Isles of Scilly Sea Defences – Periglis Beach

Shadow Habitats Regulations Assessment (HRA)

Final Report

April 2023

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Council of the ISLES OF SCILLY

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Revision History

Revision Ref/Date	Amendments	Issued to
V1.0	Final Report	The Council of the Isles of Scilly
V2.0	Updates following comments from NE	The Council of the Isles of Scilly
V3.0	Updates following comments from NE	The Council of the Isles of Scilly
V4.0	Updates following comments from The Council of the Isles of Scilly	The Council of the Isles of Scilly

Contract

This report describes work commissioned by The Council of the Isles of Scilly, JBA Consulting carried out this work.

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Purpose

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Abbreviations

EC	European Commission
ECJ	European Court of Justice
EMP	Environmental Management Plan
HRA	Habitats Regulations Assessment
INNS	Invasive non-native species
OSGR	Ordnance Survey Grid Reference
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest

1 Introduction

1.1 Background

The Council of the Isles of Scilly is proposing to construct new coastal and flood protection works at nine sites across islands off the Isles of Scilly. Five of these sites, Great Popplestone, Great Porth North of Great Carn, Green Bay, Stinking Porth, and Kitchen Porth are located on the island of Bryher. Three of these sites, Porth Killier, Periglis and Porth Coose are located on the island of St Agnes. The ninth site, Lower Town Beach, is located on the island of St Martin's.

The Isles of Scilly are generally low lying and therefore many areas are vulnerable to flooding. The flood risk is likely to increase in the future as a result of the effects of climate change. The risks to the islands have been highlighted by storms in 1989, 2004 and 2014.

The aim of this project is to protect homes and businesses across the islands of Bryher, St Agnes and St Martin's, as well as key infrastructure including the islands' emergency services and road network.

The whole of the Isles of Scilly is an Area of Outstanding Natural Beauty (AoNB), a Conservation Area and a Heritage Coast. Areas of the islands are also designated as Special Areas of Conservation (SACs) under the EU Habitats Directive, Special Protection Areas (SPAs) through the EC Birds Directive, Ramsar Sites through the 1971 UNESCO Ramsar Convention, a Marine Conservation Zone (MCZ) and 26 Sites of Special Scientific Interest (SSSIs).

JBA Consulting has been commissioned to undertake a shadow Habitats Regulations Assessment (HRA) for each of the nine sites within the proposed scheme. This HRA covers the St Agnes site Periglis Beach.

This HRA document provides the Council of the Isles of Scilly information to assist in their consideration of whether the proposed coastal and flood protection works will have likely significant effects on European Sites, and in ascertaining any adverse effects on their integrity.

As the decision-making authority, the Council of the Isles of Scilly are the Competent Authority in respect of Regulation 63 of the Conservation of Habitat and Species Regulations (as amended). This document can be described as a 'shadow' HRA, providing the necessary information to the Council of the Isles of Scilly with which to make their assessment (pursuant to Regulation 63(2) of the above Regulations).

1.2 Legislative Context

The Conservation of Habitats and Species Regulations 2017 (as amended by the Conservation of Habitats and Species (amendment) (EU Exit) Regulations 2019), also known as the 'Habitats Regulations', provide legal protection to habitats and species of national importance. The regulations also secure an ecological network of protected sites, consisting of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). Government guidance also requires that Ramsar sites (which support internationally important wetland habitats and are listed under the Convention on Wetlands of International Importance [Ramsar Convention]) are given the same level of protection as SACs and SPAs.

Prior to the UK's withdrawal from the EU, SACs were designated and protected under domestic legislation transposed from European Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive), and SPAs under European Directive 2009/147/EC on the Conservation of Wild Birds (Birds Directive). Together these sites formed a European-wide Natura 2000 network of protected sites. Since 31 December 2020, SACs and SPAs within the UK no longer fall within the Natura 2000 network, and instead form a National Site Network. SPAs and SACs continue to be referred to collectively

as 'European sites' within the context of the Habitats Regulations, reflecting their international importance for the conservation of biodiversity.

SACs and SPAs within the National Site Network are also still designated for habitats listed on Annex I and for species listed on Annex II of the Habitats Directive, and criteria listed under the Birds Directive, and it is these Annex I habitats, Annex II species and Birds Directive Criteria against which assessments under the Habitats Regulations are still made.

Regulation 63 of the Habitats Regulations states that "A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which (a) is likely to have a significant effect on a European Site or a European offshore marine site (either alone or in-combination with other plans or projects), and (b) is not directly connected with or necessary to the management of that site, must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives." This process is commonly referred to as Habitats Regulations Assessment (HRA).

2 Habitats Regulations Assessment Methods

2.1 Overview

Habitat Regulations Assessment follows a four-stage process as outlined in the Habitats Regulations Assessment Handbook (DTA, 2019) and summarised in Table 2-1 below.

This report provides evidence to support Stage 1 and Stage 2 of the HRA process, to provide the Competent Authority(s) with information to make their assessment.

Table 2-1: The HRA process

HRA stage	Description
Stage 1: Screening	This process identifies the likely significant effects upon a European site of a project or plan, either alone or in-combination with other projects or plans and determines whether these impacts are likely to be significant. Following the recent ECJ judgement in the case of "people over wind" (Case C-323/17). Measures that are necessary to avoid or reduce impacts on the European site, even when considered standard environmental best-practice, can only be at Stage 2. If no likely significant effect is determined, the project or plan can proceed. If a likely significant effect is identified, stage 2 is commenced.
Stage 2: Appropriate Assessment	Stage 2 is subsequent to the identification of likely significant effects upon a European site in stage 1. This assessment determines whether a project or plan would have an adverse impact on the integrity of a European site, either alone or in-combination with other projects or plans. This assessment is confined to the effects on the internationally important habitats and species for which the site is designated (i.e. the interest features of the site). Appropriate Assessments, in line with ECJ Case C-461/17 Holohan v An Bord Pleanála, must also consider impacts upon habitats and species within or outside of a site boundary if they support a qualifying feature and could impact upon the conservation objectives of the site. If no adverse impact is determined, the project or plan can proceed. If an adverse impact is identified, stage 3 is commenced.
Stage 3: Assessment where no	Where a plan or project has been found to have adverse impacts on the integrity of a European site, potential avoidance/mitigation measures or alternative options should be identified.

HRA stage	Description
alternatives and adverse impacts remain	If suitable avoidance/mitigation or alternative options are identified, that result in there being no adverse impacts from the project or plan on European sites, the project or plan can proceed. If no suitable avoidance/mitigation or alternative options are identified, as a rule the project or plan should not proceed. However, in exceptional circumstances, if there is an 'imperative reason of overriding public interest' for the implementation of the project or plan, consideration can be given to proceeding in the absence of alternative solutions. In these cases, compensatory measures will have to be put in place to offset any negative impacts.
Stage 4: Compensatory measures	Stage 4 comprises an assessment of the compensatory measures where, in light of an assessment of imperative reasons of overriding public interest, it is deemed that the project should proceed.

2.2 Guidance

The methodology used for this assessment is based on guidance in The Habitats Regulations Assessment Handbook (DTA, 2019). In addition, the following guidance documents were also consulted:

- European Commission Notice: Managing Natura 2000 sites. The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018)
- UK Government Guidance on the Use of Habitats Regulations Assessment (UK Government, 2019).

2.3 Assumptions and Limitations

Information on the works and conditions on site are based on current knowledge at the time of writing.

Cumulative impacts are based on published documentation. If other projects with the potential for cumulative impacts are identified, it may be necessary to re-assess this project.

3 Description of the Project

3.1 Site Location

Periglis is located in the northern extent of the island of St Agnes approximate central OS Grid Reference SV 87737 08452. The beach is composed of both sand and pebbles and there are numerous residential and non-residential properties located at the southern extent of Periglis beach, including St Agnes church. Big Pool and Browarth Point (St Agnes) SSSI and Isles of Scilly Ramsar site are located immediately adjacent to Periglis beach.

Periglis has a natural embankment helping to protect Big Pool, the outfall from which goes beneath the embankment. The seaward face of the embankment suffers from frequent erosion at higher tides and as such, the geotextile mesh and repairs to the bank after the 2014 storms have not been successful. One tonne dumpy bags filled with local sediment materials form much of the central part of the bank where the bank was breached. Additional rocks and boulders have been added to the defence near the beach entrance.

