cornwall environmental consultants LTD







Making Space for Sand
Site No 11 – Church Cove
Ecological Assessment

CEC3683
22 July 2024

Document Control

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Rev A			
Rev B			

Disclosure

The information, opinion and advice which we have prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct and the British Standard for Biodiversity – Code of Practice for Planning and Development (2013). We confirm that the opinions expressed are our true and professional bona fide opinions.

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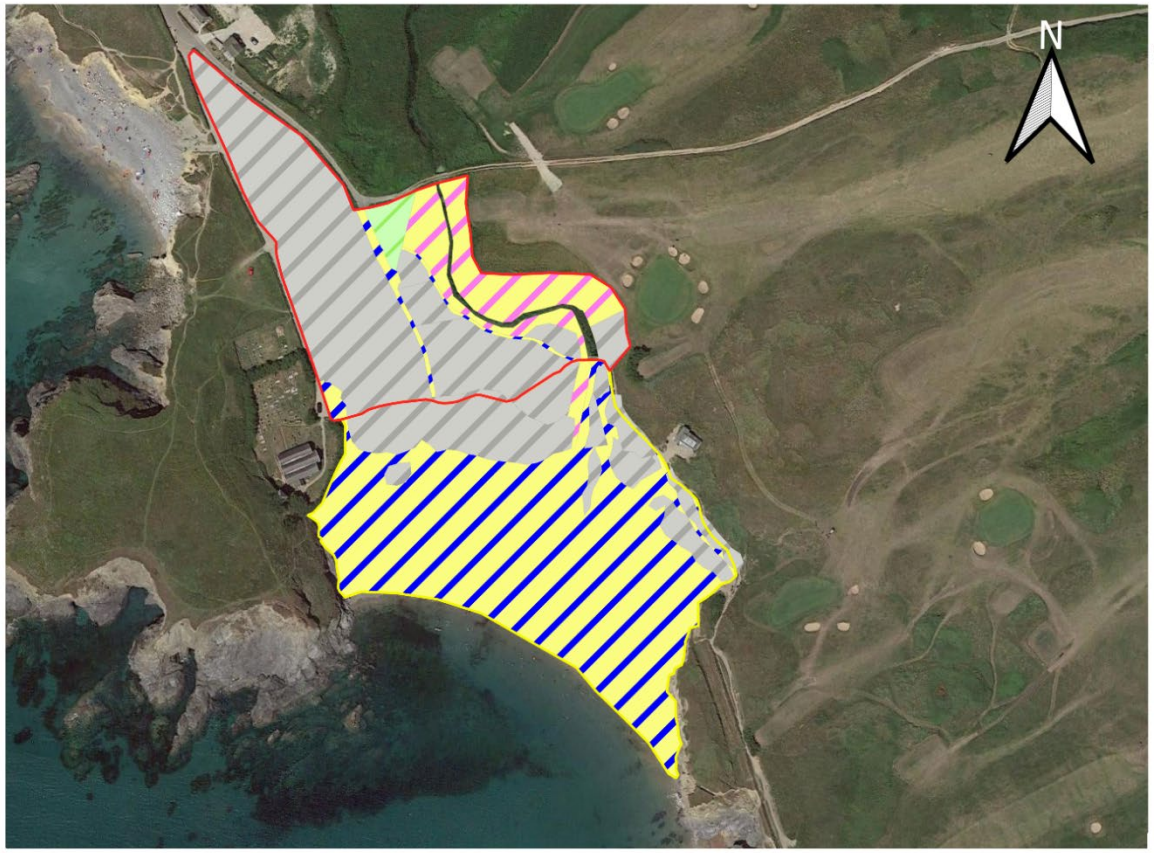
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Summary

Site and methods	
Purpose of report	To identify the ecological constraints and opportunities associated with the management of the dune system at Church Cove.
Site assessed	Church Cove, Gunwalloe
Area (ha)	Vegetated area ~1.6ha
Location:	Grid reference: SW 66127 20537 What3words: alarming.cornering.hatch
Planning Authority involved	Cornwall Council
Survey methods	Extended Phase 1 Habitat Survey UK Habitat Classification
Surveyor's name	Emily Cooper BSc (Hons), ACSM, PGCert Dr Bruce Forrest BSc (Hons), MSc, PhD, FRES
Date of assessment	UK Habitat Classification: July 2023
Weather on date of assessment	Warm and sunny

Results	
Designated sites	The Lizard SAC Baulk Head to Mullion SSSI Gunwalloe Marshes and Towans CWS
Important habitats present	Coastal sand dunes, vegetated shingle
Non-native invasive species present	None recorded

Protected species present	Nesting birds
Potential for protected species	Reptiles
Enhancement recommendations	Allow rollback into neighbouring golf course



Map 1: UK Habitat Classification

1. Introduction

1.1. Background

1.1.1. The United Nations General Assembly (UNGA) declared 2021-2030 a 'Decade on Ecosystem Restoration'. The process of ecological restoration involves restoring the biodiversity and integrity of a native reference system (Gann *et al* 2019), to achieve successful restoration, the 'end point' should be defined within the planning stage of a project (Rieger *et al* 2014).

1.1.2. Making Space for Sand is a partnership project from Cornwall Council, with Cornwall Wildlife Trust (CWT), University of Plymouth (UoP) and South West Coastal Monitoring (SWCM). The project is funded by DEFRA as part of the Flood and Coastal Innovation Programmes, which are managed by the Environmental Agency (EA). The programmes will drive innovation in flood and coastal resilience and adaptation to a changing climate.

1.1.3. The purpose of Stage 1 of the project was to conduct an analysis of dune systems at 40 locations around Cornwall, and by using modelling techniques to predict the future of the dunes in relation to climate change and rising sea levels. A 'State of the Dunes' report will be developed which will include the modelling predictions, ecological, social and heritage findings and considerations.

Table 1: Timeline of events

Date	Assessments Undertaken
MS4S Stage 1 - February 2022	Baseline Assessment and Ground truthing
MS4S – Stage 2 – June 2023	UK Habitat Classification

1.1.4. As part of the current stage of works, Stage 2, CEC are working collaboratively with Cornwall Wildlife Trust and the Environmental Records Centres for Cornwall and the Isles of Scilly (ERCCIS) to produce an ecological baseline report for 23 sites which will be used to inform restoration objectives and guide landowners and volunteer groups in these efforts. This will involve the ecological survey of the sites and assessment under Phase 1, UK Habitat Classification and Biodiversity Net Gain survey methodologies, along with the mapping of invasive species recorded on site.

1.1.5. In the recently published DEFRA list of irreplaceable habitats, sand dunes are listed, however an estimated 70% of dune systems have been lost globally during the last century due to anthropogenic pressures such as development and poor habitat management. Sand dunes are an important ecological feature, providing a unique and diverse habitat for flora and fauna, and protection against flooding, storm surges and wave attack (D'Alessandro *et al* 2020). Dunes are a multifunctional landscape and should be managed as such, allowing for interventions. Legally required stabilisation along the Dutch coast has led to a decline in pioneer species and biodiversity, coupled with increased nitrogen deposition and reduction in grazers such as rabbit. This led to a dominant climax community, and it is now recognised that this is creating a fossilised and partly acidified landscape.

1.1.6. The aim of the Making Space for Sand Project is to encourage the more sustainable use and development of the coastal fringe to allow for a more natural, ecosystem approach to coastal management where traditional coastal protection is not possible.

1.2. The Site

1.2.1. Church Cove (Cornish: Porth Lynnji or Perran Vose, meaning 'cove of the wall') is a small south-west facing beach, on the western side of the Lizard Peninsula. Church Cove is named after the small church (St Winwaloe's Church) which is sheltered by the headland to the west of the beach. The church was originally known as the

'Church of Storms', testament to the harsh conditions it has survived. The cove is located at the mouth of the Gunwalloe Stream, which flows across the beach, after meandering through a relatedly broad bottomed and undeveloped valley.

1.2.2. The coarse sand associated with the gently shelving and shallow embayed cove, form sand dunes on the upper shore. In combination with the wetland along the edges of the Gunwalloe Stream, the site is one that provides a rich tapestry of habitats. The location is considered a rural beach that has remained relatively unchanged and undeveloped, with the exception of the Towans that sit behind the site, which have been developed as a golf course.

