
Annex B: Isles of Scilly – Design Services for Off-Island Coastal Erosion Defence and Dune Management



Council of the
ISLES OF SCILLY

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Key Reference Material

Title	Source / Location of Document
Isles of Scilly Water Interest Report, 2011, WRC and ARUP	https://scilly.gov.uk/sites/default/files/document/planning/Isles%20of%20Scilly%20SMP2%20Mid%20Term%20Review_Appendix%20A%20FINAL.pdf
Adaptive Scillies PA5b ESIF Full Application Form	Available on request from SeaDefenceTender@scilly.gov.uk
Isles of Scilly Shoreline Management Plan	http://www.scilly.gov.uk/sites/default/files/document/planning/smp2.pdf and https://scilly.gov.uk/sites/default/files/document/planning/Isles%20of%20Scilly%20SMP2%20Mid%20Term%20Review_Appendix%20A%20FINAL.pdf

1. INTRODUCTION

The Isles of Scilly Council has received funding from the European Regional Development Fund and the Environment Agency to complete a range of climate change adaptation works. The physical works include modification of existing coastal protection works, installation of various structures and renourishment of existing sand/gravel dunes to reduce the impact of coastal erosion and wave overtopping.

The Isles of Scilly are one of the most vulnerable areas of the Less Developed Area for impact of climate change, rising sea level, inundation and coastal erosion and loss. The Islands bear the brunt of Atlantic storms and storm surges and the low-lying nature of the Islands makes them intensely vulnerable. This is made worse as much of the island's housing stock, water resources, commercial property are actually below sea level or on narrow very low-lying isthmuses.

The works will be undertaken on the islands of St Mary's, St Agnes, Bryher and St Martin's. A design specification for the works proposed on St Mary's has been completed already and is available for comparison. High-level concepts are provided here for the works suggested at sites on Bryher and St Agnes [Attachment A]. Note, the 'Quay Beach' attachment also refers to Green Bay on Bryher.

The concept design indicates at some sites the length and absolute height to which works such as rock armouring and sand/gravel renourishment of dunes should be constructed. At some sites the relative change in height of dunes is provided. At other sites the concept design also suggests the volume of material that should be used. At some sites only the length of renourishment expected is given.

This request for tenders is to appoint a single contractor to undertake detailed design of the works at each site on the remaining three islands of Bryher, St Agnes and St Martin's.

2. PROJECT SCOPE

BACKGROUND INFORMATION

The Isles of Scilly is an archipelago of over 200 low lying granite islands and rocks located some 28 miles south west of Land's End. The Islands have a combined land mass of 16km².

There are 5 inhabited islands. The largest is St Mary's with a land mass of 6.29km² and a population of 1670, out of a total of 2,253 residents across all 5 inhabited islands. In the summer season the population increases to over 6,000 people.

The Duchy of Cornwall owns most of the islands and as a result, most properties are leasehold; only the built-up area of Hugh Town and McFarlands Downs are largely freehold. The Island of Tresco is let in its entirety to the Tresco Estate whilst any uninhabited islands or untenanted land is leased to the Isles of Scilly Wildlife Trust.

St Mary's is very exposed to Atlantic waves and swell from the west, south and east. It is sheltered from the north west by Tresco and Bryher.

Bryher is more exposed particularly along the West coast, St Martins is exposed from the North, and St Agnes is exposed from all directions. The annual 10% exceedance wave height is around 3.5 m for all the Islands.

The mean spring tidal range at St Mary's is 4.9 m. Tidal currents are not as influential on shoreline morphology as the wave climate but can attain significant velocities in the narrow channels between islands.

Figures 1, 2 and 3 identify the areas at risk on the islands of Bryher, St Agnes and St Martin's. The numbers on the map correspond to the site numbers (column 2) in Tables 1 to 3.

There are several discrete lengths of revetment and embankment located at the back of the beaches in low-lying areas on all islands.

On Bryher at Great Popplestone, Great Par and other sites the dunes need replenishing and reinstatement to protect the water supply and the main road. Work is required to protect the quay access road from erosion.

