Hornsea Project Four

Predator Eradication Implementation Study Update

Deadline 5, Date: 20 June 2022
Document reference: G5.4
Revision: 01

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G5.4
Ver. A

Revision Summary				
Rev	*Date*	*Prepared by*	*Checked by*	*Approved by*
01	20/06/2022	GoBe Consultants Ltd, June 2022	Dr Sarah Randall, Orsted, June 2022	Dr Julian Carolan, Orsted, June 2022

Revision Change Log			
Rev	*Page*	*Section*	*Description*
01	-	-	Submitted at Deadline 5

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Glossary

Term	Definition
Compensation / Compensatory Measures	If an Adverse Effect on the Integrity of a designated site is determined during the Secretary of State's Appropriate Assessment, compensatory measures for the impacted site (and relevant features) will be required. The term compensatory measures is not defined in the Habitats Regulations. Compensatory measures are however, considered to comprise those measures which are independent of the project, including any associated mitigation measures, and are intended to offset the negative effects of the plan or project so that the overall ecological coherence of the national site network is maintained.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
Hornsea Project Four Offshore Wind Farm	The term covers all elements of the project (i.e. both the offshore and onshore). Hornsea Four infrastructure will include offshore generating stations (wind turbines), electrical export cables to landfall, and connection to the electricity transmission network. Hereafter referred to as Hornsea Four.
Index of Abundance	An estimate of the relative size of an animal population calculated from counts of the number of individuals caught for each standardized unit of effort.
Landfall	The generic term applied to the entire landfall area between Mean Low Water Spring (MLWS) tide and the Transition Joint Bay (TJB) inclusive of all construction works, including the offshore and onshore ECC, intertidal working area and landfall compound. Where the offshore cables come ashore east of Fraisthorpe.
Orsted Hornsea Project Four Ltd.	The Applicant for the proposed Hornsea Project Four Offshore Wind Farm Development Consent Order (DCO).
Special Protection Area (SPA)	Strictly protected sites designated pursuant to Article 4 of the Birds Directive (via the Habitats Regulations) for species listed on Annex I of the Directive and for regularly occurring migratory species.

Acronyms

Term	Definition
AEoI	Adverse Effect on Integrity
AWT	Alderney Wildlife Trust
DCO	Development Consent Order
FFC	Flamborough and Filey Coast
GRCP	Guillemot and Razorbill Compensation Plan

IoA	Index of Abundance
RIAA	Report to Inform Appropriate Assessment
SoA	States of Alderney
SPA	Special Protection Area
WMI	Wildlife Management International

1 Background

1.1 Introduction

1.1.1.1 Orsted Hornsea Project Four Limited (hereafter the 'Applicant') is proposing to develop Hornsea Project Four Offshore Wind Farm (hereafter 'Hornsea Four'). Hornsea Four's proposed array area will be located approximately 69 km offshore, to the east from of the East Riding of Yorkshire. Hornsea Four will include both offshore and onshore infrastructure including an offshore generating station (the offshore wind farm), export cables to landfall, an onshore substation and connection to the electricity transmission network. Detailed information on the project design can be found in **A1.4: Project Description (REP1-004)**, with detailed information on the site selection process and consideration of alternatives described in **A1.3: Site Selection and Consideration of Alternatives (APP-009)**.

1.1.1.2 The Applicant has undertaken a robust Report to Inform Appropriate Assessment (RIAA) (**B2.2: Report to Inform Appropriate Assessment (**Revision 3 of **Part 1, 3 & 4** to be submitted at Deadline 5, **REP2-005, APP-171 – APP-178)**) and concluded that based on the available evidence relating to the potential for, and consequence of, displacement to common guillemot, *Uria aalge* (hereafter guillemot) and razorbill, *Alca torda*, it does not consider there to be potential for adverse effect on integrity (AEoI) (for either species) to the conservation objectives of the Flamborough and Filey Coast (FFC) Special Protection Area (SPA) either from project alone or in-combination with other plans and projects.

1.1.1.3 The Guillemot and Razorbill Compensation Plan (GRCP) (Revision 2 of **B2.8: FFC SPA: Guillemot and Razorbill Compensation Plan** (submitted at Deadline 5)) has been developed in support of Hornsea Four should the Secretary of State disagree with the conclusions of the Applicant's RIAA in relation to the impact of the proposed wind farm on these species and find that adverse effects on the integrity of the FFC SPA cannot be ruled out. The predicted magnitude of this impact on the guillemot and razorbill features of the FFC SPA (cited within **B2.2: Report to Inform Appropriate Assessment** (Revision 3 of Part 1, Part 2 and Part 3 to be submitted at Deadline 5, **REP1-012, APP-171 – APP-178**)) is presented in **Table 2** of Revision 2 of **B2.6: Compensation Measures for FFC SPA Overview** (submitted at Deadline 5).

1.1.1.4 The in-principal compensation measures for guillemot and razorbill are being delivered as a suite of measures that include bycatch reduction, predator eradication, and fish habitat enhancement (as a resilience measure). Further information on the suite of measures is presented within Revision 2 of **B2.8: FFC SPA: Guillemot and Razorbill Compensation Plan** (submitted at Deadline 5). This document focuses solely on evidence gathered for the predator eradication 'without prejudice' compensation case.

1.2 Document Purpose

1.1.1.1 As part of the development of the 'without prejudice' compensation case for predator eradication for the benefit of guillemot and razorbill, an eradication implementation study has been undertaken across the Channel Islands of Herm, Sark and Alderney (which includes islands and islets associated with each main island). The main focus of the implementation

study is to understand the most suitable location to undertake a predator eradication programme focussing on brown (*Rattus norvegicus*) and black (*Rattus rattus*) rats.

1.1.1.2 This document provides the preliminary findings from the implementation study from data collected between September 2021 and June 2022, these include:

- Presence of target predator species;
- Necropsy analysis of the target predator species;
- Additional site-specific evidence of predation pressure;
- Preliminary findings from resident questionnaires (social acceptability);and
- Preliminary findings from the seabird census.

1.2.1.1 A preliminary estimate of nesting space for guillemot and razorbill has also been undertaken by the Applicant (see **G1.33: Predator Eradication Island Suitability Assessment Bailiwick of Guernsey** which is informed by and is also contributing to the implementation studies, it has been updated following the recent surveys and is submitted at Deadline 5). These will be confirmed, and where necessary refined, following completion of the surveys that are ongoing over the summer months of 2022.

1.2.1.2 Further updates from the implementation study will be sent to the relative stakeholders if required.

2 Introduction

2.1 Background

2.1.1.1 In 2021, the Applicant carried out a screening assessment of candidate sites for predator eradication to benefit guillemot and razorbill populations. The following sites were shortlisted:

- Alderney: A number of islands/ islets around the main island;
- Herm: Including The Humps and Jethou plus other smaller islets; and
- Sark: A number of islands/ islets around the main island.

2.1.1.2 The Applicant approached Alderney Wildlife Trust (AWT) in August 2021 to determine their ambition to eradicate rats from certain locations. The Applicant has since been working with AWT by providing additional resources (including trail cameras, toxic/non-toxic bait stations, optics, training etc.) and boat support to aid with rat eradication, and expand the surveillance for rats to include the islands of Burhou and Coque. To undertake the implementation study across the islands of Herm, Sark and their nearby islets and stacks, the Applicant commissioned a team of predator eradication experts, ornithologists and social scientists from NBC Environment Ltd. and Wildlife Management International (WMI) Ltd..

2.1.1.3 The key objectives of the Predator Eradication Implementation Study were to:

- (1) Determine if invasive mammalian predators (to species level) are present at a specific location and the potential overlap the species may have with known guillemot and/ or razorbill nesting locations;
- (2) Determine site specific predation of guillemot and/ or razorbill (eggs and chicks) at each location; and

- (3) Calculate available nesting habitat potentially available to guillemot and/ or razorbill following the removal of invasive predation pressure.

2.1.1.4 The study is currently ongoing and further findings will be sent to the relevant stakeholders if required. Preliminary estimates of nesting habitat availability for the Bailiwick of Guernsey is presented within **G1.33: Predator Eradication Island Suitability Assessment: Bailiwick of Guernsey** (submitted at Deadline 5)**.**

2.1.1.5 In line with recent Natural England advice, evidence collected by the Applicant, and support by Alderney Wildlife Trust and eradication experts, the Applicant is considering islands and islets within 500m of the coast of Alderney, Herm and Sark (in addition to islands and islets beyond this distance), due to benefits associated with predator eradication (or significant predator population suppression if natural reinvasion occurs and could not be re-eradicated) to a wide range of seabird species, including but not limited to guillemot and razorbill. Risk of rodenticide resistance during the compensation measure will be managed with the use of kill traps (such as the Goodnature A24) which operate without the use of rodenticide.

2.2 Location

2.2.1.1 The Bailiwick of Guernsey is part of the Channel Islands, located in the English Channel, off the coast of Normandy. The Bailiwick of Guernsey comprises six inhabited islands/ islets in Guernsey, Herm, Jethou, Sark, Brecqhou and Alderney, as well as a range of smaller uninhabited islets and stacks. The islands of Herm, Jethou, Sark, Brecqhou and their smaller islets and stacks that are the subject of this study are within **Figure 1**, and the islands of Alderney are within **Figure 2**.

2.2.1.2 The island and population sizes for the "mainland" islands are listed below:

- Sark and surrounding islands have a combined population of around 500 people, with a combined area of approximately 520 Ha/ 2.2 square miles. Little Sark is a peninsula joined by a narrow isthmus to the rest of Sark.
- Herm is leased from the States of Guernsey and has a population of about 50 residents, and Jethou has a transient population of 4 tenant workers. Herm and Jethou occupy a combined area of approximately 200 Ha/ 0.8 square miles.
- Alderney has a population of just over 2,000 people, with an area of around 800 Ha/ 3 square miles.

Figure 1: Study islands within Herm and Sark.