Figure 3-1: Location of proposed scheme.

3.2 Proposed Works

Defences at Periglis provide protection for residential and non-residential properties, infrastructure and Big Pool. As such, there is a need to increase these defences which suffer from frequent erosion.

The proposed works include:

- Protection of Periglis beach through use of geobags constructed into the rear of the dune ridge (3m landward), laid on a geomat and wrapped in geotextile, and covered with excavated cobble/sand material along most of the bay. The geobags will be filled with dry sand of density around 1600kg/m3. If sand material is not available, the geobags may be filled with graded local or imported rocks using high performance nets.
- Crest elevations will be raised to approximately +7.5m, and crest widths increased to reach a minimum of 4m to prevent overtopping. In order to achieve this increase in elevation, the existing dune/bank will be topped up and covered using local materials with biodegradable matting to retain the material whilst the grasses and plants establish. The natural plant fibres will provide a system of erosion control of the material positioned over the top of the dune/bank, while local flora gets naturally established. A local source of recharge sediment will be used for the dunes/banks. If no local material is available, filling material will be imported, possibly from quarries in Cornwall.
- The slipway already has a stop log fitting and stop logs and therefore no further action is required.

This approach will enhance the dune/ bank stability and will provide a robust and permanent approach in terms of protection from coastal erosion.

3.3 Construction Methodology

It is anticipated that construction of the proposed scheme at Periglis will be undertaken over approximately 62 days between November 2023 and January 2024.

The working area will be demarcated and secured using perimeter security fencing (Heras fencing or similar).

Materials will be delivered in advance of the works between June and September 2023. Materials will be delivered in advance of the construction works commencing, in approximately 18 loads. Materials will either be delivered directly to Periglis by barge using the landing site on the Periglis beach, and moved to the adjacent temporary storage area, or if not feasible, landed at the closest feasible site and transported along the access track (using the alternative access route during wet periods).

It is assumed that after delivery, materials will be transported using a 30 tonne truck, or alternative smaller vehicle if required due to access constraints. It is anticipated that deliveries will be staggered.

Construction works at Periglis will entail the excavation and movement of existing material at the top of the beach (mix of sand and cobbles) on the seaward face using a 360° 30 tonne excavator. A geotextile will be laid in the excavation with geocontainers filled with dry sand or rocks placed into the core of the dune/bank and covered/protected by a mix of local sand and cobbles, topped up by excavated material. A geomat will be laid on top of the existing bank, and it will be raised through deposition of excavated materials, or other local recharge, on top of it.

Once complete, the working area will be demobilised and all plant and construction materials will be removed from site. The footpath running behind the crest will be reinstated.

4 European Sites

4.1 Project Area of Influence and European Sites

The proposed scheme is located within the Isles of Scilly Special Protection Area (SPA) and Ramsar site and 45m from the Isles of Scilly Complex Special Area of Conservation (SAC).

Figure 4-1: Location of Periglis Beach proposed works area in relation to designated sites; Overview

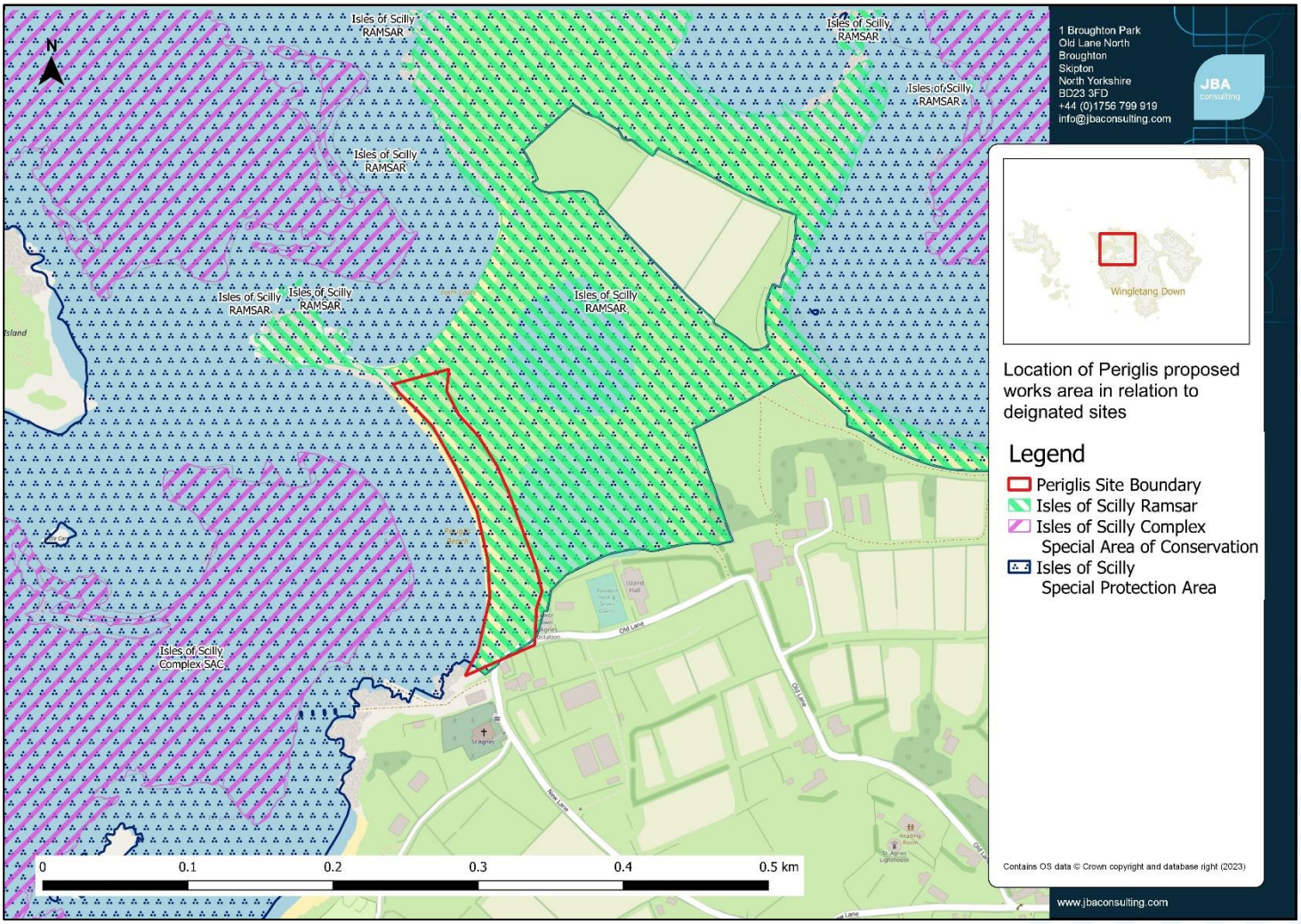

Figure 4-2: Location of Periglis Beach proposed works area in relation to designated sites; Close Up

4.2 Isles of Scilly Complex Special Area of Conservation (SAC)

4.2.1 Qualifying Features

The SAC comprises 75% marine areas and sea inlets, 20% tidal rivers, estuaries, mudflats, sandflats and lagoons (including saltwork basins) and 5% shingle, sea cliffs and islets. Annex I habitats under the Habitat Regulations that are a primary reason for selection:

- Sandbanks which are slightly covered by sea water all the time
- Mudflats and sandflats not covered by seawater at low tide
- Reefs

Annex II species that are a primary reason for selection:

- Shore dock *Rumex rupestris*

Annex II species present as qualifying feature, but not primary reason for selection

- Grey seal *Halichoerus grypus*

4.2.2 Conservation Objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species
- The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

4.3 Isles of Scilly Special Protection Area (SPA)

4.3.1 Qualifying Features

The site qualifies under Article 4.1 of the Birds Directive (2009/147/EC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:

- European storm-petrel *Hydrobates pelagicus* (breeding)

The site qualifies under Article 4.2 of the Birds Directive (79/409/EEC) as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed in Annex I) in any season:

- Lesser black-backed gull *Larus fuscus graellsii* (breeding)
- European shag *Phalacrocorax aristotelis aristotelis* (breeding)
- Great black-backed gull *Larus marinus* (breeding)

The site qualifies under SPA selection stage 1.3 as it is used regularly by over 20,000 seabirds in any season:

- In the breeding season, the site regularly supports at least 26,478 (1999) individual seabirds. The main components of the assemblage include all of the qualifying features listed above.

