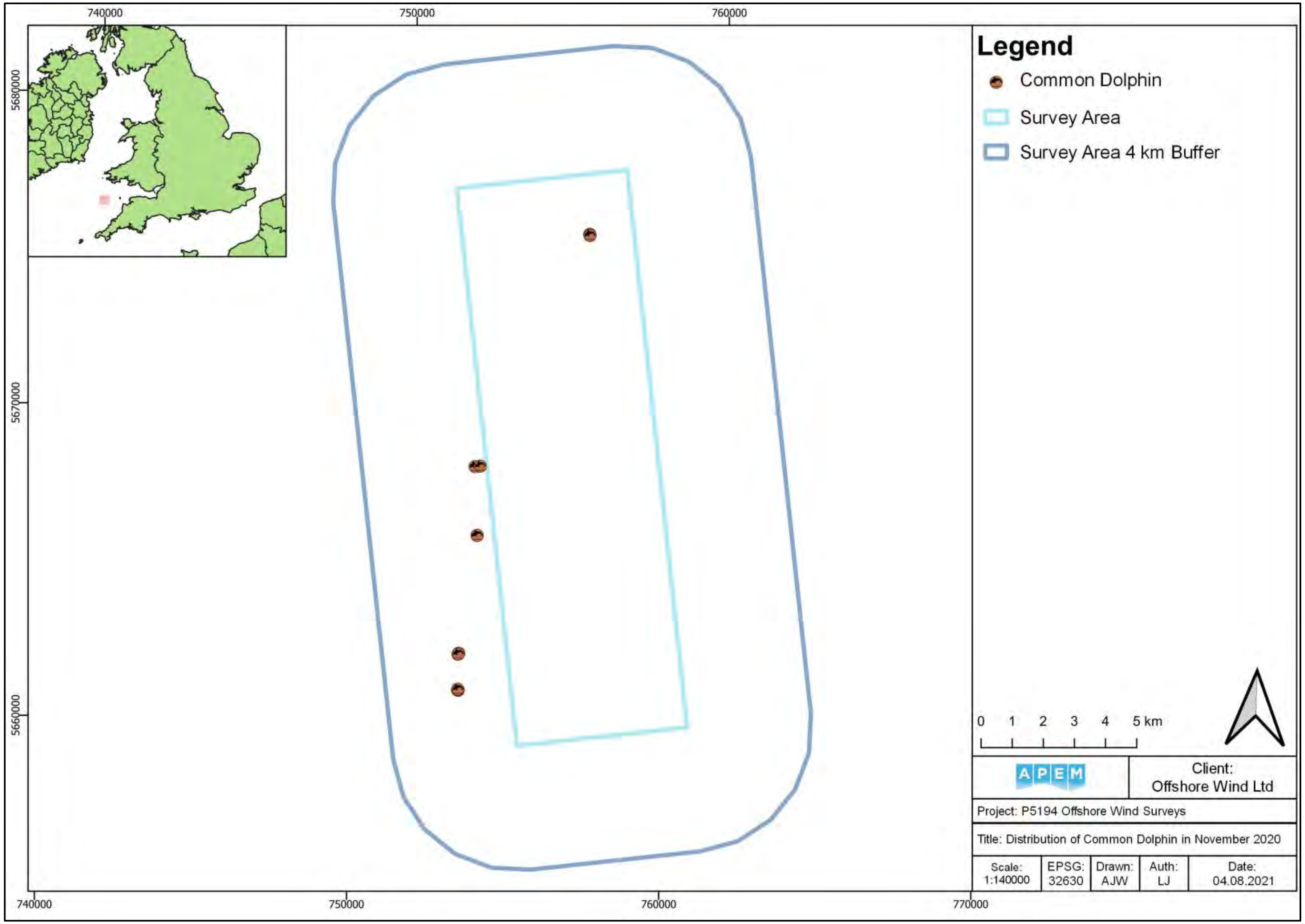


Figure 265 Distribution of common dolphins in Survey Area during November 2020

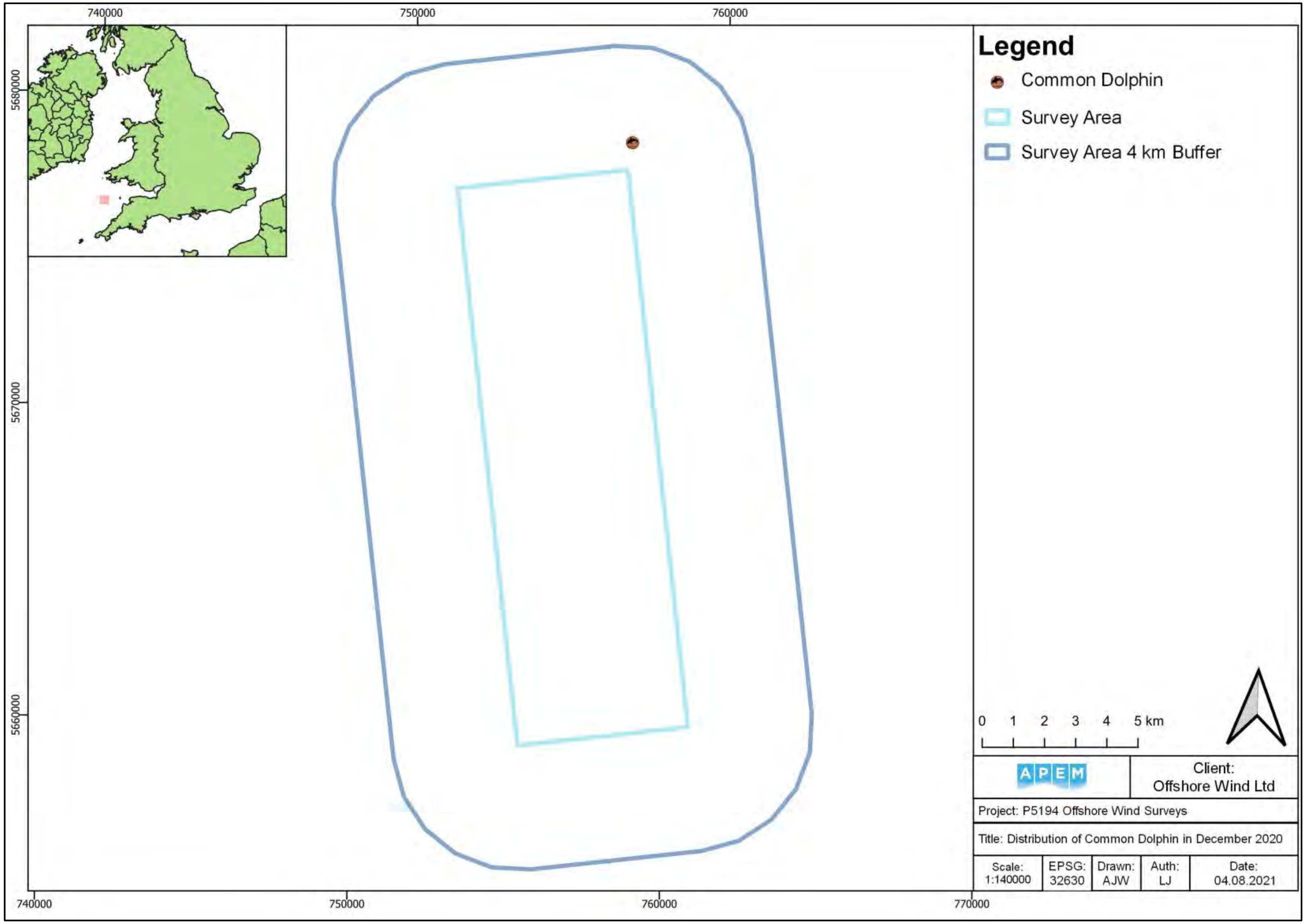


Figure 266 Distribution of common dolphins in Survey Area during December 2020

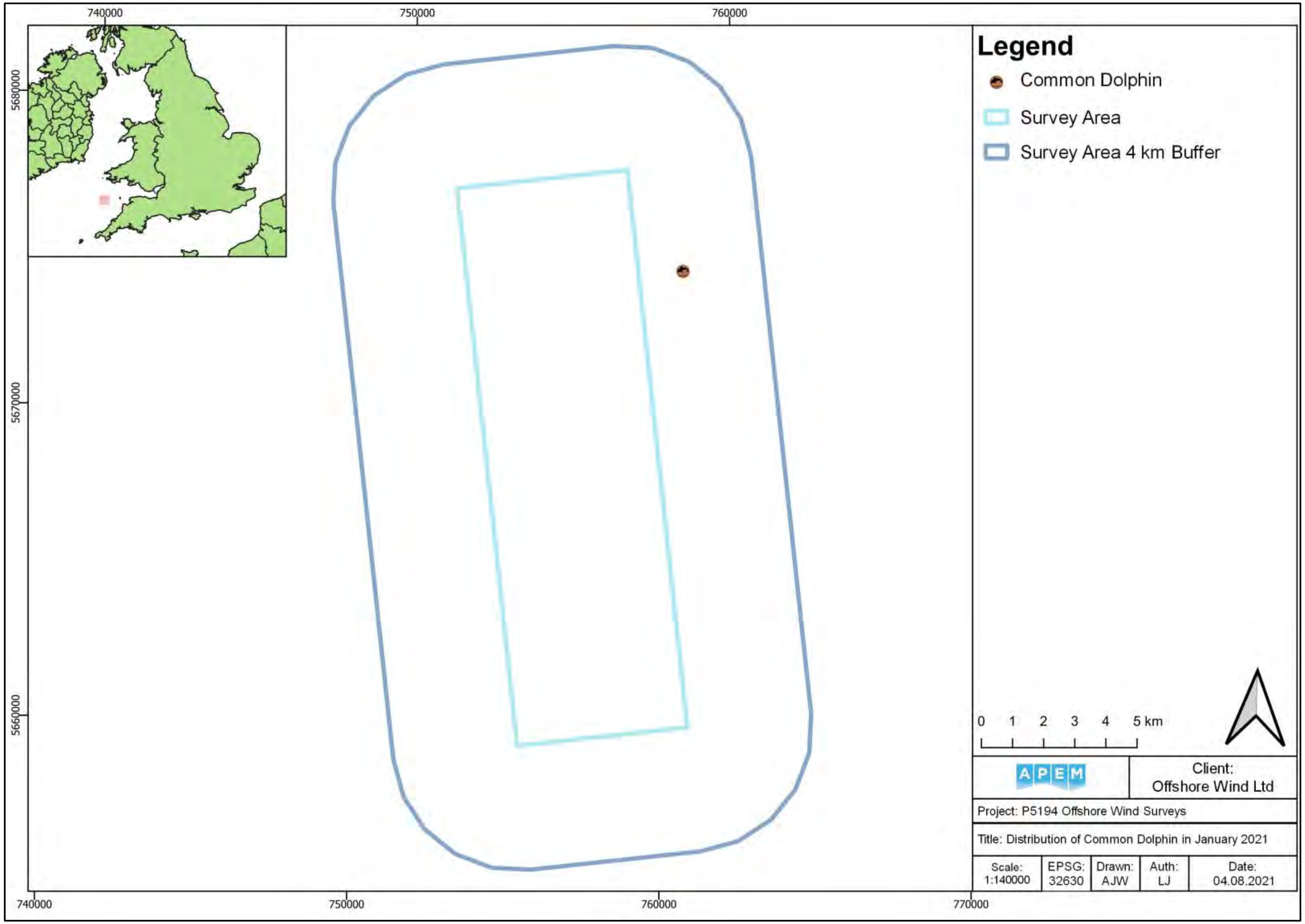


Figure 267 Distribution of common dolphins in Survey Area during January 2021

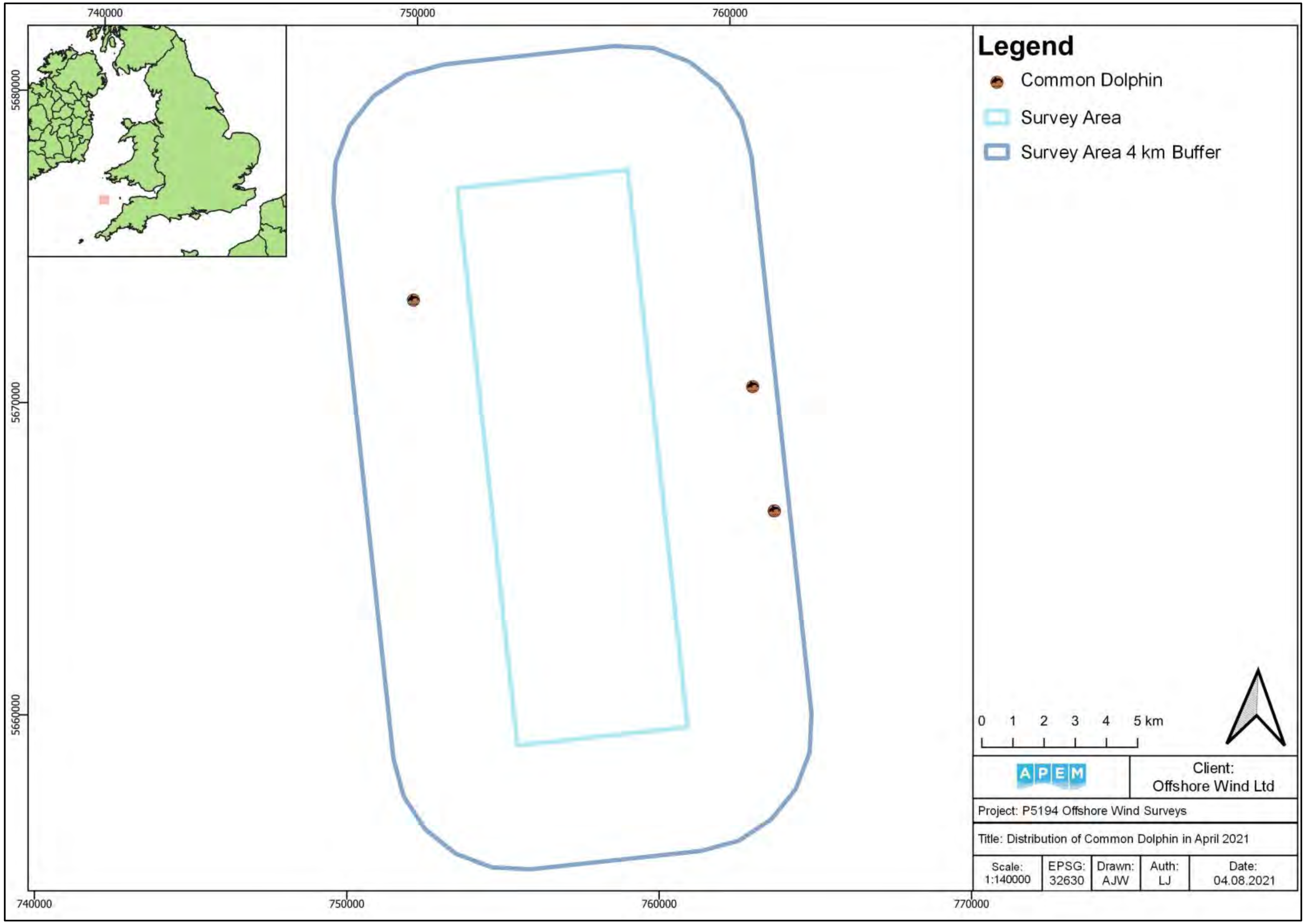


Figure 268 Distribution of common dolphins in Survey Area during April 2021

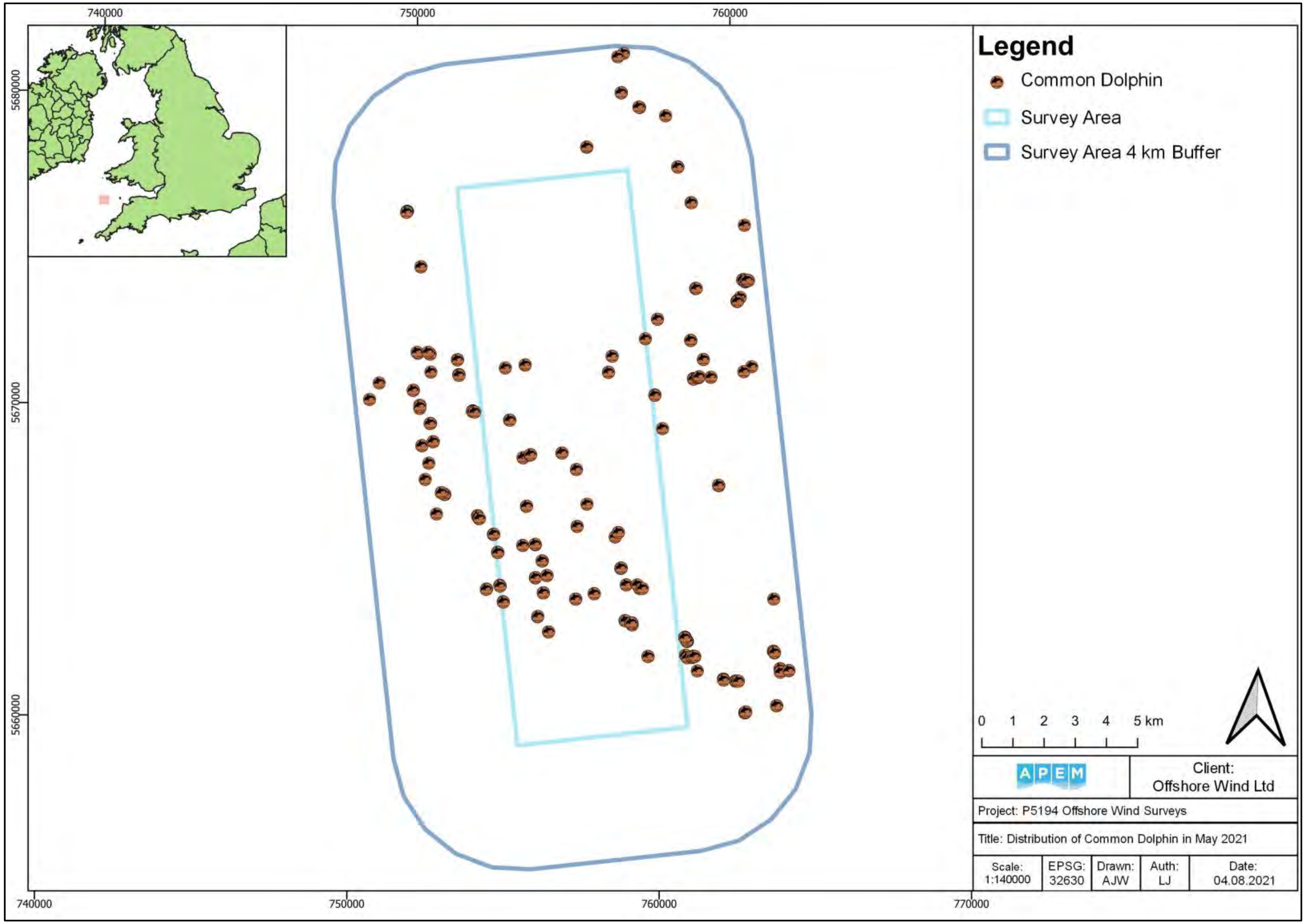


Figure 269 Distribution of common dolphins in Survey Area during May 2021

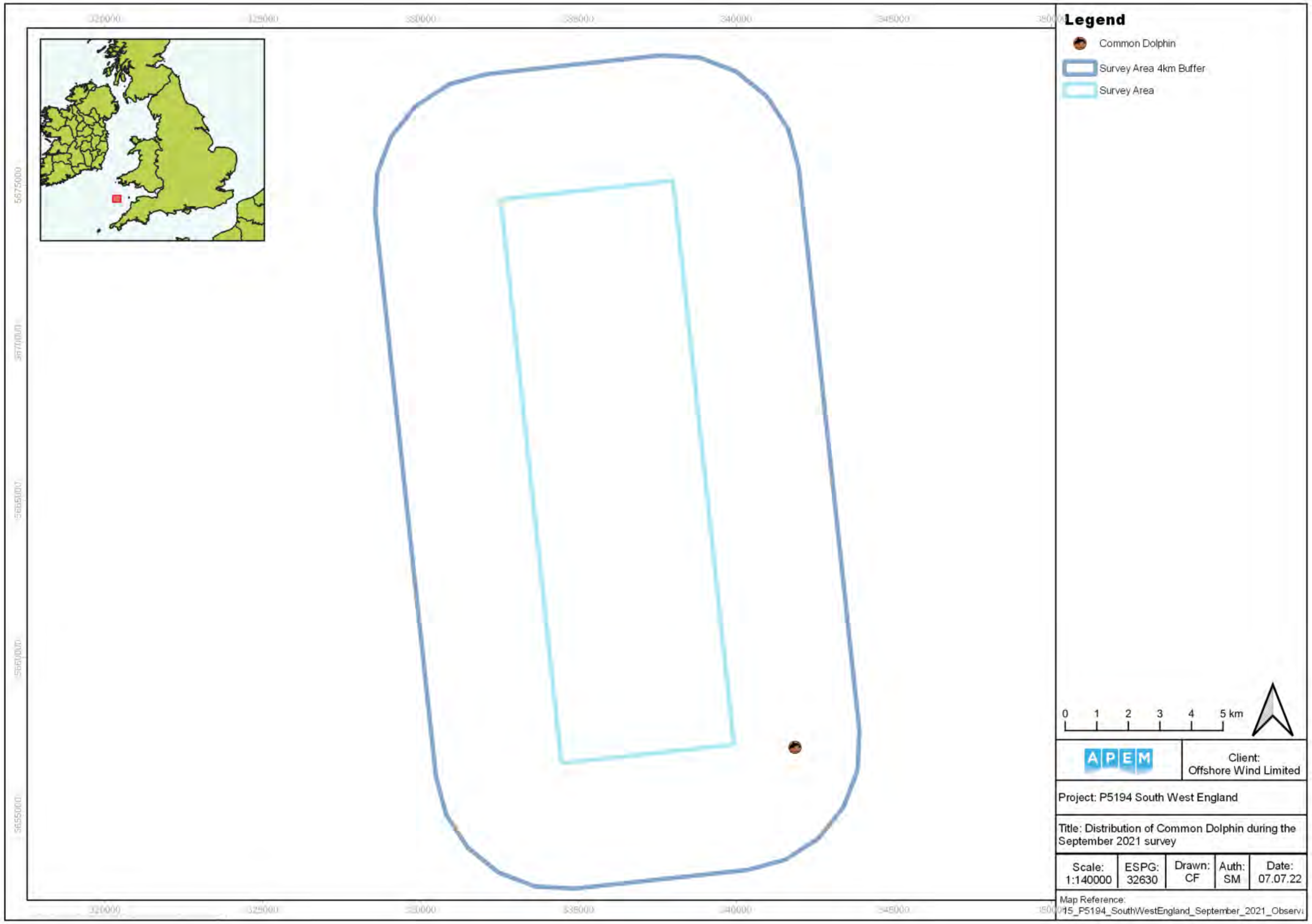


Figure 270 Distribution of common dolphins in Survey Area during September 2021

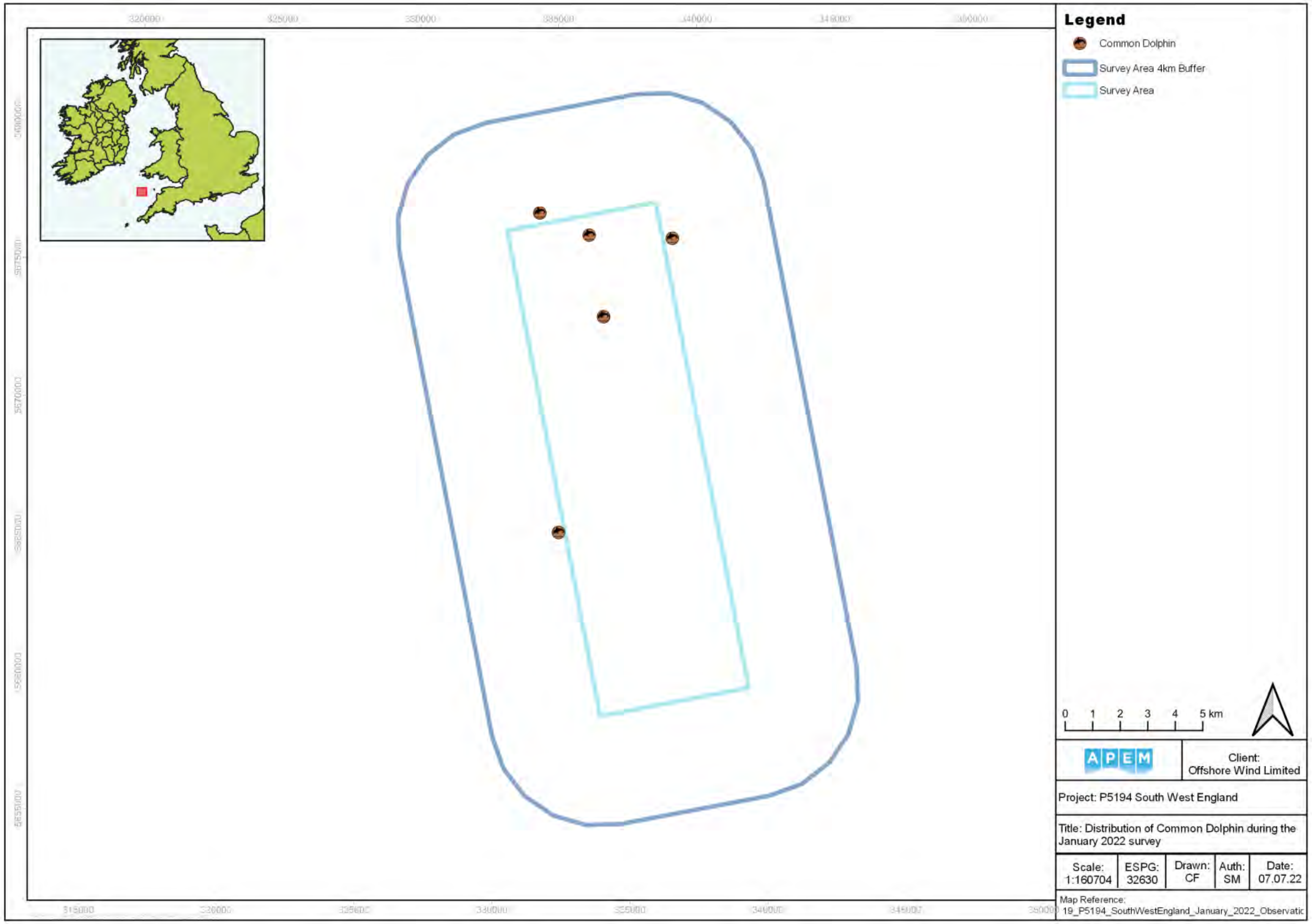


Figure 271 **Distribution of common dolphins in Survey Area during January 2022**

Figure 272 Distribution of common dolphins in Survey Area during February 2022

Figure 273 Distribution of common dolphins in Survey Area during April 2022

Figure 274 **Distribution of common dolphins in Survey Area during May 2022**

4.31 Unidentified Dolphin – *Delphinoidea*

Unidentified dolphins were recorded in July, August, September, November and December 2020, as well as from February to May 2021, and in April 2022. The peak raw count of 37 in May 2021 resulted in an abundance estimate of 269 for the Survey Area (**Table 36**).

In the Southwest England Site, unidentified dolphins were present in July, August, September, November and December 2020, as well as in February and May 2021, and April 2022. The peak raw count of 23 in May 2021 resulted in an abundance estimate of 186 (**Table 36**).

In the 4 km Buffer Zone, unidentified dolphins were recorded in July, August, September and December 2020, from February to May 2021, and during April 2022. The peak raw count of 19 in August 2020 resulted in an abundance estimate of 139 for the area (**Table 36**).

Dolphins observed in July 2020 were loosely distributed across the north, east, and south of the Survey Area (**Figure 275**). Those observed in August were in the north-west, east, south, and south-west (**Figure 276**). In September and November 2020, dolphins were identified in the north-east and south-west of the Survey Area, respectively, whereas animals noted during the December 2020 survey were in both the west and north-east (**Figure 277**; **Figure 278**; **Figure 279**). February 2021 revealed a loose distribution across the centre, north-east, and north of the Survey Area (**Figure 280**), while in March and April 2021, individuals were localised in the north and east (**Figure 281**; **Figure 282**). In May 2021, they were distributed loosely across the centre and west of the Survey Area, with additional small clusters in the north and north-west (**Figure 283**). In April 2022, they were in the north-west, middle and south-west (**Figure 284**)

Table 36 **Raw counts and abundance and density estimates (individuals per km²) of dolphin in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone**

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jul-20	16	124	16	294	0.25	0.37
Aug-20	27	205	68	387	0.19	0.61
Sep-20	5	39	5	110	0.45	0.12
Nov-20	7	55	7	165	0.38	0.16
Dec-20	6	48	6	120	0.41	0.14
Feb-21	11	84	15	177	0.30	0.25
Mar-21	8	61	8	245	0.35	0.18
Apr-21	6	46	6	138	0.41	0.14
May-21	37	269	146	415	0.16	0.80
April-22	9	69	9	152	0.33	0.21
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jul-20	2	17	2	43	0.71	0.17
Aug-20	8	67	8	175	0.35	0.68
Sep-20	4	35	4	105	0.50	0.35
Nov-20	7	62	7	185	0.38	0.63

Dec-20	3	27	3	80	0.58	0.27
Feb-21	5	43	5	122	0.45	0.43
May-21	23	186	65	332	0.21	1.88
April-22	4	34	4	102	0.5	0.34
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	14	104	14	283	0.27	0.44
Aug-20	19	139	37	292	0.23	0.59
Sep-20	1	8	1	23	1.00	0.03
Dec-20	3	23	3	69	0.58	0.10
Feb-21	6	44	6	102	0.41	0.19
Mar-21	8	59	8	176	0.35	0.25
Apr-21	6	44	6	132	0.41	0.19
May-21	14	98	35	175	0.27	0.41
April-22	5	37	5	88	0.45	0.16