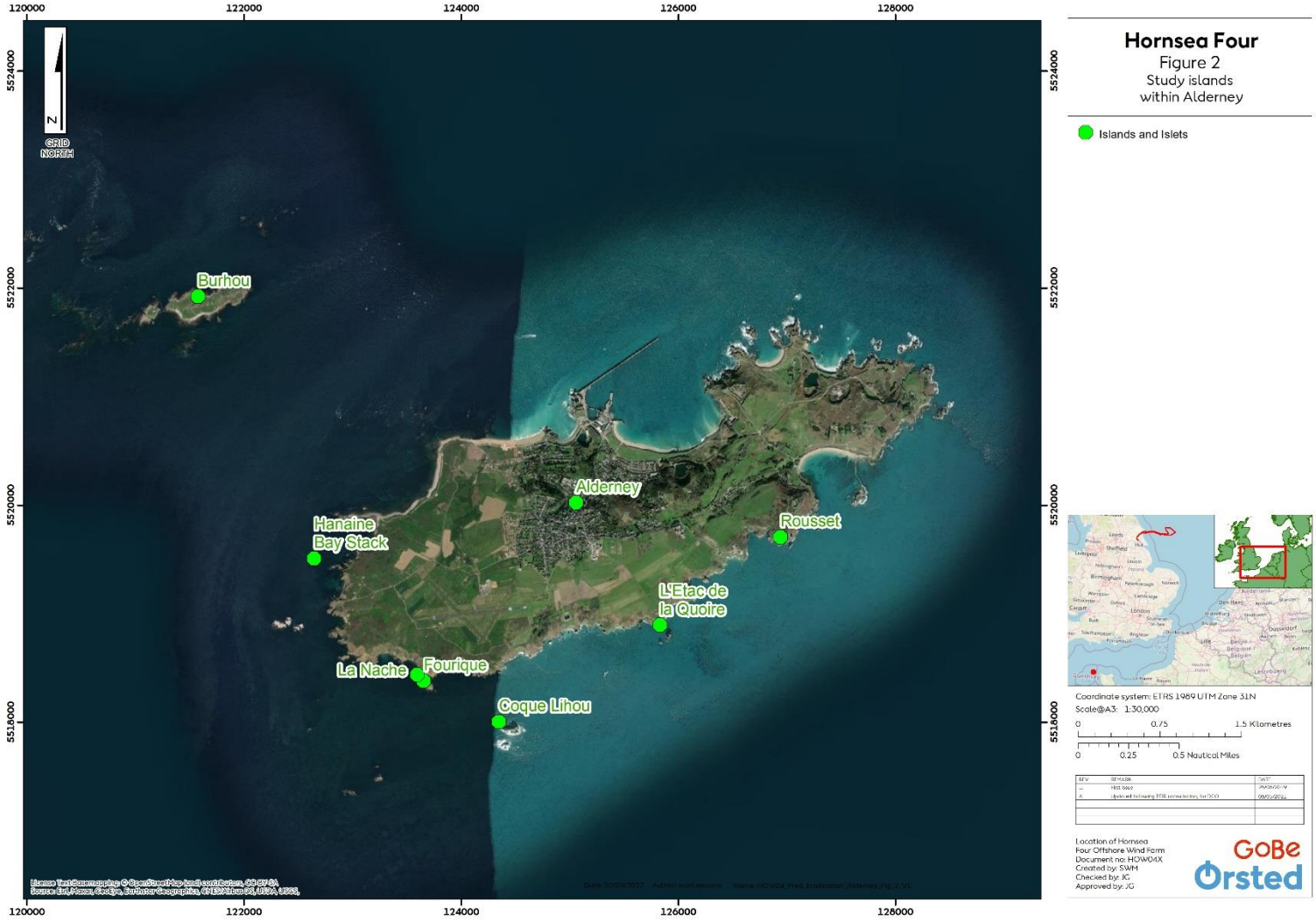

Figure 2: Study islands within Alderney.

3 Methodology

3.1.1.1 The predator eradication implementation study followed the UK Rodent Eradication Best Practice Toolkit (UK Biosecurity for Life)[1] to assess which islands an eradication would be feasible.

3.2 Presence of Invasive Mammalian Predators

3.2.1 Herm and Sark

3.2.1.1 The Herm and Sark islands were visited by eradication specialists between the 14th February to 18th March 2022 to undertake surveys of rodent abundance and distribution across the islands. Although rodents were the primary target of the implementation study, other predators have also been noted e.g. mice, hedgehogs.

3.2.1.2 The field study used methods consistent with international best practice and the UK's Rodent Eradication Best Practice Toolkit for Rodent Eradication Projects to assess the density and abundance of rats across the target locations. It ran multiple types of abundance estimates using index trapping, tracking tunnels, wax blocks, and trail cameras to assess rodent density and distribution on each of the Island groups. These various techniques are described in the sections below. A summary of deployment and implementation of the monitoring programme undertaken to date is presented in Table 1.

Table 1: Summary of the deployment of rodent monitoring stations.

Location	No Trap Lines/ traps deployed	Mean No Trap nights	No. Index Lines/ tunnels/ wax blocks deployed	No. Index nights	No. cameras
Sark	11 / 550	5	6/60/60	6	7
Grande Moie	1/10	1	1/5/5	1	2
L'Etac	1/10	1	1/5/5	1	2
Bec du Nez	1/10	1	1/5/5	1	2
Herm	4/200	5	4/40/40	7	9
Herm Ad hoc[2]	25 boxes/ 50 traps	3	-	-	-
Jethou[3]	39 boxes/ 78 traps	5	1/10/10	6	2

[1] [redacted] [Accessed May 2022].
[2] Traps deployed, but not within trap lines.
[3] Traps deployed, but not within trap lines.

Index Trapping

3.2.1.3 Index trapping (Cunningham and Moors 1996) provides an estimate of the relative size of an animal population calculated from counts of the number of individuals caught for each standardized unit of effort. The abundance (or rat density) was identified as:

- Low (< 10%);
- Moderate (between 11-25%);
- High (between 26-50%); and
- Very High (> 50%).

3.2.1.4 To identify rodent abundance and distribution, break back (kill) traps were used specifically 'Trapper T-Rex' traps). The traps were enclosed within tunnels or boxes to restrict entry by larger species and staked to prevent the trap being dragged away. The traps were baited with peanut butter and spaced approximately 30 m apart (with two traps placed back-to-back at each station). Traps were placed in level sites where there was natural cover and rats were likely to be active (i.e., rat runs, bases of large rocks, etc).

3.2.1.5 Where island size and safety allowed[4], one index line was placed per 50 Ha of Island. Small adjustment to this standard length of index line and spacing between stations was applied to smaller islets where space and terrain was limited and a determination of a suitable and representative number of traps was determined and recorded following field survey observations.

3.2.1.6 Index trap lines were run for five consecutive nights where possible on each accessible location (with the exception of Bec du Nez, Grande Moie and L'Etac[5]). The traps were checked daily. Records were taken of date, location, trap number, capture, sprung trap (set off but no capture) and still set traps.

3.2.1.7 The index of abundance (IoA; rats per 100 trap nights) was calculated for each accessible island. Allowance was undertaken for traps which were set off but did not trap a rat.

Tracking Tunnels

3.2.1.8 Tracking tunnels (with ink plates) were deployed to obtain additional presence/absence and activity information on rodents and other predators (**Figure 3**). Tunnels were held in place by pegs and a card with ink spread in its centre was placed inside the tunnel and baited with peanut butter. Tunnels were also placed 30 m apart, with ten tunnels per line. Where island size and safety allow, one tracking tunnel line was placed per 50 Ha of Island.

[4] Index lines (or other fields survey activities) were not extended to steep or unsafe cliffs, stacks or other difficult to access locations.

[5] Only one night of trapping due to logistical issues.

Figure 3: Tracking tunnel and ink plate.

3.2.1.9 Tracking tunnels were typically left in place for a week, with the card replaced each night. The cards were examined for tracks, and if tracks were identified, they were counted, photographed, and recorded. The number of cards that had rodent tracks present was used to estimate the tracking index.

Wax Blocks

3.2.1.10 Chocolate flavoured wax chew blocks were positioned and secured on metal wires in a location close to each tracking tunnel. The blocks were checked daily and left in place over a five-night period. The blocks provided additional qualitative information on the presence of potential predators. By inspecting the teeth marks it was also possible to determine the presence of different species of rodents.

Trail cameras

3.2.1.11 A network of trail cameras were deployed targeting more difficult to access locations and locations of suspected moderate to high predator activity. These cameras provided both still and video footage to further confirm the presence of rats and other potential predators plus valuable additional insight into the behaviour of these animals.

3.2.2 Alderney

3.2.2.1 In 2018, AWT began investigating the presence of rats on the south coast tidal islets of Alderney (after successful rat control at a common tern colony on the north coast). Bait was deployed in tamper proof bait boxes on Rousset, L'Etac de la Quoire, Fourquie (the eastern stack of the Twin Sisters) and the Hanaine Bay stack. Following the discovery of rats on all sites (except Rousset), a program of control was initiated in March 2019 with support from the States of Alderney (SoA). Toxic bait was deployed to extirpate the rats from each islet and its adjacent shore on the mainland to counter the constant threat of re-incursion from the mainland by controlling the rat population on the near shore. The aim was to inspect each box monthly (re-baiting as necessary) except during the breeding

season when a three-to-four-month break was planned on the islets to prevent disturbance to nesting birds. Due to limited boat support, access to the islets was prevented and following the initial deployment only the schedule of permanent baiting onshore was adequately maintained. In 2021, all permanent onshore toxic baiting ceased due to risk of secondary poisoning to non-target species. The Applicant has since worked with AWT to provide the additional resources required (including trail camera, toxic/non-toxic bait stations etc) and boat support to enable colony census, rat surveys and eradication, and expand the surveillance for rats to also include the islands of Burhou and Coque.