On St Agnes at Pereglis and Porth Coose dune reinstatement and increased crest heights on sea defences adjacent to the pool area are required to prevent inundation by the sea. The informal slipway also needs formalising and a stop-gate fitting. This protects the SSSI, the main island water source, the Island Hall/commercial units and the Bio Bubble sewage system used by the whole island.

On St Martin's there are only limited existing sea defence works, including minor revetments on the western end and several local quays and slipways on the more inhabited south / south-west side of the island. The works required include renourishing dunes to improve their ability to resist overtopping.

Figure 1 – Bryher

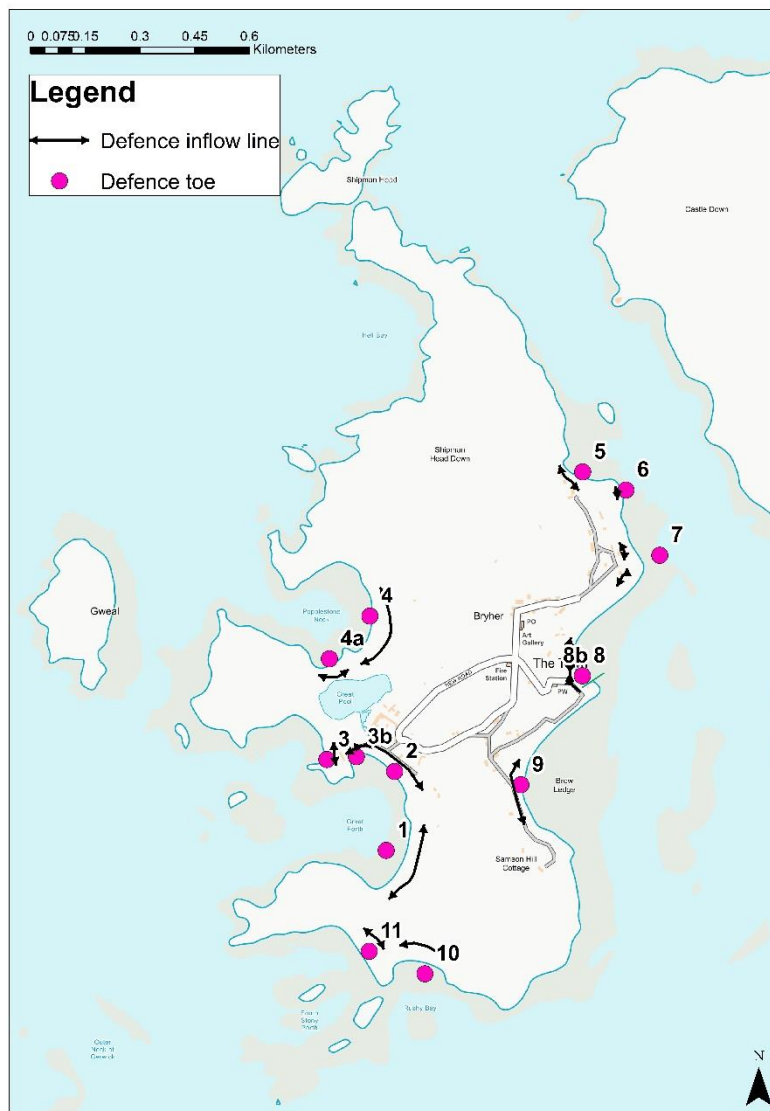
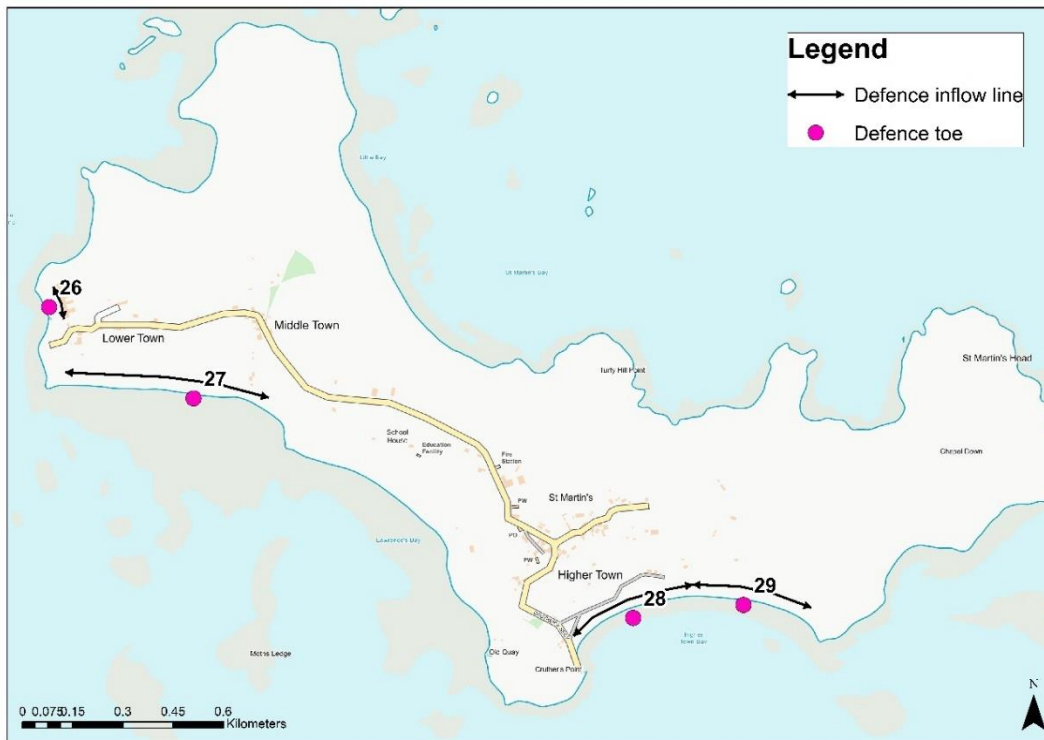


