

Appendix 17.2: Phase 2 Intertidal Survey

ENVIRONMENT GUERNSEY LTD

INTERTIDAL PHASE II SPECIES MONITORING SURVEY

Longue Hougue South, Guernsey

A report submitted to Royal Haskoning DHV

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It should be noted that whilst every effort is made to meet the client's brief no site investigation can ensure a complete assessment or a prediction of the natural environment.

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ABBREVIATIONS

ANOSIM	Primer v6 routine: analysis of similarities. "Analysis of similarities" hypothesis for differences between groups of community samples (defined a priori), using permutation/randomisation methods on resemblance matrix.
Biotope	1) The physical 'habitat' with its biological 'community'; a term which refers to the combination of physical environment (habitat) and its distinctive assemblage of conspicuous species. 2) The smallest geographical unit of the biosphere or of a habitat that can be delimited by convenient boundaries and is characterized by its biota.
EU	European Union.
JNCC	Joint Nature Conservation Committee.
GIS	Geographical Information System.
GPS	Geographical Positioning System.
Habitat	The place in which a plant or animal lives. It is defined for the marine environment according to geographical location, physiographic features and the physical and chemical environment (including salinity, wave exposure, strength of tidal streams, geology, biological zone, substratum, 'features' (e.g. crevices, overhangs, rockpools) and 'modifiers' (e.g. sand-scour, wave-surge, substratum mobility).
MarLIN	Marine Life Information Network (internet database resource).
m²	Metres squared.
n	Number of individuals (abundance) in a species.
Pielou's evenness (J')	Diversity index to measure how similar the abundances of different species are: $E = H/\log(S)$.
Quadrat	A square or rectangular plot of land used to mark off at random a physical area to isolate a sample and determine the percentage of vegetation and animals occurring within the marked area.
Shannon-wiener (H')	Diversity index which measures the order observed in a particular system. The order is characterised by the number of individuals observed for each sub-species in the sample plot: $H = -\sum(P_i \log[P_i])$.
SIMPER	Primer v6 analysis routine: Examines the contribution of each variable to average resemblances between sample groups. For Bray-Curtis similarities it determines the contributions to the average Bray-Curtis dissimilarity between pairs of groups of samples. It also determines the contributions to the average similarity within a group.
Species richness (S)	Total number of species.
UKBAP	UK Biodiversity Action Plan

Executive Summary

The report describes an intertidal Phase II species monitoring survey of Longue Hougue South, Guernsey, undertaken in August 2019. Longue Hougue South was selected for an intertidal Phase II species monitoring survey, due to a potential reclamation site development project proposed for the bay. The aim of the survey was to provide a quantitative record of intertidal substrates, species' biological diversity and composition within 12 habitat biotopes selected across the bay. This information can be used to help identify species of conservation importance within the bay and any potential environmental impacts upon them from the proposed development project activities.

The 12 selected marine habitat biotopes within Longue Hougue South comprised of 7 substrate types, with large proportions of bedrock and pebbles recorded. A total number of 8 macroalgae species and 4 lichens were identified, with biodiversity and composition differing between the selected habitat biotopes. A total number of 801 intertidal faunal individuals were recorded, which included 8 molluscs, 1 barnacle and 1 worm species. Faunal species biodiversity and composition estimates also differed between the twelve habitat biotopes.

In general, the recorded macroalgae and faunal species were regarded as common intertidal rocky shore species, found throughout the Channel Islands and the British Isles. Most species were, however, found to be highly intolerable to physical and chemical pressures, such as habitat loss, displacement and hydrocarbon contamination, with their recoverability ranging from very high to low. Such information can help inform planning application decisions for the proposed reclamation site development project.

In addition to the works described above, the survey also updated an intertidal habitat biotope survey, originally completed in 2015. This included re-defining habitat boundaries within the bay and identifying new habitats, such as eelgrass bed habitats.

Several recommendations were also given with the aim to provide more accurate, appropriate information to help understand the environment of Longue Hougue South and environmental impacts from the proposed reclamation site development project.

1. INTRODUCTION

1.1. BACKGROUND

Environment Guernsey Ltd was commissioned to undertake an intertidal Phase II species monitoring survey of Longue Hougue South, Guernsey. The selected bay is the subject of a potential reclamation site development project.

The aim of the Phase II survey was to provide a quantitative baseline record of substrate, macroalgae and faunal species (biodiversity and composition) within a number of the bay's marine habitat biotopes. The marine habitat biotopes were identified from an intertidal habitat mapping survey completed in 2015 (Environment Guernsey Ltd, 2015) and also during the field visits in 2019.

The purpose of this report is to advise the method statement for the potential development project at Longue Hougue South, in order that any potential risks to species and habitats which are identified during the survey can be mitigated accordingly throughout the project, and beyond.

The report details the following information:

- Site description;
- Methodology;
- Results;
- Recommendations;
- Summary.

1.2. SITE DESCRIPTION

The site of the survey area was located along the East coastline of Guernsey, Channel Islands. Tidal flows adjacent to the coastline range from 0.1 - 5.2 knots, from northeast to southwest direction.

The survey area consists of an intertidal rocky shoreline environment and is adjacent to the existing Longue Hougue South reclamation site (see Figure 1.1). Habitat biotopes comprised of a mixture of stable bedrock, boulders, and coarse substrates (rocks, pebbles, gravel and sands).

Intertidal Phase II Monitoring Survey,
Longue Hougue South, 2019

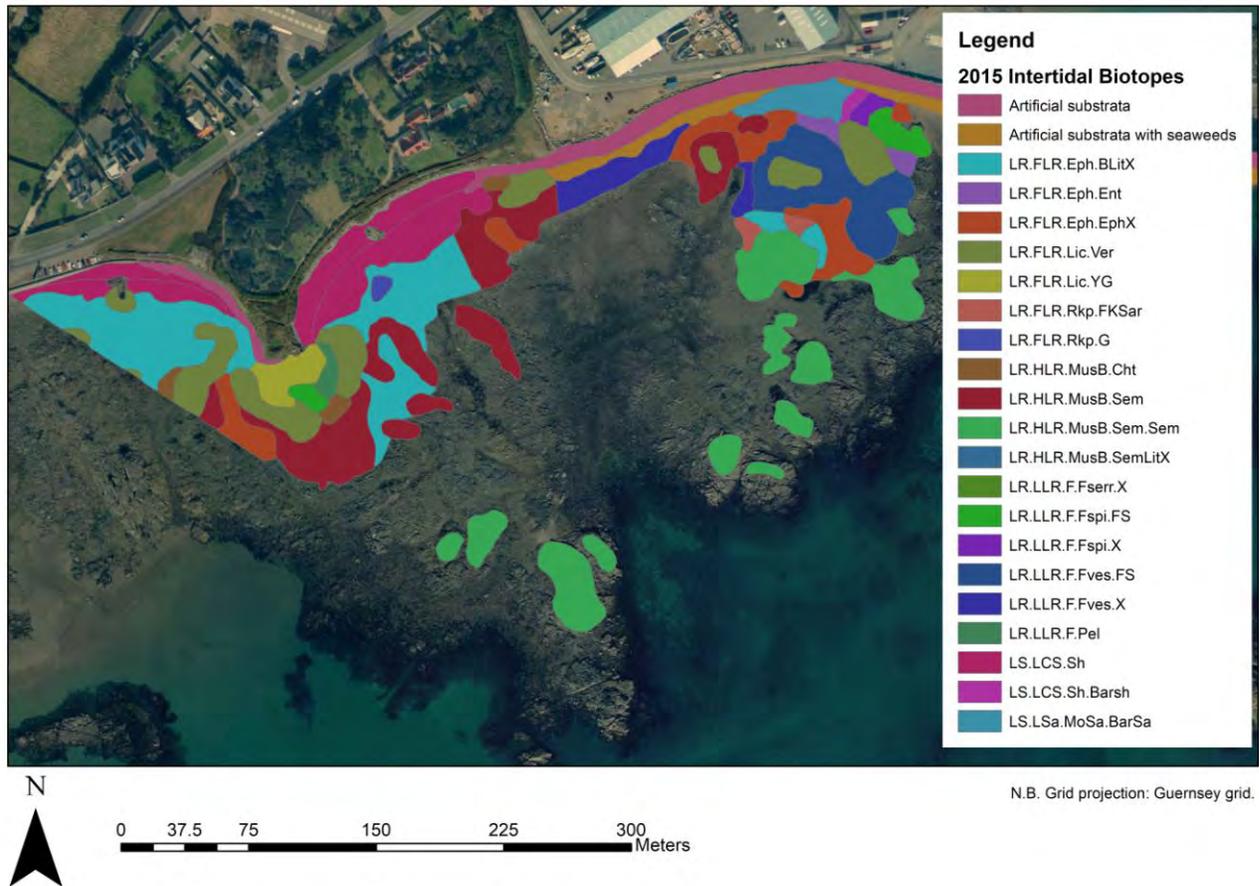


Figure 1.1. Location of Longue Hougue South survey area and recorded habitat biotopes (taken from Environment Guernsey Ltd, 2015), located on the east coast of Guernsey, Channel Islands.

2. METHODOLOGY

2.1. BACKGROUND

The field work for the intertidal Phase II species monitoring survey was completed in August/September, with data entry, analysis and report writing completed from mid September, 2019.

2.2. INTERTIDAL SURVEY

Twelve marine habitat biotopes within the Longue Hougue South survey area were selected from a previous intertidal habitat biotope survey of the bay, which was completed in 2015 (Environment Guernsey Ltd, 2015; see Figure 1.1). During the survey, additional/new habitats were also recorded and as such, three additional habitat biotopes were selected for the Phase II survey (see *H10, H11 and H12*; section 2.4 for more information and Appendix 1). The classification of the marine habitat biotopes followed Connor *et al.*, 2004 habitat classification, with habitat surveying following 'Procedural Guideline 1-1 Intertidal Resource Mapping Using Aerial Photographs' methodology from the JNCC's Marine Monitoring Handbook (Davis *et al.*, 2001). The twelve habitat biotopes selected for the Phase II survey included:

- I. *H1*: LR.FLR.Eph.BLitX. Barnacles and *Littorina* spp. on unstable eulittoral mixed substrata.
- II. *H2*: LR.FLR.Lic.Ver. *V. maura* on littoral fringe rock.
- III. *H3*: LR.FLR.Lic.YG. Yellow and grey lichens on supralittoral rock.
- IV. *H4*: LR.FLR.Eph.EphX. Ephemeral green and red seaweeds on variable salinity and/or disturbed eulittoral mixed substrata.
- V. *H5*: LR.LLR.F.Pel. *Pelvetia canaliculata* on sheltered littoral fringe rock.
- VI. *H6*: LR.HLR.MusB.Cht. *Chthamalus* spp. on exposed eulittoral rock.
- VII. *H7*: LR.HLR.MusB.Sem. *S. balanoides* on exposed to moderately exposed or vertical sheltered eulittoral rock.
- VIII. *H8*: LR.HLR.MusB.Sem.Sem. *Semibalanus balanoides*, *Patella vulgata* and *Littorina* spp. on exposed to moderately exposed or vertical sheltered eulittoral rock.
- IX. *H9*: LR.LLR.F.Fves.X. *F. vesiculosus* on mid eulittoral mixed substrata.
- X. *H10*: LR.HLR.MusB.Cht.Lpyg. *Chthamalus* spp. and *Lichina pygmaea* on steep exposed upper eulittoral rock. *This habitat was recorded in 2019.*
- XI. *H11*: LR.HLR.MusB.Sem.FvesR. *Semibalanus balanoides*, *Fucus vesiculosus* and red seaweeds on exposed to moderately exposed eulittoral rock. *This habitat was recorded in 2019.*
- XII. *H12*: LR.HLR.FT.FserTX. *Fucus serratus* with sponges, ascidians and red seaweeds on tide-swept lower eulittoral mixed substrata. *This habitat was recorded in 2019.*

For the Phase II survey, a 0.5 m² quadrat (square frame) was placed five times within each of the selected marine habitat biotope. The geographical position of each quadrat was then recorded by

GPS (dGPS hand-held and camera dGPS systems), for future monitoring surveys. Ecological and physical information was recorded within each quadrat (following the JNCC procedural guideline number 3 – 11; littoral monitoring using fixed quadrat photography survey, Davis *et al.*, 2001) including:

- Substrate type and percentage cover (following a generalised version of the Wentworth 1922 classification);
- Macroalgae species type and percentage cover (including cryptic species beneath other dense, dominating macro algae fronds);
- Faunal species type and abundance count (including species beneath dense, dominating macro algae fronds);
- Barnacle, worm and sponge species type and density percentage cover (including species beneath dense, dominating macro algae fronds).

During the field-work, the selected habitat biotopes were surveyed on foot at the lowest available mean water mark, beginning approximately two hours before the time of low tide.

2.3. DATA ANALYSIS

For data analysis, all information was entered into separate substrate, macroalgae and faunal species dataset matrices, in Microsoft Excel. It must be noted that for some macroalgae and faunal species identification, species were assigned to their genus taxonomic level. This was due to the difficulty of taxonomically identifying these species during the field-work.

To assess intertidal macroalgae and faunal species biological diversity, the Primer v6 multivariate statistical software package was used (Clark and Gorey, 2006). All biotic datasets were fourth-root transformed prior to analyses, to weigh the contributions of common and rare species for multivariate analyses, and checked by draftsman plots (Clarke and Gorey, 2006).

The composition of the recorded intertidal substrate types was assessed by their average proportion within each marine habitat biotope type, expressed as a percentage (%).

To assess macroalgae and faunal species biodiversity within each marine habitat biotope, the Primer v6 DIVERSE routine was used. This routine generated the diversity measures: species richness (S), Shannon wiener index (H' , (loge)) and Pielou's evenness (J') for each quadrat. These quadrat biodiversity values were then averaged for each marine habitat separately, for the macroalgae and faunal species datasets. For faunal species, the total abundance of individuals was also assessed.

To examine the similarity between the composition of macroalgae and faunal species across the marine habitat biotopes, the Primer v6 one-way ANOSIM routine was used. This routine tests groups of samples based on the Bray-Curtis similarity resemblance matrices. It gives a significance

level and a global absolute value R (R = 0 not significant, R = 1 significant), on the degree of separation between the sections for these species.

The Primer v6 SIMPER routine was then used, to identify which species contributed to the observed compositional differences, outlined by the ANOSIM routines. This routine generates the contribution of each group within a sample as a percentage (%), based on Bray-Curtis coefficient dissimilarities, to assess the 'closeness' of samples within a group (Clarke and Gorey, 2006). The routine was based on a 100% cut-off point to include all rare and least contributing species. The composition of the recorded density intertidal barnacle and sponge species types were assessed by their average proportion within each marine habitat biotope type, expressed as a percentage (%).

The recorded macroalgae and faunal species were then assessed in terms of their ecological status (i.e. rarity across the Channel Islands and the UK), conservation importance at the European (EU: Habitats Directive/Annex II species and OSPAR Commission: List of Threatened and/or Declining Species and Habitats) and UK (UK: Species Biodiversity Action Plans (UKBAP)) levels (see European Commission, 2019; European Commission, 2013; European Commission, 2007; JNCC, 2019; MARLIN, 2019; OSPAR COMMISSION, 2019; OSPAR COMMISSION, 2008; UKBAP, 2008), their sensitivity/ high intolerance from physical/ chemical pressures and recoverability (as defined by MARLIN, 2019).

2.4. LIMITATIONS AND ADDITIONAL NOTES

As described earlier, a number of new habitat biotopes were also identified. Their presence, location and extent differed from the 2015 habitat survey (see Appendix 1). This may be due to length of time between the survey time periods, tide state or other unknown influences (i.e. potential natural or human impacts).

In addition, an eelgrass (*Zostera marina*) bed (habitat code: SS.SMp.SSgr. *Zostera marina/angustifolia* beds on lower shore or infralittoral clean or muddy sand) was recorded. Due to this habitat's conservation importance at the international level (Europe) and national level (British Isles) it was subsequently surveyed using Seasearch methods with video/photograph survey techniques (Seasearch, 2019). These results can be found in Appendix 2.

3. INTERTIDAL SURVEY RESULTS

3.1. INTRODUCTION

The intertidal Phase II species monitoring survey recorded a range of substrates, macroalgae and faunal species within the selected marine habitat biotopes, which are presented in 3.2 to 3.5.

3.2. INTERTIDAL SUBSTRATE COMPOSITION

The selected marine habitat biotopes within Longue Hougue South comprised of 7 substrate types, generally consisting of bedrock and pebbles (see Table 3.1). In general, the substrate types corresponded to the JNCC habitat biotope classification descriptions.

Table 3.1. Intertidal substrate type and composition across the habitat biotopes within Longue Hougue South, 2019. Composition is expressed as mean percentage (%). Bold indicates proportions > 15 %.

Substrate type	Marine Biotope Habitat (%):											
	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
Bedrock		100	100	4.4	100	100	100	100		100	98.6	
Cobbles									7.5			
Boulders	61			36.3					43.2			
Rocks				3.3					17.3			4.2
Pebbles	39			54.9					28.2		1.4	
Gravel												95.8
Sand				1.1					3.8			

Habitats include: H1: LR.FLR.Eph.BLitX; H2: LR.FLR.Lic.Ver; H3: LR.FLR.Lic.YG; H4: LR.FLR.Eph.EphX; H5: LR.LLR.F.Pel; H6: LR.HLR.MusB.Cht; H7: LR.HLR.MusB.Sem; H8: LR.HLR.MusB.Sem.Sem; H9: LR.LLR.F.Fves.X; H10: LR.HLR.MusB.Cht.Lpyg; H11: LR.HLR.MusB.Sem.FvesR; H12: LR.HLR.FT.FserTX.

3.3. INTERTIDAL MACROALGAE

Species biological diversity

A total number of 8 macroalgae species and 4 lichens were identified during the survey. This included 1 Chlorophyta, 4 Ochrophyta, 3 Rhodophyta and 4 lichen species.