3.2.2.2 Evidence of rat presence at Alderney and the surrounding islands/ islets during the predator eradication implementation study were sought and obtained from:

- Bait stations;
- Trail cameras;
- Presence of faecal droppings;
- Rat runs and holes in suitable harbourage;
- Prine trails (revealed under U.V. light); and
- Carcasses and/ or sightings.

3.2.2.3 Further information on the bait stations and trail cameras is presented below.

Bait Stations/ Traps

3.2.2.4 Bait stations/ *traps* were initially deployed at L'Etac de la Quoire (including adjacent mainland), Fourquie, La Nache, Coque Lihou and Burhou in August 2021 (note some stations were deployed in 2018), with additional stations deployed at Hanaine Bay Stack and Rousset in December 2021. The number and location of bait stations/ traps deployed are presented in **Table 2** and referenced figures.

Table 2: Bait stations/ traps deployed at the islands/islets surrounding Alderney.

Location	Number of Bait Stations	Unique ID	Figure (within Appendix A)
L'Etac de la Quoire	5	QS03 QS04 QS01 QS05 QS06	Figure A 1
Fourquie (eastern tidal islet of the Twin Sister stacks)	6	TS03 TS04 TS07 TS10 TS13 TS14	Figure A 2
La Nache (the western stack of the Twin sisters)	6	TS05 TS06 TS08 TS09 TS11 TS12	Figure A 3

Location	Number of Bait Stations	Unique ID	Figure (within Appendix A)
Coque Lihou	2	CL01 CL02	Figure A 4
Burhou	4	B01 B02 B03 B04	Figure A 5
Hanaine Bay Stack	5	HS03 HS04 HS05 HS06 HS07	Figure A 6
Rousset	1	R01	Figure A 7

Trail Cameras

3.2.2.5 To maximise the likelihood of capturing a predation attempt by photography, remote cameras (supplied by the Applicant) were deployed overlooking traps and known/ likely nesting areas. A total of nine trial cameras are currently deployed and will continue to be in operation over the breeding season (e.g. **Figure 4**).

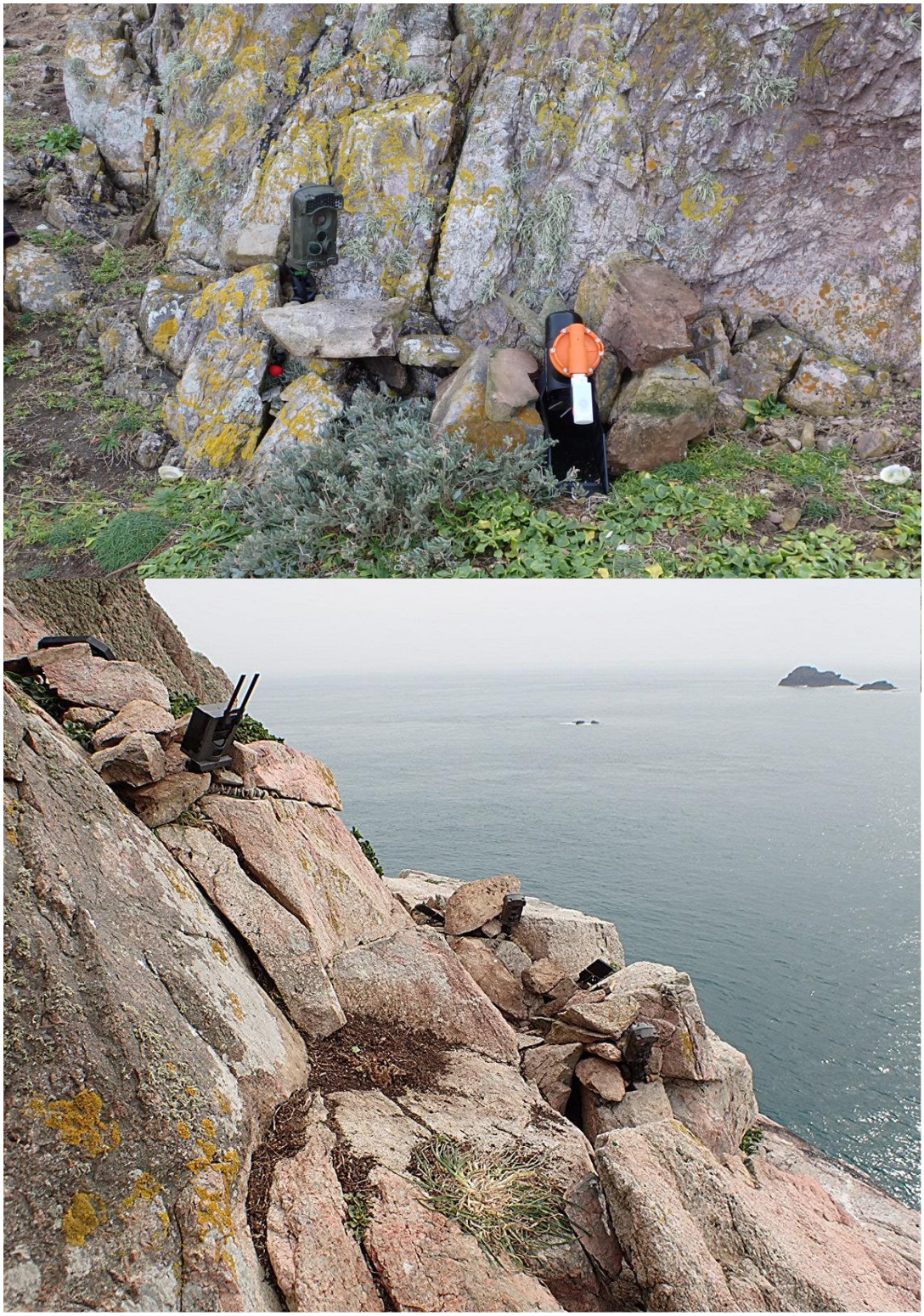

Figure 4: (Top) trail camera set overlooking a baited trap. (Bottom) Three trail cameras overlooking nesting area for guillemots (and possibly razorbills) on La Nache.

3.3 Rodent Analysis

3.3.1 Necropsy

3.3.1.1 A necropsy was completed for each trapped rat from Herm and Sark (**Section 3.2**), the following parameters were assessed:

- Body Condition;
- Weight (g);
- Head- Body length (mm);
- Tail length (mm);
- Nose to ear length (mm);
- Right ear (mm);
- Right hind foot with claw (mm);
- Right hind foot without claw (mm);
- Stomach contents; and
- Breeding status.

3.3.1.2 Tissue samples (rat tails) were also taken from each trapped rat for DNA analysis, with the aim to identify potential rodenticide resistance and connectivity (**Section 3.3.2** below).

3.3.2 DNA Analysis

Rodenticide Resistance

3.3.2.1 Three specialist laboratories have been selected to assess rodenticide resistance, each possessing their own unique strengths, thereby providing the implementation study with a comprehensive service capability:

- Saira Cawthraw, Central Unit Sequencing PCR (CUSP), Animal and Plant Health Agency (APHA), Woodham Lane, New Haw, Addlestone, Surrey, KT15 3NB
- Dr. Virginie Lattard, USC1233 INRAe/Vetagro Sup, "Rongeurs Sauvages-Risques Sanitaires et Gestion des Populations", VetAgro Sup, Campus Vétérinaire, 1 avenue Bourgelat, 69280 Marcy L'Etoile, France.
- Dr. Dougie Clarke, School of Applied Sciences, University of Huddersfield, Queensgate, Huddersfield, HD1 3DH

3.3.2.2 The number of samples sent to each laboratory is presented in **Table 3**.

Table 3: Number of samples sent to laboratories for rodenticide resistance analysis.

Laboratory	No. samples sent from Herm and Jethou	No. samples sent from Sark and Bec du Nez	No samples sent from Alderney
Central Unit Sequencing PCR (CUSP), Animal and Plant Health Agency (APHA), UK	5 (brown rat)	7 (black rat)	-
Directrice USC1233 INRAe/Vetagro Sup "Rongeurs Sauvages-Risques Sanitaires et Gestion des Populations", France	2 (brown rat)	10 (black rat)	4 (1 brown rat, 3 black rat)
School of Applied Sciences University of Huddersfield, UK	5 (brown rat)	7 (black rat)	-

Connectivity

3.3.2.3 DNA analysis will also be completed to identify where rats on the islands originated from, and whether there is connectivity (and therefore a potential biosecurity issue) between islands/ islets.

3.3.2.4 A total of five samples of brown rat (Herm and Jethou), and seven samples of black rat (Sark and Bec du Nez) were sent to the School of Applied Sciences University of Huddersfield to assess the DNA profiles.

3.4 Social Acceptability

3.4.1.1 A structured survey questionnaire (**Appendix B**) was developed with the expert support and guidance of a social scientist from the University of Exeter, to record the findings of the surveys and interviews. The objective was to obtain each residents' opinion on whether they would support a potential island eradication of rats. The questionnaire was distributed to a broad cross section of the island residents and tenants.

3.4.1.2 These surveys are still currently underway and have been extended to interview a broader range of stakeholders including, but not limited to, local governmental bodies, wildlife organisations, tourist operators, and tourists.

3.5 Seabird Census

3.5.1.1 A seabird census is being undertaken across the islands around Herm, Sark and Alderney following best practice methods presented by Walsh *et al.*, (1995). Information on productivity is also being assessed where possible[6] following best practice methods presented by Walsh *et al.*, (1995). The following islands are being surveyed:

- Herm and Jethou:
  - Grand Fauconniere
  - Crevichoin
  - Roberts Helmot/ Belvoir
  - Amfroque
  - L'Autel
  - Long Pierre
  - Godin
  - Galeu
  - Tautenay
  - Mainland Herm
- Sark:
  - Les Autelets
  - L'Etac
  - Les Burrons
  - Grande Mois
  - Petit Moie
  - Bec Du Nez/ Le Gron
  - Sark
- Alderney:
  - Ortac

[6] Noting the difficulty in monitoring guillemot and razorbill due to habitat type and crowding of individuals.