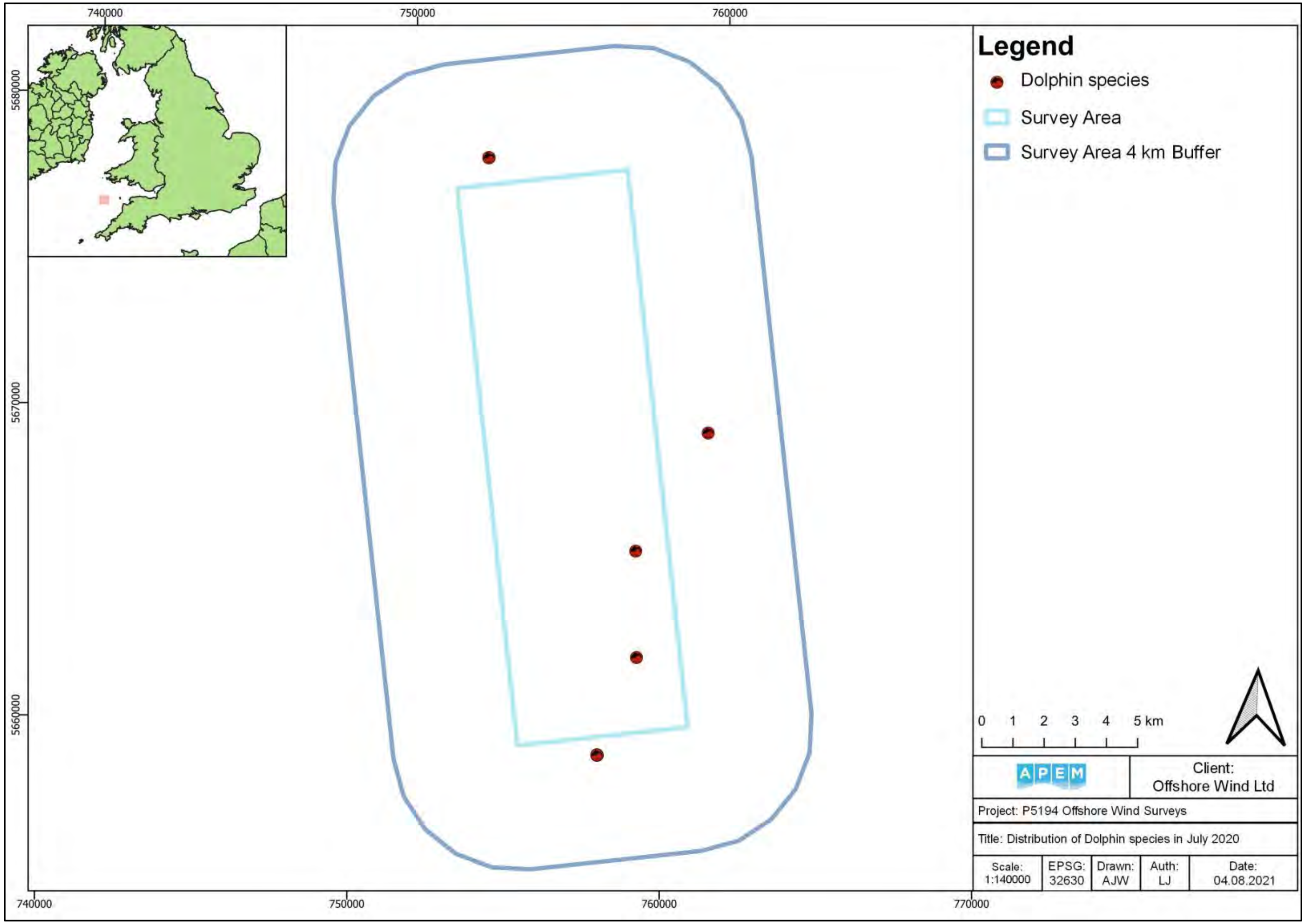


Figure 275 Distribution of dolphins in Survey Area during July 2020

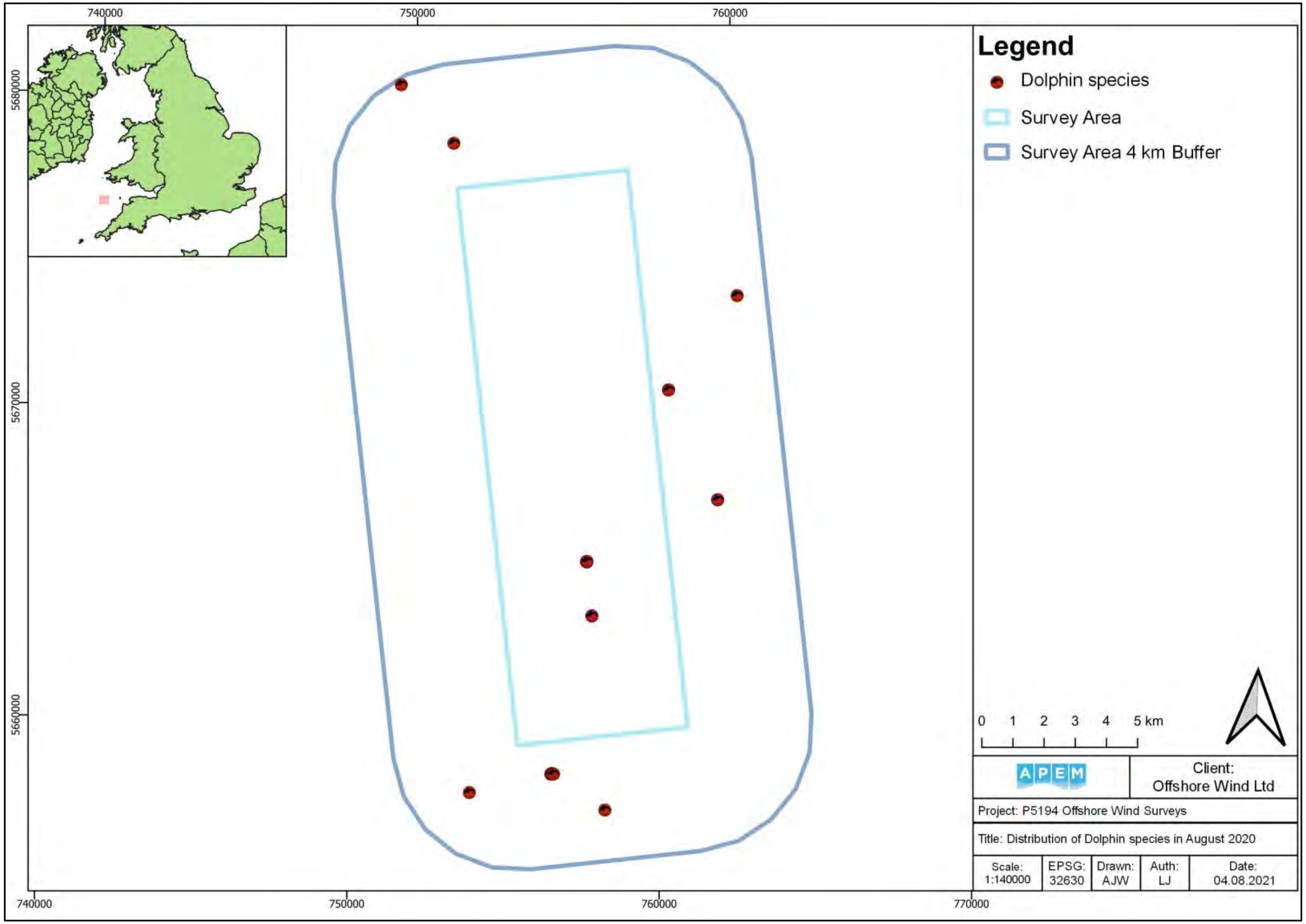


Figure 276 Distribution of dolphins in Survey Area during August 2020

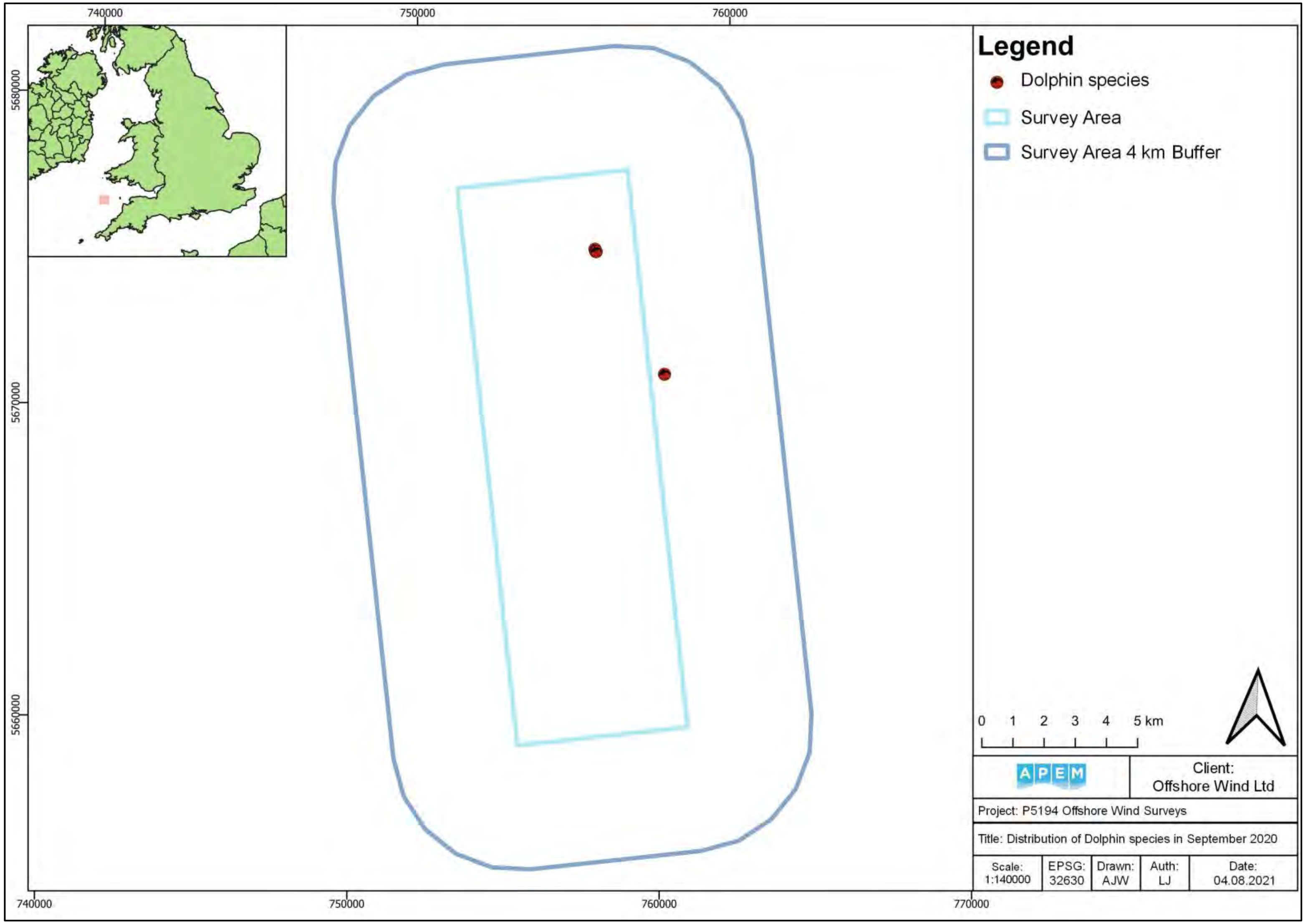


Figure 277 Distribution of dolphins in Survey Area during September 2020

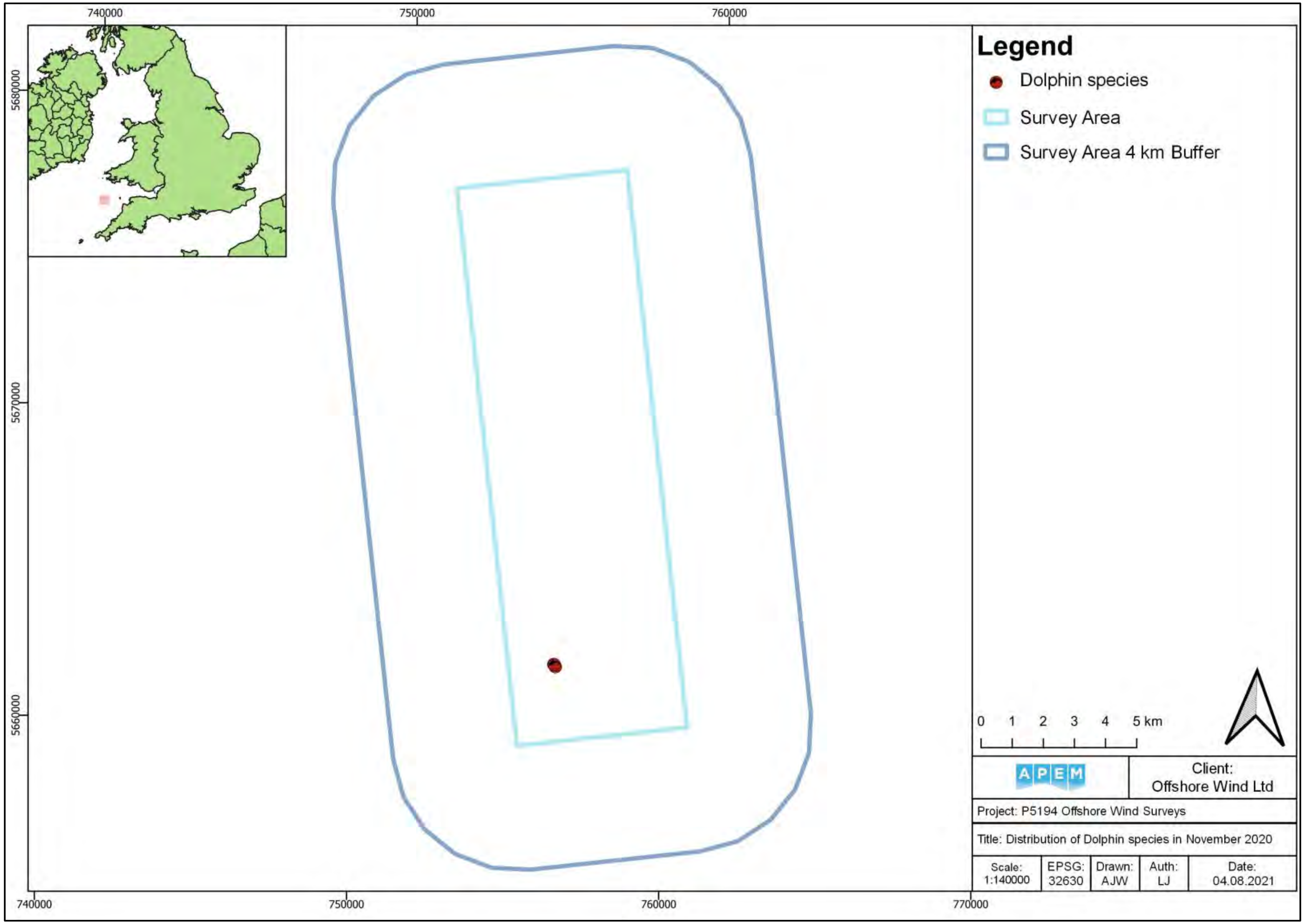


Figure 278 Distribution of dolphins in Survey Area during November 2020

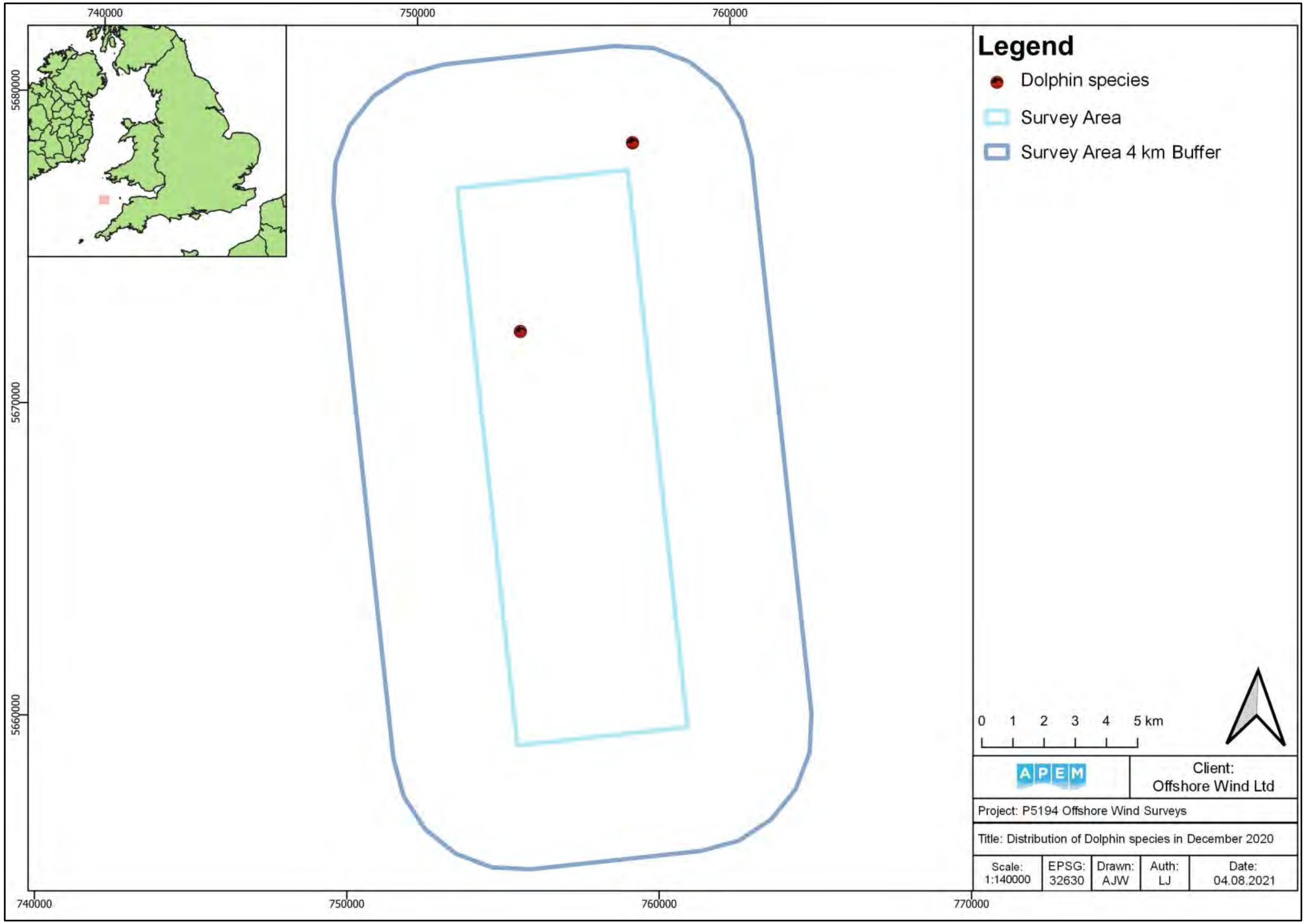


Figure 279 Distribution of dolphins in Survey Area during December 2020

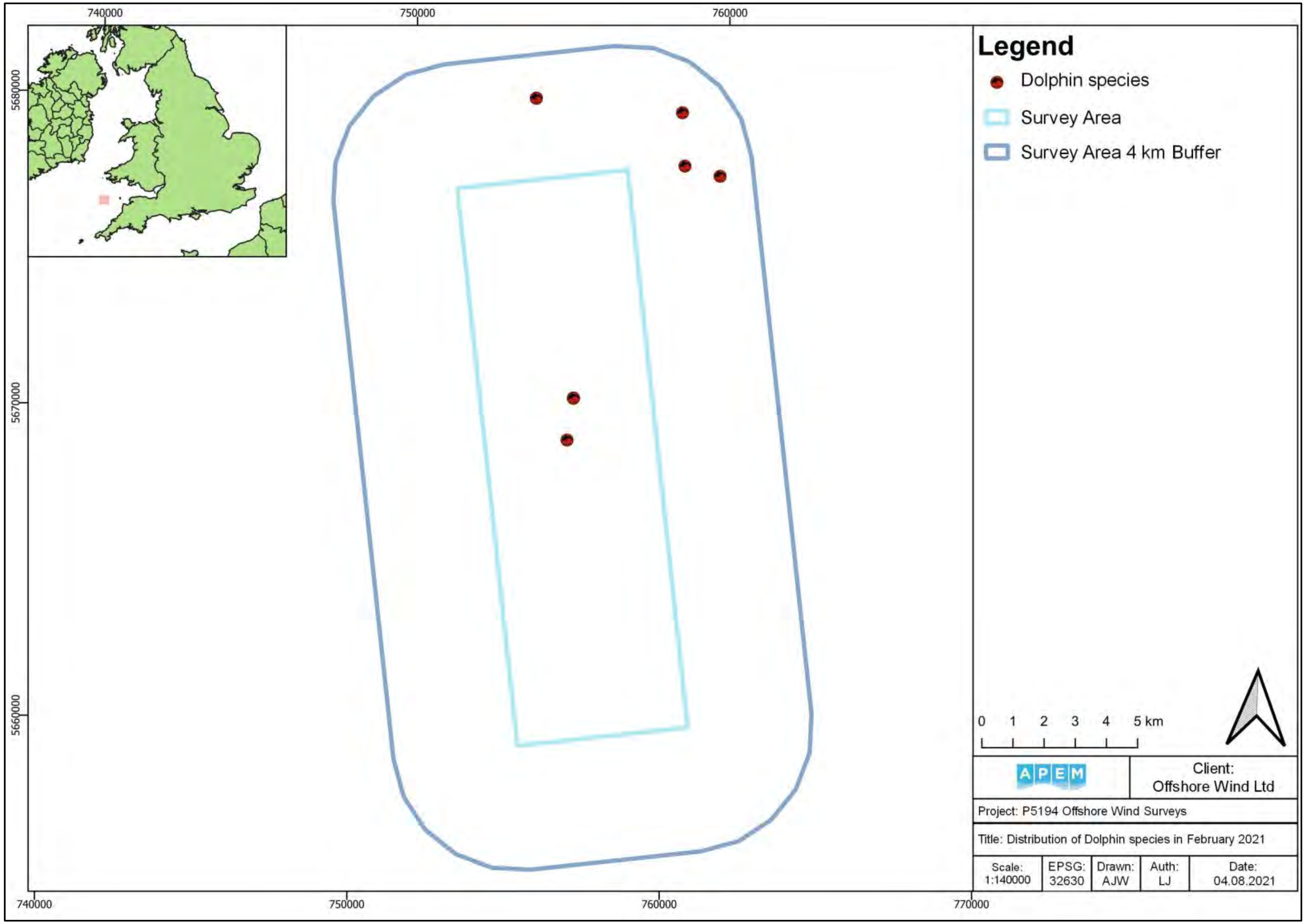


Figure 280 Distribution of dolphins in Survey Area during February 2021

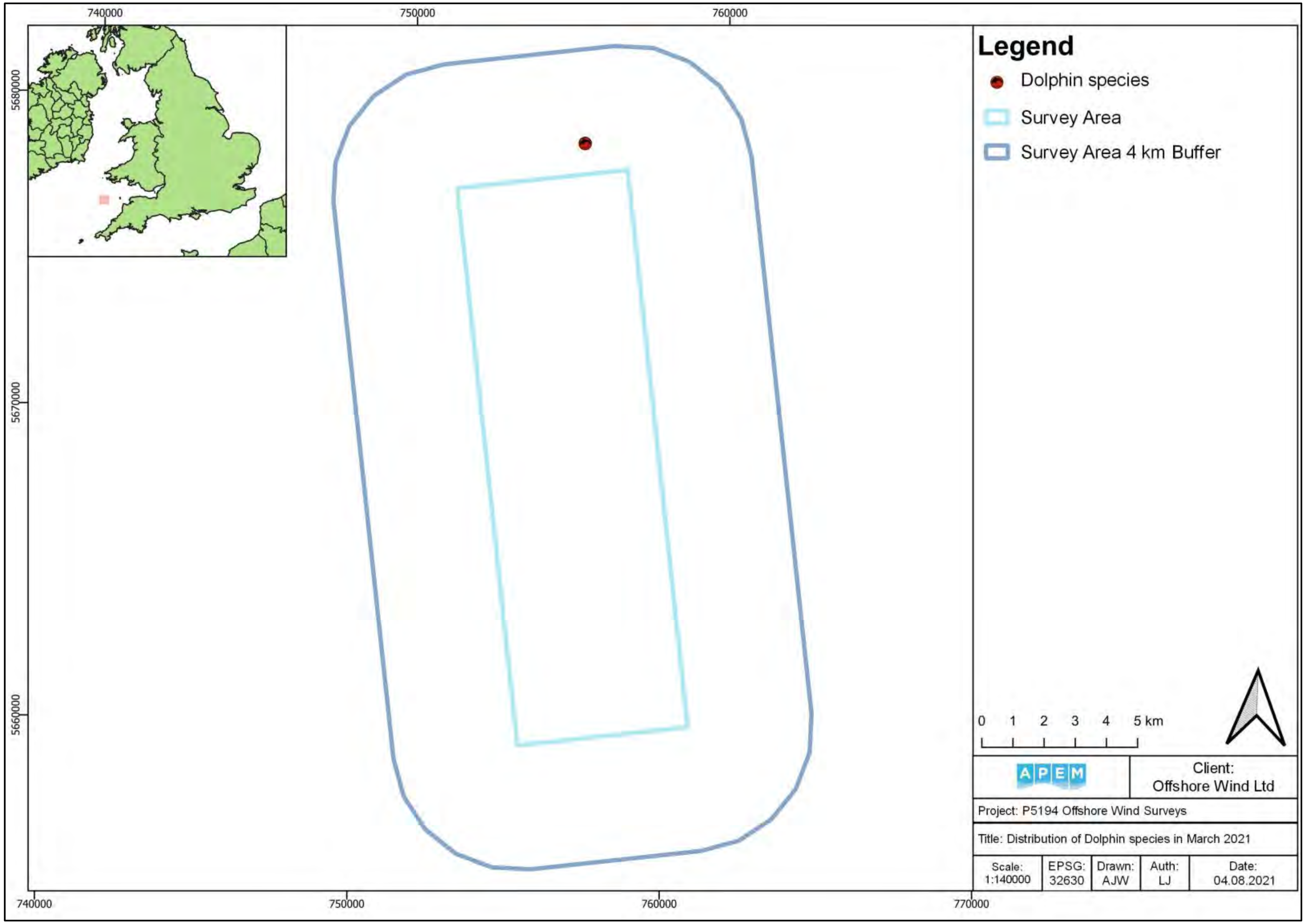


Figure 281 Distribution of dolphins in Survey Area during March 2021

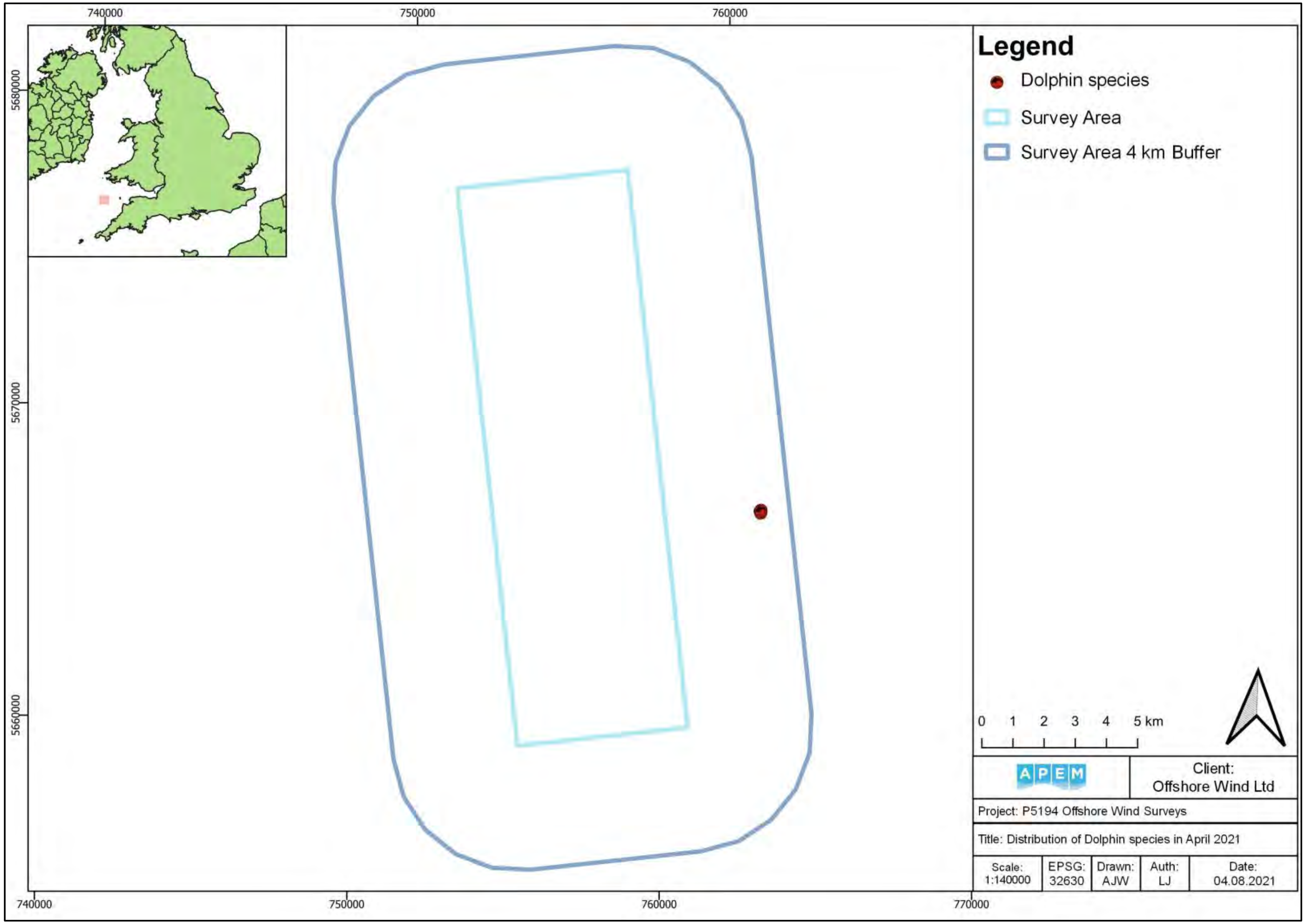


Figure 282 Distribution of dolphins in Survey Area during April 2021

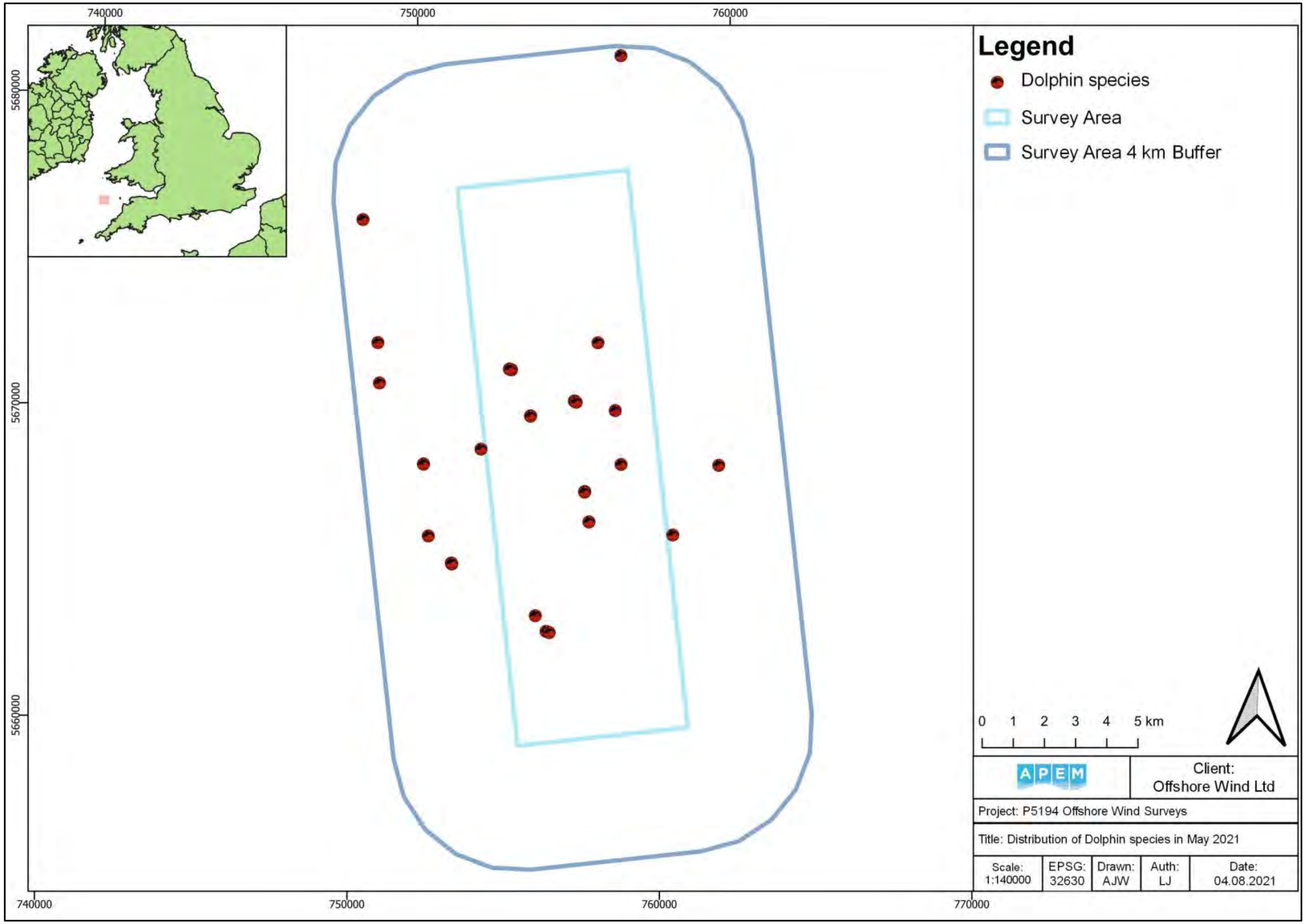


Figure 283 Distribution of dolphins in Survey Area during May 2021

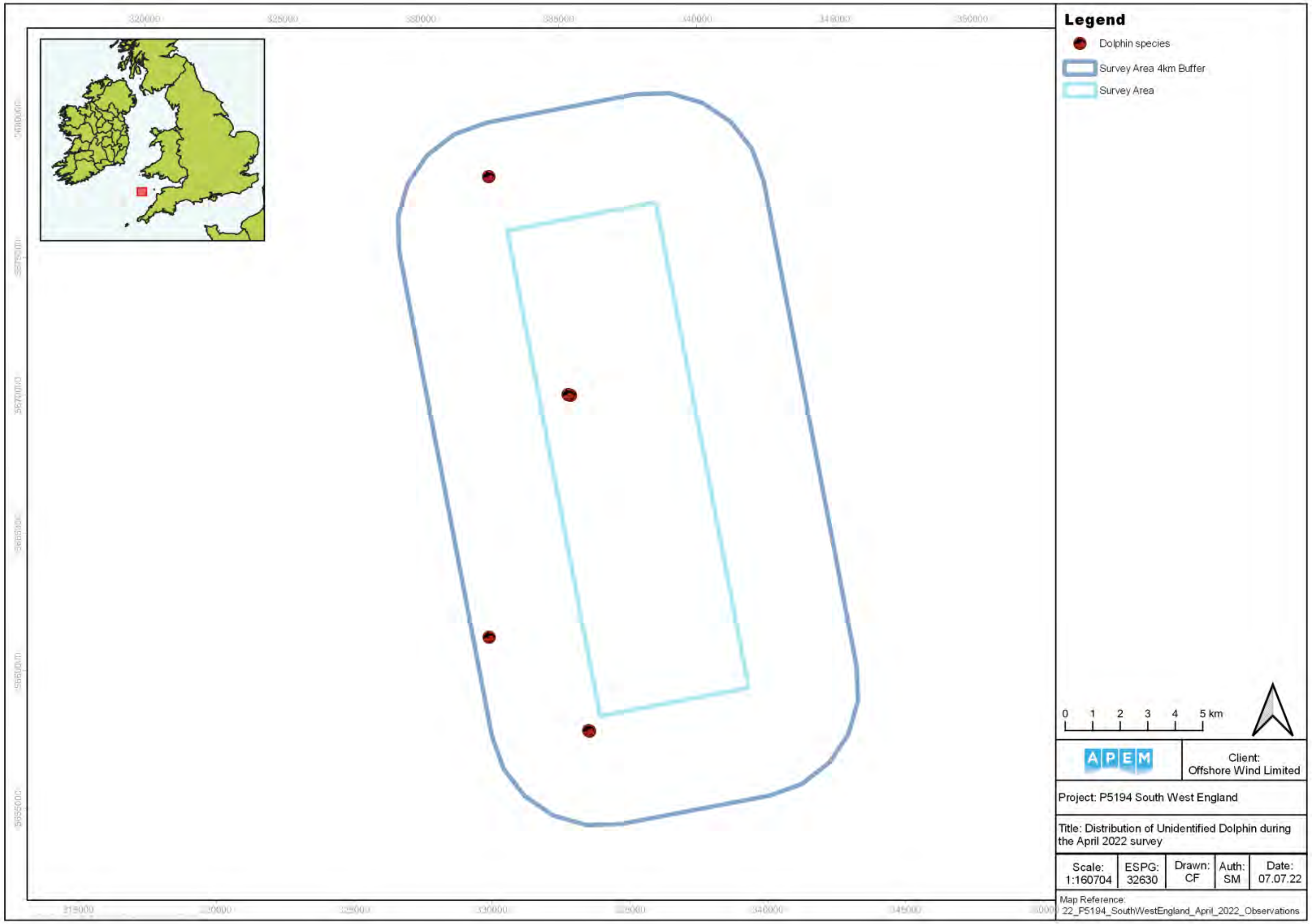


Figure 284 **Distribution of dolphins in Survey Area during April 2022**

4.32 Harbour Porpoise – *Phocoena phocoena*

Harbour porpoises were recorded in July, September and October 2020, May, July and September 2021, and April to June 2022. The peak raw count of nine in May 2021 resulted in an abundance estimate of 65 for the Survey Area (**Table 37**).

In the Southwest England Site, they were present in July and October 2020, in May and September 2021, and in April 2022. The peak raw count of five in May 2021 resulted in an abundance estimate of 40 for the area (**Table 37**).

In the 4 km Buffer Zone, there were harbour porpoises present in July and September 2020, in May, July and September 2021, and in May and June 2022. The peak raw counts of four in September 2020 and May 2021 resulted in abundance estimates of 30 and 28, respectively (**Table 37**).

In July 2020, one harbour porpoise was located in the east-southeast of the Southwest England Site, and one in the southwest of the Buffer (**Figure 285**). During September 2020, one was situated in the east-northeast of the Buffer, with a group of three in the southwest (**Figure 286**). In October 2020, one animal was on the eastern border of the Southwest England Site (**Figure 287**).

During May 2021, harbour porpoises were located from the west to the southeast of the Survey Area (**Figure 288**). The July 2021 survey revealed a lone harbour porpoise in the south, outside the Southwest England Site (**Figure 289**). In September 2021, a single individual was recorded in the south, inside the Southwest England Site, with another on the south-west of the Survey Area (**Figure 290**). During April 2022, one animal was observed in the south-west corner of the Southwest England Site (**Figure 291**). A single harbour porpoise was also recorded during May 2022 in the south-east corner of the B (**Figure 292**). And the June 2022 revealed one harbour porpoise on the west of the buffer (**Figure 293**).

Table 37 **Raw counts and abundance and density estimates (individuals per km^2) of harbour porpoises in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone**

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jul-20	2	16	2	39	0.71	0.05
Sep-20	4	31	4	86	0.50	0.09
Oct-20	1	8	1	23	1.00	0.02
May-21	9	65	22	116	0.33	0.19
Jul-21	1	8	1	23	1.00	0.02
Sep-21	4	30	4	90	0.50	0.09
Apr-22	1	8	1	23	1.00	0.02
May-22	1	8	1	23	1.00	0.02
Jun-22	1	7	1	22	1.00	0.02
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density

Jul-20	1	9	1	26	1.00	0.09
Oct-20	1	8	1	25	1.00	0.08
May-21	5	40	8	890	0.45	0.40
Sep-21	3	25	3	74	0.58	0.25
Apr-22	1	8	1	25	1.00	0.08

c) 4 km Buffer Zone

Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jul-20	1	7	1	22	1.00	0.03
Sep-20	4	30	4	83	0.50	0.13
May-21	4	28	7	56	0.50	0.12
Jul-21	1	8	1	23	1.00	0.02
Sep-21	1	7	1	22	1.00	0.03
May-22	1	7	1	22	1.00	0.03
Jun-22	1	7	1	21	1.00	0.03

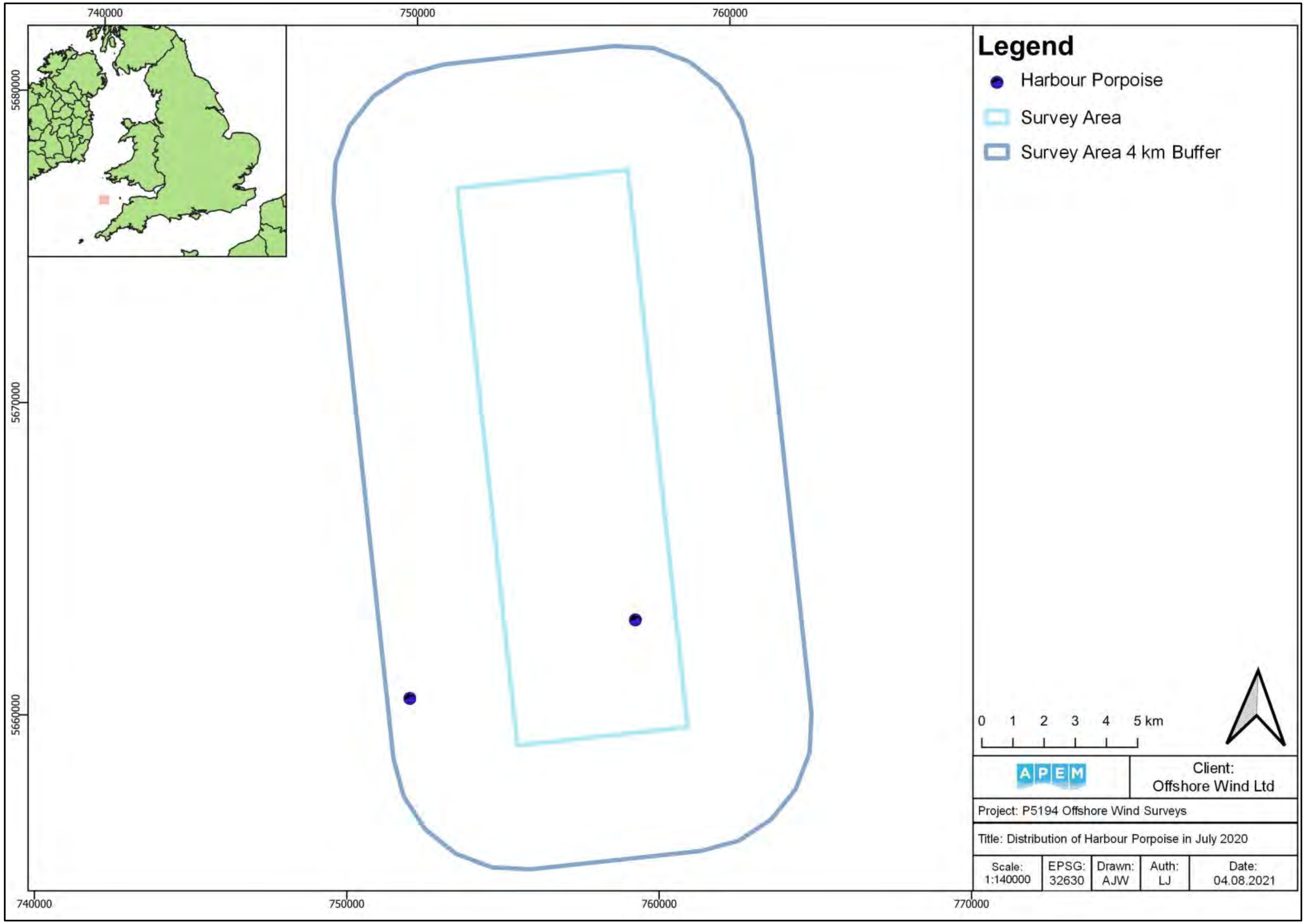


Figure 285 Distribution of harbour porpoises in Survey Area during July 2020

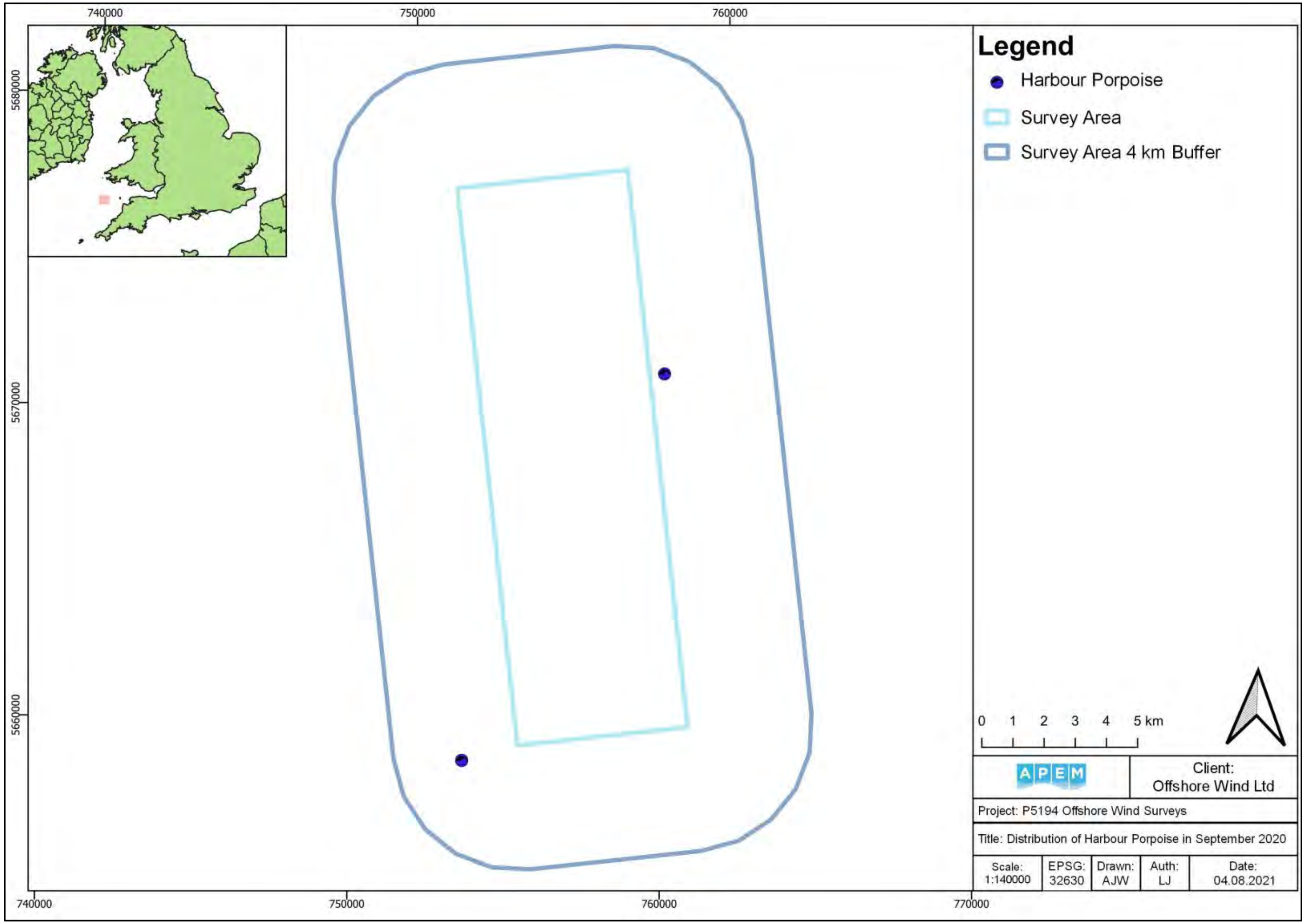


Figure 286 Distribution of harbour porpoises in Survey Area during September 2020