Figure 2 – St Agnes

Figure 3 – St Martin's



3. OBJECTIVES

Table 1: Bryher Works

Option	Site (no. is as on maps)	Protecting	Aim	Issue	Joint	Activity
1B	4 – Great Popplestone	Freshwater supply	Prevent saline intrusion by preventing overtopping waves	N end of bay sand dunes 2 m too low	5B	Recharge & restore 90 m of dune inclusive of repositioning 50 m ³ of <i>in-situ</i> existing ‘rock armour’
2B	3b – Great Porth [aka Great Par] north of Great Carn	Main road	Prevent overtopping waves damaging/blocking road	Dune crest 1 m below rest of beach frontage	3B 4B	80 m linear of dune nourishment and restoration along with negotiated changes to access and vehicular routes to enable the dune to recover and recess
3B	2 – Great Porth/Par south of Great Carn	Main road	Prevent overtopping waves damaging/blocking road	Low section of dune	4B 2B	20 m of damaged dune restoration with recharge
4B	8 – Green Bay	The Green	Prevent overtopping waves	Low section of dune	3B 2B 7B	100 m of ‘dune’ restoration and nourishment with sand to raise dune height by 250 mm
5B	3 – Stinking Porth	Freshwater supply	Prevent saline intrusion by preventing overtopping waves	Low section of dune	1B	Reduce overtop & breach risk at 20 m southern section with 20 m ³ of localised dune restoration
6B	5 – Kitchen Porth	Vulnerable properties	Prevent inundation	Low section of bank		Raise front edge and across 75 mm of informal pathway by 500 mm to provide protective embankment between dune area and properties
7B	8b – Quay	Quay access	Prevent erosion of road and quay	Eroded corners	4B	Rock revetment protection works on Quay Beach