4.3.2 Conservation Objectives

The site's conservation objectives apply to the site and the individual species and/or assemblage of species for which the site has been classified (the "Qualifying features" listed above).
The objectives are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:

- the extent and distribution of the habitats of the qualifying features
- the structure and function of the habitats of the qualifying features
- the supporting processes on which the habitats of the qualifying features rely
- the populations of each of the qualifying features
- the distribution of qualifying features within the site

4.4 Isles of Scilly Ramsar

4.4.1 Qualifying Features

The site qualifies for Ramsar designation under Ramsar criterion 6 species/populations occurring at levels of international importance. Qualifying Species/populations (as identified at designation):

- Species regularly supported during the breeding season:
  - European Storm Petrel, World - 71 apparently occupied sites, representing an average of 0.2% of the GB population (Seabird 2000 Census)
  - Lesser black-backed gull, W Europe/Mediterranean/W Africa - 3603 apparently occupied nests, representing an average of 2.4% of the breeding population (Seabird 2000 Census)

Species/populations identified subsequent to designation for possible future consideration under criterion 6.

- Species regularly supported during the breeding season:
  - European shag, Coastal N Europe 1091 apparently occupied nests, representing an average of 1.3% of the breeding population (Seabird 2000 Census)

4.4.2 Conservation Objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species
- The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site

5 Screening Assessment

5.1 Introduction

The project is not wholly directly connected with, or necessary to, the conservation management of the site's qualifying features. Therefore, a HRA screening assessment is required.

The following section identifies potential hazards of the proposed works. The effects of relevant hazards are then assessed in relation to each of the relevant qualifying features of the Isles of Scilly Complex SAC and Isles of Scilly SPA and Ramsar. The likelihood of potential exposure to the hazard and the mechanism of effect are also identified where possible. This then allows for likely significant effects on the interest features of the designated sites to be identified.

5.2 Potential Hazards to European Sites

The proposed project, as detailed in Section 3, was assessed in order to identify potential hazards that might arise to the relevant interest features of the Isles of Scilly Complex SAC and the Isles of Scilly SPA and Ramsar. The list of potential hazards to the European sites are based on the designated site features and conservation objectives. These are:

- Direct habitat loss
- Noise and visual disturbance
- Water pollution
- Sediment release (temporary during construction)
- Alteration to coastal processes
- Physical damage/mortality
- Competition from, or mortality due to, invasive non-native species (INNS)

The results of this assessment are shown in Table 5-1.

Table 5-1: Potential Hazards to Relevant Qualifying Features

Potential Hazard	Sandbanks	Mudflats	Reefs	Shore dock	Breeding Birds	Grey Seal
Habitat loss/community simplification	✓	✓	✓	✓	✓	✓
Physical damage/mortality	✓	✓	✓	✓	✓	✓
Competition from, or mortality due to, invasive non-native species (INNS)	X	X	X	✓	✓	✓
Noise and visual disturbance	X	X	X	X	✓	✓
Water pollution	✓	✓	✓	✓	✓	✓
Sediment release	✓	✓	✓	X	X	✓
Alteration to coastal processes	✓	✓	✓	✓	✓	✓
Table key: ✓ = hazard potentially relevant, X = hazard not relevant						

5.3 Assessment of Likely Significant Effects

Assessment of the hazards identified in Table 5-1 was undertaken to determine whether they would be likely to have a significant effect on the relevant qualifying features of the Isles of Scilly Complex SAC and the Isles of Scilly SPA and Ramsar and their supporting habitats, as a consequence of the project either alone or in combination with other plans or projects. The results of the screening assessment are given in Table 5-2. Plans and projects considered for the in-combination assessment are outlined in Section 6.4. Where appropriate, both construction and operational phase effects are considered.

Table 5-2: Assessment of Likely Significant Effects

Qualifying Feature	Risk (Pressure)	Likely Significant Effect Alone	Yes or No	Likely Significant Effect in Combination	Yes or No
Isles of Scilly Complex SAC					
Annex I habitats: • Sandbanks which are slightly covered by sea water all the time • Reefs	Habitat loss/ community simplification	The Annex I habitats 'sandbanks which are slightly covered by sea water all the time' and 'reefs' are not present within the works area and therefore no loss of these habitats is anticipated as part of the proposed works.	No	There is no potential for effects in combination with other PPPs.	No
	Competition from invasive non-native species (INNS)	The proposed works have the potential to spread terrestrial invasive species, however there are no invasive species likely to be introduced or spread which would impact the Annex I habitats present. Hottentot Fig is locally abundant adjacent to the works area, although none was recorded within the site boundary. There is therefore the potential to spread this INNS, however this would not be expected to impact the Annex I habitats.	No	There is no potential for effects in combination with other PPPs.	No
	Physical Damage	Reefs and sandbanks are not present within the works area and will therefore not be impacted.	No	There is no potential for effects in combination with other PPPs.	No
	Water Pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats within the SAC, in the absence of	Yes	In combination assessment carried forward to Appropriate Assessment	

		suitable on-site avoidance and mitigation measures.			
Annex I habitats: • Mudflats and sandflats not covered by seawater at low tide	Habitat loss/ community simplification	The works are confined to the existing defences and dunes at the rear of the beach and will be limited to areas of the beach which are dry or inundated only at high tides and there will be no permanent loss of sandflat habitat. However, there may be temporary losses within the construction areas at the top of the beach during excavation of the crest. Materials will be delivered by barge using a landing site in the intertidal area at Periglis beach or at an alternative site if Perigilis beach is unsuitable. The intertidal habitat in this area is predominantly mixed substratum of boulders and cobbles. However, between the cobbles and in areas closer to the low tide mark intertidal sands are present. The landing of the barge in this area could therefore result in the temporary loss of sandflats which are a feature of the SAC.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Water pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Alteration to coastal processes	As the SAC extends over the lower shore of the site the proposed works could impact habitats via coastal squeeze. No works will be situated below MHWS once constructed, with the structural core being approximately 25 m from the existing MHWS level and the backfill that covers it approximately 10 m from the MHWS level.	No	There is no potential for effects in combination with other PPPs.	No

		The placement of the geobag core will provide adequate space within which intertidal habitat and species, including the Annex I habitat, will be able to migrate as sea levels rise. Therefore, no likely significant impacts to SAC Annex I features as a result of the proposed works via coastal squeeze are anticipated.			
	Physical damage/mortality	There is the potential for works to damage sandflats, which are a feature of the SAC. While works are focussed on the crest at the back of the beach, some sand and cobbles will be excavated from lower down, near or within the sandflats. This will then be replaced following the positioning of geocontainers. Materials will be delivered by barge using a landing site in the intertidal area at Periglis beach or at an alternative site if Periglis beach is unsuitable. The landing of the barge in this area could potentially result in temporary damage to sandflats which are a feature of the SAC.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Competition from invasive non-native species (INNS)	The proposed works have the potential to spread terrestrial invasive species, however there are no invasive species likely to be introduced or spread which would impact the annex I habitats present. Hottentot Fig is locally abundant adjacent to the works area, although none was recorded within the site boundary. There is therefore the potential to spread this INNS, however, this would not be expected to impact the Annex I habitats.	No	No potential for effects in combination with other PPPs have been identified.	No