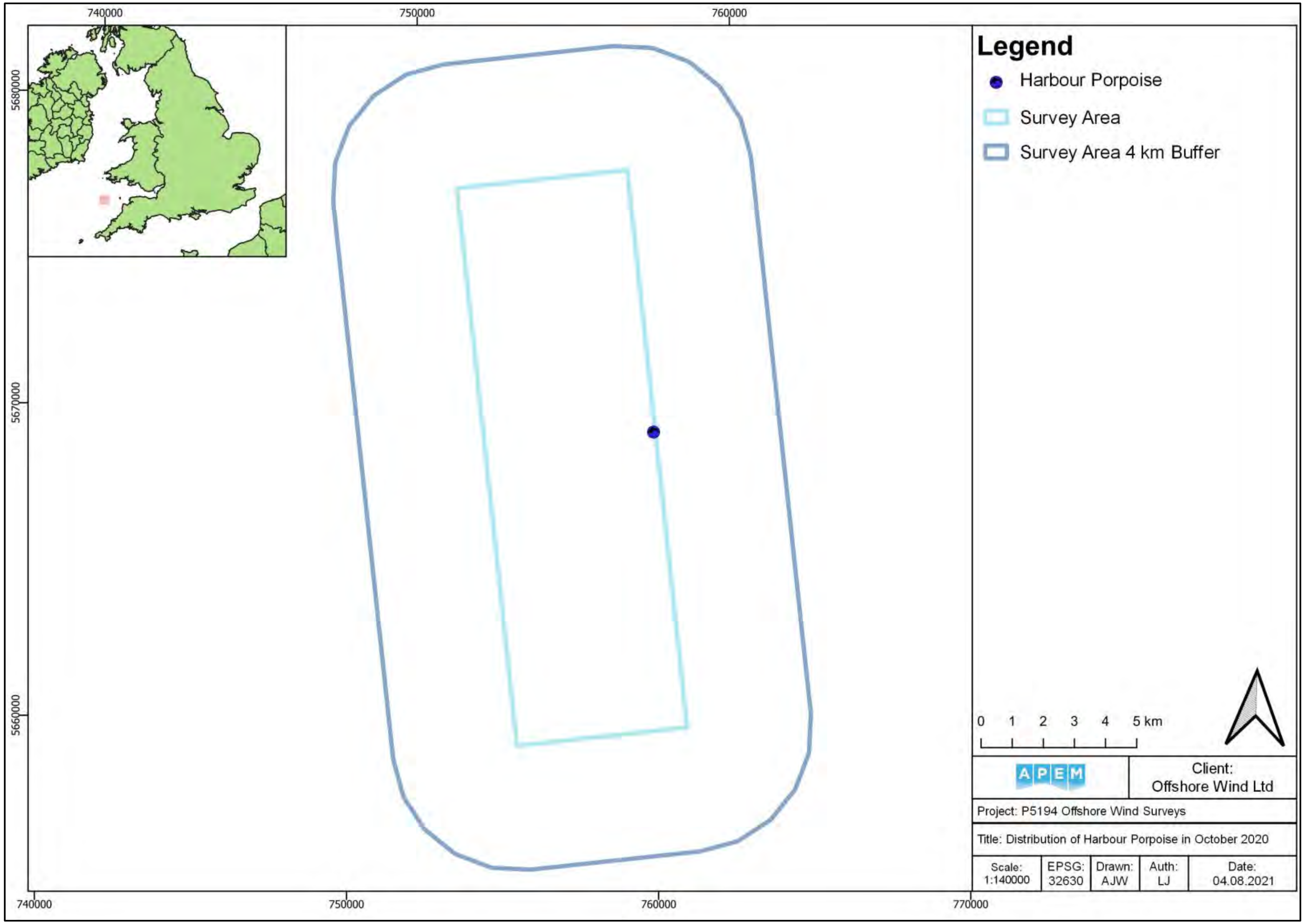


Figure 287 Distribution of harbour porpoises in Survey Area during October 2020

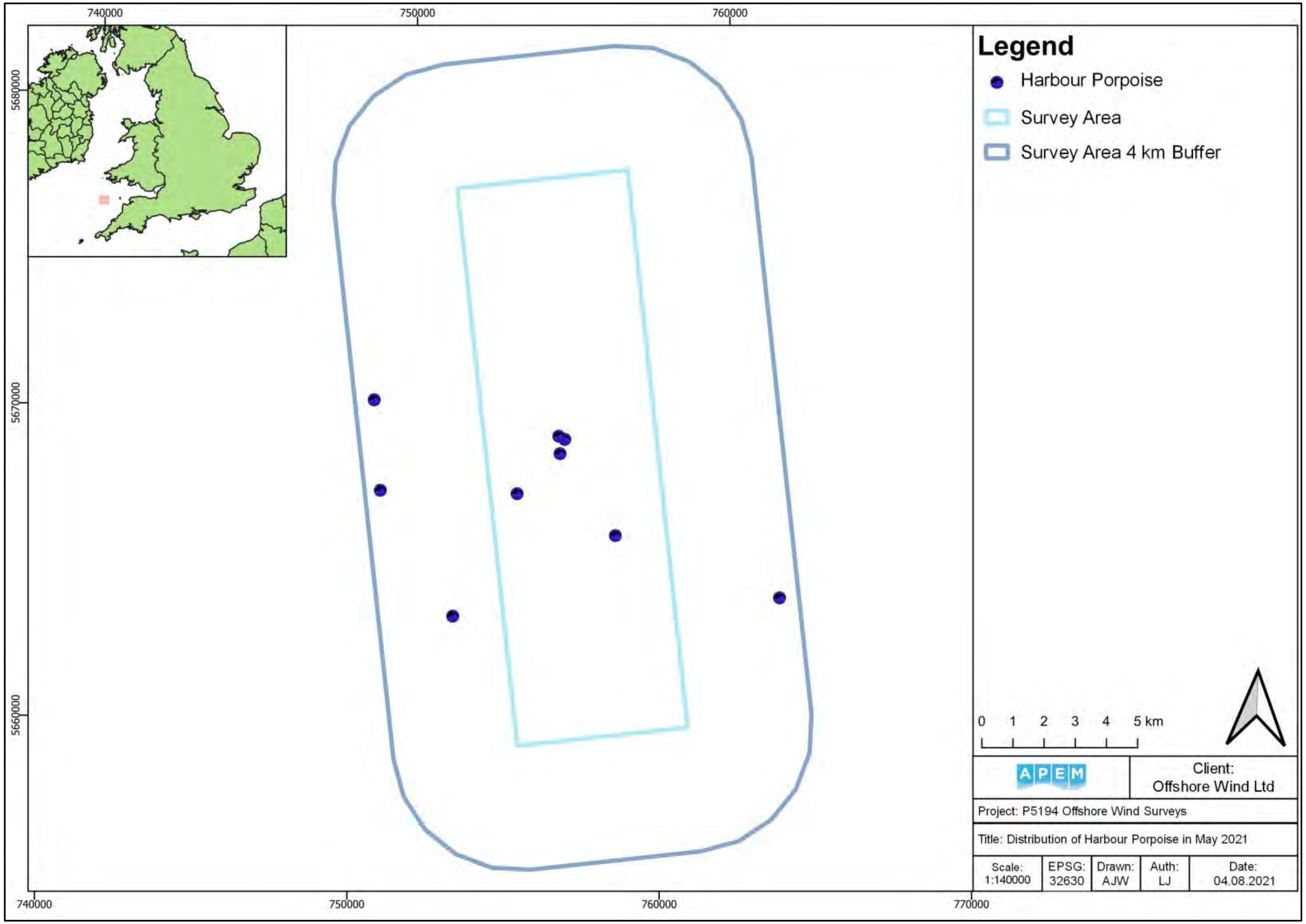


Figure 288 Distribution of harbour porpoises in Survey Area during May 2021

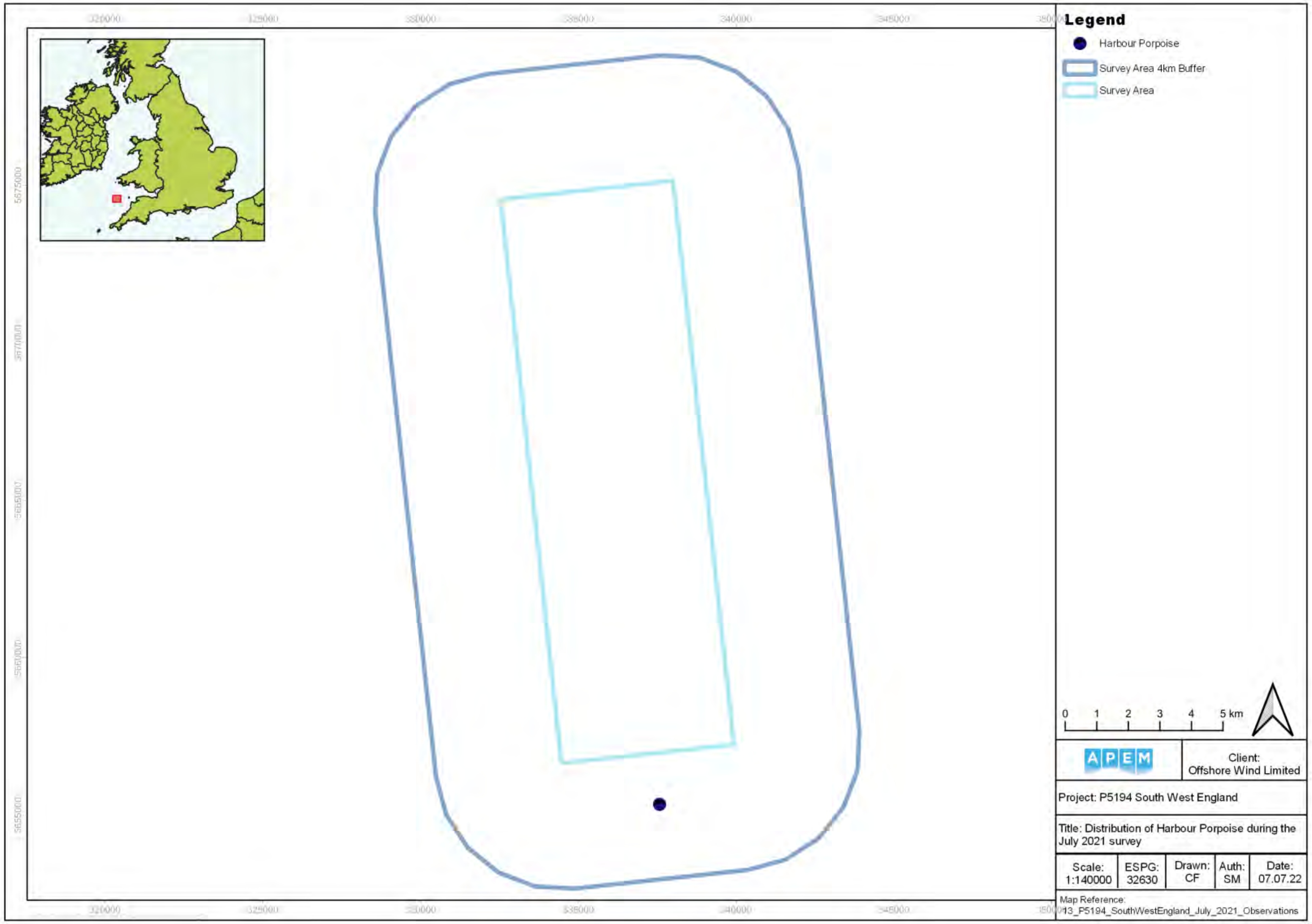


Figure 289 Distribution of harbour porpoises in Survey Area during July 2021

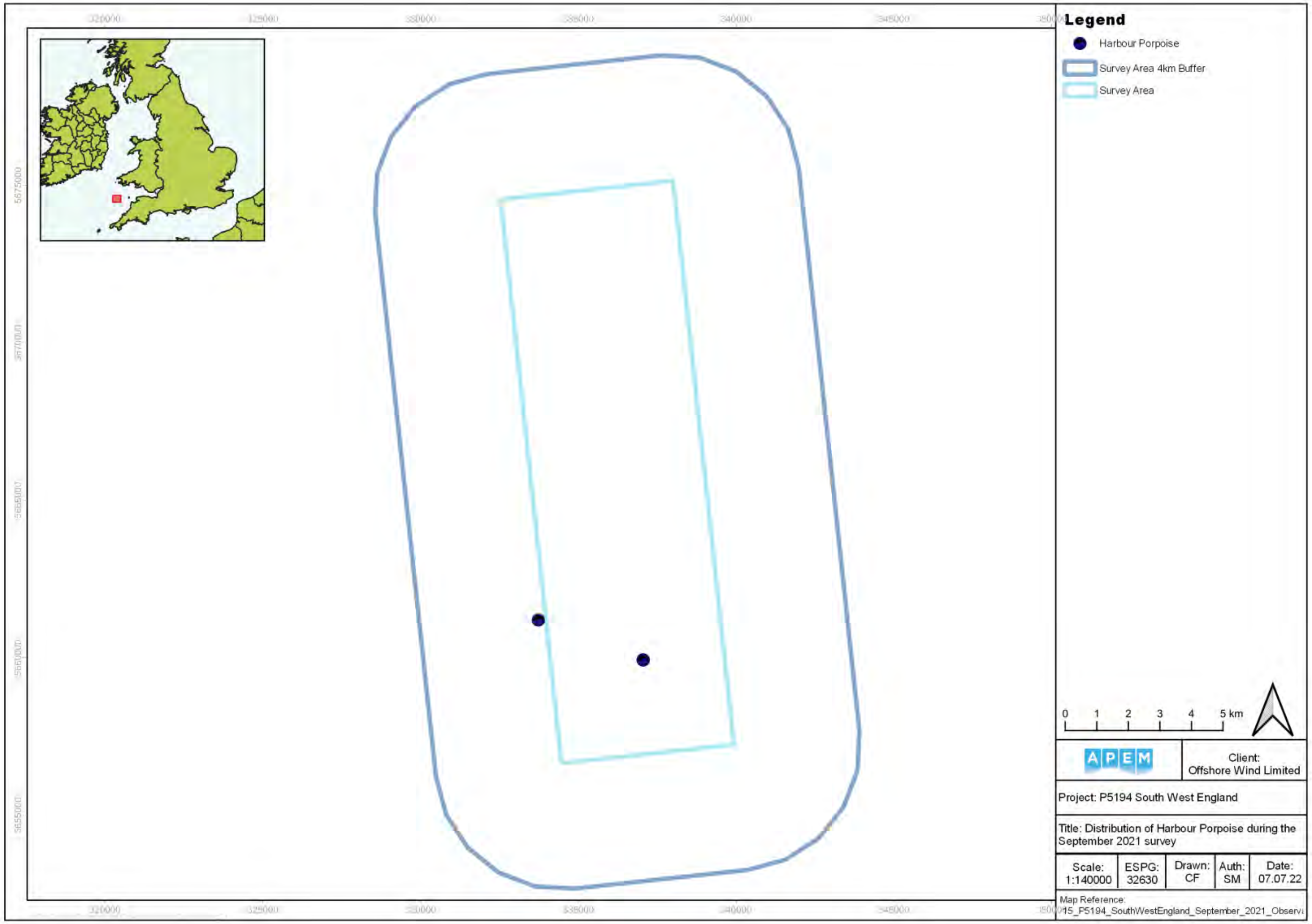


Figure 290 **Distribution of harbour porpoises in Survey Area during September 2021**

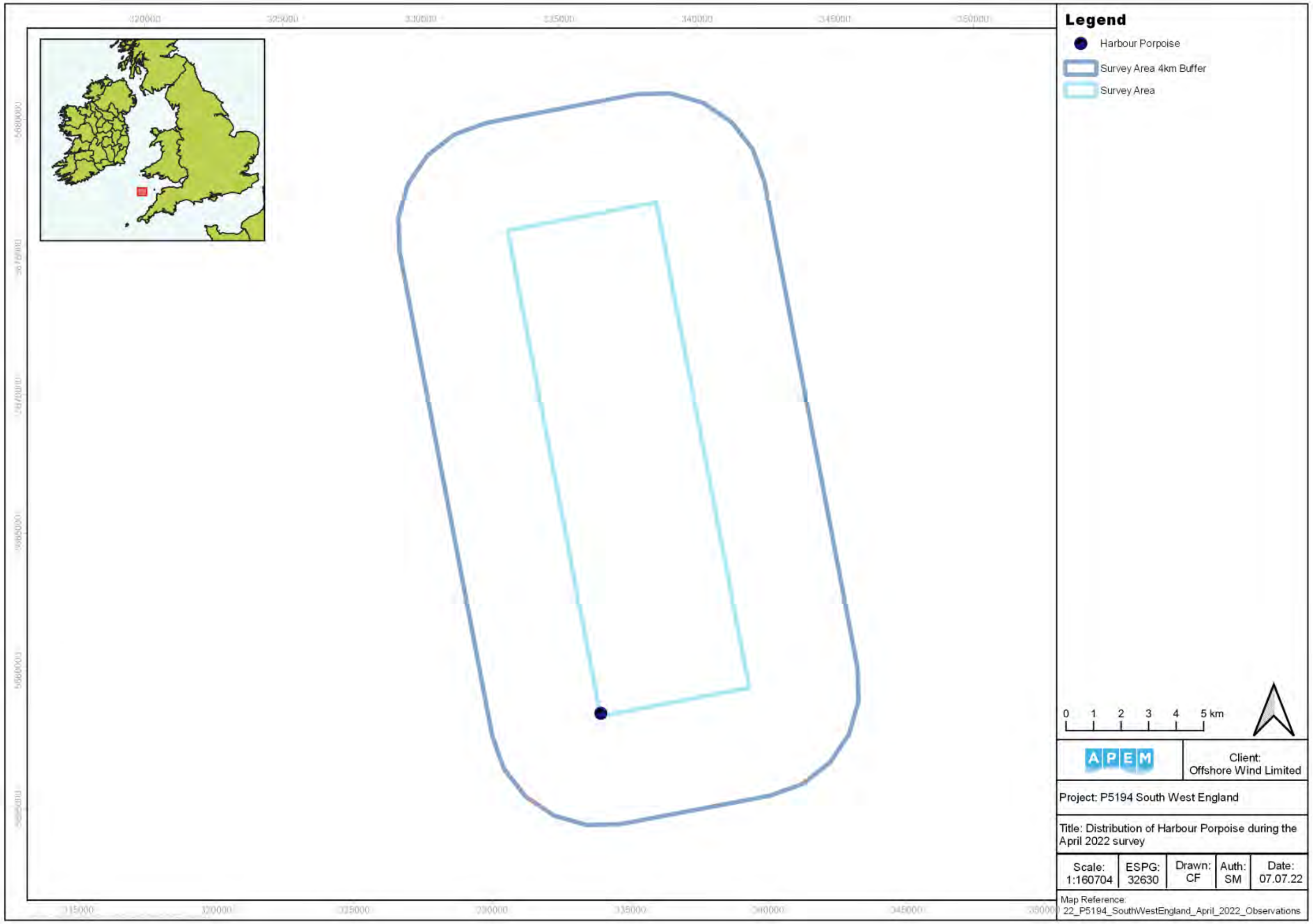


Figure 291 Distribution of harbour porpoises in Survey Area during April 2022

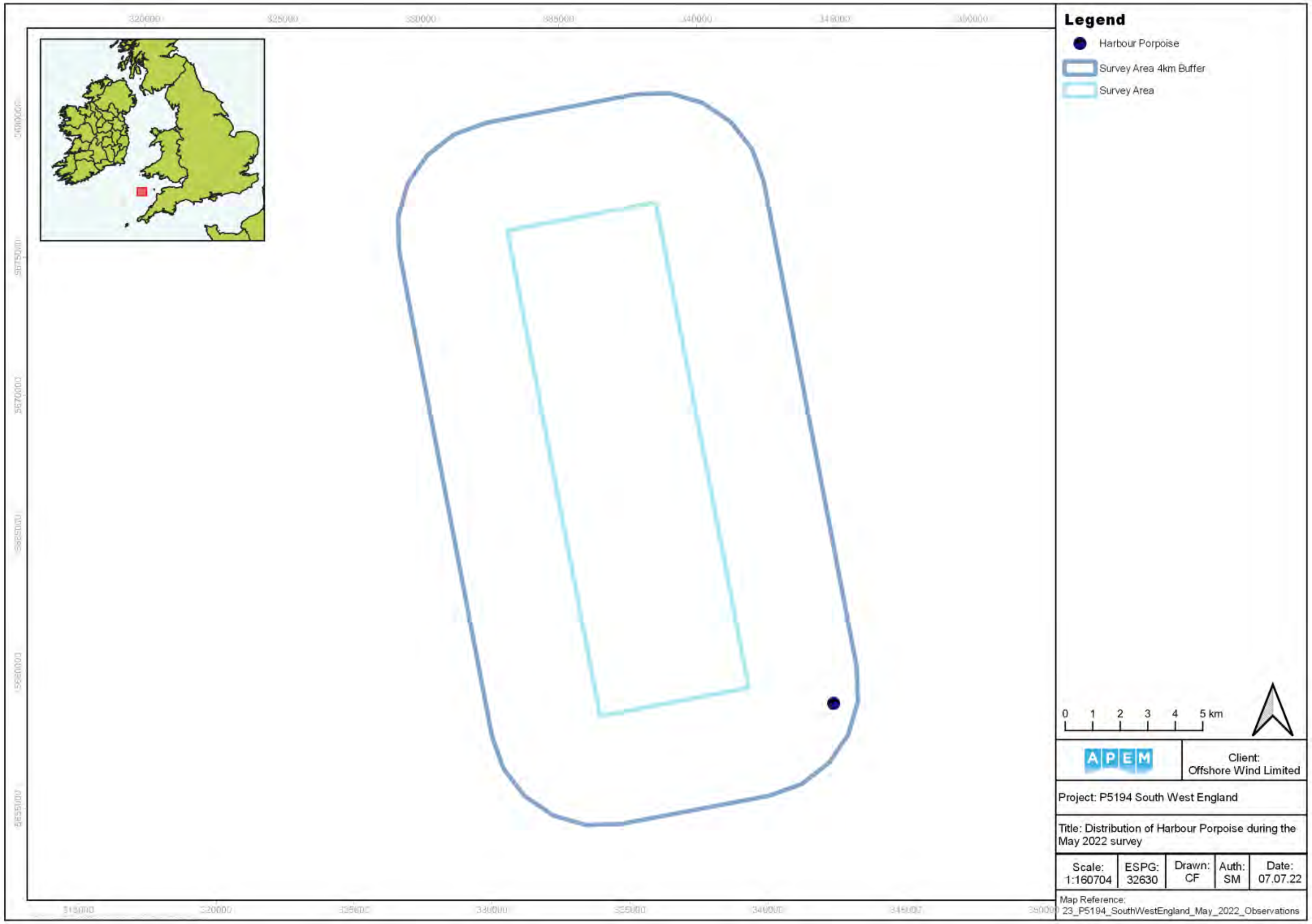


Figure 292 **Distribution of harbour porpoises in Survey Area during May 2022**

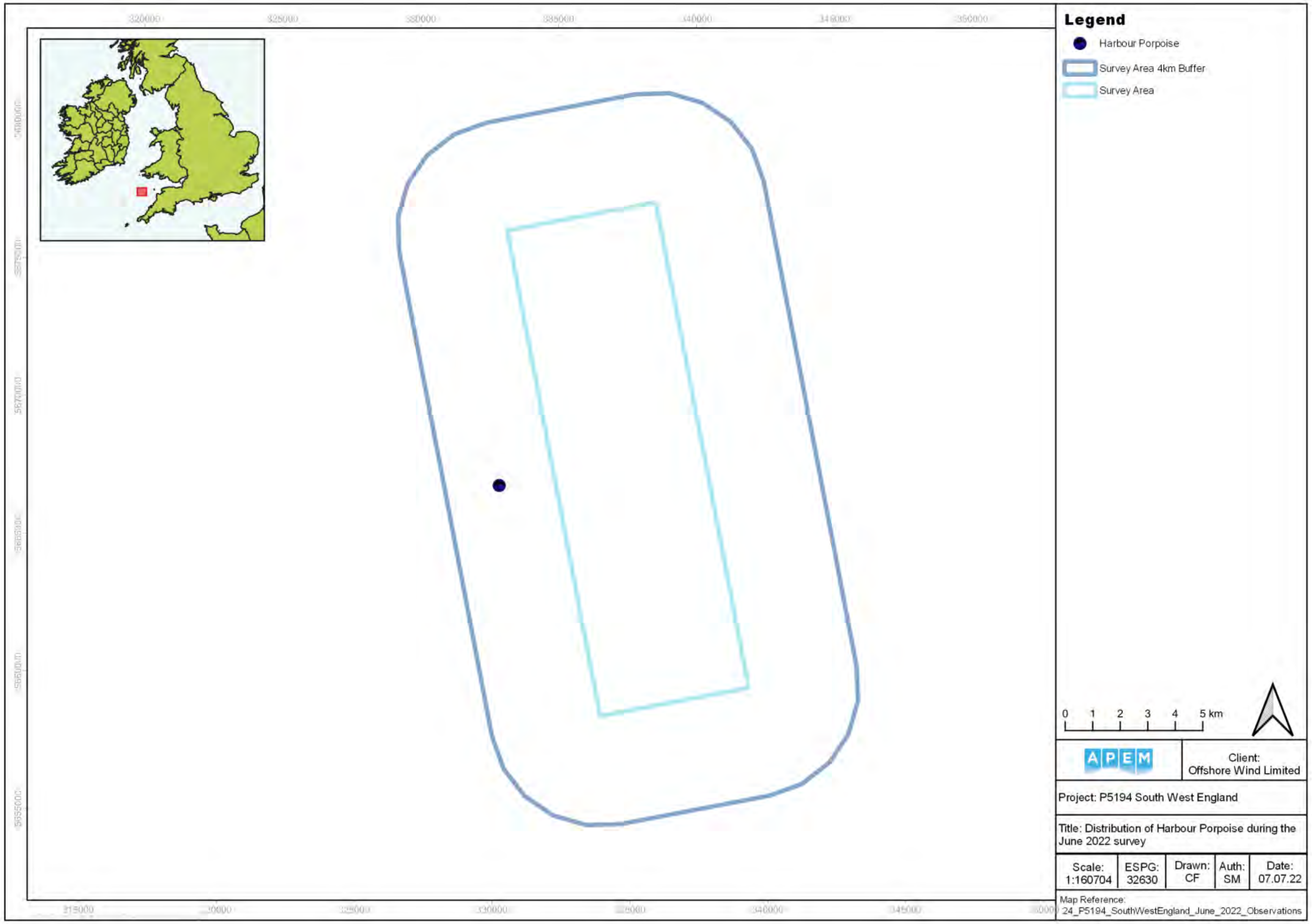


Figure 293 Distribution of harbour porpoises in Survey Area during June 2022

4.33 Dolphin / Porpoise – Unidentified *Delphinoidea*

Marine mammals that could not be identified to species level as either dolphins or porpoises where placed into this category. They were recorded from July to October 2020, from February to May 2021, and in January and February 2022. The peak raw count of 14 in May 2021 resulted in an abundance estimate of 102 for the Survey Area (**Table 38**).

In the Southwest England Site, they were recorded from July to September 2020 as well as in February, May and October 2021. The peak raw count of eight in May 2021 resulted in an abundance estimate of 65 for the area (**Table 38**).

In the 4 km Buffer Zone, the animals were present from July to October 2020, from February to May 2021, in September 2021, and January and February 2022. The peak raw count of 10 in October 2020 resulted in an abundance estimate of 74 for the area (**Table 38**).

They were loosely distributed in the Survey Area for the majority of surveys, with the exception of October 2020 when 10 individuals were grouped closely together in the east of the Survey Area (**Figure 297**), and March 2021, when three individuals were in the west (**Figure 299**). During July 2020, the animals were located in the south-east of the Survey Area (**Figure 294**). In August 2020 they were in the south, east, and north-east, while in September 2020 they were spread across the central and north-western regions (**Figure 295**; **Figure 296**).

In February 2021, there were two mammals in the north and south-west of the Survey Area (**Figure 298**). Two were also seen in the north and north-west of the Buffer during April 2021 (**Figure 300**). Dolphins / porpoises recorded in May 2021 were loosely distributed across the centre, north, northwest, and southeast of the Survey Area (**Figure 301**). During September 2021, there was one individual in the Buffer's south (**Figure 302**), and in October 2021, in the northeast of the Southwest England Site (**Figure 303**). In January 2022, a single animal was observed in the south-west of the Buffer (**Figure 304**), and similarly in February 2022, but this time just outside the Buffer in the east of the Southwest England Site (**Figure 305**).

Table 38 **Raw counts and abundance and density estimates (individuals per km^2) of dolphin and / or porpoise in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone**

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	6	46	15	85	0.41	0.14
Aug-20	10	76	15	167	0.32	0.23
Sep-20	8	63	8	149	0.35	0.19
Oct-20	10	77	10	230	0.32	0.23
Feb-21	2	15	2	38	0.71	0.04
Mar-21	3	23	3	69	0.58	0.07
Apr-21	2	15	2	38	0.71	0.04
May-21	14	102	36	182	0.27	0.30
Sep-21	2	15	2	60	0.71	0.04
Oct-21	1	8	1	23	1.00	0.02

Jan-22	2	15	2	46	0.71	0.04
Feb-22	3	23	3	69	0.58	0.07
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	3	26	3	60	0.58	0.26
Aug-20	7	58	7	159	0.38	0.59
Sep-20	3	26	3	61	0.58	0.26
Feb-21	1	9	1	26	1.00	0.09
May-21	8	65	8	130	0.35	0.66
Oct-21	1	9	1	26	1.00	0.090
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-20	3	22	3	52	0.58	0.09
Aug-20	3	22	3	51	0.58	0.09
Sep-20	5	38	5	113	0.45	0.16
Oct-20	10	74	10	221	0.32	0.31
Feb-21	1	7	1	22	1.00	0.03
Mar-21	3	22	3	88	0.58	0.09
Apr-21	2	15	2	37	0.71	0.06
May-21	6	42	7	84	0.41	0.18
Sep-21	2	15	2	44	0.71	0.06
Jan-22	2	15	2	44	0.71	0.06
Feb-22	3	22	3	66	0.58	0.09

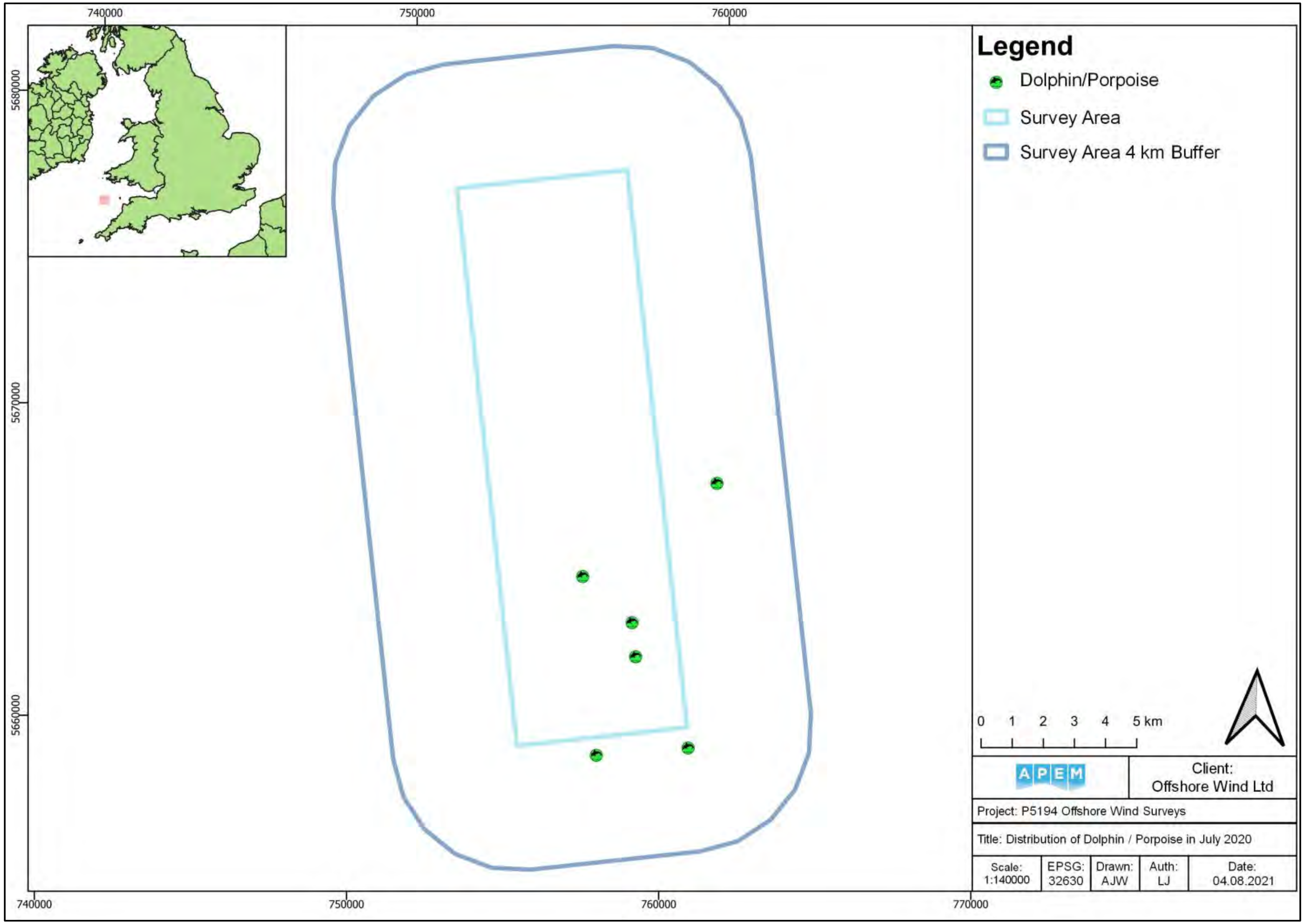


Figure 294 Distribution of dolphins / porpoises in Survey Area during July 2020

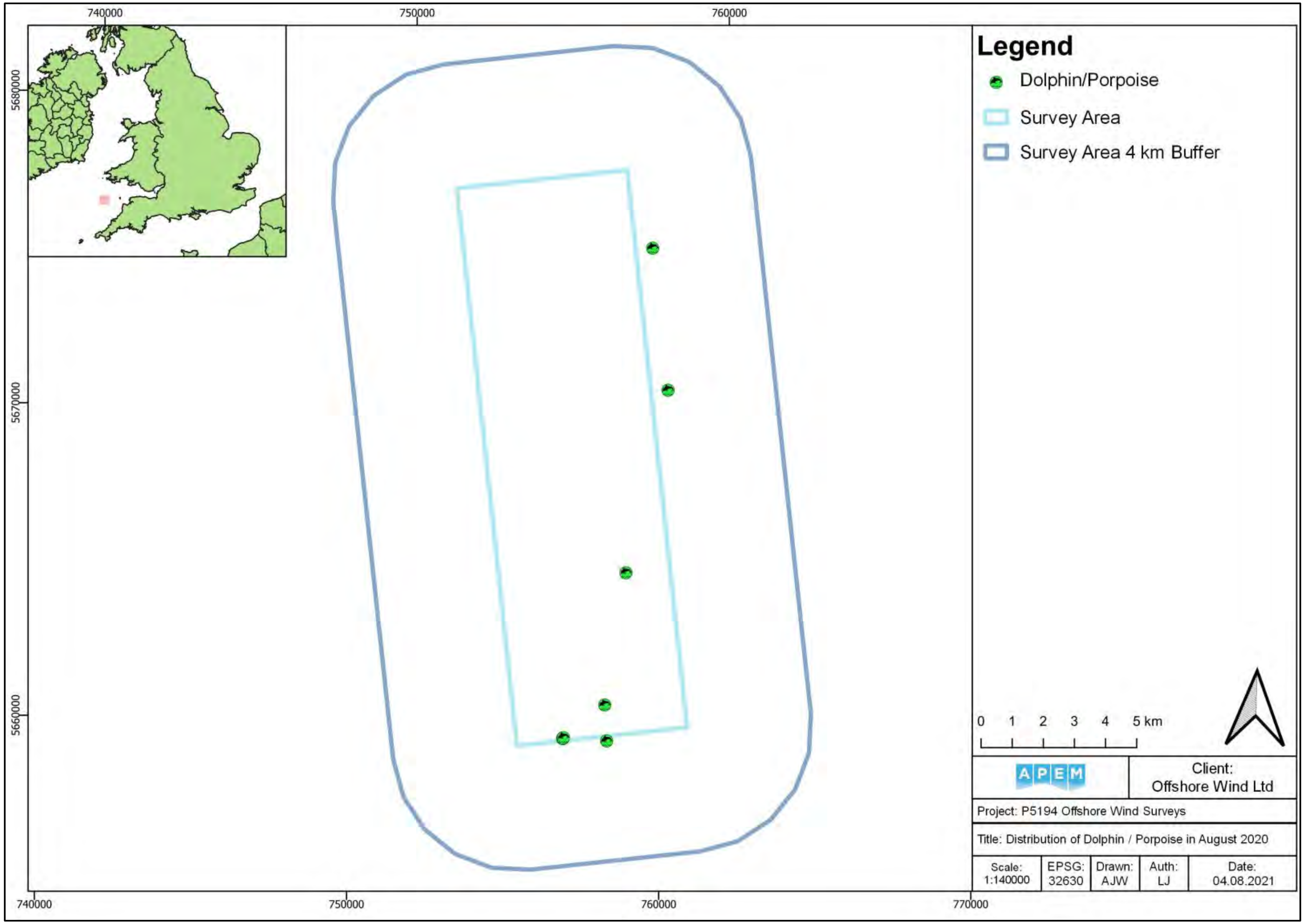


Figure 295 Distribution of dolphins / porpoises Survey Area during August 2020

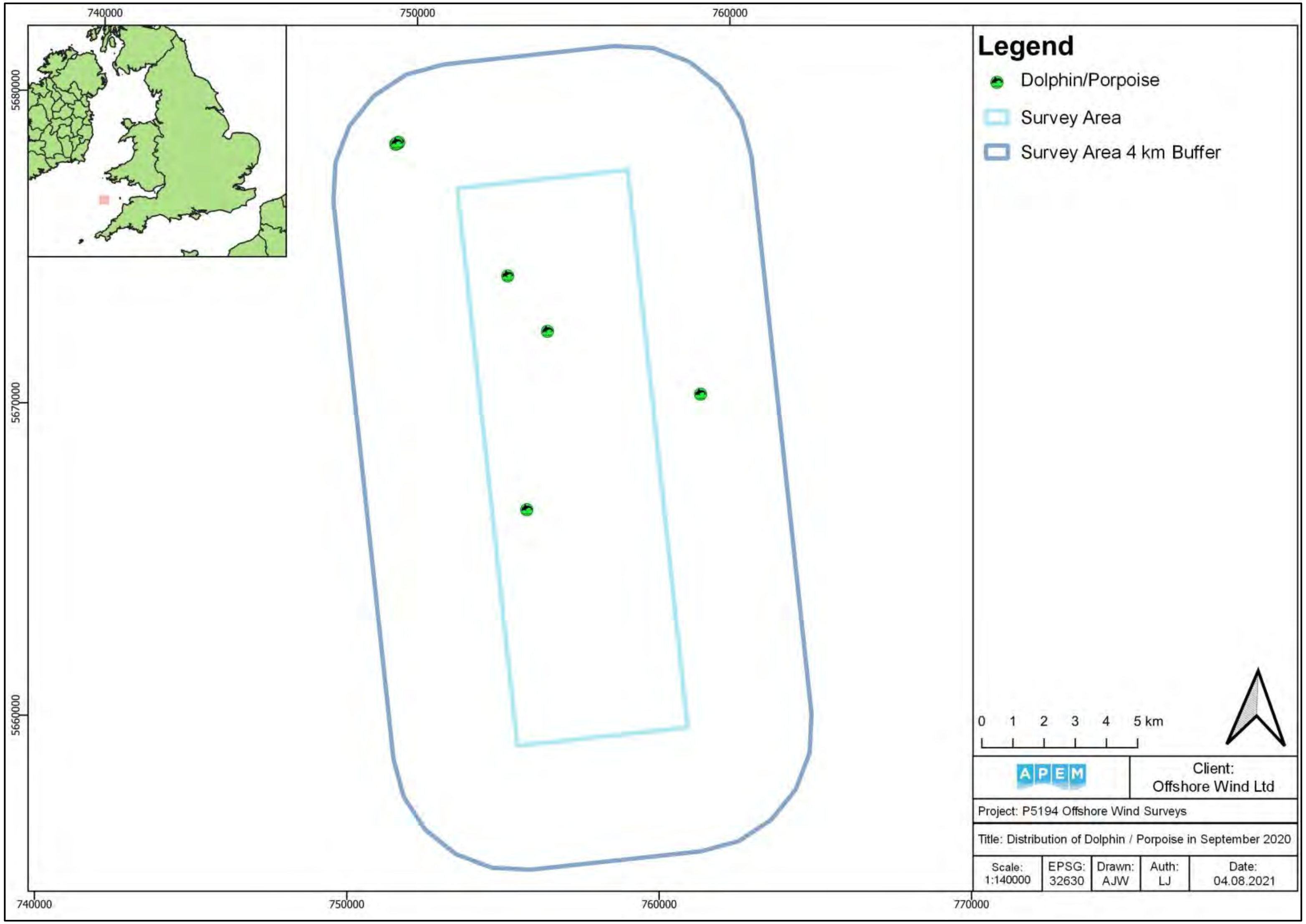


Figure 296 Distribution of dolphins / porpoises in Survey Area during September 2020

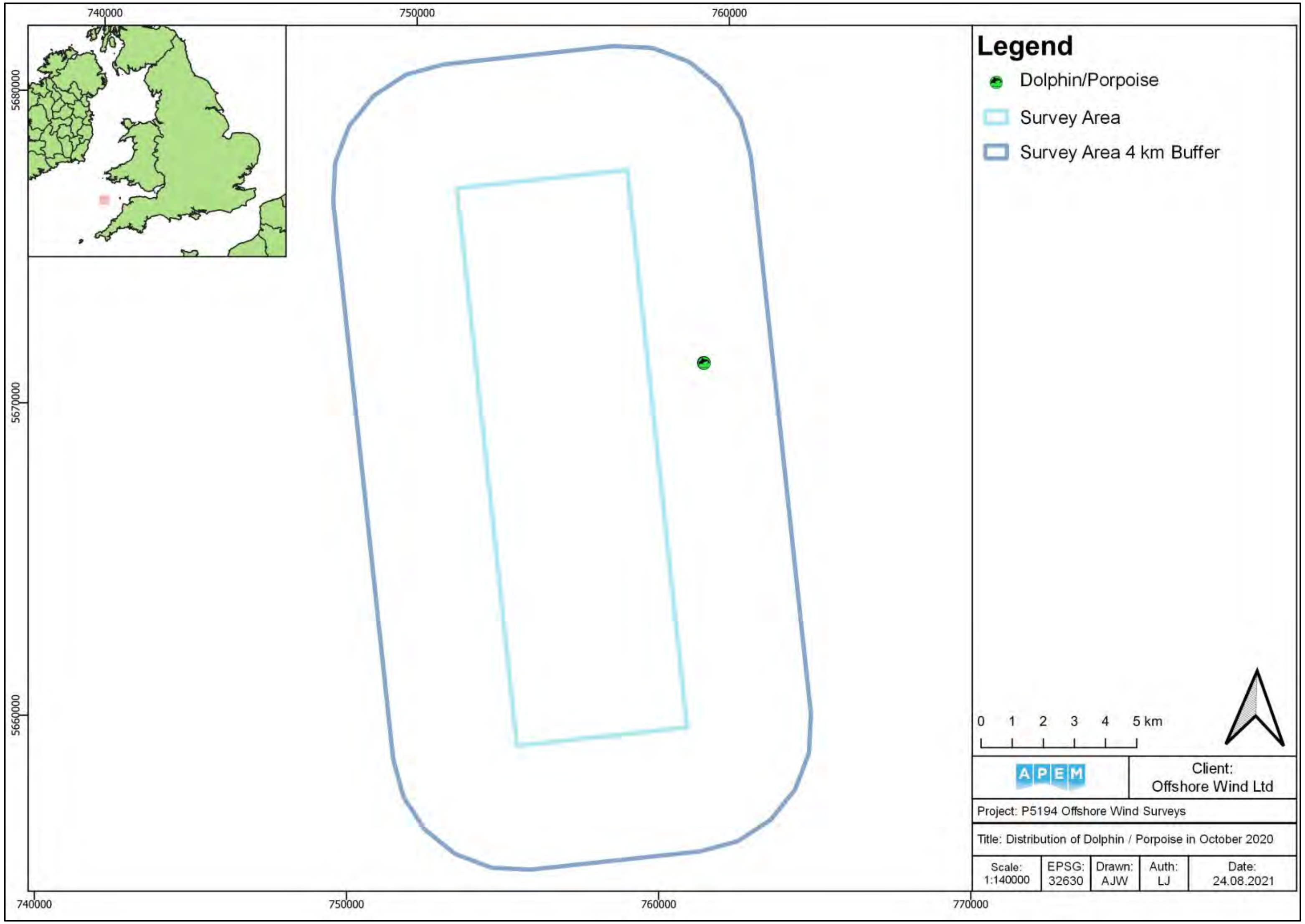


Figure 297 Distribution of dolphins / porpoises in Survey Area during October 2020

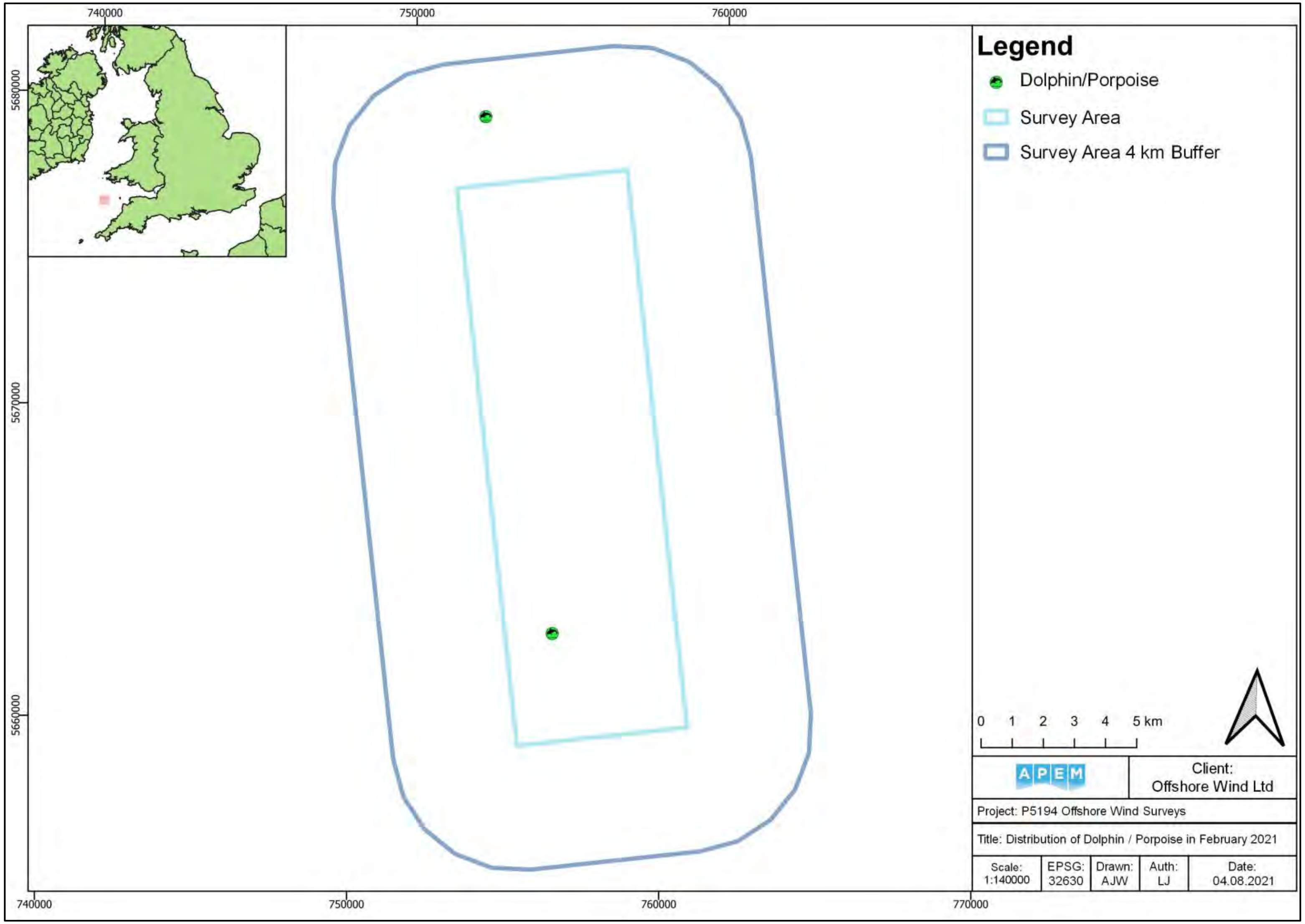


Figure 298 Distribution of dolphins / porpoises in Survey Area during February 2021