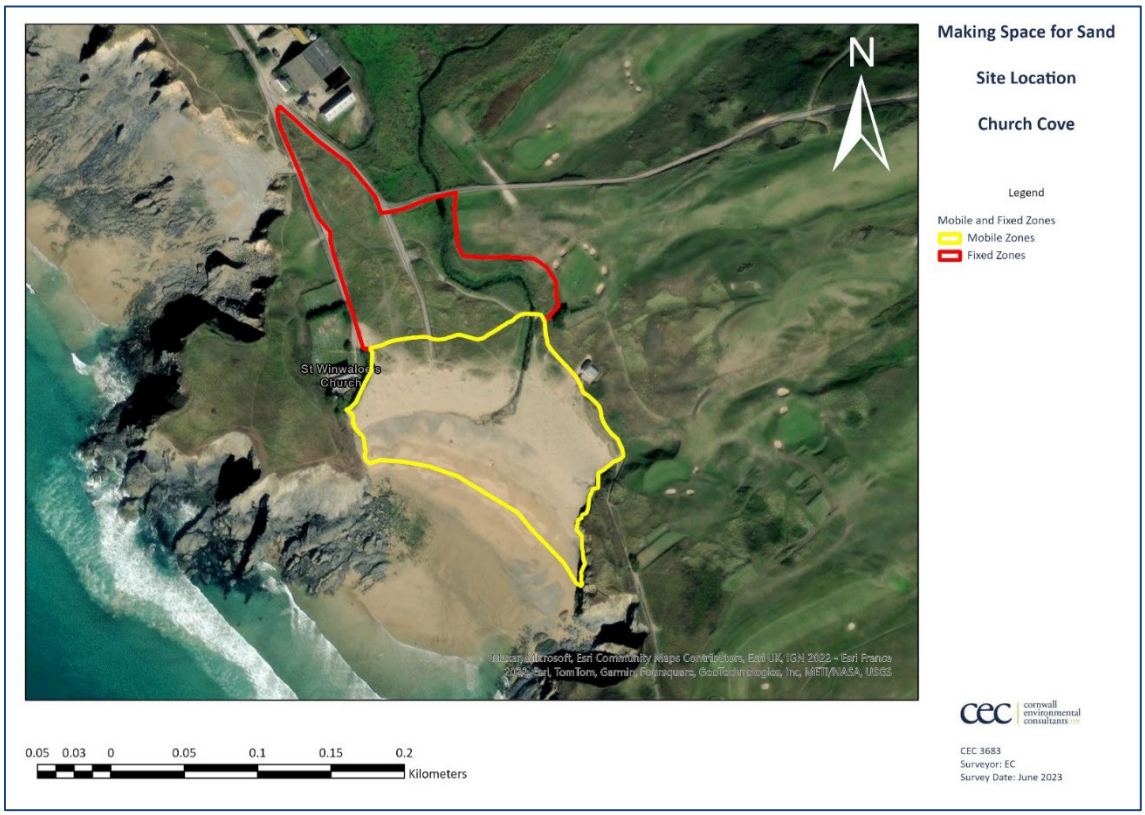


Figure 1: Site location

1.2.3. This report has been prepared by Emily Cooper, who has four years' experience in preparing ecological reports such as this.

1.2.4. This report follows the desk study and ground truthing report 'CEC3683 Making Space for Sand – Church Cove – Site 11, February 2022' which details the baseline information from Stage 1 of the project.

2. Proposals

2.1.1. At this stage of the project, Stage 2, there are no plans for the site. However, there is potential for this to change as the project progresses.

3. Conservation Designations

3.1. Conservation Designations

Sites of Special Scientific Interest (SSSI)

3.1.1. SSSIs are designated under the Wildlife & Countryside Act 1981 where they support habitats and/or species of national importance, this is overseen by Natural England. SSSIs represent the best sites for wildlife and geology. Many SSSIs are internationally important and play an important part in local culture and economy. The natural wildlife and geological features of SSSI's are considered to be irreplaceable parts of the national heritage. These are protected in order to preserve their importance, and to prevent damage and development.

Special Areas of Conservation (SAC)

3.1.2. A SAC is land designated under the Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora. This land is designated under the Conservation of Habitats and Species Regulations 2017 (as amended). Land with SACs is considered to be part of a network of high-quality conservation sites, and those considered to be most in need of conservation at a European level. SACs are a European Marine Protected Area.

Cornwall National Landscape

3.1.3. From November 2023, all areas previously know as Areas of Outstanding Natural Beauty, or AONBs, were re-named National Landscape and in Cornwall became Cornwall National Landscape. However, the Management Plan still references the term AONB as this was formally adopted by Cornwall Council and cannot be amended until the next plan is produced.

3.1.4. Cornwall National Landscape areas are protected landscapes whose distinctive character and natural beauty are so outstanding that it is in the nation's interest to safeguard them. As such they have been nationally designated by the same legislation as National Parks and have the same status and level of protection.

3.1.5. The South Coast Western section covers an area of 19,258 hectares, which is 20% of the Cornwall National Landscape. The key characteristics of this coastal landscape is a soft profile. It benefits from the protection offered by the Penwith peninsula against the full force of the Atlantic storms.

4. Legislation

4.1. Legislation

4.1.1. The Wildlife and Countryside Act (HM Government, 1981, as amended) is the main piece of legislation relating to nature conservation in Great Britain. It transposes into British law the Berne, Bonn and RAMSAR Conventions, and the European 'Birds Directive' (CEC, 1979). This legislation covers protection of wildlife (birds, other animals and plants), Sites of Special Scientific Interest (SSSI's) (with some SSSI's also designated as Special Protection Areas, SPA's), National Nature Reserves (NNR's) and RAMSAR sites.

4.1.2. The Conservation of Habitats and Species Regulations (HM Government, 2019) transposes into British law the European 'Habitats Directive' (CEC, 1992), and covers Special Areas of Conservation (SAC's) and European Protected Species (EPS) (see below). It also provides further protection for SPA's and RAMSAR sites.

4.1.3. The Countryside and Rights of Way (CRoW) Act (HM Government, 2000) increases protection for SSSIs and threatened species. It specifies the duty of Local Authorities to further the conservation of listed (UK BAP priority) habitats and species.

4.1.4. The Natural Environment and Rural Communities (NERC) Act (HM Government, 2006) confers a legal duty on every public authority to conserve biodiversity under Section 40(1). Section 41 required the publication of lists of habitats and species of principal importance for the conservation of biodiversity in England. This list contains the habitats and species previously known as 'UK BAP' (Biodiversity Action Plan) priorities for conservation, and the terminology of habitats and species of principal importance supercedes the UK BAP terminology. Such features will be referred to as Habitats of Principal Importance (HPIs) and Species of Principal Importance (SPIs), throughout this report.

4.1.5. The Environment Act 2021 (HM Government, 2021) sets clear statutory targets for the recovery of the UK's natural world in four priority areas: air quality, biodiversity, water and waste, and includes an important new target to reverse the decline in UK species abundance by the end of 2030. It will also require new developments to improve and/ or create habitats for nature, and tackle deforestation overseas.

4.1.6. The Hedgerows Regulations 1997 protects historically / ecologically important hedgerows.

4.1.7. The Protection of Badgers Act 1992 provides specific protection for badgers.

5. Policy

5.1.1. Shoreline Management Plan (SMP) is a strategy for managing flood and erosion risk for a particular stretch of coastline over short (0-20 years), medium (20-50 years) and long (50-100 years) term time periods. An SMP is considered to be the most sustainable approach to managing flood and coastal erosions risks. Cornwall adopted SMP2 in 2011, though the epochs date back to a 2005 start. Within SMP there are four policy approaches which have been assigned to stretches of coastlines (known as management units) and will vary between epochs. The four policies as defined by DEFRA are: No Active Intervention (NAI), Hold the Line (HTL), Managed realignment (MR), and Advance the line (ATL). Additional to the main policies, there are five sub policies: Slow Erosion (SE), Do not Defend (DnD), Repair not Replace (RnR), Local Activity Only (LAO), Natural Features (NF) and Placeholder (P).