In general, the selected marine habitat biotopes comprised of low macroalgae species biodiversity estimates. H11 and H3 habitat biotopes comprised of the highest estimates, with H1 and H8 habitat biotopes comprising of none (see Figure 3.1). H11 and H3 also showed an even spread of species, with H4 and H9 showing low evenness estimates.

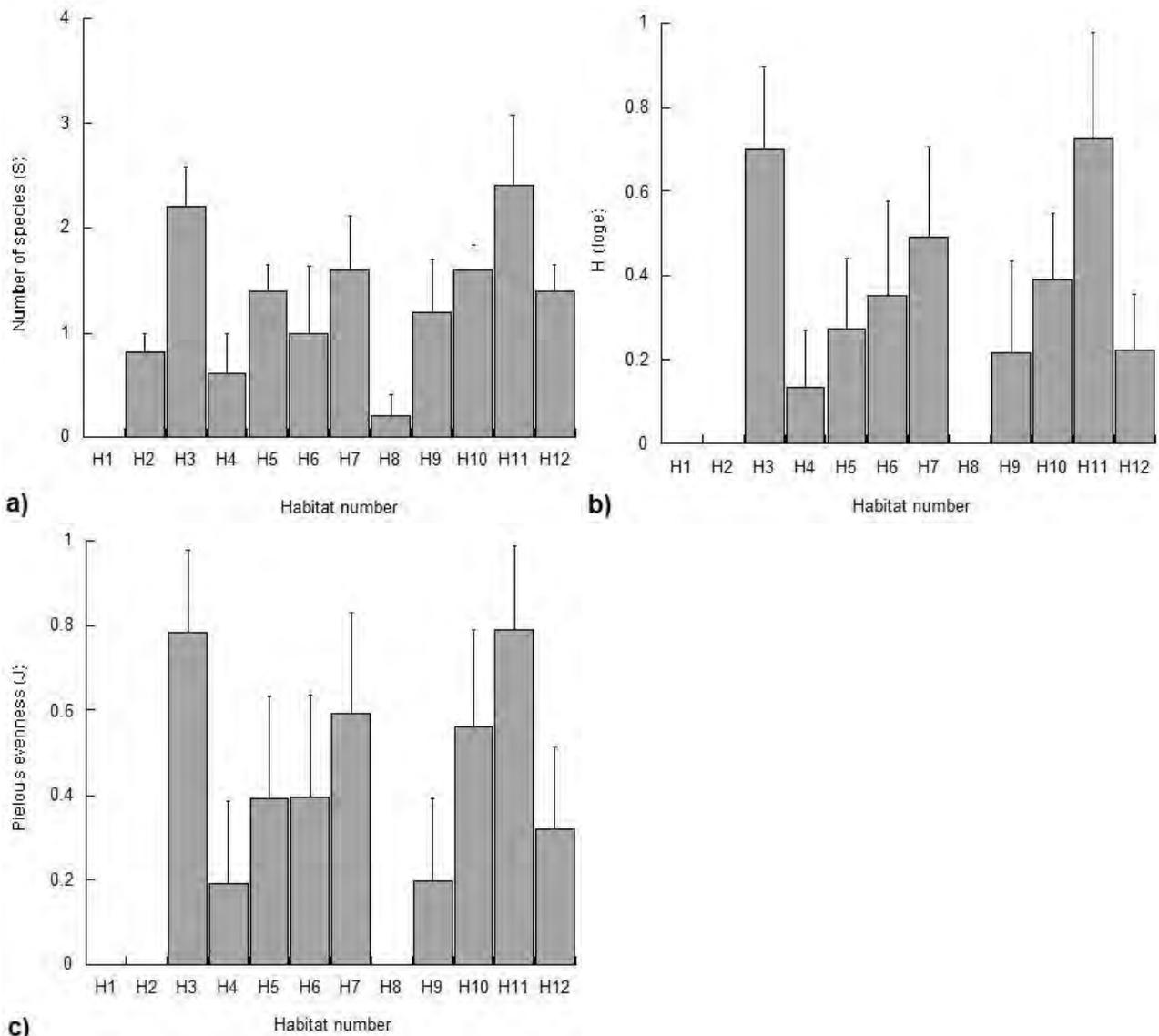


Figure 3.1. Mean macroalgae species biodiversity measures; species richness (S) a), Shannon wiener index (H' (loge)) b) and Pielou's evenness (J') c) within selected marine habitat biotopes, Longue Hougue South, 2019. Habitats include: H1: LR.FLR.Eph.BLitX; H2: LR.FLR.Lic.Ver; H3: LR.FLR.Lic.YG; H4: LR.FLR.Eph.EphX; H5: LR.LLR.F.Pel; H6: LR.HLR.MusB.Cht; H7: LR.HLR.MusB.Sem; H8: LR.HLR.MusB.Sem.Sem; H9: LR.LLR.F.Fves.X; H10: LR.HLR.MusB.Cht.Lpyg; H11: LR.HLR.MusB.Sem.FvesR; H12: LR.HLR.FT.FserTX. Error bars represent SEM.

Species composition

The ANOSIM results identified significant different macroalgae species composition between the twelve marine habitats biotopes (see Table 3.2; ANOSIM: R = 0.608, p = 0.001). The Simper results showed that this was due to the selected habitats comprising of 1-2 different dominant seaweeds or lichen species. These dominant species link well to their habitat descriptions.

Table 3.2. Intertidal macroalgae species composition within the selected marine habitat biotopes, Longue Hougue South, 2019.

Macroalgae Species	Marine Biotope Habitat (%):											
	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
Chlorophyta												
<i>Ulva species*</i>				100	100							
Ochrophyta												
<i>Fucus serratus</i>												97.27
<i>Fucus spiralis</i>						52.53						
<i>Fucus vesiculosus</i>							13.87		100		37.51	
<i>Pelvetia canaliculata</i>						47.47				12.46		
Rhodophyta												
<i>Mastocarpus stellatus</i>												
<i>Lithophyllum species*</i>							86.13					2.73
<i>Unidentified encrusting red species*</i>											62.49	
Lichen												
<i>Caloplaca marina</i>			74.29									
<i>Lichina pygmaea</i>										87.54		
<i>Ramalina siliquosa</i>			10.91									
<i>Verrucaria maura</i>		100	14.8									
Average similarity	N/A	57.21	72.95	9.05	40.60	11.69	19.97	N/A	36.67	79.80	60.29	88.45

Bold indicates proportions > 15 % contributions. * denotes species grouped at the coarser taxonomic levels recorded during the survey. Habitats include: H1: LR.FLR.Eph.BLitX; H2: LR.FLR.Lic.Ver; H3: LR.FLR.Lic.YG; H4: LR.FLR.Eph.EphX; H5: LR.LLR.F.Pel; H6: LR.HLR.MusB.Cht; H7: LR.HLR.MusB.Sem; H8: LR.HLR.MusB.Sem.Sem; H9: LR.LLR.F.Fves.X; H10: LR.HLR.MusB.Cht.Lpyg; H11: LR.HLR.MusB.Sem.FvesR; H12: LR.HLR.FT.FserTX.

3.4. INTERTIDAL FAUNAL SPECIES

Species biological diversity

A total number of 801 intertidal faunal individuals were recorded during the survey. This comprised of eight species (4 singleton species counts and 2 density species counts), which included; 6 Mollusca, 1 Arthropoda and 1 worm species.

Intertidal faunal species biodiversity and evenness estimates across the selected marine habitat biotopes were fairly low in general (see Figure 3.2). H10 and H7 comprised the largest number

of species with H3, H5 and H2 the lowest. Overall, most habitats comprised of an even spread of species. Interestingly, faunal abundances were high, particularly within H11, H8 and H7.

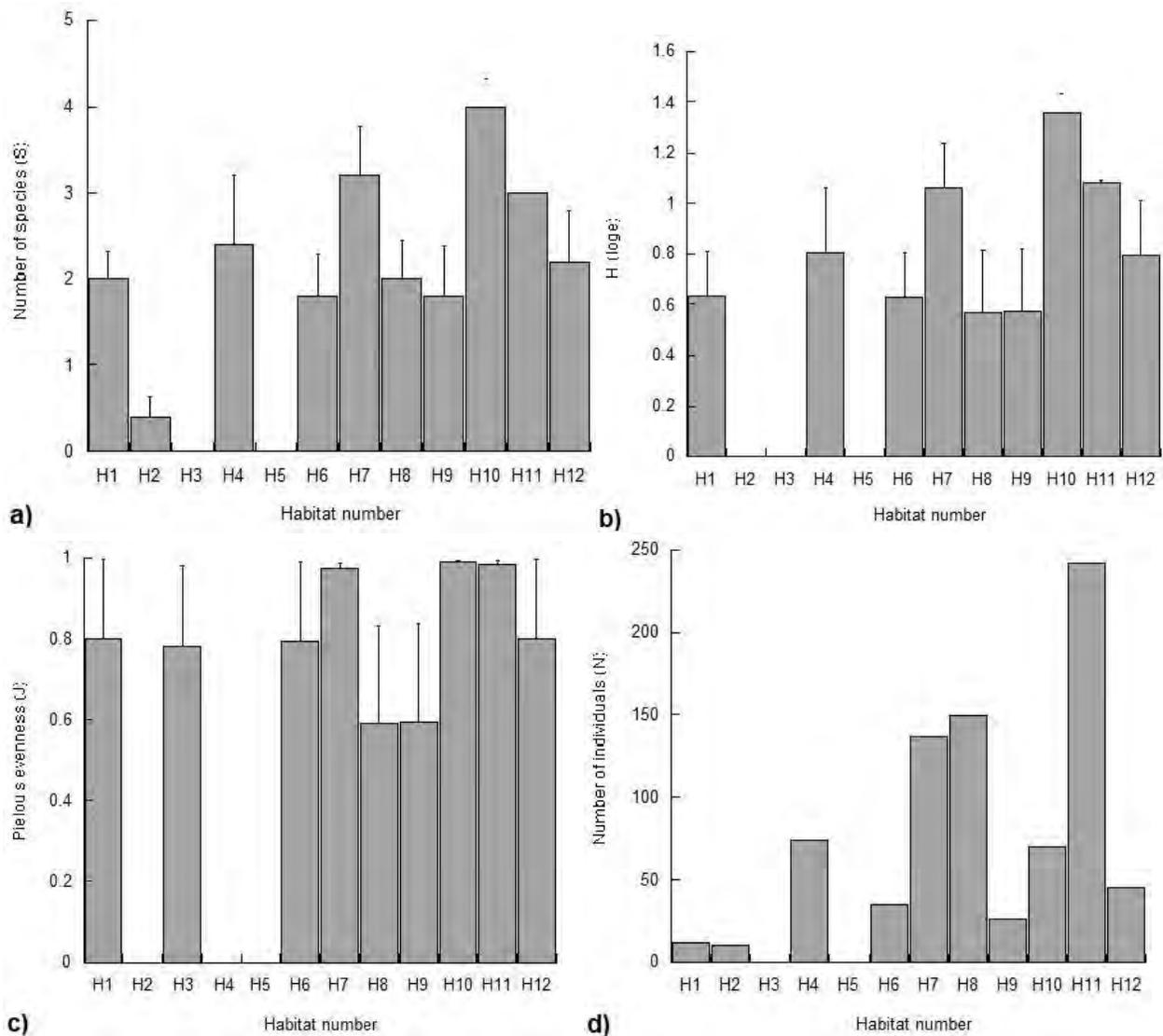


Figure 3.2. Mean intertidal faunal species biodiversity measures, species richness (S) a), Shannon wiener index (H' (log)) b) and Pielou's evenness (J') c) within selected marine habitat biotopes, Longue Hougue South, 2019. Habitats include: H1: LR.FLR.Eph.BLitX; H2: LR.FLR.Lic.Ver; H3: LR.FLR.Lic.YG; H4: LR.FLR.Eph.EphX; H5: LR.LLR.F.Pel; H6: LR.HLR.MusB.Cht; H7: LR.HLR.MusB.Sem; H8: LR.HLR.MusB.Sem.Sem; H9: LR.LLR.F.Fves.X; H10: LR.HLR.MusB.Cht.Lpyg; H11: LR.HLR.MusB.Sem.FvesR; H12: LR.HLR.FT.FserTX. Error bars represent SEM.

Species composition

The ANOSIM results show a significant difference in Intertidal faunal species composition across the selected habitat biotopes (see Table 3.3; ANOSIM: $R = 0.432$, $p = 0.001$). This was generally due to H1 comprising of high abundances of *Melarhaphes neritoides* and *Phorcus lineatus* species,

compared to the other habitats. Habitats 7 – 12 showed comparable abundances of *Steromphala umbilicalis*, *Patella* and *P. lineatus* species.

From the density scale assessment, barnacle species were identified in large proportions in H7 and H8, which relates well to their habitat descriptions. The worm, *Spirorbis spirorbis* were also identified within a few of the selected habitat biotopes in small proportions.

Table 3.3. Intertidal faunal species composition within selected marine biotope habitats of Longue Hougue South, 2019.

Singleton Species Count:	Marine Biotope Habitat (%):											
	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
Mollusca												
<i>Littorina littorea</i>							2.22					
<i>Littorina saxatilis</i>				6.36						20.27		
<i>Melarhaphe neritoides</i>	18.56			34.49						14.12		
<i>Patella species*</i>	5.99					38.59	53.95	91.04	8.75	31.31	42.3	39.09
<i>Phorcus lineatus</i>	75.45			50.45		61.41	36.13	4.35	61.98	32.15	26.56	40.31
<i>Steromphala umbilicalis</i>				8.7			7.7	4.6	29.27	2.16	31.14	20.6
Average similarity	66.79	N/A	N/A	31.99	N/A	39.42	70.97	63.49	37.60	78.14	90.89	46.30
Species Density %:												
Arthropoda												
<i>Barnacle species*</i>	0.8	0.4		0.2	0.2	1	80.4	81		1	1.8	
Annelida												
<i>Spirorbis spirorbis</i>												1.4

Bold indicates proportions > 15 % contributions. * denotes species grouped at the coarser taxonomic levels recorded during the survey. Habitats include: H1: LR.FLR.Eph.BLitX; H2: LR.FLR.Lic.Ver; H3: LR.FLR.Lic.YG; H4: LR.FLR.Eph.EphX; H5: LR.LLR.F.Pel; H6: LR.HLR.MusB.Cht; H7: LR.HLR.MusB.Sem; H8: LR.HLR.MusB.Sem.Sem; H9: LR.LLR.F.Fves.X; H10: LR.HLR.MusB.Cht.Lpyg; H11: LR.HLR.MusB.Sem.FvesR; H12: LR.HLR.FT.FserTX.

3.5 SPECIES CONSERVATION IMPORTANCE AND SENSITIVITY

Overall, the identified macroalgae and faunal species were regarded as common or widespread throughout Guernsey, the Channel Islands and the British Isles as a whole (see Table 3.4 and Table 3.5). The common periwinkle, *Littorina littorea* was recorded during the survey, which is considered rare across the Channel Islands. No recorded species (during the Phase II survey) were listed as conservationally important at the EU and UK levels. In general, most species recorded are highly intolerable to physical disturbance (such as habitat loss) and chemical pressures (such as hydrocarbon contamination), with their recoverability ranging from very high to low. Limited information exists for lichen and some fauna species.

**Intertidal Phase II Monitoring Survey,
Longue Hougue South, 2019**

Table 3.4. Intertidal macroalgae species, ecological status, intolerance and recoverability identified during the intertidal Phase II species monitoring survey, 2019.

Marine Algae Taxonomic Division	Marine Species Latin Name	Ecological Status	Conservation importance (EU, UK levels)	Species Intolerance: Rank - High	Recoverability
Chlorophyta	<i>Ulva species*</i>	Common	None	<i>Physical pressures:</i> Substrate loss; smothering; abrasion and physical disturbance; <i>Chemical pressures:</i> hydrocarbon contamination	Very High
Ochrophyta	<i>Fucus serratus</i>	Widespread	None	<i>Physical pressures:</i> Substrate loss; smothering; increase in wave exposure; displacement; <i>Chemical pressures:</i> synthetic compound contamination	High
	<i>Fucus spiralis</i>	Widespread	None	<i>Physical pressures:</i> Substrate loss; smothering; dessication; increase in immergence; displacement; <i>Chemical pressures:</i> hydrocarbon contamination;	High
	<i>Fucus vesiculosus</i>	Widespread	None	<i>Physical pressures:</i> Smothering; displacement	High
	<i>Pelvetia canaliculata</i>	Common	None	<i>Physical pressures:</i> Substrate loss; smothering; increase in wave exposure; displacement; <i>Chemical pressures:</i> hydrocarbon compound	Moderate
Rhodophyta	<i>Lithophyllum species*</i>	Widespread	None	<i>Physical pressures:</i> Substrate loss; smothering; dessication; increase in immergence; <i>Chemical pressures:</i> hydrocarbon contamination; synthetic compound contamination	Low
	<i>Mastocarpus stellatus</i>	Common	None	No information	No information
	Unidentified encrusting red species*	Unknown	None	No information	No information
Ascomycota	<i>Caloplaca marina</i>	Widespread	None	No information	No information
	<i>Lichina pygmaea</i>	Widespread	None	No information	No information
	<i>Ramalina siliquosa</i>	Widespread	None	No information	No information
	<i>Verrucaria maura</i>	Widespread	None	No information	No information

N.B. * denotes species grouped at the coarser taxonomic levels recorded during the survey. This was due to the difficulty of identifying these species to the species taxonomic level during both the field and photo analyses.