		Works will only take place above MHWS. There is therefore negligible risk of spreading or introducing marine INNS.			
Annex II species (primary reason for selection): Shore dock	Habitat loss	No Shore dock was recorded on site during the site survey, and it is believed to be absent from the works area with no recent records of Shore dock being present on St Agnes. Recent surveys suggest that it may now be restricted to just the four islands Tresco, Annet, Samson, Tean (JNCC 2022).	No	No potential for effects in combination with other PPPs have been identified.	No
	Water pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Physical damage/mortality	No Shore dock was recorded on site during the site survey, and it is believed to be absent from the works area with no recent records of Shore dock being present on St Agnes. Recent surveys suggest that it may now be restricted to just the four islands Tresco, Annet, Samson, Tean (JNCC 2022).	No	No potential for effects in combination with other PPPs have been identified.	No
	Competition from invasive non-native species (INNS)	Hottentot Fig is locally abundant adjacent to the works area, although none was recorded within the site boundary. There is therefore the potential to spread this INNS, however it would not be expected to impact populations of Shore Dock.	No	No potential for effects in combination with other PPPs have been identified.	No
Annex II species (not primary reason for selection): Grey Seal	Direct habitat loss	The works area is not a known hauling out spot for seals, although it is possible it is occasionally used as such. The works will result in a small area of temporary beach habitat loss, however there is ample alternative habitat available, and any potential impact on Grey Seal habitat would	No	No other works impacting Grey Seal habitat, either terrestrial or marine, have been identified that are likely to act in combination with these works.	No

		be negligible. Habitat loss would be temporary for the duration of on-site works. Works will not result in loss of marine habitat.			
	Noise and visual disturbance	Operations during the construction phase could cause noise and visual disturbance to Grey seal that are hauled out in the surrounding area. There is to be no impact pile driving or working in water; therefore, there will be no impacts on Grey Seals that are in the sea.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Water pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats used by Grey seal within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Physical damage/mortality	The works will take place above the Mean High Water Spring (MHWS). While it is possible for seals to be hauled out on the beach during the works, works would not continue if seals were present and likely to be harmed.	No	There are no other known projects which overlap with the works areas. There is no potential for effects in combination with other PPPs.	No
Isles of Scilly SPA					
European storm-petrel *Hydrobates pelagicus* (breeding)	Direct habitat loss	The works area is not known as to contain breeding or foraging habitat for Storm petrel. Habitats within or adjacent to the site do not provide nesting opportunities for Storm petrel and therefore the proposed works will not inhibit the recovery potential of Storm petrel within the SPA as no potential Storm petrel habitat will be lost as part of the works.	No	There are no other known projects which overlap with the works areas. There is no potential for effects in combination with other PPPs.	No
	Noise and visual disturbance	Storm petrel are known to breed within the SPA on St Agnes. However, no known	Yes	In combination assessment carried forward to Appropriate Assessment.	

		breeding sites are in close proximity to any proposed site works, with the closest known active burrow site located approximately 600m from the closest proposed works site. In this case it is considered unlikely that the proposed works will have any significant effect on burrowing seabirds or any nesting colonies on St Agnes. Operations during the construction phase could however cause disturbance to Storm petrel foraging or resting at sea within the SPA.			
	Water pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats used by Storm petrel within the SPA, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Physical damage/mortality	The works area is not known to contain breeding or foraging habitat for Storm petrel. Habitats within or adjacent to the site do not provide nesting opportunities for Storm petrel and therefore the proposed works will not directly impact any breeding Storm petrel. Any birds present in the works area can reasonably be expected to move away from harm.	No	There are no other known projects which overlap with the works areas. There is no potential for effects in combination with other PPPs.	No
	Competition from invasive non-native species (INNS)	Brown rats pose a threat to nesting Storm petrel within the Isles of Scilly SPA. Materials will be delivered by barge which could potentially provide a pathway for rats to be brought on to the island which has been rodent-free following the Isles of Scilly Seabird Recovery Project.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Direct habitat loss	The works area is not known to contain	No	No potential for effects in	No

European Shag *Phalacrocorax aristotelis* (breeding) Great black-backed gull *Larus marinus* (breeding) Lesser black-backed gull *Larus fuscus* (breeding)		breeding or foraging habitat for Shag, Great black-backed gull, or Lesser black-backed gull. Habitats within or adjacent to the site do not provide nesting opportunities for these species and therefore the proposed works will not inhibit the recovery potential of Shag, Great black-backed gull, or Lesser black-backed gull within the SPA as no potential breeding habitat will be lost as part of the works.		combination with other PPPs have been identified.	
	Noise and visual disturbance	Lesser black-backed gull and Great Black-backed Gull are known to breed within the SPA on St Agnes. The proposed works are sufficiently far away from known nesting sites of these species, and it is therefore not considered that the works will result in disturbance to nesting birds within the SPA. Operations during the construction phase could cause noise disturbance and workers could cause visual disturbance to Shag, Great black-backed gull and Lesser black-backed gull within the Isles of Scilly SPA.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Water pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats used by breeding birds within the SPA, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Physical damage/mortality	The works areas do not contain any nesting habitat for breeding Shag, Great black-backed gull or Lesser black-backed gull. Any birds present in the works area can reasonably be expected to move away from harm.	No	There are no other known projects which overlap with the works areas. There is no potential for effects in combination with other PPPs.	No

	Competition from invasive non-native species (INNS)	Brown rats pose a threat to nesting seabirds within the Isles of Scilly SPA. Materials will be delivered by barge which could potentially provide a pathway for rats to be brought on to the island which has been rodent-free following the Isles of Scilly Seabird Recovery Project.	Yes	In combination assessment carried forward to Appropriate Assessment	
Seabird Assemblage (breeding)	Habitat loss/ community simplification	The works area is not known to contain breeding or foraging habitat for the breeding seabird assemblage of the SPA. Habitats within or adjacent to the site do not provide nesting opportunities for the seabird assemblage of the SPA and therefore the proposed works will not inhibit the recovery potential of the seabird assemblage within the SPA as no potential breeding habitat will be lost as part of the works.	No	No potential for effects in combination with other PPPs have been identified.	No
	Noise and Visual Disturbance	The proposed works are sufficiently far away from any known nesting sites of the qualifying bird species listed associated with the SPA and it is therefore not considered that the works will result in disturbance to nesting bird species. However, operations during the construction phase could cause disturbance to seabird assemblages resting or foraging at sea within the SPA.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Water Pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats used by seabird assemblages within the SPA, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Physical damage/mortality	The works areas do not contain any nesting habitat for seabird species. Any birds	No	No potential for effects in combination with other PPPs have been	No

		present in the works area can reasonably be expected to move away from harm.		identified.	
	Competition from invasive non-native species (INNS)	Brown rats pose a threat to nesting seabirds within the Isles of Scilly SPA. Materials will be delivered by barge which could potentially provide a pathway for rats to be brought on to the island which has been rodent-free following the Isles of Scilly Seabird Recovery Project.	Yes	In combination assessment carried forward to Appropriate Assessment	
Isles of Scilly Ramsar					
Species regularly supported during the breeding season (as identified at designation): • Storm Petrel • Lesser black-backed gull Species regularly supported during the breeding season (identified subsequent to designation): • Shag	Direct habitat loss	The works area is not known as a breeding habitat for Storm petrel, Lesser black-backed gull or Shag. Any habitat loss will be temporary, as the sand dunes and beach will be fully reinstated. There will therefore be no foraging or breeding habitat of breeding bird species lost as part of the proposed scheme.	No	No potential for effects in combination with other PPPs have been identified.	No
	Noise and visual disturbance	Shag have not been recorded breeding on St Agnes and therefore it is not considered that the proposed works will have any significant effect on breeding Shag within the Ramsar site. Storm petrel and Lesser black-backed gull are known to breed within the Ramsar site on St Agnes. However no known breeding sites are in close proximity to any proposed site works, with the closest known active burrow site located approximately 600m from the closest proposed works site. In this case it is considered unlikely that the proposed works will have any significant effect on burrowing seabirds or any nesting colonies on St Agnes. However, operations during the construction phase could cause disturbance	Yes	In combination assessment carried forward to Appropriate Assessment	

		to seabird assemblages resting or foraging at sea within the Ramsar site.			
	Water pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats used by breeding birds within the Ramsar, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Physical damage/mortality	The works areas do not contain any nesting habitat for Storm petrel, Lesser black-backed gull or Shag. Any birds present in the works area can reasonably be expected to move away from harm.	No	No potential for effects in combination with other PPPs have been identified.	No
	Competition from invasive non-native species (INNS)	Brown rats pose a threat to nesting seabirds within the Isles of Scilly Ramsar. Materials will be delivered by barge which could potentially provide a pathway for rats to be brought on to the island which has been rodent-free following the Isles of Scilly Seabird Recovery Project.	Yes	In combination assessment carried forward to Appropriate Assessment	

5.4 Screening Statement Conclusion

At stage 1 certain effects could not be screened out without appropriate management strategies put in place, those effects requiring appropriate assessment are summarised in Table 5-3 below.