5.1.2. Church Cove is covered under policy unit MA16.3, 16.4 and 16.5. Table 2 below shows the policy plans under SMP2.

Table 2: Shoreline Management Plan Policies

MA16.3 – Poldhu Cove

Timeframe	SMP Policy	Sub Policy
Epoch 1 (2005 - 2025)	No Active Intervention	Local Activity Only
Epoch 2 (2025 -2055)	No Active Intervention	Local Activity Only
Epoch 3 (2055 - 2105)	No Active Intervention	Local Activity Only

MA16.4 –Church Cove

Timeframe	SMP Policy	Sub Policy
Epoch 1 (2005 - 2025)	No Active Intervention	Do not Defend
Epoch 2 (2025 -2055)	No Active Intervention	Do not Defend
Epoch 3 (2055 - 2105)	No Active Intervention	Do not Defend

MA16.4 – Jangye-ryn

Timeframe	SMP Policy	Sub Policy
Epoch 1 (2005 - 2025)	Managed Retreat	Slow Erosion
Epoch 2 (2025 -2055)	Managed Retreat	Slow Erosion
Epoch 3 (2055 - 2105)	No Active Intervention	Do not Defend

6. Methodology

6.1. Desk Study

6.1.1. As part of Stage 1 of the Making Space for Sand project, a desk study was undertaken recording the key features of the site, including statutory and non-statutory designations, invasive species records, Phase 1 habitat analysis, landscape features and historical features.

6.1.2. Information regarding notable plant species was obtained from the Environmental Records Centre for Cornwall and the Isles of Scilly (ERCCIS), supplementary to the information provided in Stage 1 of the project.

6.1.3. A desk study search for statutory designated sites within 1km of the site was completed using the online Multi-Agency Geographic Information for the Countryside (MAGIC) mapping tool. In addition, the Cornwall Council Interactive mapping website was used to look for County Wildlife Sites (CWS) within the search area.

6.2. Field Survey

6.2.1. A walkover site survey was undertaken to identify plant species and map habitats present. Signs of faunal species were also searched for; including tracks, prints, droppings, hairs, feeding remains, nests and burrows.

UK Habitat Classification (UK Habs) Survey

6.2.2. UKHabs is a surveying technique which maps parcels of land within a defined area and classifies them according to their habitat type, covering terrestrial, freshwater and coastal habitat types. The UKHabs system largely superseded the previous system of Phase 1 Habitat Classification. UKHabs works by classifying habitats at different levels, with level 1 being the differentiation between terrestrial, coastal and freshwater, there are nine ecosystem types at level 2, which filters down in 20 broad habitat types in level 3. In some cases, the habitat will be further classified under levels 4 and 5.

6.2.3. Secondary codes can be applied to a habitat parcel to signify the presence of other features within that habitat.

6.2.4. The UKHabs survey was carried out by Emily Cooper and Bruce Forrest on 5th July 2023. The study area included mobile and fixed dune areas as shown in Figure 1. The weather conditions at the time of survey were sunny and warm.

6.3. Limitations

6.3.1. The conclusions and recommendations presented within this report are based on the current ecological features identified, and the current dune boundary as shown in Figure 1 and in Map 1. Ecological features can change over time, particularly if site management/ use changes, or in the case of a dune system there is a particularly stormy winter; as a guide it is recommended that this report is valid until June 2025.

6.3.2. July is within the optimal season to undertake vegetation surveys: as many plant species are in bloom, accurate identification of the habitats has taken place.

6.3.3. This ecological assessment does not include a search for Tree Preservation Orders (TPOs) or Conservation Area status.

6.4. Habitat Designation

Habitats of Principle Importance – Coastal Sand Dunes, and Perennial Vegetation on Coastal Shingle

6.4.1. Coastal Sand Dunes – and Perennial Vegetation on Coastal Shingle (Broad habitat supralittoral sediment) – classify as a Habitat of Principle Importance (HPI) under Section 41 of the Natural Environment and Rural

Communities Act 2006.

6.4.2. Sand dune habitats are classified as Annex 1 habitats under the EU Habitats Directive 1992, this is transposed into UK law under The Conservation of Habitats and Species Regulations 2017. This requires member states to designate, protect and manage these habitats.

6.4.3. Within the requirements of Biodiversity Net Gain, Coastal Sand Dunes are listed as irreplaceable habitat, this means that any classification as HPI must be retained.

7. Baseline Ecological Conditions

7.1. Sand Dune Ecology

7.1.1. Sand dunes are formed through a successional process. Embryo dunes form closest to the sea where an obstruction is in place and windblown sand accumulates. Pioneer halophilic (salt tolerant) species then have the capacity to colonise this area, the typical species here being lyme and sand couch grasses.

7.1.2. Fore dunes establish where the embryo dunes have created stability in the substrate, marram grass begins to establish and further stabilise the substrate by allowing more sand to accumulate. There is now the addition of more organic matter where marram dies back. Water retention is increased and microhabitats within the dune area allow a wider diversity of vegetation to colonise.

7.1.3. Within the fixed dunes, the diversity of species will out compete marram, red fescue being a key competitor. The diversity of herbs and grasses leads to an increase in the humic content of the substrate making it more suitable for the establishment of scrub species, and eventually woodland.

7.1.4. 'Blowouts' are areas of bare sand where plant roots have been damaged leading to exposed bare sand. Erosion within these areas can accelerated by excessing trampling, grazing and burrowing. Sand sedge is a key coloniser of these areas and starts the process of stabilising the area. Despite this, blowouts and other exposed bare sand areas are an important feature of the dune landscape and ecology.

7.1.5. Dune slacks occur where the terrain drops to the level of the water table and can be seasonally or permanently wet. These areas will support different species to the other areas of the dune including reeds, rushes, sedges and horsetails. Nutrients and organic matter will accumulate in these areas supporting these different plant communities.

7.2. Sand Dune Ecological Management

7.2.1. Sand dune management historically has been to stabilise and prevent erosion. This has been achieved through strategic planting of species such as sea buckthorn, or through preventing access into areas of the dunes. This approach facilitates the stabilising of fixed dune and scrub areas, but limits the establishment of embryo and foredunes, and the key dune features such as blowouts and dune slacks.

7.2.2. Hard management approaches include the placement of rock armour and other sea defences at the toe of the dune, this limits the dunes capacity to establish seaward. Softer management approaches include the placement of old Christmas trees to act as a barrier to allow sand to accumulate against.

7.2.3. Where dunes have become over stabilised through management approaches and limits imposed by human development, within some dune systems artificial recreation of the mosaic of habitats occurs. These approaches include scraping back of scrub and cutting of notches to encourage wind blown erosion to take place.

7.2.4. Low nutrient levels are essential for dune health. Nutrient enrichment is a key management issue facing dune ecology, with species such as bramble, nettle and dock able to thrive in nutrient rich environments and outcompete dune specialist species. Sources of nutrient enrichment include atmospheric deposition, agricultural runoff and dog waste.

7.3. Indicator Species

7.3.1. The National Plant Monitoring Scheme has compiled a list of 30 plant species as indicators of dune health, with 25 being +ve, and 5 being -ve, and 17 being 'wild flower' level. See Table 3 below for full list.