- Les Etacs
- La Nache
- Fourquie
- Coque Lihou
- L'Etac de la Quoire
- Burhou
- Renonquet
- the Nannels
- Le Puits Jervais
- Rousset
- Alderney

3.5.1.2 The surveys are being undertaken throughout May and June 2022, therefore at the time of drafting the Predator Eradication Implementation Study Update, the final results from the seabird census have not been completed. The findings from this study will form the baseline for future population and productivity assessment, if one or more of the islands is included in the eradication project.

3.5.1.3 Information is also being collected on other key habitat features for consideration and use in the design and implementation of future eradication and reporting. This will also include information on which habitat would be good at supporting additional guillemot and/ or razorbill. This information has also been used to update the **G1.33: Predator Eradication Island Suitability Assessment: Bailiwick of Guernsey** submitted at Deadline 5.

4 Results

4.1 Presence of Invasive Mammalian Predators

4.1.1 Herm and Jethou

4.1.1.1 A summary of mammalian predators identified through trapping and ink tracking is presented within **Table 4**. Only brown rats were found to be present on Herm and Jethou. A total number of seven rats were caught on Herm, and one rat was caught on Jethou.

Table 4: Density and abundance results at Herm and Jethou: Index Trapping and Tracking Tunnels.

Parameter	Herm	Jethou
Index Trapping		
No. Black Rat captures	0	0
No. Brown Rat Captures	7	1
Index of Rat Abundance	**0.6**	**0.3**
No. Mice captures	139	0
Index of Mice Abundance	**12.7**	**0.0**
No. Hedgehog captures	0	0
Index of Hedgehog Abundance	**0.0**	**0.0**
Tracking Tunnels		
No. Ink Plates with Rat footprints	3	0
Index of Rat Abundance	**1.5**	**0.0**

4.1.1.2 Brown rat were present on Herm (seven captured) and Jethou (one captured), indicating the rat abundance across the main islands of Herm (0.6 %) and Jethou (0.3%) is comparatively low when considering abundance against the UK wide RSPB scale. This is supported by the abundance calculations for the ink tunnels for Herm (1.5%), and Jethou (0%) (3 (out of 40) ink tracks on Herm and zero on Jethou).

4.1.1.3 Most rats trapped on Herm were taken from areas close to moderate and high levels of human activity, including waste storage areas, agricultural fields etc where food and harbourage was most abundant. The majority of rats were identified on the south west coast of Herm.

4.1.1.4 No black rats were trapped on Herm or Jethou. The only other mammalian predators that were identified were mice.

4.1.2 Sark

4.1.2.1 A summary of mammalian predators identified through trapping and ink tracking is presented within **Table 5**.

Table 5: Density and abundance results at Sark: Index Trapping and Tracking Tunnels.

Parameter	Sark			
	Sark Mainland	*Grand Moie*	*L'Etac*	*Bec du Nez*
Index Trapping				
No. Black Rat captures	48	0	0	3
No. Brown Rat Captures	0	0	0	0
Index of Rat Abundance	**1.8**	**-**	**-**	**35.29**
No. Mice captures	124	0	0	0
Index of Mice Abundance	**4.7**	**0.0**	**0.0**	**0.0**
No. Hedgehog captures	9	0	0	0
Index of Hedgehog Abundance	**0.3**	**0.0**	**0.0**	**0.0**
Tracking Tunnels				
No. Ink Plates with Rat footprints	14		0	1
Index of Rat Abundance	**4.7**		**0.0**	**20.0**

4.1.2.2 The trapping data indicates rat abundance across the main islands of Sark (at 1.8%) is low. This is supported by the abundance calculations for the ink tunnels for Sark (4.7%).

4.1.2.3 . Most rats trapped on Sark were taken from areas close to moderate and high levels of human activity, including waste storage areas, agricultural fields etc., where food and harbourage was most abundant. Rats were not restricted to specific locations, however, were identified to be distributed across all of Sark.

4.1.2.4 No brown rats were trapped at Sark or the surrounding islands/ islets. Other mammalian predators that were identified at Sark were hedgehog and mice.

4.1.3 Alderney

4.1.3.1 A summary of mammalian predators identified through bait, cameras and other indicators (nest material, faecal droppings, urine detected under UV light, and harbourage with runs

present) is presented within Table 6. Further information on the individual sites is presented within the subsection below.

Table 6: Mammalian predators identified through bait, cameras and other methods (nest material, faecal droppings, urine detected under UV light, and harbourage with runs present) at various islands/islets around Sark. Surveys undertaken from December 2021 to March 2022.

Parameter	L'Etac de la Quoire	Fourquie	La Nache	Coque Lihou	Burhou	Hanaine bay stack	Rousset
Bait	Bait taken (December only)	Bait taken	Bait taken	-	Bait taken (October and November)	Bait taken	Bait taken
Camera	-	Black rat	Black rat	-	-	Black rat	Black and Brown rat
Other indicators	-	Faecal droppings, nest material and harbourage with runs present	Faecal droppings and harbourage with runs present	-	Harbourage with runs present	-	Faecal droppings and nest material

L'Etac de la Quoire

4.1.3.2 Evidence of rat presence was first obtained from L'Etac de la Quoire in August 2018 following the deployment of two bait stations. Evidence found was from the presence of gnawed bait, faecal droppings and trail camera photos[7]. The last signs of rat presence were found in March 2021 when the bait boxes were found with faecal droppings inside and all the bait taken.

4.1.3.3 No bait was taken between March 2021 to November 2021, potentially due to control and/or eradication from toxic bait. However, evidence of rat was identified in December 2021, bait was taken from both bait boxes and rat droppings were found. No further rats were identified from January to March 2022, likely indicating the rat incursion had potentially been eliminated by the toxic bait.

4.1.3.4 Bait was also deployed on the mainland of Alderney adjacent to L'Etac de la Quoire (Appendix A Figure A 1). Both black and brown rat were trapped at bait station QS01 (mainland Alderney adjacent to L'Etac de la Quoire). There is therefore potential for both species of rat to swim across to L'Etac de la Quoire as the islet is within swimming distance (<100 m).

4.1.3.5 Unfortunately, no rats were photographed on L'Etac de la Quoire as the trail camera was not deployed until January 2022, after rats were potentially removed using toxic bait.

4.1.3.6 The greatest potential for harbourage for rats is on the west side and top of the stack where there is grass and perennial herbs. Nevertheless, there appears to be no topographic

[7] No record of the species identity was made, and the photos have not been kept on file.

features that could block the rats access to the areas occupied by the birds (east face of the islet) indicating a high degree of potential overlap.

Fourquie

4.1.3.7 Evidence of rat presence was first obtained from this islet in August 2018 and has been found consistently since the first deployment of bait through the presence of gnawed or lost bait, droppings and nest material in the bait boxes, as well as runs through the grass covered parts of the stack. Rat activity was recorded at all the bait stations deployed on Fourquie, which were identified as black rats (several individuals of different sexes and ages) through a trail camera at QS04 (**Figure 5**) and visual observations when checking bait boxes.

Figure 5: Black rat photographed by a trail camera on Fourquie in October 2021 (top) January 2022 (bottom). Bait station TS04 (Appendix A Figure A 2) in the background.

4.1.3.8 The amount of bait consumed has reduced since October 2021, with no bait being taken in December 2021. However, signs of rat appeared again from end of January 2022, thereby indicating a potential re-incursion from the mainland.

4.1.3.9 The best harbourage for rats on Fourquie occurs on the north-east side and top of the islet where tussocky areas of grass grow. There is access from these locations to the areas of nesting seabirds, with potential evidence of rat predation identified in August 2021. Carcasses of adult auks were identified near bait box QS03, the closest bait station to the birds' nesting area, and the remains of a broken razorbill eggshell found in a likely nest site with damage indicative of predation (**Figure 6**). The direction of the breakage was along the longitudinal axis of the egg rather than across, therefore suggesting that the egg did not hatch but was broken open by a predator instead (Brown *et al.,* 2002). Additionally, AWT have identified currently unused habitat that is potentially suitable for guillemot, possibly due to overlap of nesting habitat and rats (*pers. comm.*, 2022).

Figure 6: The remains of a razorbill eggshell found in a crevice on Fourquie in August 2021.

La Nache

4.1.3.10 Evidence of rats on La Nache was found following the first deployment of two bait stations in August 2021 (TS05 and TS06). Toxic bait was therefore immediately deployed, and a third bait station (TS08) was deployed in November to improve site coverage.

4.1.3.11 There was rat activity at all bait stations deployed on Fourquie, which were identified as black rat through trail cameras. There was also presence of faecal droppings and numerous rat runs in the tussocky grass on the western and northern sides of the stack.

4.1.3.12 The camera was deployed facing a known guillemot nesting area and identified overlap of guillemot and rat on the islet (**Figure 7**). Additionally, AWT have identified currently unused habitat that is potentially suitable for guillemot, possible due to overlap of nesting habitat and rats (*pers. comm.*, 2022).

Figure 7: Trail camera photos of a guillemot nesting area (photo taken in daylight) (left) occupied by a black rat (photo taken at night) (right).

4.1.3.13 At present, reduced bait consumption suggests the control program has begun to lower the numbers of rats present. However, the latest trail camera photos indicate that some rats were still present right up to the date of the last site visit at the end of March 2022.

Coque Lihou

4.1.3.14 No evidence of rat presence was identified on Coque Lihou. No bait was taken and there were no other signs of rodent activity on the island.

4.1.3.15 The principal nesting areas of both guillemot and razorbill on Coque Lihou lie on the south and east sides of the island under large rocks and overhangs, where they could be vulnerable to rats should an incursion occur in the future.

Burhou

4.1.3.16 In October 2021, the presence bait was gnawed at stations B01 and B02 (**Appendix A Figure A 5**), indicating presence of rat. From December to March, no further signs of rat were identified.