Table 5-3: Summary of screening conclusions for the project showing all screened in hazards and European Sites

Qualifying Feature	Hazard	Likely significant effect alone or in combination
Isles of Scilly Complex SAC		
Annex I habitats: • Sand banks which are slighty covered by sea water all the time • Reefs	Water pollution	Both
Annex I habitats: • Mudflats and sandflats not covered by seawater at low tide	Habitat loss	Alone
	Water pollution	Both
	Physical damage/mortality	Alone
Annex II species (primary reason for selection): Shore dock	Water pollution	Both
Annex II species (not primary reason for selection): Grey Seal	Noise and visual disturbance	Both
	Water pollution	Both
Isles of Scilly SPA		
Storm Petrel (breeding)	Noise and visual disturbance	Both
	Water pollution	Both
	Invasive non-native species	Both
Great Black-backed Gull (breeding) Shag (breeding) Lesser Black-backed Gull (breeding)	Water pollution	Both
	Noise and visual disturbance	Both
	Invasive non-native species	Both
Seabird Assemblage (breeding)	Water pollution	Both
	Noise and visual disturbance	Both
	Invasive non-native species	Both
Isles of Scilly Ramsar		
Species regularly supported during the breeding season (as identified at designation): • Storm Petrel • Lesser black-backed gull Species regularly supported during the breeding season (as identified at designation): • Shag	Noise and visual disturbance	Both
	Water pollution	Both
	Invasive non-native species	Both

6 Appropriate Assessment

6.1 Introduction

Stage 2 of the HRA process is an Appropriate Assessment, which is required because likely significant effects caused by the proposed works have been identified on the Isles of Scilly Complex SAC and Isles of Scilly SPA and Ramsar. The Appropriate Assessment determines whether a project or plan would have an adverse impact on the integrity of a European site. In this assessment, avoidance or mitigation measures are applied to a point where the effects identified are no longer significant. If no significant impact on site integrity can be demonstrated beyond reasonable scientific doubt, the project or plan can proceed. If sufficient avoidance or mitigation measures cannot be applied, the project should not be taken forward in its current form unless there is a demonstration of no suitable alternatives and there are reasons of overriding public interest.

6.2 European Sites

Table 6-1 below shows the European sites that have been screened into the Appropriate Assessment, as summarised in Table 5-3.

Table 6-1: European sites screened into this assessment

Site Name	Proximity to Site
Isles of Scilly Complex SAC	Approximately 45m
Isles of Scilly SPA	Within Site
Isles of Scilly Ramsar	Within Site

6.3 General Scheme Mitigation Measures

6.3.1 Pollution Prevention Measures

Appropriate pollution prevention measures will be implemented to ensure that the habitats within proximity of the works, including the interest features and supporting habitats of the Isles of Scilly Complex SAC and Isles of Scilly SPA and Ramsar are not degraded as a result of pollution events during the construction phase. This mitigation will include:

- Following relevant guidance e.g. CIRIA Guidance: Control of water pollution from construction sites. Guidance for consultants and contractors (C532D) (Masters-Williams, 2001), including the delivery of toolbox talks to site staff.
- Any chemical, fuel and oil stores will be located on impervious bases within a secured bund with a storage capacity 110% of the stored volume.
- Biodegradable oils and fuels will be used where possible.
- Drip trays will be placed underneath any standing machinery to prevent pollution by oil/fuel leaks. Refuelling of vehicles and machinery will be carried out on an impermeable surface in one designated area well away from the high tide mark with capture of any spillages.
- Emergency spill kits will be available on site and staff trained in their use.
- Operators will check their vehicles on a daily basis before starting work to confirm the absence of leakages. Any leakages will be reported immediately.
- Daily checks will be carried out and records kept on a weekly basis and any items that have been repaired/replaced/rejected noted and recorded. Any items of plant machinery found to be defective will be removed from site immediately or positioned in a place of safety until such time that it can be removed.

- This mitigation is industry standard practice and as a result will be incorporated into the project through the Environmental Management Plan (EMP).

6.4 In-combination Effects

The proposed works at Periglis Beach are part of a wider scheme to construct new coastal and flood protection works at nine sites across islands off the Isles of Scilly. Three of these sites, including Periglis Beach, are located on the island of St Agnes. In order to meet project delivery schedules, parallel working between sites may occur. In order to minimise in-combination effects as a result of parallel working it will be organised so that works do not take place on adjacent beaches.

Other plans and projects with potential in-combination impacts were reviewed. No plans were identified that could potentially act in-combination with the proposed works. All of the planning applications within 1km of each of the sites are all small-scale works that have no direct connection to the site. There are no Nationally Significant Infrastructure projects within 1km of the site.

The proposed works assessed in this HRA are included within the Local Plan. Other coastal management works included within the Local Plan include proposed works for repairs to existing structures. The rest of the proposed works within the Local Plan include dune management and management of cliff recession. In-combination impacts with these projects and between the assessed projects has already been assessed in the Local Plan HRA.

6.5 Appropriate Assessment of Project Impacts and Mitigation

Taking into account the prevailing site conditions, screened in qualifying features, and the typical habitats and species necessary to the conservation of these features, the proposed works and mitigation measures and the conservation objectives for each European site, the following table details the Appropriate Assessment undertaken for the project. In Table 6-2 avoidance and mitigation measures are presented, and an assessment is made on whether an adverse impact remains after the mitigation is applied.

Table 6-2: Appropriate Assessment of Hazards and Mitigation

Qualifying Features	Description of adverse effect(s)	Can adverse effect(s) be mitigated	Description of mitigation measures, and how they would be applied (e.g. contractual obligations, consent conditions)	Can adverse effect on site integrity be ruled out?
Isles of Scilly Complex SAC				
Annex I habitats: • Sand banks which are slightly covered by sea water all the time • Reefs	Water pollution: Construction activity may result in accidental fuel or concrete spills which could cause changes in water chemistry and impact the Annex I habitats within the SAC.	Yes	Strict pollution prevention measures will be implemented on site, as outlined in Section 6.3.	Yes
Annex I habitats: • Mudflats and sandflats not covered by seawater at low tide	Habitat Loss: Works are to restore the dunes at the rear of the beach and there will be no permanent loss of sandflat habitat. However, there will be temporary losses within the construction areas at the top of the beach. Materials will be delivered by barge using a landing site in the intertidal area at Periglis beach or at an alternative site if Periglis beach is unsuitable. There is potential that the habitat 'sandflats not covered by seawater at low tide' is present within the proposed landing site of the barge and therefore there is potential that the proposed works will impact this Annex I habitat.	Yes	Any habitat loss via the construction works and barge landing will be temporary and localised. An Ecological Clerk of Works will inspect the sites before any material is brought in by barge to assess the most appropriate landing site in order to minimise impacts to SAC habitats. Any loss of sandflat habitat as part of the material delivery by barge will be temporary. To minimise disturbance and habitat degradation plant will keep to agreed haul routes and not stray outside of these areas. It is considered that in this case the haul routes will	Yes

			rapidly recover following the completion of the works	
	Water Pollution: Construction activity may result in accidental fuel or concrete spills which could cause changes in water chemistry and impact habitats within the Isles of Scilly Complex SAC.	Yes	Strict pollution prevention measures will be implemented on site, as outlined in Section 6.3.	Yes
	Physical damage: There is the potential for works to damage the habitat 'sandflats not covered by seawater at low tide' as construction works will be limited to areas of the beach which are dry or inundated only at high tides and as part of the proposed works a vessel will be used to transport construction materials to site in the form of a barge.	Yes	Any damage to habitats present within the sites via the construction works and barge landing will be temporary and localised. To minimise disturbance and habitat degradation plant will keep to agreed haul routes and not stray outside of these areas. It is considered that in this case the haul routes will rapidly recover following the completion of the works. An Ecological Clerk of Works will inspect the sites before any material is brought in by barge to assess the most appropriate landing site in order to minimise impacts to SAC habitats.	Yes
Annex II species (primary reason for selection): Shore dock	Water Pollution: Construction activity may result in accidental fuel or concrete spills which could cause changes in water chemistry and impact upon the habitats with Shore dock present within the Isles of Scilly Complex SAC.	Yes	Strict pollution prevention measures will be implemented on site, as outlined in Section 6.3	Yes