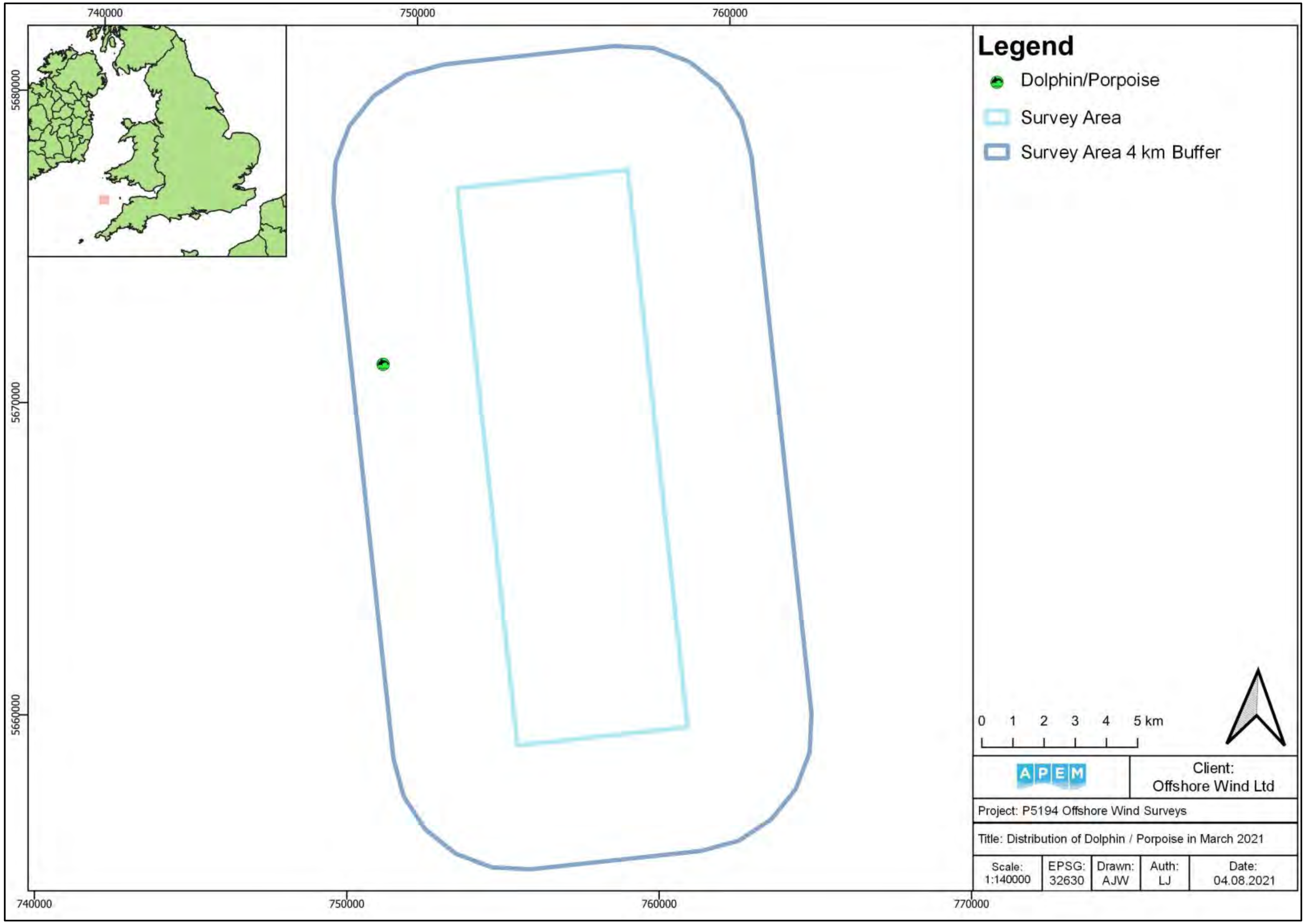


Figure 299 Distribution of dolphins / porpoises in Survey Area during March 2021

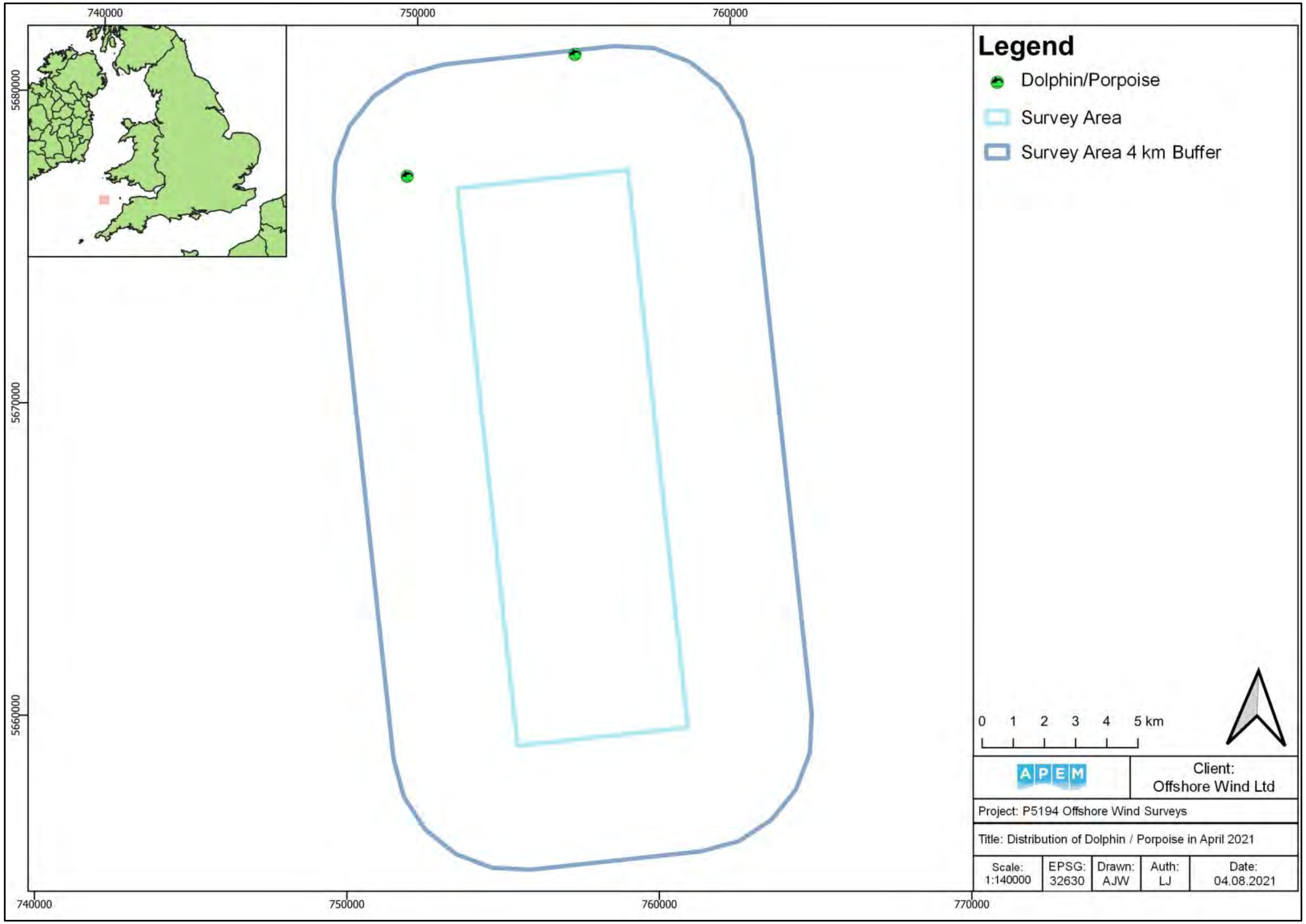


Figure 300 Distribution of dolphins / porpoises in Survey Area during April 2021

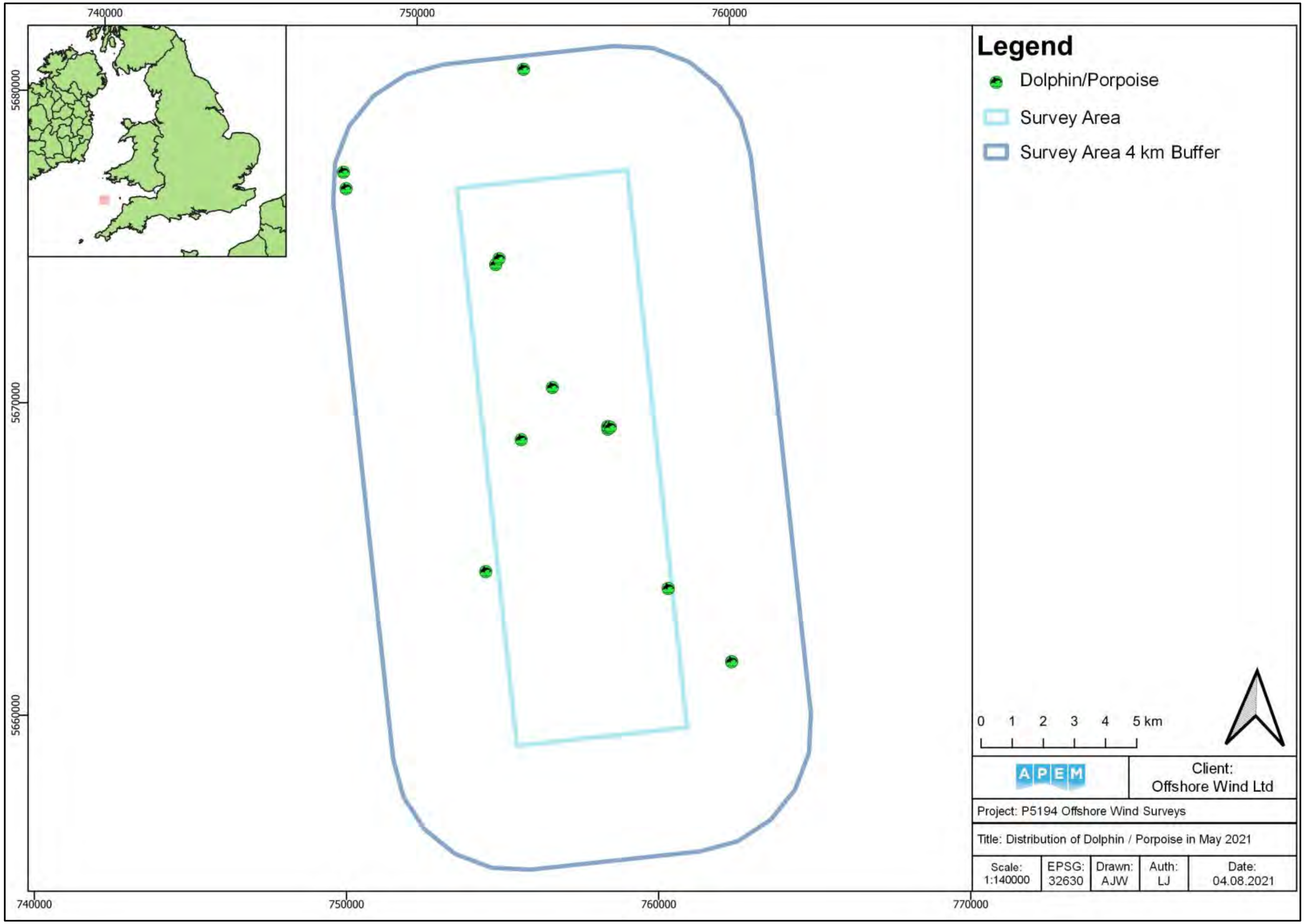


Figure 301 Distribution of dolphins / porpoises in Survey Area during May 2021

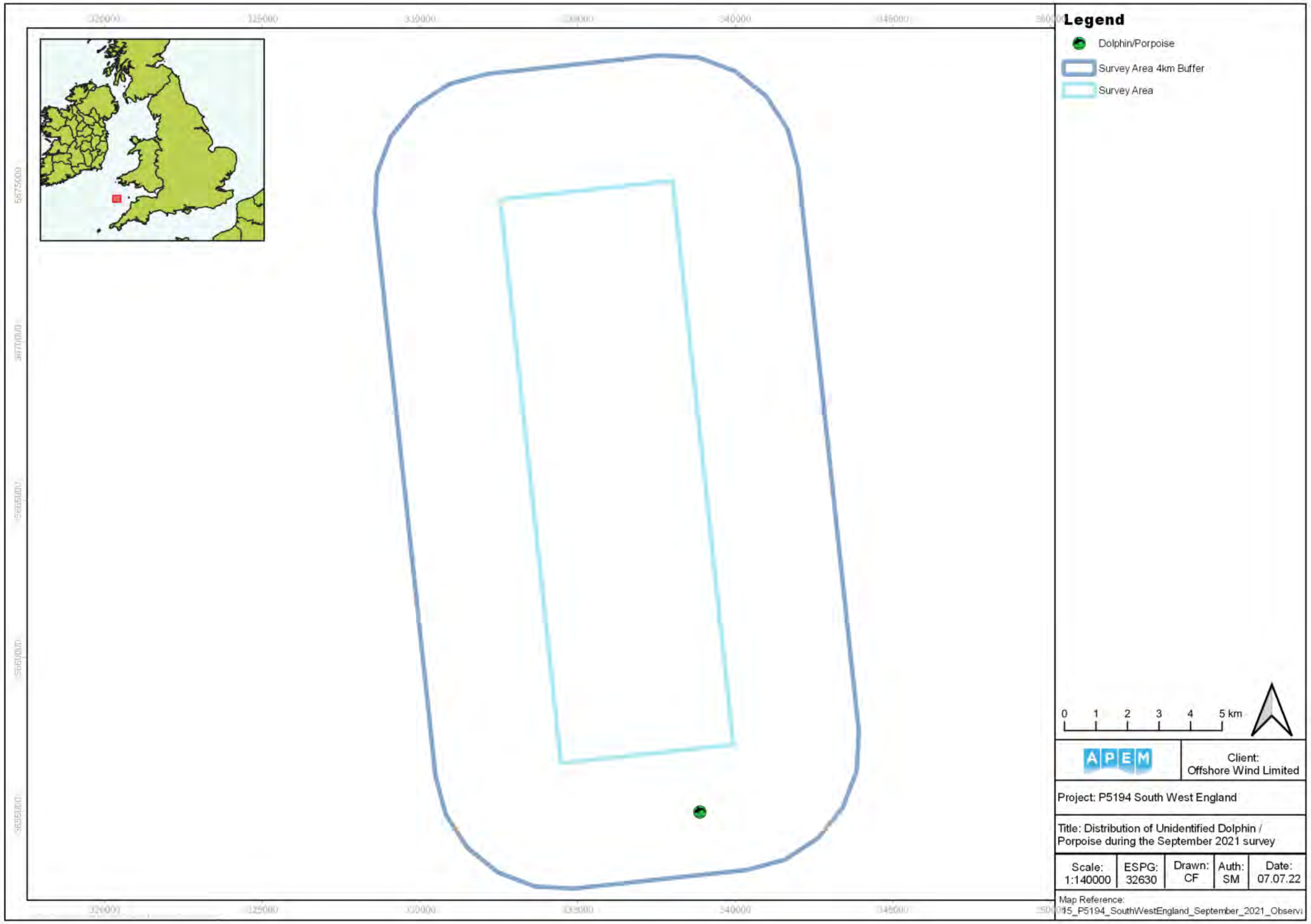


Figure 302 Distribution of dolphins / porpoises in Survey Area during September 2021

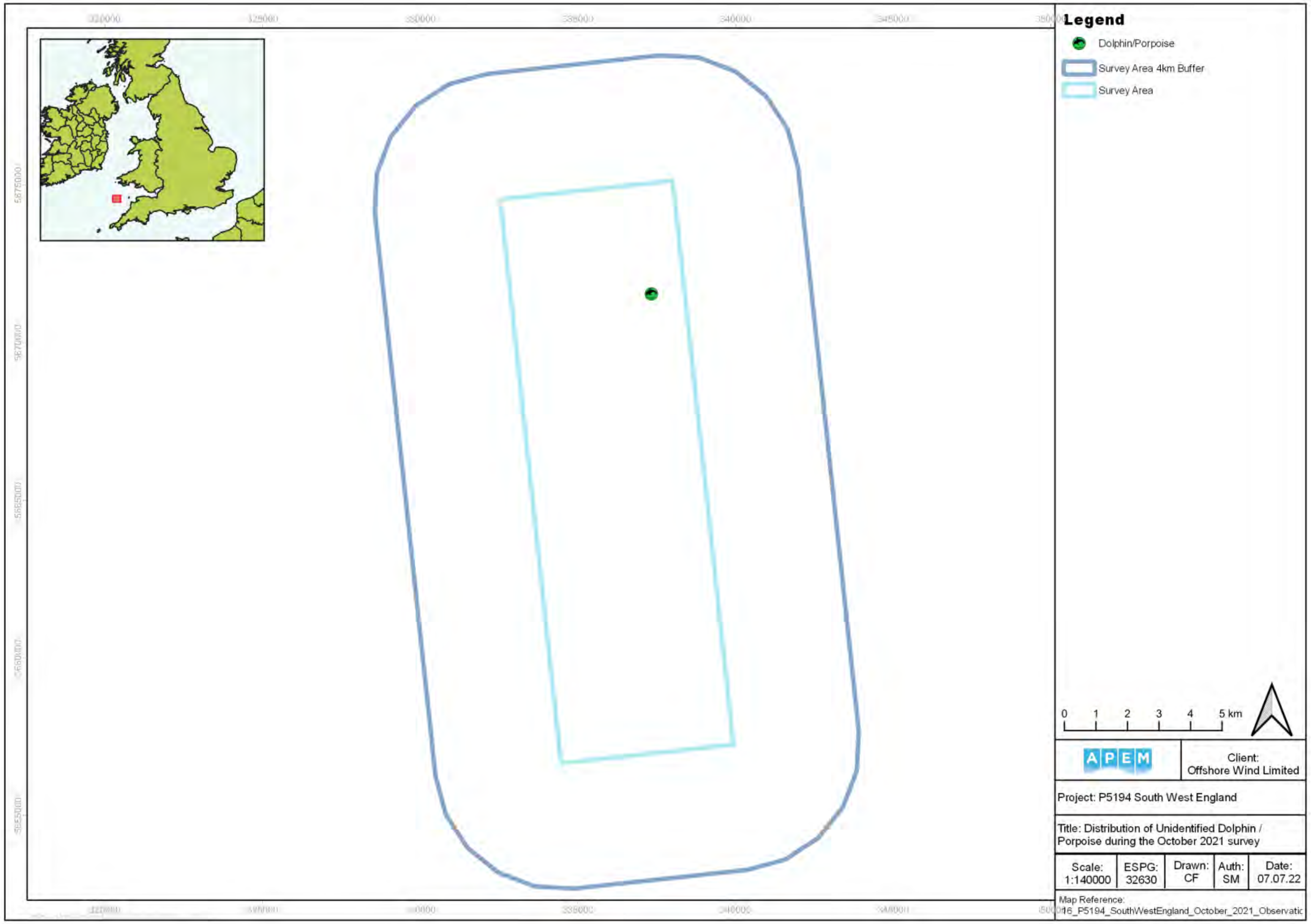


Figure 303 Distribution of dolphins / porpoises in Survey Area during October 2021

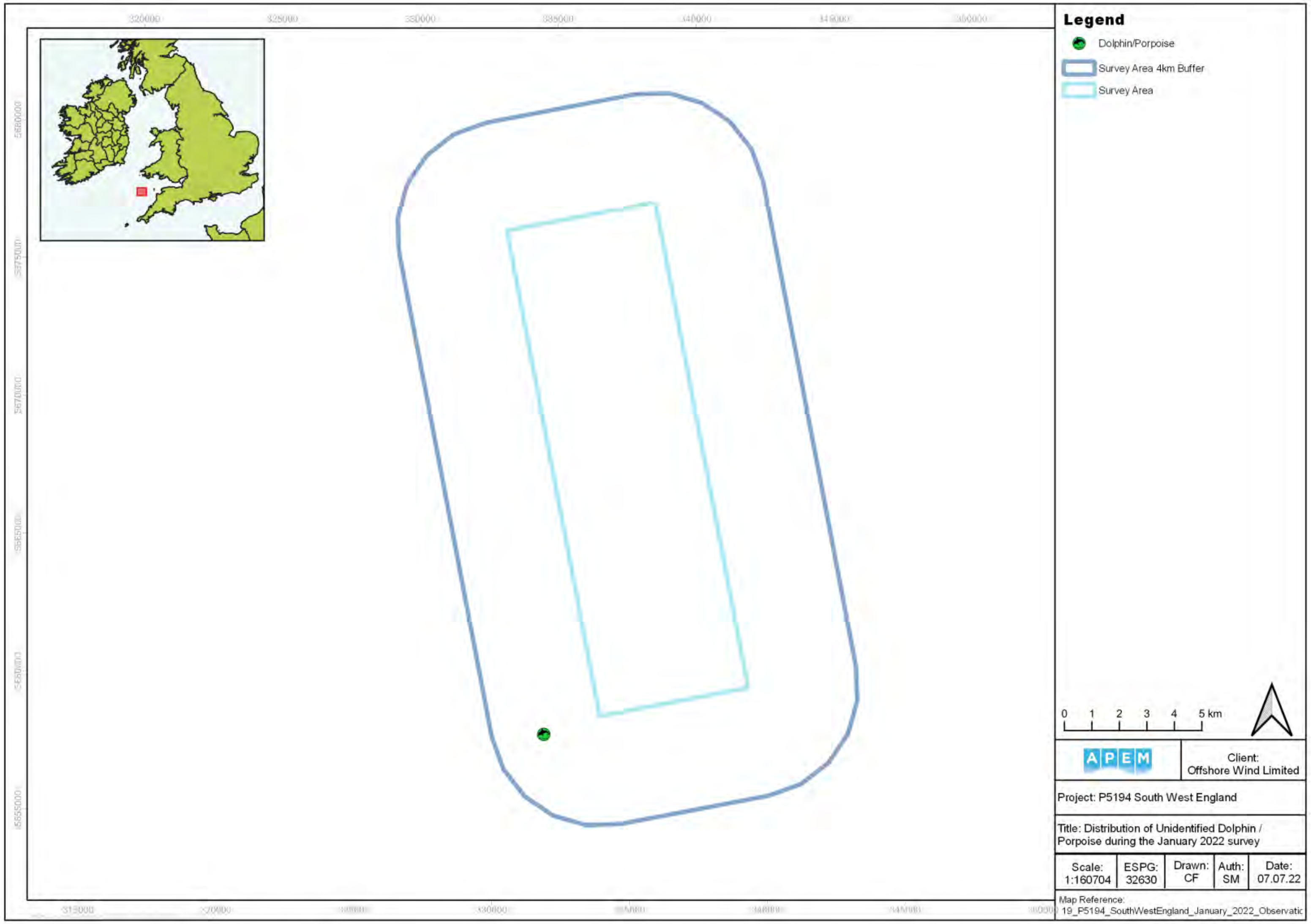


Figure 304 **Distribution of dolphins / porpoises in Survey Area during January 2022**

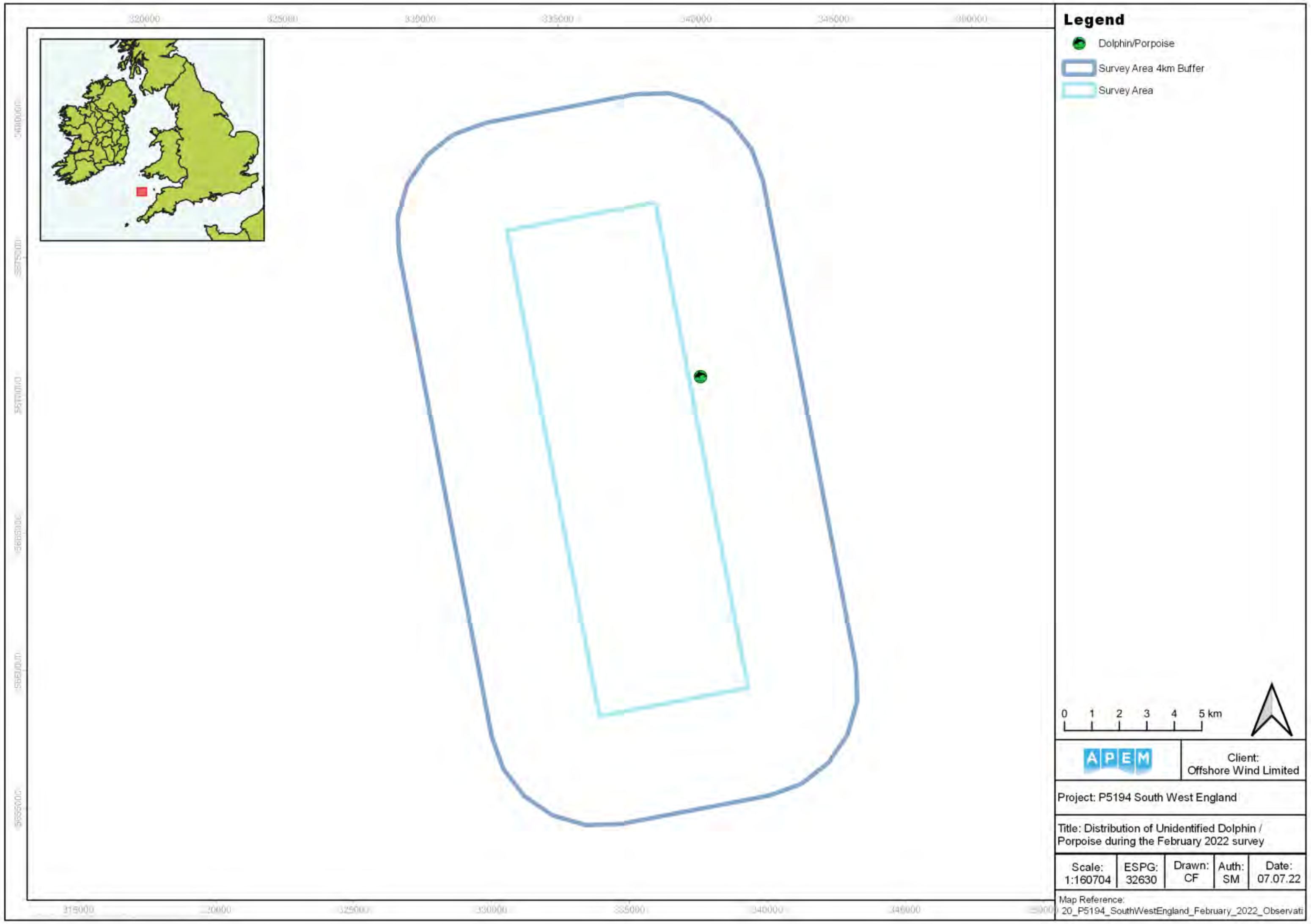


Figure 305 Distribution of dolphins / porpoises in Survey Area during February 2022

4.34 Unidentified Marine Mammals

Single unidentified marine mammals were recorded in the Buffer Zone within the Survey Area in July 2021 and February 2022. This resulted in an abundance estimate of eight for both surveys (**Table 39**).

In July, the animal was in the east of the Buffer (Figure **306**), while in February it was on the northwest (**Figure 307**).

Table 39 Raw counts and abundance and density estimates (individuals per km^2) of marine mammals in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-21	1	8	1	23	1.00	0.02
Feb-22	1	8	1	31	1.00	0.02
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
None recorded						
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jul-21	1	7	1	22	1.00	0.03
Feb-22	1	7	1	22	1.00	0.03

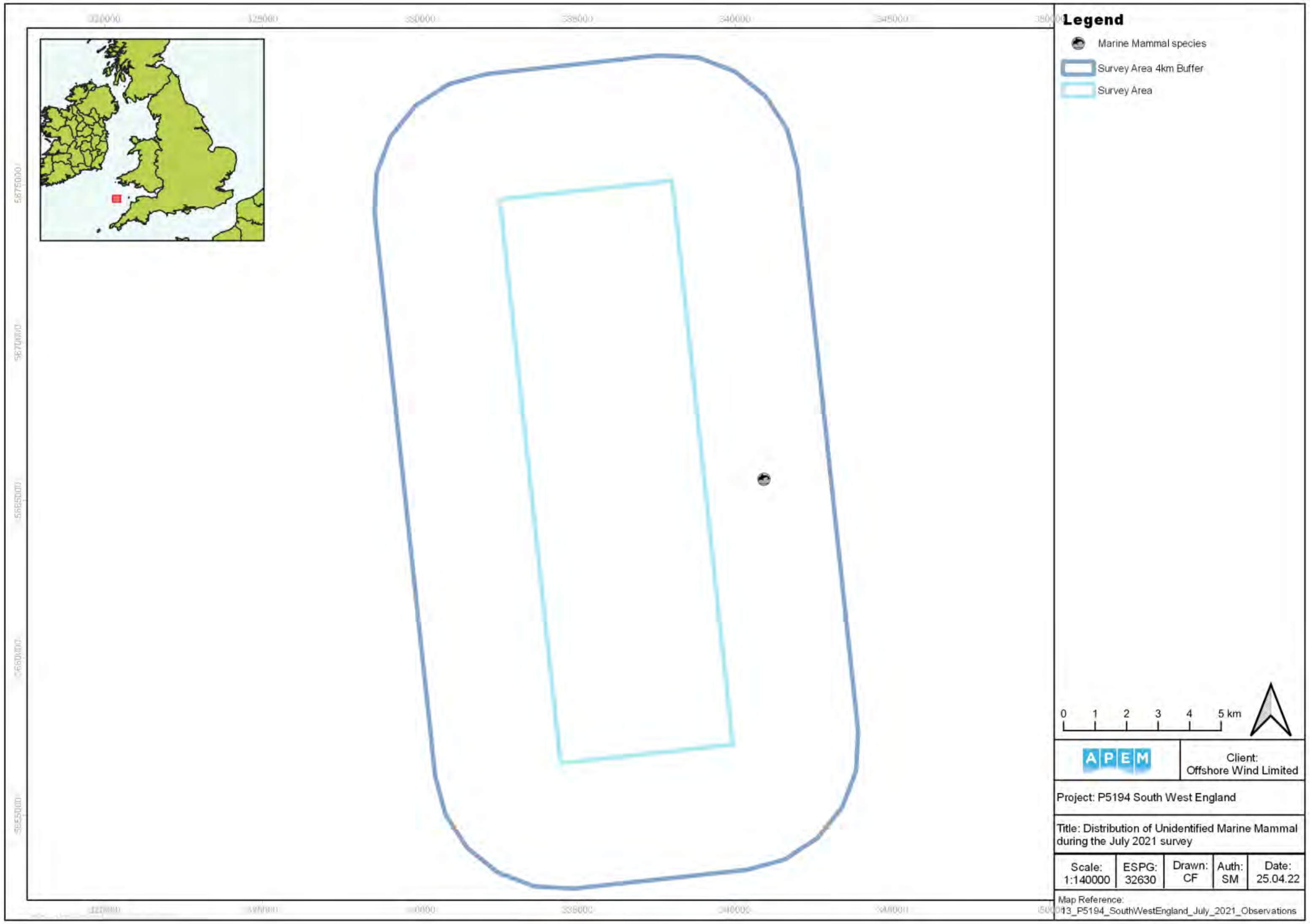


Figure 306 Distribution of marine mammals in Survey Area during July 2021

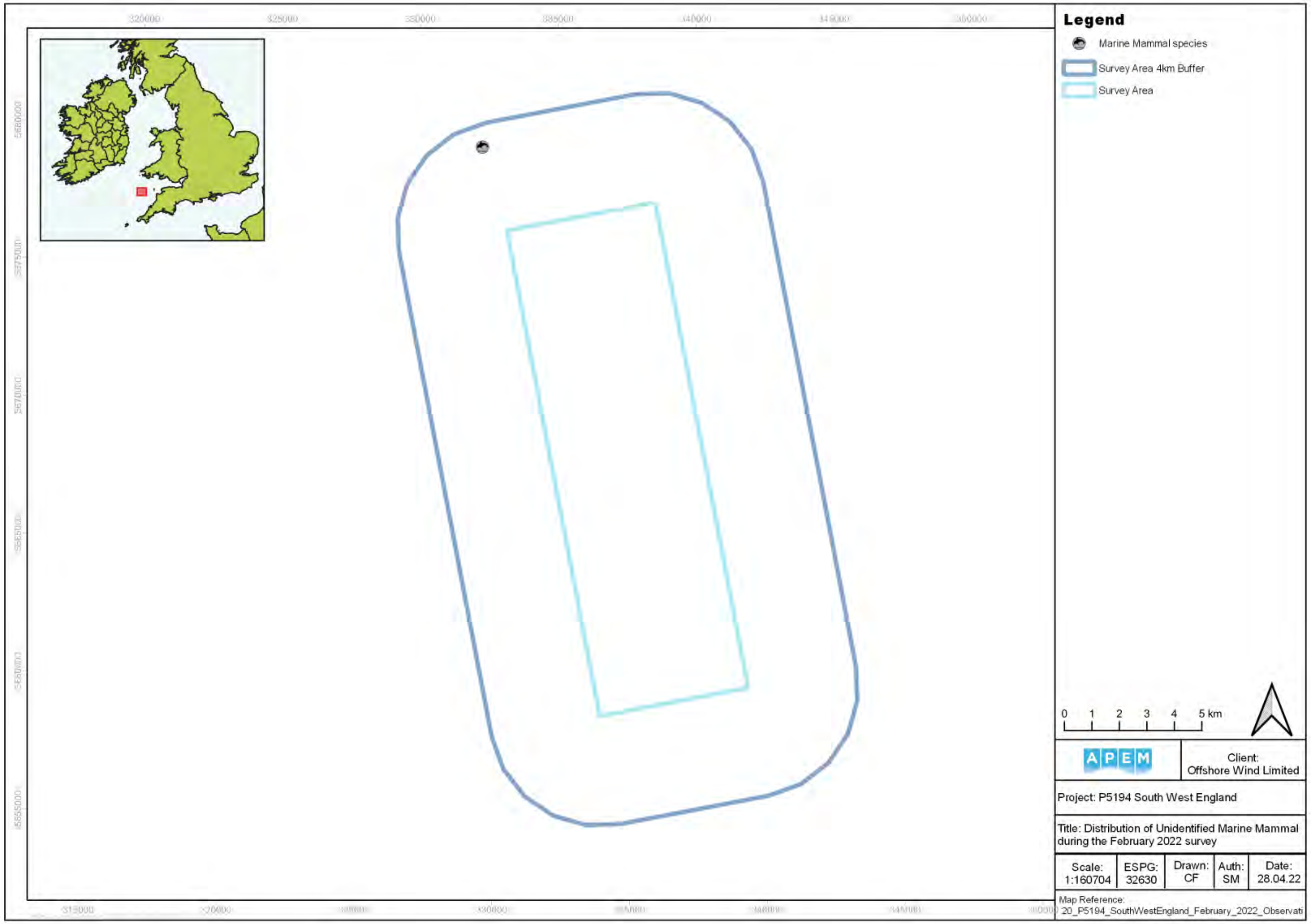


Figure 307 Distribution of marine mammals in Survey Area during February 2022

4.35 Basking Shark – *Cetorhinus maximus*

A single basking shark was recorded in January 2021, resulting in an abundance estimate of nine for the Southwest England Site (**Table 40**). The individual was located in the centre of the Southwest England Site (**Figure 308**).

Table 40 Raw counts and abundance and density estimates (individuals per km^2) of basking sharks in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jan-21	1	8	1	24	1.00	0.02
b) Southwest England Site						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
Jan-21	1	9	1	26	1.00	0.09
c) 4 km Buffer Zone						
Survey	Raw Count	Abundance	Lower CI	Upper CI	Precision	Density
None recorded.						

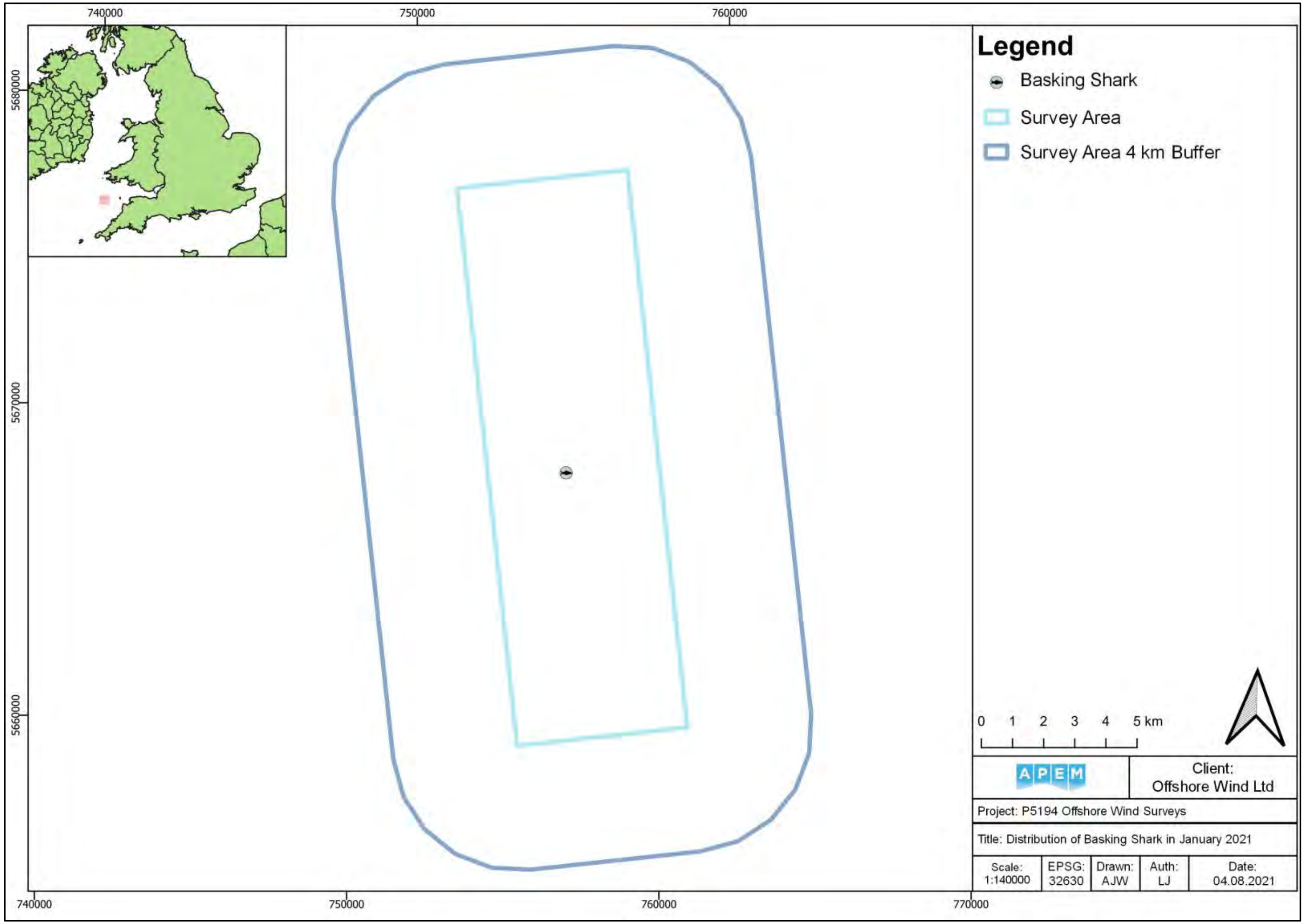


Figure 308 Distribution of basking sharks in Survey Area during January 2021

4.36 Ocean Sunfish – *Mola mola*

Single ocean sunfish were recorded in June, July and October 2021, resulting in an abundance estimate of eight for the Survey Area and 4 km Buffer Zone. (**Table 41**).

It was in the southwest of the Buffer in June and July (**Figure 309**; **Figure 310**), and the south-east area during October. (**Figure 311**).

