

REPORT

Longue Hougue South Draft Scoping Opinion

Client: States of Guernsey

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1 Part 1: Introduction

1.1 Introduction

- 1.1.1 This is a draft Scoping Opinion to inform the Environmental Impact Assessment (EIA) for the Longue Hougue South inert waste reclamation project (“the project”) (**Figure 1.1**). The project has been selected as the “preferred way forward” as the follow-on inert waste management solution through a Best Practicable Environmental Option (BPEO) strategic appraisal process.
- 1.1.2 Inert waste is defined in the Landfill Directive as “waste that does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm human health. The total leachability and pollutant content of the waste and ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater” (1999/31/EC).
- 1.1.3 In recent years the States of Guernsey (“the States”) has relied on coastal land reclamation for the depositing of inert waste from the construction and demolition industry. The existing Longue Hougue Reclamation facility on the east coast of Guernsey has received the Island’s inert waste since 1995. Recent surveys of the current site at Longue Hougue have indicated that the site is nearing the end of its life, with estimates suggesting less than five years of void space remaining. The proposed Longue Hougue South option (the project) is an extension of a current land reclamation area, which would have a capacity of 790,000m³ and an anticipated operational life of about 12 years.

1.2 The Draft Scoping Opinion

- 1.2.1 This draft Scoping Opinion presents an initial review of the potential issues associated with construction and operation of Longue Hougue South as a land reclamation site. The overall objectives of the EIA for the project are to:
- avoid or minimise potential negative impacts;
 - identify opportunities for positive impacts; and
 - to meet the requirements of Schedule 3 of the Land Planning and Development (EIA) Ordinance 2007.
- 1.2.2 This draft Scoping Opinion therefore aims to identify the relevant potential impacts associated with the physical, human, and biological environments for the project and set out the proposed approach to addressing those environmental issues through the EIA process. This report provides an overview of all potential issues and makes a case for focusing the EIA on those issues that have the potential to result in significant impacts, reducing the emphasis on those issues which are shown to be non-significant. The EIA for Longue Hougue South will also take into account the information gathered in the Inert Waste Management Strategy Options Report (Royal HaskoningDHV, 2017b) and High

Level EIA (Royal HaskoningDHV, 2017a). In line with this approach, this draft Scoping Opinion makes robust recommendations supported by evidence, regarding the issues to exclude (scope out) from the EIA. This will allow more effort to be focused on the key issues. Each section of this report summarises potential impacts on a receptor and whether these will be considered further (scoped in) as part of the EIA process.

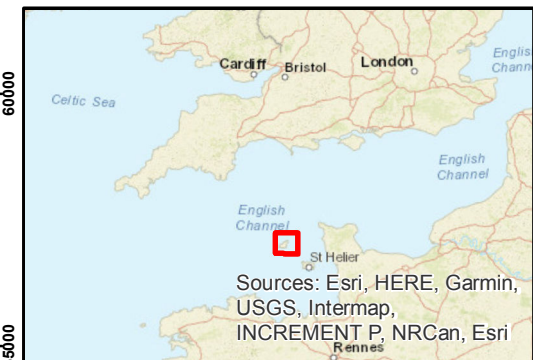
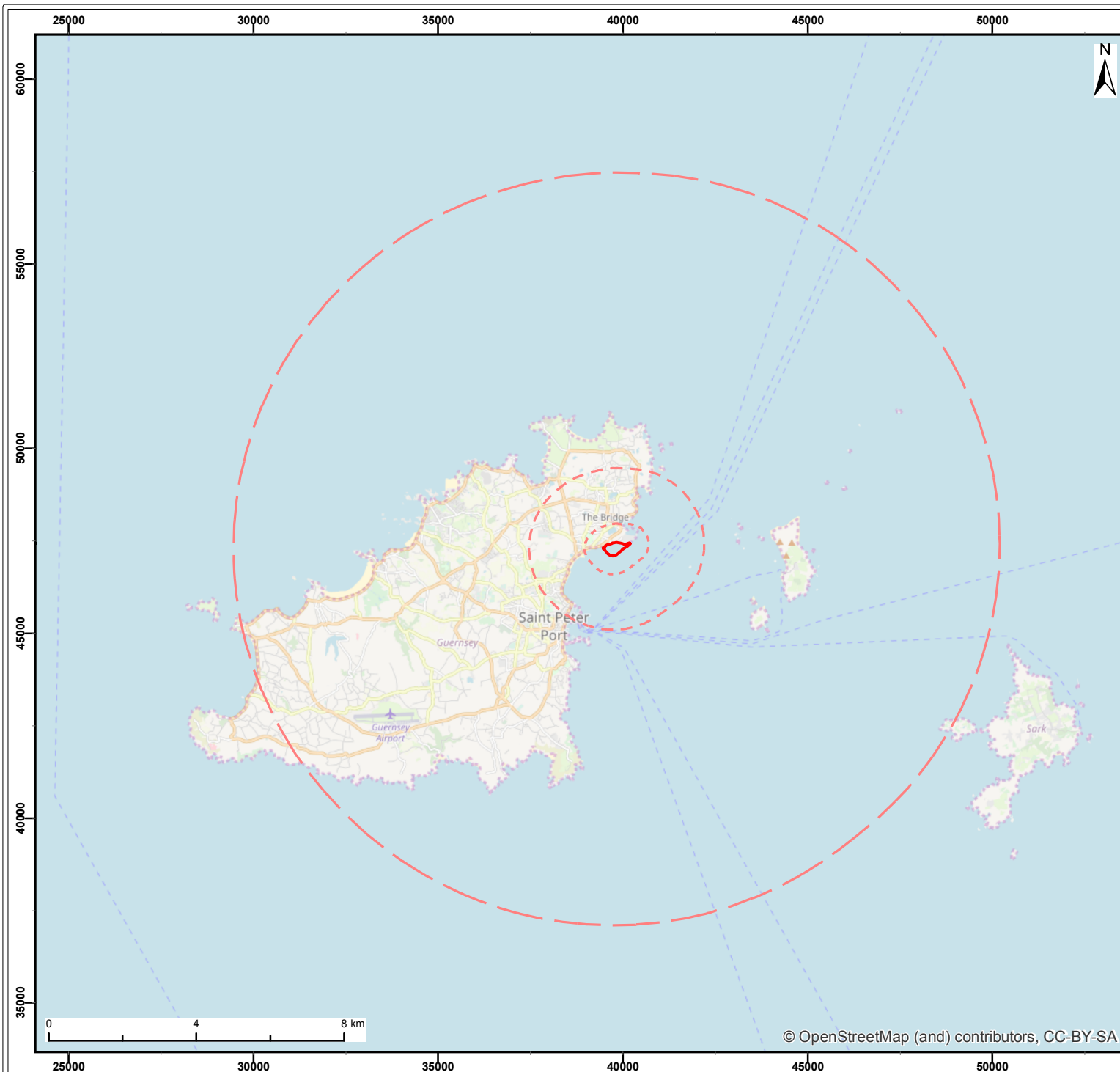
1.2.3 These reviews and work are brought together in this draft Scoping Opinion, which in line with Schedule 3 of the Land Planning and Development (EIA) Ordinance 2007 contains the following:

- A summary of any relevant policies;
- A description of the sensitivity of the environment on the development site and on land adjoining or adjacent to that site;
- A description of any information which is readily available relating to the environmental impact of the development and a statement as to the reliability and adequacy of that information;
- A list of the principal emissions which are likely to arise;
- The main matters that should be addressed in each EIA for each environmental topic;
- An outline of the proposed methodology for collecting information, assessing environmental impacts and identifying ways of mitigating the effects of those impacts on the environment; and
- A summary of the advice received or comments made on the EIA by the Officers in the Planning Services of the States of Guernsey's Development & Planning Authority in relation to obtaining an EIA Scoping Opinion Study Area.

1.2.4 For the purposes of undertaking an EIA on the Longue Hougue South site, a study area has been defined to show the spatial extent that can influence, or be influenced by, the development of the proposed inert waste management facility. The study area is different for different environmental receptors; **Table 1.1** summarises the study area for various environmental topics. The study area is presented in **Figure 1.1**.

Table 1.1 Study Area Used for Each Environmental Receptor

Environmental Receptor	Study area (distance in km)
Coastal processes	The water environment within the following area: 2km to the north, 5km to the east and to the southern breakwater at St Peter Port
Marine sediment and water quality	The water environment within the following area: 2km to the north, 5km to the east and to the southern breakwater at St Peter Port
Surface water and flooding	2km
Land use, land quality, soil quality, geology and hydrogeology	2km
Traffic and transport	All transport routes within 1.2km to the south and 1.8km to the north
Air quality	1km
Noise and vibration	1km
Population and human health	1km
Material assets (archaeology)	1km
Landscape (Townscape/ Seascape) Character and Visual Amenity	Accessible views up to 3km inland and 4km across the sea (for townscapes (where built form obscures views) and seascapes (where views are extensive over the relatively flat surface of the sea) a ZTV would not be used. The Visual Envelope is determined through desk study and refined/ confirmed through Site visit, therefore these distances are indicative at this stage)
Marine ecology	The water environment within the following area: 2km to the north, 5km to the east and to the southern breakwater at St Peter Port
Terrestrial ecology and ornithology	All ecological receptors within 2km, Ramsar Sites within 5km
Climatic factors	The whole of the Island of Guernsey
Natural Capital	The whole of the Island of Guernsey



Legend:

- Outline of Proposed Development Area

Proposed Development Area Buffers

- 0.5km Buffer
- 2km Buffer
- 10km Buffer

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Client:	Project:
States of Guernsey	Longue Hougue South Informal EIA Scoping Report

Title:

Site Location and Study Area

Figure:	1.1	Drawing No:	PB5312-200-001		
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Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	01/11/2018	GC	PT	A4	1:150,000
02	10/12/2018	FC	PT	A4	1:150,000

Co-ordinate system: Guernsey Grid

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1.4 Draft Scoping Opinion Structure

1.4.1 This draft Scoping Opinion structure is presented in **Table 1.2**.

Table 1.2 Draft Scoping Opinion Structure

Section	Description
Section 1 (this Section) - Introduction	This section introduces the need for the project, highlights the selection process and outline assessment of alternative options, sets out the policy and legislative context for the proposal, provides an outline project description, and sets out the EIA methodology. This provides a summary of the consultation undertaken prior to and during the scoping process.
Section 2 – Potential Impacts	This Section describes the baseline environment and identifies potential project construction and operation phase impacts as well as potential cumulative impacts with other projects for each of the receptors under consideration. It identifies what is 'scoped in' and 'scoped out' of the Environmental Assessment.
Section 3 – Summary and Conclusions	Overview of the key conclusions and identification of next steps.
Appendices	Technical data of relevance that has been used to inform this report.

1.5 Project Programme

1.5.1 The following are the proposed key dates for the EIA process:

- Preparation of draft Scoping Opinion – December 2018;
- Consultation on draft Scoping Opinion – January 2018;
- Workshops with key stakeholders on draft Scoping Opinion January/February 2019;
- Preparation of Environmental Statement (ES) – Commence December 2018;
- Anticipated submission of Draft ES - Spring 2019;
- Consultation on the initial EIA findings; and
- Submission of an Environmental Statement (ES) by Summer 2019.

1.6 Need for the Project

1.6.1 In recent years the States has relied on coastal land reclamation for the depositing of inert waste from the construction and demolition industry. The Longue Hougue Reclamation Facility on the east coast of Guernsey has received the Island's inert waste since 1995. Recent surveys of the current site at Longue Hougue have indicated that the site is nearing the end of its life, with estimates suggesting less than five years void space remaining.

- 1.6.2 Royal HaskoningDHV was commissioned by the States to undertake an Inert Waste Management Capacity Assessment for the existing Longue Hougue Reclamation Site in 2017. This assessment was commissioned to ensure that an up-to-date and accurate picture of the Island's inert waste stream is provided for the strategic appraisal of options.
- 1.6.3 The most recent assessment of the capacity of the existing Longue Hougue Reclamation Site provides an accurate and up-to-date picture of the Island's inert waste stream. The worst-case scenario for this assessment would see capacity reached in 2021. A more conservative case would see fill of the site by mid-2022.
- 1.6.4 Considering the remaining capacity issue at the Longue Hougue site, the States identified the need to develop an inert waste management solution to follow on from the existing land reclamation site at an early stage to ensure continuity of services. The States seek to ensure that any future inert waste management proposals would provide a solution to inert waste management for the next 20 years.

1.7 Site Selection and Outline Assessment of Alternatives

- 1.7.1 In developing an inert waste management solution, under the Environmental Pollution (Guernsey) Law, 2004, the States Trading Supervisory Board is mandated, in its role as designated Waste Disposal Authority, to identify the Best Practicable Environmental Option (BPEO) for the depositing of waste.

Site Selection Process

- 1.7.2 The strategic appraisal process comprised the following stages:
- Identification of a long-list of potentially suitable options for inert waste management;
 - Identification of environmental, social, and economic objectives and criteria against which to screen long-list of options to determine BPEO;
 - Conducted High Level EIA against the BPEO options;
 - Selection of the preferred solution(s);
 - Conduct detailed EIA against the preferred solution(s).
- 1.7.3 A cross-departmental team of officers from the States conducted an initial review of options for an inert waste management solution in 2014. This review identified a long-list of 15 potential options (plus sub-options) for future inert waste management on Guernsey.
- 1.7.4 Following a review of these options undertaken during the strategic options appraisal process (as reported in the Inert Waste Management Strategy Options Report), the 'long-list' of options identified by the States was reduced to a 'second-pass' list of 20 options (comprised of sub-options identified within the long-list) which pass initial capacity, availability and legislative constraints tests. This 'second-pass' list contains the options upon which the High Level EIA was undertaken. These 'second pass' options are listed in **Table 1.3**.

Table 1.3 *'Second-pass' Options for an Inert Waste Management Solution (Options Subject to High Level EIA)*

Option No.	Site / Option Name
1	Airport Runway Extension (eastern end)
3.1	Beach-raising on West Coast
4.1	Cotes des Amarreurs
4.15	Guillotine Quarry
4.18	L'Epine Quarry
4.19	Paradis Quarry
4.24	Barker's Quarry
5	Les Vardes Quarry
8.1	Longue Hougue South
8.2	Black Rock Option 1 (Harbour)
8.3	Black Rock Option 2
8.4	Baie De Pecqueries
8.5	North of Mont Cuet/Creve Coeur
8.6	Albecq
8.7	East of QEII Marina (St Peter Port)
8.8	Havelet Bay
11	Raising level of existing Land Reclamation at Longue Hougue
13	Increase in re-use / recycling of inert waste. Proposal: procurement of services to process inert waste received at Longue Hougue and recycle stone from this waste material using mobile plant - operations may be relocated to any follow-on reclamation site as land becomes available once the current site is completed.
14	Temporary Stockpile at Longue Hougue
15	Longue Hougue Reservoir

- 1.7.5 Of these 15 options, the Inert Waste Management Strategy Options Report identified 12 leading sites and options based on their environmental and cost and affordability criteria. These leading options are listed in **Table 1.4**. The leading list of sites and options in **Table 1.4** were subject to the next phase of the BPEO assessment process, which was conducted in consultation with relevant stakeholders as part of workshops held in Guernsey on 26 July 2017.

Table 1.4 *Leading Sites and Options Identified in the Inert Waste Management Strategy Options Report*

Option	Site / Option
1	Airport Runway Extension (eastern end)
4.15	Guillotine Quarry
11	Raising level of existing Land Reclamation at Longue Hougue
5	Les Vardes Quarry
13	Increase in re-use / recycling of inert waste
14	Temporary Stockpile at Longue Hougue
4.19	Paradis Quarry
4.18	L'Epine Quarry
8.1	Longue Hougue South
8.7	East of QEII Marina (St Peter Port)
8.5	North of Mont Cuet/Creve Coeur
4.1	Cotes des Amarreurs

1.7.6 The Longue Hougue South site was identified by Royal HaskoningDHV in 2017 through the BPEO process as the most suitable site option because it offers the best fit in terms of meeting the critical success factors and investment objectives and has the largest capacity of the individual site options that are available in the necessary timeframe.

1.7.7 The High Level EIA identified no major positive or negative impacts in relation to Longue Hougue South (Royal HaskoningDHV, 2017a). It did, however identify the following potential moderate impacts:

- Potential affect to tidal dispersion patterns and being located adjacent to an Island gateway;
- Direct loss of foreshore ABI;
- Land reclamation will lead to potential effect on the geological site located below the proposed development area;
- Land reclamation at this location will affect local sedimentation patterns along a geomorphologically active section of coastline; and
- Potential indirect effects upon the setting of protected monuments located within 500m of the option.

1.7.8 Two moderate positive impacts have been identified upon environmental objectives:

- Land reclamation will provide a new area of land that could be developed in the future; and
- Land reclamation has the potential to raise flood defences and improve the standard of flood protection along the west Guernsey coast.

Assessment of Alternative Sites

1.7.9 The constraints identified associated with the alternative sites were outlined in a value engineering workshop to follow-on from the BPEO process described above. The constraints for alternative sites are outlined in **Table 1.5**.

Table 1.5 Constraints Associated with the Alternative Sites Identified through the BPEO Process

Site Name	Constraints
Guillotine Quarry	• Access is via a 90° turn from the main road onto a narrow, grass covered track. The junction and track would need improvement to allow access. • Access point is too narrow to allow safe two-way access, a strip of adjacent land would be required. • A small area of open land is present that could be used for turning, however is currently a dumping ground for vehicles and other waste. • There is a small wall that would require demolishing. • Some of the vegetation surrounding the quarry will have to be removed. • The quarry is overlooked by three houses. • Steep rocky sides aside from an access point to the water's edge. • High water level. • The quarry provides surcharge pressure that confines leachate from the former Bordeaux landfill. If this is removed once the quarry is emptied, leachate may flow into the quarry basin. • It is not known how stable the quarry walls will be if water is drained from the quarry. • Access to the water's edge is via a short steep slope, with a 90° turn from the open land area. • The site is greenfield land. • Ecological and residential areas are within 2km of the site. • Seven protected buildings are located within 500m of the site.

Site Name	Constraints
L'Epine Quarry	- The turn is tight into the access gate. - Alternative access route is available, but this would mean lorries passing the houses in nearby residential area. - The slope to the water's edge of the alternative access route is very steep. - Vehicles would have to reverse down the steep slope, which represents a high risk. - There is no access to the water's edge at Rue es Ralles, so material would have to be tipped over the edge, representing health and safety concerns. - The quarry is surrounded by very dense vegetation that would need to be cleared, including established palm trees. - There are glasshouses and houses directly opposite the site at the Rue es Ralles access point. - The site is greenfield land. - Although not in use, the site is part of Guernsey Water's portfolio to be used in severe drought. 17 protected buildings are within 500m of the site. - Two protected monuments (Paved Road and Dehus Dolman) are located within 500m of the site. - The site is located within the Les Mielles Conservation Area, and forms part of the conservation character. - The site is located on a terrestrial ecological site.
Mont Cuet/Creve Coeur	- The coastal path bisects the landfill site, the path is frequently used. - There is a concrete outfall that bisects the bay, and takes leachate from the landfill site out to sea which will require extending. - There is a bird watching hide at the southern end of the bay. - The area is currently safeguarded for aggregate extraction under the IDP and may be used in the near future, presenting potential conflicts with operations and safety. - The bay is very rocky. - Wave action is a major concern. - The site is very exposed, which would make construction difficult. - The site has potential to change local sediment transport patterns. - L'Ancrese Common SSS is located 250m inland of the site. - Foreshore ABI is located within the site, which would be lost by the development. - The site is within a rural landscape characterised by low shores. - The site is within and would alter character of one strategic view from L'Ancrese Common.
Les Vardes	- Currently operational therefore not an immediate option. - Safeguarded for water storage in the future. - Not currently owned by the States. - Costs may be high.

Site Name	Constraints
Paradis Quarry	- The site is a habitat for migratory bird species which would be lost. - The site is greenfield land. - The site is in a rural area and surrounded by agricultural land. 15 protected buildings are located within 500m of the site. - Two protected monuments (Paved Road and Dehus Dolman) are located within 500m of the site. - The site is located in the Les Mielles Conservation Area, and forms part of the conservation area character. - The site is located on a terrestrial archaeological site. - The site is located within the Lowland Hills landscape, and is a contributing factor to the local landscape character.

Scheme Design Criteria and Alternative Designs

- 1.7.10 To inform the current design, available bathymetry was taken from the Oct 1988 survey of Belle Grève Bay, recorded to Chart Datum St Peter Port (-5.06 mAGD). This was combined with basic topographic data for the island to metres above Guernsey datum (mAGD) and checked against the 2018 Lidar survey undertaken at the site.
- 1.7.11 The neighbouring inert waste facility at Longue Hougue North has a ground level of approximately +7.5m mAGD. To tie-in to the existing site we have assumed that finished ground level at Longue Hougue South once the site has been filled will be set at +7.5m mAGD.
- 1.7.12 During the process of design, the standards assessed include the following:
- a 1 year, 50 year and 100 year storm event with sea level rise over the 50 year design life;
 - the 1 year, 50 year and 100 year storm event without sea level rise; and
 - the 1 year, 50 year and 100 year storm event increasing sea level rise to impact over an increased design life of 100 years.
- 1.7.13 The current design has a breakwater height of +9.5mAGD, with infilling expected to occur up to a maximum level of +8.5mAGD though variable across the site subject to landscaping proposals and the future after use proposals. This level will allow operations to continue without disruption, with an overtopping discharge level of less than 1l/s/m for a 1:1 year storm event. During a 1:100 year storm event there will be no damage to the rear of the breakwater with a maximum level of overtopping discharge of 50l/s/m for an extreme 1:100 year storm event. To enable future development behind the breakwater the maximum overtopping allowed is 10 l/s/m during a 1:100 year storm event. The current design complies with these standards.

- 1.7.14 Optimisation of the breakwater design is expected to be undertaken as the project progresses through to detailed design as further information is made available. The EIA will provide a technical annex considering the various design aspects and this will be summarised in the main document.
- 1.7.15 A range of alternative options for the 'structure' to enclose the embayment and thus allow inert waste to be infilled have been considered. An initial concept option of a rock armour breakwater was developed and has been considered in this draft Scoping Opinion as it is likely to represent all the potential impacts associated with other forms of 'breakwater'. Currently the design is being reviewed in terms of technical (stability, functionality, buildability, and health and safety) and financial feasibility of other structure options. The options being considered for the breakwater are:
- Rock armour;
 - 'Engineered' concrete blockwork / revetment;
 - Concrete caisson; and
 - Steel sheet pile.
- 1.7.16 The EIA will examine the potential environmental impacts associated with a technically and financially feasible option, which may include some or all of the above options.

1.8 Policy and Legislative Context

Introduction

- 1.8.1 The purpose of this section is to:
- describe the legislative and policy context of relevance to this EIA;
 - describe the existing international and the States of Guernsey legislative environment for land use planning and identify the environmental objectives contained with existing legislation;
 - describe the existing States' policies for land use planning and identify the environmental objectives contained with existing policy; and
 - outline which legislative and policy objectives will be used to assess the potential impacts of the project as part of the EIA process.

Background to Environmental Impact Assessment

1.8.2 The Land Planning and Development (Environmental Impact Assessment) Ordinance, 2007 sets out the requirements for EIA for developments and policies. The Inert Waste Reclamation falls under Schedule 1 of the Ordinance, and therefore an Environmental Statement is required. This should:

- review the baseline conditions at the site, the surrounding locality and the wider area;
- consider the social and economic planning policy context, where relevant;
- identify the main receptors;
- identify the potential environmental effects;
- assess the significance of the impacts (including any cumulative impacts);
- establish the environmental/legislative parameters; and
- adopt a robust methodology, either from desk- based analyses or site surveys, to assess the potential impacts identified.

1.8.3 The Environmental Statement must include certain other information to ensure the States' Development and Planning Authority (DPA) is able to assess the strategic environmental impacts against relevant policies. This includes:

- Any relevant national or international standards or guidance or requirements under applicable legislation setting out limits for particular environmental impacts for the relevant development enabled under the policies; and,
- Any criteria adopted for the mitigation of such impacts.

1.8.4 **Table 1.6** presents the international standards and guidance that have been used to develop criteria against which to assess the impacts of developments.

Table 1.6 Standards and Guidance used to Develop Assessment Criteria

International legislation	Relevance
EU Directive 2006/7/EC Bathing Water Directive	Bathing water quality standards (for <i>Escherichia coli</i> and <i>Intestinal enterococci</i>)
EU Directive 2008/105/EC on Environmental Quality Standards	Drinking water quality standards
EU Directive 2008/50/EC on ambient air quality and cleaner air for Europe	Air pollutant standards

Legislation

- 1.8.5 The following sub-sections summarise the relevant States' legislative requirements related to the environment and protection of human health.

Land Planning and Development (Guernsey) Law 2005

- 1.8.6 The Land Planning and Development (Guernsey) Law 2005 sets the legal context for the land use planning on Guernsey. Section 1 of the Law states the purposes of the Law is to protect and enhance, and to facilitate the sustainable development of, the physical environment of Guernsey. In this regard, the Law seeks to:

- *“protect and enhance the natural beauty and amenity of Guernsey's coasts, cliffs, countryside and other open spaces;*
- *protect and enhance Guernsey's heritage of buildings, monuments and sites of historic, architectural or archaeological importance;*
- *preserve and promote biological diversity;*
- *achieve quality in the design and implementation of development so as to respect Guernsey's historic, architectural and archaeological heritage and make a positive contribution to the built environment;*
- *maintain a balance between the competing demands of the community for the use of land;*
- *ensure that all development is carried out in a sustainable manner and in such a way as to achieve a safe and healthy living and working environment” (Land Planning and Development (Guernsey) Law, 2005).*

Land Planning and Development (General Provisions) Ordinance, 2007

- 1.8.7 The Land Planning and Development (General Provisions) Ordinance, 2007 sets out more detailed material considerations required during land use planning on Guernsey. Specifically, the Ordinance sets out the following material consideration during land use planning:

- 1.8.8 *“13. (1) Subject to section 12, in addition to the matters to which the (Development and Planning) Authority is required to have regard under the Law and this Ordinance, in determining an application for planning permission, the Authority must have regard to -*

- *the likely effect of the development on the natural beauty and landscape quality of the locality in question;*
- *the character and quality of the natural and built environment which is likely to be created by the development;*
- *the appropriateness of the development in relation to its surroundings in terms of its design, layout, scale, siting and the materials to be used;*

- *the likely effect of the development on the character and amenity of the locality in question;*
- *the likely effect of the development on roads and other infrastructure, traffic and essential services;*
- *the likely effect of the proposed use to which the application site is to be put and the likely effect of any other use to which it could be put without obtaining a further planning permission;*
- *any proposed planning covenant which can be entered into in accordance with section 23 of the Law – (i) which provides a benefit having regard to the purposes of the Law or any other purpose for which a planning covenant may be entered into, and (ii) which would have a material connection with the development;*
- *the likely effect of the development on parks, playing fields and other open spaces; and*
- *the likely effect of the development on the reasonable enjoyment of neighbouring properties” (Land Planning and Development (General Provisions) Ordinance, 2007).*

1.8.9 In addition to these key pieces of legislation, the wider States’ legislative context has been reviewed to inform this EIA. As part of this process, **Table 1.7** presents the legislation that has been considered.