Annex II species (not primary reason for selection): Grey seal	Water Pollution: Construction activity may result in accidental fuel or concrete spills which could cause changes in water chemistry and impact habitats used by Grey seal within the Isles of Scilly Complex SAC.	Yes	Strict pollution prevention measures will be implemented on site, as outlined in Section 6.3	Yes
	Noise and visual disturbance: Construction activity will cause an increased amount of noise and activity which may disturb any seals that are hauled out in the surrounding area.	Yes	The proposed scheme is not located near any known breeding colonies. The works area is not a known hauling out spot for seals, although it is possible it is occasionally used as such by some individuals. There is ample alternative habitat available, and therefore any potential impact on Grey Seal habitat would be negligible. Haul out areas should be confirmed by local wildlife groups before works begin. Prior to works commencing each day, the works area and immediate vicinity will be checked for hauled out seals. If any seals are present within 200m of the works, site staff will keep their distance and no works will take place until the seal has moved off of its own accord.	Yes
Isles of Scilly SPA				
Storm Petrel (breeding)	Water pollution: Construction activity may result in accidental fuel or concrete spills which could cause changes in water chemistry and	Yes	Strict pollution prevention measures will be implemented on site, as outlined in Section 6.3	Yes

	habitats utilised by Storm petrel within the SPA.			
	Noise and visual disturbance: Construction activity may cause an increased amount of noise and visual activity which may disturb Storm petrel foraging and resting at sea.	Yes	To reduce the impact of disturbance that working on multiple sites could have on resting and foraging Storm petrel, where parallel working is preferred to meet project delivery schedules it will be organised so that works do not take place on adjacent beaches. Given the short duration of the works and its relative small-scale in relation to the size of the SPA and abundance of other available habitat it is considered that with the mitigation outlined above any potential disturbance because of the construction works will not be significant.	Yes
	Invasive non-native species (INNS): Brown rats pose a threat to nesting Storm petrel within the Isles of Scilly SPA. Materials will be delivered by barge which could potentially provide a pathway for rats to be brought on to the island which has been rodent-free following the Isles of Scilly Seabird Recovery Project.	Yes	Biosecurity measures will be put in place to ensure the proposed works do not result in the introduction of Brown rats. Measures include checking of material, plant and vessels for signs and presence of rats before transportation and on arrival at site, the use of rope guards on the vessel transporting construction material and ensuring food and waste onboard are all contained in rodent proof	Yes

			containers. Good waste management will be implemented throughout the works and a toolbox talk highlighting vigilance for rats and the importance of reporting rat activity will be given to all site personnel before works begin. The biosecurity measures outlined above to ensure that the works do not result in the introduction of Brown rats will be adhered to and documented in a biosecurity risk assessment and mitigation strategy.	
Great Black-backed Gull (breeding) Shag (Breeding) Lesser Black-backed Gull (breeding)	Water pollution: Construction activity may result in accidental fuel or concrete spills which could cause changes in water chemistry and habitats utilised by breeding bird species within the SPA	Yes	Strict pollution prevention measures will be implemented on site, as outlined in Section 6.3	Yes
	Noise and visual disturbance: Construction activity will cause an increased amount of noise and activity which may disturb breeding bird species resting and foraging within the SPA.	Yes	To reduce the impact that working on multiple sites could have on bird assemblages, where parallel working is preferred to meet project delivery schedules it will be organised so that works do not take place on adjacent beaches. Given the short duration of the works and its relative small-scale in relation to the size of the SPA and abundance of other available habitat it is considered that	Yes

			with the mitigation outlined above any potential disturbance because of the construction works will not be significant.	
	Invasive non-native species (INNS): Brown rats pose a threat to nesting seabirds within the Isles of Scilly SPA. Materials will be delivered by barge which could potentially provide a pathway for rats to be brought on to the island which has been rodent-free following the Isles of Scilly Seabird Recovery Project.	Yes	Biosecurity measures will be put in place to ensure the proposed works do not result in the introduction of Brown rats. Measures include checking of material, plant and vessels for signs and presence of rats before transportation and on arrival at site, the use of rope guards on the vessel transporting construction material and ensuring food and waste onboard are all contained in rodent proof containers. Good waste management will be implemented throughout the works and a toolbox talk highlighting vigilance for rats and the importance of reporting rat activity will be given to all site personnel before works begin. The biosecurity measures outlined above to ensure that the works do not result in the introduction of Brown rats will be adhered to and documented in a biosecurity risk assessment and mitigation strategy.	Yes

Seabird Assemblage (Breeding)	Water pollution: Construction activity may result in accidental fuel or concrete spills which could cause changes in water chemistry and habitats utilised by breeding bird species within the SPA.	Yes	Strict pollution prevention measures will be implemented on site, as outlined in Section 6.3	Yes
	Disturbance: Construction activity will cause an increased amount of noise and activity which may disturb breeding bird species foraging and resting at sea within the SPA.	Yes	To reduce the impact that working on multiple sites could have on seabird assemblages foraging or resting at sea, where parallel working is preferred to meet project delivery schedules it will be organised so that works do not take place on adjacent beaches. Given the short duration of the works and its relative small-scale in relation to the size of the SPA and abundance of other available habitat it is considered that with the mitigation outlined above any potential disturbance because of the construction works will not be significant.	Yes
	Invasive non-native species (INNS): Brown rats pose a threat to nesting seabirds within the Isles of Scilly SPA. Materials will be delivered by barge which could potentially provide a pathway for rats to be brought on to the island which has been rodent-free following the Isles of Scilly Seabird Recovery Project.	Yes	Biosecurity measures will be put in place to ensure the proposed works do not result in the introduction of Brown rats. Measures include checking of material, plant and vessels for signs and presence of rats before transportation and on arrival at site, the use of rope guards on the vessel	Yes

			transporting construction material and ensuring food and waste onboard are all contained in rodent proof containers. Good waste management will be implemented throughout the works and a toolbox talk highlighting vigilance for rats and the importance of reporting rat activity will be given to all site personnel before works begin. The biosecurity measures outlined above to ensure that the works do not result in the introduction of Brown rats will be adhered to and documented in a biosecurity risk assessment and mitigation strategy.	
Isles of Scilly Ramsar				
Species regularly supported during the breeding season (as identified at designation): • Storm Petrel • Lesser black-backed gull Species regularly supported during the breeding season (identified	Water pollution: Construction activity may result in accidental fuel or concrete spills which could cause changes in water chemistry and habitats utilised by breeding bird species within the Ramsar.	Yes	Strict pollution prevention measures will be implemented on site, as outlined in Section 6.3	Yes
	Noise and visual disturbance: Construction activity may cause an increased amount of noise and activity which may disturb bird species resting and foraging at sea.	Yes	To reduce the impact that working on multiple sites could have on seabird assemblages foraging or resting at sea, where parallel working is preferred to meet project delivery schedules it will be organised so that	Yes

subsequent to designation): • Shag			works do not take place on adjacent beaches. Given the short duration of the works and its relative small-scale in relation to the size of the Ramsar and abundance of other available habitat it is considered that with the mitigation outlined above any potential disturbance because of the construction works will not be significant.	
	Invasive non-native species (INNS): Brown rats pose a threat to nesting seabirds within the Isles of Scilly Ramsar. Materials will be delivered by barge which could potentially provide a pathway for rats to be brought on to the island which has been rodent-free following the Isles of Scilly Seabird Recovery Project.	Yes	Biosecurity measures will be put in place to ensure the proposed works do not result in the introduction of Brown rats. Measures include checking of material, plant and vessels for signs and presence of rats before transportation and on arrival at site, the use of rope guards on the vessel transporting construction material and ensuring food and waste onboard are all contained in rodent proof containers. Good waste management will be implemented throughout the works and a toolbox talk highlighting vigilance for rats and the importance of reporting rat activity will be given to all site personnel before works begin. The biosecurity measures outlined	Yes

			above to ensure that the works do not result in the introduction of Brown rats will be adhered to and documented in a biosecurity risk assessment and mitigation strategy.	