Table 41 Raw counts and abundance and density estimates (individuals per km^2) of ocean sunfish in: a) Survey Area b) Southwest England Site and c) 4 km Buffer Zone

a) Survey Area						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jun-21	1	8	1	24	1.00	0.02
Jul-21	1	8	1	31	1.00	0.02
Oct-21	1	8	1	23	1.00	0.02
b) Southwest England Site						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
None recorded.						
c) 4 km Buffer Zone						
Survey	**Raw Count**	**Abundance**	**Lower CI**	**Upper CI**	**Precision**	**Density**
Jun-21	1	8	1	23	1.00	0.03
Jul-21	1	7	1	22	1.00	0.03
Oct-21	1	7	1	22	1.00	0.03

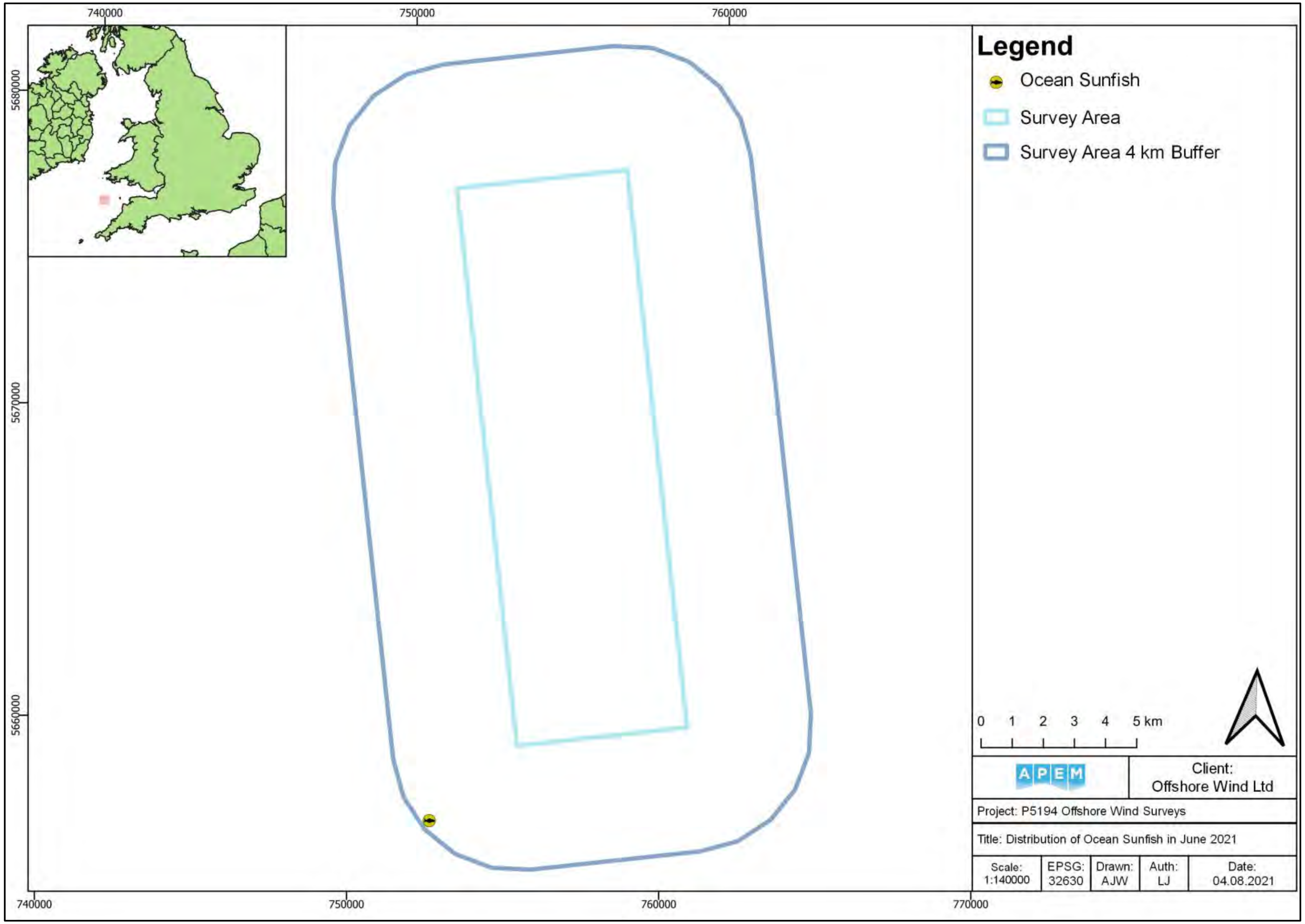


Figure 309 Distribution of ocean sunfish in Survey Area during June 2021

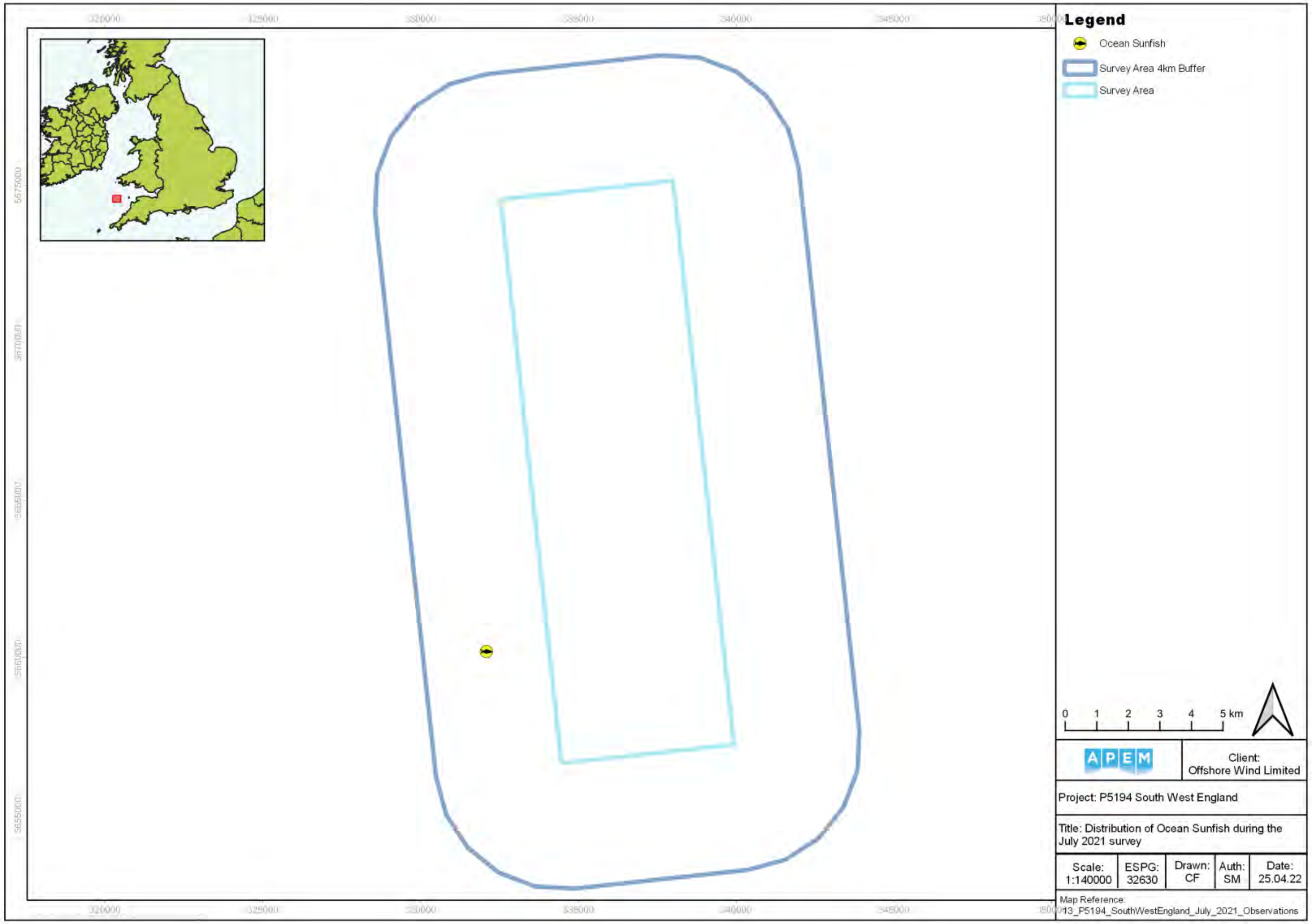


Figure 310 Distribution of ocean sunfish in Survey Area during July 2021

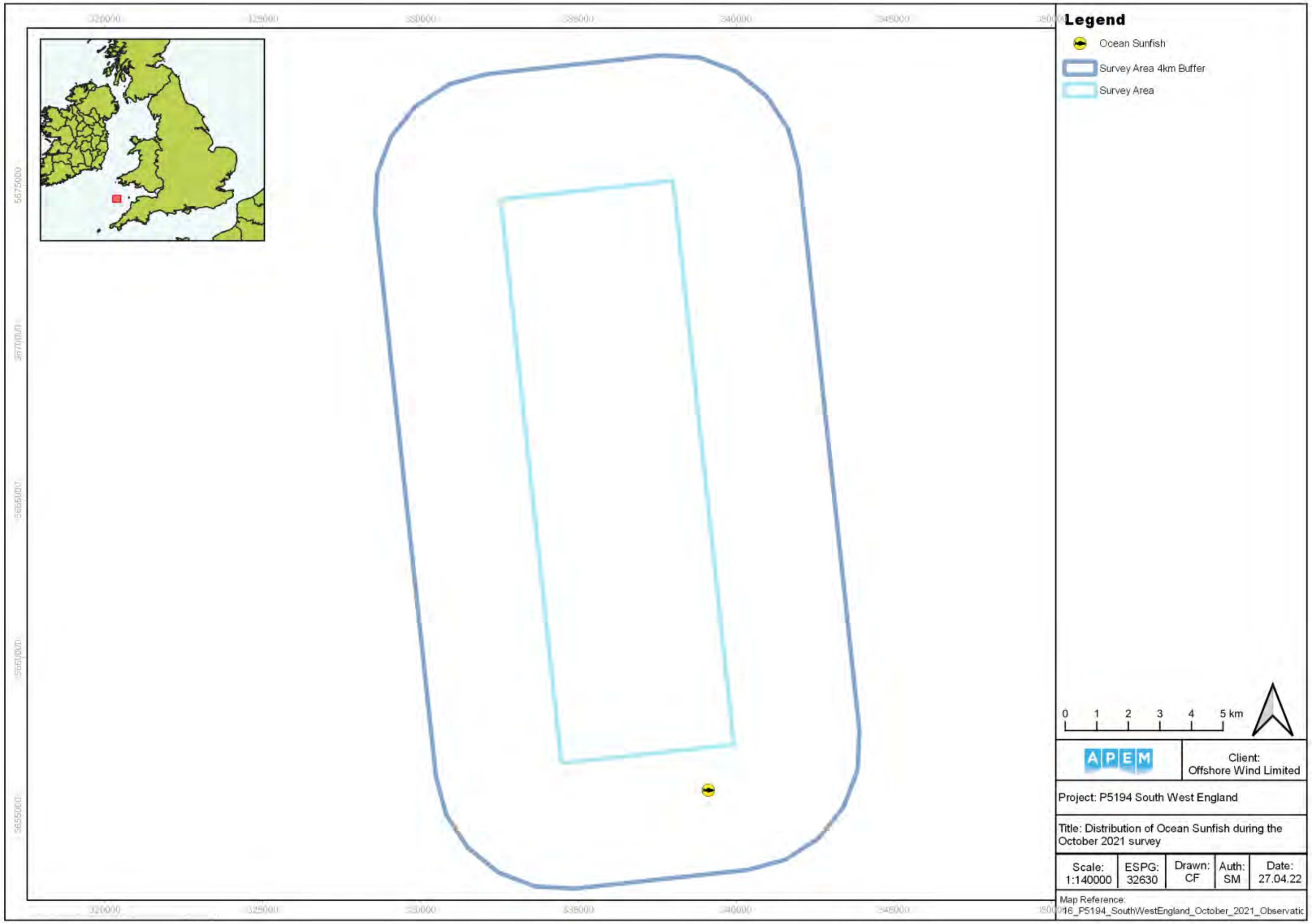


Figure 311 Distribution of ocean sunfish in Survey Area during October 2021

5. Avian Flight Heights

Of the 3,557 birds imaged in flight during Year One, the first twelve surveys, 937 were deemed suitable for flight height estimate (26%; **Table 42**, **Figure 312**). These are recorded as height above mean sea level (MSL).

Year One

205 kittiwakes were deemed suitable for flight height determination, resulting in a median altitude of 34 m relative to MSL (**Figure 312**; **Table 42**).

2 great black-backed gulls were deemed suitable for flight height determination, resulting in a median altitude of 4 m relative to MSL (**Figure 312**; **Table 42**).

2 herring gulls were deemed suitable for flight height determination, resulting in a median altitude of 48 m relative to MSL (**Table 42**).

2 lesser black-backed gulls were deemed suitable for flight height determination, resulting in a median altitude of 64 m relative to MSL (**Table 42**).

1 'commic' tern was deemed suitable for flight height determination, with an altitude of 16 m relative to MSL (**Figure 312**; **Table 42**).

153 guillemots were deemed suitable for flight height determination, resulting in a median altitude of 79 m relative to MSL (**Figure 312**; **Table 42**).

4 fulmars were deemed suitable for flight height determination, resulting in a median altitude of 5 m relative to MSL (**Figure 312**; **Table 42**).

502 Manx shearwaters were deemed suitable for flight height determination, resulting in a median altitude of 73 m relative to MSL (**Figure 312**; **Table 42**).

65 gannets were deemed suitable for flight height determination, resulting in a median altitude of 10 m relative to MSL (**Figure 312**; **Table 42**).

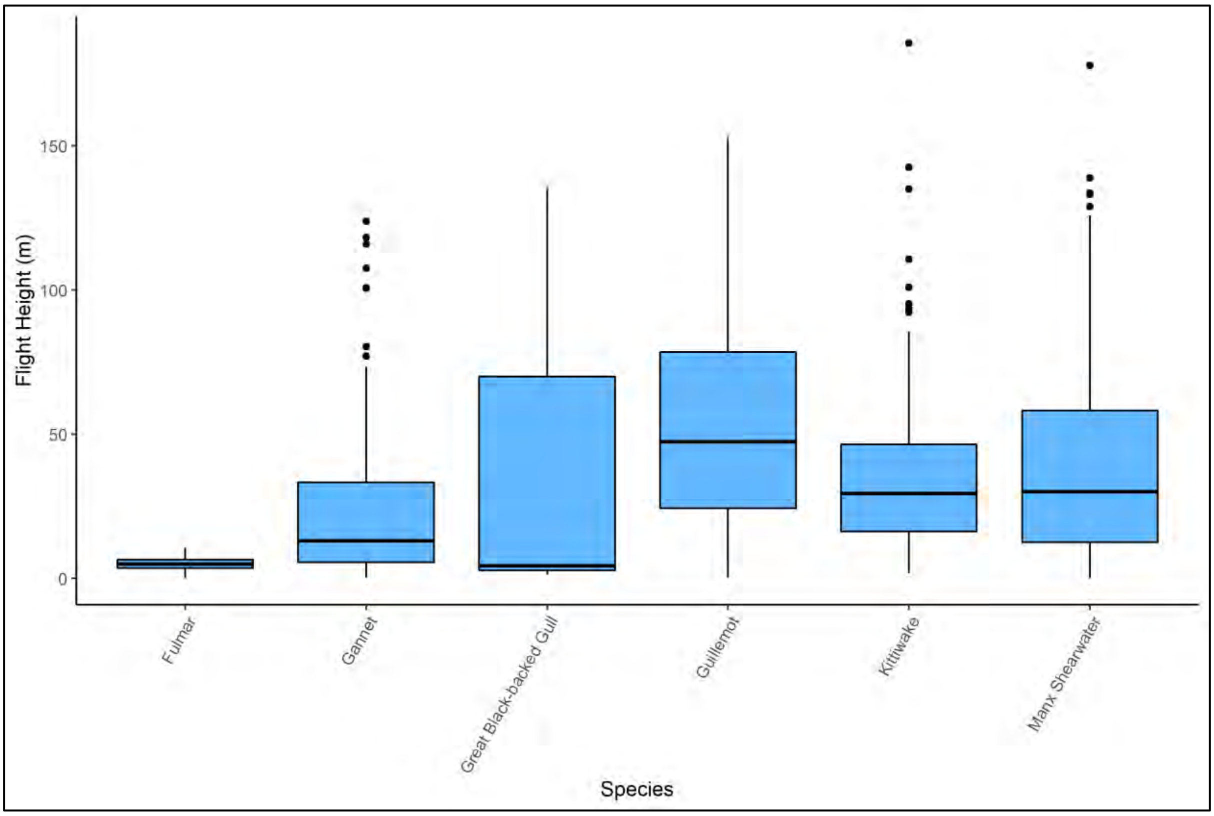


Figure 312 Flight heights (m) of avian species during Year 1 surveys (July 2020-June 2021) The 'box' is the interquartile range, with the middle bold line representing the median of the data. The 'whiskers' are the largest and smallest non-outliers. The range of the entire data includes the outliers represented by circles. Note: Species with five or more flight heights have been presented in the graph.

Table 42 Median flight heights for species in surveys between July 2020 and June 2021

Species	Raw count of suitable flying birds	Median flight height (above mean sea level, m)
Fulmar	4	5
Gannet	65	10
Great Black-backed Gull	3	4
Guillemot	153	79
Kittiwake	205	34
Manx Shearwater	502	73
'Commic' Tern*	1	16
Herring Gull	2	48
Lesser Black-backed Gull	2	64

**'Commic' refers to either common or Arctic tern*

Of the 888 birds that were imaged in flight during Year Two surveys, 153 were deemed suitable for flight height estimate (17%; **Table 43**, **Figure 313**). These flight heights are recorded as height above mean sea level (MSL).

<u>Year Two</u>

48 kittiwakes were deemed suitable for flight height determination, resulting in a mean altitude of 29 m relative to MSL (**Figure 313**; **Table 43**).

2 common gulls were deemed suitable for flight height determination, resulting in a median altitude of 64 m relative to MSL (**Table 43**).

2 great black-backed gulls were deemed suitable for flight height determination, resulting in a mean altitude of 39 m relative to MSL (**Table 43**).

3 herring gulls were deemed suitable for flight height determination, resulting in a median altitude of 52 m relative to MSL (**Figure 313; Table 43**).

5 lesser black-backed gulls were deemed suitable for flight height determination, resulting in a median altitude of 29 m relative to MSL (**Figure 313; Table 43**).

2 fulmars were deemed suitable for flight height determination, resulting in a mean altitude of 23 m relative to MSL (**Table 43**).

54 Manx shearwaters were deemed suitable for flight height determination, resulting in a median altitude of 36 m relative to MSL (**Figure 313; Table 43**).

37 gannets were deemed suitable for flight height determination, resulting in a mean altitude of 22 m relative to MSL (**Figure 313; Table 43**).

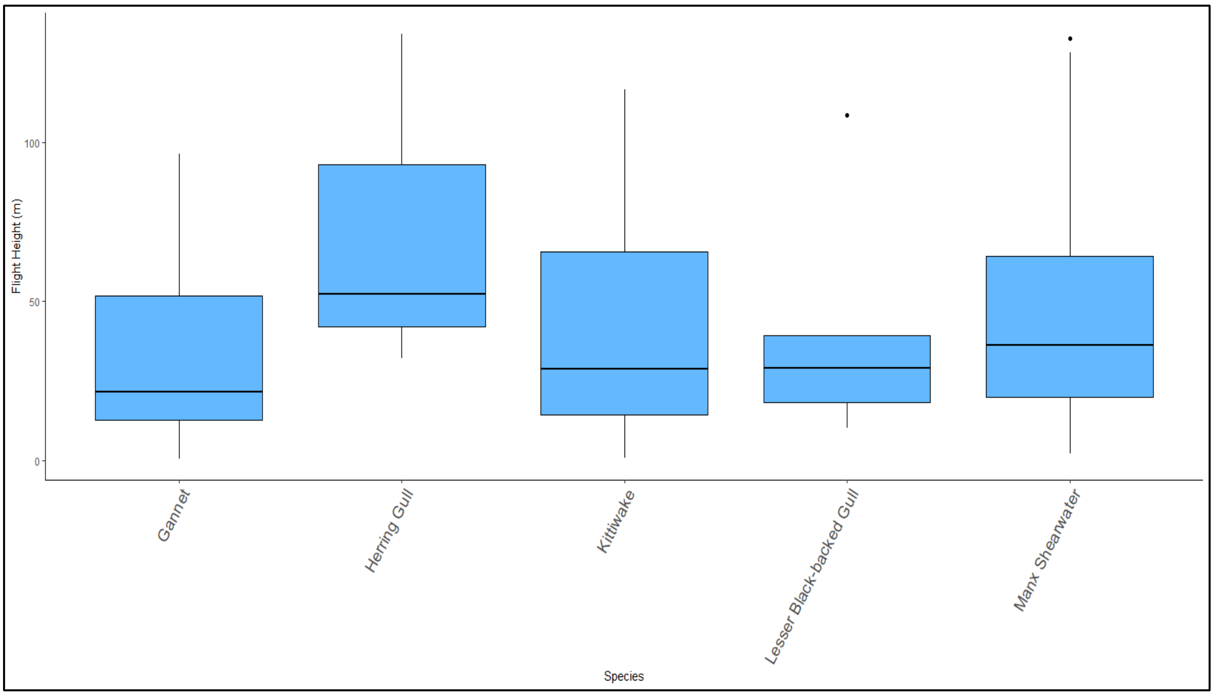


Figure 313 Flight heights (m) of avian species during surveys during Year 2 (July 2021-June 2022).
The ‘box’ is the interquartile range, with the middle bold line representing the median of the data. The ‘whiskers’ are the largest and smallest non-outliers. The range of the entire data includes the outliers represented by circles. Note: Species with five or more flight heights have been presented in the graph.

Table 43 Median flight heights for species in surveys between July 2021 and June 2022

Species	Raw count of suitable flying birds	Median flight height (above mean sea level, m)
Common Gull	2	63
Fulmar	2	22
Gannet	37	21
Great Black-backed Gull	2	38
Herring Gull	3	52
Kittiwake	48	28
Lesser Black-backed Gull	5	29
Manx Shearwater	54	36

6. Observations of Abiotic Structures

In September 2020, a small fishing vessel bearing north-northwest was observed.

In October 2020, a vessel bearing northeast was observed.

In February 2021, one cargo ship bearing southwest was observed.

In March, one speedboat (bearing not recorded) was observed.

In June, one fishing vessel (bearing not recorded) was observed. One fishing vessel was recorded in the imagery, located in the northeast of the Buffer Zone.

In July 2021, one sailing vessel (bearing not recorded) was observed.

In August 2021, one fishing vessel bearing southwest was observed.

In September 2021, two fishing vessels and a tanker (bearings not recorded) were observed. One fishing vessel was recorded in the imagery, located in the southwest of the Buffer Zone.

In February 2022, one fishing vessel was recorded in the imagery, located in the centre of the survey site.

In June 2022, one small fishing vessel ship (bearing not recorded) was observed.

In the rest of the surveys no abiotic structures were recorded either from the aircraft or in the imagery.

7. Summary and Discussion

A summary of the main abundance findings and distribution patterns, where applicable, are presented below. For each species group, results were cross-referenced with relevant literature to inform our survey findings, and to form a basis for expectations of species occurrence and seasonality where relevant.

7.1 Small Gulls

Small gulls comprised kittiwakes, common gulls and unidentified small gulls, with totals of 986, five and six identified during the survey period, respectively.

Kittiwakes were recorded every month from September 2020 to June 2022, with the exception of June and October 2021. The overall survey period peak count for the species occurred in January (Survey Area: n=268), resulting in an abundance estimate of 2,122 (**Table 5**).

Numbers showed a pattern of increasing in winter months and decreasing in summer months in both years, with peaks in January 2021 (n=268) and November 2021 (n=163) (**Table 5**). Overall, kittiwakes were seen in all areas of the Survey Area. However, higher numbers were recorded in the 4 km Buffer Zone (n=699) compared to the Site (n=287) (**Table 5**). In November 2021, a dense cluster of birds was noted in the northeast of the Survey Area (**Figure 15**). Other months showed more even distributions.

There was a contrast in Year One and Two mean flight direction patterns. In Year One, the directions of flight had predominantly easterly skews, whereas in Year Two they were predominantly westerly (**Figure 23**).

Kittiwakes nest on ledges, cliffs, and coastal anthropogenic structures, with approximately 370,000 pairs breeding in the UK annually (Sterry and Stancliffe, 2015). During the non-breeding period most kittiwakes occur out at sea (Blohmdahl, Breife, and Holmström, 2003; Sterry and Stancliffe, 2015). The peak counts experienced are consistent with historic patterns on and around Lundy Island, where they are a declining breeding species and more commonly seen offshore in larger flocks outside of the breeding season (Davis and Jones, 2020).

Common gulls were recorded in November 2021 only, with a peak count of five resulting in an abundance estimate of 38 (**Table 6**). These birds were found predominantly in the 4 km Buffer Zone to the east and north-east (**Figure 24**). All five were recorded as flying and had a mean northwest flight direction (325.868°, p=0.013; **Figure 25**). Common gulls are uncommon passage migrants and winter visitors to Lundy Island (Davis and Jones, 2018), and the low numbers seen during the survey period are consistent with this. In the UK, 98% of the common gull breeding population can be found in Scotland (JNCC, 2021). However, they can be seen across the UK in the winter months (Svensson, 2009).

Unidentified small gulls were recorded in October 2020, November 2021 and January 2022 only, with a peak raw count (n=4) resulting in an abundance estimate of 31 for the Survey Area (**Table 7**). There was no pattern in the distribution of the birds and north-west was the predominant flight direction (321.902°, p=0.512; **Figure 29a** 315.103°, p=0.512; **Figure 29b**).

7.2 Large Gulls

Large gulls recorded comprised great black-backed gulls, herring gulls, lesser black-backed gulls, unidentified black-backed gulls, and unidentified large gulls, with totals of 63, 179, 160, 15, and 39, respectively.

Great black-backed gulls occurred in July, November and December 2020, January, March, June and October 2021, as well as February and June 2022, with a peak raw count in February 2022 (n=33), resulting in an abundance estimate of 255 for the Survey Area (**Table 8**). Great black-backed gulls were widely distributed across the Survey Area (**Figure 30**-**Figure 39**), and they were observed flying in various directions (**Figure 40**).

Lesser black-backed gulls were recorded in December 2020, May to September 2021, and February, March, April and June 2022 with a peak raw count in February 2022 (n=119), resulting in an abundance estimate of 918 for the Survey Area (Error! Reference source not found.). For the December 2020 survey, there was a localised concentration in the southwest of the Buffer Zone (**Figure 51**) and in February 2022, they were in the centre of the site (**Figure 57**).

Unidentified black-backed gulls were recorded in May, June, September 2021 and February and April 2022, with a raw peak count of six in September 2021 and February 2022, resulting in an abundance estimate of 46 for the Survey Area (**Table 11**). Unidentified black-backed gulls were mostly scattered throughout the Buffer Zone.

Herring gulls occurred in September and December 2020, in April to July 2021, in October 2021, and in February and December 2022, with a peak raw count of 117 in February 2022 resulting in an abundance estimate of 903 for the Survey Area (**Table 9**). A dense group of 22 individuals was present in the south-east of the 4 km Buffer Zone during the December 2020 survey (**Figure 42**), a group of 29 individuals in the north-east of the Buffer in June 2021 (**Figure 45**) and a large cluster of 117 individuals in the mid-west of the Site in February 2022 (**Figure 48**). Across the surveys, herring gulls were found flying in various directions (**Figure 50**).

Unidentified large gull species were recorded in July and December 2020, as well as January and March and September 2021, and February, March and June 2022. The peak raw count occurred in September 2021 (n=20), resulting in an abundance estimate of 150 for the Survey Area (**Table 12**). This was in the southwest of the Buffer (**Figure 72**).

Herring gulls were the most numerous of the large gull species recorded, in line with their tendency to be common and widespread throughout the British Isles (Hume *et al.*, 2016). Great black-backed gulls are more widespread during the winter months (Hume *et al.*, 2016), aligned with the survey results. All these gulls nest on the cliffs of the west and east coasts of Lundy Island (Taylor, 1997), as do lesser black-backed gulls, breeding in small numbers (Davis and Jones, 2020). As they are more commonly passage migrants, these birds are likely to travel through the Survey Area in the late winter/early spring months on the way to larger breeding grounds further north (Ross-Smith *et al*., 2014), which may account for the peaks seen in December 2020 and February 2022.

7.3 Unidentified Gulls

A single unidentified gull was recorded in each of the August 2020 and February 2022 surveys resulting in a peak abundance estimate of eight for the Survey Area (**Table 13**). Both gulls were recorded in the western region Survey Area (**Figure 77**, **Figure 78**) and flying south (**Figure 79**).

7.4 Terns

Terns recorded during the survey period comprised Sandwich terns, common terns, ‘commic’ terns, and unidentified terns, with totals of one, five, 13, and four, respectively.

An individual Sandwich tern occurred in September 2020, resulting in an abundance estimate of eight for the Survey Area (**Table 14**). It was in the west of the 4 km Buffer Zone (**Figure 80**) and flying south. Sandwich terns are migrant summer breeders, often arriving early in spring and leaving in autumn (Sterry and Stancliffe, 2015; Hume *et al*., 2016). The species is almost exclusively coastal, favouring shallow inshore seas (Sterry and Stancliffe, 2015). *Circa* 11,000 pairs breed annually in the UK, forming colonies on beaches and islands (Sterry and Stancliffe, 2015).

Common terns were recorded during the August 2020 and May 2022 survey only, with a raw peak count in August 2020 (n=4), resulting in an abundance estimate of 30 for the Survey Area **(Table 15).** They were in the central region of the Site **(Figure 82)** and in the northwest of the Buffer Zone **(Figure 83)**. The birds were flying west-southwest **(Figure 84).**

'Commic' terns were recorded in August and September 2020, with a peak raw count in August (n=7), resulting in an abundance estimate of 53 for the Survey Area (**Table 16**). These were loosely distributed across the north, north-west, centre, and east of the Survey Area in August 2020 (**Figure 85**), whilst in September individuals were located in the Buffer's east and west (**Figure 86**). On average, in August they flew west-southwest (**Figure 87a**), and in September southeast (**Figure 87b**).

Common and Arctic terns are regular summer visitors to the British coast as migrant breeders, with approximately 10,000 common tern pairs nesting in the UK every year (Sterry and Stancliffe, 2015; Hume *et al*., 2016). While many common terns will breed on the coast, the species is also found inland in habitats such as reservoirs and flooded gravel pits (Sterry and Stancliffe, 2015; Hume *et al*., 2016). The common tern is also a common passage migrant, seen in coastal areas during spring and autumn migration (Sterry and Stancliffe, 2015). Approximately 53,000 Arctic terns breed in the UK every year, predominantly in northern Britain (Sterry and Stancliffe, 2015).

Unidentified terns occurred in August 2020, May 2021, September 2021 and May 2022, with a peak raw count in May 2022 (n=4) resulting in an abundance estimate of 30 for the Survey Area (**Table 17**). Of the 10 birds seen, eight were in the 4 km Buffer Zone, and two were in the Site (**Table 17**). The terns were split evenly between the north and south of the site – northeast in August 2020 (**Figure 88**), north and southwest in May 2021 (**Figure 89**), northwest in September 2021 (**Figure 90**) and southwest in May 2022 (**Figure 91**). The birds were recorded flying west-southwest in May 2021, and a southeast in September 2021 (**Figure 92**).

The terns recorded during the survey period align with the literature, which states that August and September comprise the post-breeding migration bio-season for common, Arctic, and Sandwich terns (Furness, 2015). The unidentified terns recorded in May coincide with the return or post-wintering migration bio-season of Sandwich terns (Furness, 2015), although as the individuals were not identified to species level from the aerial imagery this cannot be confirmed.

7.5 Skuas

Great skua was the only species of skua recorded during the survey period. They only occurred in October 2021 (n=2), resulting in an abundance estimate of 16 for the Survey Area (**Table 18**). The birds seen were in different areas – the north-east of the Site and the west of the 4 km Buffer Zone (**Figure 93**). One was recorded as flying, heading in a west-southwest direction **(Figure 94**).

Great skuas are an amber-listed species that in the UK mainly breeds in the northern isles of Scotland (94% of the breeding population), nesting on coastal moorland (JNCC, 2021). Outside the breeding season, great skuas can be found along the wider UK coast where they are likely to be migrating to warmer climates for the winter, to lead a pelagic lifestyle (Svenssen, 2009). On and around Lundy Island, they have been noted as uncommon spring and autumn migrants, with occasional individuals being seen during these times (Davis and Jones, 2018).

7.6 Auks

Auk species recorded during the survey period comprise guillemots, razorbills, guillemots / razorbills, puffins, and unidentified auks, with totals of 3,075, 364, 2,646, 66, and 48, respectively. Note birds identified as either auks or shearwaters were recorded **(Section 7.9)**.

Guillemots were recorded in all months of the survey period except August 2020, August 2021 and September 2021, with a peak raw count in May 2021 (n=981), resulting in an abundance estimate of 7,139 for the Survey Area (**Table 19**). They were loosely distributed across the Survey Area in varying densities during most surveys. For September 2020, December 2020, May 2021, June 2021, October 2021 and November 2021 the distribution data has a central/northern skew (**Figure 96**; **Figure 99**; **Figure 104**; **Figure 105**; **Figure 107**; **Figure 108**). In comparison, a relatively even distribution was recorded during July 2020, November 2020, January 2021 to March 2021, July 2021, December 2021, and February to June 2022 (**Figure 95**; **Figure 98**; **Figure 100** - **Figure 102**; **Figure 106, Figure 109, Figure 111 - Figure 115**). Across the surveys, guillemots were found on average flying in most directions (**Figure 116**).

Counts of guillemots on Lundy Island suggested the species was in decline until the mid-1970s when they recovered significantly (Taylor, 1997), and numbers had tripled due to the eradication of the islands rats in 2004 (Weston, 2019). Guillemots are commonly at their nesting colonies from March to July, remaining out at sea during other months.

Razorbills were recorded during the September, November, and December 2020 surveys, as well as from January to May, July, and October to November 2021, plus January to June 2022. The peak raw count in December 2020 (n=105) resulted in an abundance estimate of 840 for the Survey Area (**Table 20**). The birds were recorded throughout the Survey Area during most months. Individuals were loosely distributed across the Site and 4 km Buffer in September 2020 (**Figure 117**). Low numbers were identified during the November 2020 survey (**Figure 118**). In December 2020, razorbills were recorded throughout the Survey Area, although higher densities were noted in the centre, north, east, and west (**Figure 119**).

During the January 2021 survey individuals were again recorded throughout the Survey Area, with higher densities present in the centre, north-eastern, and southern regions (**Figure 120**). In the October and November 2021 surveys, low razorbill numbers were recorded in the north of the Survey Area only, predominantly in the Buffer Zone except for one individual in October 2021 (**Figure 126**; **Figure 127**). In February, April, and June 2022, razorbills were loosely distributed across the whole Survey Area, although higher densities were observed in northern/central areas in April and June (**Figure 129**; **Figure 131**; **Figure 133**). This northern/central skew was also experienced in March 2022, with a dense group identified in the northern Buffer (**Figure 130**). In December 2021 and May 2022, low numbers were repeated, with concentrations in the south of the Buffer, one individual in the north in December, and only one individual recorded in the southern Buffer Zone in May (**Figure 128**; **Figure 132**). Razorbills flew north-northeast in January 2021 (32.722°, p=0.143; **Figure 134a**), and southeast in March 2021 (125.490°, p=0.010; **Figure 134b**) and October 2021 (136.330°, p=0.512; **Figure 134c**).

Razorbill numbers on Lundy Island were declining until the mid-1980s and have stabilised since then (Taylor, 1997). They have increased due to the eradication of the islands rats in 2004 (Weston, 2019). Razorbills are not as widespread as guillemots and nest in more secluded sites such as fissures in the cliffs and screes (BirdWatch, UK, 2022). Razorbills return to their colonies in March and April and depart in August, spending time solely at sea during the non-breeding season (Davis and Jones, 2020).

Birds identified as guillemots / razorbills were recorded during every survey, with the exception of August and September 2021, with a peak raw count in March 2022 (n=585) resulting in an abundance estimate of 4,443 for the Survey Area. Distribution and abundance of guillemots / razorbills varied considerably throughout the survey period.

Puffins occurred in both July and November 2020, as well as from March to May 2021, and April to May 2022 inclusive. A peak raw count was recorded in April 2022 (n=38), resulting in an abundance estimate of 289 for the Survey Area. Individuals recorded in November 2020 and April 2022 were primarily concentrated in the north-west of the Survey Area, and small groups in the south, centre and northeast in April (**Figure 159**; **Figure 163**). There were no discernible distribution patterns across the Survey Area during July 2020, March to May 2021 and May 2022 surveys (**Figure 158**; Error! Reference source not found.; **Figure 161**; **Figure 162**; **Figure 164**). In April 2022, one puffin was recorded flying in a northerly direction (**Figure 165**).

The nesting period of puffins on Lundy Island is between April and July, however puffins can be sighted around the area outside the breeding period, but mostly commonly spend their non-breeding season at sea (Davis and Jones, 2020).

Unidentified auks were present during the December 2020, January, February, March, June and November 2021, and during March to May 2022. The peak raw count in April 2022 (n=16) resulted in an abundance estimate of 122 for the Survey Area. The birds were present in low numbers during the winter months – in December 2020 six auks were identified in the north and east of the 4 km Buffer Zone (**Figure 166**), in January 2021, there were six individuals in the east of the Buffer (**Figure 167**), and in February 2021, two unidentified auks were recorded in the north-east of the Buffer, plus a single auk in the south-west of the Site (**Figure 168**). In April 2022, four individuals were recorded in the north, with four more individuals in the southeast (**Figure 173**). The small, concentrated group in May 2022 was recorded in the northwest at the buffer-site edge (**Figure 174**).

7.7 Fulmars

A total of 148 fulmars were recorded during the survey period, 40 of which were within the Site, and 108 in the 4 km Buffer Zone. They were present in August, September and December 2020, as well as January, February, March, May, August, September, November and December 2021, and during January to June 2022. A peak raw count was recorded in December 2020 (n=77), resulting in a peak abundance estimate of 616 (**Table 24**).

Fulmars showed no distinct distribution patterns across the survey period, with individuals occurring in all regions of the Survey Area (**Figure 176**-**Figure 192**). There was, however, a slight skew in flight direction. For eight of the 14 months that recorded flying birds, a vaguely easterly direction (east, northeast and north-northeast) was the mean (**Figure 193**), while southerly directions of flight occurred the least. The mean flight direction for September 2020 and August 2021 were south-southeast (149.521°, p=0.195; **Figure 193b**) and south-west (215.822°, p=0.212; **Figure 193g**) respectively.

As pelagic foragers, fulmars are found year-round off British waters, though they are more widely found further offshore (Blohmdahl, Breife, and Holmström, 2003; Hume *et al.*, 2016). Around 500,000 pairs are thought to breed in colonies on ledges and sea cliffs around the UK (Sterry and Stancliffe, 2015). Successful breeding pairs have been found to forage closer to their breeding colonies than those that either do not breed successfully or are not seen at the breeding colonies (Edwards, 2015). As the Survey Area is approximately 40 km from Lundy Island, it is important to note the population trends on the Island. Fulmar breeding has been confirmed on Lundy Island in each census conducted between 1981 and 2017, showing a 19% increase in apparently occupied nests between 2000 and 2017 (Booker *et al.*, 2018).

This is the opposite to the national trend for this species which has shown a 31% decrease between 2000 and 2015 (JNCC, 2016), making Lundy Island a very important site for fulmars.

7.8 Petrels

A single unidentified storm petrel was recorded in the May 2021 survey, resulting in an abundance estimate of seven for the Survey Area and the 4 km Buffer Zone (**Table 25**). The unidentified bird was located in the northwest of the 4 km Buffer Zone (**Figure 194**).

The two storm petrel species found in the area are European and Leach's (Svenssen, 2009), but it is not possible to discern between them in our surveys. Storm petrels have two distinct foraging behaviours – diurnal long trips out to sea, and nocturnal trips where they stay very close to their breeding colonies (Albores-Barajas *et al*., 2011).

7.9 Shearwaters

Shearwaters recorded during the survey period comprised Manx shearwaters, unidentified small shearwaters, and unidentified shearwaters.

A total of 8,042 Manx shearwaters were recorded during the survey period, occurring in a range of abundances from July to September 2020, as well as from March to June 2021, and March to June 2022. The peak raw count in May (n=4,624), resulted in an abundance estimate of 33,652 for the Survey Area (**Table 26**). Manx shearwaters were recorded throughout both the Site and Buffer Zone from July to September 2020, April to September 2021 (with the exception of August), and March to June 2022 (**Figure 195**; **Figure 196**; **Figure 199**; **Figure 200**; **Figure 201**; **Figure 202**; **Figure 205**; **Figure 206**; **Figure 207**). Lower numbers were present during the September 2020, March 2021, and September 2021 surveys (**Figure 197**; **Figure 198**; **Figure 203**). In March 2022, there were three individuals in the east of the Site and east/south of the Buffer Zone (**Figure 204**).

Manx shearwaters are present on the island during the breeding season April to September, after which they migrate to South America for the winter. This aligns with the literature, which states that Manx shearwaters are summer visitors, generally present between May and September in any given year (Sterry and Stancliffe, 2015). The species nests in burrows on offshore islands, including Lundy (Booker & Price, 2014), with approximately 300,000 pairs breeding in the UK annually (Sterry and Stancliffe, 2015). Note that Manx shearwaters are known to exhibit nocturnal behaviour during the breeding season (Brooke, 2013) and, subsequently, have the potential to be under-recorded.

Unidentified small shearwaters were recorded in September 2021 and March 2022, with a peak raw count of six in September 2021, resulting in an abundance estimate of 45 for the Survey Area (**Table 27**). They were present in low numbers in the north of the Site Area and the south of the Buffer Zone in September 2021, and in the north and east of the Buffer in March 2022 (**Figure 209**; **Figure 210**).

Unidentified shearwaters were recorded in October 2020 only, with a peak raw count of 10 resulting in an abundance estimate of 77 for the Survey Area (**Table 28**). The dense group was found in the northeast of the Buffer Zone (**Figure 212**).

7.10 Auks / Shearwaters

Birds in the unidentified auks / shearwaters category were recorded from March to August 2021, as well as March to June 2022, with a peak raw count in April 2022 (n=34), resulting in an abundance estimate of 259 for the Survey Area (**Table 29**). Low numbers were recorded in the southwestern Buffer Zone only during the March 2021 survey (**Figure 213**). During April, they were present in the southeast of both Site and Buffer, as well as the west and north-east of the Buffer (**Figure 214**). In May 2021, they were loosely distributed across both Site and Buffer, although noticeably absent in the southwest and the far northeast of the Survey Area (**Figure 215**). During June 2021, the birds were seen in the southeast, south, and southwest of the Buffer Zone (**Figure 216**). In July and August 2021, there were low numbers in the Site Area central and southern regions, respectively (**Figure 217**; **Figure 218**). In March 2022, low numbers of individuals were recorded in the central Site and north/west of the Buffer Zone (**Figure 219**). A higher number was distributed across the Survey Area during April to June 2022, though predominantly in the respective Buffer Zones (**Figure 220-222)**.

7.11 Gannets

A total of 790 gannets were recorded during the survey period. They were present in every month July 2020 to June 2022. The peak raw count of 126 recorded in June 2021 resulted in a peak abundance estimate of 1,003 (**Table 30**).

Gannets are usually consistently present around the British coastline, reflected by their consistent presence during the two-year survey period, but the species is also a common summer and autumn migrant (Hume *et al.*, 2016). Gannets have not been known to breed on Lundy Island since the early 1900's, however they are commonly seen offshore, particularly from late summer into autumn (Davis and Jones, 2018; Davis and Jones, 2020).

Gannet records varied between months, in numbers of individual, geographic distribution within the Survey Area and direction of flight. Gannets were loosely distributed across the entire Survey Area throughout July-October 2020 (**Figure 224**-**Figure 227**), March-May 2021 (**Figure 232**-**Figure 234**) and January-June 2022 (**Figure 242**-**Figure 247**), though some months exhibited areas of higher densities. September 2020 featured a cluster of gannets in the northwest (**Figure 226**), May 2021 showed larger numbers in the southwest (**Figure 234**), and June 2021 saw a northerly distribution with individuals primarily recorded within the Buffer Zone (**Figure 235**). In April 2022, another dense group was recorded in the west of the Buffer Zone (**Figure 245**).

It is common for gannets to be found mixed in with other seabirds during feeding frenzies, brought on by circumstances such as fishing vessels discarding by-catch, cetaceans herding shoals of fish, or naturally occurring large shoals of fish (Camphuysen, 2011). Instances like these could provide explanations for the clusters seen in the surveys stated above. There was not a predominant mean flight direction found across the survey period. Gannets were recorded flying in all directions with no identifiable pattern related to time of year (**Figure 248**).

7.12 Seals

A total of six grey seals and six unidentified seals were recorded across the survey period. Grey seals occurred in March, May and September 2021, with a peak raw count in March (n=3) resulting in an abundance estimate of 23 for the Survey Area (**Table 32**). For the March

2020 survey, grey seals were located in the east of the Buffer whilst one was in the east-southeast of the Southwest England Site (**Figure 252**). During May 2021, they were located in the northeast of the Buffer (**Figure 253**). For the September 2021 survey, an individual was recorded in the south of the Site (**Figure 254**). Unidentified seals were present in August 2020, December 2020, March 2021, and January and June 2022. The peak raw count in August 2020 (n=2) resulted in an abundance estimate of 15 for the Survey Area (**Table 33**). Of the six grey seals, two were within the Site and four were in the Buffer Zone. Of the six unidentified seals, one was within the Site (**Figure 255**) and five were in the Buffer (**Figure 255-Figure 259**).

Vincent *et al.* (2017) found the majority of seals sighted from aerial surveys at sea were located in the northeast of the English Channel, although more than half of the 45 grey seals tracked from France during the study crossed the Channel, especially during the breeding season, to reach known colonies in the southwest British Isles, particularly Cornwall and the Isles of Scilly, Devon, as well as in the North Sea. Grey seals are known to breed on Lundy and there is a resident population of approximately 180 grey seals (Westcott, 2009), so it is likely that they frequently move around the area during foraging, and when not hauled out on the island. In the summer months, grey seals congregate around the coast with pregnant females reserving their fat and energy ready for the pupping season which starts September-November time. Mating occurs after the pupping season, making it an active time for grey seals around the UK coast.

7.13 Whales

Common minke whales were the only whale species identified during the survey period. A total of three occurred, with a peak raw count in May 2021 (n=2) resulting in an abundance estimate of 15 for the Survey Area (**Table 34**). A single minke whale was within the south of the Site in August 2020 (**Figure 260**), while the two individuals identified in May 2021 were in the west and southeast of the Buffer (**Figure 261**).

Minke whales are the most common baleen whale and are summer visitors to UK and Irish waters, (spring to autumn), which our survey bears out (Shirihai and Jarrett, 2011).

7.14 Dolphins / Porpoises

Dolphins / porpoises recorded during the survey period comprise common dolphins, harbour porpoises, unidentified dolphins, and unidentified dolphins / porpoises.