4.1.3.17 There are historical records of razorbills nesting (Sanders, 2007). Although their current breeding status is unknown, they potentially still breed in small numbers. The potential overlap with rats requires further assessment. An update will be presented after the seabird breeding season.

Hanaine Bay stack

4.1.3.18 Evidence (bait stations and trail cameras) indicates that black rats have continued to access the islet and/or remained present throughout the winter of 2021/2022 despite the use of toxic bait in attempt to control/ eradicate the species.

4.1.3.19 No guillemot or razorbill are known to nest on this tidal islet (records of either species nesting), however, the islet does have suitable nesting habitat. A small puffin (*Fratercula arctica*) colony existed on this site until 2016. There is therefore potential that the rats present are reducing the numbers of auks able to breed at the stack.

Rousset

4.1.3.20 Both black and brown rats have been photographed on Rousset by the trail camera (**Figure 8**) and despite uptake of the toxic bait, rats have remained present throughout the reporting period.

Figure 8: Brown rat photographed at the bait station on Rousset islet.

4.1.3.21 Rousset islet has suitable nesting habitat for guillemot and/ or razorbill, however there are no individuals nesting on the islet.

4.2 Rodent Analysis

4.2.1.1 DNA analysis will be completed to identify where rats on the islands originated from, and whether there is connectivity (and therefore a potential biosecurity issue) between islands/ islets. Once received the results of the DNA analyses will be submitted to the relevant stakeholders if required.

4.2.2 Herm and Jethou

4.2.2.1 A total of eight brown rats were trapped between Herm and Jethou in February 2022 (seven on Herm and one on Jethou). Four rats were male, and four rats were female, with the majority of rats trapped were adults (75%) (Table 7).

Table 7: Summary of brown rats caught on Herm and Jethou.

Location	Total	No. Males	No. Females	No. Adults	No. Juveniles
Herm	7 (3 rats were captured on the first trapping night)	4	3	5	2
Jethou	1	0	1	1	0
Total	8	4	4	6	2

4.2.2.2 A summary of the necropsy results is presented within **Table 8**. Generally male adult rats were heavier (16% heavier on average) than adult female rats, whereas most females had slightly longer head to body lengths (7% longer) and tail lengths (2% longer).

4.2.2.3 The stomach contents were primarily composed of digested food and dominated by vegetation, which was expected due to the study occurring outside of the seabird breeding season. The physical condition of the majority of the rats was good except for the single rat caught on a small islet off Jethou (Crevichon) which was very poor. This potentially suggests rats are anticipating a known protein source (seabirds) to arrive and have had to rely on a low protein diet of vegetation over the non-breeding season, thus resulting in poor body condition.

Table 8: Summary of measurements recorded for brown rats caught on Herm and Jethou.

Measurement	Female	Male
Body Condition	Good (with exception of Jethou which was poor).	Good
Weight (g)	Avg. 268	Avg. 310
Head- Body length (mm)	Avg. 222	Avg. 207
Tail length (mm)	Avg. 173	Avg. 169
Nose to ear length (mm)	Avg. 45	Avg. 47
Right ear (mm)	Avg. 16	Avg. 14
Right hind foot with claw (mm)	Avg. 40	Avg. 39
Right hind foot without claw (mm)	Avg. 38	Avg. 37
Stomach contents	Predominantly digested vegetation.	Predominantly digested vegetation.
Breeding status	1 pregnant	N.A.

4.2.3 Sark

4.2.3.1 A total of 51 black rats were trapped between Sark and Bec du Nez in March 2022 (48 on Sark and three on Bec du Nez). 21 rats were male, and 30 rats were female, with all of rats trapped were adults (**Table 9**).

Table 9: Summary of black rats caught on Sark and Bec du Nez.

Location	Total	No. Males	No. Females	No. Adults	No. Juveniles
Sark	48	20	28	48	0
Bec du Nez	3	1	2	3	0
Total	51	21	30	51	0

4.2.3.2 A summary of the necropsy results is presented within **Table 10**. Generally male adult rats were heavier (14% heavier on average) and had slightly longer head to body lengths (5% longer) than female rats.

4.2.3.3 The stomach contents were primarily composed of digested food and dominated by vegetation, which was expected due to the study occurring outside of the seabird breeding

season. The physical condition of the majority of the rats was good except for the three rats caught on a Bec du Nez which were very poor. As mentioned above for a similar finding on Jethou, this potentially suggests rats are anticipating a known protein source (seabirds) to arrive and have had to rely on a low protein diet of vegetation over the non-breeding season, thus resulting in poor body condition.

Table 10: Summary of measurements recorded for black rats caught on Sark and Bec du Nez.

Measurement	Female	Male
Body Condition	Good with exception of Bec du Nez which was poor.	Good with exception of Bec du Nez which was poor.
Weight g	Avg. 199	Avg. 226
Head- Body length mm	Avg. 185	Avg. 195
Tail length mm	Avg. 214	Avg. 207
Nose to ear length mm	Avg. 45	Avg. 44
Right ear mm	Avg. 23	Avg. 24
Right hind foot with claw mm	Avg. 39	Avg. 39
Right hind foot without claw mm	Avg. 37	Avg. 37
Stomach contents	Predominantly digested vegetation.	Predominantly digested vegetation.
Breeding status	None pregnant.	N.A.

4.3 Social Acceptability

4.3.1 Herm and Jethou

4.3.1.1 Questionnaires were completed by nine workers/ residents on the islands of Herm and Jethou. Key initial responses are summarised below:

- 50% of respondents said they would directly support an eradication of rats on Herm and across its near neighbouring islets and stacks.
- 10 % of respondents supported rat control but most of this group were not currently in favour of a full eradication.
- 10% of respondents were indifferent.
- 30% of respondents did not answer the question on whether they would directly support an eradication of rats.

4.3.1.2 The questionnaire also asked the respondent to tell us what they think would benefit most from a successful rat eradication. Those who favoured an eradication and/or wider control of rats ranked the benefits in the following order:

- 1) Community public health, tourism, and animal health (ranked equally)
- 2) Wildlife health
- 3) Farming

4.3.2 Sark

4.3.2.1 Questionnaires were completed by 31 residents in total across the island during our initial visit to Sark. These were mostly completed at drop-in sessions we had organised, with local

permissions given to use a community hall, as well as a space in a local tavern. Key initial responses are summarised below:

- 39% of respondents said they would directly support an eradication of rats on Sark and across its near neighbouring islets and stacks.
- An additional 17% supported an eradication in principle but were concerned about the use of poisons and what risk they might present to none target species.
- A further 3% supported an eradication on the islets but were currently against an eradication on the main island of Sark.
- 20 % of respondents supported rat control on Sark but most of this group were not currently in favour of a full eradication.
- 21% of respondents did not answer the question on whether they would directly support an eradication of rats.

4.3.2.2 The questionnaire also asked the respondent to tell us what they think would benefit most from a successful rat eradication. Those who favoured an eradication and/or wider control of rats ranked the benefits in the following order:

- 1) Public health;
- 2) The local economy (farming);
- 3) Animal health and wildlife health;
- 4) Wildlife health; and
- 5) Tourism.

4.4 Seabird Census

4.4.1.1 The Applicant has committed to undertaking a detailed seabird census of all locations currently under consideration for predator eradication. The census technique follows standard practice to ensure data can be used in comparison with historic and future counts. Details of the census and proposals for future monitoring are provided within the Applicant's Predator Eradication Roadmap (Revision 4 of **B2.8.4: Compensation measures for FFC SPA: Predator Eradication: Roadmap** (updated version to be provided at Deadline 5)). A number of surveys have been undertaken during the 2022 breeding season to inform the compensation measures and provide a baseline across the islands. The below sections present an initial overview of data collected at the time of writing this report for delivery at Deadline 5. All seabird census data will be shared with OOEG members following consent, if compensation is deemed necessary for guillemot and razorbill.

4.4.2 Herm and Jethou

4.4.2.1 Three seabird census surveys at Herm and Jethou have been completed at the time of writing during:

- 24/05/2022;
- 27/05/2022; and
- 30/05/2022.

4.4.2.2 The preliminary results have been presented in **Table 11**. Long Pierre has been identified to have the greatest number of auks nesting, primarily guillemot. However, some islands identified as having good habitat do not appear to have any nesting auks (Grande

Faoconniere, Roberts Helmot/ Belvoir, Herm). Additionally, some numbers of nesting auks decreased in the later surveys, for example:

- Long Pierre: Razorbill decreased from 14 (27/05/2022) to four (30/05/2022);
- Godin: Guillemot decreased from two (27/05/2022) to zero (30/05/2022) and razorbill decreased from four (24/05/2022) to zero (30/05/2022; and
- Galeu: Razorbill decreased from five (24/05/2022) to zero (30/05/2022).

4.4.2.3 The decrease in numbers of nesting auks could potentially indicate presence of predators.

Table 11: Preliminary finding from the seabird census at Herm and Jethou. Draft estimates as survey in currently ongoing.

Island/ Islet	Maximum number of guillemot	Maximum number of razorbill	Notes on habitat
Grande Fauconniere	0	0	Good habitat.
Crevichon	0	0	Moderate habitat.
Roberts Helmot/ Belvoir	0	0	Good habitat.
Amfroque	0	1 (27/05/2022)	Poor habitat.
L'Autel	0	0	Poor habitat.
Long Pierre	141 (30/05/2022)	14 (27/05/2022)	Very good habitat.
Godin	2 (27/05/2022)	4 (24/05/2022)	Moderate habitat.
Galue	0	5 (24/05/2022)	Moderate habitat.
Tautenay	0	0	Poor habitat.
Herm	0	0	Good habitat for cliff and burrow nesting species. Marsh harrier spotted.

4.4.3 Sark

4.4.3.1 Three seabird census surveys have been completed at Sark at the time of writing during:

- 24/05/2022;
- 27/05/2022; and
- 30/05/2022.