6.6 Implementation of Mitigation

The mitigation measures listed above are to be included in the Method Statement produced by the contractor who will be undertaking the works. The appointed contractor will therefore be responsible for ensuring that all on-site mitigation measures are implemented effectively.

7 Appropriate Assessment Conclusions

The proposed scheme will not have an adverse impact upon the Isles of Scilly Complex SAC and Isles of Scilly SPA and Ramsar either alone or in combination with any other plans or projects, providing the following mitigation measures are implemented:

- Industry standard pollution prevention measures, particularly addressing the risks of fuel and concrete spills.
- Biosecurity measures will be put in place to ensure the proposed works do not result in the introduction of Brown rats. Measures include checking of material, plant and vessels for signs and presence of rats before transportation and on arrival at site, the use of rope guards on the vessel transporting construction material and ensuring food and waste onboard are all contained in rodent proof containers. Good waste management will be implemented throughout the works and a toolbox talk highlighting vigilance for rats and the importance of reporting rat activity will be given to all site personnel before works begin. The biosecurity measures outlined above to ensure that the works do not result in the introduction of Brown rats will be adhered to and documented in a biosecurity risk assessment and mitigation strategy.
- An Ecological Clerk of Works will inspect the sites before any material is brought in by barge to assess the most appropriate landing site in order to minimise impacts to intertidal habitats. To minimise disturbance and habitat degradation plant will keep to agreed haul routes and not stray outside of these areas.
- Prior to works commencing each day, the works area and immediate vicinity will be checked for hauled out seals. If any seals are present within 200m of the works, site staff will keep their distance and no works will take place until the seal has moved off of its own accord.

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Department of Planning

Council of the Isles of Scilly

Town Hall

St Mary's TR21

1 June 2023

Dear Lisa

Information on the materials present in the Periglis embankment, St Agnes

In their letter of 5 May 2023 maintaining their objection to the coastal sea defence work proposed on St Agnes, Natural England noted that the proposal does not contain enough information and/or certainty to justify the assessment conclusion that the proposal will not result in adverse effects on the Special Protected Area and/or Special Area of Conservation.

Natural England note that a high level of certainty is required as to the impacts of a proposal on a European Site before planning permission can be granted.

Previously, uncertainty existed about the extent and nature of materials present in the embankment at Periglis because it is a) an artificial construction containing both engineered materials from works in the 1990s and 2015 and b) potentially contained waste left in the embankment over many decades.

To provide a high level of certainty on the materials present in the embankment, the project obtained Assent from Natural England to excavate up to 8 cross sections through the embankment. On 26 April 2023 4 cross sections were dug with a backhoe and the materials excavated were examined by me.

I am a geomorphologist by education and training. I hold an MA in Geography from the University of Oxford, where I specialised in geomorphology, hydrology and Quaternary science. I have a PhD in climate change during the Late Glacial. I have qualified as a Chartered Geographer (Geomorphology). I have over 30 years' experience in undertaking sedimentological and geomorphological investigations, and I have acted as an expert witness on geomorphology and hydrology in the Land and Environment Court of New South Wales (Australia), and before the Environment Court, planning tribunals and a national enquiry in New Zealand.

A large number of photographs of the Periglis embankment during its original construction in 1994 and reconstruction in 2015 were made available by St Agnes residents or were obtained from Council records. These photographs illustrate the mix of local and imported materials used in the embankment, from cross sections and construction sequences in the embankment.

These photographs provided a high level of certainty of what was used in the construction of the embankment, but they did not contain substantial information on the presence of waste, nor the natural materials likely to be found deeper than the excavation undertaken in 1996.

Conversations with St Agnes residents revealed that they were aware that inert waste had been placed in low points in the Periglis embankment over time. Residents advised that building rubble, vehicle parts and other materials might be present. However, they were unclear on what volume of material was likely to be present, nor the proportions of those materials.

The investigation of April 2023 was intended to provide information on the composition of natural materials and the proportion and type of waste possibly present.

The investigation trenches were placed at four locations likely to be representative of the types of material in the embankment (Figure 1).

Figure 1: Location of investigation trenches at Periglis, St Agnes

The locations of the trenches were chosen on the expectation that Trench 2 would probably intercept waste, because it was closest to the accessible end of the embankment.

Discussion with residents suggested Trench 1 might also intercept waste, but Trench 3 and Trench 4 were unlikely to contain waste.

The gap between Trench 1 and Trench 2 visible in the figure is because the dispersal field for the sewage system associated with the Island Hall is in this location.

The trenches were dug orthogonal to the sea, so they pass from the rear of the embankment to within 1 m of the embankment crest.

Each trench was between 5 m and 13 m long, dug with a 600 mm wide bucket attachment to a depth of up to 3 m.

The stratigraphy of each trench was described at the embankment crest and at the toe at the eastern end of each trench adjacent to the low area of the SSSI. In the northernmost Trench 4, only a crest description was provided, since the trench was relatively short.

The trenches are illustrated in figures 2-5.

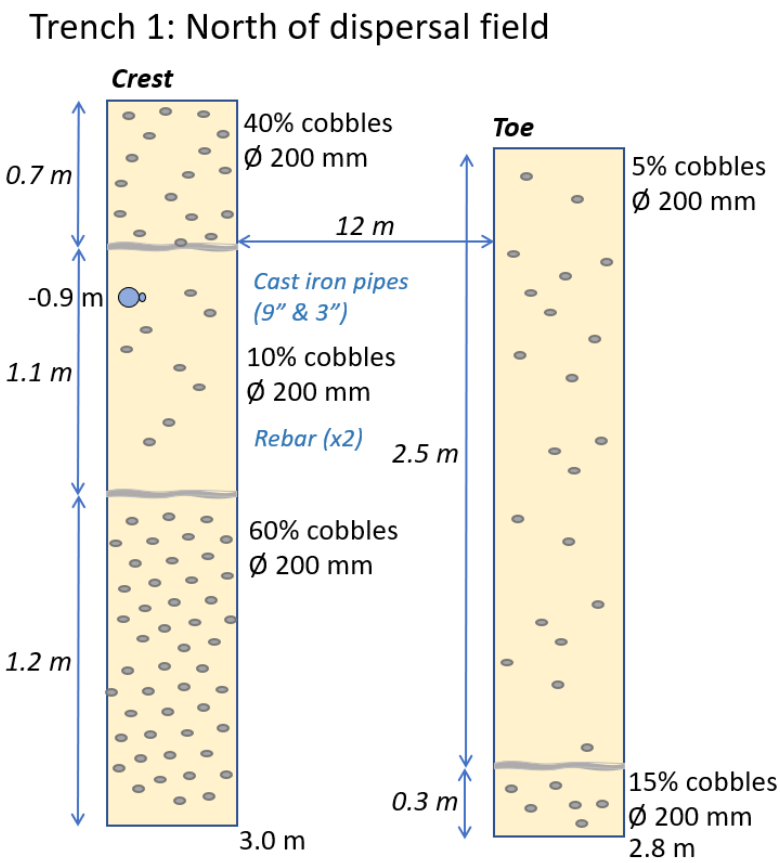
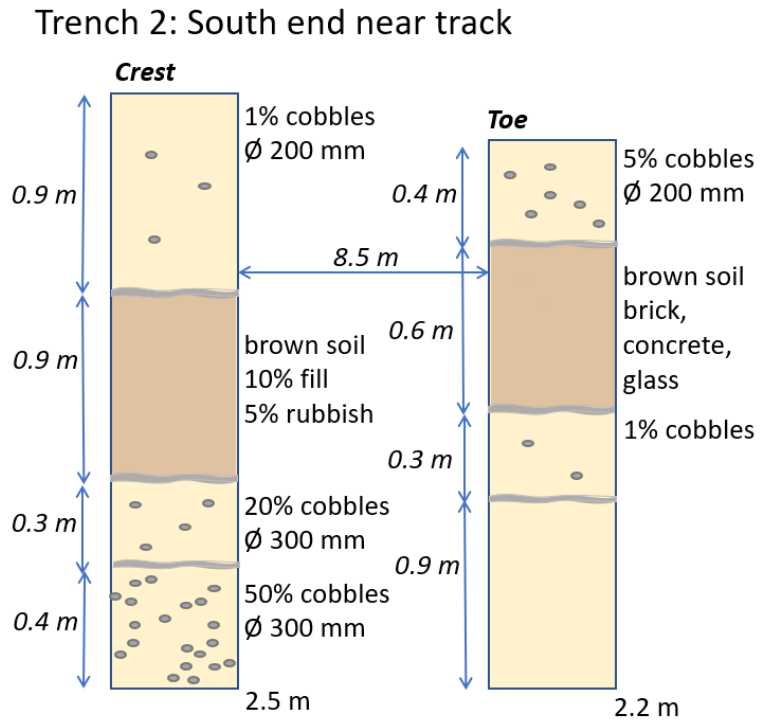