Common dolphins were present in July, August, September, November and December 2020, January, April, May and September 2021, and in January, February, April and May 2022. The peak raw count in May (n=285) resulted in an abundance estimate of 2,074 for the Survey Area (**Table 35**). Low numbers were experienced in July, December, January, April and September 2021, and January and February 2022, with individuals in the east, north-east, north-east, and east/northwest, southeast, north, and east, respectively (**Figure 262**; **Figure 266**; **Figure 267**; **Figure 268**; **Figure 270**; **Figure 271**; **Figure 272**). Distribution during the August 2020 survey was sporadic (**Figure 263**), with appearances in the east, southeast, south, southwest, and northwest of the Survey Area. Similarly, individuals in the May 2021 survey were numerous and loosely distributed across the northeast, east, southeast, west, northwest, and centre of the Survey Area (**Figure 269**). Common dolphins were also recorded in April 2022 in the southeast, southwest, south and north (**Figure 273**), and in May 2022 predominantly in the southeast, but also the southwest and northeast (**Figure 274**). Records from September and November 2020 show greater concentrations in the east/southeast and west/northwest of the Survey Area, respectively (**Figure 264**; **Figure 265**).

Common dolphins are widely distributed throughout UK waters (JNCC, 2019) and have been seen to concentrate in the south-west of the UK and Ireland during the winter months (Department for Business, Energy & Industrial Strategy, 2022).

Unidentified dolphins were recorded in July, August, September, November and December 2020, from February to May 2021, and during April 2022. The peak raw count in May 2021 (n=37) resulted in an abundance estimate of 269 for the Survey Area (**Table 36**). Unidentified dolphins recorded during July and August 2020 were loosely distributed across the north, east, and south of the Survey Area and the northwest, east, south, and southwest of the Survey Area, respectively (**Figure 275**; **Figure 276**). Individuals recorded in September 2020 and November 2020 were in the northeast and southwest, whereas animals recorded in December 2020 were located in both the west and northeast (**Figure 277**; **Figure 278**; **Figure 279)**. In February 2021, the animals were distributed loosely across the centre, northeast, and north of the Survey Area. In March and April 2021 they were localised in the north and east, (**Figure 281**; **Figure 282**). May 2021 showed a loose distribution across the centre and west of the Survey Area, with additional small clusters in the north and northwest (**Figure 283**). April 2022 showed individuals in the northwest, middle and southwest (**Figure 283**)

Harbour porpoises were recorded in July, September and October 2020, May, July and September 2021, and April to June 2022. The peak raw count in May 2021 (n=9) resulted in an abundance estimate of 65 for the Survey Area (**Table 37)**. For the July 2020 survey, one animal was located in the east-southeast of the Southwest England Site, and one in the southwest of the Buffer (**Figure 285**). In September 2020, one harbour porpoise was found in the east-northeast of the Buffer, and a group of three in the southwest (**Figure 286**). During October 2020, a single individual was located on the eastern border of the Southwest England Site (**Figure 287**), and in May 2021, harbour porpoises were seen from the west to the southeast of the Survey Area (**Figure 288**). For the July 2021 survey a lone harbour porpoise was located in the south, outside the Southwest England Site (**Figure 289**), while in September 2021 an individual was recorded in the south of the Southwest England Site, and another in the southwest of the Survey Area (**Figure 290**). A single animal was also seen in April 2022 in the southwest corner of the Southwest England Site (**Figure 291**), with another sole animal seen in May 2022 on the southeast corner of the Buffer (**Figure 292**). In June 2022, one harbour porpoise was recorded on the west of the buffer (**Figure 293**).

In the last 30 years UK harbour porpoise populations have shown a southerly directional trend, with their concentrations gradually moving from the Northern Isles of Scotland to the more southerly areas of the north sea and English channel (JNCC, 2022). The Bristol channel Special Area of Conservation (SAC) is designated as such due to the presence of harbour porpoise which is an Annex II species (JNCC, 2019a).

Unidentified dolphins / porpoises were recorded from July to October 2020, as well as from February to May 2021, and during January and February 2022. The peak raw count in May 2021 (n=14) resulted in an abundance estimate of 102 for the Survey Area (**Table 38**). They were loosely distributed in the Survey Area for the majority of surveys where detected, except October 2020, when ten individuals were grouped closely together in the east of the Survey Area (**Figure 297**), and March 2021, when three individuals were grouped in the west (**Figure 299**). During July 2020, all dolphins / porpoises were located in the south-east of the Survey Area (**Figure 294**). During August 2020, individuals were present in the south, east, and northeast, while in September 2020 they spread across central and north-western regions (**Figure 295**; **Figure 296**). In February 2021, two individuals were noted in the north and south-west of the Survey Area (**Figure 298**). Two were also noted in April 2021 in the north and northwest of the 4 km Buffer Zone (**Figure 300**). Dolphins / porpoises identified in May 2021 were loosely distributed across the centre, north, northwest, and southeast of the Survey Area (**Figure 301**). In September 2021, one animal was in the south of the 4 km Buffer (**Figure 302**), and in the northeast of the Southwest England Site during October 2021 (**Figure 303**). In the

January 2022 survey, an individual dolphin / porpoise was recorded in the southwest of the Buffer (**Figure 304**). During February 2022, individuals were in the Buffer's east (**Figure 305**).

7.15 Unidentified Marine mammals

Unclassified marine mammals include marine mammals that cannot be deemed seals, dolphins or porpoises to species level.

Single unidentified marine mammals were recorded in the survey area in July 2021 and February 2022, resulting in an abundance estimate of eight for both surveys (**Table 39**).

These animals were recorded in the Buffer – in July 2021 in the east (Figure **306**), and in February 2022, in the northwest (**Figure 307**).

7.16 Sharks

A single basking shark was recorded in January 2021 in the centre of the Site (**Figure 308**), resulting in an abundance estimate of eight for the Survey Area (**Table 40**). Basking sharks tend to be present offshore all year round, but are more common in the spring and summer (April to August) with the plankton blooms, particularly along western facing shores (Witt *et al.,* 2012). The data from this survey is not in line with the expected distribution, but as only one individual was seen, it is not representative of the population as a whole.

7.17 Ocean sunfish

One ocean sunfish was recorded in June, July and October 2021 in the south of the Buffer Zone (**Figure 309**, **Figure 310**, **Figure 311**), resulting in an abundance estimate of eight for the Survey Area (**Table 41**). Ocean sunfish are most commonly sighted in UK waters during summer months, (Leeney *et al.,* 2011) and are epipelagic migrants of the high seas in tropical and temperate regions of the Atlantic Ocean (Wheeler, 1969). Little is known about the migration of sunfish but it's thought to coincide with prey availability; jellyfish (Sims, 2002).

8. References

Albored-Barajas, Y.V., Riccato, F., Fiorin, R., Massa, B., Torricelli, P. and Soldatini, C. (2011). Diet and diving behaviours of European Storm Petrels *Hydrobates pelagicus* in the Mediterranean (ssp. *melitensis*). *Bird Study*, 58:2, 208-212.

Blohmdahl, A., Breife, B., Holmström, N. (2003). *Flight Identification of European Seabirds*. Christopher Helm: London.

Booker, H., Price, D. (2014). *Manx shearwater recovery on Lundy: population and distribution change from 2001 to 2013*. Journal of the Lundy Field Society, 4, pp.105-116.

Booker, H., Slader, P., Price, D., Bellamy, A.J. and Frayling, T. (2018). *Cliff nesting seabirds on Lundy: Population trends from 1981 to 2017.* Journal of the Lundy Field Society, 6, pp. 65-76.

Brooke, M. (2013). *The Manx Shearwater*. A&C Black.

Camphuysen, K.C.J., (2011). *Northern Gannets in the North Sea: foraging distribution and feeding techniques around the Bass Rock*. British Birds, 104, pp.60-76.

Canty, A., Ripley, B. (2010). *boot: bootstrap R (S-Plus) functions*. R package version 1.2-42.

Davis, T. and Jones, T. (2018). *Birds of 2017*, pp. 23-66. In: Lundy Field Society Annual Report 2017.

Davis, T. and Jones, T. (2020). *Birds of 2019*, pp. 47-82. In: Lundy Field Society Annual Report 2019.

Edwards, E. (2015). *The breeding season foraging trip characteristics, foraging distribution and habitat preference of northern fulmars, Fulmarus glacialis.* PhD thesis, University of Aberdeen.

Efron, B. and Tibshirani, R.J. (1993). *An introduction to the bootstrap*. Chapman & Hall, London.

R Development Core Team (2012). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, http://www.R-project.org/.

Furness, R. W. (2015). Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS). *Natural England Commissioned Reports*, (164).

Hume, R., Still, R., Swash, A., Harrop, H. and Tipling, D. (2016). *Britain's Birds: An identification guide to the birds of Britain and Ireland*. Woodstock: Princeton University Press.

JNCC (2016). *Seabird Population Trends and Causes of Change: 1986-2015 Report*. Joint Nature Conservation Committee.

JNCC (2019). *Conservation status assessment for the species: S1350 – Common dolphin (Delphinus delphis)*. In: Article 17 Habitats Directive Report 2019: Species Conservation Status Assessments 2019.

JNCC (2019a). *UK0030396: Bristol Channel Approaches Designated Special Area of Conservation (SAC).* https://sac.jncc.gov.uk/site/UK0030396

JNCC (2021). *Seabird Population Trends and Causes of Change: 1986-2019 Report*. Joint Nature Conservation Committee.

JNCC (2022). *1351 Harbour Porpoise Phocoena phocoena. https://sac.jncc.gov.uk/species/S1351/*

Ross-Smith, V.H., Robinson, R.A., Banks, A.N., Frayling, T.D., Gibson, C.C. and Clark, J.A. (2014). *The Lesser Black-backed Gull Larus fuscus in England: how to resolve a conservation conundrum*. Seabird, 27, pp. 41-61.

Shirihai and Jarrett. (2011). Whales, dolphins and seals-A Field Guide to the Marine Mammals of the World.

Sims, D.W., Southall, E.J. (2002). Occurrence of ocean sunfish *Mola mola* near fronts in the western English Channel.

Sterry, S., Stancliffe, A. (2015). *Collins BTO Guide to British Birds*. William Collins: London.

Svensson, L. (2009), *Collins Bird Guide: 2nd Edition*. London: Harper Collins Publishers Ltd.

Taylor, T. 1997. *The Birds of Lundy*. Lundy Field Society.

Vincent, C., Huon, M., Caurant, F., Dabin, W., Deniau, A., Dixneuf, S., Dupuis, L., Elder, J-F., Fremau, M-H., Hassani, S., Hemon, A., Karpouzopoulos, J., Lefeuvre, C., McConnell, B.J., Moss, S.E.W., Provost, P., Spitz, J., Turpin, Y. and Ridoux, V. (2017). '*Grey and harbour seals in France: distribution at sea, connectivity and trends in abundance at haulout Sites'*, Deep Sea Research Part II: Topical Studies in Oceanography, vol. 141, pp. 294-305 . https://doi.org/10.1016/j.dsr2.2017.04.004.

Witt, M.J., Hardy, T., Johnson, L., McClellan, C.M., Pikesley, S.K., Ranger, S., Richardson, P.B., Solandt, J.L., Speedie, C., Williams, R. and Godley, B.J,. (2012). Basking sharks in the northeast Atlantic: spatio-temporal trends from sightings in UK waters. *Marine Ecology Progress Series*, *459*, pp.121-134.

Appendix I Scientific Names and Taxonomy

Common Name	Scientific Name	Family	Class
Kittiwake	*Rissa tridactyla*	Laridae	Aves
Common Gull	*Larus canus*	Laridae	Aves
Great Black-backed Gull	*Larus marinus*	Laridae	Aves
Herring Gull	*Larus argentatus*	Laridae	Aves
Lesser Black-backed Gull	*Larus fuscus*	Laridae	Aves
Sandwich Tern	*Thalasseus sandvicensis*	Laridae	Aves
Common Tern	*Sterna hirundo*	Laridae	Aves
Arctic Tern	*Sterna paradisaea*	Laridae	Aves
Great Skua	*Catharacta skua*	Stercorariidae	Aves
Guillemot	*Uria aalge*	Alcidae	Aves
Razorbill	*Alca torda*	Alcidae	Aves
Puffin	*Fratercula arctica*	Alcidae	Aves
Fulmar	*Fulmarus glacialis*	Procellariidae	Aves
Manx Shearwater	*Puffinus puffinus*	Procellariidae	Aves
Gannet	*Morus bassanus*	Sulidae	Aves
Grey Seal	*Halichoerus grypus*	Phocidae	Mammalia
Common Minke Whale	*Balaenoptera acutorostrata*	Balaenopteridae	Mammalia
Common Dolphin	*Delphinus delphis*	Delphinidae	Mammalia
Harbour Porpoise	*Phocoena phocoena*	Phocoenidae	Mammalia
Basking Shark	*Cetorhinus maximus*	Cetorhinidae	Chondrichthyes
Ocean Sunfish	*Mola mola*	Molidae	Actinopterygii

Appendix II JNCC Species and Taxa Grouping Level Codes of Seabirds and Marine Mammals

JNCC Code	Grouping	Species Code	Species
220	Fulmar	220	Fulmar
710	Gannet	710	Gannet
94003	Small gull species	6020	Kittiwake
			Common Gull
95006	Shearwater species	460	Manx shearwater
95008	Petrel species	520	Storm petrel
95031			Great skua
95034	Large gull species	5920	Herring gull
		5910	Lesser black-backed gull
		6000	Great black-backed gull
95037	Tern species	6110	Sandwich tern
		6150	Common tern
		6160	Arctic tern
95038	‘Commic’ tern (common or Arctic)	6150	Common tern
		6160	Arctic tern
95040	Auk species	6340	Guillemot
		6360	Razorbill
		6540	Puffin
60000	Fish species	61030	Basking shark
		62000	Sunfish
70000	Phocid	70010	Grey seal
80000	Cetacean	82410	Harbour Porpoise
		82000	Dolphin sp.
		82540	Common dolphin
		81050	Common minke whale

Appendix III Raw Data, Abundance Estimates (plus upper and lower confidence limits; UCL, LCL) & Density Estimates

Kittiwake

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
03 – September 2020	14	110	16	228	0.27	0.33	17	133	17	346	0.24	0.40	-	-	-	-	-	-	31	243	71	495	0.18	0.72
04 – October 2020	10	77	10	199	0.32	0.23	42	322	42	850	0.15	0.96	-	-	-	-	-	-	52	398	54	965	0.14	1.18
05 – November 2020	-	-	-	-	-	-	7	55	16	110	0.38	0.16	-	-	-	-	-	-	7	55	16	110	0.38	0.16
06 – December 2020	16	128	64	208	0.25	0.38	54	432	208	736	0.14	1.28	-	-	-	-	-	-	70	560	320	864	0.12	1.66
07 – January 2021	61	483	245	808	0.13	1.44	207	1,639	1,164	2,138	0.07	4.87	-	-	-	-	-	-	268	2,122	1,552	2,708	0.06	6.31
08 – February 2021	7	54	8	107	0.38	0.16	8	61	23	107	0.35	0.18	-	-	-	-	-	-	15	115	46	200	0.26	0.34
09 – March 2021	9	69	23	138	0.33	0.21	17	130	69	207	0.24	0.39	-	-	-	-	-	-	26	199	107	299	0.20	0.59
10 – April 2021	-	-	-	-	-	-	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02
11 – May 2021	1	7	1	22	1	0.02	2	15	2	36	0.71	0.04	-	-	-	-	-	-	3	22	3	51	0.58	0.07
13 – July 2021	-	-	-	-	-	-	4	31	8	61	0.5	0.09	-	-	-	-	-	-	4	31	8	61	0.5	0.09
14 – August 2021	1	8	1	31	1.00	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	24	1.00	0.02
15 – September 2021	-	-	-	-	-	-	2	15	2	38	0.71	0.04	-	-	-	-	-	-	2	15	2	38	0.71	0.04
17 – November 2021	83	637	83	1833	0.11	1.89	80	614	184	1358	0.11	1.82							163	1250	215	2914	0.08	3.72
18 – December 2021	6	46	8	92	0.41	0.14	13	100	38	177	0.28	0.3	-	-	-	-	-	-	19	146	69	246	0.23	0.43
19 – January 2022	13	100	39	170	0.28	0.3	40	309	209	402	0.16	0.92	-	-	-	-	-	-	53	410	278	564	0.14	1.22
20 – February 2022	53	409	232	625	0.14	1.22	49	378	262	494	0.14	1.12	-	-	-	-	-	-	102	787	563	1057	0.10	2.34
21 – March 2022	67	509	243	866	0.12	1.51	67	509	365	676	0.12	1.51	-	-	-	-	-	-	134	1018	668	1481	0.09	3.03
22 – April 2022	1	8	1	23	1.00	0.02	3	23	3	46	0.58	0.07	-	-	-	-	-	-	4	30	8	61	0.50	0.09

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
23 – May 2022	-	-	-	-	-	-	1	8	1	23	1.00	0.02	-	-	-	-	-	-	1	8	1	23	1.00	0.02
24 – June 2022	13	97	22	195	0.28	0.29	17	127	30	292	0.24	0.38	-	-	-	-	-	-	30	224	90	404	0.18	0.67

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
03 – September 2020	9	79	9	209	0.33	0.80	12	105	12	305	0.29	1.06	-	-	-	-	-	-	21	183	21	445	0.22	1.85
04 – October 2020	2	17	2	51	0.71	0.17	2	17	2	42	0.71	0.17	-	-	-	-	-	-	4	34	4	76	0.50	0.34
05 – November 2020	-	-	-	-	-	-	3	26	3	62	0.58	0.26	-	-	-	-	-	-	3	26	3	62	0.58	0.26
06 – December 2020	1	9	1	27	1	0.09	7	62	18	125	0.38	0.63	-	-	-	-	-	-	8	71	27	133	0.35	0.72
07 – January 2021	19	167	44	325	0.23	1.69	86	755	448	1,080	0.11	7.63	-	-	-	-	-	-	105	922	579	1,291	0.11	9.31
08 – February 2021	2	17	2	43	0.71	0.17	2	17	2	43	0.71	0.17	-	-	-	-	-	-	4	35	9	78	0.50	0.35
09 – March 2021	5	43	5	111	0.45	0.43	6	51	17	94	0.41	0.52	-	-	-	-	-	-	11	94	26	172	0.30	0.95
10 – April 2021	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1	0.09
13 – July 2021	-	-	-	-	-	-	1	9	1	34	1	0.09	-	-	-	-	-	-	1	9	1	26	1	0.09
14 – August 2021	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1	0.09
15 – September 2021	-	-	-	-	-	-	2	16	2	41	0.71	0.16	-	-	-	-	-	-	2	16	2	41	0.71	0.16
17 – November 2021	-	-	-	-	-	-	4	34	9	69	0.50	0.34	-	-	-	-	-	-	4	34	9	60	0.50	0.34
18 – December 2021	3	26	3	69	0.58	0.26	4	35	4	95	0.50	0.35	-	-	-	-	-	-	7	61	7	165	0.38	0.62

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
19 – January 2022	2	17	2	52	0.71	0.17	10	87	35	139	0.32	0.88	-	-	-	-	-	-	12	105	44	174	0.29	1.06
20 – February 2022	27	235	78	460	0.19	2.37	15	130	61	208	0.26	1.31	-	-	-	-	-	-	42	365	174	617	0.15	3.69
21 – March 2022	30	259	30	596	0.18	2.62	25	216	112	346	0.20	2.18	-	-	-	-	-	-	55	475	173	942	0.13	4.8
22 – April 2022	-	-	-	-	-	-	1	8	1	34	1.00	0.08	-	-	-	-	-	-	1	8	1	25	1.00	0.08
24 – June 2022	4	34	4	76	0.50	0.34	1	8	1	25	1.00	0.08	-	-	-	-	-	-	5	42	8	84	0.45	0.42

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
03 – September 2020	5	38	8	83	0.45	0.16	5	35	5	90	0.45	0.16	-	-	-	-	-	-	10	75	23	151	0.32	0.32
04 – October 2020	8	59	8	162	0.35	0.25	40	294	40	809	0.16	1.24	-	-	-	-	-	-	48	353	48	935	0.14	1.49
05 – November 2020	-	-	-	-	-	-	4	30	4	75	0.50	0.13	-	-	-	-	-	-	4	30	4	75	0.50	0.13
06 – December 2020	15	115	54	192	0.26	0.48	47	361	161	645	0.15	1.52	-	-	-	-	-	-	62	476	253	813	0.13	2
07 – January 2021	42	319	122	578	0.15	1.34	121	920	624	1,278	0.09	3.87	-	-	-	-	-	-	163	1,240	814	1,719	0.08	5.22
08 – February 2021	5	37	5	88	0.45	0.16	6	44	15	81	0.41	0.19	-	-	-	-	-	-	11	81	29	146	0.30	0.34
09 – March 2021	4	29	7	59	0.50	0.12	11	81	29	154	0.30	0.34	-	-	-	-	-	-	15	110	51	190	0.26	0.46
11 – May 2021	1	7	1	28	1	0.03	2	14	2	35	0.71	0.06	-	-	-	-	-	-	3	21	3	49	0.58	0.09
13 – July 2021	-	-	-	-	-	-	3	22	3	44	0.58	0.09	-	-	-	-	-	-	3	22	3	44	0.58	0.09
17 – November 2021	83	609	83	1760	0.11	2.56	76	557	132	1320	0.11	2.35	-	-	-	-	-	-	159	1166	183	2772	0.08	4.91
18 – December 2021	3	22	3	51	0.58	0.09	9	66	29	117	0.33	0.28	-	-	-	-	-	-	12	88	44	147	0.29	0.37
19 – January 2022	11	81	30	148	0.30	0.34	30	221	133	317	0.18	0.93	-	-	-	-	-	-	41	303	192	443	0.16	1.28

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
20 – February 2022	26	192	103	295	0.20	0.81	34	251	162	347	0.17	1.06	-	-	-	-	-	-	60	442	317	583	0.13	1.86
21 – March 2022	37	268	116	434	0.16	1.13	42	304	195	412	0.15	1.28	-	-	-	-	-	-	79	571	376	774	0.11	2.4
22 – April 2022	1	7	1	29	1	0.03	2	15	2	37	0.71	0.06	-	-	-	-	-	-	3	22	3	51	0.58	0.09
23 – May 2022	-	-	-	-	-	-	1	7	1	22	1.00	0.03	-	-	-	-	-	-	1	7	1	22	1.00	0.03
24 – June 2022	9	64	9	150	0.33	0.27	16	114	21	272	0.25	0.48	-	-	-	-	-	-	25	179	50	365	0.20	0.75

Common Gull

Survey area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
17 – November 2021	-	-	-	-	-	-	5	38	8	84	0.45	0.11	-	-	-	-	-	-	5	38	5	77	0.45	0.11

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
17 – November 2021	-	-	-	-	-	-	1	9	1	26	1.00	0.09	-	-	-	-	-	-	1	9	1	26	1.00	0.09

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
17 – November 2021	-	-	-	-	-	-	4	29	4	66	0.50	0.12	-	-	-	-	-	-	4	29	4	66	0.50	0.12

Small Gull

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
04 – October 2020	4	31	4	92	0.50	0.09	-	-	-	-	-	-	-	-	-	-	-	-	4	31	4	92	0.50	0.09
17 – November 2021	-	-	-	-	-	-	1	8	1	23	1.00	0.02	-	-	-	-	-	-	1	8	1	23	1.00	0.02
19 – January 2022	-	-	-	-	-	-	1	8	1	23	1.00	0.02	-	-	-	-	-	-	1	8	1	23	1.00	0.02

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
19 – January 2022	-	-	-	-	-	-	1	9	1	26	1	0.09	-	-	-	-	-	-	1	9	1	26	1	0.09

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
04 – October 2020	4	29	4	88	0.50	0.12	-	-	-	-	-	-	-	-	-	-	-	-	4	29	4	88	0.50	0.12
17 – November 2021	-	-	-	-	-	-	1	7	1	22	1.00	0.03	-	-	-	-	-	-	1	7	1	22	1.00	0.03

Great Black-backed Gull

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	1	8	1	23	1	0.02	1	8	1	23	1	0.02	-	-	-	-	-	-	2	16	2	46	0.71	0.05
05 – November 2020	1	8	1	24	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	24	1	0.02
06 – December 2020	14	112	14	336	0.27	0.33	3	24	3	64	0.58	0.07	-	-	-	-	-	-	17	136	17	408	0.24	0.40
07 – January 2021	1	8	1	24	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	24	1	0.02
09 – March 2021	1	8	1	23	1	0.02	1	8	1	23	1	0.02	-	-	-	-	-	-	2	15	2	38	0.71	0.04
12 – June 2021	3	24	3	64	0.58	0.07	1	8	1	24	1	0.02	-	-	-	-	-	-	4	32	4	88	0.50	0.10
16 – October 2021	-	-	-	-	-	-	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02
20 – February 2022	33	255	33	749	0.17	0.76	-	-	-	-	-	-	-	-	-	-	-	-	33	255	33	741	0.17	0.76
24 – June 2022	-	-	-	-	-	-	2	15	2	37	0.71	0.04	-	-	-	-	-	-	2	15	2	45	0.71	0.04

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
09 – March 2021	1	9	1	26	1	0.09	1	9	1	26	1	0.09	-	-	-	-	-	-	2	17	2	43	0.71	0.17
20 – February 2022	32	278	32	816	0.18	2.81	-	-	-	-	-	-	-	-	-	-	-	-	32	278	32	816	0.18	2.81
24 – June 2022	-	-	-	-	-	-	1	8	1	25	1.00	0.08	-	-	-	-	-	-	1	8	1	25	1.00	0.08

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
01 – July 2020	1	7	1	22	1	0.03	1	7	1	22	1	0.03	-	-	-	-	-	-	2	15	2	45	0.71	0.06
05 – November 2020	-	-	-	-	-	-	1	8	1	23	1	0.03	-	-	-	-	-	-	1	8	1	23	1	0.03
06 – December 2020	14	107	14	322	0.27	0.45	3	23	3	61	0.58	0.10	-	-	-	-	-	-	17	130	17	384	0.24	0.55
07 – January 2021	-	-	-	-	-	-	1	8	1	23	1	0.03	-	-	-	-	-	-	1	8	1	23	1	0.03
12 – June 2021	3	23	3	62	0.58	0.10	1	8	1	31	1	0.03	-	-	-	-	-	-	4	31	4	92	0.50	0.13
16 – October 2021	-	-	-	-	-	-	1	7	1	22	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03
20 – February 2022	1	7	1	22	1.00	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1.00	0.03
24 – June 2022	-	-	-	-	-	-	1	7	1	21	1.00	0.03	-	-	-	-	-	-	1	7	1	21	1.00	0.03

Herring Gull

Survey Area

Survey	Sitting						Flying						Diving						Perching						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
03 – September 2020	1	8	1	24	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	24	1	0.02
06 – December 2020	11	88	11	264	0.30	0.26	11	88	11	264	0.30	0.26	-	-	-	-	-	-	-	-	-	-	-	-	22	176	22	520	0.21	0.52
10 – April 2021	-	-	-	-	-	-	1	8	1	31	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	23	1	0.02
11 – May 2021	-	-	-	-	-	-	1	7	1	22	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1	0.02
12 – June 2021	14	111	14	326	0.27	0.33	5	40	5	111	0.45	0.12	-	-	-	-	-	-	10	80	10	239	0.32	0.24	29	231	29	693	0.19	0.69
13 – July 2021	-	-	-	-	-	-	3	23	3	54	0.58	0.07	-	-	-	-	-	-	-	-	-	-	-	-	3	23	3	54	0.58	0.07
17 – December 2021	-	-	-	-	-	-	4	31	8	61	0.50	0.09	-	-	-	-	-	-	-	-	-	-	-	-	4	31	8	69	0.50	0.09
20 – February 2022	111	857	111	2524	0.09	2.55	6	46	6	139	0.41	0.14	-	-	-	-	-	-	-	-	-	-	-	-	117	903	117	2663	0.09	2.68
24 – June 2022	-	-	-	-	-	-	1	7	1	22	1.00	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1.00	0.02

Site only

Survey	Sitting						Flying						Diving						Perching						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
03 – September 2020	-	-	-	-	-	-	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1	0.09
13 – July 2021	-	-	-	-	-	-	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	34	1	0.09
17 – December 2021	-	-	-	-	-	-	1	9	1	26	1.00	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1.00	0.09
20 – February 2022	111	964	111	2892	0.09	9.74	6	52	6	156	0.41	0.53	-	-	-	-	-	-	-	-	-	-	-	-	117	1016	117	2996	0.09	10.26

4 km Buffer only

Survey	Sitting						Flying						Diving						Perching						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
06 – December 2020	11	84	11	253	0.30	0.35	11	84	11	246	0.30	0.35	-	-	-	-	-	-	-	-	-	-	-	-	22	169	22	499	0.21	0.71
10 – April 2021	-	-	-	-	-	-	1	7	1	22	1	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1	0.03
11 – May 2021	1	7	1	21	1	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	21	1	0.03
12 – June 2021	14	108	14	401	0.27	0.45	5	39	5	116	0.15	0.16	-	-	-	-	-	-	10	77	10	231	0.32	0.32	29	223	29	663	0.19	0.94
13 – July 2021	-	-	-	-	-	-	2	15	2	37	0.71	0.06	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	37	0.71	0.06
18 – December 2021	-	-	-	-	-	-	3	22	3	51	0.58	0.09	-	-	-	-	-	-	-	-	-	-	-	-	3	22	3	51	0.58	0.09
24 – June 2022	-	-	-	-	-	-	1	7	1	21	1.00	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	21	1.00	0.03

Lesser Black-backed Gull

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
06 – December 2020	12	96	12	384	0.29	0.29	5	40	5	120	0.45	0.12	-	-	-	-	-	-	17	136	17	408	0.24	0.40
11 – May 2021	1	7	1	22	1	0.02	2	15	2	36	0.71	0.04	-	-	-	-	-	-	3	22	3	51	0.58	0.07
12 – June 2021	1	8	1	24	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	24	1	0.02
13 – July 2021	-	-	-	-	-	-	3	23	3	54	0.58	0.07	-	-	-	-	-	-	3	23	3	54	0.58	0.07
14 – August 2021	4	31	4	71	0.50	0.09	2	16	2	47	0.71	0.05	-	-	-	-	-	-	6	47	8	102	0.41	0.14
15 – September 2021	3	23	3	68	0.58	0.07	-	-	-	-	-	-	-	-	-	-	-	-	3	23	3	68	0.58	0.07
20 – February 2022	119	918	119	2755	0.09	2.73	-	-	-	-	-	-	-	-	-	-	-	-	119	918	119	2755	0.09	2.73
21 – March 2022	1	8	1	23	1.00	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	23	1.00	0.02
22 – April 2022	-	-	-	-	-	-	2	15	2	38	0.71	0.04	-	-	-	-	-	-	2	15	2	38	0.71	0.04
24 – June 2022	-	-	-	-	-	-	5	37	7	75	0.45	0.11	-	-	-	-	-	-	5	37	7	67	0.45	0.11

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
13 – July 2021	-	-	-	-	-	-	1	9	1	26	1	0.09	-	-	-	-	-	-	1	9	1	26	1	0.09
14 – August 2021	1	9	1	35	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1	0.09
20 – February 2022	119	1034	119	3101	0.09	10.44	-	-	-	-	-	-	-	-	-	-	-	-	119	1034	119	3101	0.09	10.44

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
21 – March 2022	1	9	1	26	1.00	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1.00	0.09
22 – April 2022	-	-	-	-	-	-	1	8	1	25	1.00	0.08	-	-	-	-	-	-	1	8	1	25	1.00	0.08
24 – June 2022	-	-	-	-	-	-	2	17	2	42	0.71	0.17	-	-	-	-	-	-	2	17	2	42	0.71	0.17

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
06 – December 2020	12	92	12	368	0.29	0.39	5	38	5	153	0.45	0.16	-	-	-	-	-	-	17	130	17	391	0.24	0.55
11 – May 2021	1	7	1	21	1	0.06	2	14	2	35	0.71	0.06	-	-	-	-	-	-	3	21	3	49	0.58	0.09
12 – June 2021	-	-	-	-	-	-	1	8	1	23	1	0.03	-	-	-	-	-	-	1	8	1	23	1	0.03
13 – July 2021	-	-	-	-	-	-	2	15	2	37	0.71	0.06	-	-	-	-	-	-	2	15	2	37	0.71	0.06
14 – August 2021	3	23	3	68	0.58	0.1	2	15	2	60	0.71	0.06	-	-	-	-	-	-	5	37	5	90	0.45	0.16
15 – September 2021	3	22	3	65	0.58	0.09	-	-	-	-	-	-	-	-	-	-	-	-	3	22	3	65	0.58	0.09
22 – April 2022	-	-	-	-	-	-	1	7	1	22	1.00	0.03	-	-	-	-	-	-	1	7	1	22	1.00	0.03
24 – June 2022	-	-	-	-	-	-	3	21	3	50	0.58	0.09	-	-	-	-	-	-	3	21	3	50	0.58	0.09

Black-backed Gull

Survey Area

Survey	Sitting						Flying						Diving						Perched						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Diversity (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
11 – May 2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1	0.02	1	7	1	22	1	0.02
12 – June 2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	24	1	0.02	1	8	1	24	1	0.02
15 – September 2021	4	30	4	90	0.50	0.09	2	15	2	45	0.71	0.04	-	-	-	-	-	-	-	-	-	-	-	-	6	45	6	135	0.41	0.13
20 – February 2022	4	31	4	93	0.50	0.09	4	2	15	2	46	0.71	-	-	-	-	-	-	-	-	-	-	-	-	6	46	6	185	0.41	0.14
22 – April 2022	1	8	1	23	1.00	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	23	1.00	0.02

Site only

Survey	Sitting						Flying						Diving						Perched						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Diversity (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
11 – May 2021	-	-	-	-	-	-	1	8	1	24	1	0.08	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	24	1	0.08
20 – February 2022	4	35	4	104	0.50	0.35	2	17	2	52	0.71	0.17	-	-	-	-	-	-	-	-	-	-	-	-	6	52	6	156	0.41	0.53

4 km Buffer only

Survey	Sitting						Flying						Diving						Perched						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Diversity (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
12 – June 2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	23	1	0.03	1	8	1	23	1	0.03
15 – September 2021	4	29	4	87	0.50	0.12	2	15	2	44	0.71	0.06	-	-	-	-	-	-	-	-	-	-	-	-	6	44	6	131	0.41	0.19
22 – April 2022	1	7	1	22	1.00	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1.00	0.03

Large Gull

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	-	-	-	-	-	-	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02
06 – December 2020	6	48	6	144	0.41	0.14	-	-	-	-	-	-	-	-	-	-	-	-	6	48	6	144	0.41	0.14
07 – January 2021	1	8	1	24	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	24	1	0.02
09 – March 2021	2	15	2	38	0.71	0.04	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	38	0.71	0.04
15 – September 2021	12	90	12	218	0.29	0.27	8	60	8	180	0.35	0.18	-	-	-	-	-	-	20	150	20	421	0.22	0.45
20 – February 2022	7	54	7	154	0.38	0.16	-	-	-	-	-	-	-	-	-	-	-	-	7	54	7	147	0.38	0.16
21 – March 2022	1	8	1	23	1.00	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	23	1.00	0.02
24 – June 2022	1	7	1	22	1.00	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1.00	0.02

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
20 – February 2022	7	61	7	174	0.38	0.62	-	-	-	-	-	-	-	-	-	-	-	-	7	61	7	174	0.38	0.62
21 – March 2022	1	9	1	26	1.00	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1.00	0.09

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	-	-	-	-	-	-	1	7	1	22	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03
06 – December 2020	6	46	6	138	0.41	0.19	-	-	-	-	-	-	-	-	-	-	-	-	6	46	6	138	0.41	0.19
07 – January 2021	-	-	-	-	-	-	1	8	1	23	1	0.03	-	-	-	-	-	-	1	8	1	23	1	0.03
09 – March 2021	2	15	2	37	0.71	0.06	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	37	0.71	0.06
15 – September 2021	12	87	12	232	0.29	0.37	8	58	8	174	0.35	0.24	-	-	-	-	-	-	20	145	20	399	0.22	0.61
24 – June 2022	1	7	1	21	1.00	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	21	1.00	0.03

Gull

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	-	-	-	-	-	-	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02
20 – February 2022	1	8	1	23	1.00	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	23	1.00	0.02

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
20 – February 2022	1	9	1	26	1.00	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1.00	0.09

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	-	-	-	-	-	-	1	7	1	22	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03

Sandwich Tern

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
03 – September 2020	1	8	1	24	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	24	1	0.02

Site only

None recorded

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
03 – September 2020	-	-	-	-	-	-	1	8	1	23	1	0.03	-	-	-	-	-	-	1	8	1	23	1	0.03

Common Tern

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	-	-	-	-	-	-	4	30	4	91	0.50	0.09	-	-	-	-	-	-	4	30	4	83	0.50	0.09
23 – May 2022	-	-	-	-	-	-	1	8	1	23	1.00	0.02	-	-	-	-	-	-	1	8	1	23	1.00	0.02

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	-	-	-	-	-	-	4	33	4	92	0.50	0.33	-	-	-	-	-	-	4	33	4	92	0.50	0.33

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
23 – May 2022	-	-	-	-	-	-	1	7	1	22	1.00	0.03	-	-	-	-	-	-	1	7	1	22	1.00	0.03

‘Commic’ Tern

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	-	-	-	-	-	-	7	53	8	121	0.38	0.16	-	-	-	-	-	-	7	53	15	114	0.38	0.16
03 – September 2020	-	-	-	-	-	-	6	47	8	102	0.41	0.14	-	-	-	-	-	-	6	47	8	102	0.41	0.14

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	-	-	-	-	-	-	5	42	5	100	0.45	0.42	-	-	-	-	-	-	5	42	5	100	0.45	0.42

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	-	-	-	-	-	-	2	15	2	37	0.71	0.06	-	-	-	-	-	-	2	15	2	37	0.71	0.06
03 – September 2020	-	-	-	-	-	-	6	45	8	90	0.41	0.19	-	-	-	-	-	-	6	45	8	90	0.41	0.19

Tern

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
02 – August 2020	1	8	1	23	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	30	1	0.02
11 – May 2021	-	-	-	-	-	-	3	22	3	58	0.58	0.07	-	-	-	-	-	-	3	22	3	58	0.58	0.07
15 – September 2021	-	-	-	-	-	-	2	15	2	45	0.71	0.04	-	-	-	-	-	-	2	15	2	45	0.71	0.04
23 – May 2022	4	30	4	91	0.50	0.09	-	-	-	-	-	-	-	-	-	-	-	-	4	30	4	91	0.50	0.09

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
15 – September 2021	-	-	-	-	-	-	2	16	2	49	0.71	0.16	-	-	-	-	-	-	2	16	2	49	0.71	0.16

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
02 – August 2020	1	7	1	22	1	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1	0.03
11 – May 2021	-	-	-	-	-	-	3	21	3	63	0.58	0.09	-	-	-	-	-	-	3	21	3	56	0.58	0.09
23 – May 2022	4	29	4	87	0.50	0.12	-	-	-	-	-	-	-	-	-	-	-	-	4	29	4	87	0.50	0.12

Great Skua

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
16 – October 2021	1	8	1	23	1	0.02	1	8	1	23	1.00	0.02	-	-	-	-	-	-	2	16	2	39	0.71	0.05

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
16 – October 2021	-	-	-	-	-	-	1	9	1	26	1	0.09	-	-	-	-	-	-	1	9	1	26	1	0.09

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
16 – October 2021	1	7	1	22	1	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1	0.03

Guillemot

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	46	356	240	488	0.15	1.06	1	8	1	23	1	0.02	-	-	-	-	-	-	47	364	240	496	0.15	1.08
03 – September 2020	219	1,720	1,209	2,238	0.07	5.11	6	47	6	126	0.41	0.14	-	-	-	-	-	-	225	1,767	1,264	2,285	0.07	5.25
04 – October 2020	1	8	1	23	1	0.02	-	-	-	-	-	-	-	-	-		-	-	1	8	1	23	1	0.02
05 – November 2020	2	16	2	39	0.70	0.05	13	102	39	189	0.28	0.30	-	-	-	-	-	-	15	118	47	205	0.26	0.35
06 – December 2020	32	256	152	376	0.18	0.76	5	40	8	96	0.45	0.12	-	-	-	-	-	-	37	296	184	416	0.16	0.88
07 – January 2021	43	340	214	475	0.15	1.01	15	119	24	269	0.26	0.35	-	-	-	-	-	-	58	459	293	673	0.13	1.36
08 – February 2021	92	706	537	883	0.10	2.10	93	714	407	1,105	0.10	2.12	-	-	-	-	-	-	185	1,420	1,075	1,812	0.07	4.22
09 – March 2021	101	773	628	942	0.10	2.30	25	191	69	367	0.20	0.57	-	-	-	-	-	-	126	965	735	1,202	0.09	2.87
10 – April 2021	35	269	161	392	0.17	0.80	5	38	8	77	0.45	0.11	-	-	-	-	-	-	40	307	200	438	0.16	0.91
11 – May 2021	973	7,081	6,244	7,947	0.03	21.05	8	58	15	116	0.35	0.17	-	-	-	-	-	-	981	7,139	6,317	7,969	0.03	21.22
12 – June 2021	15	119	56	207	0.26	0.35	-	-	-	-	-	-	-	-	-	-	-	-	15	119	48	215	0.26	0.35
13 – July 2021	40	306	199	444	0.16	0.91	-	-	-	-	-	-	-	-	-	-	-	-	40	306	199	444	0.16	0.91
16 – October 2021	80	620	449	813	0.11	1.84	5	39	8	77	0.45	0.12	-	-	-	-	-	-	85	658	488	875	0.11	1.96
17 – November 2021	166	1273	729	2032	0.08	3.78	2	15	2	38	0.71	0.04	-	-	-	-	-	-	168	1288	736	2094	0.08	3.83
18 – December 2021	4	31	8	69	0.50	0.09	-	-	-	-	-	-	-	-	-	-	-	-	4	31	8	61	0.50	0.09
19 – January 2022	54	417	294	549	0.14	1.24	-	-	-	-	-	-	-	-	-	-	-	-	54	417	309	557	0.14	1.24
20 – February 2022	67	517	401	648	0.12	1.54	-	-	-	-	-	-	-	-	-	-	-	-	67	517	401	656	0.12	1.54
21 – March 2022	334	2537	2111	2970	0.05	7.54	9	68	23	122	0.33	0.2	-	-	-	-	-	-	343	2605	2195	3038	0.05	7.74
22 – April 2022	324	2467	2094	2870	0.06	7.33	8	61	15	122	0.35	0.18	-	-	-	-	-	-	332	2528	2177	2931	0.05	7.51
23 – May 2022	174	1321	1048	1625	0.08	3.93	3	23	3	61	0.58	0.07	-	-	-	-	-	-	177	1344	1086	1617	0.08	3.99
24 – June 2022	75	561	397	748	0.12	1.67	-	-	-	-	-	-	-	-	-	-	-	-	75	561	397	748	0.12	1.67