4.4.3.2 The preliminary results have been presented in **Table 12**. Long Pierre and Les Autlets have been identified to have the greatest number of auks nesting, primarily guillemot. However, some islands identified as having good habitat do not appear to have any/ limited nesting auks (L'Etac, Grande Mois, Petit Moie, Bec Du Nez/Le Gron, Sark). Additionally, some numbers of nesting auks decreased in the later surveys, for example:

- L'Etac: Razorbill decreased from four (27/05/2022) to two (30/05/2022);
- Les Burrons: Razorbill decreased from 18 (24/05/2022) to nine (30/05/2022; and
- Grand Mois: Razorbill decreased from one (27/05/2022) to zero (30/05/2022).

4.4.3.3 The decrease in numbers of nesting auks could potentially indicate presence of predators.

Table 12: Preliminary finding from the seabird census at Sark. Draft estimates as survey in currently ongoing.

Island/ Islet	Maximum number of guillemot (date)	Maximum number of razorbill (date)	Notes on habitat
Les Autlets	190 (30/05/2022)	2 (30/05/2022)	Very good habitat. Guillemot favoured nesting on the NE.
L'Etac	0	6	Good habitat
Les Burrons	317 (30/05/2022)	18 (24/05/2022)	Very good habitat. Guillemot favoured nesting on the NE. Razorbill favoured nesting on the SW.
Grande Mois	0	1 (27/05/2022)	Good habitat
Petit Moie	0	0	Good habitat.
Bec Du Nez/Le Gron	0	0	Good habitat.
Sark	0	0	Good habitat for cliff and burrow nesting seabirds.

4.4.4 Alderney

4.4.4.1 Detailed findings from Alderney are not currently available at the time of writing. Full findings from the seabird census will be sent with the findings of the implementation study to the relevant stakeholders if required. An initial indication of seabird presence at some locations is provided within the Predator Eradication Suitability Report (**G1.33: Predator Eradication Island Suitability Assessment Bailiwick of Guernsey** update submitted at Deadline 5).

5 Discussion

5.1 Presence of Invasive Mammalian Predators

5.1.1.1 The predator eradication implementation study has identified presence of brown and/ or black rat across islands within the Bailiwick of Guernsey. These islands have the potential to support guillemot and razorbill populations in higher capacity than current nesting populations (**G1.33: Predator Eradication Island Suitability Assessment Bailiwick of Guernsey** update submitted at Deadline 5), therefore rats may be reducing the number of auks across these sites. See **G1.33: Predator Eradication Island Suitability Assessment Bailiwick of Guernsey** update submitted at Deadline 5 for estimates of the number of auks that could be supported.

5.1.1.2 Due to logistical issues, only limited trapping (one night rather than five nights) was carried out on smaller Sark islets of Bec du Nez, Grande Moie and L'Etac. Although no rats were trapped during the one night of trapping that took place on the further away islets of Grande Moie and L'Etac, there is potential that rats were present and just not caught. Black rats were highly active on Bec du Nez despite the limited trapping (35% IOA traps and 45 % IOA ink tunnels), potentially because the islet has a land connection to Sark at low tide. It is

possible that these findings may indicate rats may have started to migrate away from the main island of Sark towards the smaller neighbouring islets; positioning themselves to take advantage of the additional food supply that will become available with the imminent arrival of the seabird breeding season (note that rats on Bec du Nez were in poor condition, see **Section 5.2** below). These findings could indicate that Bec du Nez may serve as a staging location for rats to then swim on to the more distant islets and stacks lying in the coastal waters around Sark in the habitual knowledge that seabirds will be gathering over the coming weeks. Furthermore, the initial results from the seabird census highlights that locations deemed by ornithologists as good habitat, do not currently support guillemot or razorbill. At some of these locations, such as Bec du Nez and Jethou and Grande Fauconniere, the implementation study has confirmed rat presence, while at others, presence has been inferred by expert opinion based on the distance of the island/ islet to the mainland. The presence or likely presence of rats at these locations potentially indicates why guillemot and razorbill are absent from these locations with rats likely being able to access and predate eggs and chicks of birds which do choose to nest there. Trail cameras have been deployed that identify predation pressure throughout the breeding season. This will allow for site specific predator pressure of auks to be identified. Interestingly, locations on Alderney which have confirmed rat presence and also historically supported guillemot and razorbill now lack both species entirely or in high numbers. There is potential that the birds are aware of rat presence and as a result, choose to nest in less accessible locations. Cameras deployed at these locations will provide valuable data to inform the eradication project.

5.2 Rodent Analysis

5.2.1.1 The physical condition of the trapped rats were generally in good condition across the 'mainland' of Herm, Sark, and Jethou. The single rat trapped on a small islet with a land connection to Jethou and the three rats caught on Bec du Nez were all in poor condition. This is potentially indicative that the food supply in March may have been scarce, and/ or the rat was stressed. It is highly possible some rats may be staging themselves on these neighbouring smaller islets in preparation for arrival of the food supply associated with the forthcoming seabird nesting season.

5.3 Social Acceptability

5.3.1.1 Questionnaires were completed by residents across Herm and Sark to assess the level of support for eradication and/ or control of rats on the respective islands/ islets. The majority of people supported control and/ or eradication of rats. There was less support for a full eradication at Sark, however, as the focus of predator eradication at Sark will be at offshore, uninhabited locations (with control at Sark itself), there will be minimal disturbances to resident populations on the mainland and the support therefore increased (as indicated by the residents responses for supporting predator control).

5.3.1.2 Further community engagement will continue throughout the remainder of the predator eradication implementation study to ensure that there is continued support.

5.3.1.3 There is also support for predator control (and eradication at the surrounding islets) at Alderney from AWT and the States of Alderney (see Letter of Comfort in Appendix A of

Revision 4 of **B8.4: Compensation measures for FFC SPA: Predator Eradication: Roadmap** (submitted at Deadline 5)).

5.4 Seabird Census

5.4.1.1 The preliminary findings from the seabird census across Herm, Jethou and Sark have identified islets with highest numbers of breeding pairs of guillemot and razorbill. However, despite many of the islands appearing to have good habitat, there are no/ limited nesting auks. There is therefore potential that predators (e.g. brown/ black rats) are suppressing these populations. This is potentially further evidenced by the presence of some auks in surveys that were then not present (or present in lower numbers) in the surveys that followed (e.g. L'Etac, Les Burrons, Godin, Galeu).

5.4.1.2 The seabird census will continue through June 2022, and any findings will be sent with the findings of the implementation study to the relevant stakeholders, if required.

6 Conclusions and Next Steps

6.1.1.1 The predator eradication implementation study has indicated that islands in the Bailiwick of Guernsey are suitable for predator eradication for compensation of guillemot and razorbill. With the information presented within the Applicant's Habitat Suitability report (**G1.33 Predator eradication island suitability assessment: Bailiwick of Guernsey**) it is also apparent that the required quantum of compensation in terms of nesting space for guillemot and razorbill can also be provided at the locations considered within this report in the Bailiwick of Guernsey.

6.1.1.2 For locations where cameras have been deployed on behalf of the Applicant, strong evidence of rat presence overlapping with guillemot and razorbill nesting attempts has been presented. At some locations, evidence of likely guillemot and/ or razorbill predation has also been provided. Based on the evidence provided within the Applicant's Predator Eradication Ecological Evidence report (**B2.8.3 Compensation measures for FFC SPA: Predator Eradication: Ecological Evidence (APP-196)**), there is a clear pattern of rats impacting breeding populations of guillemot and razorbill where the rats can access nesting locations. This implementation update report therefore provides further evidence which supports the eradication of rats at certain locations throughout the Bailiwick of Guernsey to benefit guillemot and razorbill.

6.1.1.3 Other observations which may suggest rat predation of seabirds has been presented in this report in the form of rat necropsy to determine physical condition. Some rats caught on small islets were deemed to be in very poor condition. This potentially suggests rats are anticipating a known protein source (seabirds) to arrive and have had to rely on a low protein diet of vegetation over the non-breeding season, thus resulting in poor body condition.

6.1.1.4 The Applicant has also identified rats on islands where there is unused nesting space despite large and potentially expanding populations of guillemot nearby, therefore potentially indicating that rats are supressing the population of both auk species within the Bailiwick of Guernsey. The Applicant will continue the predator eradication implementation study throughout the breeding season to gain further site-specific information on predator pressure, seabird populations, and the overlap between predators and guillemot and razorbill. This overlap aims to be identified through trail cameras, which have already been

deployed at known breeding sites, to capture photographs of any potential predators within these locations.

6.1.1.5 The Applicant has also aided AWT to help improve the current rat eradication programme on Alderney. Toxic bait has been removed from all islands/ islets at Alderney due to risk of rodenticide resistance and have been replaced by kill traps provided by the Applicant. These traps will be on the islands/ islets throughout the breeding season to aid with control whilst reducing potential to rodenticide resistance.

6.1.1.6 The small islands and islets associated with Alderney, Sark and Herm are suitable and locations for rat eradication based on the evidence presented within this implementation update report. The refinement of the exact locations for predator eradication within the Bailiwick of Guernsey will be determined following review of the final predator eradication implementation report and stakeholder engagement. The final report will be submitted following analysis of the surveys over the breeding season and compilation of the information and analysis required to assess the suitability, taking into account all the factors set out in the UK Rodent Eradication Best Practice Toolkit (UK Biosecurity for Life).

6.1.1.7 The Applicant is confident that the evidence gathered to date has demonstrated that the islands and islets within the Bailiwick of Guernsey provide a number of suitable locations to provide adequate and effective compensation for the impacts of Hornsea Four that can be secured and delivered. Further details which are currently being finalised by the predator eradication implementation study (expected to be completed in autumn 2022) which will aid the final decision of location and inform the implementation and ensure no delay to delivery of the measure.

7 References

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Appendix A Alderney Trap Locations

Figure A 1: Trap locations at L'Etac de la Quoire and adjacent locations at Alderney.

Figure A 2: Trap locations at Fourquie and adjacent locations at Alderney.

Figure A 3: Trap locations at La Nache.