Table 2: St Agnes Works

Option	Site	Protecting	Aim	Issue	Joint	Activity
1A	51 – Porth Killier	Seawall stability	Prevent erosion and reduce overtopping risk	Seawall erosion		Reduce scouring of toe/foundation of 10m section of retaining sea wall by protecting it with 1.5 m ³ of rock armour per linear metre
2A	51 – Porth Killier	Main road	Prevent erosion and reduce overtopping risk	Ram erosion		Halt ram erosion & overtopping risk at a 5 m section to immediate SE of sea wall by installing localised 2.5 m high rock armour revetment
3A	51 – Porth Killier	Groundwater recharge area	Reduce overtopping risk	Low section of rock armour	4A	Add 20 m ³ of rock armour to existing to raise height and address overtopping risk on NW side of Porth Killier
4A	50 – Porth Coose 48, 49 – Periglis	Groundwater recharge area	Reduce overtopping risk	Low sections of dune	3A	<p>One option from (1), (2) or (3).</p> <p>(1) Restore 500 m of dunes, locally recharging 125 m of it with imported granite ‘crush’. Naturally & flexibly strengthen, raise and protect low sections with biomatting & by planting and establishing with varied palette of coastal dune flora. Achieve a consistent profile 750 mm above the current low points.</p> <p>(2) Alternatively, protect 220 m length and 8 m width of dunes on Periglis beach with concrete block revetment, while the</p>

						remainder is treated as (1) above. (3) Alternatively, protect 220 m length and 8 m width of dunes on Periglis beach with Tecco Cell proprietary erosion protection matting, while the remainder is treated as (1) above.
5A	48 – Periglis	Slipway	Repair slipway	Slipway in poor repair		Repair Periglis Slipway (6 m ³ concrete) & enhance rock armour at quay & tie-in with beach entrance
6A	48 – Periglis	Slipway	Prevent flooding through slipway	Slipway flood risk		Add stop log fitting and supply stop logs to slipway

Table 3: St Martin's Works

Option	Site	Protecting	Aim	Issue	Joint	Activity
1M	28 – Higher Town	Freshwater supply	Prevent overtopping	Low section of dune		Fence off the 25% most damaged, weakest sections front and rear over 100 m to give them the chance to recover
2M	28 – Higher Town	Freshwater supply	Prevent overtopping	Low section of dune		Sensitively restore 200 m of dune with in-situ materials, supplemented with planting and transposing to protect the most damaged & compromised 25% of dunes, reroute the important coastal path. Potentially protect beach access tracks from erosion with boardwalks.

This contract aims to provide a 'palette' of potential measures for reduction of risk from coastal flooding and coastal erosion on the three islands. The potential measures should be specified and costed to a level suitable for tendering a contract for construction, and in sufficient detail to be used

by Council for the Isles of Scilly (CloS) for obtaining EIA and MMO licences, if required. The 'palette' will be used by CloS to select measures that suit the budget and expected outcomes, for inclusion in the future tender process for constructing the works.

The successful *Consultant* will undertake the following tasks and provide the following deliverables:

- 1) Observe the locations on the islands of St Agnes, Bryher and St Martin's where renourishment of dunes, construction of rock armour, revetments and other works is proposed to protect against overtopping from the sea and erosion from the sea, as noted in the concept design statements (see Tables 1-3 and Attachment A).
- 2) Undertake a walkover / visual survey to confirm the location of key features and to allow for the clear definition of working areas and accesses for use in compiling future Works Information documents.
- 3) Identify the design inverts for the crest of protective works that would achieve the specific elevations or elevation changes suggested in the concept designs (noting that this may change the volume of materials suggested in the concept designs, which should be updated at step 3 below)
- 4) Using 2018 or 2019 (if available) LiDAR data for the Isles of Scilly available from the Environment Agency, determine the volume of materials required to achieve these design inverts using the material types and measures recommended in the concept designs, including any material spread/footprint that may be required to achieve these inverts
- 5) Suggest alternative measures that would achieve the same outcomes as identified in the concept designs. Agree with the *Principal* any alternatives that should subsequently be estimated and included in the 'palette' of potential measures for site works. For the avoidance of doubt, the alternative measures could include works of different scope, in a different location, or using different materials and/or methods.
- 6) Following discussion with the *Employer* about the budget available for the off-islands works, provide initial cost estimates for site works for each of the measures detailed in Tables 1 to 3 and for any alternative measures agreed at step 4 above (ie, those in the 'palette'), to enable short-listing of potential site works to be undertaken for each island by Council of the Isles of Scilly, based on cost and expected performance
- 7) Following the short-listing of site works to be undertaken on each island (step 5), provide written and editable construction specifications, appropriate plans, specifications, outline programmes and schedules of work to technical design level (equivalent to RIBA 2020 stage 4). In doing so take into account and collate any information required to form part of a Pre-Construction Information document. The plans, specifications, programmes and schedules must be sufficiently detailed to permit construction of the works without further investigation being required. The plans, specifications, programmes and schedules of work must be of sufficient quality to be acceptable in an application for Planning Permission for the works. An example of the specifications produced previously for Porth Mellon on St Mary's is given in Attachment B.
- 8) Develop and provide cost plans for each of the short-listed sites.
- 9) Identify all services located where viable schemes are recommended, using data obtained from utility companies.
- 10) Undertake all necessary ground investigation to inform their options appraisal. This is to include assessment of structural integrity of existing structures. It is anticipated that, as most sites are dunes, this survey will be limited.
- 11) Assess whether an archaeological watching brief is required for the proposed schemes

- 12) The *Consultant* shall provide a baseline survey of habitats supported so that the Employer can achieve a better conservation status for the areas where the work is being undertaken.
- 13) The *Consultant* will compile the supporting technical documentation required to obtain a Screening Opinion from the Local Planning Authority.
- 14) The *Consultant* shall deliver a copy of all survey data and other data undertaken and collected in delivering the above activities and supporting detailed technical reports. The *Consultant* will take the risk of the adequacy of existing data quality and quantity.
- 15) Deliver 10 days post-contract advice to determine whether the works contracted using the *Consultant's* advice conform to the design information developed by the *Consultant*.
- 16) In delivering items 1 to 9 the *Consultant* shall package the outputs into design guides for each of the sites identified in section 3 above, in a form beneficial to contractors interested in tendering for the construction contract as a design guide.

4. PROGRAMME & COSTS

PROGRAMME

The tasks and deliverables outlined in Section 3 will be required to be received in final draft form by the Council of the Isles of Scilly by 30 June 2021.

The Consultant shall provide a detailed project plan in Microsoft project format version standard 2003 and/or pdf copy. A baseline plan shall be provided for the project start up meeting and this will be updated monthly for progress meetings with actual and forecast progress against the baseline.

The programme shall cover all the activities to be undertaken by the Consultant and other members of the project team. Include all major project milestones from commencement to the end of the reporting, consultation and approvals stage.

Evidence of Professional Indemnity insurance (£2 million) is required.

In managing the project, the *Consultant* shall:

1. Produce a project risk register review and update.
2. Attend progress meetings and draft record minutes, the *Employer* to issue.
3. Produce monthly financial updates and forecasts that meet the *Employer's* project reporting timetable together with progress reports.
4. Deliver a monthly progress report in the *Employer's* standard template giving progress against programme, deliverables received and expected and financial summary against programme.
5. Attend Adaptive Scilly project board meetings as required in capacity as the *Consultant*.
6. Capture lessons learnt relevant to scheme delivery
7. Review and update the lessons learnt log during monthly progress meetings.
8. The *Employer* will be using the product of this contract to obtain permissions (e.g. planning, MMO and SSSI authorisations). The *Consultant* will provide technical assistance in relation to this activity as requested by the *Employer* as required at the specified day-rate.

9. The *Employer* will lead in the direct communication for obtaining the Screening Opinion from Local Planning Authority.

HEALTH AND SAFETY

1. The investigations on site may be subject to notification to the Health & Safety Executive (HSE). Early advice should be provided by the *Consultant* to the *Employer* on whether such notification is likely to be required.
2. The *Consultant* will provide Principal Designer (PD) services for this scheme. The PD duties are as those identified within the Construction (Design and Management) Regulations 2015 and in HSE guidance L153.