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
01 – July 2020	10	85	34	145	0.32	0.86	-	-	-	-	-	-	-	-	-	-	-	-	10	85	34	145	0.32	0.86
03 – September 2020	59	515	244	829	0.13	5.20	-	-	-	-	-	-	-	-	-	-	-	-	59	515	253	829	0.13	5.20
05 – November 2020	-	-	-	-	-	-	2	18	2	44	0.71	0.18	-	-	-	-	-	-	2	18	2	44	0.71	0.18
06 – December 2020	13	116	44	205	0.28	1.17	3	27	3	71	0.58	0.27	-	-	-	-	-	-	16	142	62	231	0.25	1.43
07 – January 2021	10	88	35	158	0.32	0.89	2	18	2	44	0.71	0.18	-	-	-	-	-	-	12	105	44	176	0.29	1.06
08 – February 2021	25	217	130	322	0.20	2.19	12	104	35	200	0.29	1.05	-	-	-	-	-	-	37	322	191	452	0.16	3.25
09 – March 2021	25	214	137	300	0.20	2.16	1	9	1	26	1	0.09	-	-	-	-	-	-	26	223	146	309	0.20	2.25
10 – April 2021	9	77	17	154	0.33	0.78	2	17	2	43	0.71	0.17	-	-	-	-	-	-	11	94	34	180	0.30	0.95
11 – May 2021	299	2,420	1,902	2,955	0.06	24.44	2	16	2	40	0.71	0.16	-	-	-	-	-	-	301	2,437	1,951	3,019	0.06	24.62
12 – June 2021	2	17	2	43	0.71	0.17	-	-	-	-	-	-	-	-	-	-	-	-	2	17	2	43	0.71	0.17
13 – July 2021	6	52	9	103	0.41	0.53	-	-	-	-	-	-	-	-	-	-	-	-	6	52	9	103	0.41	0.53
16 – October 2021	28	246	132	405	0.19	2.48	1	9	1	26	1.00	0.09	-	-	-	-	-	-	29	255	123	405	0.19	2.58
17 – November 2021	17	147	69	233	0.24	1.48	-	-	-	-	-	-	-	-	-	-	-	-	17	147	69	233	0.24	1.48
18 – December 2021	1	9	1	26	1.00	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1.00	0.09
19 – January 2022	5	44	9	87	0.45	0.44	-	-	-	-	-	-	-	-	-	-	-	-	5	44	9	87	0.45	0.44
20 – February 2022	10	87	35	148	0.32	0.88	-	-	-	-	-	-	-	-	-	-	-	-	10	87	35	156	0.32	0.88
21 – March 2022	104	899	622	1218	0.10	9.08	4	35	4	78	0.50	0.35	-	-	-	-	-	-	108	933	657	1270	0.10	9.42
22 – April 2022	71	601	398	837	0.12	6.07	5	42	8	85	0.45	0.42	-	-	-	-	-	-	76	643	440	888	0.11	6.49
23 – May 2022	44	379	241	559	0.15	3.83	-	-	-	-	-	-	-	-	-	-	-	-	44	379	241	525	0.15	3.83
24 – June 2022	20	168	76	294	0.22	1.7	-	-	-	-	-	-	-	-	-	-	-	-	20	168	76	286	0.22	1.7

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
01 – July 2020	36	269	172	373	0.17	1.13	1	7	1	22	1	0.03	-	-	-	-	-	-	37	276	164	395	0.16	1.16
03 – September 2020	160	1,206	807	1,636	0.08	5.08	6	45	6	121	0.41	0.19	-	-	-	-	-	-	166	1,251	844	1,689	0.07	5.27
04 – October 2020	1	7	1	22	1	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1	0.03
05 – November 2020	2	15	2	38	0.71	0.06	11	83	23	158	0.30	0.35	-	-	-	-	-	-	13	98	38	181	0.28	0.41
06 – December 2020	19	146	77	230	0.23	0.61	2	15	2	38	0.71	0.06	-	-	-	-	-	-	21	161	77	261	0.22	0.68
07 – January 2021	33	251	137	388	0.17	1.06	13	99	13	236	0.28	0.42	-	-	-	-	-	-	46	350	198	540	0.15	1.47
08 – February 2021	67	490	359	622	0.12	2.06	81	593	307	937	0.11	2.50	-	-	-	-	-	-	148	1,083	783	1,478	0.08	4.56
09 – March 2021	76	557	432	696	0.11	2.35	24	176	66	330	0.20	0.74	-	-	-	-	-	-	100	733	542	952	0.10	3.09
10 – April 2021	26	191	103	287	0.20	0.80	3	22	3	52	0.58	0.09	-	-	-	-	-	-	29	213	125	324	0.19	0.90
11 – May 2021	674	4,707	3,995	5,447	0.04	19.82	6	42	7	84	0.41	0.18	-	-	-	-	-	-	680	4,749	4,016	5,496	0.04	0.06
12 – June 2021	13	100	39	85	0.28	0.42	-	-	-	-	-	-	-	-	-	-	-	-	13	100	39	85	0.28	0.42
13 – July 2021	34	249	154	359	0.17	1.05	-	-	-	-	-	-	-	-	-	-	-	-	34	249	154	359	0.17	1.05
16 – October 2021	52	384	258	524	0.14	1.62	4	30	7	59	0.50	0.13	-	-	-	-	-	-	56	413	288	561	0.13	1.74
17 – November 2021	149	1093	565	1833	0.08	4.6	2	15	2	37	0.71	0.06	-	-	-	-	-	-	151	1107	601	1833	0.08	4.66
18 – December 2021	3	22	3	51	0.58	0.09	-	-	-	-	-	-	-	-	-	-	-	-	3	22	3	51	0.58	0.09
19 – January 2022	49	362	244	487	0.14	1.52	-	-	-	-	-	-	-	-	-	-	-	-	49	362	244	480	0.14	1.52
20 – February 2022	57	420	310	538	0.13	1.77	-	-	-	-	-	-	-	-	-	-	-	-	57	420	310	538	0.13	1.77
21 – March 2022	230	1663	1352	1988	0.07	7	5	36	7	80	0.45	0.15	-	-	-	-	-	-	235	1699	1381	2024	0.07	7.16
22 – April 2022	253	1849	1513	2171	0.06	7.79	3	22	3	66	0.58	0.09	-	-	-	-	-	-	256	1871	1557	2222	0.06	7.88
23 – May 2022	130	941	716	1179	0.09	3.96	3	22	3	58	0.58	0.09	-	-	-	-	-	-	133	962	731	1216	0.09	4.05
24 – June 2022	55	394	265	537	0.13	1.66	-	-	-	-	-	-	-	-	-	-	-	-	55	394	265	537	0.13	1.66

Razorbill

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
03 – September 2020	27	212	102	346	0.19	0.63	-	-	-	-	-	-	-	-	-	-	-	-	27	212	110	353	0.19	0.63
05 – November 2020	3	24	3	47	0.58	0.07	-	-	-	-	-	-	-	-	-	-	-	-	3	24	3	55	0.58	0.07
06 – December 2020	105	840	616	1,095	0.09	2.50	-	-	-	-	-	-	-	-	-	-	-	-	105	840	608	1,079	0.11	2.50
07 – January 2021	88	697	451	958	0.11	2.07	2	16	2	48	0.71	0.05	-	-	-	-	-	-	90	713	475	966	0.11	2.12
08 – February 2021	5	38	8	77	0.45	0.11	-	-	-	-	-	-	-	-	-	-	-	-	5	38	8	77	0.45	0.11
09 – March 2021	14	107	54	176	0.27	0.32	4	31	4	77	0.5	0.09	-	-	-	-	-	-	18	138	69	214	0.24	0.41
10 – April 2021	8	61	15	123	0.35	0.18	-	-	-	-	-	-	-	-	-	-	-	-	8	61	8	123	0.35	0.18
11 – May 2021	3	22	3	51	0.58	0.07	-	-	-	-	-	-	-	-	-	-	-	-	3	22	3	44	0.58	0.07
13 – July 2021	2	15	2	38	0.71	0.04	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	38	0.71	0.04
16 – October 2021	7	54	7	132	0.38	0.16	1	8	1	23	1.00	0.02	-	-	-	-	-	-	8	62	8	147	0.35	0.18
17 – November 2021	9	69	9	192	0.33	0.21	-	-	-	-	-	-	-	-	-	-	-	-	9	69	9	207	0.33	0.21
19 – January 2022	7	54	8	116	0.38	0.16	-	-	-	-	-	-	-	-	-	-	-	-	7	54	8	116	0.38	0.16
20 – February 2022	14	108	31	232	0.27	0.32	-	-	-	-	-	-	-	-	-	-	-	-	14	108	31	216	0.27	0.32
21 – March 2022	29	220	114	342	0.19	0.65	-	-	-	-	-	-	-	-	-	-	-	-	29	220	114	342	0.19	0.65
22 – April 2022	17	129	53	213	0.24	0.38	-	-	-	-	-	-	-	-	-	-	-	-	17	129	53	228	0.24	0.38
23 – May 2022	3	23	3	68	0.58	0.07	-	-	-	-	-	-	-	-	-	-	-	-	3	23	3	68	0.58	0.07
24 – June 2022	16	120	67	187	0.25	0.36	-	-	-	-	-	-	-	-	-	-	-	-	16	120	60	187	0.25	0.36

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
03 – September 2020	3	26	3	61	0.58	0.26	-	-	-	-	-	-	-	-	-	-	-	-	3	26	3	61	0.58	0.26
05 – November 2020	1	9	1	35	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1	0.09
06 – December 2020	16	142	71	231	0.25	1.43	-	-	-	-	-	-	-	-	-	-	-	-	16	142	71	231	0.25	1.43
07 – January 2021	37	325	167	518	0.16	3.28	-	-	-	-	-	-	-	-	-	-	-	-	37	325	176	527	0.16	3.28
09 – March 2021	4	34	4	86	0.50	0.34	-	-	-	-	-	-	-	-	-	-	-	-	4	34	4	77	0.50	0.34
11 – May 2021	1	8	1	24	1	0.08	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	24	1	0.08
16 – October 2021	2	18	2	53	0.71	0.18	-	-	-	-	-	-	-	-	-	-	-	-	2	18	2	53	0.71	0.18
19 – January 2022	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	35	1	0.09
20 – February 2022	2	17	2	43	0.71	0.17	-	-	-	-	-	-	-	-	-	-	-	-	2	17	2	43	0.71	0.17
21 – March 2022	2	17	2	43	0.71	0.17	-	-	-	-	-	-	-	-	-	-	-	-	2	17	2	43	0.71	0.17
22 – April 2022	5	42	5	110	0.45	0.42	-	-	-	-	-	-	-	-	-	-	-	-	5	42	5	102	0.45	0.42
24 – June 2022	6	50	8	101	0.41	0.51	-	-	-	-	-	-	-	-	-	-	-	-	6	50	8	109	0.41	0.51

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
03 – September 2020	24	181	90	309	0.20	0.76	-	-	-	-	-	-	-	-	-	-	-	-	24	181	83	317	0.20	0.76
05 – November 2020	2	15	2	38	0.71	0.06	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	38	0.71	0.06
06 – December 2020	89	683	483	913	0.11	2.88	-	-	-	-	-	-	-	-	-	-	-	-	89	683	483	898	0.11	2.88
07 – January 2021	51	388	213	601	0.14	1.63	2	15	2	46	0.71	0.06	-	-	-	-	-	-	53	403	243	593	0.14	1.70
08 – February 2021	5	37	7	73	0.45	0.16	-	-	-	-	-	-	-	-	-	-	-	-	5	37	7	73	0.45	0.16
09 – March 2021	10	73	29	125	0.32	0.31	4	29	4	73	0.5	0.12	-	-	-	-	-	-	14	103	51	161	0.27	0.43
10 – April 2021	8	59	8	125	0.35	0.25	-	-	-	-	-	-	-	-	-	-	-	-	8	59	8	118	0.35	0.25
11 – May 2021	2	14	2	35	0.71	0.06	-	-	-	-	-	-	-	-	-	-	-	-	2	14	2	35	0.71	0.06
13 – July 2021	2	15	2	37	0.71	0.06	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	37	0.71	0.06
16 – October 2021	5	37	5	103	0.45	0.16	1	7	1	22	1.00	0.03	-	-	-	-	-	-	6	44	6	125	0.41	0.19
17 – November 2021	9	66	9	213	0.33	0.28	-	-	-	-	-	-	-	-	-	-	-	-	9	66	9	183	0.33	0.28
19 – January 2022	6	44	7	103	0.41	0.19	-	-	-	-	-	-	-	-	-	-	-	-	6	44	7	96	0.41	0.19
20 – February 2022	12	88	15	192	0.29	0.37	-	-	-	-	-	-	-	-	-	-	-	-	12	88	15	184	0.29	0.37
21 – March 2022	27	195	94	304	0.19	0.82	-	-	-	-	-	-	-	-	-	-	-	-	27	195	94	311	0.19	0.82
22 – April 2022	12	88	29	168	0.29	0.37	-	-	-	-	-	-	-	-	-	-	-	-	12	88	29	161	0.29	0.37
23 – May 2022	3	22	3	65	0.58	0.09	-	-	-	-	-	-	-	-	-	-	-	-	3	22	3	65	0.58	0.09
24 – June 2022	10	72	29	122	0.32	0.3	-	-	-	-	-	-	-	-	-	-	-	-	10	72	29	114	0.32	0.3

Guillemot / Razorbill

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	1	8	1	23	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	23	1	0.02
02 – August 2020	19	144	76	220	0.23	0.43	-	-	-	-	-	-	-	-	-	-	-	-	19	144	76	220	0.23	0.43
03 – September 2020	112	880	620	1,209	0.09	2.62	-	-	-	-	-	-	-	-	-	-	-	-	112	880	613	1,209	0.09	2.62
04 – October 2020	157	1,202	904	1,532	0.08	3.57	6	46	8	92	0.41	0.14	-	-	-	-	-	-	163	1,248	927	1,562	0.08	3.71
05 – November 2020	34	268	158	386	0.17	0.80	9	71	16	150	0.33	0.21	-	-	-	-	-	-	43	339	221	481	0.15	1.01
06 – December 2020	256	2,047	1,719	2,391	0.06	6.08	9	72	9	160	0.33	0.21	-	-	-	-	-	-	265	2,119	1,807	2,463	0.06	6.30
07 – January 2021	142	1,124	823	1,457	0.08	3.34	31	245	63	507	0.18	0.73	-	-	-	-	-	-	173	1,370	998	1,805	0.08	4.07
08 – February 2021	189	1,451	1,213	1,681	0.07	4.31	12	92	23	117	0.29	0.27	-	-	-	-	-	-	201	1,543	1,313	1,804	0.07	4.59
09 – March 2021	115	880	674	1,118	0.09	2.62	1	8	1	23	1	0.02	-	-	-	-	-	-	116	888	689	1,110	0.09	2.64
10 – April 2021	6	46	15	84	0.41	0.14	1	8	1	31	1	0.02	-	-	-	-	-	-	7	54	15	100	0.38	0.16
11 – May 2021	16	116	36	233	0.25	0.34	-	-	-	-	-	-	-	-	-	-	-	-	16	116	36	218	0.25	0.34
12 – June 2021	3	24	3	64	0.58	0.07	-	-	-	-	-	-	-	-	-	-	-	-	3	24	3	64	0.58	0.07
13 – July 2021	2	15	2	38	0.71	0.04	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	38	0.71	0.04
16 – October 2021	71	550	395	728	0.12	1.63	1	8	1	23	1.00	0.02	-	-	-	-	-	-	72	558	411	728	0.12	1.66
17 – November 2021	322	2470	1480	3812	0.06	7.34	-	-	-	-	-	-	-	-	-	-	-	-	322	2470	1519	3827	0.06	7.34
18 – December 2021	161	1238	984	1530	0.08	3.68	12	92	12	238	0.29	0.27	-	-	-	-	-	-	173	1330	1053	1622	0.08	3.95
19 – January 2022	139	1075	796	1391	0.08	3.2	-	-	-	-	-	-	-	-	-	-	-	-	139	1075	804	1376	0.08	3.2
20 – February 2022	191	1474	1196	1783	0.07	4.38	1	8	1	23	1.00	0.02	-	-	-	-	-	-	192	1482	1204	1790	0.07	4.4
21 – March 2022	579	4397	3722	5127	0.04	13.07	6	46	8	91	0.41	0.14	-	-	-	-	-	-	585	4443	3737	5225	0.04	13.21
22 – April 2022	28	213	114	335	0.19	0.63	1	8	1	23	1.00	0.02	-	-	-	-	-	-	29	221	114	335	0.19	0.66
23 – May 2022	3	23	3	61	0.58	0.07	-	-	-	-	-	-	-	-	-	-	-	-	3	23	3	61	0.58	0.07
24 – June 2022	10	75	30	135	0.32	0.22	-	-	-	-	-	-	-	-	-	-	-	-	10	75	22	142	0.32	0.22

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
02 – August 2020	4	33	8	67	0.50	0.33	-	-	-	-	-	-	-	-	-	-	-	-	4	33	8	67	0.50	0.33
03 – September 2020	34	297	148	506	0.17	3	-	-	-	-	-	-	-	-	-	-	-	-	34	297	140	506	0.17	3
04 – October 2020	37	314	144	552	0.16	3.17	1	8	1	25	1	0.08	-	-	-	-	-	-	38	323	144	577	0.16	3.26
05 – November 2020	5	44	9	97	0.45	0.44	2	18	2	53	0.71	0.18	-	-	-	-	-	-	7	62	18	132	0.38	0.63
06 – December 2020	66	587	418	792	0.12	5.93	-	-	-	-	-	-	-	-	-	-	-	-	66	587	418	783	0.12	5.93
07 – January 2021	40	351	184	579	0.16	3.55	4	35	4	105	0.5	0.35	-	-	-	-	-	-	44	386	184	623	0.15	3.90
08 – February 2021	36	313	209	426	0.17	3.16	2	17	2	43	0.71	0.17	-	-	-	-	-	-	38	330	226	426	0.16	3.33
09 – March 2021	21	163	86	249	0.23	1.65	1	9	1	34	1	0.09	-	-	-	-	-	-	22	172	94	257	0.22	1.74
11 – May 2021	6	49	8	97	0.41	0.49	-	-	-	-	-	-	-	-	-	-	-	-	6	49	8	97	0.41	0.49
12 – June 2021	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1	0.09
16 – October 2021	17	150	62	255	0.24	1.52	-	-	-	-	-	-	-	-	-	-	-	-	17	150	62	255	0.24	1.52
17 – November 2021	40	345	207	517	0.16	3.48	-	-	-	-	-	-	-	-	-	-	-	-	40	345	207	517	0.16	3.48
18 – December 2021	55	477	304	703	0.13	4.82	-	-	-	-	-	-	-	-	-	-	-	-	55	477	312	685	0.13	4.82
19 – January 2022	14	122	52	209	0.27	1.23	-	-	-	-	-	-	-	-	-	-	-	-	14	122	52	209	0.27	1.23
20 – February 2022	49	426	278	573	0.14	4.3	-	-	-	-	-	-	-	-	-	-	-	-	49	426	287	591	0.14	4.3
21 – March 2022	95	821	553	1167	0.10	8.29	-	-	-	-	-	-	-	-	-	-	-	-	95	821	544	1132	0.10	8.29
22 – April 2022	3	25	3	76	0.58	0.25	-	-	-	-	-	-	-	-	-	-	-	-	3	25	3	76	0.58	0.25

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
01 – July 2020	1	7	1	22	1	0.03	1	7	1	22	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03
02 – August 2020	15	110	51	183	0.26	0.46	-	-	-	-	-	-	-	-	-	-	-	-	15	110	51	183	0.26	0.46
03 – September 2020	78	588	377	859	0.11	2.48	-	-	-	-	-	-	-	-	-	-	-	-	78	588	362	875	0.11	2.48
04 – October 2020	120	883	648	1,148	0.09	3.72	5	37	7	81	0.45	0.16	-	-	-	-	-	-	125	920	677	1170	0.09	3.87
05 – November 2020	29	219	113	332	0.19	0.92	7	53	8	113	0.38	0.22	-	-	-	-	-	-	36	272	166	392	0.17	1.15
06 – December 2020	190	1,458	1,197	1,726	0.07	6.14	9	69	15	153	0.33	0.29	-	-	-	-	-	-	199	1,527	1,266	1,818	0.07	6.43
07 – January 2021	102	776	540	1,027	0.10	3.27	27	205	38	441	0.20	0.86	-	-	-	-	-	-	129	981	685	1,354	0.09	4.13
08 – February 2021	153	1,120	915	1,332	0.08	4.72	10	73	22	161	0.32	0.31	-	-	-	-	-	-	163	1,193	988	1,434	0.08	5.02
09 – March 2021	94	689	506	916	0.10	2.90	-	-	-	-	-	-	-	-	-	-	-	-	94	689	520	901	0.10	2.90
10 – April 2021	6	44	15	81	0.41	0.19	1	7	1	29	1	0.03	-	-	-	-	-	-	7	52	22	88	0.38	0.22
11 – May 2021	10	70	10	182	0.32	0.29	-	-	-	-	-	-	-	-	-	-	-	-	10	70	10	161	0.32	0.29
12 – June 2021	2	15	2	46	0.71	0.06	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	46	0.71	0.06
13 – July 2021	2	15	2	37	0.71	0.06	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	37	0.71	0.06
16 – October 2021	54	398	280	539	0.14	1.68	1	7	1	30	1.00	0.03							55	406	280	546	0.13	1.71
17 – November 2021	282	2068	1173	3329	0.06	8.71	-	-	-	-	-	-	-	-	-	-	-	-	282	2068	1107	3344	0.06	8.71
18 – December 2021	106	778	602	983	0.10	3.28	12	88	12	220	0.29	0.37	-	-	-	-	-	-	118	866	660	1093	0.09	3.65
19 – January 2022	125	923	672	1218	0.09	3.89	-	-	-	-	-	-	-	-	-	-	-	-	125	923	664	1203	0.09	3.89
20 – February 2022	142	1047	819	1298	0.08	4.41	1	7	1	22	1.00	0.03	-	-	-	-	-	-	143	1055	811	1313	0.08	4.44
21 – March 2022	484	3499	2892	4201	0.05	14.74	6	43	7	87	0.41	0.18	-	-	-	-	-	-	490	3543	2928	4186	0.05	14.92
22 – April 2022	25	183	95	285	0.20	0.77	1	7	1	22	1.00	0.03	-	-	-	-	-	-	26	190	102	292	0.20	0.8
23 – May 2022	3	22	3	58	0.58	0.09	-	-	-	-	-	-	-	-	-	-	-	-	3	22	3	58	0.58	0.09
24 – June 2022	10	72	21	136	0.32	0.3	-	-	-	-	-	-	-	-	-	-	-	-	10	72	21	136	0.32	0.3

Puffin

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
01 – July 2020	1	8	1	23	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	23	1	0.02
05 – November 2020	13	102	39	181	0.28	0.30	-	-	-	-	-	-	-	-	-	-	-	-	13	102	32	189	0.28	0.30
09 – March 2021	2	15	2	38	0.71	0.04	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	38	0.71	0.04
10 – April 2021	3	23	3	61	0.74	0.07	-	-	-	-	-	-	-	-	-	-	-	-	3	23	3	61	0.58	0.07
11 – May 2021	6	44	7	95	0.41	0.13	-	-	-	-	-	-	-	-	-	-	-	-	6	44	7	95	0.41	0.13
22 – April 2022	37	282	167	411	0.16	0.84	1	8	1	30	1.00	0.02	-	-	-	-	-	-	38	289	175	419	0.16	0.86
23 – May 2022	3	23	3	61	0.58	0.07	-	-	-	-	-	-	-	-	-	-	-	-	3	23	3	61	0.58	0.07

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
01 – July 2020	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	34	1	0.09
05 – November 2020	4	35	4	106	0.50	0.35	-	-	-	-	-	-	-	-	-	-	-	-	4	35	4	97	0.50	0.35
11 – May 2021	3	24	3	65	0.58	0.24	-	-	-	-	-	-	-	-	-	-	-	-	3	24	3	65	0.58	0.24
22 – April 2022	6	51	8	110	0.41	0.52	1	8	1	25	1.00	0.08	-	-	-	-	-	-	7	59	8	118	0.38	0.6

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
05 – November 2020	9	68	23	128	0.33	0.29	-	-	-	-	-	-	-	-	-	-	-	-	9	68	23	128	0.33	0.29
09 – March 2021	2	15	2	37	0.71	0.06	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	37	0.71	0.06
10 – April 2021	3	22	3	59	0.58	0.09	-	-	-	-	-	-	-	-	-	-	-	-	3	22	3	59	0.58	0.09
11 – May 2021	3	21	3	56	0.58	0.09	-	-	-	-	-	-	-	-	-	-	-	-	3	21	3	56	0.58	0.09
22 – April 2022	31	227	132	336	0.18	0.96	-	-	-	-	-	-	-	-	-	-	-	-	31	227	124	336	0.18	0.96
23 – May 2022	3	22	3	58	0.58	0.09	-	-	-	-	-	-	-	-	-	-	-	-	3	22	3	65	0.58	0.09

Auk

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
06 – December 2020	6	48	6	136	0.41	0.14	-	-	-	-	-	-	-	-	-	-	-	-	6	48	6	120	0.41	0.14
07 – January 2021	6	48	6	111	0.41	0.14	-	-	-	-	-	-	-	-	-	-	-	-	6	48	6	111	0.41	0.14
08 – February 2021	2	15	2	46	0.71	0.04	1	8	1	23	1	0.02	-	-	-	-	-	-	3	23	3	54	0.58	0.07
09 – March 2021	2	15	2	38	0.71	0.04	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	38	0.71	0.04
12 – June 2021	1	8	1	24	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	24	1	0.02
17 – November 2021	6	46	15	84	0.41	0.14	-	-	-	-	-	-	-	-	-	-	-	-	6	46	15	84	0.41	0.14
21 – March 2022	4	30	8	61	0.50	0.09	-	-	-	-	-	-	-	-	-	-	-	-	4	30	8	68	0.50	0.09
22 – April 2022	16	122	46	213	0.25	0.36	-	-	-	-	-	-	-	-	-	-	-	-	16	122	46	221	0.25	0.36
23 – May 2022	4	30	4	76	0.50	0.09	-	-	-	-	-	-	-	-	-	-	-	-	4	30	4	76	0.50	0.09

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
08 – February 2021	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1	0.09
17 – November 2021	2	17	2	43	0.71	0.17	-	-	-	-	-	-	-	-	-	-	-	-	2	17	2	43	0.71	0.17
21 – March 2022	1	9	1	26	1.00	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1.00	0.09
22 – April 2022	4	34	4	85	0.50	0.34	-	-	-	-	-	-	-	-	-	-	-	-	4	34	4	85	0.50	0.34
23 – May 2022	2	17	2	52	0.71	0.17	-	-	-	-	-	-	-	-	-	-	-	-	2	17	2	52	0.71	0.17

4 km buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
06 – December 2020	6	46	6	123	0.41	0.19	-	-	-	-	-	-	-	-	-	-	-	-	6	46	6	130	0.41	0.19
07 – January 2021	6	46	6	114	0.41	0.19	-	-	-	-	-	-	-	-	-	-	-	-	6	46	6	114	0.41	0.19
08 – February 2021	1	7	1	22	1	0.03	1	7	1	22	1	0.03	-	-	-	-	-	-	2	15	2	37	0.71	0.06
09 – March 2021	2	15	2	37	0.71	0.06	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	37	0.71	0.06
12 – June 2021	1	8	1	31	1	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	23	1	0.03
17 – November 2021	4	29	7	59	0.50	0.12	-	-	-	-	-	-	-	-	-	-	-	-	4	29	7	59	0.50	0.12
21 – March 2022	3	22	3	51	0.58	0.09	-	-	-	-	-	-	-	-	-	-	-	-	3	22	3	51	0.58	0.09
22 – April 2022	12	88	29	161	0.29	0.37	-	-	-	-	-	-	-	-	-	-	-	-	12	88	22	168	0.29	0.37
23 – May 2022	2	14	2	43	0.71	0.06	-	-	-	-	-	-	-	-	-	-	-	-	2	14	2	43	0.71	0.06

Fulmar

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	3	23	3	53	0.58	0.07	3	23	3	53	0.58	0.07	-	-	-	-	-	-	6	46	15	83	0.41	0.14
03 – September 2020	6	47	6	126	0.41	0.14	2	16	2	47	0.71	0.05	-	-	-	-	-	-	8	63	8	181	0.35	0.19
06 – December 2020	9	72	9	176	0.33	0.21	68	544	72	1,439	0.12	1.62	-	-	-	-	-	-	77	616	88	1,479	0.11	1.83
07 – January 2021	1	8	1	24	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	24	1	0.02
08 – February 2021	8	61	8	154	0.35	0.18	1	8	1	23	1	0.02	-	-	-	-	-	-	9	69	9	161	0.33	0.21
09 – March 2021	6	46	6	115	0.41	0.14	4	31	3	69	0.50	0.09	-	-	-	-	-	-	10	77	23	153	0.32	0.23
11 – May 2021	-	-	-	-	-	-	1	7	1	22	1	0.02	-	-	-	-	-	-	1	7	1	22	1	0.02
14 – August 2021	1	8	1	24	1.00	0.02	2	16	2	47	0.71	0.05	-	-	-	-	-	-	3	24	3	55	0.58	0.07
15 – September 2021	-	-	-	-	-	-	1	8	1	23	1.00	0.02	-	-	-	-	-	-	1	8	1	23	1.00	0.02
17 – November 2021	-	-	-	-	-	-	1	8	1	23	1.00	0.02	-	-	-	-	-	-	1	8	1	23	1.00	0.02
18 – December 2021	1	8	1	31	1.00	0.02	2	15	2	38	0.71	0.04	-	-	-	-	-	-	3	23	3	54	0.58	0.07
19 – January 2022	-	-	-	-	-	-	1	8	1	23	1.00	0.02	-	-	-	-	-	-	1	8	1	23	1.00	0.02
20 – February 2022	4	31	8	62	0.50	0.09	15	116	31	232	0.26	0.34	-	-	-	-	-	-	19	147	54	278	0.23	0.44
21 – March 2022	2	15	2	38	0.71	0.04	1	8	1	23	1.00	0.02	-	-	-	-	-	-	3	23	3	53	0.58	0.07
22 – April 2022	1	8	1	23	1.00	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	30	1.00	0.02
23 – May 2022	2	15	2	38	0.71	0.04	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	38	0.71	0.04
24 – June 2022	1	7	1	22	1.00	0.02	1	7	1	22	1.00	0.02	-	-	-	-	-	-	2	15	2	37	0.71	0.04

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	1	8	1	25	1	0.08	2	17	2	42	0.71	0.17	-	-	-	-	-	-	3	25	3	58	0.58	0.25
03 – September 2020	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	35	1	0.09
06 – December 2020	2	18	2	44	0.71	0.18	13	116	13	356	0.28	1.17	-	-	-	-	-	-	15	133	15	383	0.26	1.34
08 – February 2021	2	17	2	43	0.71	0.17	-	-	-	-	-	-	-	-	-	-	-	-	2	17	2	43	0.71	0.17
14 – August 2021	1	9	1	26	1	0.09	1	9	1	26	1	0.09	-	-	-	-	-	-	2	18	2	44	0.71	0.18
20 – February 2022	2	17	2	43	0.71	0.17	11	96	11	200	0.30	0.97	-	-	-	-	-	-	13	113	17	243	0.28	1.14
21 – March 2022	1	9	1	35	1.00	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1.00	0.09
23 – May 2022	1	9	1	26	1.00	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1.00	0.09
24 – June 2022	1	8	1	25	1.00	0.08	1	8	1	25	1.00	0.08	-	-	-	-	-	-	2	17	2	42	0.71	0.17

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	2	15	2	37	0.71	0.06	1	7	1	22	1	0.03	-	-	-	-	-	-	3	22	3	44	0.58	0.09
03 – September 2020	5	38	5	121	0.45	0.16	2	15	2	45	0.71	0.06	-	-	-	-	-	-	7	53	7	173	0.38	0.22
06 – December 2020	7	54	7	138	0.38	0.23	55	422	55	1,105	0.13	1.78	-	-	-	-	-	-	62	476	62	1,235	0.13	2
07 – January 2021	1	8	1	23	1	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	23	1	0.03
08 – February 2021	6	44	6	132	0.41	0.19	1	7	1	22	1	0.03	-	-	-	-	-	-	7	51	7	146	0.38	0.21

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
09 – March 2021	6	44	6	103	0.41	0.19	4	29	4	66	0.50	0.12	-	-	-	-	-	-	10	73	15	139	0.32	0.31
11 – May 2021	-	-	-	-	-	-	1	7	1	21	1	0.03	-	-	-	-	-	-	1	7	1	21	1	0.03
14 – August 2021	-	-	-	-	-	-	1	8	1	23	1.00	0.03	-	-	-	-	-	-	1	8	1	23	1.00	0.03
15 – September 2021	-	-	-	-	-	-	1	7	1	22	1.00	0.03	-	-	-	-	-	-	1	7	1	29	1.00	0.03
17 – November 2021	1	7	1	22	1.00	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1.00	0.03
18 – December 2021	1	7	1	22	1.00	0.03	2	15	2	37	0.71	0.06							3	22	3	51	0.58	0.09
19 – January 2022	-	-	-	-	-	-	1	7	1	22	1.00	0.03	-	-	-	-	-	-	1	7	1	22	1.00	0.03
20 – February 2022	2	15	2	37	0.71	0.06	4	29	4	81	0.50	0.12	-	-	-	-	-	-	6	44	7	88	0.41	0.19
21 – March 2022	1	7	1	22	1.00	0.03	1	7	1	22	1.00	0.03	-	-	-	-	-	-	2	14	2	36	0.71	0.06
22 – April 2022	1	7	1	22	1.00	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1.00	0.03
23 – May 2022	1	7	1	22	1.00	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1.00	0.03

Storm Petrel

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
11 – May 2021	1	7	1	22	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	22	1	0.02

Site only

None recorded

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
11 – May 2021	1	7	1	21	1	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	7	1	21	1	0.03

Manx Shearwater

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	575	4,454	3,038	6,174	0.040	13.24	1,177	9,117	6,940	11,782	0.03	27.10	-	-	-	-	-	-	1,752	13,571	10,883	16,886	0.02	40.34
02 – August 2020	509	3,861	1,206	8,026	0.040	11.48	186	1,411	1,024	1,866	0.07	4.19	-	-	-	-	-	-	695	5,273	2,473	9,840	0.04	15.67
03 – September 2020	52	408	52	1,044	0.14	1.21	146	1,147	146	3,267	0.08	3.41	-	-	-	-	-	-	198	1,555	198	4,421	0.07	4.62
09 – March 2021	3	23	3	61	0.58	0.07	1	8	1	23	1	0.02	-	-	-	-	-	-	4	31	4	77	0.50	0.09
10 – April 2021	256	1,966	1,290	2,818	0.06	5.84	68	522	384	691	0.12	1.55	-	-	-	-	-	-	324	2,488	1,766	3,310	0.06	7.40
11 – May 2021	3,877	28,215	20,938	35,755	0.02	83.86	747	5,436	3,675	7,671	0.04	16.16	-	-	-	-	-	-	4,624	33,652	26,032	41,904	0.01	100.02
12 – June 2021	250	1,991	709	4,013	0.06	5.92	195	1,553	924	2,301	0.07	4.62	-	-	-	-	-	-	445	3,543	1,879	5,765	0.05	10.53
13 – July 2021	26	199	54	436	0.2	0.59	16	122	61	199	0.25	0.36	-	-	-	-	-	-	42	322	145	605	0.15	0.96
15 – September 2021	1	8	1	23	1	0.02	2	15	2	38	0.7	0.04	-	-	-	-	-	-	3	23	3	53	0.58	0.07
21 – March 2022	5	38	5	84	0.45	0.11	6	46	8	91	0.4	0.11	-	-	-	-	-	-	11	84	23	152	0.3	0.25
22 – April 2022	315	2398	1416	3632	0.05	7.13	100	761	510	1066	0.1	2.26	-	-	-	-	-	-	415	3159	1926	4614	0.05	9.39
23 – May 2022	56	425	91	964	0.13	1.26	88	668	425	994	0.1	1.99	-	-	-	-	-	-	144	1093	592	1761	0.08	3.25
24 – June 2022	241	1803	241	4092	0.06	5.36	80	599	217	1070	0.1	1.78	2	15	2	45	0.7	0.04	323	2417	539	5050	0.05	7.18

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
01 – July 2020	107	913	435	1,425	0.10	9.22	321	2,738	1,459	4,419	0.06	27.66	-	-	-	-	-	-	428	3,651	2,167	5,443	0.05	36.88
02 – August 2020	65	542	65	1,460	0.12	5.47	62	517	259	843	0.13	5.22	-	-	-	-	-	-	127	1,060	300	2,178	0.09	10.71
03 – September 2020	50	436	50	1,108	0.14	4.40	135	1,178	135	3,507	0.09	11.90	-	-	-	-	-	-	185	1,614	185	4,563	0.07	16.30
09 – March 2021	1	9	1	26	1	0.09	1	9	1	26	1	0.09	-	-	-	-	-	-	2	17	2	43	0.71	0.17
10 – April 2021	75	644	189	1,296	0.12	6.51	8	69	26	120	0.35	0.70	-	-	-	-	-	-	83	712	257	1,424	0.11	7.19
11 – May 2021	1,760	14,247	8,014	21,751	0.02	143.91	200	1,619	858	2,631	0.07	16.35	-	-	-	-	-	-	19,60	15,866	9,341	23,669	0.02	160.26
12 – June 2021	15	130	26	312	0.26	1.31	14	121	43	225	0.27	1.22	-	-	-	-	-	-	29	251	78	511	0.19	2.54
13 – July 2021	2	17	2	43	0.7	0.17	4	34	4	86	0.5	0.34	-	-	-	-	-	-	6	52	9	103	0.4	0.53
15 – September 2021	1	8	1	25	1	0.08	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	25	1	0.08
21 – March 2022	2	17	2	52	0.7	0.17	1	9	1	26	1	0.09	-	-	-	-	-	-	3	26	3	69	0.57	0.26
22 – April 2022	50	423	85	1032	0.14	4.27	18	152	76	237	0.24	1.54	-	-	-	-	-	-	68	575	186	1235	0.12	5.81
23 – May 2022	12	103	12	258	0.29	1.04	21	181	86	310	0.22	1.83	-	-	-	-	-	-	33	284	120	482	0.17	2.87
24 – June 2022	15	126	15	311	0.26	1.27	3	25	3	59	0.58	0.25	-	-	-	-	-	-	18	151	18	311	0.24	1.53

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
01 – July 2020	468	3,491	2,275	4,886	0.05	14.70	856	6,386	4,670	8,579	0.03	26.89	-	-	-	-	-	-	1,324	9,877	7,557	12,674	0.03	41.60

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	444	3,245	848	6,980	0.05	13.67	124	906	643	1,213	0.09	3.82	-	-	-	-	-	-	568	4,152	1,572	8,026	0.04	17.49
03 – September 2020	2	15	2	45	0.71	0.06	11	83	30	143	0.30	0.35	-	-	-	-	-	-	13	98	38	173	0.28	0.41
09 – March 2021	2	15	2	44	0.71	0.06	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	44	0.71	0.06
10 – April 2021	181	1,332	861	1,884	0.07	5.61	60	441	309	625	0.13	1.86	-	-	-	-	-	-	241	1,773	1,273	2,347	0.07	7.47
11 – May 2021	2,117	14,784	10,587	19,289	0.02	62.26	547	3,820	2,256	5,782	0.04	16.09	-	-	-	-	-	-	2,664	18,604	14,191	24,324	0.02	78.35
12 – June 2021	235	1,810	578	3,767	0.07	7.62	181	1,394	786	2,111	0.07	5.87	-	-	-	-	-	-	416	3,205	1,610	5,154	0.05	13.50
15 – September 2021	-	-	-	-	-	-	2	15	2	36	0.7	0.06	-	-	-	-	-	-	2	15	2	36	0.7	0.06
21 – March 2022	3	22	3	58	0.58	0.09	5	36	7	80	0.45	0.15	-	-	-	-	-	-	8	58	14	123	0.35	0.24
22 – April 2022	265	1937	1052	3084	0.06	8.16	82	599	358	870	0.11	2.52	-	-	-	-	-	-	347	2536	1542	3815	0.05	10.68
23 – May 2022	44	318	44	832	0.15	1.34	67	485	275	781	0.12	2.04	-	-	-	-	-	-	111	803	362	13972	0.09	3.38
24 – June 2022	226	1617	226	4143	0.07	6.81	77	551	200	1009	0.11	2.32	2	14	2	43	0.7	0.06	305	2182	522	4515	0.06	9.19

Small Shearwater

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
15 – September 2021	-	-	-	-	-	-	6	45	8	98	0.4	0.13	-	-	-	-	-	-	6	45	6	98	0.4	0.13
21 – March 2022	-	-	-	-	-	-	4	30	8	61	0.5	0.09	-	-	-	-	-	-	4	30	8	61	0.5	0.09

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
15 – September 2021	-	-	-	-	-	-	4	33	4	82	0.5	0.33	-	-	-	-	-	-	4	33	4	82	0.5	0.33

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
15 – September 2021	-	-	-	-	-	-	2	15	2	36	0.7	0.06	-	-	-	-	-	-	2	15	2	36	0.7	0.06
21 – March 2022	-	-	-	-	-	-	4	29	7	58	0.5	0.12	-	-	-	-	-	-	4	29	7	58	0.5	0.12

Shearwater

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
04 – October 2020	10	77	10	306	0.32	0.23	-	-	-	-	-	-	-	-	-	-	-	-	10	77	10	230	0.32	0.23

Site only

None recorded

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
04 – October 2020	10	74	10	221	0.32	0.31	-	-	-	-	-	-	-	-	-	-	-	-	10	74	10	221	0.32	0.31

Auk / Shearwater

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
09 – March 2021	4	31	4	92	0.50	0.09	-	-	-	-	-	-	-	-	-	-	-	-	4	31	4	92	0.50	0.09
10 – April 2021	16	123	23	300	0.25	0.37	-	-	-	-	-	-	-	-	-	-	-	-	16	123	23	292	0.25	0.37
11 – May 2021	29	211	138	306	0.19	0.63	-	-	-	-	-	-	-	-	-	-	-	-	29	211	183	291	0.19	0.63
12 – June 2021	5	40	8	80	0.45	0.12	1	8	1	24	1	0.02	-	-	-	-	-	-	6	48	16	96	0.41	0.14
13 – July 2021	2	15	2	38	0.71	0.04	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	38	0.71	0.04
14 – August 2021	-	-	-	-	-	-	1	8	1	24	1	0.02	-	-	-	-	-	-	1	8	1	24	1	0.02
21 – March 2022	2	15	2	38	0.71	0.04	1	8	1	23	1	0.02	-	-	-	-	-	-	3	23	3	53	0.58	0.07
22 – April 2022	31	236	137	343	0.18	0.7	3	23	3	61	0.58	0.07	-	-	-	-	-	-	34	259	152	381	0.17	0.77
23 – May 2022	4	30	4	68	0.5	0.09	4	30	8	61	0.5	0.09	-	-	-	-	-	-	8	61	23	114	0.35	0.18
24 – June 2022	16	120	60	187	0.25	0.36	-	-	-	-	-	-	-	-	-	-	-	-	16	120	60	187	0.25	0.36