**Intertidal Phase II Monitoring Survey,
Longue Hougue South, 2019**

Ecological status is determined by the distribution and abundance of each species throughout the British Isles (from MarLIN, 2019). Conservation importance at the European (EU: Habitats Directive/Annex II species and OSPAR Commission: List of Threatened and/or Declining Species and Habitats) and UK (UK: Species Biodiversity Action Plans (UKBAP)) levels. Species intolerance is defined as the susceptibility of a species population to damage, or death, from an external factor (MarLIN, 2019). Intolerance is assessed relative to change in a specific factor. Rank high: the species population is likely to be killed/destroyed by the factor under consideration. Recoverability is defined as the ability of an individual (or individual colony) of species to redress damage sustained as a result of an external factor. Very high: full recovery is likely within a few weeks or at most 6 months; High: full recovery will occur but will take many months (or more likely years) but should be complete within about five years; Moderate: full recovery will occur but will take many months (or more likely years) but should be complete within about five years; Low: only partial recovery is likely within 10 years and full recovery is likely to take up to 25 years.

Table 3.5. Intertidal faunal species, ecological status, intolerance and recoverability identified during the intertidal Phase II species monitoring survey, 2019.

Marine Faunal Taxonomic Group	Marine Species Latin Name	Ecological Status	Conservation importance (EU, UK levels)	Species Intolerance: Rank - High	Recoverability
Singleton Species Count: Mollusca	<i>Littorina littorea</i>	Rare in CI's	None	<i>Physical pressures:</i> Substrate loss; smothering; <i>Chemical pressures:</i> hydrocarbon compound contamination	High
	<i>Littorina saxatilis</i>	Common	None	No information	No information
	<i>Melarhappe neritoides</i>	Common	None	No information	No information
	<i>Patella species*</i>	Widespread	None	<i>Physical pressures:</i> Substrate loss; smothering; <i>Chemical pressures:</i> synthetic compound contamination; hydrocarbon compound contamination	High
	<i>Phorcus lineatus</i>	Widespread	None	Substrate loss; smothering; decrease in temp; changes in oxygenation;	Moderate
	<i>Steromphala umbilicalis</i>	Common	None	No information	No information
Species Density %: Arthropoda	<i>Barnacle species*</i>	Common	None	<i>Physical pressures:</i> Substrate loss; decrease in temp; displacement; decrease in salinity; changes in oxygenation	Moderate
Annelida	<i>Spirorbis spirorbis</i>	Common	None	No information	No information

**Intertidal Phase II Monitoring Survey,
Longue Hougue South, 2019**

N.B. * denotes species grouped at the coarser taxonomic levels recorded during the survey. This was due to the difficulty of identifying these species to the species taxonomic level during both the field and photo analyses. Ecological status is determined by the distribution and abundance of each species throughout the British Isles (from MarLIN, 2019). Conservation importance at the European (EU: Habitats Directive/Annex II species and OSPAR Commission: List of Threatened and/or Declining Species and Habitats) and UK (UK: Species Biodiversity Action Plans (UKBAP)) levels. Species intolerance is defined as the susceptibility of a species population to damage, or death, from an external factor (MarLIN, 2019). Intolerance is assessed relative to change in a specific factor. Rank high: the species population is likely to be killed/destroyed by the factor under consideration. Recoverability is defined as the ability of an individual (or individual colony) of species to redress damage sustained as a result of an external factor. Very high: full recovery is likely within a few weeks or at most 6 months; High: full recovery will occur but will take many months (or more likely years) but should be complete within about five years; Moderate: full recovery will occur but will take many months (or more likely years) but should be complete within about five years; Low: only partial recovery is likely within 10 years and full recovery is likely to take up to 25 years.

4. RECOMMENDATIONS

Information from the intertidal Phase II species monitoring survey was used to outline a number of recommendations. These recommendations are described below:

4.1. FUTURE ECOLOGICAL SURVEYS RECOMMENDATIONS

R.1. Consider expanding Phase I habitat and Phase II species surveys within the survey area.

During the Phase II survey, new habitat biotopes were identified, particularly within the lower shore/Infralittoral zone (i.e. IR.HIR.KSed.LsacSac / LR.HLR.FT.FserTX habitats; see Appendix 1). Due to time restraints (i.e. surveying in very low spring tides), these habitats could not be assessed. It is therefore recommended that an expansion of the intertidal habitat biotope survey and subsequent Phase II survey within the lower infralittoral region (during a low spring tide) is undertaken.

R.2. Consider using complementary ecological surveys.

It is recommended that other marine ecological surveys are undertaken within Longue Hougue South. These surveys should aim to enhance ecological knowledge of the bay to provide information to help reduce any impacts upon the bay (including important habitats and species), from any development project practices/activities. Potential future surveys could include:

- Undertake additional snorkel/scuba dive/ survey of the shallow sublittoral region of the bay (0-5m depth) and adjacent areas, particularly to evaluate kelp and eelgrass habitat biotopes, following Seasearch surveying techniques.

R.3. Consider development activities post late spring/early summer timescales.

If the development project does occur, it is recommended that the development project activities (i.e. construction) are undertaken late summer/early autumn. This is due to late spring/early summer being a key timeframe for marine species reproduction and habitat biotope growth.

R.4. Consider re-evaluating the impact of the potential development project upon eelgrass (*Z.marina*) beds within and adjacent to the survey area.

Due to the presence of eelgrass (*Z. marina*) beds recorded within and adjacent to the survey area (see Appendix 2), it is recommended that a re-evaluation of the environmental impacts from the potential development project upon these habitat biotopes is undertaken. Eelgrass beds are highly susceptible to habitat loss and smothering, in addition to being considered conservationally important across the regional (Channel Islands), national (UK) and international (Europe and beyond) levels. A re-assessment of the development project's potential environmental impacts would help identify and further develop appropriate mitigation measures and monitoring practices, specific to these eelgrass beds.

R.5. Consider replicating the Phase II surveys post potential development project activities.

If the development project does occur, it is recommended a Phase II surveys should be conducted post the development. This will outline any potential influences, impacts or changes from the works on the intertidal area around and may also enable additional mitigation measures.

R.6. Consider using the Phase II survey methods for other ecological or anthropogenic activity studies.

The Phase II survey method and the data collected during this survey could be used for other intertidal ecological assessments or anthropogenic impact studies that occur within the survey area i.e. potential future pollution events derived from the project execution.

5. SUMMARY

The intertidal Phase II species monitoring survey of Longue Hougue South identified a range of intertidal substrates, macroalgae, lichen and faunal species, within the 12 selected important marine habitats. The survey also updated a past intertidal habitat biotope survey completed in 2015.

The selected marine habitat biotopes comprised of 7 substrate types, with large proportions of bedrock and pebbles.

A total number of 8 macroalgae, 4 lichens and 8 faunal species were recorded across the selected marine habitat biotopes. Macroalgae and faunal species biodiversity and composition differed between the habitat biotopes overall. The recorded intertidal macroalgae and faunal species were regarded as widespread or common intertidal rocky shore species, found throughout the Channel Islands and the British Isles. Most species were found to be highly intolerable to physical and chemical pressures, with their recoverability ranging from very high to low.

Following this survey, a number of recommendations were suggested, to enhance ecological information of the bay to help reduce any potential impacts from future development practices.

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APPENDICES

Appendix 1: Intertidal habitat biotope map and Phase II quadrat survey information.

APPENDIX 2: Survey notes of *Zostera marina* habitat recorded within the survey area, 2019.

Appendix 1: Intertidal habitat biotope map and Phase II quadrat survey information.

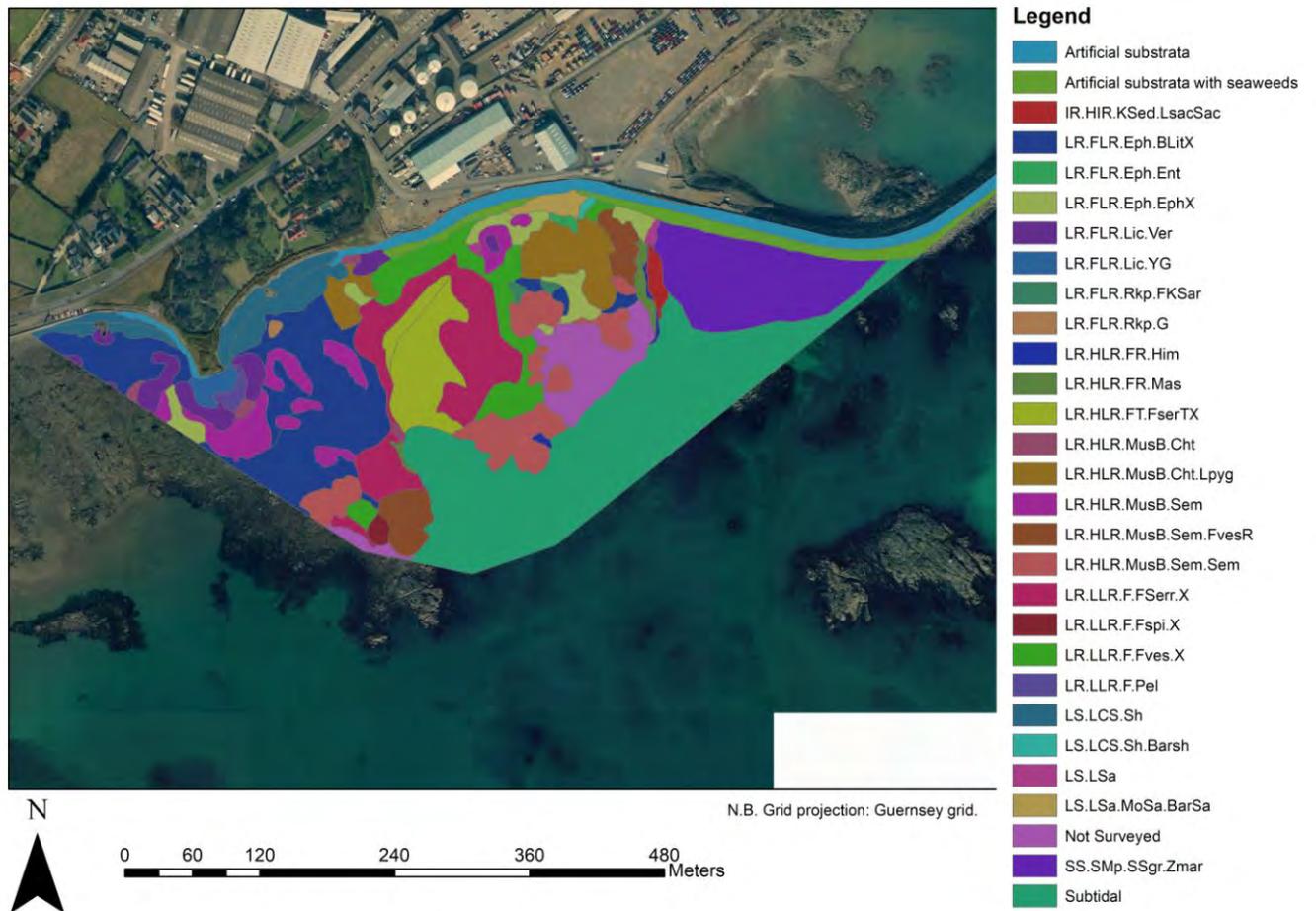


Figure 7.1. Updated habitat biotope map of Longue Hougue South, 2019.

Table 7.1. Updated habitat biotope code description, size and conservation importance for all JNCC habitat biotopes recorded in Longue Hougue South, 2019.

Intertidal Phase II Monitoring Survey,
Longue Hougue South, 2019

Habitat Biotope Type	Habitat Biotope Code	Total area (m ²)	Conservation Importance: EU Annex I	Conservation Importance: UK BAP
High energy littoral rock (and other substrata)	LR.HLR.MusB.Cht	573	EU Habitat Directive: reefs	
	LR.HLR.MusB.Cht.Lpyg	5465	EU Habitat Directive: reefs	
	LR.HLR.MusB.Sem	5,661	EU Habitat Directive: reefs	UKBAP: Estuarine rockysore
	LR.HLR.MusB.Sem.Sem	8,266	EU Habitat Directive: reefs	
	LR.HLR.MusB.Sem.LitX		EU Habitat Directive: reefs	
	LR.HLR.MusB.Sem.FvesR	3,482	EU Habitat Directive: reefs	
	LR.HLR.FR.Him	314	EU Habitat Directive: reefs	
	LR.HLR.FT.FserTX	6,385	EU Habitat Directive: reefs	UKBAP: Tide swept channels
Low energy littoral rock	LR.LLR.F.Fserr.X	11,017	EU Habitat Directive: reefs	
	LR.LLR.F.Fspi.X	423	EU Habitat Directive: reefs + Large shallow inlets and bays	
	LR.LLR.F.Fves.X	6,514	EU Habitat Directive: reefs + Large shallow inlets and bays	UKBAP: Estuarine rockysore
	LR.LLR.F.Pel	533	EU Habitat Directive: reefs + Large shallow inlets and bays	UKBAP: Estuarine rockysore
Features of littoral rock	LR.FLR.Lic.YG	892	EU Habitats Directive: reefs	UKBAP: maritime cliffs and slopes
	LR.FLR.Lic.Ver	3,527	EU Habitat Directive: reefs	
	LR.FLR.Rkp.G	143	EU Habitat Directive: reefs	
	LR.FLR.Rkp.FK.Sar	311	EU Habitat Directive: reefs	
Ephemeral green or red communities	LR.FLR.Eph.Ent	233	EU Habitat Directive: reefs	UKBAP: Estuarine rockysore
	LR.FLR.Eph.EphX	3,643	EU Habitat Directive: reefs	
	LR.FLR.Eph.BLitX	17,502		UKBAP: Estuarine rockysore
Littoral Sediment	LS.LCS.Sh.BarSh	156		
	LS.LCS.Sh	5,540		
	LS.LSa	270		
	LS.LSa.MoSa.BarSa	1,000	EU Habitat Directive: Mudflats and sandflats not covered by	

**Intertidal Phase II Monitoring Survey,
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Other	SS.SMp.SSgr.Zmar	12,182	seawater at low tide EU Habitat Directive: Large shallow inlets and bays	UKBAP: Seagrass beds
	IR.HIR.KSed.LsacSac	695	EU Habitat Directive: reefs	

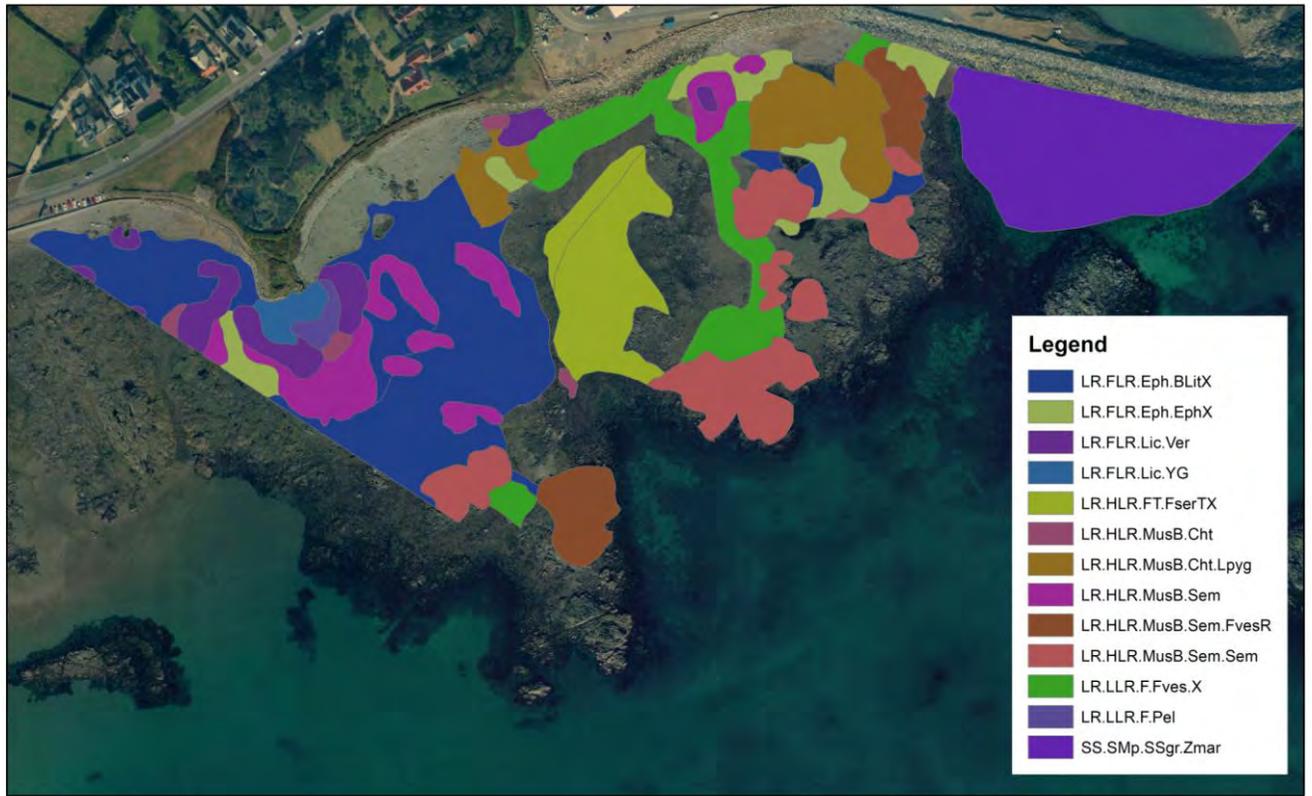


Figure 7.2. Selected habitat biotopes for the Phase II survey of Longue Hougue South, 2019.

Table 7.2. GPS coordinates of quadrats within Longue Hougue South selected habitat biotopes, 2019.