Table 1.7 States’ Environmental Legislation Relevant to the EIA

Legislation relevant to the EIA
Planning¹
The Land Planning and Development (Guernsey) Law, 2005
The Land Planning and Development (Environmental Impact Assessment) Ordinance, 2007
The Land Planning and Development (General Provisions) Ordinance, 2007
The Land Planning and Development (Special Controls) Ordinance, 2007
The Building (Guernsey) Regulations, 2012 (and Guernsey Technical Standards issued under those Regulations)
Waste
Refuse Disposal Ordinance, 1959
The Transfrontier Shipment of Waste Ordinance, 2018
The Environmental Pollution (Guernsey) (Amendment) Law, 2015
The Environmental Pollution (Guernsey) Law, 2004 ²
The Environmental Pollution (Waste Control and Disposal) Ordinance, 2010

¹ This list only includes planning and building control legislation most relevant to the assessment of the environmental effects of development.

² The parts relating to water and air pollution and pollution by sound and light are not yet in force but there is approved policy to bring into force the water pollution part and enact legislation under it to replace some of the current water pollution legislation.

Legislation relevant to the EIA
The Waste Control and Disposal (Duty of Care) Regulations, 2010
The Waste Control and Disposal (Exemptions) Regulations, 2010
The Waste Control and Disposal (Specially Controlled Waste) Regulations, 2010
The Parochial Collection of Waste (Guernsey) Law, 2015
Waste Management Services (Charging) Ordinance, 2018
Water/Sea
The States Water Supply (Guernsey) Laws, 1927 to 1997
Loi Relatif aux Douits, 1936
The Watercourses Ordinance, 1957
States Water Supply (Prevention of Pollution) Ordinance, 1966
Sewerage (Guernsey) Law, 1974
Part III of the Food and Environment Protection Act 1985 as extended to Guernsey with modifications
The Water Byelaws (Guernsey) Ordinance, 2003
Public Health/Nuisances
Loi relative à la Santé Publique, 1934
The Public Health Ordinance, 1936
Other legislation: Health and Safety³
Loi Relative aux Explosifs, 1905
Loi Relative aux Huiles ou Essences Minerales ou Autre Substances de la Meme Nature, 1924
Health and Safety at Work (General)(Guernsey) Ordinance, 1987
The Health and Safety (Gas)(Guernsey) Ordinance, 2006
The Control of Poisonous Substances (Guernsey) Regulations, 2014
Other legislation: Energy
The Renewable Energy (Guernsey) Law, 2010
Other legislation: Shipping, Harbours and Maritime
Harbours Ordinance, 1988
The Merchant Shipping (Bailiwick of Guernsey) Law, 2002
Security of Ships and Port Facilities Ordinance, 2004
Prevention of Pollution (Guernsey) Law, 1989

³In enforcing the above Health and Safety legislation, regard is had by the Guernsey Health and Safety Executive to the following UK Health and Safety Executive guidance insofar as consistent with Guernsey legislation:

- PADHI – Planning Advice for Developments near Hazardous Installations;
- Land use planning advice around large scale petrol storage sites (SPC/TECH/GENERAL/43).

Legislation relevant to the EIA

Other legislation: Animals and Animal Health

The Animal Welfare (Guernsey) Ordinance, 2012

Policy

- 1.8.10 The following sub-sections summarise the relevant States' land use policies and how they recommend that the environment is considered during the land use planning process. The following sub-sections also identify those environmental objectives identified with the policy documents described.

Strategic Land Use Plan 2011

- 1.8.11 The Strategic Land Use Plan (SLUP) is a statutory document prepared by the Strategic Land Planning Group under the 2005 Planning Law. It sets out a 20-year agenda for land use planning in Guernsey and guides and directs the DPA in the preparation of detailed land use policies set out within the Development Plans. The SLUP concentrates on the action that needs to be taken to use and manage land as a strategic resource, rather than only looking narrowly at individual topics and land supply targets.

- 1.8.12 The SLUP includes ten core objectives "to improve the quality of life of Islanders and to support a successful economy while protecting the Island's environment, unique cultural identity and rich heritage through spatial planning policies" (States of Guernsey, 2011b). These objectives include the following environmental objectives, through ensuring that planning policies enable:

- "the maintenance of a healthy society...that provides for a wide range of leisure opportunities;
- the wise management of Island resources such as land, air quality, energy and water;
- support to be given to corporate objectives and associated policies relating to the conservation of energy, reduction of our carbon footprint, development of renewable energy and adaptation to climate change;
- the protection of local biodiversity and the countryside;
- the enhancement of the culture and identity of Guernsey by protecting local heritage and promoting high standards of new development;
- the management of solid and liquid waste" (States of Guernsey, 2011b).

Island Development Plan 2016

- 1.8.13 The Island Development Plan (IDP) was adopted by the States on 2nd November 2016. It sets out the land use policies for the whole of Guernsey. The plan replaced the Urban Area Plan (UAP) and Rural Area Plan (RAP). The IDP recognises that the current Longue Hogue Reclamation Site is an established location for waste management.

1.8.14 The IDP contains a series of objectives and policies to deliver the IDP's principal aim of helping to maintain and create a socially inclusive, healthy and economically strong Island, while balancing these objectives with the protection and enhancement of Guernsey's built and natural environment and the need to use land wisely. They include the following (relevant) environmental objectives:

- **The most effective and efficient use of land and natural resources:** "Good land use planning is essential in delivering sustainable development, which is about meeting the needs of the present while safeguarding the interests of future generations...realised through:
 - (i) achieving the prudent use of natural resources, including those that may enable the supply of renewable energy;
 - (ii) ensuring the physical and natural environment of the Island is conserved and enhanced;
 - (iii) reducing, where practicable, the Island's contribution to greenhouse gases".
- "The IDP policies have an emphasis towards encouraging brownfield development in the interests of the most effective and efficient use of land and protection of the environment."
- **Manage the built and natural environment:** "the IDP policies must ensure protection of the historic environment, but as part of the wider task of balancing economic, social and environmental objectives.
- The IDP policies must ensure protection of important landscapes and open spaces...Those areas identified as being of particular importance, in environmental terms, include Sites of Special Significance and Areas of Biodiversity Importance."
- **Supporting a healthy and inclusive society:** "The IDP seeks to enable a balance to be achieved between conservation and the needs of disabled people, specifically in relation to Protected Buildings.
- The IDP will support the maintenance and enhancement of access to indoor and outdoor recreation, including informal outdoor recreation, access to the countryside, coastal areas and visual access to open areas" (States of Guernsey, 2016c).

1.8.15 In addition to these environmental objectives, the IDP contains specific policies relating to different environmental receptors and how they must be considered during land use planning. These policies (the 'general policies') will help direct the identification of environmental objectives against which to assess the inert waste management options.

Landscape Character and Open Land

- 1.8.16 Policy GP1 states that “Proposals will not be supported if they would result in the unnecessary loss of open and undeveloped land which would have an unacceptable impact on the open landscape character of an area” (States of Guernsey, 2016c). Consideration of the landscape character type in which a development sits, distinctive landscape features and local distinctiveness, and visual and physical access provision are all required for a development to have adequately taken into landscape character into account.

Sites of Special Significance (SSS)

- 1.8.17 Policy GP2 requires that proposed developments follow the mitigation hierarchy when considering impacts to SSSs, and that development proposals demonstrate that they will not have a negative impact upon SSSs, or that where a negative impact will occur that sufficient mitigation can be provided to ensure no net loss of the SSS special interest features, or where mitigation is not possible that any negative impact can be offset, either on or offsite.

Areas of Biodiversity Importance (ABI)

- 1.8.18 Policy GP3 requires that proposed developments demonstrate that the biodiversity interest of ABIs have been considered as part of the design and development process, with biodiversity interest being protected or enhanced, any negative effects mitigated.

Conservation Areas

- 1.8.19 Policy GP4 requires that development proposals within a Conservation Area conserves and, where possible, enhances the special character, architectural or historic interest and appearance of the particular Conservation Area.

Protected Buildings

- 1.8.20 Policy GP5 requires development proposals to extend or alter a Protected Building demonstrate no negative effect upon the special interest of the building or its setting. There is presumption against demolition of a Protected Building unless it is demonstrated that the Protected Building is structurally unsound, or it can be demonstrated that there are overriding benefits to the population centre in which it is situated.

Protected Monuments

- 1.8.21 Policy GP6 requires development proposals which directly affect a Protected Monument, or the site on which it is located to demonstrate that there will be no negative effect on the special interest of the Protected Monument. There is presumption against demolition of a Protected Monument unless it is demonstrated that the Protected Monument is structurally unsound, is technically incapable of repair and represents a danger to the public.

Archaeological Remains

- 1.8.22 Policy GP7 requires development proposals which directly affect sites or areas of archaeological importance require an archaeological assessment scheme to be agreed with the States. This scheme will include an archaeological investigation or provision of an archaeological watching brief, the details of which are to be agreed with the States. Depending on the nature of the findings, the States may require that the any remains found are preserved in situ.

Sustainable Development

- 1.8.23 Policy GP9 requires developments to consider the use of energy and resources and any negative impact on the environment through paying particular regard to the location, orientation and appearance of the building, the form of construction, the materials used and its resilience to climate change and flooding; and to acceptable impacts on the amenities of neighbouring properties.
- 1.8.24 These obligations set out in these policies apply but the Plan should be read as a whole and where there is a conflict, there is a balance to be made in light of the Principal Aims and objectives of the Plan.

Guernsey Biodiversity Strategy

- 1.8.25 Guernsey's Biodiversity Strategy (States of Guernsey Environment Department, 2015) appraises the current state of Guernsey's ecosystems and identifies the principal threats to its native flora and fauna before outlining a framework for the conservation and enhancement of the island's biodiversity. The strategy includes the following objectives for ensuring the Strategy's overarching aim of conserving and enhancing biological diversity in Guernsey:
- "To conserve and enhance key local, regional and internationally important species, habitats and sites;
 - To ensure that biodiversity objectives and considerations are integral to all States' policy, programmes and action;
 - To increase public awareness and encourage communities and individuals to be involved in the conservation of local biodiversity; and
 - *To monitor and review biodiversity in Guernsey* (States of Guernsey Environment Department, 2015).

Habitat Regulations Assessment

- 1.8.26 The proposed development site is located only 2.1km from the boundary of the Herm, Jethou and The Humps Ramsar Site. The States of Guernsey does not have specific legislation for undertaking appropriate assessment in relation to European Sites, therefore we propose to apply the UK legislation in this instance as best practice.

- 1.8.27 For sites designated under European nature conservation legislation, UK Government policy (ODPM, 2005) states that internationally important wetlands designated under the Ramsar Convention 1971 (Ramsar sites) are afforded the same protection as Special Areas of Conservation (SACs) and Special Protection Areas (SACs) for the purpose of considering development proposals that may affect them.
- 1.8.28 Given the location of the proposed inert waste reclamation facility relatively near to the Ramsar site, there is the potential for change to coastal processes, and therefore impacts to the habitats and species it is designated for. Furthermore, the proposed development is not connected with the management of the Ramsar site therefore, it is considered that the proposed Longue Hougue South will need to comply with the measures set out in the Habitats Directive. Consequently, a 'shadow' Habitats Regulations Assessment (HRA) Screening exercise will be carried out and presented within the ES as part of the EIA process. This exercise will identify likely significant effects of the proposed development on any nearby sites that are protected by the EU Habitats Regulations, and therefore whether Appropriate Assessment is required.

1.9 Project Description

- 1.9.1 The States of Guernsey is seeking to gain planning approval for an extension to an existing inert waste deposit facility at Longue Hougue, on the north-east coast of Guernsey. The need for the project is described in **Section 1.6**. The first stage of the project would consist of the construction of a structure approximately 800m in length and extending up to 210m from the shoreline. The area (approximately 9ha) within the structure would be used as a deposit site for Guernsey's inert waste, with a predicted capacity of 850,000m³ that would take about 12 years to fill.
- 1.9.2 Engineering feasibility (technical, financial, construction method) is being undertaken to ascertain the best practicable option for the breakwater structure (see **paragraph 1.7.11**); either steel sheet piling, concrete caisson, engineered concrete blockwork, or rock armour. The feasible options will be assessed at a high level in the EIA process, with the preferred option carried forward.
- 1.9.3 The design of the breakwater would allow the site to be operational throughout the year, and would protect against a 1:100 year storm event including for sea level rise for a design life of 50 years. During the EIA process the feasibility of different design lives and storm events will be considered in order to finalise the breakwater design and site capacity.
- 1.9.4 Construction of the breakwater is (more) likely to be undertaken using land based plant and machinery, though it will be dependent on the location of the source of rock armour and how this will be transported to site. In the deeper sections, floating equipment may be required. The crest of the breakwater will be used as a temporary construction road and construction will utilise dump trucks, bulldozers, flatbed trucks, and long reach excavators or cranes.

1.9.5 The anticipated breakwater construction sequence detailed in the Breakwater Concept Design Report (Royal HaskoningDHV, 2018) is outlined below:

- Temporary haul roads constructed to site.
- Delivery and stockpile of primary armour layer and underlayer (on foreshore at Longue Hougue South. Delivery of rock either by road or sea or a combination of both dependent upon availability of material on the Island.
- Delivery of quarry run material to site via road.
- End tipping of quarry run material to form core of the breakwater. Core should not be left unprotected. Maximum 30m advance of core without protection is recommended. This can be changed subject to experience and working methods of the Contractor.
- Placement of geotextile along scour apron of breakwater footprint. This may require marine-based techniques in deep water.
- Placement of scour apron and rock toe. This may require marine-based techniques in deep water.
- Placement of underlayer and primary armour layer from breakwater crest (land-based techniques).

1.9.6 Construction is anticipated to take up to 2 years, though this is highly dependent on Contractor engagement and rock sourcing, as well as timings / seasonality.

1.9.7 The States of Guernsey will find an alternative use for the site, once its function as an inert waste facility is complete. This has not yet been determined and will depend on the future requirements of the States of Guernsey. This report does not consider the future use of the site.

1.10 EIA Methodology

Introduction

1.10.1 The EIA will consider all relevant topics covered under the three general areas of physical environment, biological environment, and human environment.

1.10.2 The EIA will be carried out in accordance with the Schedule 3 of the Land Planning and Development (EIA) Ordinance 2007 (see **paragraph 1.8.2**). Furthermore, the approach to the EIA and the production of the resulting ES will closely follow relevant guidance including:

- Land Planning and Development (Guernsey) Law 2005;
- Land Planning and Development (General Provisions) Ordinance 2007;
- States' policies such as the Strategic Land Use Plan 2011 and the Island Development Plan 2016; and

- Relevant UK and EU Directives for environmental quality standards (such as 2006/7/EC, 2008/105/EC and 2008/50/EC).

1.10.3 It will also give due regard to the requirements of the UK Habitat and Species Regulations 2010, and the UK Marine and Coastal Access Act 2009 as best practice.

Stakeholder Consultation

Previous Consultation

1.10.4 The selection of the Longue Hougue South Inert Waste Facility has been based on previous consultation for the following:

- Options Review - Desk top review of the strategic policy context for inert waste management in Guernsey – adopted waste strategy (Waste Management Plan); strategic and detailed land use planning policy; and relevant legislation.
- Inert Waste Management Capacity Assessment - Outline of the current inert waste streams and management on Guernsey, and predicted future inert waste volumes.
- The Inert Waste Management Strategy.
- A draft of the Inert Waste Management Strategy was provided for comment in April 2017. The workshops and external consultation were used to shape the final parameters used for the BPEO assessment to identify the preferred shortlist.
- The draft high level EIA Scoping Report and EIA Environmental Report (that were prepared for and included within the Inert Waste Management Strategy) were circulated for stakeholders to give further feedback on environmental, social and economic factors that influenced the BPEO assessment.

Scoping Consultation

1.10.5 The aim of this will be to maintain engagement and consultation with key stakeholders through scoping and the likely considerations and expectations for the EIA regarding potential constraints, baseline requirements, potentially significant impacts to consider, and further detail on potential opportunities. This has or will be undertaken by:

- Contacting key data holders and interested parties requesting further data associated with the project's study area (this would initially be undertaken by phone and possibly email or telephone);
- Carrying out discussions (including teleconferences and meetings) with key States of Guernsey stakeholders to confirm the EIA Scope in order to gain feedback on social, environmental, and technical aspects.
- Circulating the final draft Scoping Opinion to external stakeholders, followed by meetings to discuss any concerns.
- We have identified key stakeholders (organised groups) with whom to circulate the draft Scoping Opinion using our knowledge and knowledge from the planning

team. We would circulate (digitally - by direct email) a copy of the draft Scoping Opinion.

- 1.10.6 In addition, a public exhibition on the draft Scoping Opinion and Design Options will be held in January / February 2019 alongside publication of a summary of the draft EIA Scoping Report on the States' website, and a request for any issues or anecdotal information or concerns made.
- 1.10.7 We propose to hold meetings with Key Stakeholders in February / March 2019 after receiving comments on the draft Scoping Opinion to run through the approach to EIA and the initial issues we have identified to garner their concerns.
- 1.10.8 We also propose to hold a community / stakeholder exhibition, approximately at the time when initial assessments have been completed on the EIA (expected to be around mid-April / May 2019).
- 1.10.9 A summary of all consultation undertaken over the lifetime of the development will be included as an Appendix to the draft Environmental Statement.

Characterisation of the Existing Environment

- 1.10.10 The characterisation (description) of the existing environment will be undertaken in order to determine the baseline conditions in the area covered by Longue Hougue South and relevant surrounding study areas. This entails the following steps:
 - Study areas will be defined for each receptor based on the relevant characteristics of the receptor (e.g. mobility/range);
 - Review of the available information;
 - Review of the likely or potential impacts that might be expected to arise from the development;
 - Determine if sufficient data to make the EIA judgements with sufficient confidence;
 - If further data required, ensure that data gathered are targeted and directed at answering the key question and filling key data gaps; and
 - Review the information gathered to ensure the environment can be sufficiently characterised in sufficient detail.
- 1.10.11 The States has collated a significant amount of existing data from a number of sources including:
 - High Level EIA undertaken for the previous phase of site selection (Royal HaskoningDHV, 2017a);
 - High Level EIA Scoping Report undertaken for the previous phase of site selection (Royal HaskoningDHV, 2017c); and
 - Previous reports and environmental assessments in the States of Guernsey.

- 1.10.12 Consideration will also be given to the evolution of the baseline in the absence of the development (described as the 'do nothing' scenario), this will take account of current trends such as climate change and biodiversity loss.
- 1.10.13 The specific approach to establishing a robust baseline (upon which impacts can be assessed) is set out under each parameter within this draft Scoping Opinion (**Section 2**). It is envisaged that this approach will be subject to review following the receipt of the advice and comments from the States of Guernsey's Planning Department and other consultation with statutory bodies. It is also recognised that this approach may evolve over time with the collection of new data (including surveys) from the study area and as the design of the project advances.

Assessment of the Project Impacts

- 1.10.14 The approach to making balanced assessments will be guided by both EIA specialists and technical specialists using available data, new data, experience, and expert judgement. In order to provide a consistent framework and system of common tools and terms, where appropriate, a matrix approach will be used to frame and present the judgements made. However, it should be noted that for each topic of the EIA, the latest guidance or best practice will be used and therefore definitions of sensitivity and magnitude of impact will be tailored to each receptor. The impact assessment will consider the potential for impacts during the construction and operation of Longue Hougue South. It does not consider re after use of the site, because this detail is not yet agreed. Any future use would be subject to relevant planning permission and the necessary work required to support such an application.

Determining Receptor Sensitivity and Value

- 1.10.15 The characterisation of the existing environment will help to determine the receptor sensitivity in order to assess the potential impacts upon it.
- 1.10.16 Receptor value considers whether, for example, the receptor is rare, has protected or threatened status, importance at local, regional, national or international scale, and in the case of biological receptors whether the receptor has a key role in the ecosystem function. These considerations are balanced against the properties of the receptor under consideration.
- 1.10.17 The ability of a receptor to adapt to change, tolerate, and/or recover from potential impacts will be key in assessing its sensitivity to the impact under consideration. For ecological receptors tolerance could relate to short-term changes in the physical environment, for human environment receptors tolerance could relate to displacement effects and therefore impacts upon economics or safety. It also follows that the time required for recovery will be key considerations in determining receptor sensitivity.
- 1.10.18 The overall receptor sensitivity is determined therefore by considering a combination of value, adaptability, tolerance and recoverability and applying professional judgement and / or past experience.

1.10.19 Note that expert judgement is particularly important when determining the sensitivity of receptors. For instance, an Annex II species (under the Habitats Directive) would have a high value, but if it was highly tolerant of an impact or had high recoverability it would follow that the sensitivity in this instance should reflect the ecology rather than default to protected status taking precedence.

Predicting the Magnitude of Project Impacts

1.10.20 In order to predict the significance of an impact it is fundamental to establish the magnitude and probability of an effect occurring through a consideration of:

- Scale or spatial extent (small scale to large scale or most of the population or a few individuals);
- Duration (short-term to long-term);
- Frequency; and
- Nature of change relative to the baseline.

Evaluation of Significance

1.10.21 Subsequent to establishing the sensitivity and magnitude of an effect, the impact significance will be predicted by using quantitative or qualitative criteria, as appropriate to ensure a robust assessment. Where possible a matrix such as the one presented in **Table 1.8** will be used to aid assessment of impact significance based on expert judgement. For each section of the ES, the best methodology (based on the latest available guidance) will be followed and, when more appropriate, another approach than the matrix may be used.

Table 1.8 Impact Significance Matrix

		Magnitude			
		High	Medium	Low	Negligible
Sensitivity	High	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Minor
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Minor	Negligible	Negligible	Negligible

1.10.22 **Table 1.9** provides an indication of the significance definitions that The States proposes to use in the assessment process for the majority of parameters.

Table 1.9 Impact significance definitions

Impact Significance	Definition
Major negative	Very large or large change in receptor condition which are likely to be important considerations at a regional or district level because they contribute to achieving national, regional or local objectives, or, could result in exceedance of statutory objectives and/or breaches of legislation.
Moderate negative	Intermediate change in receptor condition, which are likely to be important considerations at a local level.
Minor negative	Small change in receptor condition, which may be raised as local issues but are unlikely to be important in the decision-making process.
Negligible	No discernible change in receptor condition.
Minor positive	The impact is of minor significance, but has been assessed as having some environmental benefit.
Moderate positive	The impact is assessed as providing a moderate gain to the environment.
Major positive	The impact is assessed as providing a significant positive gain to the environment.

- 1.10.23 A description of the approach to impact assessment and the interpretation of significance levels will be provided within each section of the ES. This approach will ensure that the definition of impacts is transparent and relevant to each topic under consideration.

Confidence

- 1.10.24 Once an assessment of a potential impact has been made, it is necessary to assign a confidence value to the assessment to assist in the understanding of the judgment. This is undertaken on a simple scale of high-medium-low, where high confidence assessments are made on the basis of robust evidence, with lower confidence assessments being based, for example on extrapolation and use of proxies.

Mitigation Measures

- 1.10.25 Where the impact assessment identifies that an aspect of the development is likely to give rise to significant negative environmental impacts, mitigation measures will be proposed and discussed with the relevant authorities to prevent (avoid) or minimise the impact(s) such that they are reduced to acceptable levels. We would also seek to identify and use mitigation measures to enhance the environment where possible and relevant. Where mitigation measures are identified, we will provide an understanding of the likely success of the measure(s) and the magnitude of reduction of an effect that they are predicted to result in.

1.10.26 For the purposes of the EIA, two types of mitigation have been defined, and these will be identified in the ES:

- Embedded mitigation, consisting of mitigation measures that are identified and adopted as part of the evolution of the project design; and
- Additional mitigation, consisting of mitigation measures that are identified during the EIA process to reduce or eliminate any predicted impacts, which are subsequently adopted by The States as project commitments.

Assessing Residual Impacts

1.10.27 Following identification of mitigation measures, impacts will be re-assessed and all residual impacts will be described. Where no mitigation measure is proposed, a statement will be made to explain why the impact cannot be reduced.

Cumulative Impacts

1.10.28 Cumulative assessment forms part of the EIA process. Schedule 2 of The Land Planning and Development (Environmental Impact Assessment) Ordinance 2007 sets out the requirement to assess the impact of the development in combination with any other activity having an effect in the same area.

1.10.29 The scope of the cumulative assessment (in terms of relevant issues and projects) will be established with consultees (including other developers) as the EIA progresses. **Section 2.17** of this draft Scoping Opinion provides a high-level discussion of potential cumulative considerations that are believed to require inclusion within the EIA.

1.10.30 Only projects which are reasonably well described and sufficiently advanced to provide information on which to base a meaningful and robust assessment will be included in the cumulative assessment.

1.10.31 Offshore cumulative impacts may come from interactions with the following activities and industries:

- Tidal / marine current hydropower;
- Aggregate extraction and dredging;
- Licensed disposal sites;
- Navigation and shipping;
- Commercial fisheries;
- Sub-sea cables and pipelines;
- Potential port/harbour development; and
- Oil and gas activities.

1.10.33 Onshore plans or projects that may be considered include (but not limited to):

- Energy generation infrastructure;
- Building/housing developments;
- Installation or upgrade of roads;
- Installation or upgrade of cables and pipelines; and
- Coastal protection works.

1.10.34 The full list of plans or projects to be included in the cumulative assessment will be developed as part of on-going consultation with technical consultees.

Environmental Statement Structure

1.10.35 The ES will document the EIA process and will describe the project and the EIA process with regard to the latest legislation, policy and guidance. Subject to the outcomes of the scoping process, the ES will comprise the following documents, parts and chapters:

- Non-Technical Summary;
- Introduction:
 - Need for the Project;
 - Policy and Legislative Context;
 - Site Selection and Assessment of Alternatives;
 - Project Description; and
 - EIA Methodology.
- Topic Specific Chapters which will include the following subsections:
 - Introduction;
 - Data Sources;
 - Baseline;
 - Do Nothing Scenario;
 - Impacts During Construction phase (including mitigation);
 - Impacts During Operational Phase (including mitigation)
 - Cumulative Impacts.
- The list of Topic Specific Chapters includes:
 - Coastal Processes;
 - Marine Sediment and Water Quality;
 - Surface Water and Flooding;
 - Land Use, Land Quality, Soil Quality, Geology and Hydrogeology;

- Traffic and Transport;
- Air Quality;
- Noise and Vibration;
- Population and Human Health;
- Material Assets (Archaeology, Culture and Built Heritage);
- Landscape and Visual Character;
- Marine Ecology;
- Terrestrial Ecology and Ornithology;
- Natural Capital; and
- Climatic Factors.
- Summary and Conclusions; and
- Appendices.

2 Potential Impacts

2.1 Introduction

- 2.1.1 The following sections summarise the baseline conditions for the environmental receptors in terms of features, characteristics, general trends and key issues relevant to inert waste management in order to influence the detailed design of the proposed Inert Waste Reclamation Facility.
- 2.1.2 A robust baseline ensures appropriate environmental effects are considered at the next stage of the EIA process. The baseline also plays a vital role in identifying key features and issues for consideration in the development of the design, and focussing the assessment on key issues of importance.

2.2 Data Sources

- 2.2.1 In order to inform the baseline environment, **Table 2.1** presents the data sources used.