Table 3: Dune Indicator Species

Name	Common Name	Wildflower Indicator	Indicator +/-	Present on site
Alopercurus geniculatus	Marsh Foxtail		+	
Carex flacca	Glaucous Sedge		+	
Carlina vulgaris	Carline Thistle		+	
Cerastium arvense	Field Mouse-ear		+	
Cirsium arvense	Creeping Thistle	✓	-	
Equisetum palustre	Marsh Horsetail		+	
Filago minima	Small Cudweed		+	
Geranium sanguineum	Bloody Cranes-bill		+	
Lysimachia vulgaris	Yellow Loosestrife	✓	+	
Medicago lupulina	Black Medick		+	✓
Ophiglossum vulgatum	Adder's tongue	✓	+	
Pilosella officinarum	Mouse-ear Hawkweed	✓	+	✓
Plantago coronopus	Buck's-horn Plantain	✓	+	✓
Potentilla reptans	Creeping Cinquefoil	✓	+	
Ranunculus acris	Meadow Buttercup	✓	+	
Ranunculus repens	Creeping Buttercup	✓	+	
Rosa ruogsa	Japanese Rose	✓	-	
Rubus fruiticosus	Bramble	✓	-	
Rumex acetosella	Sheep's Sorrel	✓	+	
Sagina nodosa	Knotted Pearlwort		+	
Salix repens	Creeping Willow	✓	+	
Senecio erucifolius	Hoary Ragwort		+	
Senecio jacobaea	Common Ragwort	✓	-	
Thalictrum minus	Lesser Meadow-rue		+	
Trifolium fragiferum	Strawberry Clover		+	
Trifolium pretense	Red Clover	✓	+	

Name	Common Name	Wildflower Indicator	Indicator +/-	Present on site
Trifolium repens	White Clover	✓	+	
Urtica dioica	Common Nettle	✓	-	
Valerianella locusta	Common Cornsalad		+	
Vica cracca	Tufted Vetch	✓	+	

7.3.2. In addition to these species, Red Valerian (*Centranthus ruber*), Alexanders (*Smyrnium olusatrum*), Tamarisk (*Tamerix*), Hebe (*Veronica x franiscana*) and Sea Buckthorn (*Hippophae rhamnoides*) have been classified as negative indicators for the purposes of this study, this is based on them being non-native species to Cornwall and having capacity to become invasive in the dune environment. This is in addition to the commonly listed and Schedule 9 invasive non-native species.

7.4. Site Description

7.4.1. The dune at Church Cove is one of the smallest within the MS4S portfolio of sites, it has a sand dune to the west, with a small stream, flanked by reedbeds running to the east of the site. The dune system has some patches of embryo dune and vegetated shingle at the MHW mark, where the stream discharges to the sea. Dune grassland is dominated by marram and contains a number of salt tolerant species. There is a links golf course to the east of the site.

7.4.2. UK Habitat Classification habitat distribution is shown in Map 1.

7.5. Statutory and Non-Statutory Designated Sites

7.5.1. Designated sites which are on or in proximity to the site are show in Table 4 and Figure 2 below.

Table 4: Designated Sites

Designation	Qualifying Features	Condition
The Lizard Special Area of Conservation (SAC)	Annex 1 Habitats: 1230 Vegetated Sea Cliffs of the Atlantic and Baltic Coasts 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp*. 3170 Mediterranean temporary ponds * Priority feature 4010 Northern Atlantic wet heaths with *Erica tetralix* 4030 European dry heaths	No condition assessment available

Designation	Qualifying Features	Condition
	4040 Dry Atlantic coastal heaths with *Erica vagans* * Priority feature	
Lizard Point SAC	Annex 1 Habitats: 1170 Reefs	No condition assessment available
Baulk Head to Mullion Site of Special Scientific Interest (SSSI)	Maritime grasslands; maritime rock-crevice community; strandline vegetation; wet grassland; extensive reedbeds (breeding warblers, Odonata, rare bryophytes)	Hydrological management at the coast (medium risk, potential pressure); invasive non-native freshwater plants (high risk, potential pressure)
Cornwall National Landscape Area	"soft profile" landscape characteristics; tall cliffs with small coves; the Helford river	No condition assessments available

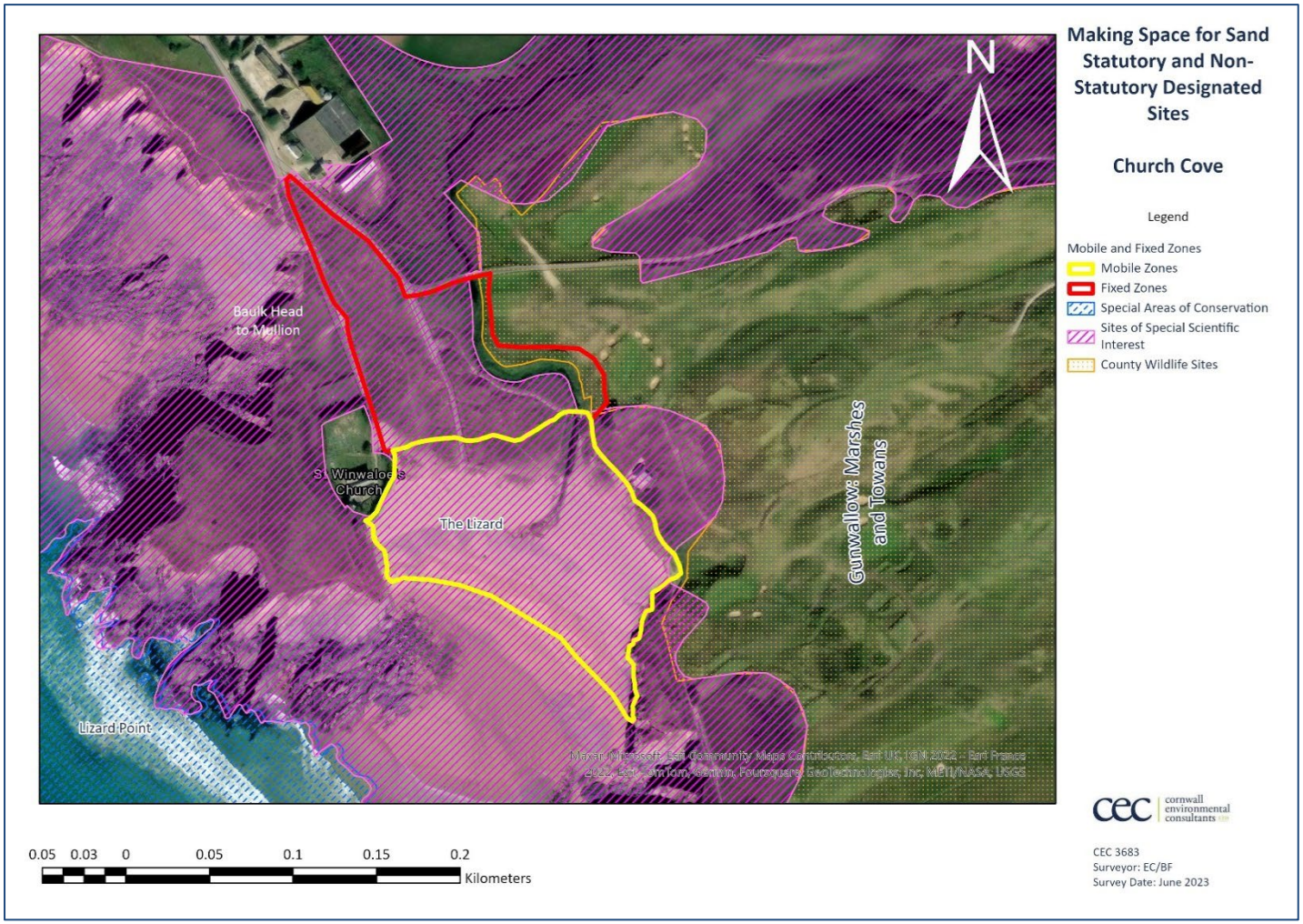


Figure 2: Designated Sites

7.6. Site survey recorded habitats.

7.6.1. Across the site 1.57ha of vegetated habitat was mapped, and are illustrated on Figure 3. Areas of beach extending into the sea were not mapped.

Open Dune

7.6.2. Embryonic shifting dune (s3a5 under UK Habitat Classification) is seen in polygons 196, 199 and 204, they account for 0.07ha, <5% of the vegetated area. These habitats are seen along the toe of the dune on the seaward side. Species within this habitat is include lyme and sand couch grass showing the natural successional processes of the dune system. Other species recorded within the embryo dunes are sea rocket, sea knotgrass and sea beet, and abundant amounts of sea holly.

7.6.3. Shifting dune with marram (s3a6) is seen in polygons 197, 198, 200 and 203. The account for 0.3ha, 20% of the vegetated site area. This area of the dune is dominated by marram, and has the addition of abundant sea holly, wild carrot and sea bindweed.

7.6.4. Dune grassland (s3a7) is seen in polygons 201 and 206-211. They account for 0.9ha, almost 60% of the vegetated area of the site. There are still patches of marram seen within this habitat type, along with other grasses such as red fescue, and small vascular plants typical of this habitat including ladies bedstraw, restharrow, sea bindweed, sandwort and sea beet. Polygon 201 was noted to have encroaching bramble scrub, black mustard and flag iris.