**Intertidal Phase II Monitoring Survey,
Longue Hougue South, 2019**

Habitat no	Habitat code	Quadrat no 1	2	3	4	5
H1	LR.FLR.Eph.BLitX	49.28.548n; 002.31.259w	49.28.546n; 002.31.272w	49.28.537n; 002.31.276w	49.28.551n; 002.31.301w	49.28.555n; 002.31.327w
H2	LR.FLR.Lic.Ver	49.28.531n; 002.31.159w	49.28.534n; 002.31.251w	49.28.541n; 002.31.240w	49.28.536n; 002.31.230w	49.28.529n; 002.31.225w
H3	LR.FLR.Lic.YG	49.28.536n; 002.31.224w	49.28.528n; 002.31.213w	49.28.537n; 002.31.198w	49.28.541n; 002.31.192w	49.28.536n; 002.31.217w
H4	LR.FLR.Eph.EphX	49.28.512n; 002.31.217w	49.28.520n; 002.31.230w	49.28.525n; 002.31.236w	49.28.528n; 002.31.238w	49.28.534n; 002.31.237w
H5	LR.LLR.F.Pel	49.28.535n; 002.31.189w	49.28.531n; 002.31.185w	49.28.536n; 002.31.187w	49.28.540n; 002.31.185w	49.28.543n; 002.31.187w
H6	LR.HLR.MusB.Cht	49.28.527n; 002.31.186w	49.28.526n; 002.31.182w	49.28.529n; 002.31.186w	49.28.524n; 002.31.186w	49.28.523n; 002.31.188w
H7	LR.HLR.MusB.Sem	49.28.515n; 002.31.184w	49.28.508n; 002.31.172w	49.28.504n; 002.31.183w	49.28.506n; 002.31.206w	49.28.526n; 002.31.170w
H8	LR.HLR.MusB.Sem.Sem	49.28.475n; 002.31.138w	49.28.477n; 002.31.113w	49.28.483n; 002.31.071w	49.28.487n; 002.31.055w	49.28.512n; 002.31.073w
H9	LR.LLR.F.Fves.X	49.28.582n; 002.31.582w	49.28.587n; 002.31.074w	49.28.601n; 002.31.041w	49.28.604n; 002.28.027w	49.28.614n; 002.31.018w
H10	LR.HLR.MusB.Cht.Lpyg	49.28.598n; 002.30.955w	49.28.597n; 002.30.947w	49.28.599n; 002.30.936w	49.28.611n; 002.30.940w	49.28.595n; 002.30.917w
H11	LR.HLR.MusB.Sem.FvesR	49.28.616n; 002.30.914w	49.28.606n; 002.30.908w	49.28.594n; 002.30.910w	49.28.399n; 002.30.898w	49.28.608n; 002.30.901w
H12	LR.HLR.FT.FserTX	49.28.587n; 002.31.036w	49.28.580n; 002.31.045w	49.28.566n; 002.31.059w	49.28.562n; 002.31.081w	49.28.551n; 002.31.096w

N.B. GPS coordinate distances: 3-5 meter accuracy.

APPENDIX 2: Additional survey notes of *Zostera marina* habitat recorded within the 2019 survey area, 2019.

Due to the presence of *Zostera marina* identified during the survey, an additional sublittoral survey was completed. This additional survey consisted of snorkeling along 4 transect lines and recording marine habitats, substrates and species, following Seasearch survey methods. All transect lines were recorded using an underwater GoPro video camera. The location of each transect line is shown in Figure 7.3.



Figure 7.3. Transect line locations within Longue Hougue South, 2019.

The survey identified the presence of the eelgrass habitat: SS.SMp.SSgr. *Zostera marina/angustifolia* beds on lower shore or infralittoral clean or muddy sand. The extent of this habitat is shown in Figure 7.4. The survey results recorded a number of macro algae species and an abundance of fish species, such as juvenile pollack (*Pollachius pollachius*), gobies (*Gobius* species) and wrasse (*Labrus* species).

This habitat is considered an important habitat as it is highly productive (an estimated 2g C/m²/day during the growing season), supports a variety of marine species and provides a number of ecological functions (such as stabilising sediment) (OSPAR COMMISSION, 2008). The OSPAR COMMISSION considers this habitat as a habitat which is under threat and/or decline (OSPAR, 2019). It is listed as an EU Annex I habitat of importance and a UK BAP habitat (MARLIN, 2019).

The habitat is highly intolerable to physical pressures including: habitat loss, disturbance, changes in substrate, turbidity, smothering and introduction of shading, and, biological pressures such as: introduction of invasive species and pathogens (MARLIN, 2019).



Figure 7.4. Eelgrass bed habitat extent within Longue Hougue South, 2019 (taken from Harvey, T, 2019).

**Intertidal Phase II Monitoring Survey,
Longue Hougue South, 2019**

Appendix 18.1: Scaly Cricket Survey



REPORT

Longue Hougue South EIA

Scaly Cricket Survey

Client: States of Guernsey

Reference: PB5312I&BRP1810171320

Status: 0.1/Final

Date: 9/9/2019

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Document title: Longue Hougue South EIA

Document short title: LHS Scaly Cricket Survey
Reference: PB5312I&BRP1810171320
Status: 0.1/Final
Date: 9/9/2019
Project name: Longue Hougue South EIA
Project number: PB53121
Author(s): Laura Covington

Drafted by: Laura Covington and Simon Thomas

Checked by: Pete Thornton

Date / initials: 9/09/2019 PT

Approved by: Gary Bower

Date / initials: 9/09/2019 GB

Classification

Open



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Appendices

Appendix 1: Site Geomorphology

1 Introduction

1.1 Purpose of this Report

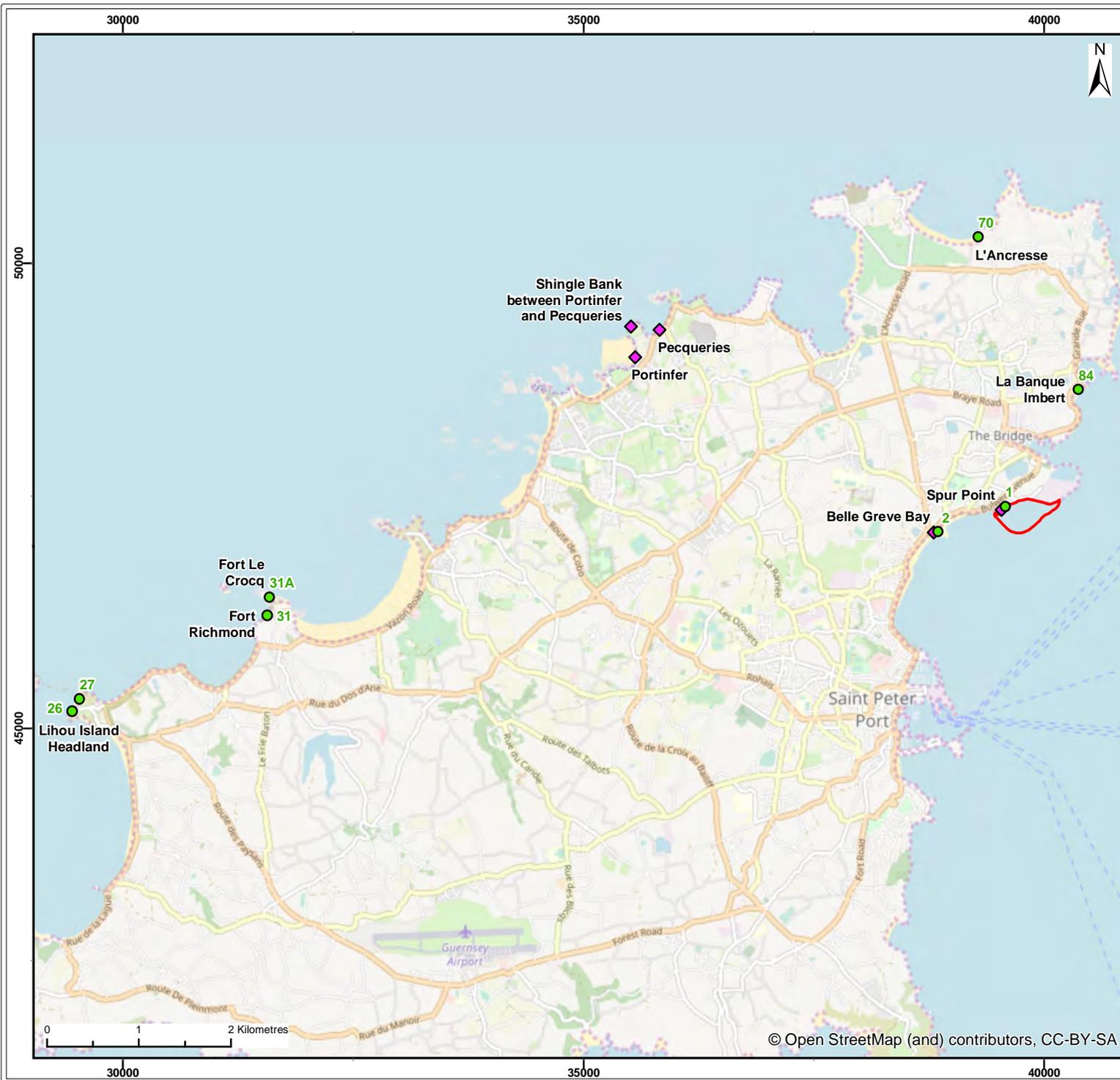
1. This report sets out the findings of the Scaly Cricket Surveys undertaken to inform the Longue Hogue South Environmental Impact Assessment.

1.2 Project Description

2. The States of Guernsey (“the States”) are proposing an inert waste reclamation project named the Long Hogue South inert waste reclamation project (“the project”). The project has been selected as the preferred inert waste management solution for the next 20 years through a Best Practicable Environmental Option (BPEO) strategic appraisal process.
3. In recent years the States has relied on coastal land reclamation for the disposal of inert waste from the construction and demolition industry. The Longue Hogue Reclamation Site on the east coast of Guernsey has received the Island’s inert waste since 1995. Recent surveys of the current site at Longue Hogue have indicated that the site is nearing the end of its life, with estimates suggesting less than five years void space remaining.
4. The project is an extension of a current land reclamation area, which would have a capacity of 795,000m³ and an operational life of 12 years or more.

1.3 Scaly Cricket

5. The scaly cricket (*Pseudmogoplistes vicentae*) is a small wingless cricket. It inhabits shingle beaches, and has been found living amongst shingle, under rocks and beach debris. Most individuals inhabit shingle above the high-water mark and are associated with the seaweed strandline.
6. Scaly Cricket is not a protected species; however, it is considered vulnerable as it does not have a large population distribution within Guernsey. Before 2018, it was only known to be present at 5 beaches along the coastline of Guernsey (**Figure 1**). One of these, to the north of Spur Point, is the proposed location for the inert waste reclamation project. Therefore, initial surveys were carried out to confirm whether the species is still present at Spur Point. A second set of surveys was then carried out to determine the presence/absence of the species across the island.



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Legend:

- Outline of Proposed Development
- Scaly Crickets**
- ◆ Historic Known Location
- Location Identified in 2019 Survey

Guernsey Government, 2018
© HaskoningDHV UK Ltd.

Client:	Project:
States of Guernsey	Longue Hougue South EIA

Title:
Scaly Cricket Locations

Figure: 1	Drawing No: PB5312-300-031				
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	19/08/2019	FC	PT	A4	1:60,000

Co-ordinate system: Guernsey Grid



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1.4 Summary of findings

7. The initial survey found Scaly cricket at both Spur Point and Belle Greve Bay, similar counts of low numbers of species were found at each location.
8. Our results show that Scaly Crickets are present on at least two separate beaches on the Fort Richmond headland, two beaches on Lihou Headland, Bellegreve Bay, La Banque, Herm Island and L'Ancrese (**Figure 1**). None were found on the Pezeries to Portelet headland, Havellet Bay and Perelle beach. This implies, although does not prove, that the Scaly Cricket is absent at these locations.

2 Methodology

2.1 Field Study

Site Selection 2018

9. The main survey area, (referred to as Site 1), is the bay where the proposed reclamation site is located.
10. A second site to the south of Spur Point was also chosen survey due to its similar habitat and proximity to the area of proposed works (referred to as Site 2).
11. The initial Survey to confirm presence/absence was carried on 17th/18th October 2018.
12. Once the presence of the species was confirmed at Sites A and B, the survey area was widened to include all suitable shingle habitats within Guernsey. These were identified from the full-island habitat survey undertaken in 2010. The locations of shingle in the survey were then reviewed by Trevor Bourgaize of La Société Guernesaise to identify a total of 84 locations where Scaly Cricket is likely to occur. The survey effort was split between RHDHV, La Société Guernesaise and States of Guernsey. This report presents the details of the sites surveyed by RGDHV and SOG and an overview of the data received from La Société Guernesaise.
13. The locations that were surveyed for scaly cricket are described in **Table 4 Site Geomorphology**.

Pitfall Traps

14. All surveys followed the methodology set out in Drake et al (2007). This involved the placement of 10 pitfall traps at 2m intervals at each site in and around the high tide mark. The traps were baited with sausage on the first day, and then inspected on the second day.

15. Before placing each of the pitfall traps, a hand search was carried out to visually check the presence of scaly cricket.

2.2 Constraints

16. Scaly Cricket can be found and identified all year round, however they are thermophilic and greater numbers are identified during warm weather. The initial survey was carried out in October 2018 when the weather was mild, therefore low numbers were found.
17. The wider surveys were carried out in July 2019 in optimal conditions.

3 Survey Results

Hand Searches

18. The hand search in October 2018, adult scaly cricket was observed at Pitfall trap B6, but not at any other of the locations. The second-hand search identified 5 individuals at Site A and 6 adults in Site B.

Table 1 Hand search results

Site	Number	Date of search
1	5	2018
2	6	2018

19. During the July 2019 site survey, every site was hand searched and no Scaly Crickets were found.

Pitfall Traps

20. **Table 2** presents the findings of the October 2018 pitfall trap survey. **Table 3** presents the findings of the RHDHV/States of Guernsey 2019 pitfall trap survey and the following paragraph summarises the findings of La Société Guernesiaise pitfall trap surveys.

Table 2 *Numbers of Scaly Cricket identified in Pitfall Traps October 2018*

Pitfall Trap	Number	Pitfall Trap	Number
1-1	0	2-1	0
1-2	0	2-2	0
1-3	0	2-3	0
1-4	0	2-4	0
1-5	0	2-5	1
1-6	0	2-6	2
1-7	0	2-7	0
1-8	1	2-8	0
1-9	0	2-9	0
1-10	0	2-10	0

Table 3 *Number of Scaly Crickets identified per site in July 2019*

Site	Number
1	34
2	12
3A	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	N/A – inaccessible
21	N/A – inaccessible
22	N/A – inaccessible
26	112
27	9

Site	Number
28	0
30	0
31	5 (Four individuals in trap 6, one in trap 10)
31A	1 (In trap 4)
31B	0
36	0
37	0

21. La Société Guernesiaise found over 250 individuals in 16 traps at Spur Point (Site 1) and 31 in 16 traps at Bellegreve Bay (Site 2). Roughly 100 were found at La Banque in 16 traps. Ten scaly crickets were found on Herm Island and 6 at L'Ancrese (site 70).

4 Interpretation

22. Our results show that Scaly Crickets are present on at least two separate beaches on the Fort Richmond headland, Lihou Headland, Bellegreve Bay, La Banque, Herm Island and L'Ancrese. None were found on the Pezeries to Portelet headland and Perelle beach. This implies, although does not prove, that the Scaly Cricket is absent at these locations.

5 References

Drake CM, Lott DA, Alexander KNA and Webb J (2007). Surveying terrestrial and freshwater invertebrates for conservation evaluation. Natural England Research Report NERR005. Natural England, Peterborough.

Appendix 1: Site Geomorphology

23. Table 4 details the geomorphological features of each survey site undertaken by States of Guernsey and Royal HaskoningDHV.

Table 4 Site Geomorphology

Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
1	Spur Point									

2									
---	--	--	--	--	--	--	--	--	--

Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
3A										

Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
13	Bay with rocky outcrops	334 NW	15	4		5mm – 200mm, mixed cobbles, pebbles, granules	0	1	Cliff	

Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
										

Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
14	Rocky cove with man-made slipway	325 NW	20		Slipway	>200mm, cobbles, 10mm pebbles	0	0		 

Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
										

15	3 coves separated by rocks	NW	17	Rocks covered with <i>F. spiralis</i> at lowest level	Cobbles, pebbles	5	15	Man-made walls and vegetated cliffs	
----	----------------------------	----	----	---	------------------	---	----	-------------------------------------	--

Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
										

Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
16	Cove	339 N	48	5		Coarse sand, shingle, cobbles, boulders	0	1		

Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
17	Open bay	50 NE	45	2	Half rocks, half shingle	All types	0	<1	Cliifs	

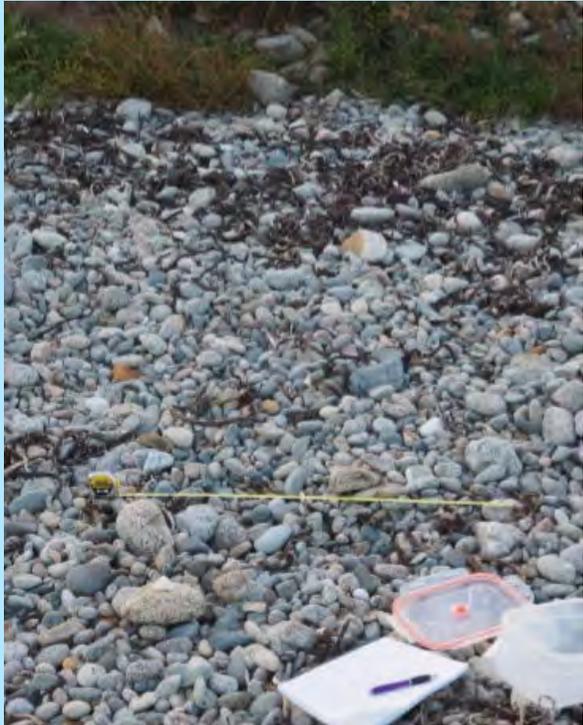
Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
										

Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
18	Open bay	23 NE	35	2	Half rocks, half shingle	All types	1	0	Sea wall and spray	

19	Cove	0 N	20	2	Half rocks, half shingle	All types	1	0	Sea wall and cliffs	  
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Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
20	N/A – inaccessible	-	-	-	-	-	-	-	-	-
21	N/A – inaccessible	-	-	-	-	-	-	-	-	-
22	N/A – inaccessible	-	-	-	-	-	-	-	-	-

Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
26	Bay with rocky outcrops	ENE			Pinnacles of bedrock outcropping	200mm+ - 2mm	0	0		 

27	Shingle Bay	E								 
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Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
28	Shingle Bay	NNE				>20mm	0	0		 

Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
30	Shingle Bay	NN W	30	3		2mm – 1m, Shingle	0	0	Sea Wall	
31	Shingle Bay	NN W	30	3		2mm – 20cm, shingle	0	0	Sea wall and revetment	

31 A	Rocky Bay	NE	35	3		Mixed, boulders and cobbles	0	0	Rock Revetme nt	
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Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
										

Site	Large Scale Context	Orientation	Cross shore profile	Berm height	Longshore Profile	Particle Size/ Description	% Finer Sediment	% Vegetation Cover	Landward Constraints	Photos
31 B	Rocky Headland	N	15	2		Mixed, boulders and cobbles	0	0	None	
36										
37										

Appendix 18.2: Overwintering Bird Survey

ENVIRONMENT GUERNSEY LTD

Longue Hougue South Bird Survey Report



Completion date: August 2019



Environment Guernsey
Environmental contracting & consulting

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Cover photo – Oystercatcher (*Haematopus ostralegus*) ©Barry Wells

EXECUTIVE SUMMARY

Environment Guernsey was commissioned to undertake a bird survey of the Longue Hougue South site over several months from October 2018 to April 2019. This report provides an outline of the fieldwork and evaluates the results from a local and regional context.