Table 2.1 Data Sources Used to Inform the Baseline Environment

Data sources	Author	Date
Belle Grève Bay Guernsey Hydrographic and Geophysical Survey. Report No. D88148	Osiris Seaway Limited	1989
Outline and Guide to the Geology of Guernsey	Roach, R.A., Topley, G.C., Brown, M., Bland, A.M., D'Lemos, R.S.	1991
Guernsey Strategy for Coastal Defence and Beach Management. Volume I – Strategy Report	States of Guernsey	1999
Guernsey Water Business Plan 2009 - 2019	Guernsey Water	2009
Habitat Survey of Guernsey, Herm and Associated Islands 2010	States of Guernsey Environment Department	2010
UK Overseas Territories and Crown Dependencies: 2011 Biodiversity snapshot	Joint Nature Conservancy Council	2010
The Strategic Land Use Plan	States of Guernsey	2011
Guernsey Coastal Defences Flood Risk Assessment Studies, March 2012	Royal HaskoningDHV	2012
Coastal Defence Flood Studies, Billet D'État XV, July 2013	States of Guernsey Environment Department	2013

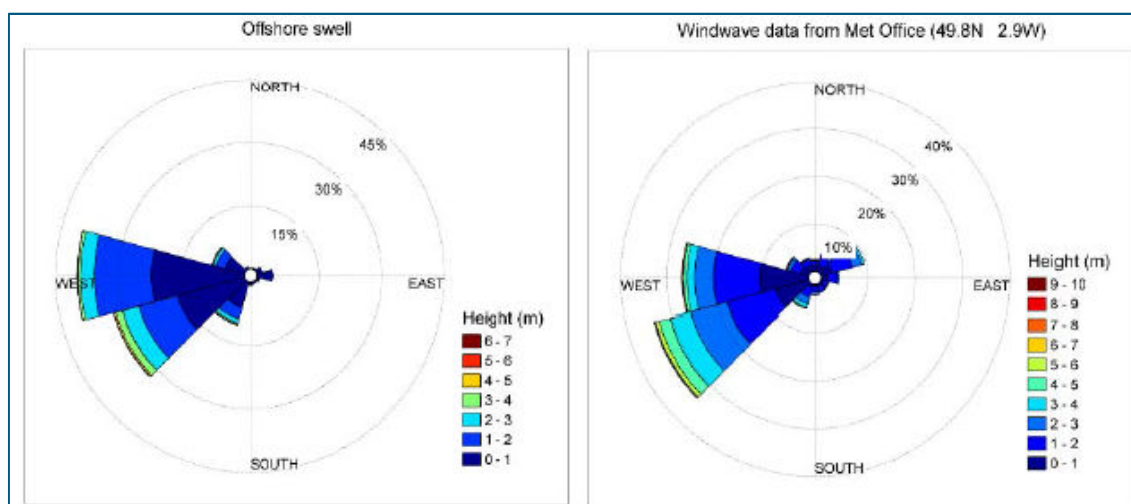
Data sources	Author	Date
Guernsey Character Study (Stage 1), June 2013	States of Guernsey Environment Department	2013
Guernsey Conservation Area Study	States of Guernsey Environment Department	2013
Sites of Special Significance and other designated Nature Conservation Sites	States of Guernsey Environment Department	2013
Guernsey Annual Greenhouse Gas Bulletin	States of Guernsey Policy Council	2014
Air Quality in Guernsey Screening and Assessment Document, July 2015	Office of Environmental Health and Pollution Regulation	2015
Safeguarding Guernsey's Wildlife: A Biodiversity Strategy for Guernsey	States of Guernsey Environment Department	2015
Waste Development at Longue Hogue. Environmental Statement - Volume 6 Water Environment	Amec Foster Wheeler Environment & Infrastructure UK	2015
Guernsey Facts and Figures 2016	States of Guernsey	2016
Environmental Impact Assessment of the draft Island Development Plan: Environmental Statement, February 2015 (as updated April 2016)	States of Guernsey	2016
Island Development Plan: Written Statement and Proposals Map, November 2016	States of Guernsey	2016
Guernsey Inert Waste Management Strategy High Level EIA	Royal HaskoningDHV	2017
Inert Waste Management Strategy Options Report	Royal HaskoningDHV	2017
Guernsey Inert Waste Management Strategy High Level EIA Scoping Report	Royal HaskoningDHV	2017
Longue Hogue South Breakwater Concept Design Report	Royal HaskoningDHV	2018

2.3 Coastal Processes

Baseline Environment

- 2.3.1 Guernsey is exposed to waves from all directions. The conditions include wind waves generated locally arriving from the directions of the coasts of France and England, and swell propagating down the English Channel and diffracting around the Cherbourg Peninsula, as well as swell arriving from the north Atlantic. The dominant wave climate and the most severe conditions originates from the west, arriving either as north Atlantic long period swell, or as shorter period wind-waves, generated more locally by south-westerly storms. Typical offshore wave roses for swell and locally generated waves are shown in **Figure 2.1** (Royal Haskoning, 2012).

Figure 2.1 *Typical Offshore Wave Climate of Swell (left) and Wind-wave (right) (Royal Haskoning, 2012)*



- 2.3.2 Although the prevailing wind direction is westerly, the eastern coastline of Guernsey is partly sheltered by the French Normandy coast and the Island of Herm. Therefore, the east coast of the island experiences less severe wave conditions than the west (Amec Foster Wheeler, 2015).
- 2.3.3 Depths within the site range from -8mLOD to highest tide level (see **Table 2.2**). The depth within the site therefore ranges up to 13m, but with infill capacity ranging up to 15.5m or more in the deepest sections. Approximately 30% of the development is underwater at all times, with 10% above highest tide level, and the remainder intertidal.
- 2.3.4 Tidal currents around the Channel Islands tend to be strong, with peaks of 2.7m/s at the Little Russel Channel (States of Guernsey, 1999). Tides at St. Peter Port are regular and semi-diurnal, with predicted spring and neap tide ranges of 7.9m and 3.4m, respectively (Admiralty Tide Tables, 2018)). **Table 2.2** presents the tide data for the area.

Table 2.2 Characteristic Tide Levels at St Peter Port

Stage	Level (m)	
	Chart Datum	Local Ordnance Datum
Highest Recorded Tide (1998 to 2010)	10.7	5.64
Highest Astronomical Tide	10.3	5.24
Mean High Water Springs	9.3	4.24
Mean High Water Neaps	7.0	1.94
Ordnance Datum	5.06	0
Mean Low Water Neaps	3.6	-1.46
Mean Low Water Springs	1.4	-3.46
Chart Datum	0	-5.06

- 2.3.5 The proposed development will be placed on the western side of Belle Grève Bay and south of Longue Hougue. A hydrogeological survey carried out in 1989 found a fast tidal stream causing over falls and standing waves throughout the area (Osiris Seaway Limited, 1989).
- 2.3.6 In Belle Grève Bay, Royal Haskoning (2012) showed that typical wave heights reach approximately 2m on severe conditions, with wave periods in the order of 6 seconds to 7 seconds. The dominant wave direction is from the south-east at the shoreline. The bay can be affected by longer period swell but this has a lower wave height, although these waves are of significantly greater wave period. Royal Haskoning (2012) presented the distribution of typical wave heights and direction as a wave rose at four inshore locations around Belle Grève Bay (**Figure 2.2**), together with a wave rose for slightly further offshore (nearshore wave climate determined at St. Peter Port).
- 2.3.7 The bay gains significant shelter because of St. Peter Port to the south and the land-claim to the north. The northern section of the bay is more exposed than the frontage to the south. Predominant waves tend to approach the southern defences (DU9 through to DU5) at a slightly oblique angle to the alignment of the defences. Waves approach DU4 more normal to the shoreline encouraging the development of the shingle bank in this area. A summary of worse case wave heights and wave period at Longue Hougue South are shown in **Table 2.3**.

Figure 2.2 Predicted Locally Generated Wave Conditions within Belle Grève Bay (Royal Haskoning, 2012)

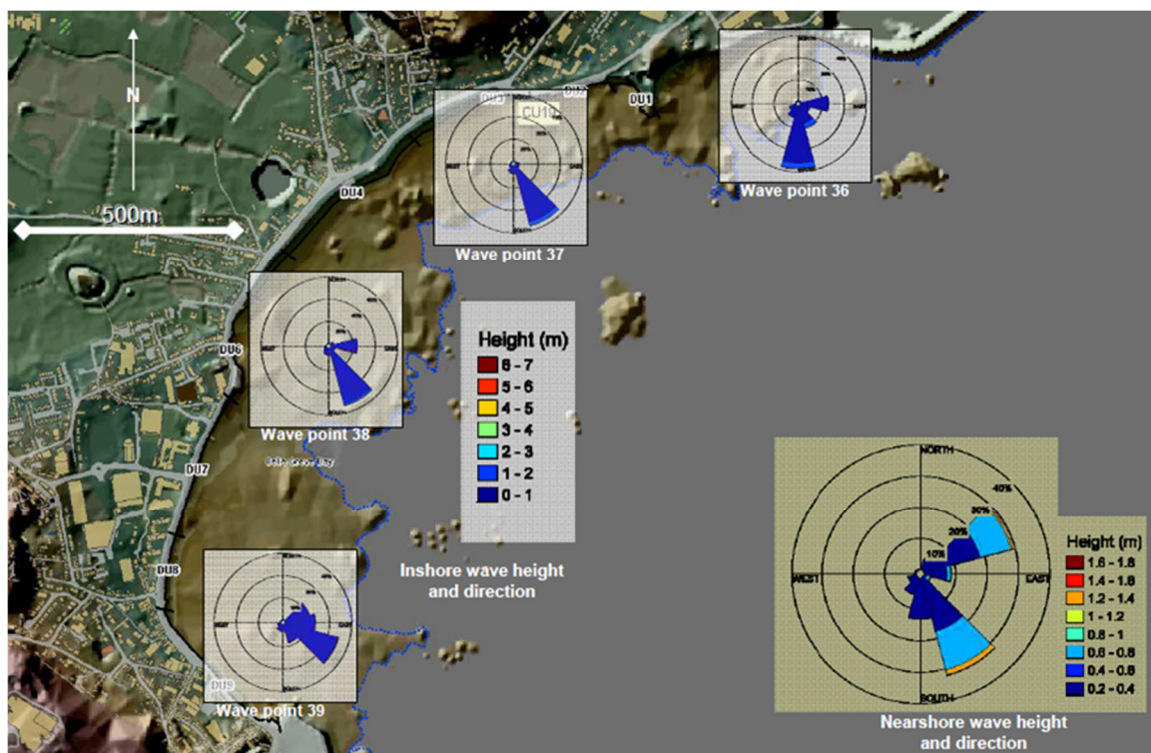


Table 2.3 Design Wave Heights and Periods at Longue Hougue South and Immediately to its South

Frequency	Longue Hougue South		South of Longue Hougue South	
	Wave Height (m)	Period (s)	Wave Height (m)	Period (s)
Locally Generated Waves				
1-year	1.7	7.2	1.7	7.2
10-year	1.8	7.2	1.7	7.2
50-year	1.8	7.2	1.7	7.2
100-year	1.8	7.2	1.7	7.2
250-year	1.8	7.2	1.7	7.2
Swell Waves				
1-year	0.4	11.7	0.4	11.7
10-year	0.5	12.5	0.5	12.5
50-year	0.5	13.0	0.5	13.0
100-year	0.6	13.3	0.6	13.3
250-year	0.6	13.6	0.6	13.6

- 2.3.8 The bathymetry across the bay is variable with large rock outcrops that are revealed at low water. The seabed types recorded in the 1989 survey were Rock, Rock and Sand and Sand. Subsequently, an intertidal survey was commissioned for the current Longue Hougue Waste Reclamation Facility using The Marine Habitat Classification for Britain and Ireland (Connor, 2004). The survey found a variety of substrates including bedrock, boulders, cobbles, coarse sediments and debris. The most common habitat biotopes included LR.HLR.MusB.Sem and LR.HLR.MusB.Sem.Sem consisting of barnacle mosaics associated with high energy characteristics on littoral stable bedrock (States of Guernsey Environment Department, 2015). The bedrock below the proposed Longue Hougue South site is Precambrian St. Peter Port Gabbro, which is rare due to its composition of multiple hornblende-bearing gabbros (Roach et al., 1991, Nash & Townsend, 2016). Natural exposure of St. Peter Port Gabbro occurs on the shore platform along the east coast of Guernsey between St. Sampson and St. Peter Port, including Longue Hougue South (Topley *et al.*, 1990).

Potential Impacts during Construction

Effects on Hydrodynamic Regime (Waves and Tidal Currents)

- 2.3.9 The Project has the potential to affect local waves and tidal currents during construction of the breakwater.

Effects on Suspended Sediment Concentrations and Transport

- 2.3.10 The construction of the breakwater may cause changes to the concentrations of suspended sediments and their transport patterns within Belle Grève Bay.

Potential Impacts during Operation

Effects on hydrodynamic regime (waves and tidal currents)

- 2.3.11 The Project has the potential to affect local waves and tidal currents.

Effects on Suspended Sediment Concentrations and Transport

- 2.3.12 Once constructed, the site has the potential to change sediment transport patterns along a geomorphologically active section of coastline. The existing Longue Hougue Inert Waste Facility already provides a feature affecting sedimentation locally, and the new land reclamation may move this process further along the coast and impact on other areas.

Potential In-combination Impacts

Potential Impacts on Marine Ecology

- 2.3.13 A change in suspended sediment concentrations, sediment transport and wave dynamics could have an impact on marine ecological receptors in the local area.

Summary of Impacts

- 2.3.14 **Table 2.4** summarises the potential effects on coastal processes that have been scoped in and scoped out of the Environmental Statement.

Table 2.4 Summary of Impacts Relating to Coastal Processes

Potential impacts	Scoped in?	
	Construction	Operation
Effects on hydrodynamic regime (waves and tidal currents)	Yes	Yes
Effects on suspended sediment concentrations and transport	Yes	Yes
In-combination impacts	Yes	Yes

Mitigation Measures

- 2.3.15 The requirement for and approach to mitigation will be determined during the impact assessment process.

Approach to Assessment and Data Gathering

- 2.3.16 Impacts will be considered on sensitive receptors within the water environment between Bordeaux Harbour to the north, St Peter Port Southern Breakwater to the south and 5km to the east of the proposed development.
- 2.3.17 A survey will be undertaken to develop a more detailed understanding of the marine environment adjacent to the Project area, which comprises a marine benthic (and particle size) survey including 20 sample stations and drop-down video (DDV) survey stations. Modelling will be carried out to develop a more detailed understanding of the hydrodynamic conditions of the Project area using Royal HaskoningDHV's established English Channel Regional Model refined and updated for the Guernsey coastline.
- 2.3.18 Our English Channel Regional Model has been calibrated and verified against astronomic and measured tidal levels and measured tidal currents around both sides of the English Channel, including tide gauge data recorded at St Peter Port, Guernsey. The model has not been fully calibrated because no measured tidal current data was available around the Guernsey coast. Since the model has been calibrated against tidal level data recorded at St Peter Port, we believe the tidal hydrodynamics of the region is well captured by the model. Model calibration on tidal currents is usually position specific and often associated with accuracy of local bathymetry. Therefore, we believe the model has sufficient accuracy for the purposes of environmental impact assessment.
- 2.3.19 The model mesh will be refined around the Longue Hougue coast with higher grid resolution and updated with the latest bathymetry data (as discussed with the Assistant Harbour Master). The refined and updated model will be run for the existing coastline/bathymetry and with the breakwater in place; in addition, a run will be made of partial breakwater completion to ascertain whether there are any risks of erosion during completion of the construction phase. The model results will be compared at peak ebb

and flood tides and bed shear stresses at both spring and neap tides. The difference will be presented in both contour plots for the area and tables for selected locations.

- 2.3.20 Areas of potential sediment mobility will be defined based on a comparison of the peak bed shear stresses with the sea bed sediment data. A numerical modelling technical note will be prepared to describe input data and model configuration to support the interpretation of the outputs for inclusion in the EIA.

2.4 Marine Sediment and Water Quality

Baseline Environment

- 2.4.1 Weekly monitoring is undertaken by the States of Guernsey's Office of Environmental Health & Pollution Regulation department at 13 locations around the coast, these are considered to be historically important monitoring locations. Water quality is tested in accordance with the EU Bathing Water Quality Directive standards and reported for the period between April and September (although monitoring occurs throughout the year).
- 2.4.2 The water collected during monitoring is tested for *Escherichia Coli* and *Intestinal Enterococci*. The closest monitoring location to the project site is Bordeaux, approximately 1km to the north.
- 2.4.3 The 2017 sampling data for Bordeaux is provided in **Table 2.5**. The four-year classification between 2014 and 2017 was Good and the most recent sample taken (25/9/2018) was Excellent (States of Guernsey, 2018b).

Table 2.5 WFD Bathing Water Quality Sampling Results for 2017

Sampling Date	Escherichia coli (no. per 100ml)	Intestinal enterococci (no. per 100ml)	Standard
16/05/2017	23	12	Excellent
23/05/2017	28	6	Excellent
31/05/2017	12	6	Excellent
06/06/2017	54	22	Excellent
13/06/2017	22	15	Excellent
20/06/2017	22	17	Excellent
27/06/2017	10	4	Excellent
04/07/2017	18	2	Excellent
11/07/2017	30	24	Excellent
18/07/2017	12	6	Excellent

Sampling Date	Escherichia coli (no. per 100ml)	Intestinal enterococci (no. per 100ml)	Standard
25/07/2017	9	7	Excellent
01/08/2017	7	7	Excellent
08/08/2017	21	11	Excellent
15/08/2017	8	10	Excellent
22/08/2017	57	25	Excellent
30/08/2017	250	250	Poor
05/09/2017	32	21	Excellent
12/09/2017	28	22	Excellent
19/09/2017	20	13	Excellent
27/09/2017	19	14	Excellent

- 2.4.4 The proposed development is located near to (**Figure 2.3**) Belle Grève Outflow. Temporary changes to tidal flows during construction could affect dispersion patterns from the outfall which could cause a deterioration in water quality parameters.

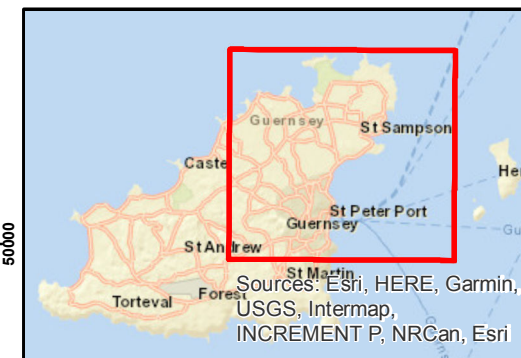
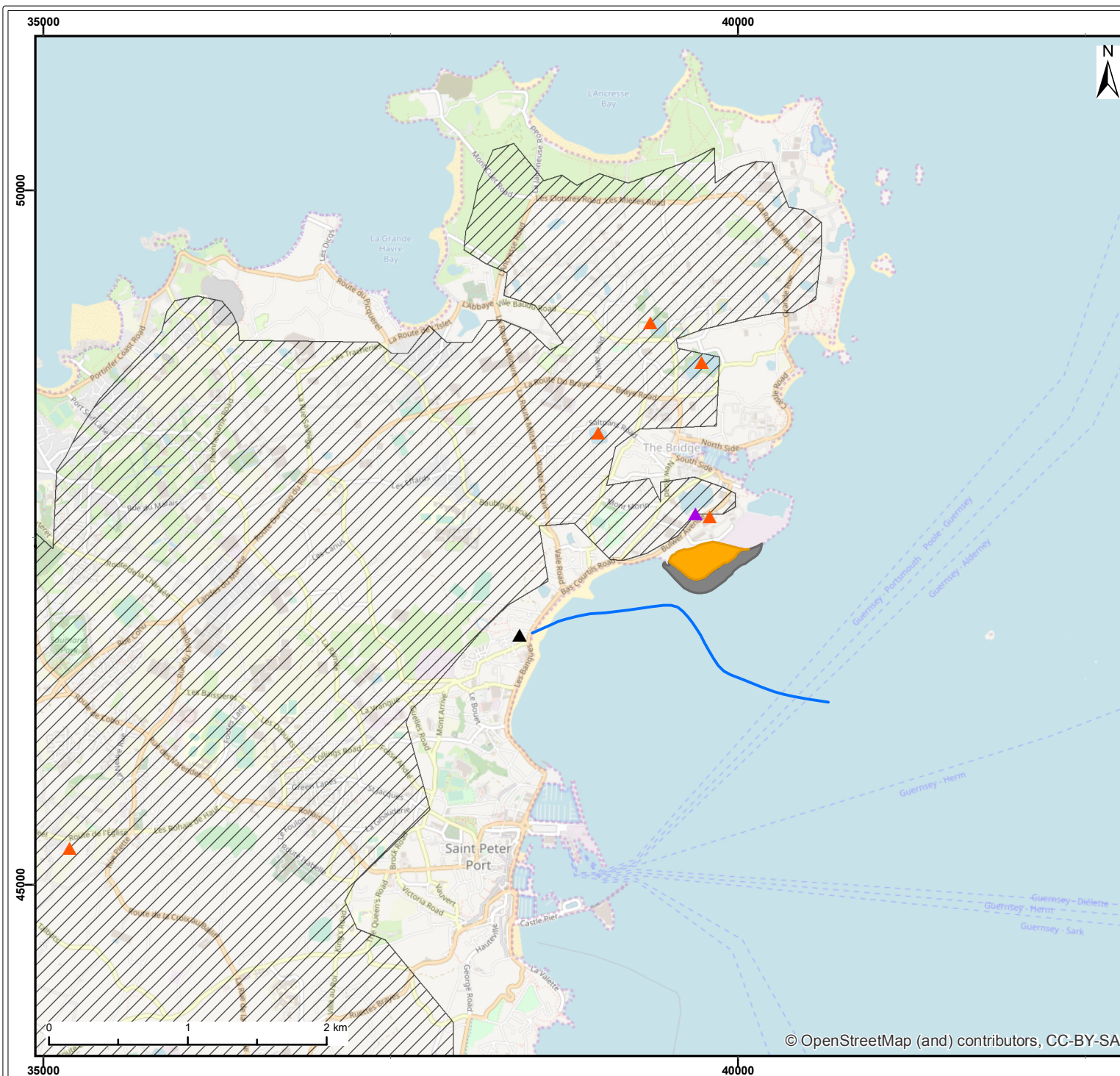
Potential Impacts during Construction

Deterioration in Water Quality due to Increased Suspended Sediment Concentrations

- 2.4.5 An increase in suspended sediments is possible during construction of the breakwater. The significance of impacts associated with temporary increases in suspended sediment will be dependent on the habitats and communities present within the offshore area (see **Section 2.13**).

Release of Contaminated Sediments

- 2.4.6 As sediments are re-suspended, contaminants may be re-mobilised into the water column causing a reduction in water quality. Sediment grain size is a significant factor that controls the capacity for both suspended and bed sediments to concentrate and retain metals and organic pollutants (Horowitz, & Elrick 1987). Finer sediments (clay and silt fractions) have a greater absorbing capacity and, therefore retain higher concentrations of contaminants. The mobile sediments present in the survey area are expected to be composed almost exclusively of cobbles, shingle, and sand and therefore pose a low risk of contaminant release. There will therefore be no potential for reduction in water quality from the release of contaminated sediments, this has been scoped out of the Environmental Statement.



Legend:

-  Breakwater
-  Infill Area
-  Guernsey Water Catchment
-  Long Sea Outfall
-  Wastewater Treatment Centre
-  Water Storage Reservoir
-  Water Treatment Works

Guernsey Government, 2018
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Client:	Project:
States of Guernsey	Longue Hougue South Informal EIA Scoping Report

Title:
Location of Water Receptors

45000

Figure: 2.3		Drawing No: PB5312-200-003			
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	05/11/2018	GC	PT	A4	1:40,000
02	10/12/2018	FC	PT	A4	1:40,000

Co-ordinate system: Guernsey Grid



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Accidental Release of Contaminants

- 2.4.7 As with all construction, there is a risk of accidental pollution events resulting in a degradation of water quality. The impact of this impact will be reduced through The States' use of good practice techniques and procedures throughout all construction activities. These will be stated within the ES and will be secured through commitment to a relevant certified document such as a Marine Contingency Pollution Plan. This commitment ensures the use of appropriate preventative measures and serves as an embedded mitigation against all types of pollution incidents. However, the risk of the impact occurring remains, therefore it has been scoped in.

Deterioration in Water Quality due to Changes in Hydrodynamic Regime

- 2.4.8 The site is located near to the Belle Grève Outflow (see **Figure 2.3**), at its closest point the outfall pipe is located approximately 125m from the proposed development the outfall discharge being approximately 1,200m from the closest point of the proposed development. Temporary changes to tidal flows during to construction could affect dispersion patterns from the outfall which could cause a deterioration in water quality parameters.

Potential Impacts during Operation

Release of Contaminated Sediments

- 2.4.9 There is a risk that the deposited material could be transported through the breakwater and into the surrounding environment. This impact has been scoped in to the Environmental Statement.

Accidental Release of Contaminants

- 2.4.10 The States is committed to the use of good practice techniques and procedures throughout all operational activities. These will be stated within the ES and will be secured through commitment to a relevant certified document such as a Pollution Prevention Plan. This commitment ensures the use of appropriate preventative measures and serves as an embedded mitigation against all types of pollution incidence. There remains a risk that there may be an accidental discharge during operation of the inert waste facility, therefore this has been scoped in the to the Environmental Statement. Deterioration in Water Quality due to Increased Suspended Sediment Concentrations
- 2.4.11 During operation, there could be an increase in suspended sediment concentrations as tipped material is released through the breakwater structure. Changes to coastal processes could also increase the amount of material eroded and re-suspended in locations around the site, which could result in a deterioration in water quality.

Deterioration in Water Quality due to Long-term Changes in the Hydrodynamic Regime

- 2.4.12 The site is located adjacent to the Belle Grève Outflow (see **Figure 2.3**), the end of the outfall is located approximately 1,200m from the proposed development. Changes to currents and flows due to the presence of the breakwater could affect dispersion from outfall which in turn could cause a deterioration in water quality parameters.

Summary of Impacts

- 2.4.13 **Table 2.6** summarises the potential effects on marine sediment and water quality that have been scoped in and scoped out of the Environmental Statement.

Table 2.6 Summary of Impacts Relating to Marine Sediment and Water Quality

Potential impacts	Scoped in?	
	Construction	Operation
Release of contaminated sediments	Yes	Yes
Accidental release of contaminants	Yes	Yes
Deterioration in water quality due to increased suspended sediment concentrations	Yes	Yes
Deterioration in water quality due to changes in hydrodynamic regime	Yes	Yes

Mitigation Measures

- 2.4.14 As outlined above, best practice guidance and relevant mitigation plans will aid prevention and containment of accidental spills.

Approach to Assessment and Data Gathering

- 2.4.15 A survey will be undertaken to develop a more detailed understanding of the marine environment adjacent to the Project area, which comprises a marine benthic (and particle size) survey including 20 sample stations and drop-down video (DDV) survey stations.
- 2.4.16 Modelling of physical processes described in **Section 2.3** will allow for prediction of changes in suspended sediments, which will then be applied to assessing the impact on water quality. The particle size results will aid the coastal modelling by aiding the determination of the settlement rates of the sediments present.