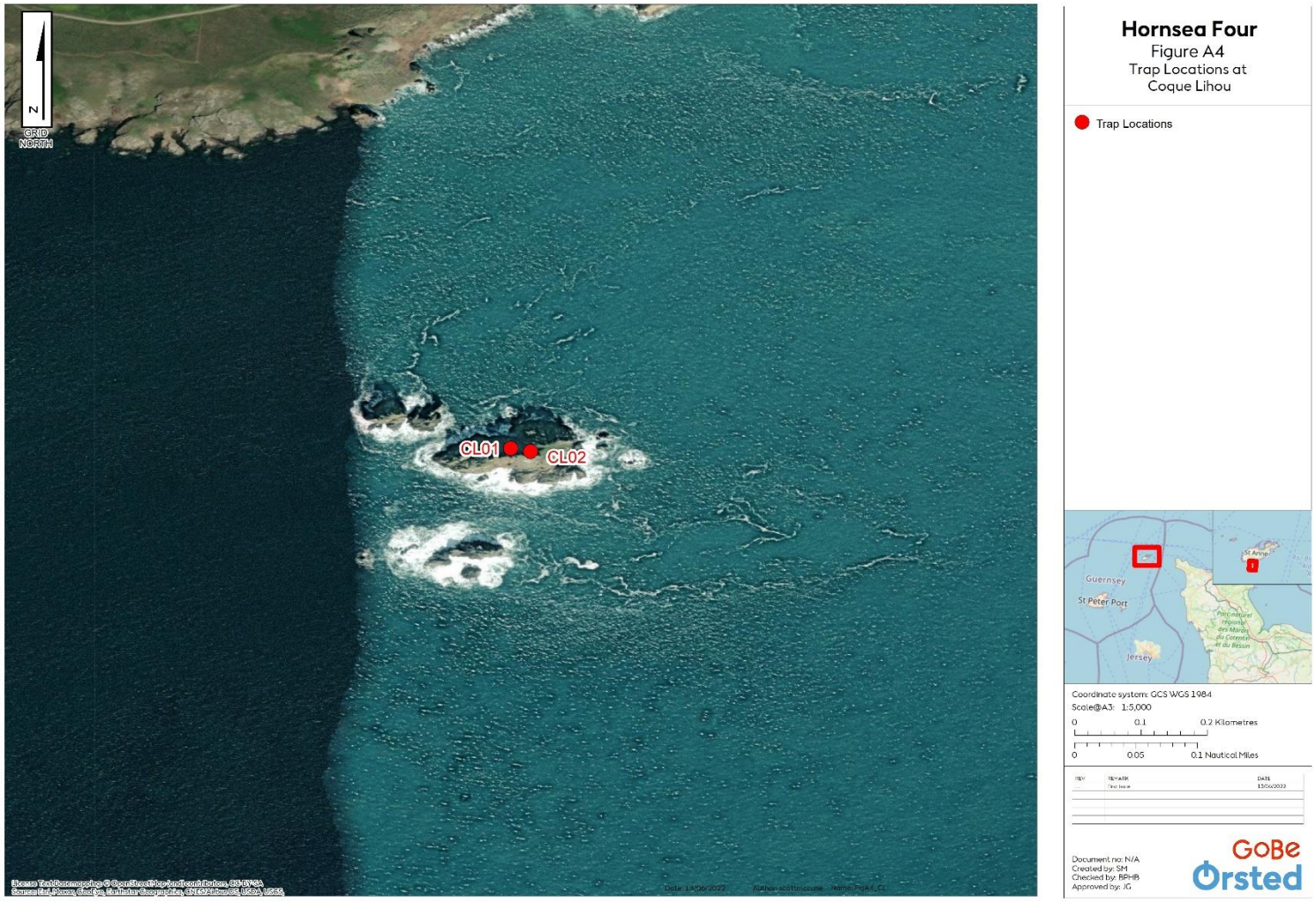

Figure A 4: Trap locations at Coque Lihou.

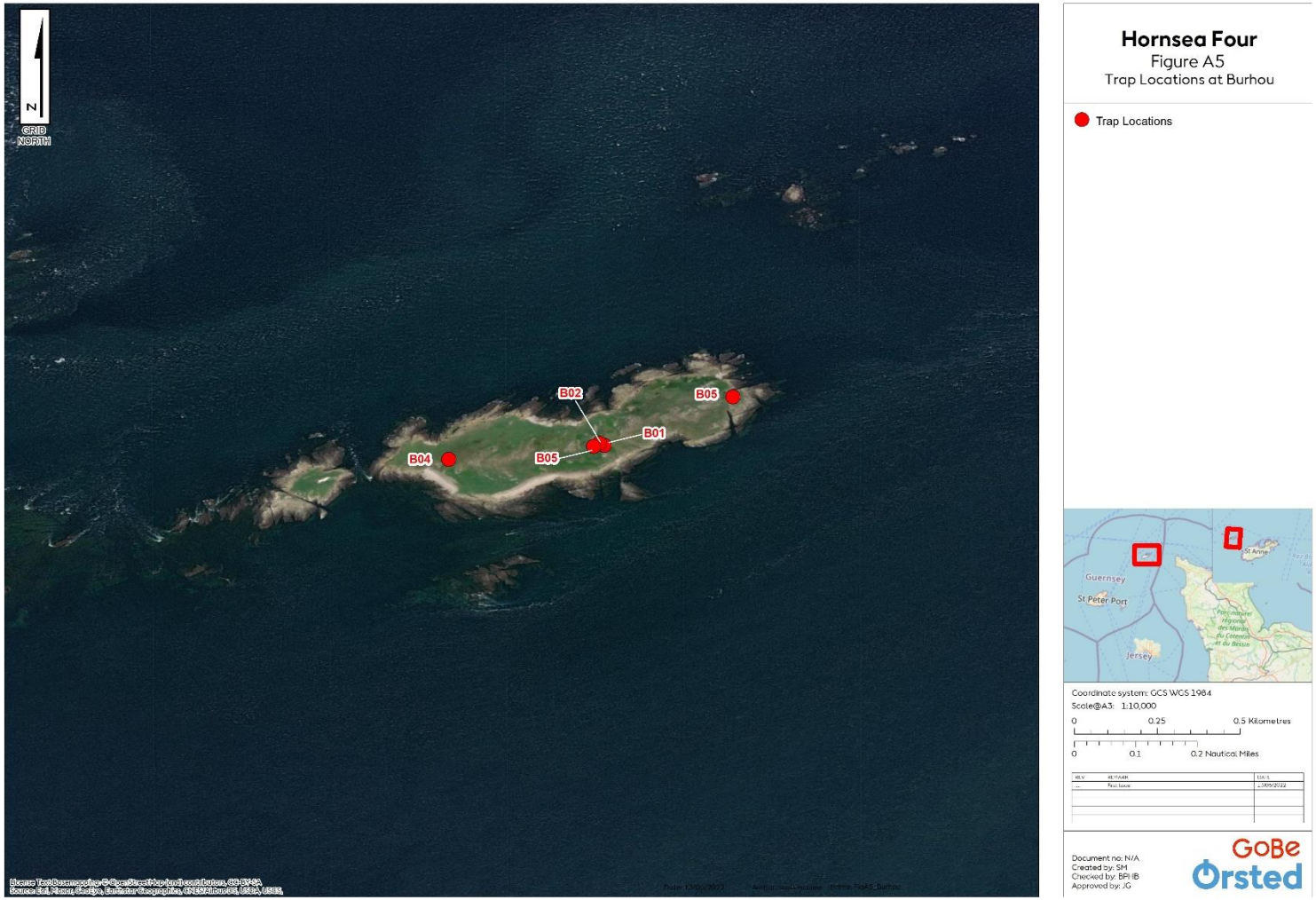

Figure A 5: Trap locations at Burhou.

Figure A 6: Trap locations at Haniane Stack and adjacent locations at Alderney.