Longue Hougue South supports a range of birds in generally small numbers, although several species which were recorded are listed as UK species of conservation concern and some are scarce in the island. The field observations also suggest that many of the individuals using the site are site-faithful individuals which habitually forage within a relatively small area.

DRAFT

1. INTRODUCTION

1.1 BACKGROUND

Longue Hougue South has been proposed as a possible site to use for the disposal of inert waste. As such, the States of Guernsey are in the process of undertaking the necessary environmental research and surveying in order to inform the decision-making process.

As part of this programme of works, Environment Guernsey was commissioned to undertake a bird survey of the area for the period October 2018 – April 2019.

1.2 SURVEY SITE

The Longue Hougue South site is shown in figure 1. It is situated at the north end of the Belle Greve Bay complex on Guernsey’s east coast.

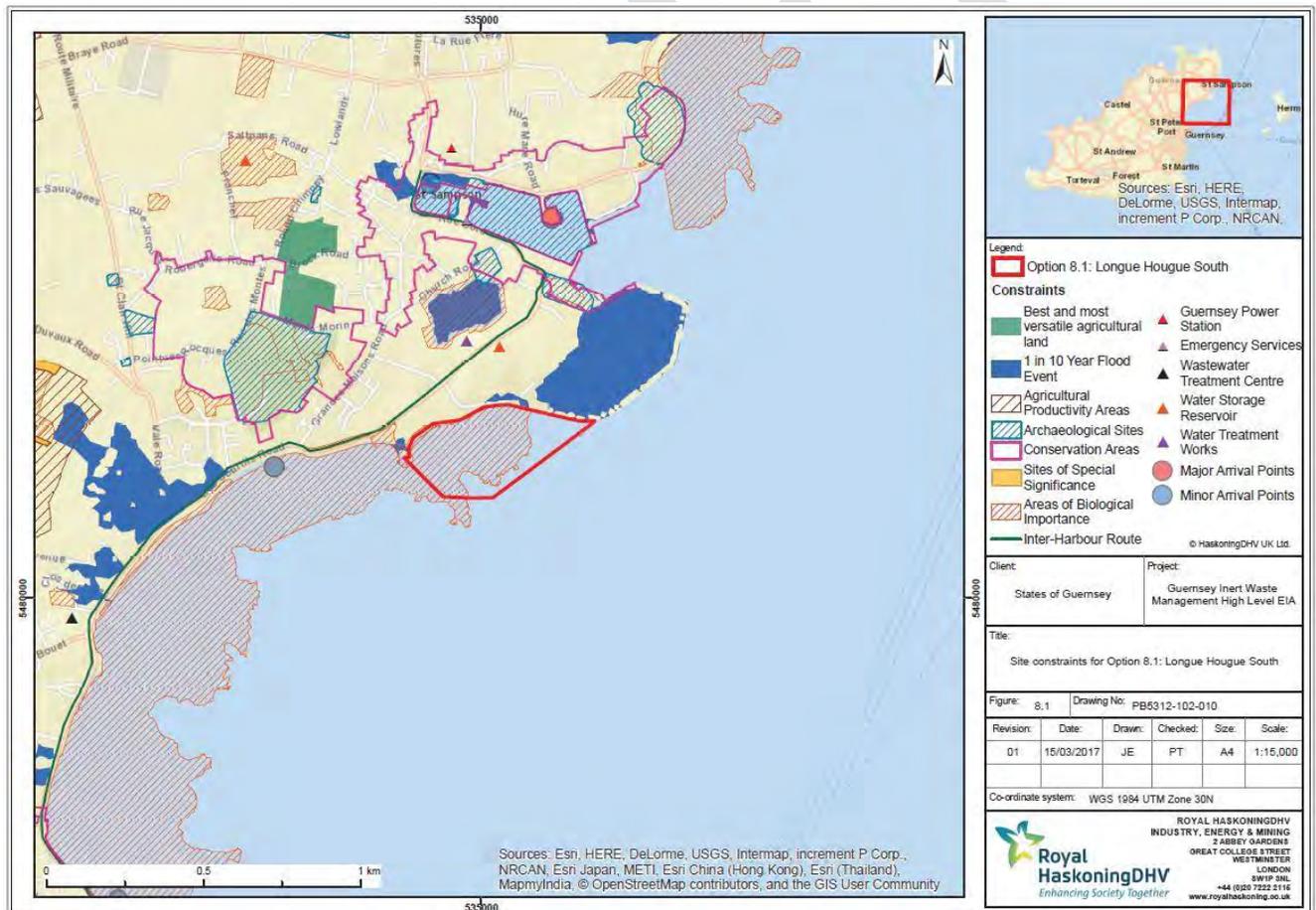


Figure 1 Site plan of Longue Hougue South ©Royal HaskoningDHV

1.3 SITE DESIGNATION

The site is designated an 'Area of Biodiversity Importance (ABI) – Foreshore' under the Urban Area Plan (2016).

Veron (1997) designated Longue Hougue South an Important Bird Area (IBA), including it within the larger 'Belle Greve Bay' site. The use of the wider bay by various gull species and waders, such as Oystercatcher, Turnstone, Ringed Plover and Grey Plover in particular was highlighted.



Figure 1 Turnstone (*Arenaria interpres*) ©Barry Wells

2. SURVEY METHOD

2.1 OVERVIEW

The survey required seven monthly visits to be undertaken between October 2018 and April 2019. Each visit lasted six hours and typically commenced an hour before high water and ended towards low water. This ensured that a range of tidal states was covered.

2.2 SURVEY DATES

The site was surveyed on the following dates –

- 01 November 2018
- 30 November 2018
- 28 December 2018
- 28 January 2019
- 27 February 2019
- 29 March 2019
- 30 April 2019

Due to the date of commission, the first visit, which was proposed for October 2018, was completed in early November. Also, poor weather delayed the April visit which resulted in a different tidal period being surveyed. Details of the tide and the survey duration are provided in figure 2.

Date of survey	High tide	Survey duration
01 November 2018	1204	1030 - 1630
30 November 2018	1152	1000 - 1600
28 December 2018	1033	0930 - 1530
28 January 2019	1152	1000 - 1600
27 February 2019	1205	1100 - 1700
29 March 2019	1237	1130 - 1730
30 April 2019	0421	0830 - 1430

Figure 2 Details of survey visits

2.3 METHOD

The site was surveyed by walking a fixed circular route along the top of the foreshore each hour. At regular intervals, surveyors stood at suitable vantage points and scanned the intertidal zone with binoculars.

Due to the relatively flat nature of the area, birds were generally viewable across the entire site so that it was not necessary – or desirable – to walk the lower beach or the eastern rock armouring. This would have disturbed feeding or roosting birds, resulting in unrepresentative data.

On lower states of tide, care was taken to ensure that all foraging birds, particularly waders, were recorded. Repeated scans of the foreshore were required in order to ensure that accurate counts of each species were obtained.



Figure 3 Fixed survey route of bird survey ©Google

All birds seen on site were recorded, including those flying over. The direction of birds in flight was also noted. Birds heard singing were also included even if they were located outside of the survey site, as this is indicative of breeding or territorial behaviour in the vicinity.

Observations for each hour were recorded on outline site maps and then tabulated.

3. RESULTS

3.1 OVERVIEW OF SPECIES

A total of 46 species was recorded on the site. The full results for the seven surveys are provided in Appendices 1 and 2.

The number of species encountered on each visit was relatively constant (Fig 3), varying between 24 (December, March) and 27 (November, February, April). Species only recorded flying over the site represent a small proportion of the overall totals.

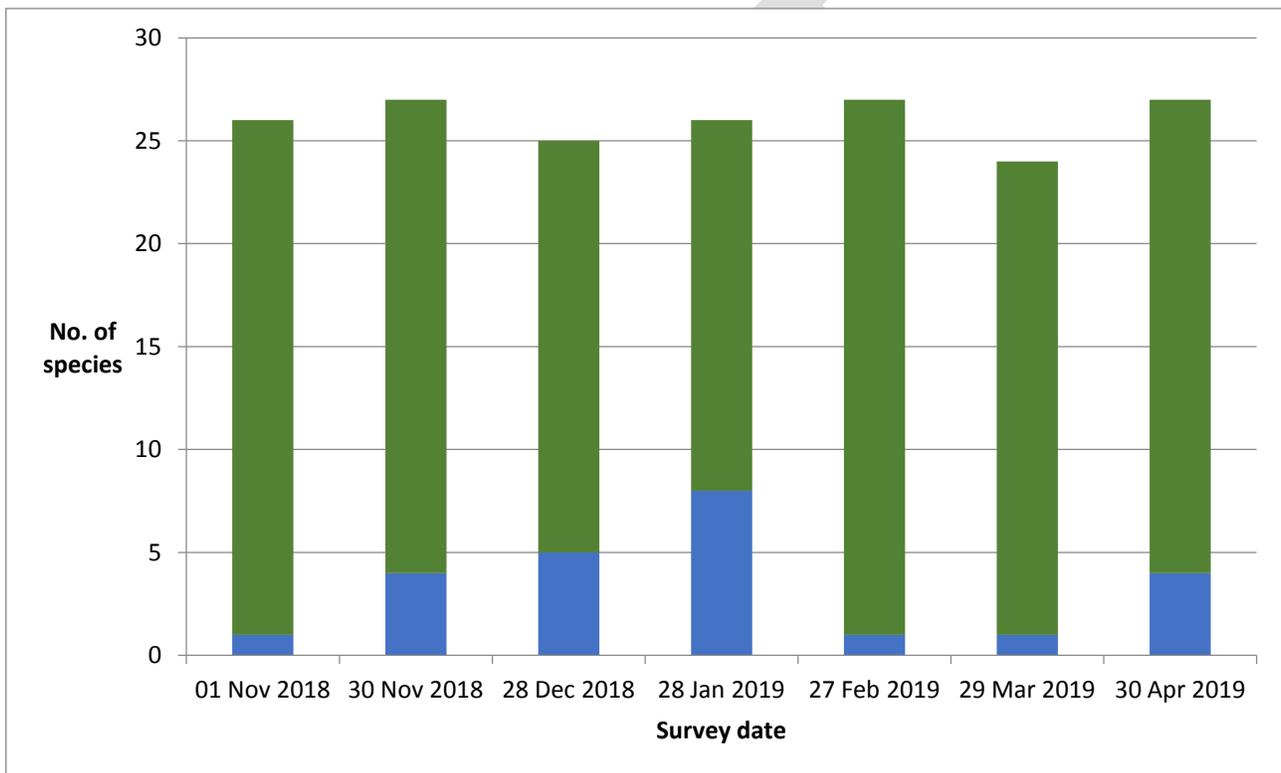


Figure 4 Number of bird species recorded on each visit (blue – flyovers only)

Nine species were recorded on every visit:

- | | |
|--|--|
| Cormorant (<i>Phalacrocorax carbo</i>) | Shag (<i>P. aristotelis</i>) |
| Oystercatcher (<i>Haematopus ostralegus</i>) | Great Black-backed Gull (<i>Larus marinus</i>) |
| Herring Gull (<i>L. argentatus</i>) | Carrion Crow (<i>Corvus corone</i>) |
| Wren (<i>Troglodytes troglodytes</i>) | Robin (<i>Erithacus rubecula</i>) |
| House Sparrow (<i>Passer domesticus</i>) | |

A further five species (Curlew, Woodpigeon, Magpie, Blackbird, Greenfinch) were recorded on six of the seven survey visits.

Eight species were recorded on only one visit:

Shelduck (*Tadorna tadorna*)

Peregrine falcon (*Falco peregrinus*)

Whimbrel (*Numenius phaeopus*)

Sandwich Tern (*Thalasseus sandvicensis*)

Swallow (*Hirundo rustica*)

Blackcap (*Sylvia atricapilla*)

Firecrest (*Regulus ignicapillus*)

Linnet (*Linaria cannabina*)

3.2 OVERVIEW OF NUMBERS

The table below provides a breakdown of the numbers by order or family:

Order/Family	Scientific name	Landed	Flyover	Total
Wildfowl	<i>Anseriformes</i>	4	16	20
Waterbirds	<i>Pelecaniformes</i>	33	32	65
Hérons	<i>Ciconiiformes</i>	8	2	10
Birds of prey	<i>Falconiformes</i>	2	1	3
Waders	<i>Charadriiformes</i>	68	52	120
Gulls and Terns	<i>Laridae</i>	167	613	780
Pigeons	<i>Columbiformes</i>	33	36	69
Kingfishers	<i>Coraciiformes</i>	2	1	3
Songbirds	<i>Passeriformes</i>	231	63	294

Figure 5 Breakdown of bird totals by order or family

In terms of overall numbers, gulls (*Laridae*) were the most numerous group by far, followed by songbirds (*Passeriformes*) and waders (*Charadriiformes*).

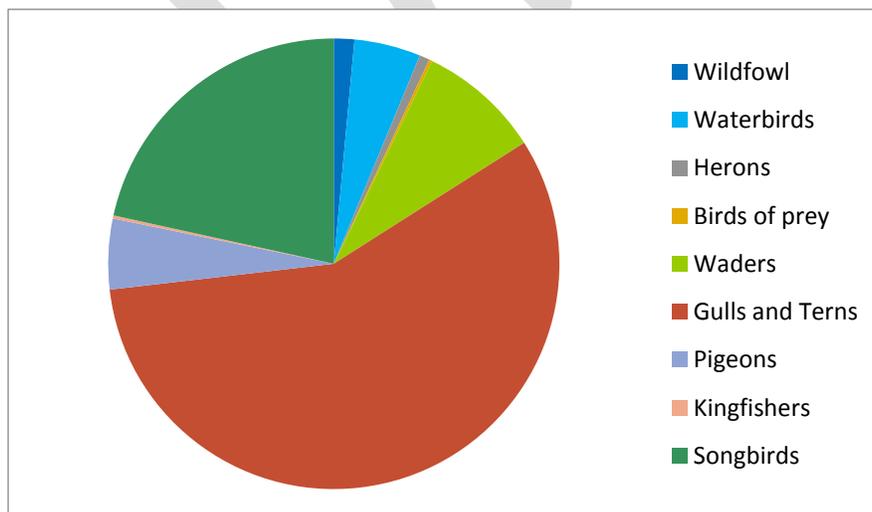


Figure 6 Birds by group (including flyovers)

When flyovers were removed from the figures, songbirds were the most common.

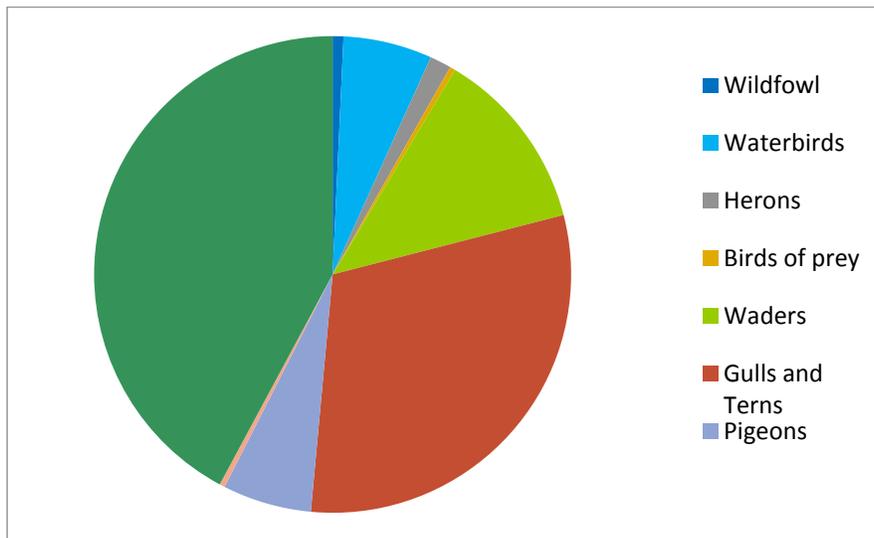


Figure 7 Birds by group (without flyovers)



Figure 8 Herring Gull (*Larus argentatus*) – the most numerous species recorded at Longue Hougue South ©Barry Wells

4. ANALYSIS

4.1 INTRODUCTION

In order to facilitate analysis, the survey data has been grouped into bird orders or families. Each group is discussed separately.