2.5 Surface Water and Flooding

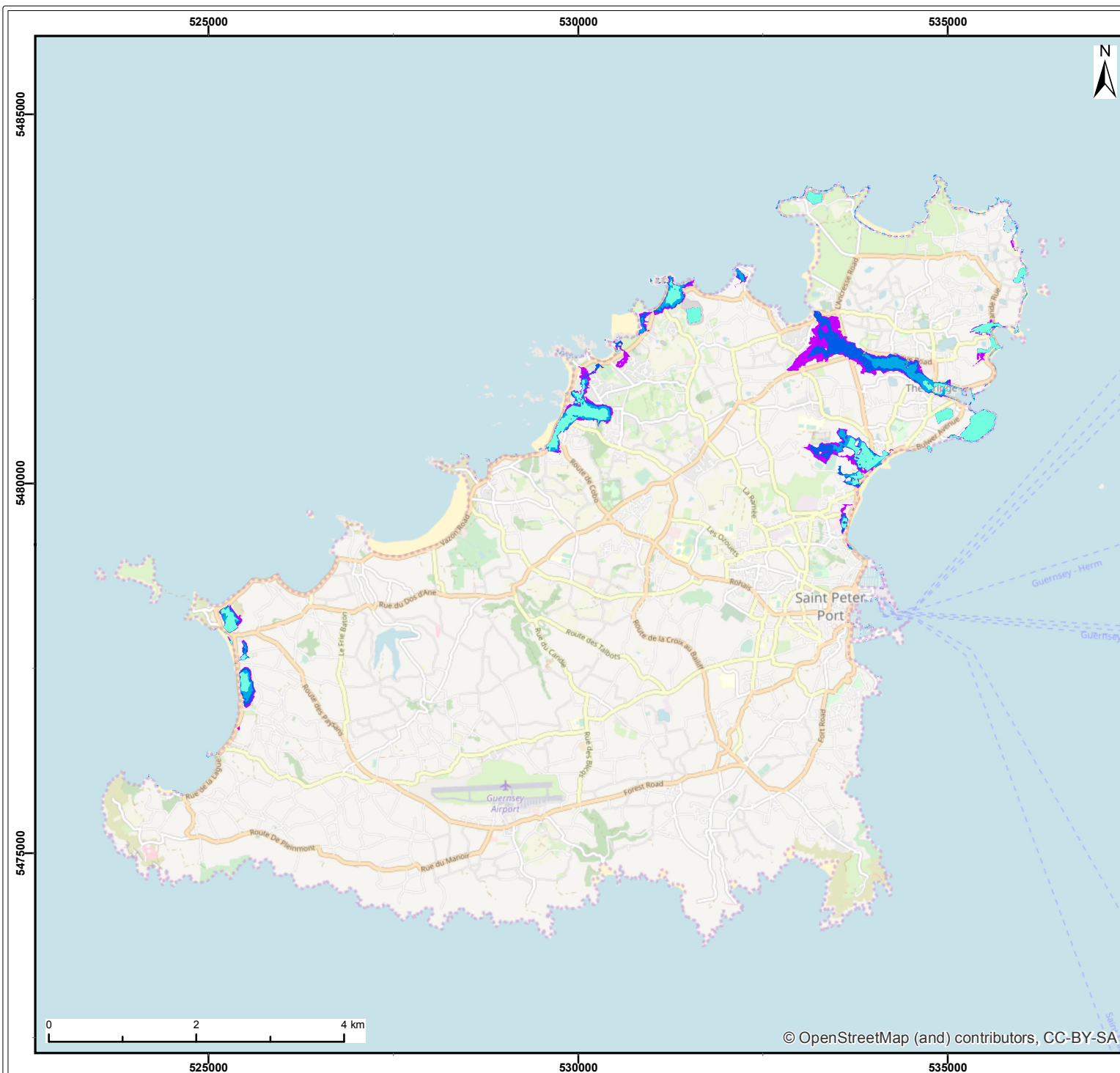
Baseline Environment

- 2.5.1 Approximately 300m to the North West of the site lies Longue Hougue Reservoir, which has been flooded by Guernsey Water after previously being mined as a quarry for St Peter Port gabbro bedrock (Amec Foster Wheeler, 2015). The quarry is currently being used as a potable drinking water source and has a maximum depth of 67m (Amec Foster Wheeler, 2015). The Longue Hougue Reservoir is the largest water resource on Guernsey and has a capacity of 1,300 million litres (Amec Foster Wheeler, 2015).
- 2.5.2 Guernsey is subject to the risk of coastal flooding during flood events with return periods of 1:10 years and above (Royal HaskoningDHV, 2012). The seven identified areas at risk from 1:10 year coastal flooding are shown in **Figure 2.4**. The order of priority for capital works (as agreed by the States in 2013), are St Sampson's Harbour area, Belle Grève Bay area, Cobo and Saline Bay, Baie de Port Grat and Pequeries area, Bordeaux Harbour area, Rocquaine and L'Eree area, and Pembroke Bay area.
- 2.5.3 The potential effects of flooding events with different return periods at each of these flood risk areas are summarised in **Table 2.7**.

Table 2.7 Flood Risk Level within Guernsey (Royal HaskoningDHV, 2012)

Flood risk area	No. of properties at risk by return period				Additional assets at risk
	1 in 10	1 in 50	1 in 100	1 in 250	
St Sampson's Harbour area	2	124	246	355	Risk of flooding of the Harbour area and local road network
Belle Grève Bay area	235	378	461	513	Risk to main coastal road
Cobo and Saline Bay	124	154	181	265	Risk to main coastal road
Baie de Port Grat and Pequeries area	10	48	75	110	Risk to life from sudden failure of flood defence
Bordeaux Harbour area	27	44	50	66	Risk of flooding of the local road network
Rocquaine and L'Eree area	9	17	20	24	Risk to main coastal road
Pembroke Bay area	A single commercial building is at risk at this location				

- 2.5.4 The States' Strategic Land Use Plan supports developments which enable adaptation to climate change.



Legend:

Flood Extent

- 1 in 10 year event
- 1 in 50 year event
- 1 in 100 year event
- 1 in 250 year event

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Client:	Project:
States of Guernsey	Longue Hougue South Informal EIA Scoping Report

Title:
Flood Risk Areas

Figure:	2.4	Drawing No:	PB5312-200-004		
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	05/11/2018	GC	PT	A4	1:75,000

Co-ordinate system: WGS 1984 UTM Zone 30N



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Potential Impacts during Construction

Direct Disturbance of Surface Water Bodies and Drainage

- 2.5.5 The proposed development is not adjacent to any surface water bodies that could be impacted during construction. Furthermore, the site will not be surfaced with impermeable material during its function as an inert waste facility, therefore run-off would occur by percolation through the fill material and there would be no run-off out of the site. There will therefore be no impact to surface water bodies or drainage, and this impact has been scoped out of the Environmental Statement.

Pollution of Surface Waterbody due to Accidental Release of Fuels, Oils, Lubricants and Construction Materials

- 2.5.6 As with all construction projects, there is a risk of accidental pollution events resulting in a degradation of water quality. The impact of this impact will be reduced through The States' use of good practice techniques and procedures throughout all construction activities. These will be stated within the ES and will be secured through commitment to a Marine Contingency Pollution Plan. This commitment ensures the use of appropriate preventative measures and serves as an embedded mitigation against all types of pollution incidents. However, the risk of the impact occurring remains, therefore it has been scoped in.

Raised Flood Defences

- 2.5.7 The proposed development has the potential for a positive impact through the raising of the current coastal defences along this frontage. This could reduce flood risk to properties and infrastructure at Spur point.

Potential Impacts during Operation

Direct Disturbance of Surface Water Bodies

- 2.5.8 The proposed development is not adjacent to, nor linked to any surface water bodies that could be impacted during operation and therefore there is unlikely to be a pathway for water to flow between the site and the reservoir.

Increased Surface Run-off

- 2.5.9 The proposed development is not adjacent to, or linked to any surface water bodies that could be impacted during operation. There will therefore be no impact to surface water bodies, and this impact has been scoped out of the Environmental Statement.
- 2.5.10 The design is not progressed sufficiently to determine whether there will be an impact to run off and drainage from the site, therefore this impact has been scoped in to the ES.

Pollution of Surface Waterbody due to Accidental Release of Fuels, Oils, Lubricants

- 2.5.11 The only potential sources of pollution are the vehicles transporting material to site, the small number of vehicles on site and the facilities at the entrance gate. As previously stated there is no surface water connection between the proposed development and any surface waterbody, therefore this impact has been scoped out. Raised Flood Defences
- 2.5.12 The proposed development has the potential for a positive impact through the raising of the current coastal defences along this frontage. This will reduce flood risk to properties and infrastructure at Spur point.

Potential In-combination Impacts

- 2.5.13 Given that the impact to run-off and drainage from the site cannot be determined, cumulative impacts have been scoped in to the ES.

Summary of Impacts

- 2.5.14 **Table 2.8** summarises the potential effects on surface water and flooding that have been scoped in and scoped out of the Environmental Statement.

Table 2.8 Summary of Impacts Relating to Surface Water and Flooding

Potential impacts	Scoped in?	
	Construction	Operation
Direct disturbance to surface water bodies	No	No
Increased surface run-off	Yes	Yes
Raised flood defences	No	Yes
Pollution of Surface Waterbody due to Accidental Release of Fuels, Oils, Lubricants	Yes	No

Mitigation Measures

- 2.5.15 Embedded mitigation is expected to include the following:
- Development of and compliance with a Pollution Prevention Plan to ensure all appropriate Pollution Prevention Guidelines and good practice guidelines are followed.

Approach to Assessment and Data Gathering

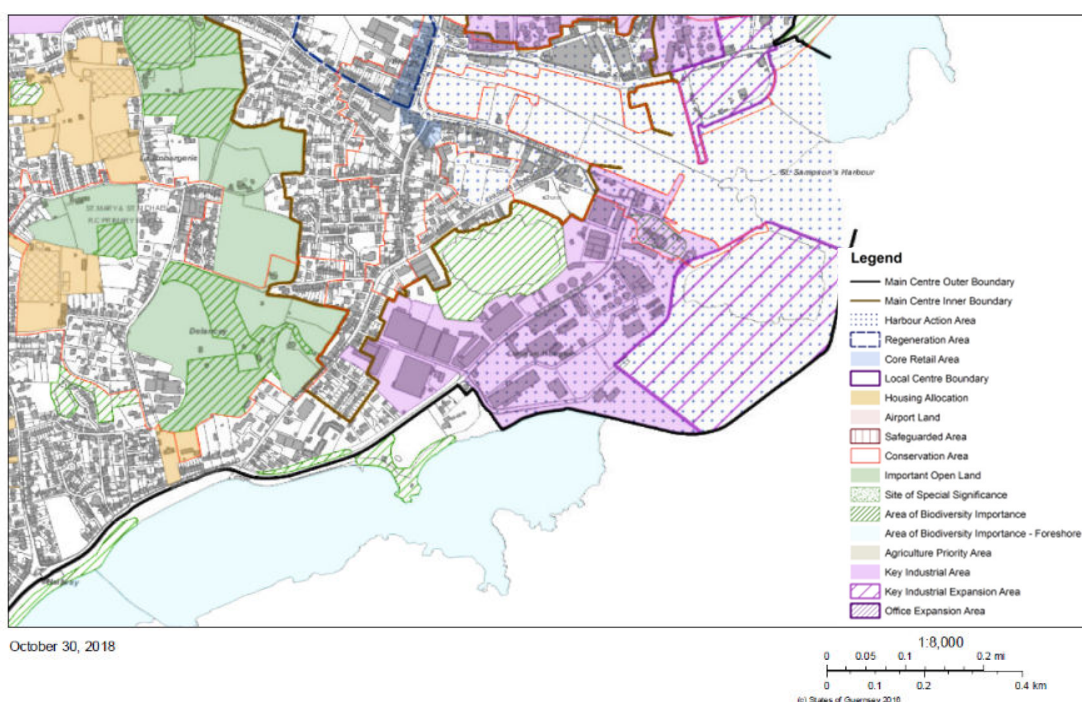
- 2.5.16 The assessment will be informed by a desk-based assessment and review of available data from the States and Guernsey Water, site visits, and consultation with relevant statutory consultees. Impacts will be considered on sensitive receptors within 2km.
- 2.5.17 A drainage assessment will be carried out to determine whether there are any impacts to run-off and drainage during the detailed design phase, and whether any mitigation is required.

2.6 Land Use, Land Quality, Soil Quality, Geology and Hydrogeology

Baseline Environment

- 2.6.1 The bedrock geology is comprised of a combination of plutonic igneous rocks and metamorphic rocks, with the former dominating the north of the Island and the latter dominating the south. The south and south-east of the island (the plateau) is underlain by lcart and Perelle gneiss, and the land beneath St Peter Port and St Sampson in the east is underlain by St Peter Port gabbro. The north of the island is underlain by L'Eree and Bordeaux granite and diorite formations.
- 2.6.2 The land surrounding the development site is an urban area, and is predominantly a key industrial area (including the existing waste facility), a key industrial expansion area, harbour action area and an area of biodiversity importance at Spur Point (States of Guernsey, 2016) (**Figure 2.5**). Three residential properties are immediately adjacent to the site and further residential areas sit behind Belle Grève Road.

Figure 2.5 Land Use Surrounding the Development Site (States of Guernsey, 2018)



- 2.6.3 There are 71 known historic landfill sites located on the Island, including five sites of land reclamation (inert), one horticultural-only site, 35 private landfill sites and 30 States landfill sites, of which four are inert waste only, and the waste streams of the remaining 26 are not confirmed. However, other than the existing inert waste facility at Longue Hougue, no other landfill sites are located immediately adjacent to the proposed development site.
- 2.6.4 There is an important geological site located in the Longue Hougue Key Industrial Area showing “an interesting relationship...between several micro-gabbro dykes and later plagioclase-rich veins, the latter tending to occur along the margins of the micro gabbro” (Roach et al., 1991).
- 2.6.5 In addition, research commissioned by the States to inform the preparation of the Island Development Plan identifies that the St Peter Port Gabbro exposures at Spur Bay are important: showing layering of “Birdseye” Gabbro and pale, finer-grained Feldspar-rich Gabbro (Environment Guernsey, 2014).
- 2.6.6 The site is situated on the coast and open water and is therefore not part of an existing groundwater body, however is adjacent to the groundwater of the coastal zone. Due to the igneous nature of the bedrock beneath the site, no aquifers exist in the site area. Guernsey water obtain most of their water supply through the capture of surface run off and rainfall.

Potential Impacts during Construction

Contaminant Mobilisation to Groundwater Body

- 2.6.7 There are no aquifers in the vicinity of the site therefore direct disturbance impacts on groundwater and to aquifers are not anticipated as a result of the development. There is a potential impact on groundwater quality from accidental or incidental discharges of pollutants during construction, however contaminant release will be avoided by the use of good practice techniques during construction. Therefore, this impact is unlikely and has been scoped out of the EIA.

Disturbance to Geological Sites

- 2.6.8 There is a potential for disturbance to and direct loss of the St Peter Port Gabbro exposures at Spur Point due to the creation of the inert waste reclamation site. The scale of this will depend on whether there will be any construction disturbance outside the footprint of the permanent works.

Disruption to Land Use

- 2.6.9 Belle Grève Bay is used for recreation, and this use will be affected by the proposed development within the footprint of the site. The extent of this impact will be examined in the Environmental Assessment. During construction, there will be no direct disturbance to adjoining land uses. Disturbance to landscape character and views are assessed in Landscape and Visual Impact whilst disturbance to recreational, residential and commercial receptors are assessed in Population and Human Health impacts.

Disruption to Existing Landfill Sites

- 2.6.10 There will be no direct or indirect disturbance to existing landfill, and inert waste sites during construction. This has been scoped out.

Disruption to Historic Landfill Sites

- 2.6.11 There will be no direct or indirect disturbance to historic landfill sites during construction. This has been scoped out.

Potential Impacts during Operation

Contaminant Mobilisation to Groundwater Bodies

- 2.6.12 There are no aquifers in the vicinity of the site therefore direct disturbance impacts aquifers are not anticipated as a result of the operation of the development. There is a potential impact on groundwater quality from accidental or incidental discharges of pollutants during operation, however the only activities on site are vehicle movements and the site is being used for infilling with inert waste and no contaminants will be present. Good practice techniques will be in place during operations along with spill kits for vehicles fuel or other small-magnitude low likelihood leakage risks. Therefore, impacts on groundwater quality are unlikely and have been scoped out from the EIA.

Disturbance to Geological Sites

- 2.6.13 There will be a direct loss of the St Peter Port Gabbro exposures at Spur Point due to the creation of the inert waste reclamation site.

Disruption to Land Use

- 2.6.14 Once operational there will be a change in land use from coastal habitat used for recreation to open land with potential for other uses, most likely industrial, appropriate to its location if required.

Disruption to Existing Landfill Sites

- 2.6.15 There will be no direct or indirect disturbance to existing landfill, and inert waste sites during operation of the proposed development. This impact has been scoped out.

Disruption to Historic Landfill Sites

- 2.6.16 There will be no direct or indirect disturbance to historic landfill sites during operation of the proposed development. This impact has been scoped out.

Summary of Impacts

- 2.6.17 **Table 2.9** summarises the potential effects on Land Use, Land Quality, Soil Quality, Geology and Hydrology that have been scoped in and scoped out of the Environmental Statement.

Table 2.9 *Summary of Impacts Relating to Land Use, Land Quality, Soil Quality, Geology and Hydrology*

Potential impacts	Scoped in?	
	Construction	Operation
Contaminant mobilisation to groundwater bodies	No	No
Disturbance to geological sites	Yes	Yes
Disruption to land use	Yes	Yes
Disruption to existing landfill sites	No	No
Disruption to historic landfill sites	No	No

Mitigation Measures

- 2.6.18 There is a low risk of groundwater pollution during the construction phase. This would be managed through the development of and compliance with a Pollution Prevention Plan to ensure all appropriate Pollution Prevention Guidelines and good practice guidelines are followed.
- 2.6.19 Disturbance to geology can be minimised during construction by building out along the breakwater structure from the existing Longue Hougue Inert Waste Facility and using this as an access road.

Approach to Assessment and Data Gathering

- 2.6.20 The assessment will be informed by a desk-based assessment and review of available data from States of Guernsey and consultation with relevant statutory consultees.

2.7 Traffic and Transport

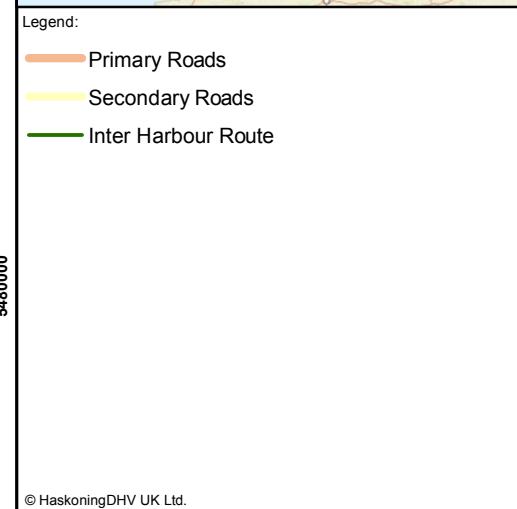
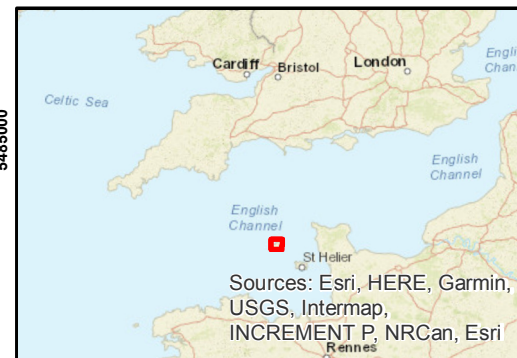
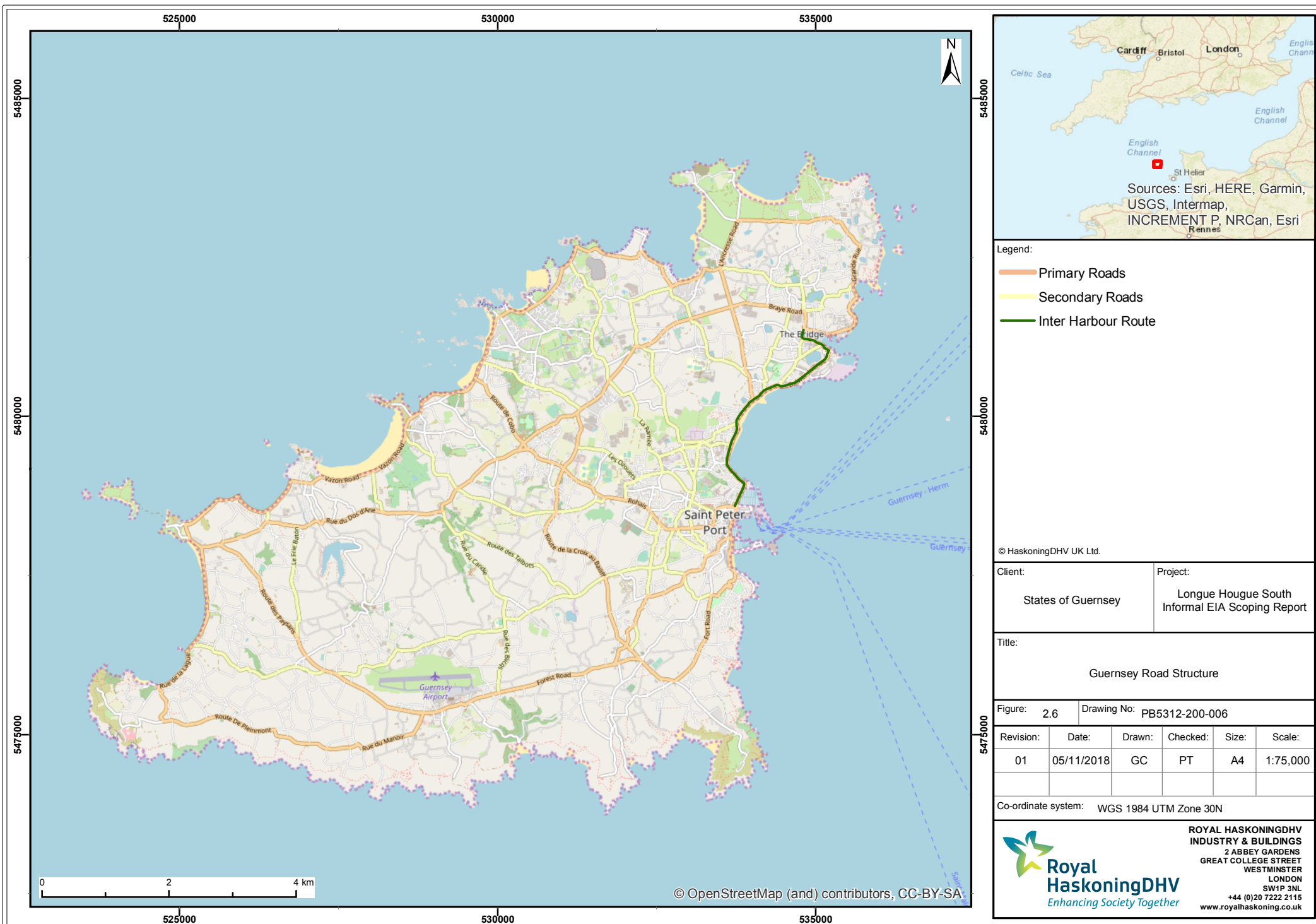
Baseline Environment

- 2.7.1 The traffic and transport baseline in Guernsey is outlined in the Guernsey Character Study Stage 1 (States of Guernsey Environment Department, 2013). It describes the strategic character of Guernsey and was produced to inform the Island Development Plan.

- 2.7.2 Guernsey has two main gateways, the airport three miles south west of St Peter Port and the ferry terminal at St Peter Port. Both provide services to other Channel Islands, the UK and mainland Europe.
- 2.7.3 The harbours in St Peter Port and St Sampson are the Island's commercial hubs, where goods are exported and imported. Harbours and marinas along the coast offer mooring for private boats.
- 2.7.4 In general, the road network on the Island follows the pattern of the fields, which results in a dense network of narrow winding lanes, most with speed limits of 25 miles per hour. The inter-harbour route that connects St Peter Port to St Sampson's harbour is the widest and busiest road on the Island; it carries a significant proportion of commercial traffic and is heavily used by traffic, cyclists and pedestrians and has a speed limit of 35 miles per hour. The road structure in Guernsey is shown in **Figure 2.6**.
- 2.7.5 Outside St Peter Port and St Sampson, the main roads and primary routes are just wide enough for two vehicles, and often larger vehicles need to mount the pavement in order to pass one another.
- 2.7.6 Off the main routes the majority of roads are single carriageway with passing places for vehicles. Some areas are designated Ruelle Tranquilles where the speed limit is 10 miles per hour and cyclists, pedestrians and horses have priority.
- 2.7.7 Car ownership and use in Guernsey is relatively high which can lead to congestion and air quality issues when bottlenecks occur.
- 2.7.8 Buses and taxis provide public transport radiating from a bus terminus at St Peter Port. Some areas have a limited frequency of service during the day and very few services run during the night.
- 2.7.9 Cycling is popular for both leisure and commuting in Guernsey due to the relatively flat topography with few long or steep hills. There is one designated cycle lane which runs alongside the inter-harbour route (**Figure 2.6**).

Potential Impacts during Construction

- 2.7.10 The site is located on the inter-harbour route which, although a main road, is already relatively busy. The construction phase would result in the requirement for the import and export of materials and plant to the development area. This may lead to the following impacts:



Client:	Project:
States of Guernsey	Longue Hougue South Informal EIA Scoping Report

Title:
Guernsey Road Structure

00

Co-ordinate system: WGS 1984 UTM Zone 30N



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Increased Traffic Congestion

2.7.11 This may impact upon commuters and seasonal tourist traffic with associated effects including:

- Driver delay;
- Severance;
- Impacts on pedestrians and cycle amenity (i.e. Ruelle Tranquilles and cycle networks); and
- Impacts on air quality, noise and vibration (considered in **Section 2.8**).

Decline in Road Safety

2.7.12 Effects may include:

- Introducing new risks with the formation of new construction accesses; and
- Suitability of access and delivery routes for HGVs, light vehicles, plant and abnormal loads.

Potential Impacts during Operation

2.7.13 As the site is adjacent to an existing inert waste deposit facility, it is anticipated that changes in traffic volume during operation will not be significant.

2.7.14 As the current external road system is already being utilised for the current inert waste deposit facility, it is anticipated that external roads will be suitable for the traffic associated with the operational phase of proposed development and therefore no off-site highway improvements would be required.

Mitigation Measures

2.7.15 The environmental assessment will determine the requirement for the implementation of mitigation measures to reduce significance of the impact to transport receptors.

2.7.16 The following 'embedded or designed in' mitigation informs the traffic assignments to be included in the environmental assessment:

- Suitable access points and identification of optimum routes for construction traffic to use (minimising the impact on sensitive receptors);
- Reducing points of access through the adoption of an internal road;
- Consolidating HGV and employee movements at mobilisation zones to reduce vehicle movements along more sensitive local routes; and
- Committing to the development of a Construction Traffic Management Plan (CTMP) to manage employee and HGV movements to avoid sensitive times, use of only defined routes, compliance with maximum HGV 'caps' and strategies to continually monitor and enforce.

Summary of Impacts

2.7.17 **Table 2.10** summarises the potential effects on Traffic and Transport that have been scoped in to the Environmental Statement.

Table 2.10 Summary of Impacts relating to Traffic and Transport.

Potential impacts	Scoped in?	
	Construction	Operation
Increased traffic congestion	Yes	No
Decline in road safety	Yes	No

Approach to Assessment and Data Gathering

2.7.18 Impacts will be considered on all transport routes within 1.2km to the south and 1.8km to the north of the proposed facility.

2.7.19 The States has commissioned a baseline traffic survey to develop a more detailed understanding of the traffic conditions adjacent to the Project area. The survey will be carried out in April 2019 and will be undertaken across a week period and will comprise the installation of five automatic traffic counters. The exact locations of these will be determined by local conditions during the survey, however they are likely to be in the following locations:

- Les Banques;
- Vale Road;
- Two on Bulwer Avenue (one either side of the existing site entrance); and
- On the unnamed road within the existing site.

2.7.20 The work to be undertaken will include the development of a 2D layout including details of critical junction geometry and visibility splays in order to inform the assessment of potential impacts on traffic and transport receptors.