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
10 – April 2021	8	69	8	206	0.35	0.70	-	-	-	-	-	-	-	-	-	-	-	-	8	69	8	275	0.35	0.70

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
11 – May 2021	10	81	32	138	0.32	0.82	-	-	-	-	-	-	-	-	-	-	-	-	10	81	32	146	0.32	0.82
13 – July 2021	2	17	2	43	0.71	0.17	-	-	-	-	-	-	-	-	-	-	-	-	2	17	2	43	0.71	0.17
14 – August 2021	-	-	-	-	-	-	1	9	1	26	1	0.09	-	-	-	-	-	-	1	9	1	35	1	0.09
21 – March 2022	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1	0.09
22 – April 2022	3	25	3	59	0.58	0.25	1	8	1	25	1	0.08	-	-	-	-	-	-	4	34	8	68	0.5	0.34
23 – May 2022	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1	0.09
24 – June 2022	1	17	2	42	0.71	0.17	-	-	-	-	-	-	-	-	-	-	-	-	1	17	2	42	0.71	0.17

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
09 – March 2021	4	29	4	81	0.50	0.12	-	-	-	-	-	-	-	-	-	-	-	-	4	29	4	81	0.50	0.12
10 – April 2021	8	59	8	132	0.35	0.25	-	-	-	-	-	-	-	-	-	-	-	-	8	59	8	125	0.35	0.25
11 – May 2021	19	133	70	203	0.23	0.56	-	-	-	-	-	-	-	-	-	-	-	-	19	133	70	203	0.23	0.56
12 – June 2021	5	39	8	77	0.45	0.16	1	8	1	23	1	0.03	-	-	-	-	-	-	6	46	15	85	0.41	0.19
21 – March 2021	1	7	1	22	1	0.03	1	7	1	22	1	0.03	-	-	-	-	-	-	2	14	2	36	0.71	0.06
22 – April 2022	28	205	117	307	0.19	0.86	2	15	2	44	0.71	0.06	-	-	-	-	-	-	30	219	117	322	0.18	0.92
23 – May 2022	3	22	3	58	0.58	0.09	4	29	7	58	0.5	0.12	-	-	-	-	-	-	7	51	14	94	0.38	0.21
24 – June 2022	14	100	43	165	0.27	0.42	-	-	-	-	-	-	-	-	-	-	-	-	14	100	50	165	0.27	0.42

Gannet

Survey Area

Survey	Sitting						Flying						Diving						Deceased						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	44	341	44	1,007	0.15	1.01	27	209	77	434	0.19	0.62	-	-	-	-	-	-	-	-	-	-	-	-	71	550	85	1,387	0.12	1.63
02 – August 2020	7	53	15	106	0.38	0.16	34	258	99	478	0.17	0.77	-	-	-	-	-	-	1	8	1	23	1	0.02	42	319	144	554	0.15	0.95
03 – September 2020	26	204	79	377	0.19	0.61	68	534	243	997	0.12	1.59	-	-	-	-	-	-	-	-	-	-	-	-	94	738	401	1,186	0.10	2.19
04 – October 2020	22	169	84	276	0.21	0.50	22	169	61	306	0.21	0.50	-	-	-	-	-	-	-	-	-	-	-	-	44	337	184	521	0.15	1
05 – November 2020	1	8	1	24	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	24	1	0.02
06 – December 2020	12	96	12	256	0.28	0.29	3	24	3	56	0.57	0.07	-	-	-	-	-	-	-	-	-	-	-	-	15	120	15	288	0.26	0.36
07 – January 2021	1	8	1	24	1	0.02	1	8	1	24	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	2	16	2	40	0.71	0.05
08 – February 2021	5	38	5	84	0.44	0.11	12	92	23	192	0.29	0.27	-	-	-	-	-	-	-	-	-	-	-	-	17	130	38	253	0.24	0.39
09 – March 2021	9	69	23	130	0.33	0.21	17	130	77	199	0.25	0.39	-	-	-	-	-	-	-	-	-	-	-	-	26	199	122	291	0.20	0.59
10 – April 2021	6	46	8	92	0.41	0.14	17	183	61	223	0.24	0.39	-	-	-	-	-	-	-	-	-	-	-	-	23	177	92	284	0.21	0.50
11 – May 2021	20	146	80	226	0.22	0.43	25	182	95	284	0.20	0.54	-	-	-	-	-	-	-	-	-	-	-	-	45	327	211	473	0.15	0.97
12 – June 2021	79	629	183	1,250	0.11	1.87	47	374	207	581	0.14	1.11	-	-	-	-	-	-	-	-	-	-	-	-	126	1,003	502	1,648	0.09	2.98
13 – July 2021	1	8	1	23	1	0.02	1	8	1	23	1	0.02	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	38	0.71	0.04
14 – August 2021	11	86	24	188	0.3	0.26	21	165	71	290	0.22	0.49	-	-	-	-	-	-	-	-	-	-	-	-	32	251	118	400	0.18	0.75
15 – September 2021	33	248	33	669	0.17	0.74	26	195	45	406	0.2	0.58	-	-	-	-	-	-	-	-	-	-	-	-	59	444	105	1007	0.13	1.32
16 – October 2021	5	39	8	77	0.45	0.12	17	132	77	194	0.24	0.39	-	-	-	-	-	-	-	-	-	-	-	-	22	170	108	248	0.21	0.51
17 – November 2021	10	77	10	184	0.32	0.23	12	92	12	253	0.29	0.27	-	-	-	-	-	-	-	-	-	-	-	-	22	169	23	429	0.21	0.5
18 – December 2021	1	8	1	23	1	0.02	3	23	3	54	0.58	0.07	-	-	-	-	-	-	-	-	-	-	-	-	4	31	8	69	0.5	0.09
19 – January 2022	-	-	-	-	-	-	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02	2	15	2	39	0.71	0.04
20 – February 2022	9	69	9	208	0.33	0.21	7	54	8	116	0.38	0.16	-	-	-	-	-	-	-	-	-	-	-	-	16	123	16	386	0.25	0.37
21 – March 2022	4	30	4	68	0.5	0.09	18	137	84	205	0.24	0.41	-	-	-	-	-	-	-	-	-	-	-	-	22	167	99	235	0.21	0.5

Survey	Sitting						Flying						Diving						Deceased						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
22 – April 2022	35	266	91	487	0.17	0.79	38	289	129	495	0.16	0.86	1	8	1	23	1	0.02	-	-	-	-	-	-	74	563	228	997	0.12	1.67
23 – May 2022	-	-	-	-	-	-	4	30	8	61	0.5	0.09	-	-	-	-	-	-	1	8	1	23	1	0.02	5	38	8	68	0.44	0.11
24 – June 2022	7	52	7	112	0.38	0.15	17	127	52	239	0.24	0.38	-	-	-	-	-	-	-	-	-	-	-	-	24	180	82	299	0.20	0.54

Site only

Survey	Sitting						Flying						Diving						Deceased						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
01 – July 2020	-	-	-	-	-	-	5	43	9	85	0.44	0.43	-	-	-	-	-	-	-	-	-	-	-	-	5	43	9	85	0.45	0.43
02 – August 2020	-	-	-	-	-	-	2	17	2	42	0.71	0.17	-	-	-	-	-	-	-	-	-	-	-	-	2	17	2	42	0.71	0.17
03 – September 2020	13	113	13	279	0.28	1.14	11	96	26	192	0.30	0.97	-	-	-	-	-	-	-	-	-	-	-	-	24	209	52	445	0.2	2.11
04 – October 2020	5	42	8	93	0.45	0.42	8	68	8	187	0.35	0.69	-	-	-	-	-	-	-	-	-	-	-	-	13	110	25	212	0.28	1.11
05 – November 2020	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1	0.09
07 – January 2021	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1	0.09
08 – February 2021	-	-	-	-	-	-	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1	0.09
09 – March 2021	2	17	2	43	0.71	0.17	4	34	9	69	0.5	0.34	-	-	-	-	-	-	-	-	-	-	-	-	6	51	17	94	0.41	0.52
10 – April 2021	3	26	3	69	0.58	0.26	6	51	9	120	0.41	0.52	-	-	-	-	-	-	-	-	-	-	-	-	9	77	17	154	0.33	0.78
11 – May 2021	12	97	40	178	0.29	0.98	6	49	8	113	0.41	0.49	-	-	-	-	-	-	-	-	-	-	-	-	18	146	65	27	0.24	1.47
12 – June 2021	1	9	1	26	1	0.09	9	78	26	147	0.33	0.79	-	-	-	-	-	-	-	-	-	-	-	-	10	87	26	147	0.32	0.88
14 – August 2021	3	26	3	62	0.58	0.26	5	44	9	88	0.45	0.44	-	-	-	-	-	-	-	-	-	-	-	-	8	70	26	132	0.35	0.71
15 – September 2021	1	8	1	25	1	0.08	4	33	8	74	0.5	0.33	-	-	-	-	-	-	-	-	-	-	-	-	5	41	8	82	0.45	0.41

Survey	Sitting							Flying							Diving						Deceased						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)		Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)		Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
16 – October 2021	3	26	3	53	0.58	0.26	9	79	35	132	0.33	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	106	53	167	0.29	1.07
20 – February 2022	9	78	9	235	0.33	0.79	3	26	3	78	0.58	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	104	12	313	0.29	1.05
21 – March 2022	4	35	4	78	0.5	0.35	4	35	9	69	0.5	0.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	69	26	121	0.35	0.7
22 – April 2022	-	-	-	-	-	-	6	51	8	93	0.41	0.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	51	17	102	0.41	0.52
23 – May 2022	-	-	-	-	-	-	1	9	1	26	1	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	9	1	26	1	0.09
24 – June 2022	5	42	5	101	0.45	0.42	8	67	8	160	0.35	0.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	109	17	227	0.28	1.1

4 km Buffer only

Survey	Sitting						Flying						Diving						Deceased						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance	LCL	UCL	Precision	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	44	328	44	985	0.15	1.38	22	164	37	418	0.21	0.69	-	-	-	-	-	-	-	-	-	-	-	-	66	492	66	1283	0.12	2.07
02 – August 2020	7	51	15	102	0.38	0.21	32	234	73	439	0.18	0.99	-	-	-	-	-	-	1	7	1	22	1	0.03	40	292	124	519	0.16	1.23
03 – September 2020	13	98	45	158	0.28	0.41	57	430	143	859	0.13	1.81	-	-	-	-	-	-	-	-	-	-	-	-	70	528	241	980	0.12	2.22
04 – October 2020	17	125	52	221	0.24	0.53	14	103	37	206	0.27	0.43	-	-	-	-	-	-	-	-	-	-	-	-	31	228	110	390	0.18	0.96
06 – December 2020	12	92	12	246	0.29	0.39	3	23	3	54	0.58	0.10	-	-	-	-	-	-	-	-	-	-	-	-	15	115	15	284	0.26	0.48
07 – January 2021	-	-	-	-	-	-	-	8	1	23	1	0.03	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	23	1	0.03
08 – February 2021	5	37	5	88	0.45	0.16	11	81	15	176	0.30	0.34	-	-	-	-	-	-	-	-	-	-	-	-	16	117	29	242	0.25	0.49
09 – March 2021	7	51	7	110	0.38	0.21	13	95	44	154	0.28	0.40	-	-	-	-	-	-	-	-	-	-	-	-	20	147	81	227	0.22	0.62
10 – April 2021	3	22	3	52	0.58	0.09	11	81	29	147	0.30	0.34	-	-	-	-	-	-	-	-	-	-	-	-	14	103	44	177	0.27	0.43
11 – May 2021	8	56	21	98	0.35	0.24	19	133	63	223	0.23	0.56	-	-	-	-	-	-	-	-	-	-	-	-	27	189	98	293	0.19	0.80
12 – June 2021	78	601	162	1,233	0.11	2.53	38	293	139	470	0.16	1.23	-	-	-	-	-	-	-	-	-	-	-	-	116	894	354	1,479	0.09	3.77
13 – July 2021	1	7	1	22	1	0.03	1	7	1	22	1	0.03	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	37	0.71	0.06

Survey	Sitting						Flying						Diving						Deceased						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance	LCL	UCL	Precision	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
14 – August 2021	8	60	8	158	0.35	0.25	16	120	30	240	0.25	0.51	-	-	-	-	-	-	-	-	-	-	-	-	24	180	68	315	0.2	0.76
15 – September 2021	32	232	32	602	0.18	0.98	22	160	22	363	0.21	0.67	-	-	-	-	-	-	-	-	-	-	-	-	54	392	73	993	0.14	1.65
16 – October 2021	2	15	2	37	0.71	0.06	8	59	22	103	0.35	0.25	-	-	-	-	-	-	-	-	-	-	-	-	10	74	30	118	0.32	0.31
17 – November 2021	10	73	10	169	0.32	0.31	12	88	12	271	0.29	0.37	-	-	-	-	-	-	-	-	-	-	-	-	22	161	22	389	0.21	0.68
18 – December 2021	1	7	1	22	1	0.03	3	22	3	51	0.58	0.09	-	-	-	-	-	-	-	-	-	-	-	-	4	29	7	59	0.5	0.12
19 – January 2022	-	-	-	-	-	-	1	7	1	22	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03	2	15	2	37	0.71	0.06
20 – February 2022	-	-	-	-	-	-	4	29	7	59	0.5	0.12	-	-	-	-	-	-	-	-	-	-	-	-	4	29	7	59	0.5	0.12
21 – March 2022	-	-	-	-	-	-	14	101	51	159	0.27	0.43	-	-	-	-	-	-	-	-	-	-	-	-	14	101	51	159	0.27	0.43
22 – April 2022	35	256	73	512	0.17	1.08	32	234	80	417	0.18	0.99	1	7	1	22	1	0.03	-	-	-	-	-	-	68	497	183	892	0.12	2.09
23 – May 2022	-	-	-	-	-	-	3	22	3	51	0.58	0.09	-	-	-	-	-	-	1	7	1	22	1	0.03	4	29	7	65	0.5	0.12
24 – June 2022	2	14	2	36	0.7	0.06	9	64	21	122	0.33	0.27	-	-	-	-	-	-	-	-	-	-	-	-	11	79	29	129	0.30	0.33

Bird species

Survey Area

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
19 – January 2022	2	15	2	46	0.71	0.04	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	46	0.71	0.04
20 – February 2022	3	23	3	62	0.58	0.07	3	23	3	54	0.58	0.07	-	-	-	-	-	-	6	46	8	108	0.41	0.14

Site only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
20 – February 2022	-	-	-	-	-	-	1	9	1	26	1	0.09	-	-	-	-	-	-	1	9	1	26	1	0.09

4 km Buffer only

Survey	Sitting						Flying						Diving						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
19 – January 2022	2	15	2	44	0.71	0.06	-	-	-	-	-	-	-	-	-	-	-	-	2	15	2	44	0.71	0.06
20 – February 2022	3	22	3	59	0.58	0.09	2	15	2	37	0.71	0.06	-	-	-	-	-	-	5	37	5	103	0.45	0.16

Grey Seal

Survey Area

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
09 – March 2021	3	23	3	61	0.58	0.07	-	-	-	-	-	-	3	23	3	61	0.58	0.07
11 – May 2021	2	15	2	44	0.71	0.04	-	-	-	-	-	-	2	15	2	44	0.71	0.04
15 – September 2021	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02

Site only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
09 – March 2021	1	9	1	26	1	0.09	-	-	-	-	-	-	1	9	1	26	1	0.09
15 – September 2021	1	8	1	33	1	0.08	-	-	-	-	-	-	1	8	1	25	1	0.08

4 km Buffer only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
09 – March 2021	2	15	2	59	0.71	0.06	-	-	-	-	-	-	2	15	2	59	0.71	0.06
11 – May 2021	2	14	2	42	0.71	0.06	-	-	-	-	-	-	2	14	2	42	0.71	0.06

Seal species

Survey Area

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	2	15	2	38	0.71	0.04	-	-	-	-	-	-	2	15	2	38	0.71	0.04
06 – December 2020	1	8	1	24	1	0.02	-	-	-	-	-	-	1	8	1	24	1	0.02
09 – March 2021	-	-	-	-	-	-	1	7	1	22	1	0.03	1	8	1	31	1	0.02
19 – January 2022	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02
24 – June 2022	-	-	-	-	-	-	1	7	1	22	1	0.02	1	7	1	22	1	0.02

Site only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	1	8	1	25	1	0.08	-	-	-	-	-	-	1	8	1	25	1	0.08

4 km Buffer only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	1	7	1	29	1	0.03	-	-	-	-	-	-	1	7	1	29	1	0.03
06 – December 2020	1	8	1	23	1	0.03	-	-	-	-	-	-	1	8	1	23	1	0.03

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
09 – March 2021	-	-	-	-	-	-	1	7	1	22	1	0.03	1	7	1	22	1	0.03
19 – January 2022	1	7	1	22	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03
24 – June 2022	-	-	-	-	-	-	1	7	1	21	1	0.03	1	7	1	21	1	0.03

Common Minke Whale

Survey Area

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
02 – August 2020	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02
11 – May 2021	1	7	1	22	1	0.02	1	7	1	22	1	0.02	2	15	2	36	0.71	0.04

Site only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
02 – August 2020	-	-	-	-	-	-	1	8	1	25	1	0.08	1	8	1	25	1	0.08

4 km Buffer only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
11 – May 2021	1	7	1	21	1	0.03	1	7	1	21	1	0.03	2	14	2	35	0.71	0.06

Common Dolphin

Survey Area

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
01 – July 2020	4	31	4	85	0.50	0.09	-	-	-	-	-	-	4	31	4	85	0.50	0.09
02 – August 2020	32	243	99	417	0.18	0.72	1	8	1	23	1	0.02	33	250	99	432	0.17	0.74
03 – September 2020	10	79	10	228	0.32	0.23	2	16	2	47	0.72	0.05	12	94	12	236	0.29	0.28
05 – November 2020	19	150	24	331	0.23	0.45	1	8	1	24	1	0.02	20	158	24	339	0.22	0.47
06 – December 2020	1	8	1	24	1	0.02	-	-	-	-	-	-	1	8	1	24	1	0.02
07 – January 2021	1	8	1	24	1	0.02	-	-	-	-	-	-	1	8	1	24	1	0.02
10 – April 2021	4	31	4	77	0.50	0.09	-	-	-	-	-	-	4	31	4	69	0.50	0.09
11 – May 2021	238	1,732	1,252	2,227	0.06	5.15	47	342	204	488	0.15	1.02	285	2,074	1,499	2,729	0.06	6.16
15 – September 2021	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02
19 – January 2022	18	139	23	294	0.24	0.41	1	8	1	23	1	0.02	19	147	39	294	0.23	0.44
20 – February 2022	20	154	20	386	0.22	0.46	-	-	-	-	-	-	20	154	20	370	0.22	0.46
22 – April 2022	10	76	30	137	0.32	0.23	14	107	23	213	0.27	0.32	24	183	76	297	0.2	0.54
23 – May 2022	34	258	46	569	0.17	0.77	3	23	3	53	0.58	0.07	37	281	53	577	0.16	0.84

Site only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
02 – August 2020	15	125	15	284	0.26	1.26	1	8	1	25	1	0.08	16	134	16	300	0.25	1.35
03 – September 2020	7	61	7	183	0.38	0.62	-	-	-	-	-	-	7	61	7	244	0.38	0.62

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
05 – November 2020	3	26	3	79	0.58	0.26	1	9	1	26	1	0.09	4	35	4	141	0.50	0.35
11 – May 2021	75	607	324	947	0.12	6.13	19	154	65	259	0.23	1.56	94	761	437	1,117	0.10	7.69
19 – January 2022	8	70	8	192	0.35	0.71	-	-	-	-	-	-	8	70	8	209	0.35	0.71
20 – February 2022	2	17	2	52	0.71	0.17	-	-	-	-	-	-	2	17	2	52	0.71	0.17
22 – April 2022	2	17	2	42	0.71	0.17	-	-	-	-	-	-	2	17	2	42	0.71	0.17

4 km Buffer only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
01 – July 2020	4	30	4	82	0.50	0.13	-	-	-	-	-	-	4	30	4	82	0.50	0.13
02 – August 2020	17	124	37	234	0.24	0.52	-	-	-	-	-	-	17	124	37	234	0.24	0.52
03 – September 2020	3	23	3	60	0.58	0.10	2	15	2	60	0.71	0.06	5	38	5	90	0.45	0.16
05 – November 2020	16	121	16	294	0.25	0.51	-	-	-	-	-	-	16	121	16	287	0.25	0.51
06 – December 2020	1	8	1	23	1	0.03	-	-	-	-	-	-	1	8	1	31	1	0.03
07 – January 2021	1	8	1	23	1	0.03	-	-	-	-	-	-	1	8	1	23	1	0.03
10 – April 2021	4	29	4	74	0.50	0.12	-	-	-	-	-	-	4	29	4	66	0.50	0.12
11 – May 2021	163	1,138	775	1,564	0.08	4.79	19	154	65	259	0.23	1.56	191	1,334	887	1,795	0.07	5.62

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
15 – September 2021	1	7	1	22	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03
19 – January 2022	10	74	10	162	0.32	0.31	1	7	1	22	1	0.03	11	81	11	185	0.3	0.34
20 – February 2022	18	133	18	339	0.24	0.56	-	-	-	-	-	-	18	133	18	354	0.24	0.56
22 – April 2022	8	58	22	102	0.35	0.24	14	102	29	205	0.27	0.43	22	161	66	285	0.21	0.68
23 – May 2022	34	246	43	535	0.17	1.04	3	22	3	51	0.58	0.09	37	268	58	550	0.16	1.13

Dolphin Species

Survey Area

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	7	54	8	116	0.38	0.16	9	70	9	209	0.33	0.21	16	124	16	294	0.25	0.37
02 – August 2020	27	205	68	394	0.19	0.61	-	-	-	-	-	-	27	205	68	387	0.19	0.61
03 – September 2020	5	39	5	118	0.45	0.12	-	-	-	-	-	-	5	39	5	110	0.45	0.12
05 – November 2020	7	55	7	165	0.38	0.16	-	-	-	-	-	-	7	55	7	165	0.38	0.16
06 – December 2020	6	48	6	120	0.41	0.14	-	-	-	-	-	-	6	48	6	120	0.41	0.14
08 – February 2021	10	77	10	177	0.32	0.23	1	8	1	23	1	0.02	11	84	15	177	0.30	0.25
09 – March 2021	8	61	8	245	0.35	0.18	-	-	-	-	-	-	8	61	8	245	0.35	0.18
10 – April 2021	4	31	4	92	0.50	0.09	2	15	2	46	0.71	0.04	6	46	6	138	0.41	0.14
11 – May 2021	30	218	102	342	0.18	0.65	7	51	7	116	0.38	0.15	37	269	146	415	0.16	0.80
22 – April 2022	9	69	15	152	0.33	0.21	-	-	-	-	-	-	9	69	9	152	0.33	0.21

Site only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	2	17	2	43	0.71	0.17	-	-	-	-	-	-	2	17	2	43	0.71	0.17
02 – August 2020	8	67	8	175	0.35	0.68	-	-	-	-	-	-	8	67	8	175	0.35	0.68
03 – September 2020	4	35	4	105	0.50	0.35	-	-	-	-	-	-	4	35	4	105	0.50	0.35
05 – November 2020	7	62	7	185	0.38	0.63	-	-	-	-	-	-	7	62	7	185	0.38	0.63
06 – December 2020	3	27	3	80	0.58	0.27	-	-	-	-	-	-	3	27	3	80	0.58	0.27
08 – February 2021	5	43	5	122	0.45	0.43	-	-	-	-	-	-	5	43	5	122	0.45	0.43

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
11 – May 2021	18	146	40	283	0.24	1.47	5	40	5	105	0.45	0.40	23	186	65	332	0.21	1.88
22 – April 2022	4	34	4	135	0.5	0.34	-	-	-	-	-	-	4	34	4	102	0.5	0.34

4 km Buffer only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
01 – July 2020	5	37	5	97	0.44	0.16	9	67	9	201	0.33	0.28	14	104	14	283	0.27	0.44
02 – August 2020	19	139	37	292	0.23	0.59	-	-	-	-	-	-	19	139	37	292	0.23	0.59
03 – September 2020	1	8	1	23	1	0.03	-	-	-	-	-	-	1	8	1	23	1	0.03
06 – December 2020	3	23	3	69	0.58	0.10	-	-	-	-	-	-	3	23	3	69	0.58	0.10
08 – February 2021	5	37	5	102	0.45	0.16	1	7	1	22	1	0.03	6	44	6	102	0.41	0.19
09 – March 2021	8	59	8	176	0.35	0.25	-	-	-	-	-	-	8	59	8	176	0.35	0.25
10 – April 2021	4	29	4	88	0.50	0.12	2	15	2	44	0.71	0.06	6	44	6	132	0.41	0.19
11 – May 2021	12	84	35	147	0.29	0.35	2	14	2	42	0.71	0.06	14	98	35	175	0.27	0.41
22 – April 2022	5	37	5	80	0.45	0.16	-	-	-	-	-	-	5	37	5	88	0.45	0.16

Harbour Porpoise

Survey Area

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	2	16	2	39	0.71	0.05	-	-	-	-	-	-	2	16	2	39	0.71	0.05
03 – September 2020	1	8	1	24	1	0.02	3	24	3	71	0.58	0.07	4	31	4	86	0.50	0.09
04 – October 2020	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02
11 – May 2021	6	44	15	80	0.41	0.13	3	22	3	51	0.58	0.07	9	65	22	116	0.33	0.19
13 – July 2021	-	-	-	-	-	-	1	8	1	31	1	0.02	1	8	1	23	1	0.02
15 – September 2021	2	15	2	45	0.71	0.04	2	15	2	38	0.71	0.04	4	30	4	90	0.5	0.09
22 – April 2022	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02
23 – May 2022	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02
24 – June 2022	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02

Site only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	1	9	1	26	1	0.09	-	-	-	-	-	-	1	9	1	26	1	0.09
04 – October 2020	1	8	1	25	1	0.08	-	-	-	-	-	-	1	8	1	25	1	0.08
11 – May 2021	4	32	4	65	0.50	0.32	1	8	1	32	1	0.08	5	40	8	89	0.45	0.40
15 – September 2021	2	16	2	49	0.71	016	1	8	1	25	1	0.08	3	25	3	74	0.58	0.25
22 – April 2022	1	8	1	25	1	0.08	-	-	-	-	-	-	1	8	1	25	1	0.08

4 km Buffer only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	1	7	1	22	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03
03 – September 2020	1	8	1	23	1	0.03	3	23	3	68	0.58	0.10	4	30	4	83	0.50	0.13
11 – May 2021	2	14	2	35	0.71	0.06	2	14	2	35	0.71	0.06	4	28	7	56	0.50	0.12
13 – July 2021	-	-	-	-	-	-	1	7	1	22	1	0.03	1	7	1	22	1	0.03
15 – September 2021	-	-	-	-	-	-	1	7	1	22	1	0.03	1	7	1	22	1	0.03
23 – May 2022	1	7	1	22	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03
24 – June 2022	1	7	1	21	1	0.03	-	-	-	-	-	-	1	7	1	21	1	0.03

Dolphin / Porpoise

Survey Area

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	4	31	8	70	0.5	0.09	2	16	2	39	0.71	0.05	6	46	15	85	0.41	0.14
02 – August 2020	10	76	15	167	0.32	0.23	-	-	-	-	-	-	10	76	15	167	0.32	0.23
03 – September 2020	4	31	8	63	0.50	0.09	4	31	4	94	0.50	0.09	8	63	8	149	0.35	0.19
04 – October 2020	10	77	10	230	0.32	0.23	-	-	-	-	-	-	10	77	10	230	0.32	0.23
08 – February 2021	1	8	1	23	1	0.02	1	8	1	23	1	0.02	2	15	2	38	0.71	0.04
09 – March 2021	3	23	3	92	0.58	0.07	-	-	-	-	-	-	3	23	3	69	0.58	0.07
10 – April 2021	-	-	-	-	-	-	2	15	2	38	0.71	0.04	2	15	2	38	0.71	0.04
11 – May 2021	13	95	44	167	0.28	0.28	1	7	1	22	1	0.02	14	102	36	182	0.27	0.30
15 – September 2021	2	15	2	45	0.71	0.04	-	-	-	-	-	-	2	15	2	60	0	0.04
16 – October 2021	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02
19 – January 2022	2	15	2	46	0.71	0.04	-	-	-	-	-	-	2	15	2	46	0.71	0.04
20 – February 2022	3	23	3	69	0.58	0.07	-	-	-	-	-	-	3	23	3	69	0.58	0.07

Site only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
01 – July 2020	3	26	3	60	0.58	0.26	-	-	-	-	-	-	3	26	3	60	0.58	0.26
02 – August 2020	7	58	7	159	0.38	0.59	-	-	-	-	-	-	7	58	7	159	0.38	0.59

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
03 – September 2020	3	26	3	61	0.58	0.26	-	-	-	-	-	-	3	26	3	61	0.58	0.26
08 – February 2021	-	-	-	-	-	-	1	9	1	26	1	0.09	1	9	1	26	1	0.09
11 – May 2021	7	57	16	113	0.38	0.58	1	8	1	24	1	0.08	8	65	8	130	0.35	0.66
16 – October 2021	1	9	1	26	1	0.09	-	-	-	-	-	-	1	9	1	26	1	0.09

4 km Buffer only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km²)
01 – July 2020	1	7	1	22	1	0.03	2	15	2	37	0.71	0.06	3	22	3	52	0.58	0.09
02 – August 2020	3	22	3	51	0.58	0.09	-	-	-	-	-	-	3	22	3	51	0.58	0.09
03 – September 2020	1	8	1	30	1	0.03	4	30	4	90	0.50	0.13	5	38	5	113	0.45	0.16
04 – October 2020	10	47	10	294	0.32	0.31	-	-	-	-	-	-	10	74	10	221	0.32	0.31
08 – February 2021	1	7	1	29	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03
09 – March 2021	3	22	3	66	0.58	0.09	-	-	-	-	-	-	3	22	3	88	0.58	0.09
10 – April 2021	-	-	-	-	-	-	2	15	2	37	0.71	0.06	2	15	2	37	0.71	0.06
11 – May 2021	6	42	7	84	0.41	0.18	-	-	-	-	-	-	6	42	7	84	0.41	0.18
15 – September 2021	2	15	2	44	0.71	0.06	-	-	-	-	-	-	2	15	2	44	0.71	0.06
19 – January 2022	2	15	2	44	0.71	0.06	-	-	-	-	-	-	2	15	2	44	0.71	0.06
20 – February 2022	3	22	3	66	0.58	0.09	-	-	-	-	-	-	3	22	3	66	0.58	0.09

Marine Mammal Species

Survey Area

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
13 – July 2021	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02
20 – February 2022	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	31	1	0.02

Site only

None recorded

4 km Buffer only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
13 – July 2021	1	7	1	29	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03
20 – February 2022	1	7	1	22	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03

Basking Shark

Survey Area

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
07 – January 2021	1	8	1	24	1	0.02	-	-	-	-	-	-	1	8	1	24	1	0.02

Site only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
07 – January 2021	1	9	1	26	1	0.09	-	-	-	-	-	-	1	9	1	26	1	0.09

4 km Buffer only

None recorded

Ocean Sunfish

Survey Area

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
12 – June 2021	1	8	1	24	1	0.02	-	-	-	-	-	-	1	8	1	24	1	0.02
13 – July 2021	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02
16 – October 2021	1	8	1	23	1	0.02	-	-	-	-	-	-	1	8	1	23	1	0.02

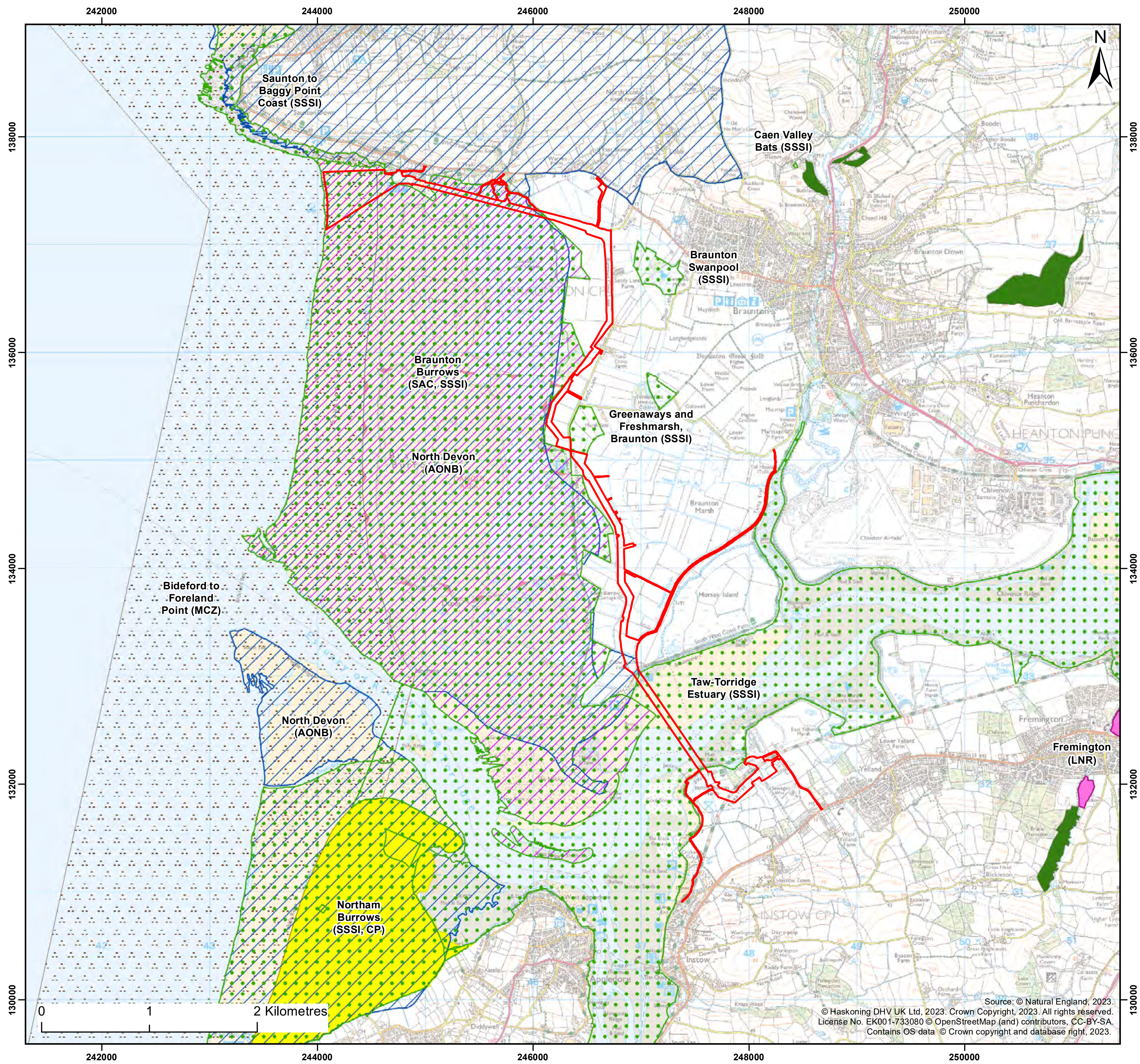
Site only

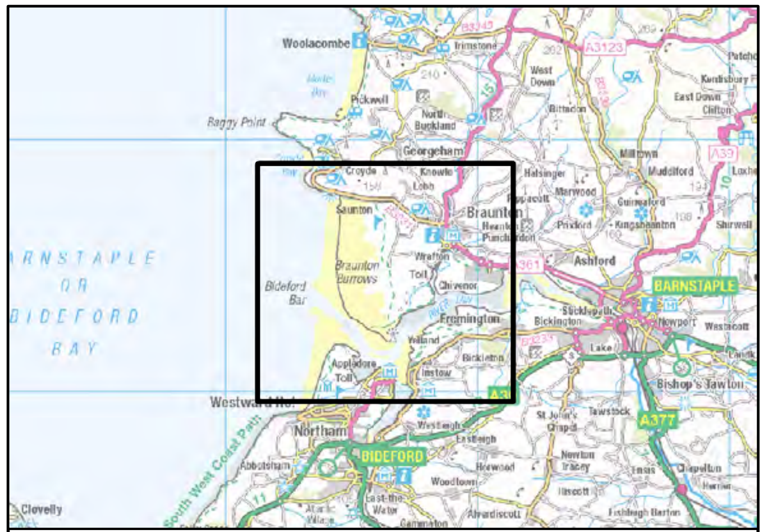
None recorded

4 km Buffer only

Survey	Submerged						Surfacing						Total					
	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)	Count	Abundance Est.	LCL	UCL	Precision (CV)	Density (km^2)
12 – June 2021	1	8	1	23	1	0.03	-	-	-	-	-	-	1	8	1	23	1	0.03
13 – July 2021	1	7	1	22	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03
16 – October 2021	1	7	1	22	1	0.03	-	-	-	-	-	-	1	7	1	22	1	0.03

Annex 9: Designated Sites





Legend:

- Onshore Development Area
- Marine Conservation Zones (MCZ)
- Special Areas of Conservation (SAC)
- Sites of Special Scientific Interest (SSSI)
- Areas of Outstanding Natural Beauty (AONB)
- Ancient Woodland
- Local Nature Reserves (LNR)
- Country Parks

Client:	Project:
Offshore Wind Ltd.	White Cross Offshore Windfarm

Title:

Designated Sites

Figure: 16.2	Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0713

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	03/08/2023	AB	CB	A3	1:35,000

Co-ordinate system: British National Grid

WHITE CROSS

Royal HaskoningDHV
Enhancing Society Together

INSERT PDF

Annex 10: Report to Inform Appropriate Assessment Note

1 Introduction

1. The responses to Natural England's comments on the **Appendix 6.A: Report to Inform Appropriate Assessment (RIAA)** of the **Onshore ES** are presented in **Appendix A: Response to Natural England**.

2. The Applicant considers that there is sufficient information provided in **RIAA** to conclude that there will no Adverse Effect on Integrity (AEoI) as a result of the Project. However, following the comments provided by Natural England, further surveys, assessment and evidence have been provided and are detailed in **Appendix A**) these confirm the assessment conclusions in the **RIAA**. Given that no conclusions of AEoI are subject to change as a result of the further evidence provided, it is considered that it is not necessary to update the **RIAA**.

2 Braunton Burrows SAC

3. Concerns regarding the information and assessment in relation to the coastal processes and the effects on the Braunton Burrows SAC were noted by the Applicant. Therefore, further geophysical survey was undertaken at the Landfall location. This determined that there is sufficient depth of sand to avoid a risk of cable exposure within the intertidal area of Braunton Burrows SAC. This supports the previous offshore survey and conclusions of the **RIAA** in relation to depth of cables. Detailed information is provided in **Appendix T Annex 1: Onshore Ground Investigation Factual Report**.

4. **Appendix F: Coastal Geomorphology Technical Note** (WHX001-FLO-CON-CAG-ASS-0002) considered the Taw-Torridge Estuary system and its potential relationship with Braunton Burrows SAC, which has confirmed the conclusion of the **RIAA**. This document also provided further conceptual understanding of the system to confirm that the buried cable would not be exposed over time (supported by the **Cable Burial Risk Assessment (CBRA**) (WHX001-FLO-CON-ENG-RSA-0001) as stated in the **RIAA**, nor that there would be any impacts on geomorphology. The additional survey and assessment confirmation the information and conclusions in relation to the Braunton Burrows SAC in the **RIAA**.

3 Annex II Migratory Fish

5. With regards to Annex II migratory fish over the limited piling activities, Natural England stated they disagreed with the conclusions and requested further justification. We have provided further justification within the ES Addendum documents, and reiterate where the modelling is presented in the submitted **Offshore ES** and **RIAA**. Therefore, the conclusions of the **RIAA** remain the same.

4 Offshore Ornithology

6. With regards to offshore ornithology, Natural England raised concerns in relation to the cumulative and in-combination assessment, the worst-case scenario used for CRM (and to take account of recent best practice guidance changes) and disagreed with the apportioning applied to account for sabbatical rates. The **RIAA** had provided qualitative assessment for the historic projects. However, in order to provide further assessment to support the conclusions of the **RIAA**, a gap analysis and quantification has been undertaken for a range of key species (see **Appendix Q Annex 3: Cumulative and In-combination Gap Analysis Report** (WHX001-FLO-CON-ENV-ASS-0003) of this **ES Addendum**). Where species exceeded the 1% threshold, Population Viability Analysis (PVA) was undertaken (see **Appendix Q Annex 1: Population Viability Analysis** of this **ES Addendum**).

7. The results of this gap analysis concluded that there is no material change the in-combination assessment conclusions presented within the **RIAA**. In regard to the worst case assessment question, this is presented in the **RIAA**, noting it as being the 18MW option. However, in order to take account of new guidance updated collision impacts were modelled and considered within **Appendix Q Annex 3: Cumulative and In-combination Gap Analysis Report** (WHX001-FLO-CON-ENV-ASS-0003) of this **ES Addendum**. For kittiwake and gannet this resulted in further reductions in the worst-case impact predictions, and there are no changes to the conclusions of the submitted **RIAA**. We provide clarification regarding the sabbatical rate in our response, however, we considered and reviewed the apportionment for gannet (see **Appendix Q Annex 2: White Cross Offshore Windfarm Offshore Ornithology HRA Excluding Sabbatical Rates** (WHX001-FLO-CON-ENV-RPT-0003)). This resulted in predicted impacts for the Project increasing by less than 0.1 additional mortalities per annum, which would not materially change the Project's original assessment conclusions within the **RIAA.**

5 Petalwort

8. Natural England raised concerns about impacts on petalwort of the Braunton Burrows SAC. The **RIAA** concluded no presence (within the Onshore Development Area) and no impacts (due to the very small scale of the buried cable ducting), and this has been further confirmed by an additional petalwort desk-based assessment and petalwort site survey (see **Appendix L: Petalwort Desk-Based Assessment and Survey Report**). The survey confirmed no presence in the Onshore Development, which supported the information in the **RIAA**. Concerns were also raised about hydrogeological impacts from the trenchless activities and dewatering and the indirect impact to on petalwort and dune slack habitat. This impact was not screened into the **RIAA/HRA**. However,

it had been considered outside the process. To support the consideration (from the **ES**), geotechnical survey (**Appendix T: Onshore Ground Investigation Interpretative Report** of the **ES Addendum**) and hydrogeological risk assessment modelling (**Appendix G: Hydrogeological Risk Assessment**) were undertaken. The additional information confirmed the baseline understanding. The modelling results and risk assessment confirmed only temporary localised effects, which would not result in any long term changes to groundwater. Consequently, this confirmed that no indirect impact on petalwort or dune slack habitat of the Braunton Burrows SAC would be affected.