Figure 2: Trench 1 illustration



NB: Yellow materials are sand, forming the balance of all proportions in each column diagram

Figure 3: Trench 2 illustration

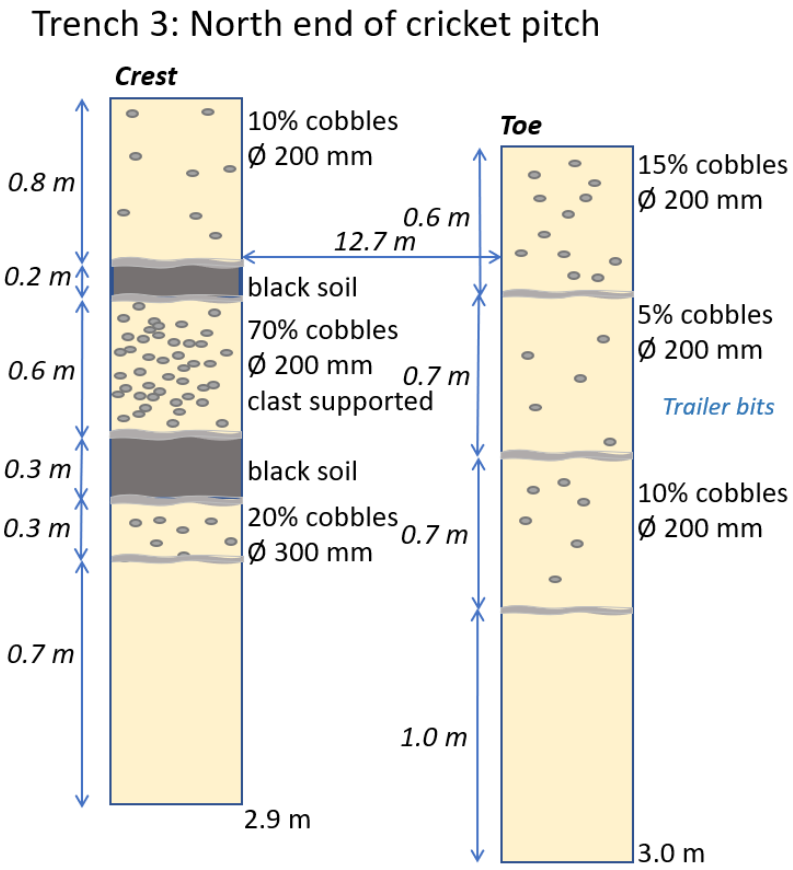


Figure 4: Trench 3 illustration

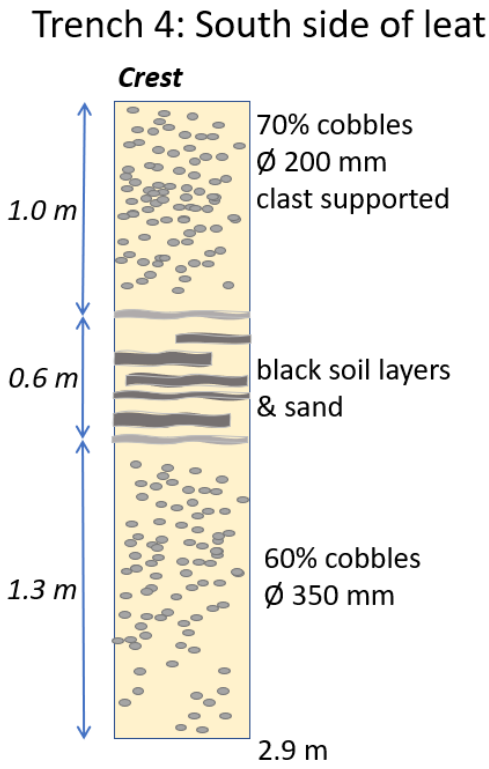


Figure 5: Trench 4 illustration

Interpretation

The general interpretation I make of the materials present in the cross sections, and considering the photographs of works in 2015 and 1996 are:

There is a surface unit on the embankment of materials placed as part of the works in 2015. At the northern end of the embankment, this is a layer of cobbles and sand, taken from the neighbouring beach, which seems to be about 70% cobbles and is matrix supported (ie, the cobbles are touching each other and sometimes have no sand between them).

Elsewhere, this surface layer is thin or non-existent, possibly where the bank height was not made up in the 2015 works because it was at design height already.

At the northern end of the embankment, there are layers of black soil which possibly represent palaeosols (ancient soils), composed of sand and organic material.

At the southern end of the embankment the brown soil present was probably placed where residents were disposing of rubble and other inert materials – there are up to 15% by volume bricks, concrete and glass mixed in with the soil. Residents recall 'filling holes' in the dune, rather than excavating a large volume then filling it again.

At most sites there is a basal unit with more cobbles present, except (notably) the trench north of the cricket pitch. This basal unit possibly represents an older beach unit that was covered by the overlying dune sand. The lack of cobbles at this depth north of the cricket pitch may represent the position of a cobble-poor section of the palaeo-beach as seen typically in present-day mixed cobble-sand beaches on the Isles of Scilly.

The rear of the embankment has fewer cobbles and more sand (except at the leat, which is a very narrow bank). This sandier unit at the rear of the embankment probably represents a wind-blow 'dune' component of the embankment. Aeolian transport of sand to the rear of the embankment occurs today, as seen at the southern end of the cricket pitch. This suggests the palaeo-shoreline has not previously been any further east than the crest of the existing embankment in approximately the last 6,000 years, which is the period that existing sea level has been experienced locally.

In places there is low proportion of general inert building waste such as bricks. Individual pieces of inert waste such as cast-iron pipe and what appeared to be the remains of a trailer were probably used for dune strengthening. Most waste was present at the southern end, closest to the buildings, as might be expected if waste was being deposited the shortest distance from the neighbouring track.

The volume of waste present is less than expected and all waste can be managed by removing it to the waste management facility on St Agnes and disposing of it.

The sand present in the embankment is all the same grain size – similar to the beach sand. The cobbles present range in size from 200 mm to 350 mm median diameter. They mostly are rounded granite beach cobbles.

The proportional mix and volumes present of cobbles and sand observed provides a high level of confidence on what is likely to be present within the rest of the embankment to plan the volume of each that must be imported to construct the proposed sea defences.

Impacts of the proposed works on the European site

The potential for impacts of the proposed works on the European site are now know with a high level of certainty:

1) The waste present in the Periglis embankment is inert
2) The waste is present in small volumes and can be managed by removing it for proper disposal
3) The volume of waste present is small enough that it will not require importation of substantial volumes of additional materials to complete the works as designed
4) The relative proportions of sand and cobbles are known from the excavations so far, and any variation in the proportions actually uncovered during the works can be managed within the proposed methods to undertake the works. For example, using a high proportion of the rounded cobbles present in geobags is feasible. No local materials will remain unused at the end of the works. No unexpected natural materials such as large rocks were found.
5) This means that it is unlikely that the integrity of the European site will be affected by the works, since there are not likely to be any unexpected effects

Although a very high level of certainty about the contents of the embankment could be obtained by digging up more of the embankment, the resulting additional information would not change the approach to managing waste present or material import to the work sites.

The cost of undertaking such an extensive investigation would be out of proportion to the likelihood that the findings would materially affect the integrity of the European site in a way that cannot be managed during the project execution with the information already gained.

Yours sincerely

[redacted]

Stephen Swabey