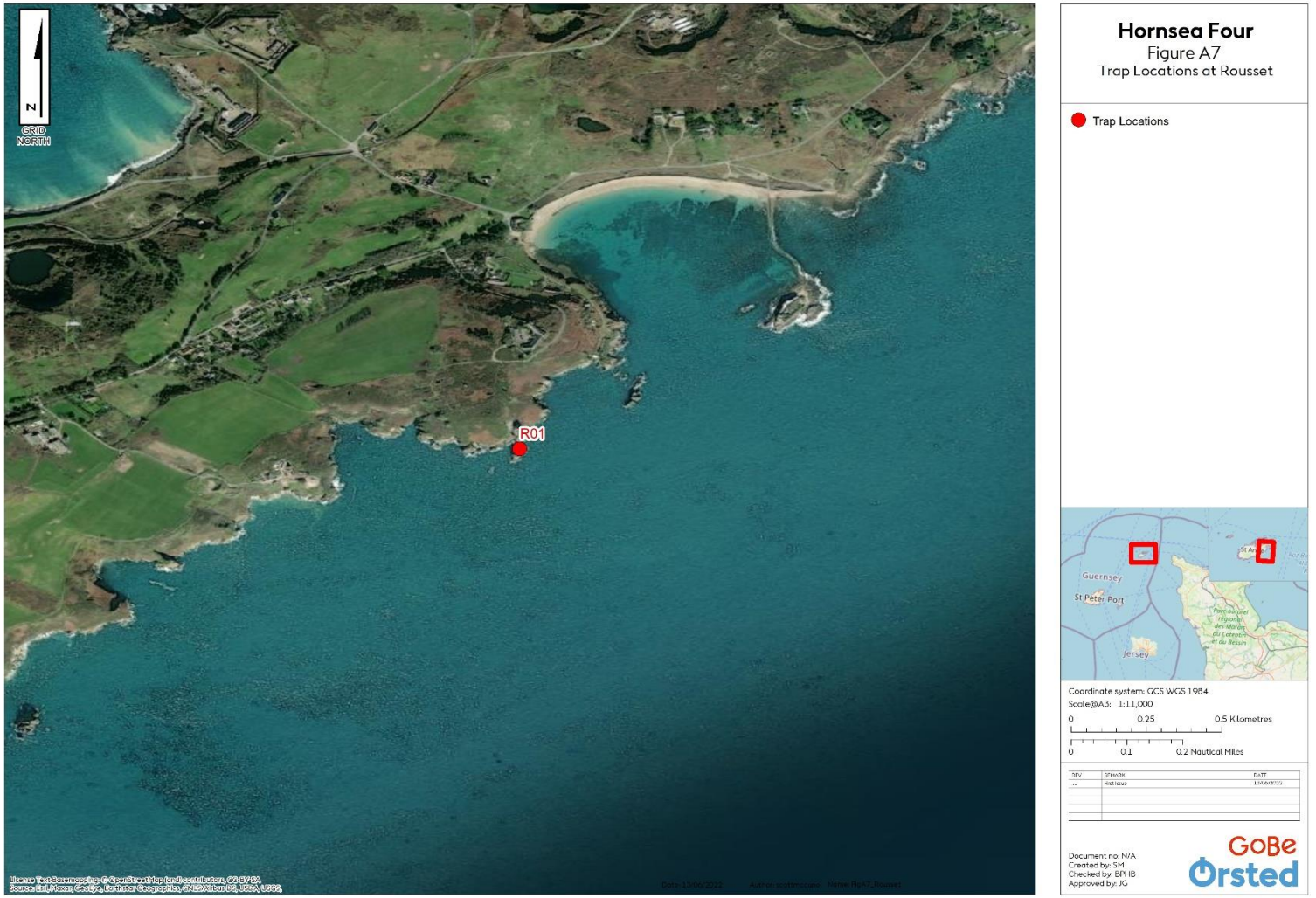

Figure A 7: Trap locations at Rousset.

Appendix B Questionnaire

1 Herm

We are interested in your views and feedback about rats and their management on Herm, Jethou, and the surrounding islets and stacks.

All responses to this survey are anonymous. If you choose to provide contact details (at the end of the survey) they will be stored securely and separately from your survey responses.

Once completed, please return this survey to: [redacted]

SECTION A

1. **Do you live on Herm or Jethou?** Yes ☐ No ☐
2. **Have you noticed the presence of rats on the Island(s)?** Yes ☐ No ☐
3. **Do you have any concerns about the presence of rats on the Island(s)?** Yes ☐ No ☐
4. **If yes, are you concerned about rats:**

	Not at all concerned	*Slightly concerned*	*Moderately concerned*	*Very concerned*
Damaging food or crops	☐	☐	☐	☐
Damaging property	☐	☐	☐	☐
Harming wildlife	☐	☐	☐	☐
Harming domestic animals	☐	☐	☐	☐
Harming people	☐	☐	☐	☐
Carrying fleas or diseases	☐	☐	☐	☐

Other (please specify):

5. **Have you personally experienced any problems with rats on the islands in the past five years?** Yes ☐ No ☐

If YES, go to Question 6. If NO, go to SECTION B.

6. Where have you experienced problems with rats?

	Yes	*No*
Home	☐	☐
Business	☐	☐
Farm	☐	☐
Boat	☐	☐

Other (please specify):

7. What problems with rats have you experienced?

	Yes	*No*
Damaging food or crops	☐	☐
Damaging property	☐	☐
Harming wildlife	☐	☐
Harming domestic animals	☐	☐
Harming people	☐	☐
Carrying fleas or diseases	☐	☐

Other (please specify):

SECTION B

Please read the information below before continuing.

Eradication is the permanent removal, using bait stations containing rodenticide (rat poison), of all rats in an area. This method is sometimes used to completely remove rats from islands to which they have been introduced by humans. Eradication projects also involve longer-term measures (e.g. monitoring and biosecurity) to prevent rats from returning.

NBC Environment is carrying out initial research to find out if:

a) it would be technically possible to eradicate rats from Herm, Jethou and surrounding islets, and

b) to understand how the community would feel about an eradication project.

8. Please tell us your initial thoughts about the idea of a rat eradication project on Herm, Jethou and surrounding islets.

9. What do you think could benefit from a successful rat eradication project?

	Not at all beneficial	*Slightly beneficial*	*Moderately beneficial*	*Very beneficial*
Local community	☐	☐	☐	☐
Economy (farming)	☐	☐	☐	☐
Economy (tourism)	☐	☐	☐	☐
Public health	☐	☐	☐	☐
Animal health	☐	☐	☐	☐
Wildlife	☐	☐	☐	☐

Other (please specify):

10. What do you think could challenge a successful rat eradication project?

	Not at all challenging	*Slightly challenging*	*Moderately challenging*	*Very challenging*
Gaining community support	☐	☐	☐	☐
Access to private land	☐	☐	☐	☐
Island terrain	☐	☐	☐	☐
Avoiding harm to other wildlife	☐	☐	☐	☐
Avoiding harm to domestic animals	☐	☐	☐	☐
Adequate funding	☐	☐	☐	☐
Avoiding rats returning	☐	☐	☐	☐
Waste management	☐	☐	☐	☐
Ecological effects of removing rats	☐	☐	☐	☐

Other (please specify):

11. Do you have any other suggestions, questions, or concerns about the idea of a rat eradication project on Herm, Jethou and surrounding islets?

12. How would you prefer to be informed about the findings of this initial research (select all that apply)?

Email (provide details below) ☐
Community meeting ☐

If filling in electronically please return to [redacted]
If you would prefer to meet, discuss and fill in a hard copy please contact [redacted] *who is on herm on* [redacted]

About this research:
Hornsea Four will be located approximately 69 km offshore from the East Riding of Yorkshire. Hornsea Four will include both offshore and onshore infrastructure including an offshore generating station (wind farm), export cables to landfall, an onshore substation and connection to the electricity transmission network. Hornsea Four may be required to compensate for potential impacts from Hornsea Four on certain seabird species.

Ørsted has therefore commissioned NBC Environment to undertake a feasibility study across the islands of Herm, Sark and their nearby islets and stacks. The key objective of this feasibility study is to determine if introduced predators of seabirds, chicks and/or eggs (notably rats) are present. If they are confirmed to be present, work will be undertaken to consider if it is feasible to remove those predators and provide improved conditions for seabirds to breed more successfully and for colonies to grow. This feasibility study will build upon work undertaken by the RSPB in 2018.

If you'd like to discuss our research or contribute more to our ongoing conversation with the Herm and Jethou community, you can contact [redacted].

Your Contact Details (Optional)

Name: _____

Email address: _____

Phone number: _____

IF YOU HAVE ALREADY KINDLY COMPLETED THIS SURVEY THEN THERE IS NO NEED TO COMPLETE IT AGAIN.

We are interested in your views and feedback about rats and their management on Sark and the surrounding islets and stacks.

All responses to this survey are anonymous. If you choose to provide contact details (at the end of the survey) they will be stored securely and separately from your survey responses.

Once completed, please return this survey to one of the drop-boxes in either Food stop, Mon Plasir or Gallery Stores. DEADLINE TO SUBMIT IS JUNE 5TH 2022.

SECTION A

1.	**Do you live on Sark?**	Yes ☐	No ☐
2.	**Have you noticed the presence of rats on the Island(s)?**	Yes ☐	No ☐
3.	**Do you have any concerns about the presence of rats on the Island(s)?**	Yes ☐	No ☐

4. If yes, are you concerned about rats

	Not at all concerned	*Slightly concerned*	*Moderately concerned*	*Very concerned*
Damaging food or crops	☐	☐	☐	☐
Damaging property	☐	☐	☐	☐
Harming wildlife	☐	☐	☐	☐
Harming domestic animals	☐	☐	☐	☐
Harming people	☐	☐	☐	☐
Carrying fleas or diseases	☐	☐	☐	☐

Other (please specify):

5. Have you personally experienced any problems with rats on the islands in the past five years? Yes ☐ No ☐

If YES, go to Question 6. If NO, go to SECTION B.

6. Where have you experienced problems with rats?

	Yes	*No*
Home	☐	☐
Business	☐	☐
Farm	☐	☐
Boat	☐	☐

Other (please specify):

7. What problems with rats have you experienced?

	Yes	*No*
Damaging food or crops	☐	☐
Damaging property	☐	☐
Harming wildlife	☐	☐
Harming domestic animals	☐	☐
Harming people	☐	☐
Carrying fleas or diseases	☐	☐

Other (please specify):

SECTION B

Please read the information below before continuing.

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to which they have been introduced by humans. Eradication projects also involve longer-term measures (e.g. monitoring and biosecurity) to prevent rats from returning.

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Economy (tourism)	☐	☐	☐	☐
Public health	☐	☐	☐	☐
Animal health	☐	☐	☐	☐
Wildlife	☐	☐	☐	☐

Other (please specify):

10. What do you think could challenge a successful rat eradication project?

	Not at all challenging	*Slightly challenging*	*Moderately challenging*	*Very challenging*
Gaining community support	☐	☐	☐	☐
Access to private land	☐	☐	☐	☐
Island terrain	☐	☐	☐	☐
Avoiding harm to other wildlife	☐	☐	☐	☐
Avoiding harm to domestic animals	☐	☐	☐	☐

Adequate funding	☐	☐	☐	☐
Avoiding rats returning	☐	☐	☐	☐
Waste management	☐	☐	☐	☐
Ecological effects of removing rats	☐	☐	☐	☐

Other (please specify):

11. Do you have any other suggestions, questions, or concerns about the idea of a rat eradication project on Sark and surrounding islets?

12. How would you prefer to be informed about the findings of this initial research (select all that apply)?

Email (provide details below) ☐
Community meeting ☐

If you would prefer to meet, discuss and fill in a hard copy please contact [redacted]

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If you'd like to discuss our research or contribute more to our ongoing conversation with the Sark and Breqhou community, you can contact [redacted].

Your Contact Details (Optional)

Name: _____

Email address: _____

Phone number: _____