7.6.5. Sand dunes are an important habitat for a wide assemblage of invertebrates – with bare sand providing shelter opportunities for burrowing insects, ground nesting birds, reptile and amphibian species.

Vegetated Shingle

7.6.6. There was one recorded polygon of Perennial vegetation on coastal shingle (s3b5) at the mouth of the river, this polygon is 0.01ha in size, <5% of the vegetated site area. Species in this habitat include sea beet and sea kale.

7.6.7. Vegetated shingle is a high distinctiveness habitat, with less than 6000ha in the UK (and 40% being found in one location). The annual vegetation of shingle requires the right supply of seed, stability and nutrients to establish. Seed can be distributed via wave transportation, however if buried too deep establishment will be limited. Shingle has the capacity to support breeding birds, including waders and terns, as well as a wide assemblage of invertebrate species.

7.6.8. The complex nature of the habitat means it is vulnerable to the impacts of climate change and sea level rise.

Reedbeds

7.6.9. Flanking the stream are reedbeds (f2e), seen in polygons 202, 212 and 213. They cover an area of 0.25ha, 15% of the vegetated area. The reeds extend up to 20m from the river into the fixed dune area and provide a valuable buffer between the terrestrial and freshwater environment. The reedbeds at Church Cove are dominated with reed (*Phragmites australis*).

7.6.10. Reeds provide valuable habitat to a number of birds, providing nesting opportunities and feeding grounds. Dryer areas of reed beds can provide a burrowing habitat for voles, water shrews, harvest mice and otter. The submerged root areas provide a nursery function for fish species.

7.6.11. Reeds have the capacity to provide valuable filtration function, reducing the levels of nutrients and heavy metals into water courses, this in turn will help to provide protection for the dune habitat.

Neutral Grassland

7.6.12. This habitat type refers to polygon 205, a total area of 0.04ha, <5% of the vegetated area.

7.6.13. To the north of the dune system there is a small grassland patch classified as 'other neutral grassland, semi-improved' types under phase 1, and under UK Habs as modified grassland.

7.6.14. The grassland has a short sward and is under heavy recreational pressure from footfall. There are a relatively small number of commonly occurring grasses and herbaceous species such as buttercup, daisy ribwort plantain and red fescue within the grassland areas.

Table 5: Summary of habitat types and percentage cover

Habitat Type	Percentage Cover
Open Dune (including s3a5 Embryonic shifting dunes (H2110), s3a6 Shifting dunes with marram (H2120), and s3a7 dune grassland (H2130))	80%
Vegetated Shingle (s3b5 Perennial vegetation on coastal shingle (H1220))	<5%
Reedbeds (f2e Reedbeds)	15%
Neutral Grassland	<5%

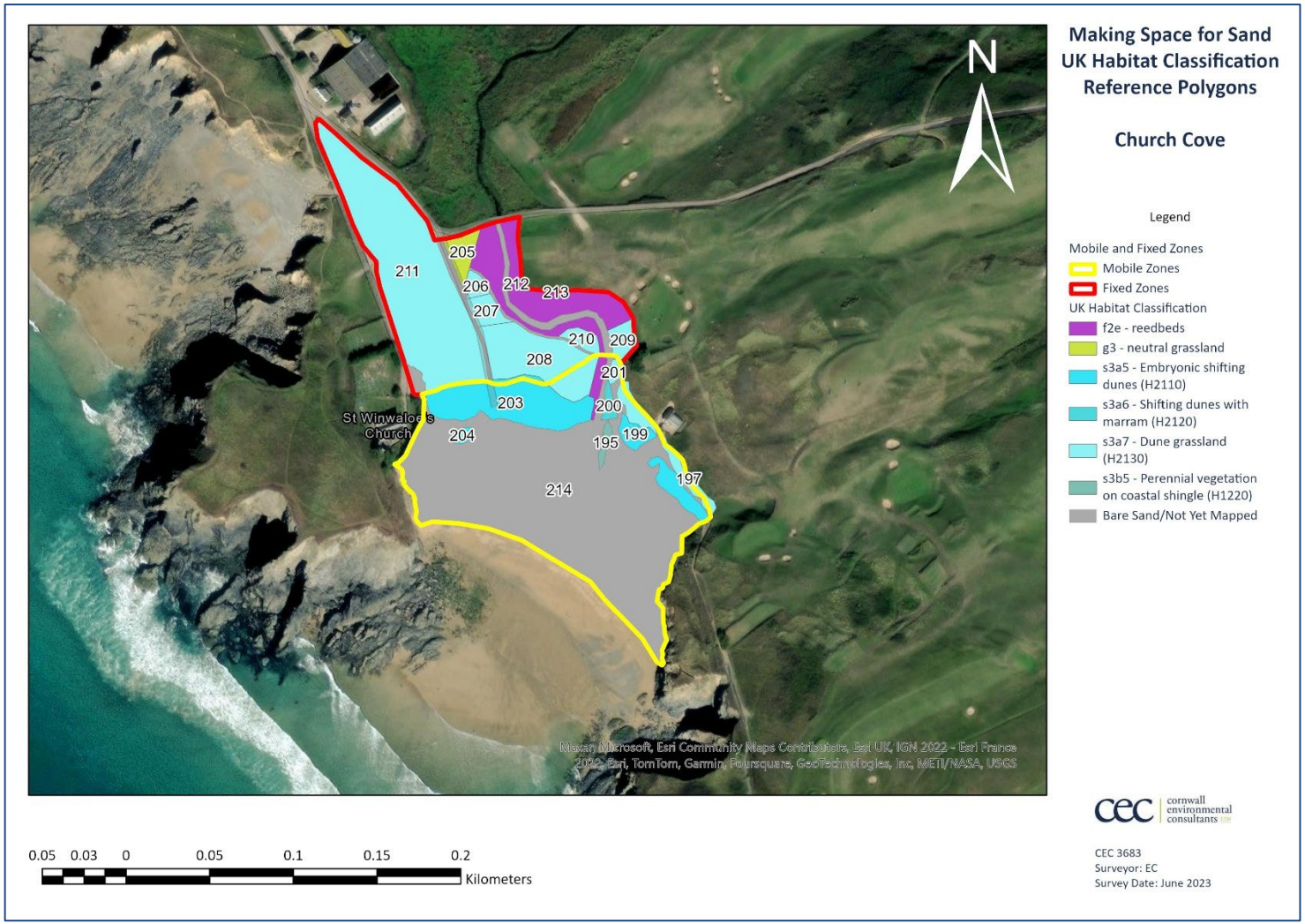


Figure 3: UK Habitat Classification Reference Polygons

7.7. Species

Flora

Vascular Plants

7.7.1. The desk study found numerous records for plant species of conservation concern within the 1km search area of the site. Examples of notable records include red listed sea bindweed and sea holly, nationally scarce western clover and wild leek and nationally rare and Schedule 8 species sea knotgrass. See Figure 4 for records of notable plant species data.

7.7.2. Of these species seen within the environmental records, except for the scarce western clover, all were observed on the site survey.

7.7.3. Church Cove has an assemblage of embryonic halophilic species such as sea beet, sea kale, sea rocket, and sea knotgrass and additional herbaceous species such as sea carrot, sea holly, sea bindweed. These are all species typically associated with this type of habitat.

Lower Plants

7.7.4. A specialised survey for non-vascular plants, bryophytes and lichens, was outside the scope of this study. The desk study revealed no records for lower plant species, within 1km of the site.

Non-native Invasive Plants

7.7.5. There were no non-native invasive species recorded whilst on the site visit.

7.7.6. St Winwaloe's Church, located immediately west of the surveyed area, has a number of tamarisk shrubs, however they are not impacting on the habitats on site and are an important cultural feature.

7.7.7. The desk study returned results for Three Cornered Garlic at the site. See Figure 5for records of invasive non-native species data.

7.8. Target Notes

7.8.1. Target notes refer to areas of ecological interest that were recorded during the survey, both floral and faunal.

7.8.2. The target notes at the site highlight the important plant species that were observed, for Church Cove these include sea holly and sea knotgrass. A plan showing recorded target notes can be seen in Figure 6.