2.7.21 As it is unlikely that there will be a significant increase in the number of vehicles visiting the site in the operational phase compared to the current Longue Hougue facility, there would be no need for detailed junction modelling for traffic delays.

2.8 Air Quality

Baseline Environment

2.8.1 The baseline for air quality is outlined in the environmental statement for the Island Development Plan (States of Guernsey, 2016b).

- 2.8.2 Nitrogen oxides (NO_x) are generated principally by the combustion of fossil fuels by motor vehicles. NO_x contributes to the depletion of the ozone layer, acid rain and can cause detrimental effects to the health of people and ecosystems. NO_x levels in Guernsey are below the EU Directive guideline maximum of 40µg/m³ per year. NO_x levels are sometimes exceeded at the busier roadsides such as Bulwer Avenue, St Sampson and the Grange, and St Peter Port. Overall air pollution in Guernsey is reported to be increasing, yet remains below WHO standards. Concentrations of airborne pollutants at a real-time monitoring station installed at Bulwer Avenue are outlined in **Table 2.11**.

Table 2.11 Concentrations of Pollutants at Two Monitoring Sites on Guernsey.
Data: States of Guernsey (2018a)

Monitoring Station	Parameter	Concentration (µgm ⁻³)	Last Updated
Bulwer Avenue	PM ₁₀	-	02/03/2018 16:00
	NO ₂	31	19/10/2018 10:00
	NO	30	19/10/2018 10:00
	NO _x as NO ₂	77	19/10/2018 10:00
	SO ₂	-	24/04/2014 14:00
Lukis House	NO ₂	30	19/10/2018 12:00
	CO	-	25/04/2014 10:00
	NO	10	19/10/2018 12:00
	NO _x as NO ₂	45	19/10/2018 12:00

- 2.8.3 The sensitive receptors present in the environment surrounding the development include users of the road and roadside area, residents of local housing, users of nearby outdoor spaces, elderly people, students of schools and sensitive ecological features.
- 2.8.4 The closest human receptors to the site are located along Bulwer Avenue, approximately 100m north-west of the proposed development.

Potential Impacts during Construction

Increased Air Pollution Levels

- 2.8.5 The site is located within an existing industrial area, which while currently operating at a safe air pollution level may be subject to exceedances with additional traffic. During construction, there will be a high volume in traffic for deliveries which would result in increased air emissions and increased pollutant levels on surrounding roads. This has the potential to increase exceedances to safe air pollution levels.

Increased Dust Levels

- 2.8.6 Construction activities and the movement of vehicles has the potential to create dust pollution, which would affect air quality levels.

Potential Impacts during Operation

Increased Air Pollution Levels

- 2.8.7 The site is located within an existing industrial area, but it is also adjacent to sensitive ecological areas and residential areas. Once the new site is operational the altered entry would be closer to residential properties and footpath users and therefore there could be an increase in emissions to these receptors.

Increased Dust Levels

- 2.8.8 Operational activities and the movement of vehicles has the potential to create dust pollution, which could affect air quality levels.

Summary of Impacts

- 2.8.9 **Table 2.12** summarises the potential impacts to air quality that have been scoped in and scoped out of the EIA.

Table 2.12 Summary of Impacts Relating to Air Quality

Potential impacts	Scoped in?	
	Construction	Operation
Increased air pollution levels	Yes	Yes
Dust	Yes	Yes

Mitigation Measures

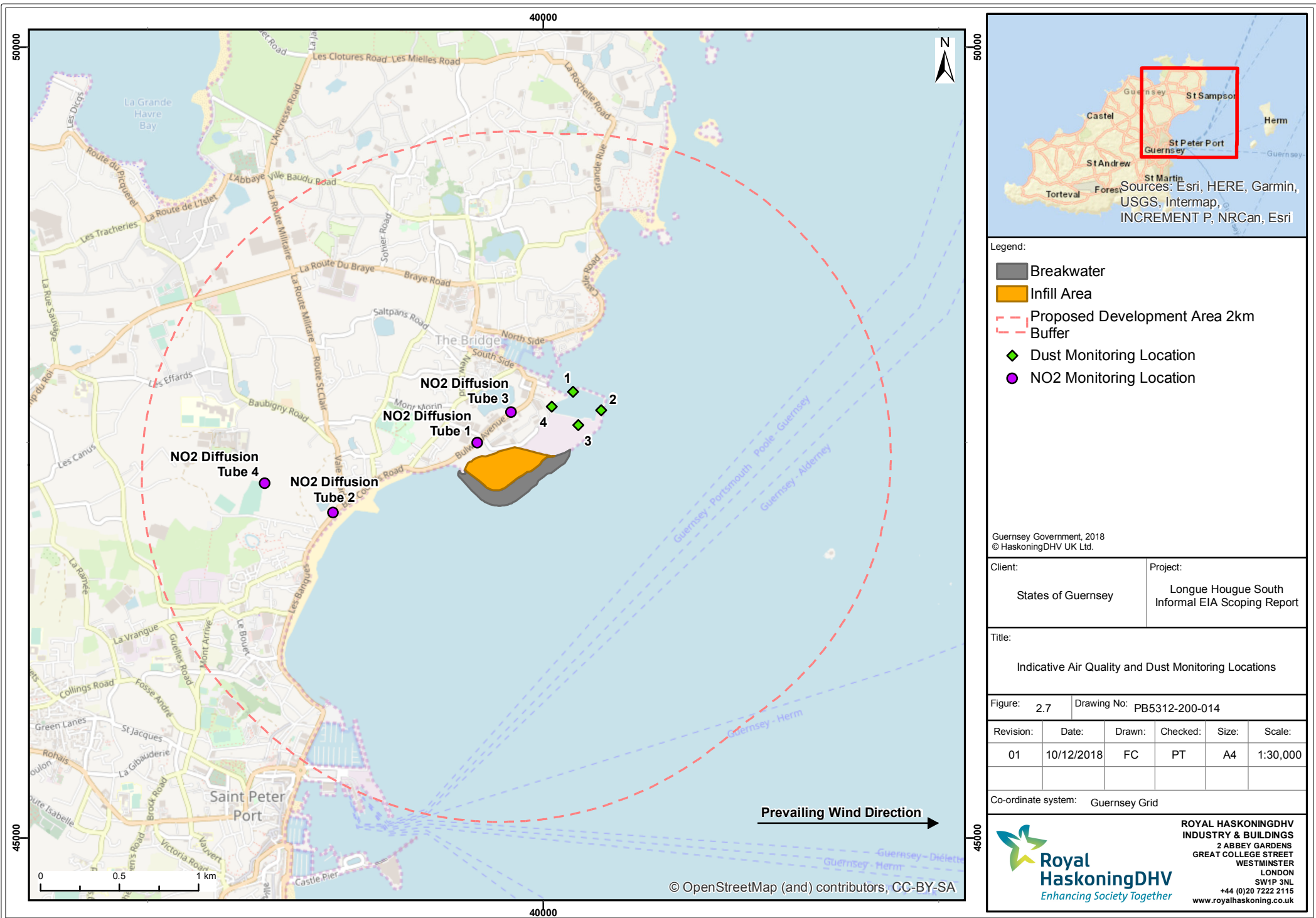
- 2.8.10 Embedded mitigation is likely to include the following:
- Construction and decommissioning works would be undertaken in accordance with best practice measures (including dust management measures) and proportional to the likely impacts;
 - An Air Quality Management Plan (AQMP) would be developed as part of a Construction Environmental Management Plan (CEMP); and
 - A Construction Traffic Management Plan would be put in place to control employee and HGV movements.
- 2.8.11 Any requirement for additional air quality and dust mitigation measures will be determined through liaison with stakeholders such as the Director of Environmental Health & Pollution Regulation at the States' of Guernsey.

Approach to Assessment and Data Gathering

- 2.8.12 Impacts will be considered on sensitive receptors within 1km.
- 2.8.13 An air quality monitoring survey will be carried out to establish baseline air pollution and dust levels in the vicinity of the site.
- 2.8.14 Diffusion tubes will be employed along the road network to be considered in the assessment, as shown indicatively in **Figure 2.7**, and at locations that represent background pollutant levels (i.e. are located at a distance from pollution sources such as roads). The diffusion tubes will monitor concentrations of nitrogen dioxide (NO₂) for a duration of three months. The diffusion tubes will be changed on a monthly basis and sent to an accredited laboratory for analysis. Spot measurements of particulate matter with an aerodynamic diameter of 10 micrometres and 2.5 micrometres (PM₁₀ and PM_{2.5}) will be taken using an Aerocet-531 particulate meter to provide an indication of baseline particulate concentrations.
- 2.8.15 The monitoring data from the diffusion tubes will be annualised as appropriate, using the methodology detailed in Defra Technical Guidance (Defra, 2016) to provide representative annual mean concentrations. It is acknowledged that Guernsey does not have any locally-adopted air quality standards with which to compare monitored annual mean concentrations. In the absence of any adopted standards, the monitored data will be compared with the relevant EU air quality Objectives.
- 2.8.16 Dust monitoring will also be undertaken in the area surrounding the existing inert waste facility to determine expected dust levels from a process of this nature. Dust deposition gauges will be deployed to the north, east, south and west of the existing reclamation area for a duration of three months, and indicative locations are shown in **Figure 2.7**, to capture dust levels in various directions. The dust gauges will be analysed monthly at an accredited laboratory, and the dust flux will be recorded to provide an indication of baseline dust deposition in the area.

Construction Phase Assessment

- 2.8.17 There is potential for exhaust emissions associated with construction phase traffic movements to lead to air quality impacts at receptors in the vicinity of roads which will be used by construction vehicles. Dispersion modelling will be carried out using the ADMS-Roads model to predict pollutant concentrations at nearby sensitive receptors. The modelled pollutant concentrations will be combined with background monitoring data to provide total pollutant concentrations, which will be compared to the relevant EU Air Quality Objectives.
- 2.8.18 The impact of construction phase dust will be considered using guidance provided by the Institute of Air Quality Management (IAQM) (IAQM, 2014). Mitigation measures will be recommended which will be commensurate with the level of dust risk of the site.



Operational Phase Assessment

- 2.8.19 Dispersion modelling using the ADMS-Roads model will be used to consider the impact of changes in traffic flows during the operational phase of the development at relevant sensitive receptors.
- 2.8.20 The monitored dust flux from the existing inert waste facility will be used to consider the expected impact of emissions of dust at receptors during the operational phase of the development. Mitigation measures will be recommended as required.

2.9 Noise and Vibration

Baseline Environment

- 2.9.1 The main source of noise within the development site is from traffic on Les Banques and Bulwer Avenue and background noise from the industrial estate, waves, and birds.
- 2.9.2 Identified noise receptors include the residential properties at Spur Point, users of the public footpath at Spur Point, users of the foreshore, residents along the proposed construction transport routes and inland of the site, and protected species such as marine mammals and birds. For the purposes of assessment, 5 key receptors have been identified, labelled as MP1-MP5. These are described in **Table 2.13** and identified on **Figure 2.8**.

Table 2.13 Proposed Noise Receptors

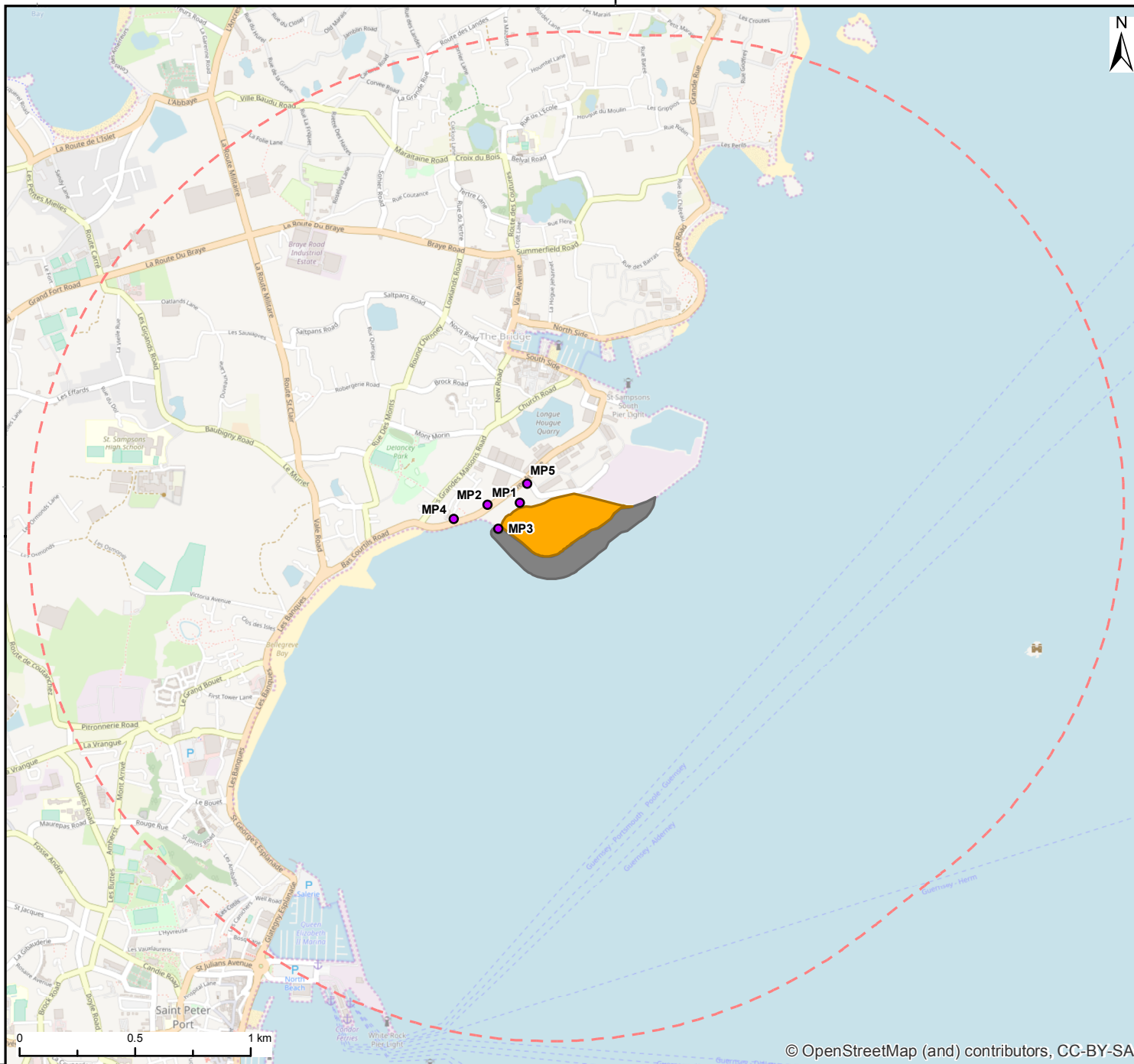
Receptor Position	Receptor Description
MP1	Residential receptor located south of Bulwer Avenue on patch of land adjacent to the site boundary.
MP2	Representative of residential receptors located along Bulwer Avenue north-west of the proposed site boundary.
MP3	Representative of any ecological receptors on the shore west of the proposed site boundary.
MP4	Representative of BBC Guernsey offices off Bulwer Avenue.
MP5	Representative of residential receptor on the junction between Bulwer Avenue and unnamed road leading to Guernsey Recycling.

Potential Impacts during Construction

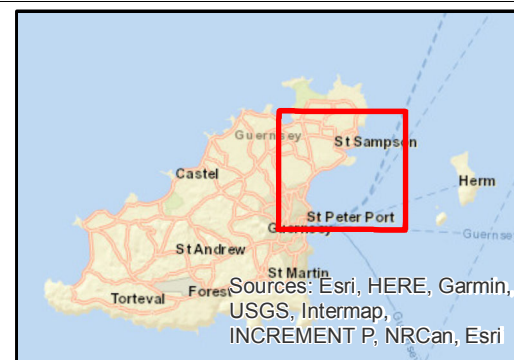
Potential Impact to Properties from Vibration

- 2.9.3 Receptor MP1 is located less than 30m from the proposed site boundary. There is the potential for vibration impacts to arise, depending on construction methodology.

40000



40000



Legend:

- Breakwater
- Infill Area
- Proposed Development Area 2km Buffer
- Noise Monitoring Location

Guernsey Government, 2018
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Client:

States of Guernsey

Project:

Longue Hougue South
Informal EIA Scoping Report

Title:

Location of Proposed Noise Monitoring Locations

Figure: 2.8

Drawing No: PB5312-200-015

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	11/12/2018	FC	PT	A4	1:25,000

Co-ordinate system: Guernsey Grid



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45000

45000

- 2.9.4 Receptors MP2, MP4 and MP5 represent buildings which have the potential to experience vibrational impacts and MP3 represents ecological receptors. However, these are considered too distant for vibration impacts because the distance between them and the project site boundary is >50 metres. Therefore, vibrational impacts have been scoped out.

Noise Disturbance from Construction of the Breakwater

- 2.9.5 Receptors MP1-MP5 all have the potential for noise disturbance from the construction of the breakwater. The severity of impact will depend on the timing of construction.

Noise Disturbance from Increased Traffic

- 2.9.6 Receptors MP1-MP5 all have the potential for noise disturbance from increased traffic and HGV movements.

Potential Impacts during Operation

Noise Disturbance from Deposit of Inert Waste

- 2.9.7 Receptor MP1 will potentially be disturbed by the operational activities once the scheme is operational, given the proximity to the site boundary. Impacts could potentially occur at the other identified receptors from elements of the construction and therefore will be scoped into the assessment.

Noise Disturbance from Increased Traffic Movements

- 2.9.8 As the site is adjacent to an existing inert waste deposit facility, it is anticipated that changes in traffic during operation will not be significant. However, changes in the location of junctions and turning movements of vehicles entering and leaving the site could potentially impact on noise levels at nearby residential receptors and therefore the assessment of traffic noise during operation is scoped in.

Potential In-combination Impacts

Potential Impact on Marine Ecology from Underwater Noise during Construction

- 2.9.9 Noise generated by the construction work by vessels and the breakwater construction process could have an impact on marine mammals present in the local area through disturbance and hearing loss.
- 2.9.10 Research into the effects of underwater noise upon benthic species is ongoing, although it is known that different species of fish have different sensitivities to underwater noise (Slabbekoorn *et al.*, 2010). However, it is likely that there is habituation to noise created by existing boat movements, tidal movements and waves within Belle Grève Bay, particularly the large number of vessels operating out of St Peter Port. Whilst construction activities have the potential to produce underwater noise through increased vessel movements and breakwater construction, the numbers of vessels and speeds of those vessels are not considered likely to increase baseline noise levels, therefore this impact

has been scoped out.

Potential Impact on Marine Ecology from Underwater Noise during Operation

- 2.9.11 During operation, underwater noise will not be generated at the site as there will be no boat movements and no activities will take place in open water, therefore operational underwater noise has been scoped out of the assessment.

Summary of Impacts

- 2.9.12 **Table 2.14** summarises the potential impacts to noise and vibration that have been scoped in and scoped out of the Environmental Assessment.

Table 2.14 Summary of Impacts Relating to Noise and Vibration

Potential impacts	Scoped in?	
	Construction	Operation
Vibration Impact to MP1	Yes	No
Vibration Impact to MP2-MP5	No	No
Disturbance from construction activities	Yes	No
Disturbance from increased traffic	Yes	Yes
Noise disturbance from placement of inert waste at Receptor MP1 -MP5	N/A	Yes
Impact on marine ecology from underwater noise	No	No

Mitigation Measures

- 2.9.13 Specific mitigation measures will be identified in the ES, following the noise survey results and the impact assessment, however there are a number of 'best practice' measures that should always be implemented on construction sites so as to be a "good neighbour" and protect the amenity of nearby residential receptors.
- 2.9.14 These include:

Noise Mitigation

- avoiding unnecessary revving of engines and switching off equipment when not required;
- minimising the drop height of materials;
- starting up plant and vehicles sequentially rather than all together;
- audible reversing warning systems on mobile plant and vehicles should be of the types which, whilst ensuring that they give a proper warning, have a minimum

noise impact on neighbouring receptors. The use of conventional audible reversing alarms has the potential to cause annoyance due to the tonal component. It should be noted that alternatives, such as "white-noise" type alarms, are available which are generally considered to be less annoying;

- ensuring that vehicles are maintained regularly and kept in a good working order;
- increasing the distance between plant and noise sensitive receptors is the most effective method of controlling noise. Whilst it will not be possible to do this when work takes place at a fixed location, stationary plant such as compressors and generators should be located as far away from noise sensitive receptors as possible; and
- reduce noise by increasing the distance between source and receptor or considering screening. For maximum benefit, screens should be as close to the source as possible.

Vibration Mitigation (mainly Construction Phase Oriented)

- choosing alternative, lower impact equipment or methods wherever possible;
- scheduling the use of vibration-causing equipment, such as jackhammers, at the least sensitive time of day;
- Routing, operating or locating high vibration sources as far away from sensitive areas as possible;
- sequencing operations so that vibration-causing activities do not occur simultaneously;
- isolating the equipment causing the vibration on resilient mounts; and
- keeping equipment well maintained.

Approach to Assessment and Data Gathering

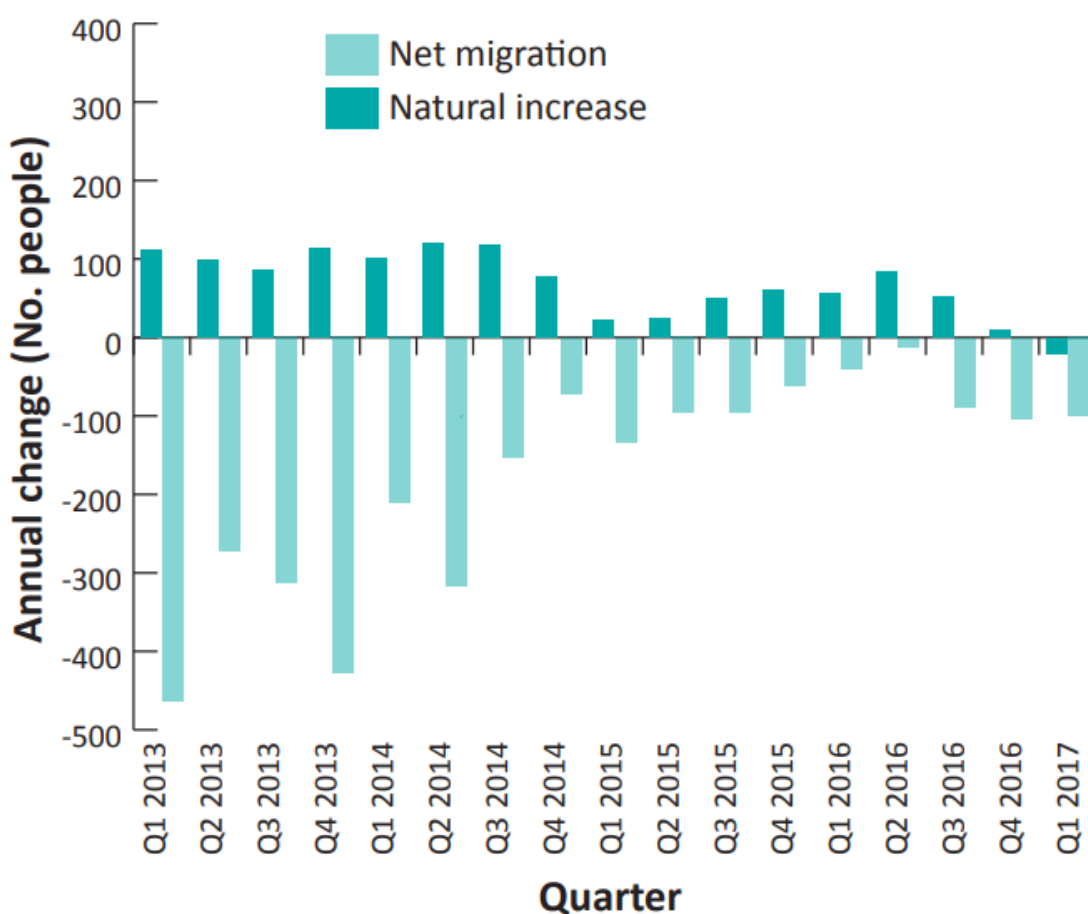
- 2.9.15 Impacts will be considered on sensitive receptors within 1km.
- 2.9.16 A noise survey is to be undertaken, and it will entail three surveys in February, March and April. Noise monitoring will be undertaken at the five closest noise sensitive receptors (MP1 to MP5) to the proposed project boundary in accordance with the procedure described in BS 7445 parts 1 and 2 and BS 4142:2014.
- 2.9.17 The assessment will be informed by noise modelling for the construction phase using SoundPLAN noise modelling software.
- 2.9.18 For the operational phase, the assessment of noise from proposed fixed and mobile plant and activities associated with the operational elements of the project will be considered at the nearest receptors. An indicative list of plant equipment and activity noise levels will be developed and compiled based on the operational activities expected.

2.10 Population and Human Health

Baseline Environment

2.10.1 Guernsey had a population of approximately 62,000 people in March 2017 (States of Guernsey (2018)). The population rose by about 5% in the ten years to 2011, but has been relatively static since 2012. In the four years to 2016, natural population increase on the Island was approximately 96 people per annum (0.15%), whilst net migration was approximately 44 people per annum (0.07%), although fluctuating between positive and negative, migration rates year on year. Between 2016 and 2018, the population declined by 121 people. Seasonal migration accounts for the majority of annual migration, with migration positive during the Q1 and Q2 and negative during Q3 and Q4 in the years between 2013-2017 (see **Figure 2.9**). The Island's population is ageing, with the peak age brackets on the island being 40-49 and 50-59. The overall life expectancy is 83 years; 81 for men and 85 for women (States of Guernsey (2018a)).