4.2 WILDFOWL (*Anseriformes*)

Wildfowl were scarce at Longue Hougue South during the survey. Shelduck (*Tadorna tadorna*) and Brent Goose (*Branta bernicla*) were the only species recorded.

Brent Geese overwinter in Guernsey in a few small flocks (typically 20-50), feeding on eel-grass (*Zostera spp.*) and sea lettuce (*Ulva spp.*). Shelducks have recently increased as a local breeding species and now also gather in a pre-breeding group, numbering up to 50 individuals.

Overall, wildfowl were recorded in below average numbers during winter 2018-2019, mainly due to mild conditions. Four Brent Geese foraged at Longue Hougue South during one survey visit although other birds which were present in the north of the island did not use the area, indicating it was not a favoured foraging site.

4.3 WATERBIRDS (*Pelecaniformes*)

Three species – Gannet (*Morus bassanus*), Cormorant (*Phalacrocorax carbo*) and Shag (*P. aristotelis*) were recorded.

4.3.1. Cormorant (*Phalacrocorax carbo*), Shag (*P. aristotelis*)

Cormorants and Shags are able to feed on the site when the tide is high and they were recorded on every survey visit. Both species tend to hunt as individuals, only loosely associating with other birds. Although only small numbers were observed, it is likely that the same birds were habitually foraging at the site.

The Cormorant is a widespread but uncommon resident species whereas the Bailiwick of Guernsey has supported nationally important numbers of Shag in the past. Due to a long-term decline however, the islands no longer meet this threshold and the species is red-listed in the UK. Despite this downturn, Guernsey still hosts significant numbers year-round.

4.3.2. Other waterbirds

Single Gannets were recorded flying past on four visits. The shallow inshore nature of the site makes it unsuitable for Gannets to feed.

4.4 HERONS (*Ciconiiformes*)

Little Egret (*Egretta garzetta*) used Longue Hougue South during most visits whereas Grey Heron (*Ardea cinerea*) was only seen on two occasions.

4.4.1. Grey Heron (*Ardea cinerea*)

Grey Heron is a non-breeding near-resident species found around the island's coasts. It favours sheltered bays and the relatively exposed nature to this site may make it less suitable as a feeding area.

4.4.2. Little Egret (*Egretta garzetta*)

The frequent use of the area by a Little Egret throughout the survey suggests the same individual was probably involved. The two birds recorded in April, with another flying over, highlights the likelihood that birds from the small colony on Jethou, the only breeding site in the Bailiwick, regularly forage at Longue Hougue South. The colony has remained small but stable since it was established in the 2000s.

4.5 BIRDS OF PREY (*Falconiformes*)

Kestrel (*Falco tinnuculus*) was recorded on two occasions and Peregrine Falcon (*Falco peregrinus*) once.

There are very limited opportunities for Kestrels to hunt at Longue Hougue South due to a lack of suitable grassland habitats. In contrast, Peregrines may frequently pass over the site as part of a network of locations visited. There was no evidence however, that the area was a preferred one for the species.

4.6 WADERS (*Charadriiformes*)

Four species of wader were recorded at Longue Hougue South – Oystercatcher (*Haematopus ostralegus*), Turnstone (*Arenaria interpes*), Curlew (*Numenius arquata*) and Whimbrel (*N. phaeopus*).

4.6.1. Oystercatcher (*Haematopus ostralegus*), Curlew (*Numenius arquata*)

Typically 9-12 Oystercatchers frequently foraged on the intertidal zone, favouring the rocky wave-cut platform on the northeast half of the area (Fig 8). The birds arrived 2-3 hours after high water, fed for several hours and then either rested or preened as the tide started to rise again. 1-3 Curlews used the same parts of the site and behaved in a similar fashion.

It is reasonable to assume that this small population is near-resident at Longue Hougue South, at least outside of the breeding season. Oystercatcher also occurs as a widespread breeding species and may use the area during the breeding season as well.



Figure 9 Intertidal reef favoured by waders, especially Oystercatchers

4.6.2. Other waders

A small group (7 birds) of Turnstones fed on site on one visit and a larger flock flew past on another occasion. A single migrant Whimbrel was present in April. These observations may all involve birds on passage.

4.7 GULLS AND TERNS (*Laridae*)

Large numbers of gulls were recorded on every visit and often included moderate-sized flocks passing overhead. Four species of gull and one species of tern were recorded during the survey.

4.7.1. Herring Gull (*Larus argentatus*)

Herring Gulls were numerous throughout the survey period with up to 93 recorded each hour either flying over or roosting on the intertidal reefs. On average, only a small number of birds would routinely use the bay for foraging but occasionally flocks were displaced from the nearby Longue Hougue quarry and would land on the beach. The flooded quarry was heavily used for drinking and feeding and most of the flyovers were heading to or from the site.

Despite the Herring Gull being the commonest breeding gull in the Channel Islands, it is red-listed as a UK species of conservation concern having experienced widespread declines in recent decades.

4.7.2. Great Black-backed Gull (*Larus marinus*)

This species was recorded in 30 of the 42 survey hours, usually as single birds or pairs flying over. Other sightings were of birds resting or roosting amongst Herring Gulls or by themselves on rocky outcrops just offshore.

Great Black-backed Gulls are widespread breeders on cliffs and islets although they do not generally form colonies: they prefer to establish a territory away from rival pairs.

4.7.3. Lesser Black-backed Gull (*Larus fuscus*)

The Lesser Black-backed Gull is migratory and on the whole, winters in Southern Europe and North Africa. Early each year, birds journey north to reach Guernsey and re-establish breeding territories. They nest in various small colonies around the Bailiwick.

Birds were recorded at Longue Hougue South from January onwards in increasing numbers as spring arrived. As with the other gull species, birds were not seen to forage on the site and most records were of flyovers.

4.7.4. Black-headed Gull (*Chroicocephalus ridibundus*)

This small gull overwinters in Guernsey and migrates to the Continent or the UK to breed. Reflecting this behaviour, Black-headed Gulls were commonly recorded during the first five survey visits but were absent in March and April.

Birds were seen to forage at Longue Hougue South, mostly on higher tides and typically only in small numbers. The species was more often recorded in flight.

4.7.5. Sandwich Tern (*Thalasseus sandvicensis*)

This species was only recorded in the first two hours of the early November 2018 visit. The 2-3 birds were probably late passage migrants although some individuals overwinter occasionally.

4.8 PIGEONS (*Columbiformes*)

Three species of pigeon were recorded on the site – Woodpigeon (*Columba palumbus*), Stock Dove (*C. oenas*) and Collared Dove (*Streptopelia decaocta*).

These birds were often recorded flying over the site but were associated with the wooded private property adjacent to Longue Hougue South, where several pairs held territory and were presumed to nest.

4.9 KINGFISHERS (*Coraciiformes*)

A Kingfisher (*Alcedo atthis*) was seen fishing on the foreshore on two visits (late November and January). The bird recorded in January was present for three hours, indicating that the individual may have been favouring the area for extended periods.

Kingfishers are non-breeding visitors to the island in very small numbers. Those which overwinter often select a network of preferred freshwater and marine feeding locations for use in different weather conditions and tidal states. It is feasible that the November and January sightings were of the same individual which may have used Longue Hougue South frequently during the winter but remained largely undetected. Records of Kingfisher from a number of east coast sites were submitted to the Guernsey Birds website during winter 2018-2019, including Belle Greve Bay, Salerie Corner and Candie Gardens (St Peter Port).

4.10 SONGBIRDS (*Passeriformes*)

4.10.1. Incidental species

24 species of songbird were recorded during the survey although many were seen or heard only on the periphery of the site. Those which were not considered to be directly using the site are as follows:

Swallow (<i>Hirundo rustica</i>)	Blackcap (<i>Sylvia communis</i>)
Chiffchaff (<i>Phylloscopus collybita</i>)	Firecrest (<i>Regulus ignicapillus</i>)
Song Thrush (<i>Turdus philomenos</i>)	Great Tit (<i>Parus major</i>)
Blue Tit (<i>Cyanistes caeruleus</i>)	Long-tailed Tit (<i>Aegithalos caudatus</i>)
Chaffinch (<i>Fringilla coelebs</i>)	Greenfinch (<i>Chloris chloris</i>)
Goldfinch (<i>Carduelis carduelis</i>)	Linnet (<i>Linaria cannabina</i>)

Many of the above are common resident species although Firecrest is a scarce breeder and Blackcap, Chiffchaff and Linnet are generally summer visitors only. The single Swallow was considered to be a migrant heading north.

4.10.2. Marginal species

A further six species were recorded within the site but were considered marginal users only, which occasionally 'spilled over' into the site. Birds using the area in this way would typically forage at the top of the beach, sing or rest in associated scrub or rarely, engage in territorial disputes with rivals:

Magpie (<i>Pica pica</i>)	Wren (<i>Troglodytes troglodytes</i>)
Dunnock (<i>Prunella modularis</i>)	Robin (<i>Erithacus rubecula</i>)
Blackbird (<i>Turdus merula</i>)	House Sparrow (<i>Passer domesticus</i>)

The records of House Sparrow are noteworthy as it is red-listed as a UK species of conservation concern. A flock of 12-15 birds was usually present in a tamarisk hedge near the top of the beach.



Figure 10 Location of House Sparrow flock

4.10.3. Rock Pipit (*Anthus petrosus*), Meadow Pipit (*A. pratensis*)

Rock Pipits were occasionally recorded at Longue Hougue South, peaking at three birds in late November. Although the species breeds in small numbers locally, Rock Pipits were not recorded after January and it is therefore likely that most of the sightings relate to wintering birds which established temporary feeding territories.

Single Meadow Pipits were recorded in November and February. These were considered to be wandering wintering birds or migrants.

4.10.4. Pied Wagtail (*Motacilla alba yarrellii*), Grey Wagtail (*M. cinerea*)

These two species overwinter in the island although Pied Wagtail is more numerous than Grey Wagtail. Like other winter visitors, individual wagtails will tend to use a small number of favoured sites during their stay.

Pied Wagtails were recorded on every visit until the end of February, suggesting that they headed back to breeding grounds elsewhere during March. The scarcer Grey Wagtail was only recorded in January and February but probably left the island at a similar time to the Pied Wagtails.

Wagtails tended to forage for invertebrates in the sheltered sections of rock armouring (fig 10).



Figure 11 Favoured sheltered feeding area for wagtails

4.10.5. Carrion Crow (*Corvus corone*)

A small number of Carrion Crows were recorded on every visit and 1-2 pairs were presumed to be resident. They showed territorial behaviour from late winter onwards whereby any passing crows were intercepted and pursued until they had left the area. The birds probably nest in the mature trees of the adjacent property and the foreshore formed part of their foraging area.

In late autumn and early winter, there was less territorial activity and a group of birds was observed collecting acorns of Holm Oak (*Quercus ilex*) and hiding them under leaves near the public car park west of the site.

Carrion Crows are a very common resident species although the local population is joined by wandering or wintering birds from elsewhere.

4.10.6. Black Redstart (*Phoenicurus ochruros*)

Very small numbers of Black Redstart overwinter although more pass through on passage. Breeding is recorded occasionally and was last confirmed in 2015.

The species was observed feeding amongst the rock armouring in late November, January and February. It is likely that the individual used the wider Longue Hougue area as a winter territory, frequenting the sheltered beach where invertebrate prey may have remained more active in lower temperatures.

5. CONSERVATION STATUS OF RECORDED BIRDLIFE

5.1 UK STATUS

The table below shows the UK conservation status of the birds recorded at Longue Hougue South.

SPECIES	SCIENTIFIC NAME	SPECIES	SCIENTIFIC NAME
Shelduck	<i>Tadorna tadorna</i>	Meadow Pipit	<i>Anthus pratensis</i>
Brent Goose	<i>Branta bernicla bernicla</i>	Rock Pipit	<i>Anthus petrosus</i>
Cormorant	<i>Phalacrocorax carbo</i>	Grey Wagtail	<i>Motacilla cinerea</i>
Shag	<i>Phalacrocorax aristotelis</i>	Pied Wagtail	<i>Motacilla alba yarrellii</i>
Gannet	<i>Morus bassanus</i>	Magpie	<i>Pica pica</i>
Grey Heron	<i>Ardea cinerea</i>	Carrion Crow	<i>Corvus corone</i>
Little Egret	<i>Egretta garzetta</i>	Wren	<i>Troglodytes troglodytes</i>
Peregrine Falcon	<i>Falco peregrinus</i>	Duncock	<i>Prunella modularis</i>
Kestrel	<i>Falco tinnuculus</i>	Blackcap	<i>Sylvia atricapilla</i>
Oystercatcher	<i>Haematopus ostralegus</i>	Chiffchaff	<i>Phylloscopus collybita</i>
Turnstone	<i>Arenaria interpres</i>	Firecrest	<i>Regulus ignicapillus</i>
Curlew	<i>Numenius arquata</i>	Robin	<i>Erithacus rubecula</i>
Whimbrel	<i>Numenius phaeopus</i>	Black Redstart	<i>Phoenicurus ochruros</i>
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Blackbird	<i>Turdus merula</i>
Great Black-backed Gull	<i>Larus marinus</i>	Song Thrush	<i>Turdus philomenos</i>
Lesser Black-backed Gull	<i>Larus fuscus graellsii</i>	Great Tit	<i>Parus major</i>
Herring Gull	<i>Larus argentatus</i>	Blue Tit	<i>Cyanistes caeruleus</i>
Sandwich Tern	<i>Thalasseus sandvicensis</i>	Long-tailed Tit	<i>Aegithalos caudatus</i>
Woodpigeon	<i>Columba palumbus</i>	House Sparrow	<i>Passer domesticus</i>
Stock Dove	<i>Columba oenas</i>	Chaffinch	<i>Fringilla coelebs</i>
Collared Dove	<i>Streptopelia decaocto</i>	Greenfinch	<i>Carduelis chloris</i>
Kingfisher	<i>Alcedo atthis</i>	Goldfinch	<i>Carduelis carduelis</i>
Swallow	<i>Hirundo rustica</i>	Linnet	<i>Linaria cannabina</i>

Figure 12 UK red- and amber-listed species

Eight red-listed species were seen during the survey. Of these, five (Shag, Curlew, Herring Gull, Grey Wagtail, Black Redstart) were actively using the area as defined on the site plan (Fig 1.)

14 amber-listed species were present, of which, eight could be considered to be directly using site to some degree, as follows:

Brent Goose	Oystercatcher
Turnstone	Black-headed Gull
Great Black-backed Gull	Lesser Black-backed Gull
Sandwich Tern	Kingfisher

5.2 LOCAL STATUS

An overview of the local conservation importance is provided below:

SPECIES	LOCAL STATUS	SPECIES	LOCAL STATUS
Shelduck	Not common resident	Meadow Pipit	Not common resident
Brent Goose	Fairly common winter visitor	Rock Pipit	Fairly common resident
Cormorant	Not common resident	Grey Wagtail	Fairly common winter visitor
Shag	Common resident	Pied Wagtail	Common winter visitor
Gannet	Common migrant	Magpie	Common resident
Grey Heron	Fairly common winter visitor	Carrion Crow	Common resident
Little Egret	Scarce resident	Wren	Very common resident
Peregrine Falcon	Rare resident	Dunnock	Very common resident
Kestrel	Fairly common resident	Blackcap	Fairly common summer visitor
Oystercatcher	Fairly common resident	Chiffchaff	Fairly common summer visitor
Turnstone	Common winter visitor	Firecrest	Not common winter visitor
Curlew	Common winter visitor	Robin	Very common resident
Whimbrel	Not common migrant	Black Redstart	Not common winter visitor
Black-headed Gull	Common winter visitor	Blackbird	Very common resident
Great Black-backed Gull	Fairly common resident	Song Thrush	Fairly common resident
Lesser Black-backed Gull	Fairly common summer visitor	Great Tit	Common resident
Herring Gull	Very common resident	Blue Tit	Common resident
Sandwich Tern	Fairly common migrant	Long-tailed Tit	Fairly common resident
Woodpigeon	Common resident	House Sparrow	Common resident
Stock Dove	Not common resident	Chaffinch	Common resident
Collared Dove	Common resident	Greenfinch	Common resident
Kingfisher	Not common winter visitor	Goldfinch	Common resident
Swallow	Fairly common summer visitor	Linnet	Fairly common summer visitor

Figure 13 Primary local statuses of Longue Hougue birds (from Bisson 2015)

6. SUMMARY

With 46 species recorded over the winter months (November – April), Longue Hougue South supports a varied avifauna, although many species were present in small numbers or were located along or outside the northern boundary of the site.

The area is currently heavily used by various gull species which use the foreshore as a relatively undisturbed resting area, having visited the nearby quarry to drink and bathe.

The intertidal zone also supports some waterbirds at high tide and small groups of waders at low tides. Evidence from research elsewhere has shown that such birds are typically site-faithful, routinely returning to feed in the area on a near-daily basis, as tides allow. Little Egrets which forage on the site are likely to be from the only local colony, situated on Jethou.

In terms of passerines, the survey results suggest that some locally scarce species, such as Black Redstart, Grey Wagtail and Kingfisher use Longue Hougue South as part of their winter territory or as part of a larger network of feeding sites.