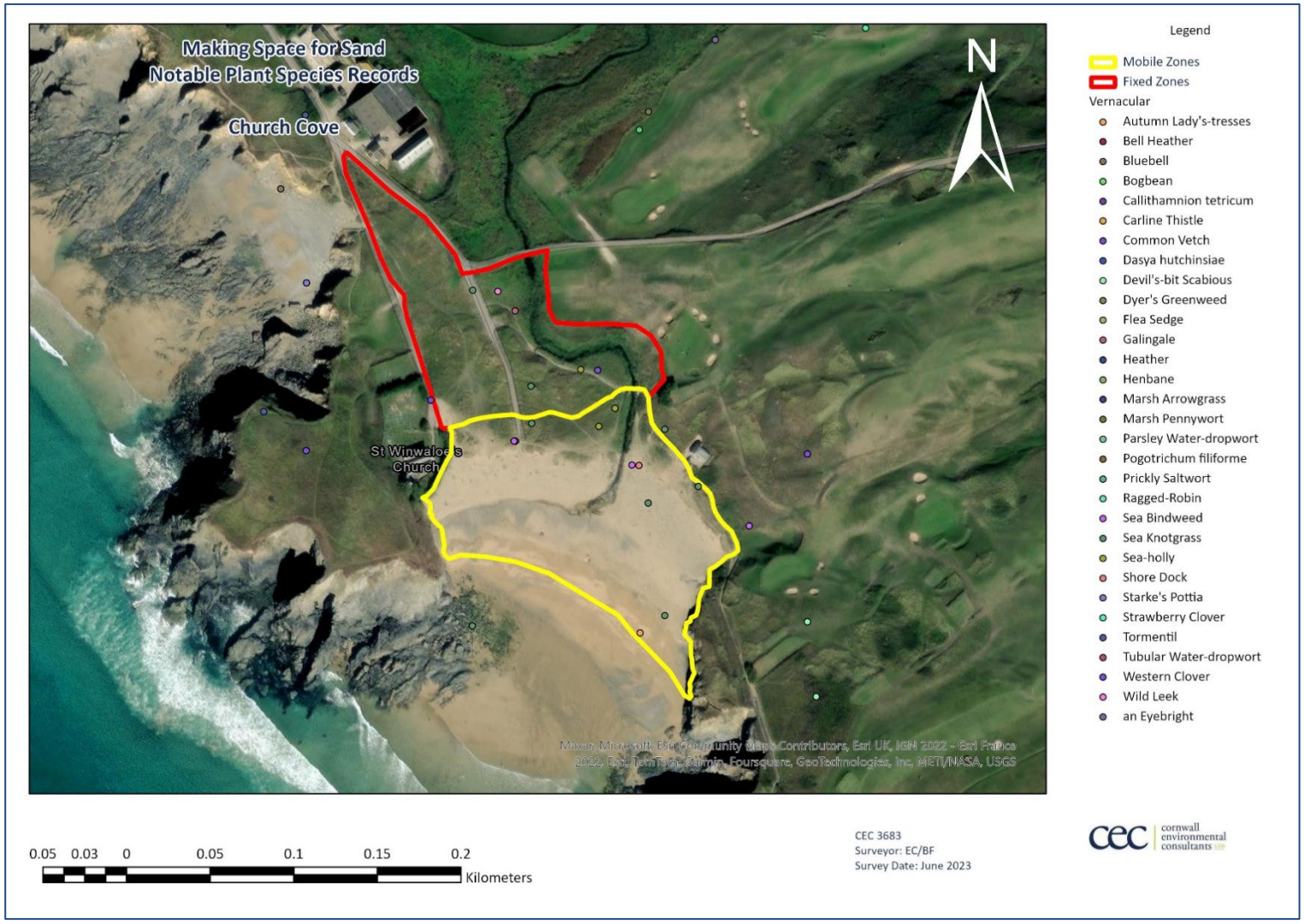


Figure 4: Notable Plant Species Records

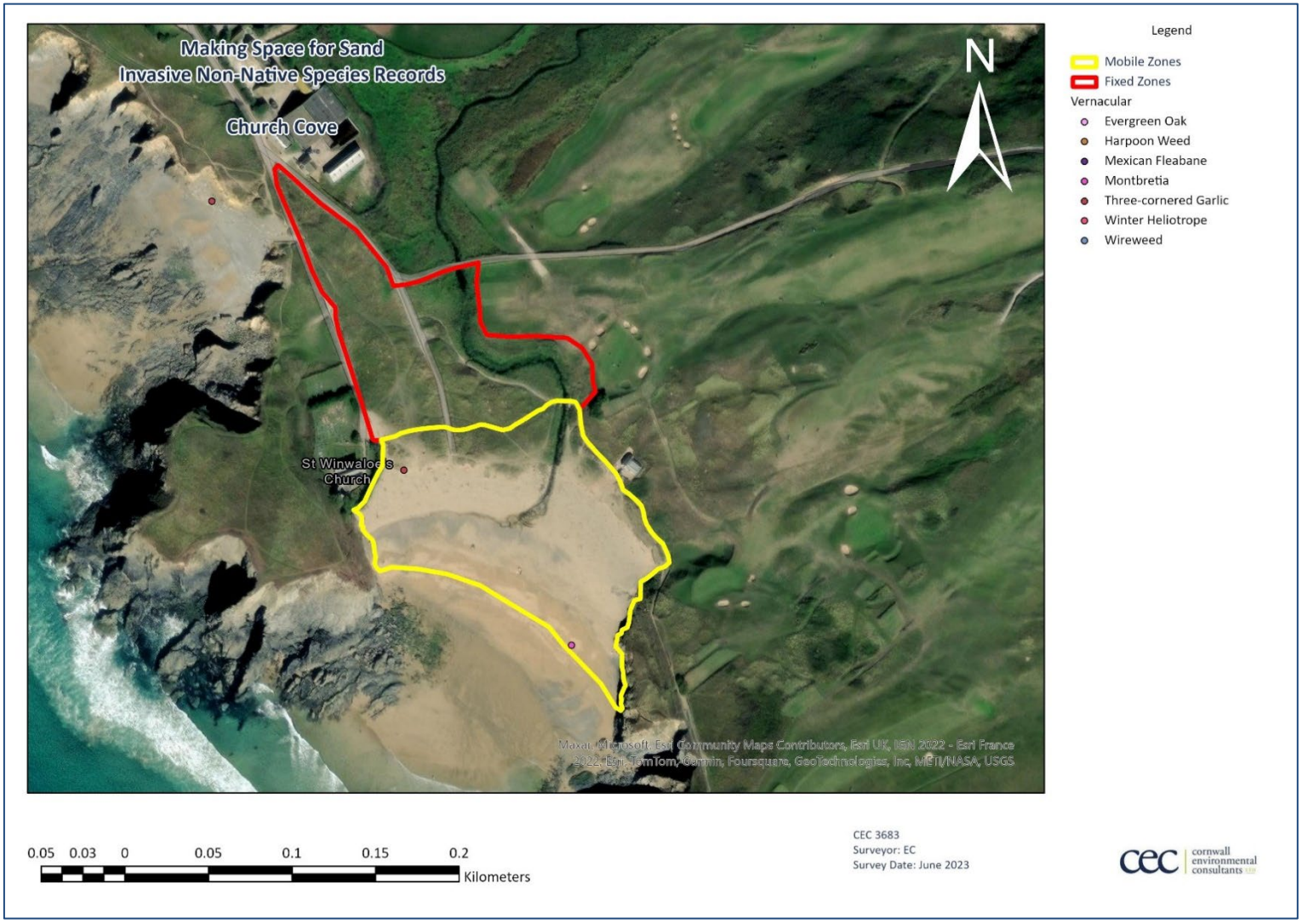


Figure 5: Invasive Non-Native Species Records

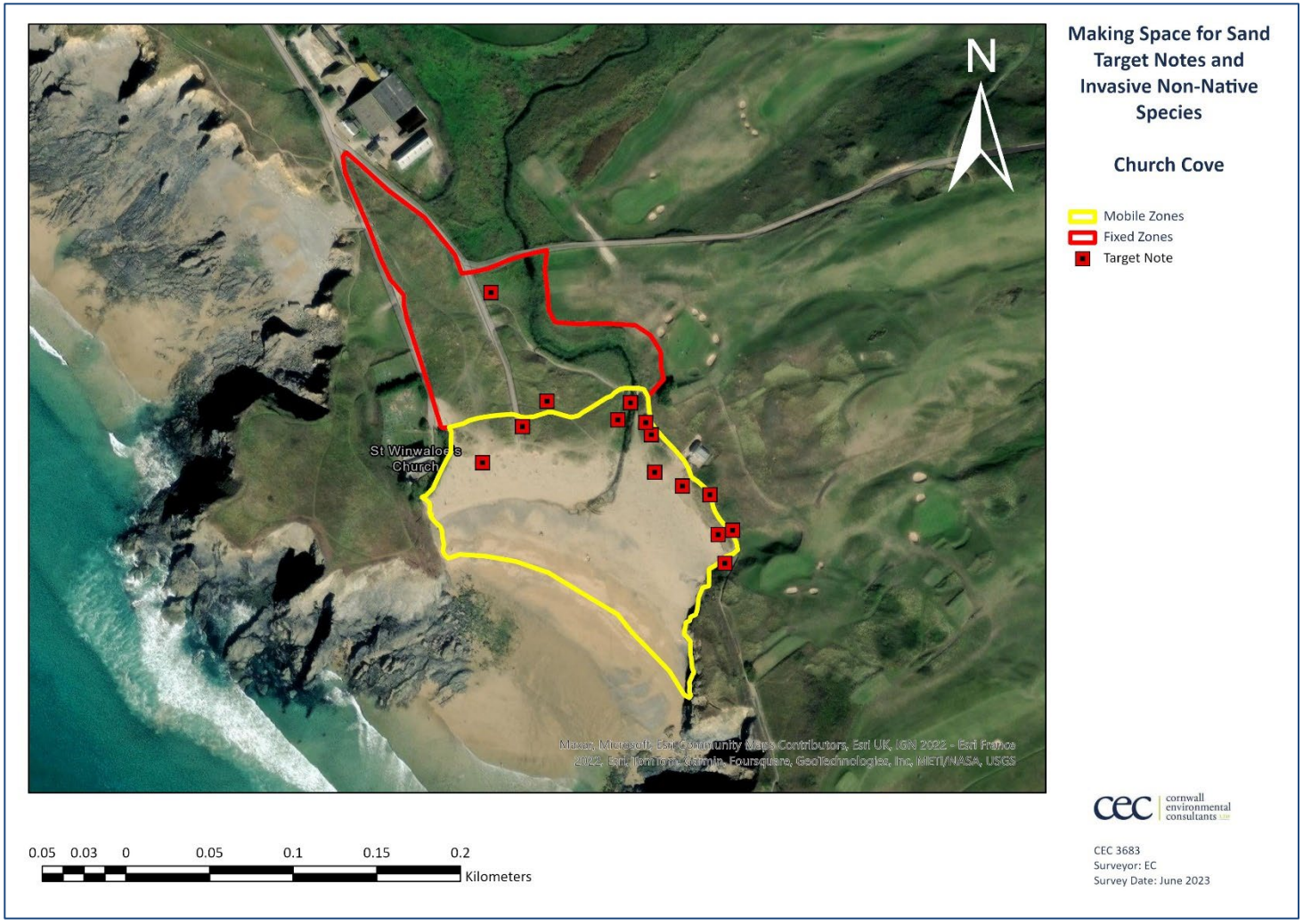
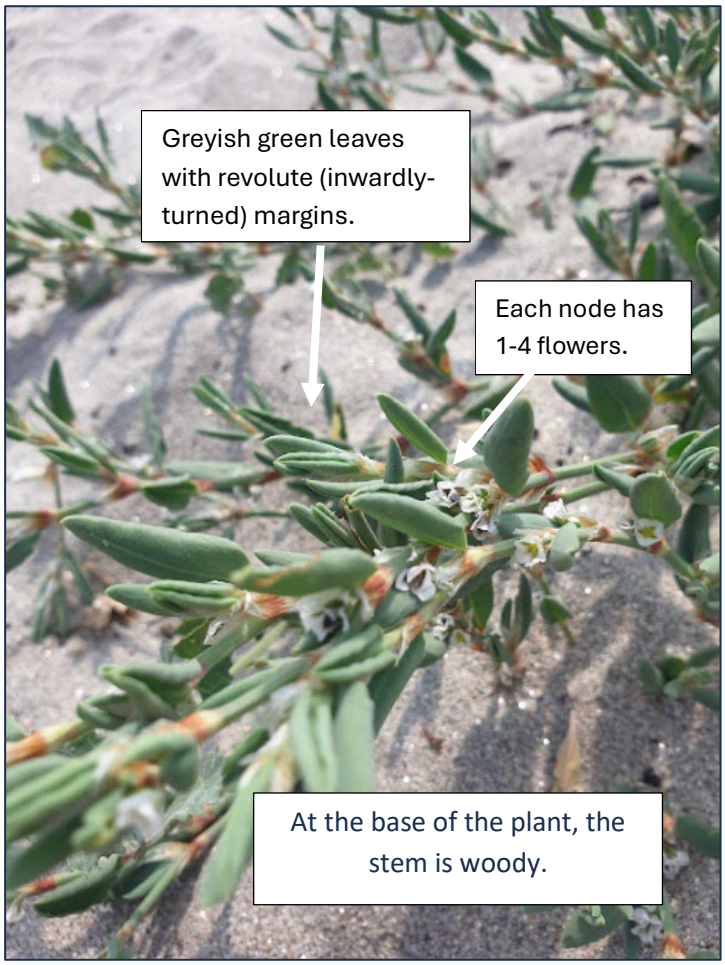


Figure 6: Site Survey Target Notes and Invasive Non-Native Species

8. Species Highlights

8.1.1. This section highlights some of the notable species either recorded on site, or reported in the environmental records for the site.