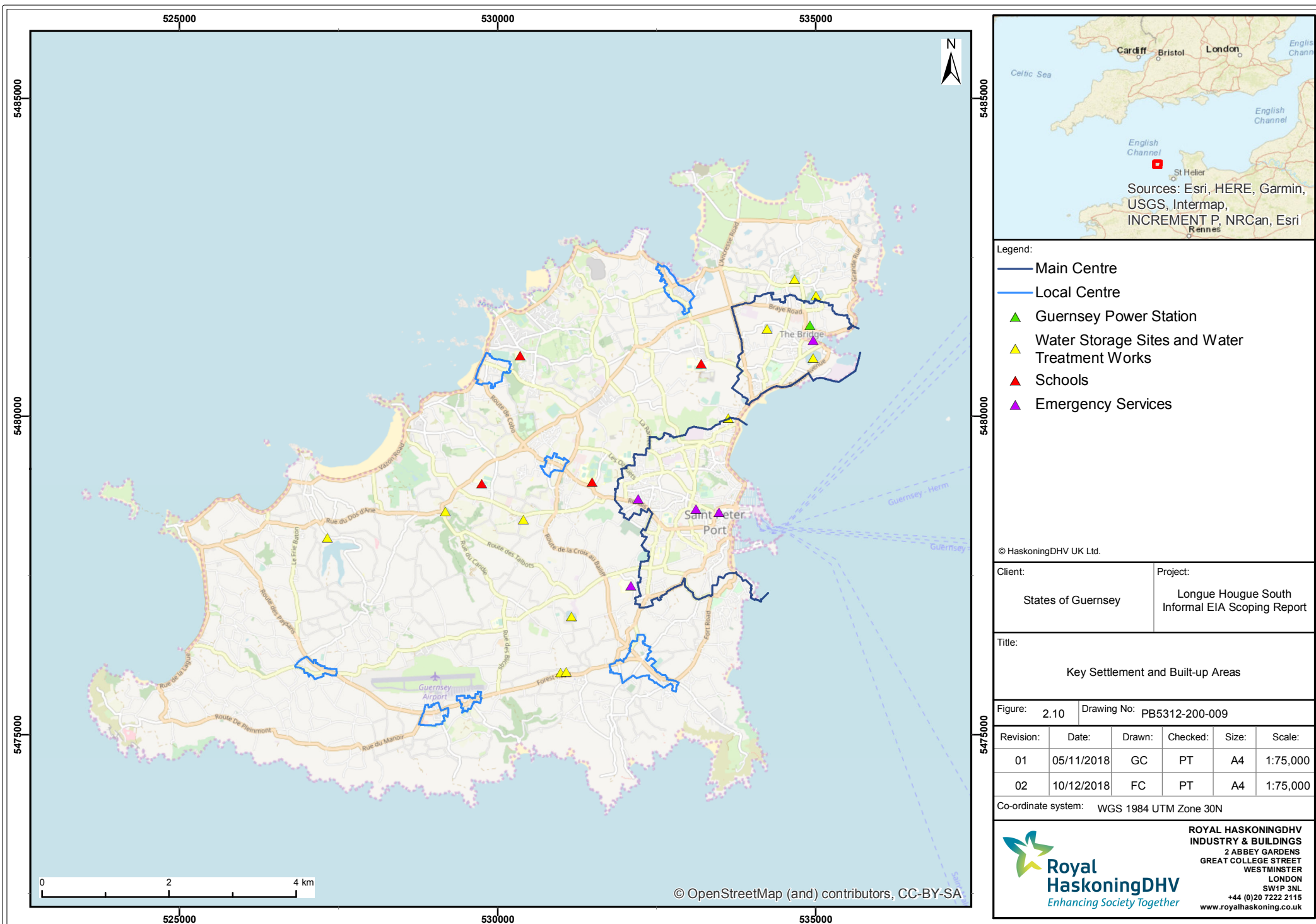
Figure 2.9 *Guernsey Population change 2013-2018 (Guernsey Facts and Figures 2016 (States of Guernsey, 2018a))*



- 2.10.2 The population is concentrated on the north and east of the Island, with highest population density parishes being St Peter Port, Vale, and St Sampson. 12.1% of Guernsey's total land area was 'developed' (i.e. used for buildings or infrastructure) in 2018. The key settlements and built-up areas are shown on **Figure 2.10**. On average, there has been a net increase of 137 dwellings per year from 2012-2017, which meets the States' 2017 target of achieving 127 new dwellings per year (States of Guernsey Committee for the Environment & Infrastructure, 2018; States of Guernsey, 2018c). Only 4% of new dwellings built over this period have been built on greenfield land. Of the 26,993 properties on the Island (as of December 2017), in the local market 60% are owner-occupied while 28% are rented and 10% are social housing.
- 2.10.3 The spatial policy within the Island Development Plan (IDP) divides the island into a hierarchical structure of Main Centres, Main Centre Outer Areas and Local Centres. The IDP identifies 15 new housing sites allocations on the Island, all located within existing Main Centres at St Peter Port, St Sampson, Vale, and St Martin. The location of these new housing sites is summarised in **Table 2.15**.

Table 2.15 Sites Allocated as Housing Sites in the 2016 IDP

Site	Location of site
Bougourd Ford	St Peter Port
Education offices	
Former Priaulx Garage	
King's Club	
La Vrangue	
Maurepas Road	
Les Petites Fontaines	
Warry's Bakery	
Belgrave Vinery	St Sampson
Franc Fief	
Les Bas Courtils	
Pointues Rocques	
Saltpans	
Braye Lodge	St Martin
Cleveleys Vinery	Vale



- 2.10.4 As of March 2018, 31,062 people were in employment, and the unemployment rate of the Island was 2.1%. The unemployment rate saw an overall increase from 1.4% in March 2016. Construction (a key sector for inert waste generation) is the fourth largest employer on the Island, after Finance, public administration, and wholesale and retail; it employed 2,766 people (almost 10% of the Island's labour force).
- 2.10.5 As of 2018 Guernsey's economy is largely based on the finance sector, with 53% of the Island's Gross Value Added (GVA) coming from this sector. Business services, information services and public administration together account for 35.7% of the Island's GVA, with other industries contributing smaller amount (States of Guernsey, 2016a).

Development

- 2.10.6 Development restrictions are in place around certain installations within the Island. These are fuel storage sites at Bulwer Avenue, St Sampson and Northside, Vale, both of which are subject to Development Proximity Zones of 90m from storage tanks and 75m from unloading points, and 100m from tanks and 75m from unloading points respectively. Public Safety Zones the policy objective is to ensure that permitted development does not significantly increase the number of people living, working or congregating within these identified areas. The locations of these installations and critical infrastructure assets including emergency services and service locations are shown on **Figure 2.10**.
- 2.10.7 The land in the vicinity of the proposed development is largely industrial, with the current Longue Hougue Inert Waste Facility, Waste Transfer Station and a recycling centre bordering the site. Behind the site there is a wider industrial estate including a number of fuel storage sites and an abattoir.

Residential Areas

- 2.10.8 The proposed inert waste site is located on the boundary between residential open land uses and industrial land use. There are three residential properties that are directly adjacent to the site, one of which overlooks Belle Grève Bay ('Gorselea'). The closest road is Bulwer Avenue, 100 metres north of the landward edge of the proposed development.
- 2.10.9 Behind Bulwer Avenue on the western side of the bay there is a residential area with approximately 50 houses. This residential area sits between a business park to the west and the Longue Hougue industrial estate to the east.
- 2.10.10 Grandes Maisons Road, which encloses these properties to the north also hosts approximately 60 residential properties, most of which border Delancey Park. To the north east of Delancey Park, behind Grandes Maisons road there is a residential estate with approximately 120 properties.

Tourism and Recreation

- 2.10.11 Guernsey accommodated 279,700 visitors during 2016, of which 188,500 departed by air, and 91,200 departed by sea. Of these visitors, 169,000 stayed in commercial accommodation. These figures exclude the further 149,625 visit cruise ship passengers and yachtsmen who visit the island each year (States of Guernsey Commerce & Employment Department, 2017).
- 2.10.12 The three main tourist activities on Guernsey are experiencing the island's natural beauty, walking, and visiting the island's beaches (Visit Guernsey, 2017). The Island's beaches can be seen on **Figure 2.11**, these are where bathing water quality is sampled and they are considered to be important bathing areas. The Island's Cliff Path walking routes are located along the coast of the Island and coastal paths continue largely unbroken around the entire Island.
- 2.10.13 Four hundred metres to the north-west of the site is Delancey Park, which includes a playground that overlooks Belle Grève Bay. There is a footpath along the coast at the boundary of the proposed development which runs along the edge of Belle Grève Bay from the existing Longue Hougue inert waste facility site to Spur Point. There is a car parking area to the south west of the bay.

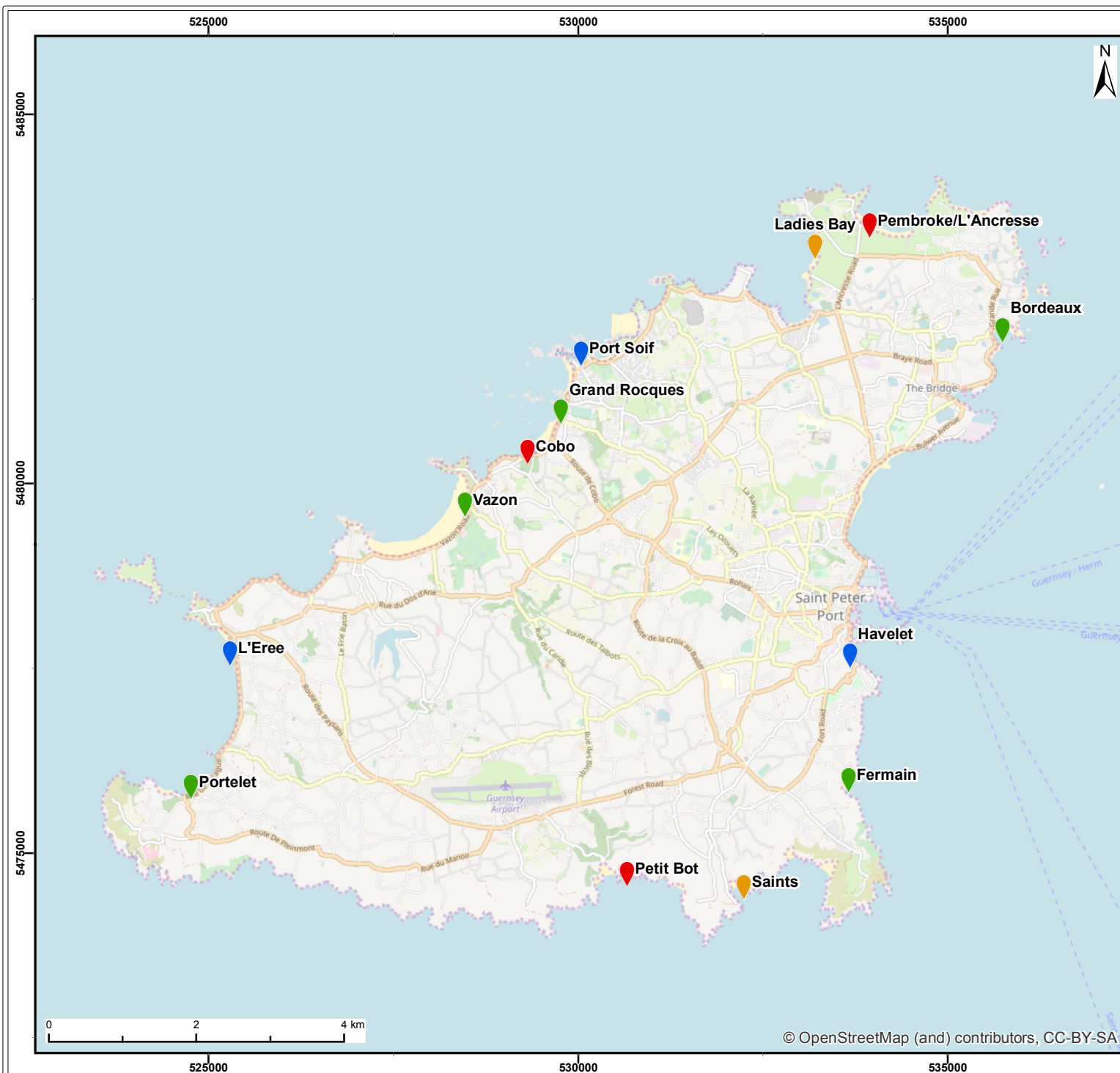
Potential Impacts during Construction

Impact of Increased Industrialisation

- 2.10.14 The site is located adjacent to St Sampson Main Centre and the Project may contribute to the industrialisation of the St Sampson coast.

Impact on Recreation

- 2.10.15 Although the Delancy Park is located approximately 400m west, it is separated from the site by roads and other developments and is not predicted to be impacted by the development. However, the coastal path does run around the perimeter of the site which will be lost during construction and reinstated because of the development. Furthermore, the foreshore is used for walking and ormering which will affected during construction.
- 2.10.16 The reclamation will result in a small reduction in available water for navigation, however this is not considered to be significant and has therefore been scoped out. Given that there is already an inert waste facility adjacent to the site, there is not likely to be any indirect impact to navigation over and above what is already present, therefore indirect impacts are also scoped out.



Legend:

Bathing Water Classification (2014-2017 four-year rolling average)

- Excellent
- Good
- Sufficient
- Poor

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Client:	Project:
States of Guernsey	Longue Hougue South Informal EIA Scoping Report

Title:
Guernsey Main Beach Locations

6475000

Figure: 2.11		Drawing No: PB5312-200-010			
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	05/11/2018	GC	PT	A4	1:75,000

Co-ordinate system: WGS 1984 UTM Zone 30N



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Impact on Human Health

- 2.10.17 Construction of the proposed development has the potential to impact human health through a decline in road safety, decreased air quality, increased noise levels, loss of recreational resources and visual disturbance. These impacts are covered in detail in the respective chapters however a general combined assessment will be provided for sensitive receptors in relation to all of these impacts.

Potential Impacts during Operation

Positive Impact on Key Infrastructure

- 2.10.18 Once full, the future use of the site may be considered to add key industrial infrastructure to the island which may have needed to have been placed elsewhere. At present, it is not possible to determine this future use, and therefore what impact may arise. This has been scoped out and will be considered when the site is complete and the end use has been determined.

Impact on Recreation

- 2.10.19 The proposed development could result in the temporary obstruction to the coastal path which currently runs around the rear of the embayment within the development footprint and thus result in modification of this recreational receptor.
- 2.10.20 The presence of the inert waste facility will result in a reduction of available foreshore for ormering and recreational walking, therefore, the direct impact on recreation is scoped in.
- 2.10.21 The reclamation will result in a small reduction in available water for navigation, however this is not considered to be significant and has therefore been scoped out. Given that there is already an inert waste facility adjacent to the site, there is not likely to be any indirect impact to navigation over and above what is already present, therefore indirect impacts are also scoped out.

Impact on Human Health

- 2.10.22 Operation of the proposed development has the potential to impact human health through a decline in road safety, decreased air quality, increased noise levels, loss of recreational resources, and visual disturbance. These impacts are covered in detail in the respective chapters however a general combined assessment will be provided for sensitive receptors in relation to all of these impacts.

Summary of Impacts

- 2.10.23 The impacts that have been scoped in to the full environmental assessment are summarised in **Table 2.16**.

Table 2.16 Summary of Impacts Relating to Population and Human Health

Potential impacts	Scoped in?	
	Construction	Operation
Impact of increased industrialisation	Yes	No
Impact on recreational use of foreshore	Yes	Yes
Impact on navigation	No	Yes
Impact on human health	Yes	Yes
Positive impact on key infrastructure	No	No

Mitigation Measures

- 2.10.24 The requirement for and extent of mitigation measures associated with population and human health will be established during the impact assessment process. In relation to recreational resource, the scheme design could provide for retention of coastal access either along the coastal edge on completion of the operational phase, or along existing route albeit with formalisation and screening of the site.

Approach to Assessment and Data Gathering

- 2.10.25 Impacts will be considered on sensitive receptors within 1km.
- 2.10.26 To gather an in-depth view of the potential impacts on population and human health. The States has commissioned surveys for air quality, traffic and noise (see earlier sections). Analysis of the results of these surveys as well as a comprehensive desktop study will be undertaken to assess the impacts on population and human health. This will be cross checked by a site visit to confirm the findings of the desk study.

2.11 Material Assets (Archaeology, Built and Cultural Heritage)

Baseline Environment

- 2.11.1 Guernsey has a rich archaeological heritage with evidence of human activity and settlement from 8,000 BC. Examples of significant remains include:
- rural areas burial mounds;
 - prehistoric landscapes;
 - standing stones;
 - mediaeval road patterns;
 - mediaeval and Iron Age field systems;
 - fortifications;

- agricultural;
- domestic and ecclesiastical buildings; and
- ancient settlements.

2.11.2 The States' development plans identify 26 Conservation Areas which are designated for special architectural or historic interest and character that is desirable to preserve or enhance. The Conservation Areas are a major part of the cultural identity of Guernsey however the States' recognise that change is required to respond to different economic, social and cultural conditions.

2.11.3 A preliminary search of the assets in the local vicinity of the development area has been undertaken. Within 250m of the site two assets have been identified:

- Delancey Conservation Area; and
- Delancey Park: prehistoric monument, site of windmill, multi-period fortifications.

2.11.4 A further search of the Guernsey Sites and Monuments Record (SMR) identified 15 assets within 250m of the development, which are listed below:

- Billingbear House, Bulwer Avenue;
- Spur Point Battery;
- 10.5cm K331 (f) Gun Casemate (part of MGU834);
- Site of hut (part of MGU834);
- Tobruk for Tank Turret, part of MGU834;
- Lady Cecilia Hay at Spur Point;
- L'Ami des Grecs on Spur Point;
- Nordenskjold at Spur Point;
- Sabine on Spur Point;
- Sovereign at Spur Point (1843);
- Sovereign at Spur Point (1849);
- Amphora from Belle Grève Bay;
- 10.5cm K331(f) Gun Casemate at Spur Point (Wn. Richardseck);
- 2cm Flak Gun Emplacement at Spur Point Battery (Wn. Richardseck); and
- Resistance Nest "Richardseck" at Spur Point.

2.11.5 Assets that are within 1km have also been identified because they may be subject to indirect impacts. These assets include:

- Delancey Conservation Area;
- The Bridge Conservation Area;
- Delancey Park: prehistoric monument, site of windmill, multi-period fortifications;
- La Ronde Cheminee: medieval settlement;
- Mont Crevelt: multi-period fortifications and prehistoric findspot;
- St Clair: prehistoric findspots, standing stones and site of medieval chapel;
- St Sampsons Harbour;
- St Sampsons Parish Church and Environs; and
- Vale Castle and environs.

2.11.6 There were 214 assets identified in the SMR within 1km of the proposed development. These include:

- 73 World War II Assets;
- 64 Buildings;
- 46 Protected Monuments;
- 14 Find Spots;
- 14 Maritime Assets;
- 2 Landscapes; and
- 1 Place.

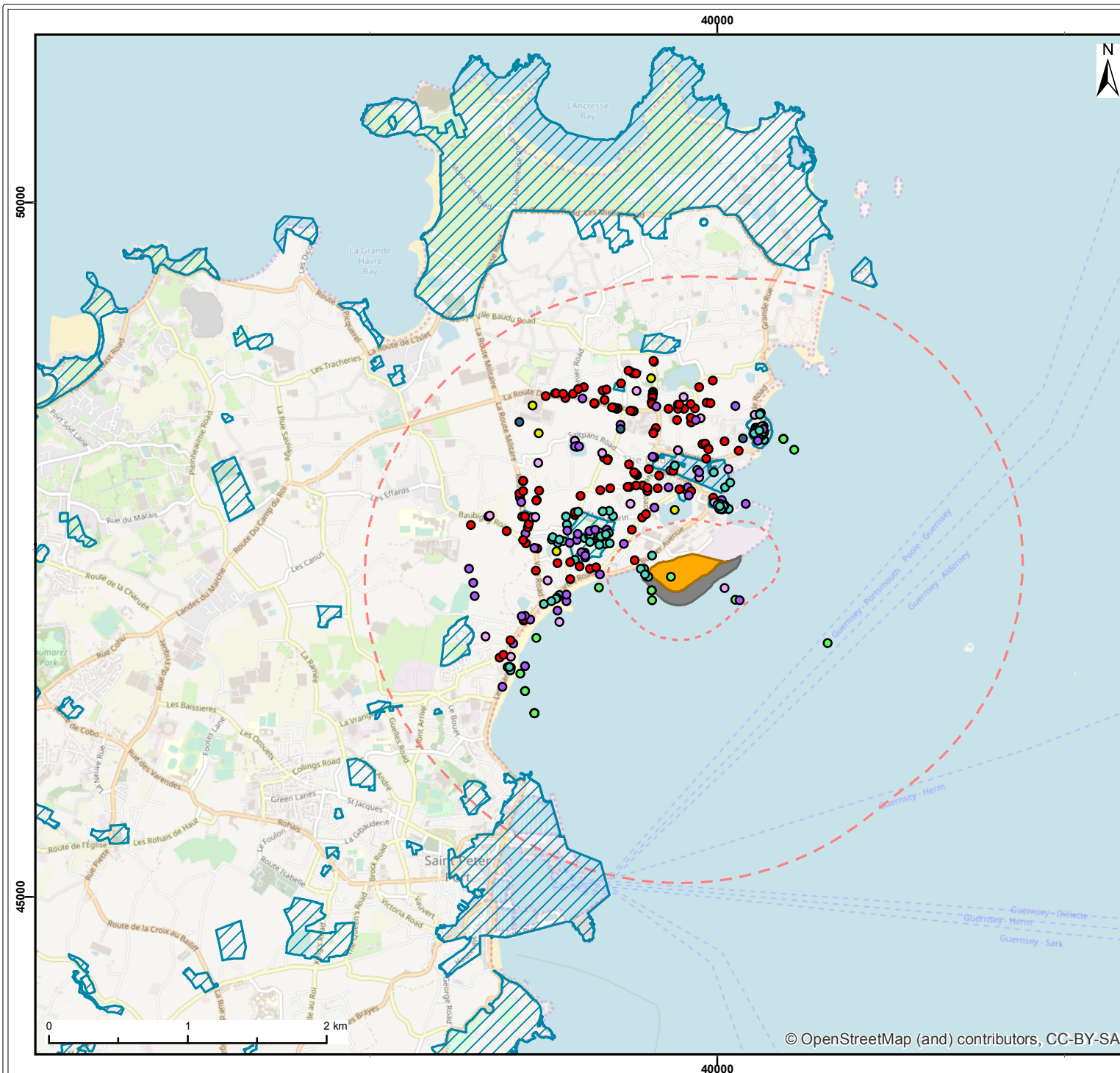
2.11.7 The intertidal and subtidal environment surrounding the proposed development is high energy rocky seabed and rocky intertidal with very little sediment. This means that there is very limited potential for archaeological remains to be present in the proposed development area.

2.11.8 Heritage assets are identified on **Figure 2.12**.

Potential Impacts during Construction

Direct Impact on Known and Unknown Archaeological and Historical Sites

2.11.9 Construction of the proposed development will not cause obstruction to or impact on the Delancey Conservation Area and Delancey Park, as well as unknown heritage assets within 250 metres of the development. Therefore, the direct impact of construction has been scoped out of the EIA process.



Legend:

- Breakwater
- Infill Area
- Proposed Development Area 250m Buffer
- Proposed Development Area 2km Buffer
- Archaeological Site

Record Type

- Monument
- Building
- Find Spot
- World War II
- Landscape
- Place
- Maritime

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Client:	Project:
States of Guernsey	Longue Hougue South Informal EIA Scoping Report

Title:
Heritage Assets

Figure: 2.12	Drawing No: PB5312-200-011
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Revision:	Date:	Drawn:	Checked:	Size:	Scale:
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Co-ordinate system: Guernsey Grid


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Indirect Impact on Unknown Archaeological and Historical Sites

- 2.11.10 The proposed development has the potential to cause an indirect impact on the setting of designated and non-designated heritage assets within 1km of the site, through noise and visual disturbance. This impact will be assessed in the Environmental Assessment.

Potential Impacts during Operation

Direct Impact on Known and Unknown Archaeological and Historical Sites

- 2.11.11 Operation of the proposed development will not cause obstruction to or impact on the Delancey Conservation Area and Delancey Park, as well as unknown heritage assets within 250 metres of the development. Therefore, the direct impact of construction has been scoped out of the EIA process.

Indirect Impact on Unknown Archaeological and Historical Sites

- 2.11.12 Once operational, the proposed development has the potential to cause an indirect impact on the setting of designated and non-designated heritage assets within 1km of the site, through noise and visual disturbance. This impact will be assessed in the Environmental Assessment.

Summary of Impacts

- 2.11.13 The impacts on material assets scoped in to the assessment are outlined in **Table 2.17**.

Table 2.17 Summary of Impacts Relating to Material Assets (Archaeology)

Potential impacts	Scoped in?	
	Construction	Operation
Direct impacts on known and unknown archaeological and historical sites	No	No
Indirect impacts on known and unknown archaeological sites	Yes	Yes

Mitigation Measures

- 2.11.14 The requirement and details of mitigation measures will be identified as part of the Environmental Assessment. If settings impacts are identified, sympathetic design and screening with plants will be considered.

Approach to Assessment and Data Gathering

- 2.11.15 The assessment will consider indirect impacts on assets within 1km of the site.

2.12 Landscape (Townscape/ Seascape) Character and Visual Amenity

Baseline Environment

2.12.1 In accordance with current good practice, this assessment will address landscape and visual effects as separate issues. Landscape effects relate to both the effect on the physical features of the Site, and on the landscape character of the Site and surrounding area. Visual effects relate to typical views of the proposed development received by visual receptors from the surrounding area.

2.12.2 The landscape assessment will include townscape and seascape as the Site lies in the sea.

Landscape/ Townscape/ Seascape Character

2.12.3 The Island coastline is described as varied. The east coast is less indented and is scoured by the tidal race between Guernsey, Herm and Jethou. It is also more protected, lying in the lee of the prevailing wind.

2.12.4 The Site is located adjacent to/ on the east coast. It is coastal/ marine and consists of a rocky foreshore, up to 200m of which is exposed at low tide and is in the sea. The landward edge of the site is partially fronted by rock boulders and is adjoined to the current land reclamation site at Longue Hougue by a rock revetment.

2.12.5 A review of baseline information for landscape included the following States of Guernsey documents:

- Guernsey Character Study (GCS) (Stage 1) June 2013, and
- The Island Development Plan (IDP) 2016 (supersedes the Rural Plan and Urban Plan) and the following IDP annexes are relevant in describing the landscape/ townscape/ seascape context: Annex V Landscape Character, Annex VII Conservation Areas.

2.12.6 The GCS describes the following elements, which in combination with the underlying topography of upland plateau with southern and south-eastern cliffs in the south and lowland and marshy areas in the north, contribute to the unique character of Guernsey:

- Character Areas. - These are split into four categories, that help to explain the strategic character of the particular area: Rural, Semi-rural, Built-up, Urban.
- Landmarks - Memorable features in the landscape, aiding navigation/ legibility, giving identity.
- Movement - The main paths and routes that people take when moving through the Island.
- Gateways - The major arrival points to the Island.

- 2.12.7 The GCS acknowledges that interaction with and reclamation of the sea, and defence (from both the sea and from outside invasion) has been part of its historic development.
- 2.12.8 In Annex 5 Landscape Character of the IDP, the Coastal Landscape and the Lowland Landscape Types are relevant. The Site lies within the Coastal Landscape Type within the sub-category, the East Coast (from Bordeaux to Havelet). The East Coast is further divided into the areas described below and confirmed during the site visit. These will inform the choice of some of the (landscape/ townscape/ seascape) character area receptors and include:
- The Harbours;
 - The East Coast Road;
 - The Promontories.
- 2.12.9 Lowland Landscape Type, which lie within the study area but relate less to the Site include:
- Lowland Hills with characteristic undulating land with small rocky hills or 'hougues'.
- 2.12.10 The Harbours (St Peter Port and St Sampson's Harbour) Character Areas are the main arrival points to the island by sea around which settlement has occurred. They form the two main urban character areas and the two Main Centres of Guernsey, as illustrated on the IDP Proposals Map. The Main Centres are shown with an outer boundary with an inner boundary around the core.
- 2.12.11 The Site lies within the IDP East Coast area between the two harbours. The northern boundary of the Site is contiguous with the outer boundary of St Sampson's, the northern of these two Main Centres. The area with the Spur Point public footpath and garden area immediately west of and adjacent to the site is outside the northern Main Centre outer boundary, and it has a built up character, being situated between the sea, residential and industrial areas, and small informal open areas.
- 2.12.12 The general area surrounding the site is low lying with a maximum elevation of 15m inland. Outside of this range are St Peter Port to the south which rises to ~50m, Delancey Park to the west that rises to ~30m AGD, Mont Crevelt to the north-west which rises to ~20m, and the foot of Vale Castle ~30m which lies 200m to the north of the site. Areas of higher ground in the surrounding area could potentially have a view of the site from an elevated position.
- 2.12.13 Although nearer St Sampson's Harbour Main Centre to the north, the Site is separated from it by built form and vegetation. It relates more to areas over the open seascape to the south and east to include St Peter Port, Belle Grève Bay, and East Coast Road with frontage and treed background, it also relates to the sea with its ferry routes, and other marine activities, and marginally to the distant islands of Herm and Jethou, circa 5km away from the Site (though these are considered too far for visible changes to arise). To the north, areas immediately adjacent to the Site are not separated from the Site by buildings or vegetation and include the current land reclamation site at Longue Hougue on the

northern Site boundary and the area to the west, mentioned above, which is built up in character with mixed characteristics. These considerations have influenced the selection of receptors. The potential Character Area Receptors that may be impacted by changes in landscape/ townscape/ seascape character are identified in **Table 2.18**.