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Appendix 1 Maximum totals of birds by species recorded on each visit

SPECIES	SCIENTIFIC NAME	01 Nov	30 Nov	28 Dec	28 Jan	27 Feb	29 Mar	30 Apr
Shelduck	<i>Tadorna tadorna</i>	0	0	0	0	0	0	(2)
Brent Goose	<i>Branta bernicla bernicla</i>	0	(7)	(3)	0	4 (4)	0	0
Cormorant	<i>Phalacrocorax carbo</i>	1 (6)	2 (2)	(2)	(2)	1	1 (1)	(1)
Shag	<i>Phalacrocorax aristotelis</i>	5	3 (2)	4 (4)	5 (4)	6 (2)	2 (1)	3 (1)
Gannet	<i>Morus bassanus</i>	0	(1)	0	0	(1)	(1)	(1)
Grey Heron	<i>Ardea cinerea</i>	1 (1)	0	0	0	0	1	0
Little Egret	<i>Egretta garzetta</i>	1	1	0	0	1	1	2 (1)
Peregrine Falcon	<i>Falco peregrinus</i>	0	0	(1)	0	0	0	0
Kestrel	<i>Falco tinnuculus</i>	1	1	0	0	0	0	0
Oystercatcher	<i>Haematopus ostralegus</i>	9 (1)	11	10	(1)	12	1	9 (3)
Turnstone	<i>Arenaria interpres</i>	7	(35)	0	0	0	0	0
Curlew	<i>Numenius arquata</i>	2 (10)	1 (1)	0	(1)	3	1	1
Whimbrel	<i>Numenius phaeopus</i>	0	0	0	0	0	0	1
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	12 (3)	2 (41)	(29)	(63)	4 (2)	0	0
Great Black-backed Gull	<i>Larus marinus</i>	2 (3)	2 (3)	1 (4)	(6)	2 (3)	2 (6)	1 (7)
Lesser Black-backed Gull	<i>Larus fuscus graellsii</i>	0	0	0	(1)	1 (2)	1 (6)	10 (15)
Herring Gull	<i>Larus argentatus</i>	93 (93)	2 (65)	2 (79)	3 (11)	11 (67)	2 (75)	12 (29)
Sandwich Tern	<i>Thalasseus sandvicensis</i>	(2)	0	0	0	0	0	0
Woodpigeon	<i>Columba palumbus</i>	2 (6)	0	1 (1)	2 (7)	8 (12)	6 (1)	3 (3)
Stock Dove	<i>Columba oenas</i>	0	0	0	(1)	2	2	1 (3)
Collared Dove	<i>Streptopelia decaocto</i>	0	0	2	0	1	2	1 (2)
Kingfisher	<i>Alcedo atthis</i>	0	1 (1)	0	1	0	0	0
Swallow	<i>Hirundo rustica</i>	0	0	0	0	0	0	(1)
Meadow Pipit	<i>Anthus pratensis</i>	1	0	0	0	1	0	0
Rock Pipit	<i>Anthus petrosus</i>	1 (1)	3	0	1	0	0	0
Grey Wagtail	<i>Motacilla cinerea</i>	0	0	0	2	3	0	0
Pied Wagtail	<i>Motacilla alba yarrellii</i>	1 (3)	3 (1)	2 (1)	2	2	0	0
Magpie	<i>Pica pica</i>	1	0	1	1	4 (4)	1	2
Carrion Crow	<i>Corvus corone</i>	1 (2)	3 (1)	2 (4)	3 (8)	2	5 (6)	3 (4)
Wren	<i>Troglodytes troglodytes</i>	1	1	1	1	2	2	1
Dunnock	<i>Prunella modularis</i>	1	0	1	0	0	1	1
Blackcap	<i>Sylvia atricapilla</i>	0	0	0	0	0	0	1
Chiffchaff	<i>Phylloscopus collybita</i>	1	3	1	0	2	0	0
Firecrest	<i>Regulus ignicapillus</i>	0	0	1	0	0	0	0
Robin	<i>Erithacus rubecula</i>	2	1	4	4	1	3	1
Black Redstart	<i>Phoenicurus ochruros</i>	0	1	0	1	1	0	0
Blackbird	<i>Turdus merula</i>	2	2	2	2	2	1	2
Song Thrush	<i>Turdus philomenos</i>	1	1	0	0	0	0	0
Great Tit	<i>Parus major</i>	0	1	3	1	0	1	0

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Blue Tit	<i>Cyanistes caeruleus</i>	0	3	0	1	0	0	1
Long-tailed Tit	<i>Aegithalos caudatus</i>	0	0	6	1	0	0	0
House Sparrow	<i>Passer domesticus</i>	15	5	12	2	11	3	12
Chaffinch	<i>Fringilla coelebs</i>	0	1	3	0	2	1	1 (2)
Greenfinch	<i>Carduelis chloris</i>	0	3 (1)	7	3 (2)	3	2 (3)	2
Goldfinch	<i>Carduelis carduelis</i>	3	0	(2)	(2)	3	4 (5)	8 (3)
Linnet	<i>Linaria cannabina</i>	0	(7)	0	0	0	0	0
Total		168 (129)	54 (297)	66 (132)	36 (109)	96 (97)	46 (105)	79 (78)

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Appendix 2 Full results by visit

SPECIES	SCIENTIFIC NAME	1030-1130	1130-1230	1230-1330	1330-1430	1430-1530	1530-1630
Cormorant	<i>Phalacrocorax carbo</i>		1		(1)	(1)	(6)
Shag	<i>Phalacrocorax aristotelis</i>	5	4	2		1	1
Grey Heron	<i>Ardea cinerea</i>	1					1 (1)
Little Egret	<i>Egretta garzetta</i>					1	1
Kestrel	<i>Falco tinnuculus</i>		1				
Oystercatcher	<i>Haematopus ostralegus</i>				2	3	9 (1)
Turnstone	<i>Arenaria interpres</i>					7	
Curlew	<i>Numenius arquata</i>		(10)				2
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	6	6	12	(3)	(2)	
Great Black-backed Gull	<i>Larus marinus</i>	1		(2)		2 (3)	
Herring Gull	<i>Larus argentatus</i>	17	9	14 (36)	30 (93)	93 (9)	83 (31)
Sandwich Tern	<i>Thalasseus sandvicensis</i>	(2)	(1)				
Woodpigeon	<i>Columba palumbus</i>	2			(4)	(6)	
Meadow Pipit	<i>Anthus pratensis</i>		1				
Rock Pipit	<i>Anthus petrosus</i>	1	1			1	(1)
Pied Wagtail	<i>Motacilla alba yarrellii</i>		1	(1)	(3)		
Magpie	<i>Pica pica</i>	1		1			
Carrion Crow	<i>Corvus corone</i>	1		1		1 (2)	
Wren	<i>Troglodytes troglodytes</i>	1				1	
Dunnock	<i>Prunella modularis</i>	1		1	1		
Chiffchaff	<i>Phylloscopus collybita</i>	1	1				
Robin	<i>Erithacus rubecula</i>	2	2	2	1	1	2
Blackbird	<i>Turdus merula</i>	1	2			1	1
Blue Tit	<i>Cyanistes caeruleus</i>			1			
House Sparrow	<i>Passer domesticus</i>	15	2		1		2
Goldfinch	<i>Carduelis carduelis</i>		3				
Total		58 (n/a)	35 (10)	34 (39)	35 (104)	112 (23)	102 (40)

Figure 14 01 November 2018

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SPECIES	SCIENTIFIC NAME	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600
Brent Goose	<i>Branta bernicla bernicla</i>			(7)			
Cormorant	<i>Phalacrocorax carbo</i>			(1)	1	2 (2)	1
Shag	<i>Phalacrocorax aristotelis</i>	2 (2)	3 (1)	3 (1)	1	1 (1)	2
Gannet	<i>Morus bassanus</i>			(1)			
Grey Heron	<i>Ardea cinerea</i>						
Little Egret	<i>Egretta garzetta</i>						1
Kestrel	<i>Falco tinnuculus</i>	1					
Oystercatcher	<i>Haematopus ostralegus</i>					10	11
Turnstone	<i>Arenaria interpres</i>				(35)		
Curlew	<i>Numenius arquata</i>	(1)				1	
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	(19)	(41)	2 (3)	(1)	1 (10)	(1)
Great Black-backed Gull	<i>Larus marinus</i>	1 (1)	(3)	2	(1)		(1)
Herring Gull	<i>Larus argentatus</i>	2 (7)	(65)	1 (9)	1 (48)	(25)	2 (40)
Sandwich Tern	<i>Thalasseus sandvicensis</i>						
Woodpigeon	<i>Columba palumbus</i>						
Kingfisher	<i>Alcedo atthis</i>	(1)			1		
Meadow Pipit	<i>Anthus pratensis</i>						
Rock Pipit	<i>Anthus petrosus</i>	3					
Pied Wagtail	<i>Motacilla alba yarrellii</i>	1	2	2	3	2	1 (1)
Magpie	<i>Pica pica</i>						
Carrion Crow	<i>Corvus corone</i>	1	3		3	(1)	2 (1)
Wren	<i>Troglodytes troglodytes</i>	1			1		1
Dunnock	<i>Prunella modularis</i>						
Chiffchaff	<i>Phylloscopus collybita</i>						
Robin	<i>Erithacus rubecula</i>	1	1	2	2	3	2
Black Redstart	<i>Phoenicurus ochruros</i>		1		1		1
Blackbird	<i>Turdus merula</i>			2			
Song Thrush	<i>Turdus philomenos</i>	1					
Great Tit	<i>Parus major</i>			1			
Blue Tit	<i>Cyanistes caeruleus</i>		3				
House Sparrow	<i>Passer domesticus</i>	1	5				
Chaffinch	<i>Fringilla coelebs</i>						1
Greenfinch	<i>Carduelis chloris</i>	3					(1)
Goldfinch	<i>Carduelis carduelis</i>						
Linnet	<i>Linaria cannabina</i>		(7)				
Total		18 (31)	18 (117)	13 (22)	14 (85)	20 (39)	25 (45)

Figure 15 30 November 2018

Bird Survey – Longue Hougue South

SPECIES	SCIENTIFIC NAME	0930-1030	1030-1130	1130-1230	1230-1330	1330-1430	1430-1530
Brent Goose	<i>Branta bernicla bernicla</i>			(1)		(3)	
Cormorant	<i>Phalacrocorax carbo</i>					(2)	
Shag	<i>Phalacrocorax aristotelis</i>	3 (4)	(2)	4 (1)	1	2	1
Gannet	<i>Morus bassanus</i>						
Grey Heron	<i>Ardea cinerea</i>						
Little Egret	<i>Egretta garzetta</i>						
Peregrine Falcon	<i>Falco peregrinus</i>	(1)		(1)			
Kestrel	<i>Falco tinnuculus</i>						
Oystercatcher	<i>Haematopus ostralegus</i>	1		10			5
Turnstone	<i>Arenaria interpres</i>						
Curlew	<i>Numenius arquata</i>						
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	(29)	(7)	(21)		(3)	(1)
Great Black-backed Gull	<i>Larus marinus</i>	(2)	(4)	1 (3)	(2)	(1)	
Herring Gull	<i>Larus argentatus</i>	(79)	(56)	(12)	1 (44)	2 (28)	1 (36)
Sandwich Tern	<i>Thalasseus sandvicensis</i>						
Woodpigeon	<i>Columba palumbus</i>	1		1	(1)	(1)	
Collared Dove	<i>Streptopelia decaocto</i>	2		2			
Kingfisher	<i>Alcedo atthis</i>						
Meadow Pipit	<i>Anthus pratensis</i>						
Rock Pipit	<i>Anthus petrosus</i>						
Pied Wagtail	<i>Motacilla alba yarrellii</i>		1 (1)	1 (1)		2	
Magpie	<i>Pica pica</i>						
Carrion Crow	<i>Corvus corone</i>	2			1	(4)	(1)
Wren	<i>Troglodytes troglodytes</i>	1	1	1			
Dunnock	<i>Prunella modularis</i>		1				
Chiffchaff	<i>Phylloscopus collybita</i>						
Firecrest	<i>Regulus ignicapillus</i>		1				
Robin	<i>Erithacus rubecula</i>	4	1	1	1	1	2
Black Redstart	<i>Phoenicurus ochruros</i>						
Blackbird	<i>Turdus merula</i>	2	1				1
Song Thrush	<i>Turdus philomenos</i>						
Great Tit	<i>Parus major</i>		3				
Blue Tit	<i>Cyanistes caeruleus</i>						
Long-tailed Tit	<i>Aegithalos caudatus</i>		6				
House Sparrow	<i>Passer domesticus</i>	12	12				
Chaffinch	<i>Fringilla coelebs</i>		1	3			
Greenfinch	<i>Carduelis chloris</i>		7				
Goldfinch	<i>Carduelis carduelis</i>				(2)		
Linnet	<i>Linaria cannabina</i>						
Total		28 (115)	35 (70)	24 (30)	4 (49)	7 (42)	10 (38)

Figure 16 28 December 2018

Bird Survey – Longue Hougue South

SPECIES	SCIENTIFIC NAME	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600
Brent Goose	<i>Branta bernicla bernicla</i>						
Cormorant	<i>Phalacrocorax carbo</i>	(1)		(2)	(1)		
Shag	<i>Phalacrocorax aristotelis</i>	4	5 (2)	1 (4)	(1)		
Gannet	<i>Morus bassanus</i>						
Grey Heron	<i>Ardea cinerea</i>						
Little Egret	<i>Egretta garzetta</i>						
Peregrine Falcon	<i>Falco peregrinus</i>						
Kestrel	<i>Falco tinnuculus</i>						
Oystercatcher	<i>Haematopus ostralegus</i>						(1)
Turnstone	<i>Arenaria interpres</i>						
Curlew	<i>Numenius arquata</i>	(1)					
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	(33)	(63)	(8)	(3)	(5)	(1)
Great Black-backed Gull	<i>Larus marinus</i>	(6)	(1)	(3)	(1)		(2)
Lesser Black-backed Gull	<i>Larus fuscus graellsii</i>					(1)	(1)
Herring Gull	<i>Larus argentatus</i>	3 (10)	(9)	3 (7)	1 (11)	1 (11)	(11)
Sandwich Tern	<i>Thalasseus sandvicensis</i>						
Woodpigeon	<i>Columba palumbus</i>	2 (2)		(1)		(7)	(1)
Stock Dove	<i>Columba oenas</i>	(1)					
Collared Dove	<i>Streptopelia decaocto</i>						
Kingfisher	<i>Alcedo atthis</i>				1	1	1
Meadow Pipit	<i>Anthus pratensis</i>						
Rock Pipit	<i>Anthus petrosus</i>		1				
Grey Wagtail	<i>Motacilla cinerea</i>				1	2	2
Pied Wagtail	<i>Motacilla alba yarrellii</i>		1	2	1	1	
Magpie	<i>Pica pica</i>			1	1		
Carrion Crow	<i>Corvus corone</i>	3	1	1		(8)	1 (1)
Wren	<i>Troglodytes troglodytes</i>				1		
Dunnock	<i>Prunella modularis</i>						
Chiffchaff	<i>Phylloscopus collybita</i>						
Firecrest	<i>Regulus ignicapillus</i>						
Robin	<i>Erithacus rubecula</i>	2	1	2	3	4	1
Black Redstart	<i>Phoenicurus ochruros</i>			1	1	1	1
Blackbird	<i>Turdus merula</i>	1	2	2			
Song Thrush	<i>Turdus philomenos</i>						
Great Tit	<i>Parus major</i>		1				
Blue Tit	<i>Cyanistes caeruleus</i>		1				
Long-tailed Tit	<i>Aegithalos caudatus</i>	1					
House Sparrow	<i>Passer domesticus</i>	1	2				
Chaffinch	<i>Fringilla coelebs</i>						
Greenfinch	<i>Carduelis chloris</i>		3 (1)		(2)		
Goldfinch	<i>Carduelis carduelis</i>	(2)					
Linnet	<i>Linaria cannabina</i>						
Total		17 (56)	18 (76)	13 (25)	10 (19)	10 (32)	6 (18)

Figure 17 28 January 2019

Bird Survey – Longue Hougue South

SPECIES	SCIENTIFIC NAME	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700
Brent Goose	<i>Branta bernicla bernicla</i>	4		1 (4)	1		
Cormorant	<i>Phalacrocorax carbo</i>						1
Shag	<i>Phalacrocorax aristotelis</i>	2 (1)	2 (2)	6	1		1
Gannet	<i>Morus bassanus</i>			(1)			
Grey Heron	<i>Ardea cinerea</i>						
Little Egret	<i>Egretta garzetta</i>					1	1
Peregrine Falcon	<i>Falco peregrinus</i>						
Kestrel	<i>Falco tinnuculus</i>						
Oystercatcher	<i>Haematopus ostralegus</i>	3			12	12	9
Turnstone	<i>Arenaria interpres</i>						
Curlew	<i>Numenius arquata</i>					3	1
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	4 (1)	1	1 (1)	1	(2)	
Great Black-backed Gull	<i>Larus marinus</i>	2 (3)	(2)	2 (1)			
Lesser Black-backed Gull	<i>Larus fuscus graellsii</i>	(2)	(1)	1	(2)	(1)	
Herring Gull	<i>Larus argentatus</i>	3 (15)	7 (42)	8 (31)	3 (67)	4 (8)	11 (24)
Sandwich Tern	<i>Thalasseus sandvicensis</i>						
Woodpigeon	<i>Columba palumbus</i>		(1)	1	1 (12)	8	
Stock Dove	<i>Columba oenas</i>		2				
Collared Dove	<i>Streptopelia decaocto</i>						1
Kingfisher	<i>Alcedo atthis</i>						
Meadow Pipit	<i>Anthus pratensis</i>						
Rock Pipit	<i>Anthus petrosus</i>		1				
Grey Wagtail	<i>Motacilla cinerea</i>						
Pied Wagtail	<i>Motacilla alba yarrellii</i>		3		1		
Magpie	<i>Pica pica</i>		2	1			
Carrion Crow	<i>Corvus corone</i>	(1)	1 (4)	1 (1)	4	(3)	(4)
Wren	<i>Troglodytes troglodytes</i>	1		1	2	1	
Dunnock	<i>Prunella modularis</i>	1				2	
Chiffchaff	<i>Phylloscopus collybita</i>						
Firecrest	<i>Regulus ignicapillus</i>						
Robin	<i>Erithacus rubecula</i>	1	2	2	1	1	1
Black Redstart	<i>Phoenicurus ochruros</i>				1	1	
Blackbird	<i>Turdus merula</i>	1		4	2	1	1
Song Thrush	<i>Turdus philomenos</i>						
Great Tit	<i>Parus major</i>						
Blue Tit	<i>Cyanistes caeruleus</i>						
Long-tailed Tit	<i>Aegithalos caudatus</i>						
House Sparrow	<i>Passer domesticus</i>	5		11	10	10	1
Chaffinch	<i>Fringilla coelebs</i>	2			2		2
Greenfinch	<i>Carduelis chloris</i>	3				1	
Goldfinch	<i>Carduelis carduelis</i>		3	3	2		
Linnet	<i>Linaria cannabina</i>						
Total		32 (23)	24 (52)	43 (39)	44 (81)	45 (14)	30 (28)