8.2. Sea knotgrass *Polygonum maritimum*





A nationally rare species (occurring in 15 or fewer 10x10km hectads) of shingle and fine sand beaches, sea knotgrass is classified as Endangered (GB Red List post-2001), and is protected under Schedule 8 of the Wildlife and Countryside Act, as well as being listed in Cornwall Red Data Book.

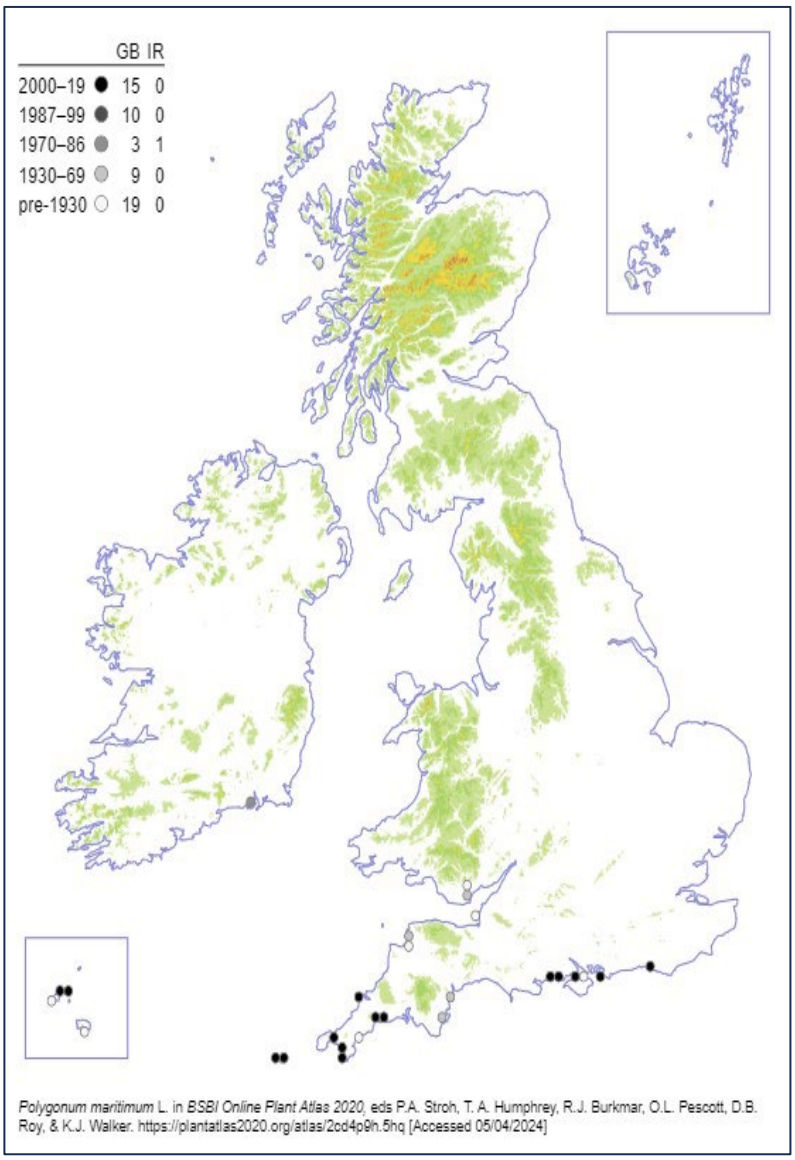
Distribution: Patchy distribution along the South and Southwest coasts of England; strongholds in Cornwall include Par and Gunwalloe.

