cornwall environmental consultants LTD







Mawgan Porth
Beach Dune Management Plan

CEC3683 Making Space for Sand
26 October 2026

Document Control

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Rev A			
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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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Summary

Site and methods	
Purpose of report	To provide a Beach Dune Management Plan to guide restoration of habitats at Mawgan Porth to recognise the challenge of coastal change.
Site assessed	Mawgan Porth
Area (ha)	~ 2.24ha
Location:	Grid reference: SW 84959 67310 What3words:innovator.takeover.craftsman
Planning Authority involved	Cornwall Council
Survey methods	UK Habitat Classification Biodiversity Net Gain Condition Assessment
Date of assessment	UK Habitat Classification: June 2023 BNG Condition Assessment: December 2023 UK Habitat Classification and Condition Assessment to southern areas: January 2025
Weather on date of assessment	UK Habitat Classification – Overcast, ~24°C BNG Condition Assessment – Overcast with sunny spells ~5°C UK Habitat Classification and Condition Assessment to southern areas - Overcast with sunny spells ~8°C

1. Introduction

1.1. Background

1.1.1. Making Space for Sand is a partnership project being delivered through Cornwall Council in collaboration with Cornwall Wildlife Trust (CWT), University of Plymouth (UoP), South West Coastal Monitoring (SWCM) and Cornwall Community Flood Forum (CCFF). The project is funded by DEFRA as part of the Flood and Coastal Resilience Innovation Programmes (FCRIP), which are managed by the Environment Agency (EA). The programmes will drive innovation in flood and coastal resilience and adaptation to a changing climate.

1.1.2. The aim of the Making Space for Sand Project is to enable the creation of sustainable and resilient communities that can capitalise on their natural resource to increase economic and resilience opportunities. Encouraging the more sustainable use and development of the coastal fringe, will allow for a more natural, ecosystem approach to coastal management to be taken where traditional coastal protection is not possible.

1.1.3. Four zones have been identified to define the beach/dune area and are defined as:

1.1.4. Beach Zone – The wet beach area has been defined using Mean Low Water Spring (MLWS) and Mean High Water Spring (MHWS) contours extracted from all LiDAR data captured by SWCM. The Beach Zone will therefore encompass the area between the MHWS and MLWS contours, with volumes for this area extracted from each LiDAR surface.

1.1.5. Mobile Zone – This area is defined as the active dune face and embryo dune1 from MHWS +1 m to the back of the mobile area, often distinguished by vegetation depth or urban development. The Mobile Zone has been defined using aerial imagery from 2007 to 2021 and historic OS maps and has been verified through site visits.

1.1.6. Fixed Zone – This area is defined by permanent dune vegetation that may also include scrub or invasive species, effectively denoting vegetation atop sandy soil.

1.1.7. Developed Zone – This is defined as urban development areas (i.e., car parks, unnatural grassy areas, roads, houses etc.) which have been built atop previously present dune systems.

1.1.8. For the purpose of this report efforts have been concentrated on the Mobile and Fixed Zones as shown in Figure 1

1.2. Aims and objectives

1.2.1. This report details the specific plans for the dunes at Mawgan Porth, it is supported by the overarching strategic document CEC3683 Beach Dune Management Plan Strategic Overview.

1.3. Site location

1.3.1. Mawgan Porth (Figure 1) is located on the North Cornwall coast approximately 3 miles north of the town of Newquay. It is bound by cliffs to the north and south, and the village of Mawgan Porth to the east. Within the steep flat-bottomed valley there is one watercourse, the River Menalhyl, which discharges to the sea at Mawgan Porth. To the east of the dunes, there are a small number of properties, and the B3276 road.