Table 2.18 Proposed Character Area Receptors (landscape/ townscape/ seascape receptors) to be included in the Landscape and Visual Assessment

Number	Character Area Receptors (landscape/ townscape/ seascape receptors)	Description
1	St Peter Port (Harbour and Town)	Gateway to and from the Island of Guernsey.
2	Les Banques/ Les Bas Courtils East Coast Road Frontage and Treed backdrop	Coastal road and associated built environment to include the frontage, defences and car parks on the seaward side.
3	Belle Greve Bay	Belle Greve Bay beach, shingle, rocks and promontories.
4	The Open Sea with Islands (and Ferry Routes)	Open Sea with inhabited islands (Herm, Jethou) and uninhabited islands/ rocky outcrops, ferry routes and fishing boats.
5	The Local Landscape/Seascape – Rocky & Industrial	The north-eastern part of the site, the road leading through the industrial area to the current inert waste facility.
5B	The Local Landscape/Seascape – Rural Pocket	The south-western part of the site and landscape local to the site, the garden and residence, the public footpath and open space, the local beach north of Spur Point.

Visual Amenity, Views and Visual Receptors

- 2.12.14 Proximity to the sea has meant that long distance and panoramic views are possible and the GCS has mapped these views Strategic Views (Figure 11). Some of these long-range views/ viewpoint locations from which large areas of the island can be seen lie within the study area/ Visual Envelope (VE) and are from a similar location as the viewing points on the Guernsey Map (2010).
- 2.12.15 The VE includes views from the north east, east, south east, south, and south west with near views only available from the adjacent land to the west and from the north.
- 2.12.16 Views would be available to visual receptors at St Peter Port Harbour; along the Coast Road with its residential frontage adjacent to Belle Grève Bay; from the beach and marine area of Belle Grève Bay; from the Sea with views from boats and ferries; far distant views over the sea from the inhabited islands of Herm and Jethou, and near views from the adjacent public footpath, private residence and the current land reclamation site at Longue Hougue. Views from St Sampson's harbour area to the north west and Vale Castle are curtailed by built form and vegetation and are therefore scoped out. These considerations

inform the selection of visual receptors, which selected from within the visual envelope as shown in the following table. This includes receptors of strategic views and panoramic views as shown on Figure 11 in the GCS and on the Guernsey Map (2010).

2.12.17 Visual receptor groups within the study area and visual envelope would include:

- Road Users -driver, cyclists, pedestrians;
- Residents;
- Bathers and other beach users;
- Ferry users travelling to and from St Peter Port;
- Fishermen and recreational boat users;
- Users of the public footpath;
- Tourists; and
- Workers in the adjacent landfill site.

2.12.18 Viewpoints will be selected to provide a selection of representative viewpoints for a range of receptors groups, as listed above, and from a variety of view directions. These will be co-ordinated with the Cultural Heritage Consultant. The viewpoints will be shown on a plan.

Potential Impacts during Construction

Alteration to Landscape Character

2.12.19 During construction, the presence of the associated plant, materials and other temporary structures, and the activity associated with the construction process would result in a change of landscape character from coastal/marine to industrial.

Disturbance to Visual Amenity / Viewers

2.12.20 The existing site has an extensive visual envelope to the east and south over the sea. The presence of the construction as described in **paragraph 2.12.6** would also change the views towards and within the site during the construction phase.

Potential Impacts during Operation

Alteration to Landscape Character

2.12.21 Once operational, the character of the site will change from coastal rocky shore to reclamation site.

Disturbance to Visual Amenity / Viewers

- 2.12.22 There would be a permanent change to local views towards the Site from the nearby residence and adjacent public footpath and to wider views at about 1km - 2km distance from St Peter Port, the coast road, Belle Grève Bay, and from the sea to include ferries and other boats. Between 2km and 3km visibility is likely to be faint and details unlikely to discern, for example from viewpoints such as Fort George. For views over 4km, where available such as over the sea, the changes will be negligible.

Summary of Impacts

- 2.12.23 **Table 2.19** summarises the potential impacts to Landscape/Townscape/ Seascap Character and on Visual Character Amenity/ Viewers that have been scoped into the Environmental Statement.

Table 2.19 Summary of Impacts Relating to Landscape and Visual Character

Potential impacts	Scoped in?	
	Construction	Operation
Changes to Landscape/ Townscape/ Seascap Character	Yes	Yes
Changes to views to Visual Amenity / Viewers	Yes	Yes

Mitigation Measures

- 2.12.24 Impacts to landscape/ seascap/ townscape and visual amenity will be mitigated through careful consideration of the design of the breakwater, to include consideration of the ultimate end use of the Site so that a salt free soil and sub soil base is laid down in areas where green infrastructure planting could occur.

Approach to Assessment and Data Gathering

- 2.12.25 Impacts will be considered on all accessible views within 4km on land and across the sea.
- 2.12.26 The GCS did not include coastline/ marine character areas, and the IDP included coastal but not marine character areas, which is where the proposed development is situated. This was a constraint in the gathering of the baseline data.
- 2.12.27 A site visit has been undertaken to identify receptors and representative viewpoints for assessment. These and the L/T/S/VIA Methodology have been sent to the States of Guernsey for agreement.

- 2.12.28 A full Landscape and Visual Impact Assessment will be prepared to the latest guidance (GLVIA 3) to ensure that the sensitive receptors are clearly identified, changes and their magnitude assessed, and potential mitigation measures and enhancements developed.

2.13 Marine Ecology

Baseline

Designated Sites

- 2.13.1 The proposed development is located on an area of intertidal and subtidal habitat in Belle Grève Bay which includes the foreshore Area of Biodiversity Importance (ABI). The foreshore ABI includes all subtidal habitat in the north of the Island, from Pleinmont to St Peter Port. ABIs are protected as they represent habitat types that are of significance to nature conservation in the island however they do not have sufficiently high level of special interest to be designated as Sites of Special Significance (SSS) (States of Guernsey Environment, 2014). While the foreshore as a whole was suggested as a SSS by Société Guernesiaise, the States decided not to designate it because the evidence regarding its interest was too vague and such designation would give rise to difficulties applying the legislation by capturing everyday ad hoc activities such as building a sand castle into the planning system. As such the States considered the designation would be overly onerous in an area with little development pressure. Instead protection and recognition of its biodiversity value of this area was given by designating it an ABI.

Habitats

- 2.13.2 The key marine habitat categories present within Guernsey are:
- Open water; and
 - Coastland.
- 2.13.3 The marine ecology of the Bailiwick is rich and diverse. Guernsey's geographic location and large tidal differences create and support a diverse range of habitats. The convergence of cold and warm bio-geographic regions supports an array of species which include rich plankton "rivers" which flow eastward from the Atlantic to the North Sea. The large tidal range supports a particularly large and biodiverse range of organisms in the intertidal habitats. Several habitats regarded as a priority for conservation may be found around the islands including Eelgrass beds (which provide spawning grounds for species such as sea bass and black sea bream), Maerl beds, and tidal rapids.
- 2.13.4 An intertidal habitat survey completed for the adjacent Longue Hougue Inert Waste Facility was completed in August 2015. Twenty-six biotopes were identified throughout the survey, 16 of which occurred in Belle Grève Bay (**Table 2.20**). The results of this survey are shown in **Figure 2.13**.

- 2.13.5 The boundary between the land and the foreshore is dominated by artificial substrata, with a strip of littoral coarse sediment in the centre of the bay. The two most commonly occurring habitats found throughout the survey were LR.HLR.MusB.Sem and LR.HLR.MusB.Sem.Sem. These habitats are typically found in areas with strong tidal flow and/or wave action, and consist of barnacle mosaics.

Figure 2.13 Results of 2015 Intertidal Habitat Survey of Site

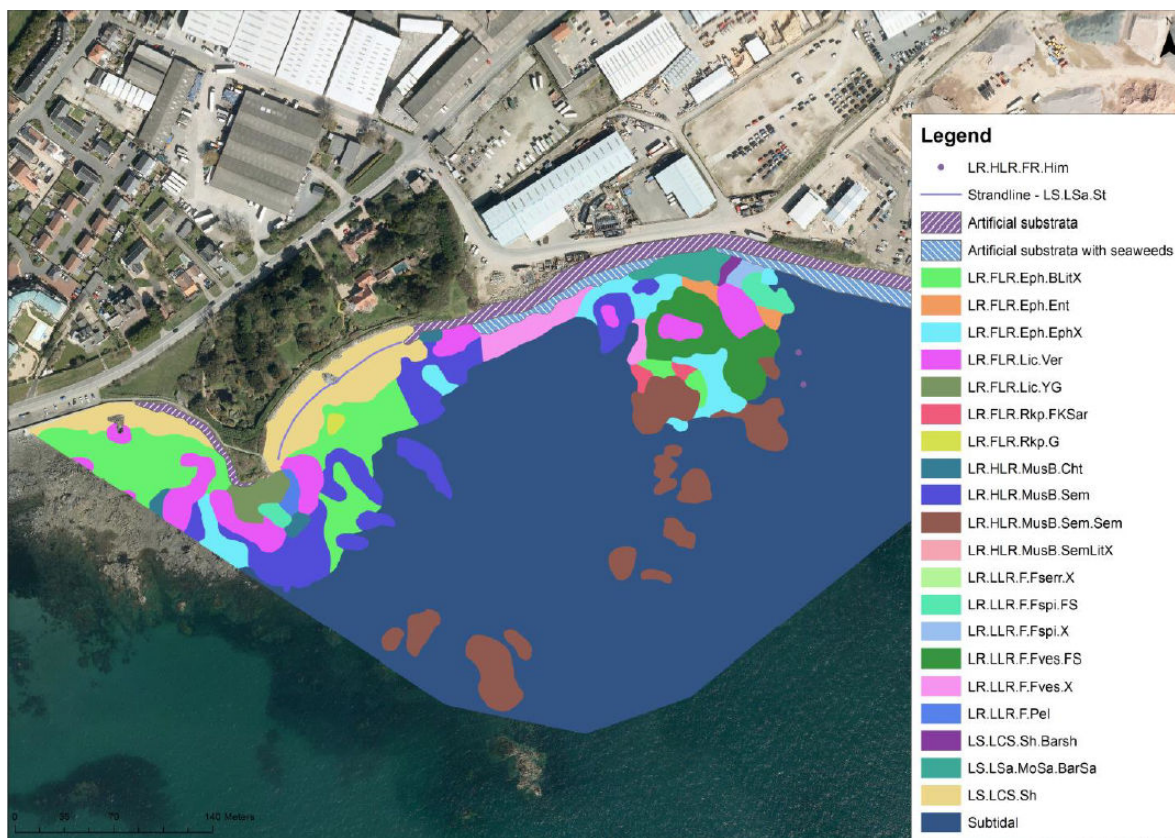


Table 2.20 JNCC Habitats Identified from the 2015 Intertidal Survey (Adapted from: States of Guernsey Environment, 2015)

Habitat biotope type	Habitat Biotope Code	Description	Ecological significance
High energy littoral rock (and other substrata)	LR.HLR.MusB.Sem.Sem	<i>Semibalanus balanoides</i> , <i>Patella vulgata</i> and <i>Littorina</i> spp. on exposed to moderately exposed or vertical sheltered eu littoral rock.	Low
	LR.HLR.MusB.Sem.LitX	<i>S. balanoides</i> and <i>Littorina</i> spp. on exposed to moderately exposed or vertical sheltered eu littoral rock.	Moderate
	LR.HLR.FR.Him	<i>H. elongata</i> and red seaweeds on exposed to moderately exposed lower eu littoral rock.	Low

Habitat biotope type	Habitat Biotope Code	Description	Ecological significance
Low energy littoral rock	LR.LLR.F.Fserr.X	<i>Fucus serratus</i> on full salinity lower eulittoral mixed substrata.	Moderate
	LR.LLR.Fspi.FS	<i>Fucus spiralis</i> on full salinity sheltered upper eulittoral rock.	Low
	LR.LLR.Fspi.X	<i>Fucus spiralis</i> on full salinity upper eulittoral mixed substrata.	Low
	LR.LLR.Fves.FS	<i>Fucus vesiculosus</i> on moderately exposed to sheltered mid eulittoral rock.	Low
	LR.LLR.Fves.X	<i>F. vesiculosus</i> on mid eulittoral mixed substrata.	Low
	LR.LLR.F.Pel	<i>Pelvetia canaliculata</i> on sheltered littoral fringe rock.	Low
Features of littoral rock	LR.FLR.Lic.YG	Yellow and grey lichens on supralittoral rock.	Low
	LR.FLR.Lic.Ver	<i>V. maura</i> on littoral fringe rock.	Low
	LR.FLR.Rkp.G	Green seaweeds (<i>Enteromorpha spp.</i> and <i>Cladophora spp.</i>) in shallow upper shore rock pools.	Low
	LR.FLR.Rkp.FK.Sar	<i>S. muticum</i> in eulittoral rock-pools.	Low
Ephemeral green or red communities	LR.FLR.Eph.Ent	<i>Enteromorpha spp.</i> on freshwater-influenced and/or unstable upper eulittoral rock.	Low
	LR.FLR.Eph.EphX	Ephemeral green and red seaweeds on variable salinity and/or disturbed eulittoral mixed substrata.	Low
Littoral sediment	LS.LCS.Sh.BarSh	Barren littoral shingle.	Low

2.13.6 Of the habitats seen throughout the foreshore, two were of moderate ecological significance. LR.HR.MusB.Sem.LitX: Barnacles and *Littorina littorea* on unstable eulittoral mixed substrata is a UK Biodiversity Action Plan (UKBAP) habitat, which is rare in the British Isles. LR.LLR.F.Fserr.X: *Fucus serratus* on full salinity lower mixed substrata is common in the UK, however is of moderate ecological significance due to the high abundance of invertebrate species that shelter beneath *F. serratus* fronds.

2.13.7 The survey also recorded an invasive species of marine algae *Sargassum muticum* within a number of rockpools.

2.13.8 The subtidal habitat within the project area has not been surveyed.

2.13.9 There are a number of marine mammal species present in the waters off Guernsey. The islands have a remarkably high biodiversity compared with oceanic territories of a similar size. A Biodiversity Strategy for Guernsey (States of Guernsey Environment Department, 2015) set out a strategy to identify 'priority species' for Guernsey, which will then be subject to an action plan to ensure their protection. These species are yet to be confirmed, however the list below summarises those species identified as notable species present in Guernsey's terrestrial and marine habitats (JNCC, 2010).

Marine Mammals

- Grey seals *Halichoerus grypus*;
- Bottle-nosed dolphins *Tursiops truncatus*;
- Common dolphin *Delphinus delphis*;
- Risso's dolphins *Grampus griseus*;
- Porpoises *Phocaena phocaena*;
- Pilot whales *Globicephala melaena*; and
- Minke Whales *Balaenoptera acutirostrata*.

Molluscs

- Ormer *Haliotis tuberculata*.

Potential Impacts during Construction

Loss of Habitat

2.13.10 Construction of the breakwater will lead to loss of intertidal and subtidal habitat in a small area. Based on current survey data, no protected habitats or species are seen within the bay, and the majority of habitats are of 'low' ecological status. However, there is an intertidal UKBAP habitat present and the subtidal habitat has not been surveyed. Therefore, the impact of loss of habitat will be considered in the EIA.

Habitat Alteration / Physical Disturbance

2.13.11 As the proposed development involves covering a section of intertidal and subtidal habitat with the breakwater structure and isolating an area for the foreshore from the wider marine habitat, physical disturbance is unavoidable. The significance of this effect will be assessed during the EIA.

Increased Suspended Sediments

- 2.13.12 Installation of the breakwater may cause an increase in suspended sediment concentrations in Belle Grève Bay and surrounding water column. Such concentrations have the potential to affect benthos through smothering of sessile species and filter feeders. An increase in turbidity could also cause a reduction in light penetration through the water column, which could have an impact on photosynthesising marine algae. As the bay is a dynamic environment with high wave action and tidal movements it is likely that any sediment released will rapidly dissipate. This effect will be investigated during the coastal process modelling and is therefore scoped in to the EIA.

Re-mobilisation of Contaminated Sediments

- 2.13.13 Sediment disturbance could lead to the mobilisation of contaminants (if present) that could be harmful to the benthos. Sediment grain size is a significant factor that controls the capacity for both suspended and bed sediments to concentrate and retain metals and organic pollutants (Horowitz, 1987). Finer sediments (clay and silt fractions) have a greater adsorbing capacity and, therefore retain higher concentrations of contaminants. This is considered unlikely for the proposed development as the mobile sediments present in the area are almost exclusively of shingle, cobbles and sand, it is not anticipated that significant contaminant release will occur if sediments are re-suspended. This impact has therefore been scoped out of the EIA.

Potential Impact on Protected Sites

- 2.13.14 The development includes an area of intertidal ABI. The development has the potential to cause indirect impacts on the Herm Ramsar site, therefore the impact of the proposed development on designated sites will be considered in the EIA.

Potential Impact on Marine Mammals due to Collisions with Vessels

- 2.13.15 Although the majority of construction will take place on the land, some sub-tidal areas may only be accessed by boat. An increase in boat movements may generate an increased collision risk to marine mammals, therefore this impact will be assessed in the EIA.

Potential Impacts during Operation

Loss of Habitat

- 2.13.16 Once operational, the infilling of the area between the breakwater and shoreline will lead to loss of intertidal and subtidal habitat over time. Based on current survey data, no protected habitats or species are seen within the bay, and the majority of habitats are of 'low' ecological status. However, there is an intertidal UK BAP habitat present and the subtidal habitat has not been surveyed. Therefore, the impact of loss of habitat will be considered in the EIA.

Increased Suspended Sediments

- 2.13.17 The placement of the breakwater within the bay has the potential to alter local coastal processes and therefore could cause a change in suspended sediments. As the bay is a dynamic environment with high wave action and tidal movements it is likely that any sediment released will rapidly dissipate. This effect will be investigated through the coastal process modelling, and therefore is scoped in to the EIA.

Re-mobilisation of Contaminated Sediments

- 2.13.18 Sediment disturbance could lead to the mobilisation of contaminants (if present) that could be harmful to the benthos, however as the mobile sediments present in the area are almost exclusively of shingle, cobbles and sand, it is not anticipated that significant contaminant release will occur if sediments are re-suspended therefore this has been scoped out of the EIA.

Potential Impact on Protected Sites

- 2.13.19 The development includes an area of intertidal ABI. The development has the potential to cause indirect impacts on the Herm Ramsar site, therefore the impact of the proposed development on designated sites will be considered in the Environmental Assessment.

Habitat Alteration

- 2.13.20 The intertidal survey noted colonisation of the current Longue Hougue seawall by *Ulva intestinalis* and *Fucus vesiculosus*. This effect may be extended along the breakwater and lead to a localised increase in biodiversity. Although potentially viewed as a positive effect, this represents a change from the baseline ecology and may also increase the potential for colonisation by invasive species. The proposed development represents a change from the natural environment.

Potential Impact on Marine Mammals due to Collisions with Vessels

- 2.13.21 There are no vessel movements associated with the operational phase of the project therefore there will be no risk to marine mammals from collisions. Therefore, this has been scoped out of the EIA.

Summary of Impacts

- 2.13.22 The impacts to Marine Ecology scoped into the assessment are outlined in **Table 2.21**.

Table 2.21 Summary of Impacts Relating to Marine Ecology

Potential impacts	Scoped in?	
	Construction	Operation
Physical disturbance	Yes	Yes
Increased suspended sediments	Yes	Yes
Re-mobilisation of contaminated sediments	No	No
Loss of habitat	Yes	Yes
Habitat alteration	Yes	Yes
Potential impact on marine protected features	Yes	Yes
Potential impact on marine mammals due to vessels	Yes	No

Mitigation Measures

- 2.13.23 The requirement for and approach to mitigation will be determined during the assessment process. Protocols taken to protect marine mammals will be outlined in a Marine Mammal Mitigation and Monitoring Plan (MMMMP) for example if considered necessary.

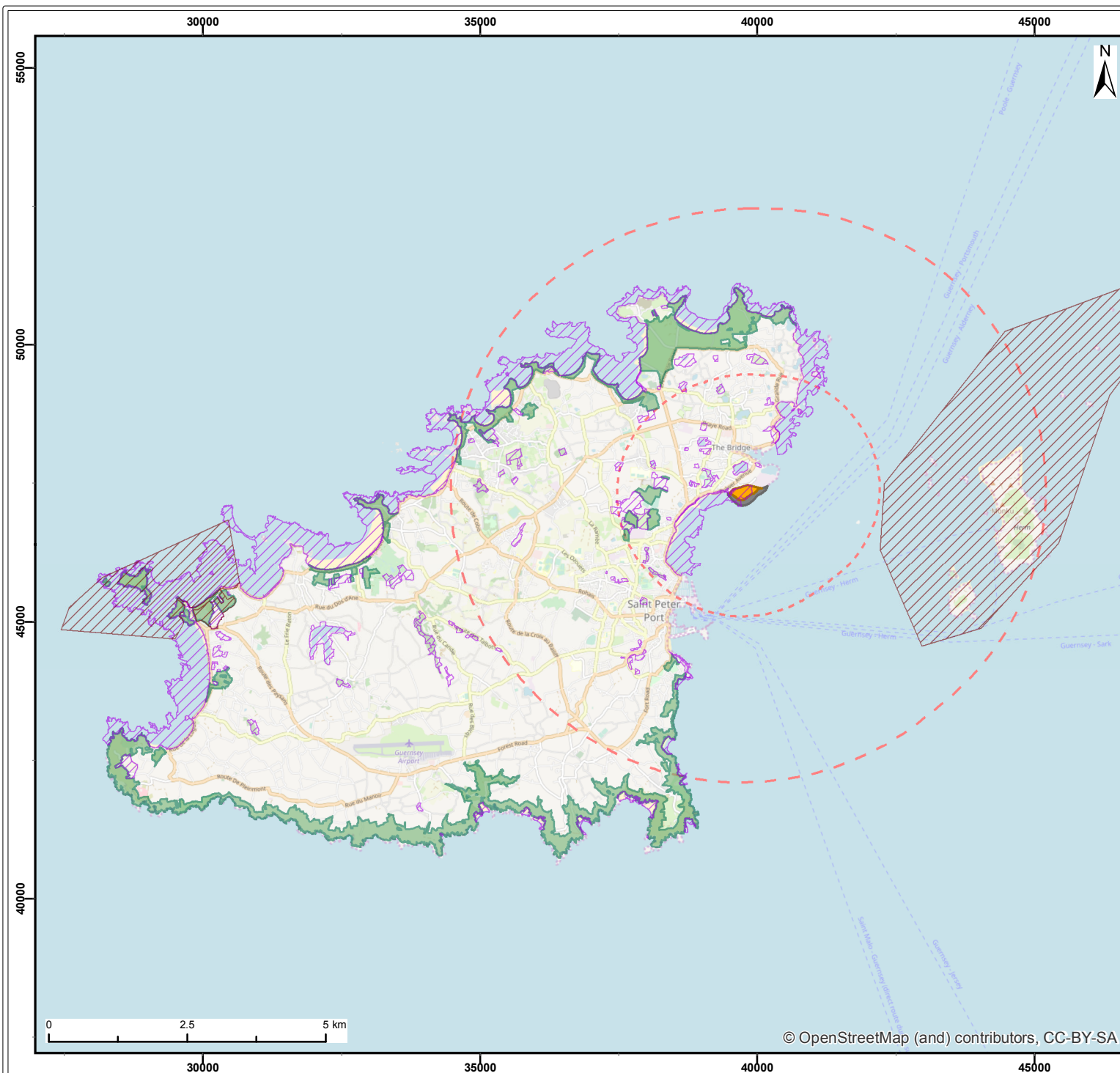
Approach to Assessment and Data Gathering

- 2.13.24 A benthic survey has been commissioned by The States to develop a more detailed understanding of the conditions of the marine environment adjacent to the Project area, which will comprise 20 sample stations and drop-down video (DDV) survey stations within and around the study area.
- 2.13.25 Impacts will be considered on sensitive receptors within the water environment between Bordeaux Harbour to the north, St Peter Port Southern Breakwater to the south and 5km to the east of the proposed development.

2.14 Terrestrial Ecology and Ornithology

Baseline

- 2.14.1 Guernsey uses a spatial approach to protecting and enhancing biodiversity on and around the Island through delineation of internationally, nationally and sub-nationally designated sites for nature conservation. These include Ramsar sites, Sites of Special Significance, and Areas of Biodiversity Importance. The designated sites in Guernsey are shown on **Figure 2.14**.



- Legend:
- Breakwater
 - Infill Area
 - Proposed Development Area 2km Buffer
 - Proposed Development Area 5km Buffer
 - Sites of Special Significance
 - Areas of Biological Importance
 - Ramsar Sites

Guernsey Government, 2013, JNCC 2016
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Client:	Project:
States of Guernsey	Longue Hougue South Informal EIA Scoping Report

Title:
International and National Nature Conservation Designations

40000

Figure: 2.14		Drawing No: PB5312-200-013			
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	01/11/2018	GC	PT	A4	1:100,00
02	10/12/2018	FC	PT	A4	1:100,00

Co-ordinate system: Guernsey Grid



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International Sites

- 2.14.2 There are two internationally designated wetland sites located within Guernsey, Lihou Island and L'Eree Headland Ramsar site and The Herm, Jethou and The Humps Ramsar site. L'Eree Headland Ramsar site is located over 5km from the proposed development therefore it is not considered further in this report.
- 2.14.3 The Herm, Jethou and The Humps was designated as a Ramsar site under The Convention on Wetlands of International Importance on 28th January 2016. The site was designated under Ramsar Criterion 6, as an important breeding area for lesser black backed gull *Larus fuscus*, puffin *Fratercula arctica*, and shag *Phalacrocorax aristotelis*.
- 2.14.4 Sites of Special Significance (SSS) are areas which have been identified as having special significance because of their archaeological, historical, botanical, geological, scientific, cultural, zoological or other special interest and which are desirable to preserve, enhance or manage. The 2016 Island Development Plan (States of Guernsey, 2016c) includes the designation of nine SSSs based on their botanical or zoological interest specifically for the wild range of wildlife they support. The locations of the sites are shown on **Figure 2.14**. Of the nine sites, only one is located within 2km: St Sampson's Marais & Château des Marais designated for a range of insects, plants, birds, amphibians, reptiles and mammals.

National Sites

- 2.14.5 Areas of Biodiversity Importance (ABI), including the Foreshore ABI (which covers the foreshore outside of the Cliffs Site of Special Significance and the St Peter Port and St Sampson harbour areas), are areas which contribute significantly to the biodiversity of the Island despite not being designated as Site of Special Significance. Some of the ABIs support the special interest of a SSS by providing either natural buffers or wildlife corridors. Others do not have sufficient special interest to be designated as a SSS but nonetheless are important in supporting the biodiversity of the Island.
- 2.14.6 The proposed development includes small areas of the Bulwer Avenue & Spur Point ABI. The site is an ABI due to the presence of coastal grassland and pebble ridge above high tide level and small areas of coastal rocks and scrub, in addition to its intertidal habitats. The area around Spur Point is important for roosting sea birds.

Habitats

- 2.14.7 Guernsey was subject to a full-island habitat survey in 2010. **Table 2.22** presents the habitat types and extents.