Habitat: Sand and shingle above high tide.

Size: up to 40cm, leaves up to 15mm.

Flowering Season: June – Sept.

Value to wider habitat: Sea knotgrass has developed strategies to survive in challenging habitats, include salt, drought and sand burial tolerance, and wind resistance. The species is important for the stabilisation of sand, it has a shallow root system which allows it to anchor easily. The organic matter it provides assists in the establishment of other dune species, while it provides food source for insects.



Images (clockwise from top left) – Author's own photograph; iNaturalist (Sea Knotgrass (Polygonum maritimum) · iNaturalist); BSBI (see ref. at base of map).

8.3. Sea Holly *Eryngium maritimum*



Sea Holly is a perennial herb belonging to the Apiaceae or Umbelliferae family (celery, carrot, or parsley). It is native to Europe and North Africa and its status within England is near threatened. It is declining and even extinct in some areas of its northern range, largely due to habitat loss and land use changes. It has a distinct appearance of blue flowering head, flowering in June.



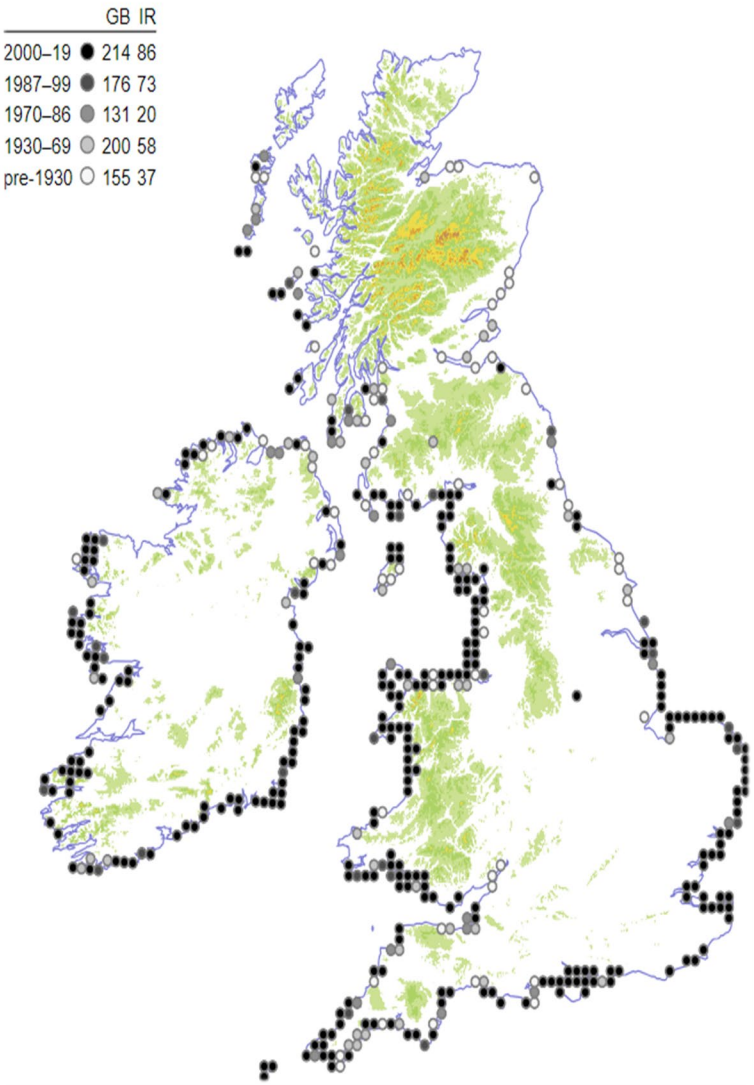


Distribution: Distributed within dune systems along the North and South coast of Cornwall, up to 300m from the coast

Habitat: Sea Holly can be found on coastal dunes, saltmarshes, and rocky shores. This hardy, drought tolerant plant favours well drained, moderately fertile soils, sunny spots and can be found across the UK and Ireland.

Identification: Thistle like, rounded, blue flower heads when in bloom with distinct silvery-blue, spiky edged leaves.

Value to wider habitat: Sea Holly helps to stabilize sand dunes, preventing erosion. The plants deep taproot helps it anchor in the sand, and its spiky leaves and bracts protect the plant from wind and salt spray. The species doesn't support insect herbivores as its protected from grazing by its spininess and chemical defences, however bees and butterflies seek out the species for its nectar.



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9. Ecological Constraints and Opportunities

9.1. Ecological Constraints

Designated Sites

9.1.1. It is not anticipated that any enhancement works that take place at Church Cove would impact on designated sites.

Invasive Non-Native Species

9.1.2. There are no constraints from invasive non-native species at Church Cove.

Adjacent Land Uses and Infrastructure

9.1.3. To the northeast of the site, there is a golf course. Golf courses are traditionally maintained as mono cultural environments, and often supplemented by fertilisers and herbicides. There is potential that run off and seepage from the adjacent golf course can/will impact the site detrimentally.

9.1.4. To the west of the site, St Winwaloe Church and graveyard, built in the 13th century is located. This has a bordering hedge of tamarisk – although seen as detrimental to dune habitats, this considered to be important locally as a heritage feature of the church, and the species is not impacting the dune habitat at this time.

9.1.5. There are two roads which are constraining the dunes, one leading to the church, the second linking to a track onto the golf course.

9.2. Ecological Enhancement Opportunities

9.2.1. The high quality of the habitats and good management practices by the landowner mean there are limited opportunities at Church Cove for enhancement within the mapped area.

9.2.2. There were some recorded areas of scrub to the east of the site, which is bramble dominated. Scrub in its own right is an important habitat for nesting birds and small mammals, however it should be controlled as is and not allowed to spread further into the site.

9.2.3. Allowing further roll back of the dunes into the golf course area to the east will increase the area of the dune habitat.

10. Conclusions

10.1.1. This report provides a comprehensive ecological baseline for the Coastal Sand Dunes at Church Cove, focusing on the classification of habitats according to the UK Habitats Classification system and the mapping of invasive species. The baseline assessment includes descriptions of the dune habitats, their ecological significance, and their current condition. It also involves the identification and spatial distribution of invasive species that may pose a threat to the native biodiversity and ecological integrity of the sand dunes.

10.1.2. Church Cove exhibits the full range of successional processes characteristic of sand dune ecosystems. These processes include the formation of embryo dunes, the development of shifting dunes with marram and the establishment dune grassland. Among these stages, the fixed dune grassland area is the most prominent and extensive.

10.1.3. Currently, there are few significant constraints affecting the management and conservation of the sand dune ecosystem at Church Cove. However, there are also limited immediate opportunities for significant ecological enhancements. One potential opportunity that has been identified is the scope for allowing dune "roll back" into the adjacent golf course area. This process involves the intentional retreat of the dunes inland to accommodate natural coastal processes and sea level rise, which can help to maintain the dynamic nature of the dune system and enhance its resilience to climate change. Allowing the dunes to roll back could provide additional space for the natural succession and expansion of dune habitats, potentially improving biodiversity and ecosystem health in the long term.

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