Figure 18 27 February 2019

Bird Survey – Longue Hougue South

SPECIES	SCIENTIFIC NAME	1130-1230	1230-1330	1330-1430	1430-1530	1530-1630	1630-1730
Brent Goose	<i>Branta bernicla bernicla</i>						
Cormorant	<i>Phalacrocorax carbo</i>		(1)			1	
Shag	<i>Phalacrocorax aristotelis</i>	2 (1)	1	1	1	1 (1)	2
Gannet	<i>Morus bassanus</i>		(1)				
Grey Heron	<i>Ardea cinerea</i>						1
Little Egret	<i>Egretta garzetta</i>						1
Peregrine Falcon	<i>Falco peregrinus</i>						
Kestrel	<i>Falco tinnuculus</i>						
Oystercatcher	<i>Haematopus ostralegus</i>					1	
Turnstone	<i>Arenaria interpres</i>						
Curlew	<i>Numenius arquata</i>	1	1		1	1	1
Black-headed Gull	<i>Chroicocephalus ridibundus</i>						
Great Black-backed Gull	<i>Larus marinus</i>	1 (2)	2 (6)	(6)	(1)		(1)
Lesser Black-backed Gull	<i>Larus fuscus graellsii</i>	(5)	(5)	1 (4)	(6)	(6)	
Herring Gull	<i>Larus argentatus</i>	2 (75)	(13)	2 (22)	2 (33)	1 (47)	2 (13)
Sandwich Tern	<i>Thalasseus sandvicensis</i>						
Woodpigeon	<i>Columba palumbus</i>	1	(1)	1		6	
Stock Dove	<i>Columba oenas</i>	2					
Collared Dove	<i>Streptopelia decaocto</i>		2				
Kingfisher	<i>Alcedo atthis</i>						
Meadow Pipit	<i>Anthus pratensis</i>						
Rock Pipit	<i>Anthus petrosus</i>						
Grey Wagtail	<i>Motacilla cinerea</i>						
Pied Wagtail	<i>Motacilla alba yarrellii</i>						
Magpie	<i>Pica pica</i>	1					
Carrion Crow	<i>Corvus corone</i>	(6)	3 (1)	(1)	1 (1)	5	1
Wren	<i>Troglodytes troglodytes</i>		2		1		
Dunnock	<i>Prunella modularis</i>				1		1
Chiffchaff	<i>Phylloscopus collybita</i>						
Firecrest	<i>Regulus ignicapillus</i>						
Robin	<i>Erithacus rubecula</i>	1	2	1	2	1	3
Black Redstart	<i>Phoenicurus ochruros</i>						
Blackbird	<i>Turdus merula</i>	1		1	1	1	1
Song Thrush	<i>Turdus philomenos</i>						
Great Tit	<i>Parus major</i>				1		
Blue Tit	<i>Cyanistes caeruleus</i>						
Long-tailed Tit	<i>Aegithalos caudatus</i>						
House Sparrow	<i>Passer domesticus</i>		3		1		
Chaffinch	<i>Fringilla coelebs</i>	1	1			1	1
Greenfinch	<i>Carduelis chloris</i>	1		2	(3)		1
Goldfinch	<i>Carduelis carduelis</i>	2	2 (5)	(2)	1	4	3
Linnet	<i>Linaria cannabina</i>						
Total		16 (89)	19 (33)	9 (35)	13 (44)	23 (54)	18 (14)

Figure 19 29 March 2019

Bird Survey – Longue Hougue South

SPECIES	SCIENTIFIC NAME	0830-0930	0930-1030	1030-1130	1130-1230	1230-1330	1330-1430
Shelduck	<i>Tadorna tadorna</i>						(2)
Brent Goose	<i>Branta bernicla bernicla</i>						
Cormorant	<i>Phalacrocorax carbo</i>	(1)		(1)		(1)	
Shag	<i>Phalacrocorax aristotelis</i>	2 (1)	3 (1)	2			1
Gannet	<i>Morus bassanus</i>			(1)			
Grey Heron	<i>Ardea cinerea</i>						
Little Egret	<i>Egretta garzetta</i>				1	2 (1)	1
Peregrine Falcon	<i>Falco peregrinus</i>						
Kestrel	<i>Falco tinnuculus</i>						
Oystercatcher	<i>Haematopus ostralegus</i>	3 (3)	2	1 (1)	6	8	9
Turnstone	<i>Arenaria interpres</i>						
Curlew	<i>Numenius arquata</i>		1		1		1
Whimbrel	<i>Numenius phaeopus</i>	1					
Black-headed Gull	<i>Chroicocephalus ridibundus</i>						
Great Black-backed Gull	<i>Larus marinus</i>	(3)	(3)	(7)			1 (1)
Lesser Black-backed Gull	<i>Larus fuscus graellsii</i>	(2)	(6)	(15)	10 (7)	(8)	(10)
Herring Gull	<i>Larus argentatus</i>	2 (12)	1 (27)	6 (22)	12 (29)	2 (22)	(26)
Sandwich Tern	<i>Thalasseus sandvicensis</i>						
Woodpigeon	<i>Columba palumbus</i>	1 (2)	(3)	3	1 (1)	1	
Stock Dove	<i>Columba oenas</i>	1	1			1 (3)	
Collared Dove	<i>Streptopelia decaocto</i>		1		(2)		
Kingfisher	<i>Alcedo atthis</i>						
Swallow	<i>Hirundo rustica</i>		(1)				
Meadow Pipit	<i>Anthus pratensis</i>						
Rock Pipit	<i>Anthus petrosus</i>						
Grey Wagtail	<i>Motacilla cinerea</i>						
Pied Wagtail	<i>Motacilla alba yarrellii</i>						
Magpie	<i>Pica pica</i>	2			1		
Carrion Crow	<i>Corvus corone</i>	1 (1)	2 (3)	1 (4)	1	1 (2)	3
Wren	<i>Troglodytes troglodytes</i>	1		1		1	1
Dunnock	<i>Prunella modularis</i>		1				
Blackcap	<i>Sylvia atricapilla</i>	1					
Chiffchaff	<i>Phylloscopus collybita</i>						
Firecrest	<i>Regulus ignicapillus</i>						
Robin	<i>Erithacus rubecula</i>	1			1	1	
Black Redstart	<i>Phoenicurus ochruros</i>						
Blackbird	<i>Turdus merula</i>	2	2	1			1
Song Thrush	<i>Turdus philomenos</i>						
Great Tit	<i>Parus major</i>						
Blue Tit	<i>Cyanistes caeruleus</i>						1
Long-tailed Tit	<i>Aegithalos caudatus</i>						
House Sparrow	<i>Passer domesticus</i>	3	2	12	1	1	2
Chaffinch	<i>Fringilla coelebs</i>	(2)	1				

Bird Survey – Longue Hougue South

Greenfinch	<i>Carduelis chloris</i>	1			2	1	
Goldfinch	<i>Carduelis carduelis</i>	2 (2)	8	1 (6)	(3)	2	2
Linnet	<i>Linaria cannabina</i>						
Total		24 (29)	25 (44)	28 (57)	37 (42)	21 (37)	23 (39)

Figure 20 30 April 2019

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Appendix 19.1: Ecosystem Services Assessment Screening Matrices

Typology of Services	Sub category	Identifying Asset	Likely yes/no	
Provisioning				
Food - managed	Cereal Crops		No	
	Vegetables		No	
	Fruit (including orchards)		No	
	Allotments		No	
	Livestock (meat and dairy)		No	
	Game	Pheasant/grouse		No
		Waterfowl		No
	Fish	Salmon		No
		Trout		No
		Fishing Lakes		No
		Oyster beds		No
		Mussel beds		No
Sea fishing			Yes	
Honey		No		
Food - wild	Mushrooms		No	
	Nuts		No	
	Wild fruit		No	
	Fish	Ormering		Yes
				Yes
Cultivated produce	Fibre crops		No	
	Willow beds		No	
	Wool		No	
	Flowers and plants		No	
	Thatch		No	
	Leather		No	
	Timber		No	
	Paper		No	
Energy	Bio-fuel		No	
	Peat		No	
	Wood fuel		No	
	Charcoal		No	
	Gas		No	
	Geothermal		No	
	Wind		No	
	Hydropower	River flow		No
		Intertidal habitat		Yes
Tidal currents			Yes	
Minerals	Geological substrate	Granite	No	
		Limestone	No	
		Slate	No	
		Sandstone	No	
		Salt	No	
		Clay	No	
		Gypsum, potash, peat	No	
		Sand and gravel	No	
Genetic resources	Animal breeding		No	
	Medicinal		No	
Biochemicals, natural medicines, pharmaceuticals	Medical raw materials	Herbs	No	
Ornamental resources	Compost		No	
	Flowers		No	
	Shells		Yes	
	Stone		Yes	
Fresh water	Drinking water		No	

Typology of Services	Sub category	Identifying Asset	Likely yes/no
Regulation Services			
Air-quality regulation	Dry deposition of pollutants		No
	Removal of pollutants by vegetation		No
Climate regulation	Carbon sequestration	Woods / peat	No
Climate regulation	Carbon sequestration	Seagrass	Yes
Water regulation	Land cover		No
	Water Storage	Peat Bogs	No
		Reservoirs	No
		Wetlands	No
Natural Hazard regulation	Natural Defences	Saltmarsh	No
Pest regulation	Crop and livestock pests		No
Disease regulation	Mosquitos	Waterbodies	No
		Wetlands	No
Flood regulation / protection	Barriers	Embankments	No
		Topography	Yes
	Surface water retention	Landcover	No
Erosion regulation			Yes
Water purification and waste treatment	Removal of pollutants by vegetation	Peat Bogs	No
		Reedbeds	No
Pollination		Wildflowers	No
Cultural Services			
Cultural heritage	Religion		No
	Social interaction		No
	Traditions		No
	Landscape	Iconic landscape	Yes
	Location/ heritage asset		Potential
	Wildlife (habitats and species)		Yes
Recreation and tourism	Walking		Yes
	Freshwater angling		No
	Coastal angling		Yes
	Scuba diving		No
	Watersports (including surfing/ windsurfing/ canoeing/ rowing/ sailing)		Yes
	Bird watching/ wildlife watching		Yes
	Hors riding		No
	Gardening		No
	Game shooting		No
	Cycling		Yes
	Geology	Gabbro	Yes
	Golf		No
Aesthetic value	Physical landscape/ townscape/seascape		Yes
	Heritage asset		Potential
Supporting Services			
Soil formation			No
Primary production			No
Nutrient cycling			No
Water cycling			No
Phosynthesis			No

Column A taken from Defra (2007) An Introductory Guide to Valuing Ecosystem Services.

Appendix 19.2: Ecosystem Services Assessment Scoping Matrices

Typology of Services	Sub category	Identifying Asset	Likely yes/no	Assessment of impact	Impact
Provisioning					
Food - managed	Fish	Sea Fishing	Yes	Coastal Processes are assessed in Chapter 7 . There will be no change to tidal currents at St Sampson's Harbour, and therefore effect to any fishing vessels moving in or out of this location. There will be no interruption to fishing activity as a result of the Project. Chapter 17 (Marine Ecology) assessed the impacts of increased suspended sediment on commercial fish species and concludes that a only those fish species that are within 200m of Longue Hougue South would be temporarily affected by increased suspended sediment concentrations and smothering. Juvenile and adult fish are mobile and able to avoid localised areas of increased suspended sediment concentrations, and if they are displaced can move to adjacent undisturbed areas within their normal habitat range therefore the impact will be negligible.	x
Food - wild	Fish	Angling	Yes	Spur Point, Spur Bay and Belle Greve Bay are all local fishing spots (https://micksfishing.co.uk/where-to-fish.html). Once the Project is in place there will be a loss in fish habitat within Spur Bay. Alternative habitat for the fish will still be available on the southern area of Spur Point and Belle Greve Bay as well as around the Island, therefore the impact is negligible.	x
	Shellfish	Ormering	Yes?	The intertidal habitats within Spur Bay have the potential to support Ormer. However, local ormerer's attended the scoping consultation event and advised that they do not carry out this activity at Spur Bay. There will therefore be no impact.	0

Typology of Services	Sub category	Identifying Asset	Likely yes/no	Assessment of impact	Impact
Energy	Hydropower	Intertidal habitat	Yes	There are no existing coastal hydropower plants and no plans for any at present. There will be no impact to this asset	0
		Tidal currents	Yes	There are no existing coastal hydropower plants and no plans for any at present. There will be no impact to this asset	0
Ornamental resources	Shells		Yes	The Project will lead to a very small reduction in intertidal habitats which support this resource, however the magnitude is low as shells are available for collection at all of the Island Beaches. There will be a negligible impact.	x
	Stone		Yes	The Project will lead to a very small reduction in intertidal habitats which support this resource, however the magnitude is low as stones are available for collection at all of the Island Beaches. There will be a negligible impact.	x
Regulation Services					

Typology of Services	Sub category	Identifying Asset	Likely yes/no	Assessment of impact	Impact
Climate regulation	Carbon sequestration	Seagrass	?	The Project will lead to a reduction of 8% of the known eelgrass extent within Guernsey. Mitigation for the loss of eelgrass could include translocation of the eelgrass beds and / or seeding of eelgrass at a new site, to ensure that there will be no net reduction of this habitat, and no impact on the species that use it. It is however expected that not all eelgrass could be translocated due to currently known success rates (for an eelgrass patch of this size, the expected survival rate is just 35% of plants), even with the best possible methods and donor site used (MMO, 2019), although the new site may expand to the same size after transplantation). Therefore, the magnitude of impact would be reduced to negligible, with overall a very small loss of total eelgrass habitat across Guernsey lost. There would be no noticeable effect in the provision of carbon sequestration services. Furthermore, the carbon currently sequestered in the existing eelgrass would be buried, removing that from the carbon cycle. This would have a negligible positive impact to carbon sequestration services.	x/+
Flood regulation / protection	Barriers	Topography	Yes	The proposed development will build upon the existing defences along the frontage. This will provide a positive impact through the raising of the current coastal defences.	+
Erosion regulation			Yes	There will be no significant change to coastal processes and therefore no notable change in erosion and accretion rates.	0

Typology of Services	Sub category	Identifying Asset	Likely yes/no	Assessment of impact	Impact
Cultural Services					
Cultural heritage	Landscape	Iconic landscape	Yes	Chapter 16 considers impacts to the landscape. The creation of a breakwater and infill of Spur Bay with inert waste would fundamentally change the character and sense of place. This would have a substantial adverse impact.	xx
	Location/ heritage asset		Yes	Chapter 15 considers heritage assets. The proposed breakwater will meet the foreshore adjacent to the gun emplacement MGU664 and, without mitigation, it is anticipated that the construction of the breakwater will result in the destruction of the fragmented remains on the foreshore as well as a change to the physical context of the gun emplacement foundation which survives. This will result in a potentially major adverse direct impact. However, as described for the do-nothing scenario (Section 15.4), the asset is in poor condition and without intervention could be lost to the sea in the foreseeable future. Mitigation measures to record and, if possible, to ensure the longevity of this structure as part of the Project, may, therefore, represent a major positive impact.	xx / ++
	Wildlife (habitats and species)		Yes	Chapter 17 and Chapter 18 consider the marine, intertidal and terrestrial habitats and species that are, or potentially could be, present near to the Project. Of these, none are identified as being culturally significant, or emblematic for Guernsey. There will be no impact.	0

Typology of Services	Sub category	Identifying Asset	Likely yes/no	Assessment of impact	Impact
Recreation and tourism	Walking		Yes	There is a footpath that runs alongside the Site which will be reinstated once construction is complete. There will be no impact to walking	0
	Coastal angling		Yes	Spur Point, Spur Bay and Belle Greve Bay are all local fishing spots (https://micksfishing.co.uk/where-to-fish.html). Once the Project is in place there will be a loss in fish habitat within Spur Bay. Alternative locations for angling will still be available on the southern area of Spur Point and Belle Greve Bay as well as around the Island, therefore the impact is negligible.	x
	Water sports (including surfing/ windsurfing/ canoeing/ rowing/ sailing)		Yes	The presence of the breakwater will have no impact to sea kayaking activities in the local area.	0
	Bird watching/ wildlife watching		Yes	The infill of Spur Bay will result in the loss of habitat for birds and consequently reduce birdwatching opportunities. However, all of the birds recorded on site were common and there are other, better locations for birdwatching around Guernsey, therefore the impact is negligible.	x
	Cycling		Yes	The operation of the inert waste facility will not change the local cycle network which is located on roads across Guernsey. The increase in traffic volumes would have a negligible impact on cycling.	0

Typology of Services	Sub category	Identifying Asset	Likely yes/no	Assessment of impact	Impact
Aesthetic value	Physical landscape/ townscape/seascape		Yes	Chapter 16 considers impacts to the landscape. The creation of a breakwater and infill of Spur Bay with inert waste would fundamentally change the character and sense of place. This would have a substantial adverse impact.	XX
	Heritage asset		Yes	The operational facility will be located within the existing WTS and, therefore, there will be no change to the baseline setting of heritage assets from operation activities. The presence of the breakwater would alter the setting of gun emplacement MGU664, however this asset is currently in a poor state of survival and is at risk of loss from sea level rise. Therefore, the impact upon the setting of those heritage assets with views of the breakwater is assessed as minor adverse.	X

Column A taken from Defra (2007) An Introductory Guide to Valuing Ecosystem Services.