Table 2.22 Terrestrial and Intertidal Habitats Recorded on Guernsey during the 2010 Habitat Survey

Habitat category	Habitat classification	Area (ha)	Proportion of greenspace (%)
Terrestrial land			
Dry grasslands	Improved Grassland	1138	18
Miscellaneous	Amenity Grassland	687	11
Miscellaneous	Arable Land (short term ley)	556	8.7
Miscellaneous	Arable Land	333	5.2
Woodland	Dense Scrub	315	4.9
Woodland	Semi Natural Broadleaved Woodland	198	3.1
Dry grasslands	Semi-improved Grassland	192	3.0
Woodland	Planted Broadleaved Woodland	107	1.7
Tall herb and fern	Continuous Bracken	101	1.6
Coastland	Dune Grassland	84	1.3
Maritime cliff and slope	Coastal Grassland	74	1.2
Maritime cliff and slope	Hard Cliff	59	0.92
Dry grasslands	Parkland	56	0.88
Marshy grasslands	Semi-improved Marshy Grassland	53	0.83
Open water	Standing Water	48	0.75
Miscellaneous	Bare Ground	41	0.65
Woodland	Planted Mixed Woodland	35	0.55
Miscellaneous	Brownfield	32	0.51
Tall herb and fern	Tall Ruderal	32	0.50
Coastland	Dune Scrub	27	0.43
Woodland	Planted Coniferous Woodland	26	0.41
Coastland	Shingle	16	0.26
Swamp, marginal and inundation	Swamp	15	0.24
Woodland	Plantation Woodland	14	0.22
Coastland	Rock	12	0.19

Habitat category	Habitat classification	Area (ha)	Proportion of greenspace (%)
Marshy grasslands	Marshy Grassland	8.0	0.13
Quarry	Quarry	5.8	0.09
Coastland	Sand / Mud	4.3	0.07
Miscellaneous	Hottentot Fig	4.1	0.07
Maritime cliff and slope	Soft Cliff	2.6	0.04
Open water	Brackish Pool	2.5	0.04
Dry grasslands	Unimproved Grassland	2.1	0.03
Coastland	Coastal Heathland	1.6	0.02
Coastland	Saltmarsh	1.6	0.02
Coastland	Open Dune	1.4 8	0.02
Swamp, marginal and inundation	Marginal Vegetation	0.66	0.01
Coastland	Dune Slack	0.47	0.01
Intertidal zone			
Coastland	Intertidal Rock and Boulders	795	13
Coastland	Intertidal Sand	249	3.89
Coastland	Intertidal Shingle	36	0.57

2.14.8 The key habitat categories present within Guernsey are:

- Woodland;
- Scrub;
- Dry grasslands;
- Marshy grasslands;
- Tall herb and fern;
- Swamp, marginal and inundation;
- Open water;
- Coastland;
- Quarry;
- Miscellaneous; and
- Boundaries.

2.14.9 The habitats recorded in 2010 noted a series of changes over the preceding decade, specifically:

- There has been an increase in woodland on Guernsey from 216ha to 379ha. Sixty hectares have changed classification following the succession of Dense Scrub to Semi-natural Broadleaved Woodland, and 51ha have been planted with broadleaved trees; the States' Free Trees Scheme is largely responsible for this.
- Scrub on Guernsey has increased from 234ha to 314ha. This is following the abandonment of marginal land and the spread of scrub along the cliffs, the scrub replacing species-rich grasslands and heath.
- There was an increase in shingle from 13.45ha to 16.31ha (21.2% increase). Rock was recorded as decreasing from 15.97 ha to 11.99ha (25% decrease) and coastal grassland increased in area from 61.06ha to 74.03 ha (21.2.4% increase).
- The abundance of other, rarer habitats, has also decreased, especially species-rich dry grasslands contributing to an overall decline in Guernsey's biodiversity (States of Guernsey Environment Department, 2010).

Species

2.14.10 Guernsey is in the North Temperate Zone, and close to the French coast. As a consequence, the terrestrial species found are a subset of those in north-west France. The islands have a remarkably high biodiversity compared with oceanic territories of a similar size, even so, there are few terrestrial species compared with the mainland of France.

2.14.11 A Biodiversity Strategy for Guernsey (States of Guernsey Environment Department, 2015) set out a strategy to identify priority species for Guernsey, which will then be subject to an action plan to ensure their protection. These species are yet to be confirmed, however the list below summarises those species identified as notable species present in Guernsey's terrestrial habitats (JNCC, 2010). It should be noted, that although scaly cricket are known to be present on Guernsey, they are not detailed in the Biodiversity Strategy and are therefore not present in the list below.

Terrestrial Mammals

- Greater White-toothed Shrew *Crocidura russula*;
- Guernsey Vole *Microtus arvalis sarnius*;
- Pipistrelle *Pipistrellus pipistrellus*; and
- Long-eared bats *Plecotus auritus*.

Insects

- Blue-winged Grasshopper *Oedipoda caerulescens*;
- Mole Cricket *Gryllotalpa gryllotalpa*;

- Glanville Fritillary *Melitaea cinxia*; and
- Dung Beetle *Copris lunaris*.

Plants

- Guernsey fern *Asplenium x microdon*;
- Guernsey spleenwort *Asplenium x sarniense*;
- Guernsey centaury *Exaculum pusillum*;
- Guernsey lily *Nerine sarniensis*; and
- Loose-flowered orchid *Anagallis laxiflora*.

Invasive Species

2.14.12 Invasive species are a particular problem within Guernsey, as it has been isolated from mainland Europe since the last ice age. The following species terrestrial pose a current threat to native Guernsey flora and fauna:

- Hottentot fig *Carpobrotus edulis*;
- New Zealand pigmy weed *Crassula helmsii*; and
- Pampas grass *Cortaderia selloana*.

Birds

2.14.13 In addition to the Ramsar sites at Lihou Island and L'Eree Headland and The Herm, Jethou and The Humps, the coastal habitats of Guernsey provide important roosting and foraging habitats for migratory shorebirds.

2.14.14 La Société Guernesiaise records bird data across the island. The results of the counts up to 2010/2011 are shown in **Table 2.23**.

2.14.15 The key coastal habitats for waders are along the western coast of Guernsey, with no sites surveyed on the northern or eastern coasts supporting key populations of any species of wader.

2.14.16 In addition to these coastal habitats, standing water will provide a valuable habitat for loafing waterfowl. Arable fields and pastoral grasslands will also provide foraging habitat for migratory geese species, and exposed refuse tips support migratory gull species.

Table 2.23 Species Trends in Monthly Shorebird Counts around Guernsey's Coastal Zone from 1979 -2011 (adapted from La Société Guernesaise, 2011)

Species	% changes over previous		
	5 years	10 years	25 years
Bar-tailed godwit	203	116	6
Black-headed gull	-3	-22	-53
Dark-bellied brent goose	58	64	276
Dunlin	-44	-66	-88
Eurasian curlew	18	10	31
Golden plover	-68	-84	-91
Great black-backed gull	-20	41	450
Grey heron	-3	-10	32
Grey plover	-43	-68	-64
Herring gull	14	75	295
Lesser black-backed gull	52	174	1421
Little egret	28	46	>1000
Oystercatcher	-9	-11	8
Purple sandpiper	-80	-91	-89
Redshank	-13	-33	-78
Ringed plover	-30	-44	-40
Ruddy turnstone	-47	-42	-77
Sanderling	-20	-16	173
Shelduck	193	4237	3800
RED ALERT (greater than 50% decline) ⁴			
AMBER ALERT (25-50% decline)			

⁴ Following the Birds of Conservation Concern 4 (BoCC4) methodology for identifying Red and Amber list species (RSPB, 2015).

2.14.17 The first month of the wintering bird surveys to inform the EIA has been completed. The following species were identified within the study area:

- Cormorant;
- Shag;
- Grey heron;
- Little egret;
- Oystercatcher;
- Turnstone;
- Curlew;
- Black-headed gull;
- Great black-backed gull;
- Herring gull; and
- Sandwich tern.

2.14.18 In addition, the following passerines and raptors were also observed:

- Kestrel;
- Woodpigeon;
- Meadow pipit;
- Rock pipit;
- Pied wagtail;
- Magpie;
- Carrion crow;
- Wren;
- Dunnock;
- Chiffchaff;
- Robin;
- Blackbird;
- Blue tit;
- House sparrow; and
- Goldfinch.

2.14.19 The full details of the surveys will be presented as an appendix in the Environmental Statement once the suite of surveys is complete.

2.14.20 A Phase 1 habitat survey of the development area was completed in 2015. The survey identified the following habitats:

- Amenity grassland;
- Brownfield (the Longue Hougue reclamation area);
- Dense scrub;
- Improved grassland;
- Parkland;
- Planted mixed woodland;
- Rock;
- Seawall;
- Semi-improved grassland;
- Shingle; and
- Tall ruderal.

2.14.21 The shingle habitat within Belle Grève Bay is known for the scaly cricket *Pseudmogoplistes vicentae*, which is classified as endangered in Great Britain. Preliminary surveys have confirmed the presence of the cricket in Belle Grève Bay, as well as on other beaches within Guernsey.

Potential Impacts during Construction

Potential Impact on Protected Sites

2.14.22 The proposed development site is located 2.1km from the Herm, Jethou and The Humps Ramsar Site. There will be no direct impact to protected species or habitats within the Ramsar, however, there is the potential for change to coastal processes, and therefore indirect impacts to the habitats and species it is designated for.

2.14.23 St Sampson's Marais & Château des Marais SSS is 1.2km to the west of the proposed development, however it does not lie on any of the proposed transport routes, therefore there will be no direct or indirect impacts to the habitats and species present at this site. It is scoped out of the ES.

2.14.24 The proposed development lies within the Bulwer Avenue & Spur Point ABI. Dust and emissions during construction could have an impact on the ABI habitats. In addition, the presence of construction machinery and personnel and noise from construction activities could result in disturbance to birds present within the ABI. The development will result in habitat loss and temporary and long-term disturbance to the ABI.

Disturbance to Birds

- 2.14.25 Noise and vibration related to construction and installation activities at the proposed development has the potential to disturb and displace terrestrial species, in particular shorebirds that utilise Spur Point for roosting. The susceptibility of each species to construction disturbance will depend upon factors such as the feeding strategy of the species (i.e. aerial, swimming or surface) and timing of construction activities and behaviour (whether birds are breeding or migrating). The assessment will be informed by reviews of species sensitivity and monthly bird surveys will be completed as part of the EIA.

Habitat Loss

- 2.14.26 There will be no direct impact to the terrestrial habitats located within Spur Point (coastal grassland, trees and scrub), these are therefore scoped out.
- 2.14.27 The coastal habitats anticipated to be directly impacted by the proposed development are rock, shingle and sea wall. The majority of species within these habitats, such as birds, are mobile and able to relocate following repeated disturbance. However, slower moving species such as the scaly cricket may be impacted by the loss of shingle on the foreshore of Belle Grève Bay. Further surveys will be completed as part of the EIA to determine the significance of this effect.

Impacts upon Prey Species

- 2.14.28 Indirect effects on birds and other terrestrial taxa may occur during the construction phase if there are impacts on prey species and the habitats of prey species. These indirect effects include those resulting from the production of underwater noise and the generation of suspended sediments that may alter the behaviour or availability of bird prey species. Underwater noise may cause fish and mobile invertebrates to avoid the construction area and also affect their physiology and behaviour. Significantly elevated suspended sediments may cause fish and mobile invertebrates to avoid the construction area and may smother and hide immobile benthic prey within the immediate area. These mechanisms could potentially result in less prey being available in the area adjacent to active construction works to foraging seabirds. Smothering of the intertidal habitat from resuspended sediment could affect the available foraging resource for wading birds.

Impacts Resulting from Dust Emissions

- 2.14.29 Dust emissions produced during construction of the breakwater may have an adverse effect on local flora and fauna through smothering of habitats and invertebrates. This could result in direct habitat degradation and also loss of foraging habitat for birds.

Potential Impacts during Operation

Noise and Visual Disturbance to Birds

- 2.14.30 The presence of the breakwater and vehicles used to transport inert material to the inert waste facility site during operation has the potential to disturb and displace birds from within and around the site. This is assessed as indirect habitat loss, as it has the potential to reduce the area available to birds for feeding, loafing and moulting.

Habitat Loss

- 2.14.31 There will be no direct impact to terrestrial habitats during operation of the inert waste site. These habitats are therefore scoped out.
- 2.14.32 As the infilling of the site occurs over the operational lifetime of the site, coastal habitat loss would gradually occur in the coastal environment within the project area. The coastal habitats anticipated to be directly impacted by the proposed development are rock, shingle and sea wall. The majority of species within these habitats, such as birds, are mobile and able to relocate following repeated disturbance. However, slower moving species such as the scaly cricket may be impacted by the loss of shingle on the foreshore of Belle Grève Bay. Further surveys will be completed as part of the EIA.

Impacts upon Prey Species

- 2.14.33 Indirect effects on birds and other terrestrial taxa may occur during the construction phase if there are impacts on prey species and the habitats of prey species. These indirect effects include those resulting from the production of underwater noise and the generation of suspended sediments that may alter the behaviour or availability of bird prey species. Underwater noise may cause fish and mobile invertebrates to avoid the construction area and also affect their physiology and behaviour. Significantly elevated suspended sediments may cause fish and mobile invertebrates to avoid the construction area and may smother and hide immobile benthic prey within the immediate area. These mechanisms could potentially result in less prey being available in the area adjacent to active construction works to foraging seabirds.

Impacts Resulting from Dust Emissions

- 2.14.34 Dust emissions produced during the ongoing placement of materials and use of the site for inert waste may have an adverse effect on local flora and fauna through smothering of habitats and invertebrates. This could result in direct habitat degradation and also loss of foraging habitat for birds.
- 2.14.35 The predominant wind direction is West South West, although there are occasions when the wind comes in from the north east. At present, there is not sufficient data to scope this impact therefore it will be included in the EIA.

Summary of Potential Impacts

2.14.36 **Table 2.24** summarises the potential impacts to terrestrial ecology and ornithology that have been scoped into the EIA.

Table 2.24 Summary of Impacts Relating to Terrestrial Ecology and Ornithology

Potential impacts	Scoped in?	
	Construction	Operation
Potential impact on protected sites	No	Yes (Ramsar only)
Disturbance to birds	Yes	Yes
Habitat loss	Yes	Yes
Impacts on prey species	Yes	Yes
Impacts resulting from dust emissions	Yes	Yes

Mitigation Measures

2.14.37 The need for mitigation will be dependent on the results of the site-specific surveys and impact assessment. Consultation with key stakeholders will be ongoing throughout the EIA process and will include the need for mitigation and the feasibility of potential options.

Approach to Assessment and Data Gathering

2.14.38 Impacts will be considered on sensitive receptors within 5km for the Ramsar Site and 2km for all other ecological receptors.

2.14.39 The States' has commissioned winter bird surveys which will include 1 visit per month through the winter months (October to May), which will establish the nature of the use of the site by birds recorded, i.e. seasonal differences and activities (i.e. foraging, overwintering, migrating or other), in order to determine the importance of the site relative to the wider area for seabirds. Detailed analysis of this data will include abundance and density estimates.

2.14.40 A terrestrial ecological survey has been completed in summer 2018, the results of this will be used in the EIA process.

2.14.41 An initial survey for scaly cricket has been carried out at Spur Point to confirm its presence or otherwise. This will be reported in the ES. The survey will be extended to all suitable habitats (identified as shingle in the 2010 habitat survey) across Guernsey to capture the species data on an island basis. This will give context to the impact to the species population on Guernsey as a result of the proposed development.

2.14.42 The assessment of dust for the EIA will determine whether there will be an indirect impact to habitats and species from dust.

2.14.43 The sensitivity of each species will be determined based on the size of its population, its conservation status and its known sensitivity to disturbance. Species identified as sensitive receptors will be subject to full impact assessment against the impacts listed above. The impact assessment will be undertaken in line with guidance by IEEM (2010), CIEEM (2016) and expert opinion.

2.15 Climatic Factors

2.15.1 Climate resilience has been considered within other topics, in particular air quality and flood risk, and is not considered within its own category.

2.16 Natural Capital

2.16.1 Natural capital is another term for the stock of renewable and non-renewable natural resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people (Natural Capital Coalition, 2016).

2.16.2 In order to consider natural capital within an EIA process the first step is defining the spatial extent of the environment to consider. In the case of EIA this should link to the zones or potential zones of influence of the impacts or potential impacts of the proposed development. The identification of the baseline natural capital is then built up from the information available, all of which is collected and collated and identified within the other technical chapters of this document. However, given the potential wide range of natural capital, in order to reduce the scale of data collection, a screening exercise is first undertaken to identify the likely or potential natural capital present and then to use the other technical chapters to build up a presence / absence record. Following this we can then describe / quantify the baseline natural capital.

2.16.3 The natural capital assets are a blend of spatial elements which may have intrinsic (provisioning) natural capital such as providing food, energy, minerals, freshwater, ornamental resources, biochemical / medicines, and genetic material. These in turn may through various activities provide other services including regulation services (such as regulating water flows, water quality, air quality, and climate) and cultural services (usually by their location or historical remnants and the activities that humans can carry out on them), and also supporting services (such as soil formation, primary production, nutrient cycling, water cycling, and photosynthesis). The natural capital is the total of these services provided by the footprint and study area of the proposed development.

2.16.4 Utilising a matrix, developed from Defra (2007) and expanded on by RHDHV over time and through experience, identifying a wide range of services, categories, and types of asset which perform services or are themselves natural capital, we have identified which potential services may be present within the proposed site and the immediate surroundings, in order to ascertain the likely baseline natural capital assets. The matrix is presented in **Appendix A**. The assets we will therefore identify in the baseline are:

- Provisioning services:
 - managed food (sea fishing) and wild food (fish);
 - hydropower (intertidal habitat and tidal currents);
 - genetic resources (medicinal);
 - ornamental resources (shells and stone).
- Regulation services:
 - Flood regulation and protection (barriers - topography);
 - Erosion regulation.
- Cultural services:
 - Cultural heritage (landscape);
 - Cultural heritage (heritage assets - potentially);
 - Cultural heritage (wildlife habitats and species);
 - Recreation and tourism (coastal angling);
 - Recreation and tourism (bird watching/wildlife watching);
 - Aesthetic value (physical landscape / seascape);
 - Aesthetic value (heritage assets – potentially).

Baseline Environment

2.16.5 On the basis of the ecosystem services and resulting natural capital that has been screened in above, the groupings of natural capital for consideration is:

- Habitat and species – see **Section 2.13** and **Section 2.14** for details;
- Land use (and topography) – see **Section 2.6** for details;
- Landscape – see **Section 2.12** for details;
- Heritage assets – see **Section 2.11** for details; and
- Recreation and amenity – see **Section 2.10** for details.

Potential Impacts during Construction

2.16.6 Short-term perturbation is not considered in the assessment of natural capital as the assumption is that the natural systems will revert back to existing unless a long-term activity continues to impact on them. All long-term impacts on natural capital are considered in the operation phase below.

Potential Impacts during Operation

Regulatory Services

- 2.16.7 Flood Regulation - at this stage there would be no deterioration as the scheme would not remove any existing service and would maintain and provide this service to a higher level, therefore it has been scoped out.
- 2.16.8 Erosion – there is the potential for changes in coastal processes to alter erosion / accretion patterns and these will be considered.

Cultural Services

- 2.16.9 Habitat and species - there will be a direct loss of coastal and intertidal habitat to the footprint of the development, as well as the potential for smothering of habitats from dust emissions and the potential for changes to coastal processes having an indirect impact on the Herm, Jethou & The Humps Ramsar Site.
- 2.16.10 Land use (and topography) – there will be a change in land use from coastal to open land and potentially industrial or other appropriate uses if required.
- 2.16.11 Landscape – there will be a permanent change in landscape character and views to and from the site.
- 2.16.12 Heritage assets – there will be a direct impact on Delancey Park Conservation Area and potential for impacts to unknown assets within 250m of the development. In addition, there is the potential for indirect impacts to known and unknown assets within 1km of the development.
- 2.16.13 Recreation and amenity – there will be a direct loss of foreshore used for recreation and amenity.

Mitigation Measures

- 2.16.14 Mitigation measures to prevent or minimise temporary and reduce scale of long-term disturbances will be identified in the specific topic chapters. However, some loss of natural capital is permanent and cannot be mitigated, such as loss of intertidal / subtidal habitat.

Approach to Assessment and Data Gathering

- 2.16.15 Data collection and collation is being undertaken along with additional surveys to further extend the baseline. Where this coincides with natural capital this is reflected in the relevant topic chapters. The updated baseline information will be used to inform the specific topic assessment, and for the Environmental Assessment we will quantify the nature / extent of the change in the ecosystem services and overall natural capital 'account' for the elements scoped in above.

2.17 Cumulative Impacts

- 2.17.1 European Community Directive 85/337/EEC, as amended by Council Directive 97/11/EC and 2003/35/EC, requires the assessment of cumulative effects at a project level within an EIA. This will be included within the ES as best practice.

Approach to Assessment and Data Gathering

- 2.17.2 Based on the nature of impacts of the proposed development, the potential cumulative impacts associated with the development will be considered with reference to other proposed developments in the surrounding area.
- 2.17.3 All key developments that are currently within the planning system will be screened to determine whether they are likely to result in cumulative effects. This will include:
- developments consented and built but not yet operating;
 - developments consented but not yet constructed (or completed);
 - developments in the consenting process but no decision made; and
 - developments known to be likely applications (consultation underway) in the near future.
- 2.17.4 Our approach to the cumulative assessment will be in three stages. Firstly, we will identify all the potential projects and present their spatial location along with the zones of influence we have identified for our receptor groups. We will then overlay similar zones of influence from the other developments and extract a list from that of possible receptors that could potentially be affected. This is our initial cumulative impact screening stage.
- 2.17.5 Secondly, following this initial screening we will then run through each of the projects and those potential impacts to determine whether there is a likelihood (such as due to programme) of an impact occurring, or whether we have been overly conservative on the zones of influence to scope out yet further any potential developments / cumulative impacts. This is our cumulative impact scoping stage.
- 2.17.6 Third and finally, the remaining potential cumulative impacts will be assessed at the end of each technical topic chapter.

3 Summary and Conclusions

3.1.1 **Table 3.1** summarises the findings of the scoping phase and identifies the potential impacts that have been scoped into the main EIA assessment process, and it identifies those impacts have been scoped out from further assessment on the basis of the scoping considerations detailed in **Section 2**.

Table 3.1 Summary of Scoping Phase

Topic Chapter	Potential Impact	Scoped in to the Environmental Statement	
		Construction	Operation
Coastal Processes	Effects on hydrodynamic regime (waves and tidal currents)	Yes	Yes
	Effects on suspended sediment concentrations and transport	Yes	Yes
	In-combination impacts	Yes	Yes
Marine Sediment and Water Quality	Accidental release of contaminants	Yes	Yes
	Release of contaminated sediments	Yes	Yes
	Deterioration in water quality due to increased suspended sediment concentrations	Yes	Yes
	Deterioration in water quality due to changes in hydrodynamic regime	Yes	Yes
Surface Water and Flooding	Direct disturbance of surface water bodies	No	No
	Increased surface runoff	Yes	Yes
	Raised flood defences	No	Yes
	Pollution of surface waterbody due to accidental release of fuels, oils, lubricants and construction materials	Yes	No
Land Use, Land Quality, Soil Quality, Geology and Hydrology	Contaminant mobilisation to groundwater bodies	No	No
	Disturbance to geological sites	Yes	Yes
	Disruption to land use	Yes	Yes
	Disruption to existing landfill sites	No	No
	Disruption to historic landfill sites	No	No
Traffic and Transport	Increased traffic congestion	Yes	No
	Decline in road safety	Yes	No
Air Quality	Increased air pollution levels	Yes	Yes
	Dust	Yes	Yes

Topic Chapter	Potential Impact	Scoped in to the Environmental Statement	
		Construction	Operation
Noise and Vibration	Vibration Impact to MP1	Yes	No
	Vibration Impact to MP2-MP5	No	No
	Disturbance from Construction activities	Yes	No
	Disturbance from increased traffic	Yes	Yes
	Noise disturbance from placement of inert waste at Receptor MP1 - MP5	No	Yes
	Impact on marine ecology from underwater noise	No	No
Population and Human Health	Impact of increased industrialisation	Yes	No
	Impact on recreation	Yes	Yes
	Impact on human health	Yes	Yes
	Positive impact on key infrastructure	No	No
Material Assets (Archaeology and Built Heritage)	Direct impacts on known and unknown archaeological and historical sites	No	No
	Indirect impacts on known and unknown archaeological sites	Yes	Yes
Landscape and Visual Character	Changes to Landscape/ Townscape/ Seascape Character	Yes	Yes
	Changes to views to Visual Amenity / Viewers	Yes	Yes
Marine Ecology	Physical disturbance	Yes	Yes
	Increased suspended sediments	Yes	Yes
	Re-mobilisation of contaminated sediments	No	No
	Loss of habitat	Yes	Yes
	Habitat alteration	Yes	Yes
	Potential impact on marine protected features	Yes	Yes
	Potential impact on marine mammals due to vessels	Yes	No
Terrestrial Ecology and Ornithology	Potential impact on protected sites	No	Yes
	Disturbance to birds	Yes	Yes
	Habitat loss	Yes	Yes
	Impacts on prey species	Yes	Yes
	Impacts resulting from dust emissions	Yes	Yes

4 Acronym and Abbreviation List

Acronym	Acronym description
2D	Two dimensional
ABI	Area of Biodiversity Importance
AOD	Above Ordnance Datum
AQMP	Air Quality Management Plan
BAP	Biodiversity Action Plan
BPEO	Best Practicable Environmental Option
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CTMP	Construction Traffic Management Plan
DMRB	Design Manual for Roads and Bridges
DPA	Development and Planning Authority
EC	European Community
EIA	Environmental Impact Assessment
ES	Environmental Statement (reporting outcome of EIA)
EU	European Union
GLVIA3	Guidelines for Landscape and Visual Impact Assessment 3rd Edition
Ha	Hectare
HGV	Heavy Goods Vehicle
IDP	Island Development Plan
IEEM	Institute of Ecology and Environmental Management
kg	Kilogramme
km	Kilometre
MLWS	Mean Lower Spring Tide
MMMP	Marine Mammal Mitigation and Monitoring Plan
m	Metre
m ³	Cubic metre
ml	Millilitres
m/s	Metres per second
µg	Microgram (one thousandth of a milligram (mg))
NO ₂	Nitrogen dioxide

Acronym	Acronym description
NO _x	Nitrogen oxides
ODPM	Office of the Deputy Prime Minister
PM ₁₀	Particulate matter of less than 10 microns average diameter
RAP	Rural Area Plan
RHDHV	Royal HaskoningDHV
SLUP	Strategic Land Use Plan
SO ₂	Sulphur Dioxide
SSS	Sites of Special Significance
St	Saint
t	Metric tonne
UAP	Urban Area Plan
UK	United Kingdom
WHO	World Health Organisation

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Append A Natural Capital Screening Table

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
		Salmon	No
		Trout	No
	Fish	Fishing Lakes	No
		Oyster beds	No
		Mussel beds	No
		Sea Fishing	Yes
	Honey		No
Food - wild	Mushrooms		No
	Nuts		No
	Wild fruit		No
	Fish		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		Yes
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	No	
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	Hill walking		No	
	Freshwater angling		No	
	Coastal angling		Yes	
	Scuba diving		No	
	Watersports (including surfing/ windsurfing/ canoeing/ rowing/ sailing)		No	
	Bird watching/ wildlife watching		Yes	
	Horseriding		No	
	Gardening		No	
	Game shooting		No	
	Cycling		No	
	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	