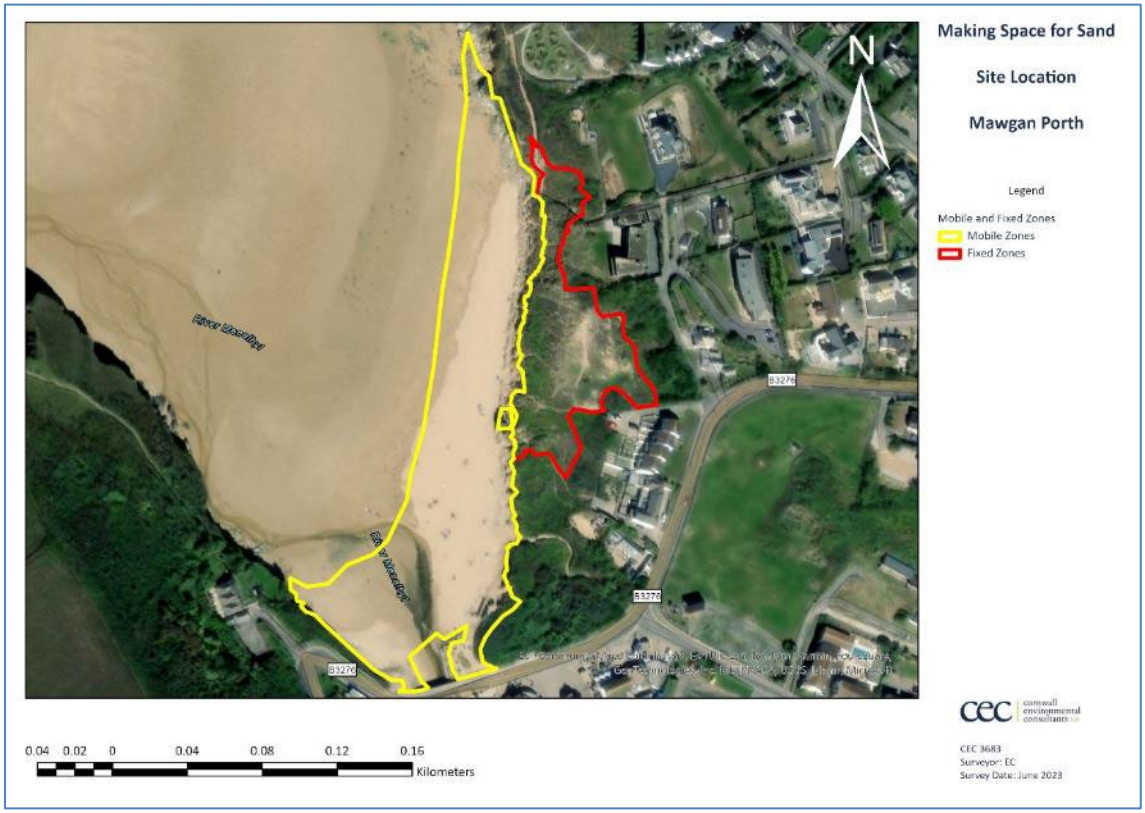


Figure 1: Site Location at Mawgan Porth showing Mobile and Fixed Zones

1.3.2. The dune area at Mawgan Porth is vegetated, however this is predominantly scrub, with some areas of open dune at the toe. The dune is heavily eroded at the seaward edge and scattered with invasive plant species. Various sea defence mechanisms have been put in place at Mawgan Porth, including gabions and areas of riprap (large stones to dissipate wave energy). There is no significant management of the beach although, some private landowners have tried Christmas tree 'planting' of dead Christmas trees, which is used as a form of sand stabilisation.

2. Shoreline Management Plan Policy Units

2.1.1. Shoreline Management Plan 2011 SMP2 - Cornwall Council

2.1.2. The Shoreline Management Plan (SMP), specifically SMP2 for Cornwall and the Isles of Scilly, is a strategic, long-term coastal management policy document adopted by Cornwall Council. It provides a broad assessment of how the coast is likely to change over time and sets out recommended approaches for managing coastal erosion and flood risk in a sustainable way, more information about this plan can be found in the Beach Dune Strategic Overview Document.

2.1.3. Mawgan Porth is within Policy Development Zone 13 (PDZ 13) under Management Area (MA) MA33. There are three Policy Units (PUs) associated with Mawgan Porth, PU33.1 is associated with the undefended cliffs (Table 1), PU33.3 is associated with a short section in front of the road bridge and the old Coastguard Cottages (Table 2) and PU33.4 is associated with the dunes. Within PU33.4 the assigned policy for all time frames is No Active Intervention which is a decision not to invest in providing or maintaining defences or natural coastline with a sub policy of Do Not Defend where no defences are present, and it would be technically/environmentally unacceptable to introduce any due to the impact. This means that dunes should be allowed to respond naturally to sea level rise and continue to provide natural defence.

Table 1: PU 33.1 - Undefended Cliffs

Timeframe	SMP Policy	Sub Policy
Medium Term (2025 -2055)	No Active Intervention	Do not defend
Long Term (2055 - 2105)	No Active Intervention	Do not defend

Table 2: PU 33.3 - Mawgan Porth - road section

Timeframe	SMP Policy	Sub Policy
Medium Term (2025 -2055)	Managed Realignment	Placeholder
Long Term (2055 - 2105)	No Active Intervention	Local Activity Only

Table 3: PU33.4 - Dunes

Timeframe	SMP Policy	Sub Policy
Medium Term (2025 -2055)	No Active Intervention	Do not defend
Long Term (2055 - 2105)	No Active Intervention	Do not defend

2.1.4. N.B. the short-term time frame ended in Cornwall in 2025

2.1.5. At Mawgan Porth, significant future erosion and flooding risks influence the preferred plan and policy. By 2105, coastal erosion could reach 35-40 metres and flooding is expected to extend up to the normal tidal limit of the River Menalhyl. Properties at the rear of the beach are already subject to high flood risk due to wave overtopping action and this will only increase into the future.

2.1.6. Approximately 275m Mawgan Porth is fronted by dunes, with a number of properties located around 75-100m to the rear of the current dune front. The Policy Unit PU 33.4 (See Table 3) is for No Active Intervention, the shoreline should be allowed to respond naturally to sea level rise and adjust its form and profile accordingly. The extent of shoreline rollback will depend on sea level rise and sediment supply,

with naturally dynamic dunes providing the most effective and sustainable defence against future erosion and flooding along this section of the Mawgan Porth frontage.

2.1.7. The B3276 road is also vulnerable to coastal risks, Policy Unit PU 33.3 (see Table 2) is for managed realignment. This will bring major changes to the community, including rerouting the road and potentially relocating the commercial hub. Identifying this as a Coastal Change Management Area would help in managing future erosion and flood risks to the dune frontage. Around 150m of defence would need to be assessed for realignment. In the long-term managed realignment would be expected to give way to no active intervention as a sustainable shoreline position is established.

2.1.8. This policy employed along the road section avoids constraining any part of this frontage and in minimising coastal squeeze impacts. Significant dune rollback could affect properties immediately behind, dependent on the position of the hard geology and the actual relict cliff. Depending on the results of monitoring along the frontage and improved knowledge on the cliff line position a managed realignment approach could be introduced to assist with enhancing the dune area on the basis of meeting Government outcome measures relating to UK BAP habitat (coastal sand dunes).

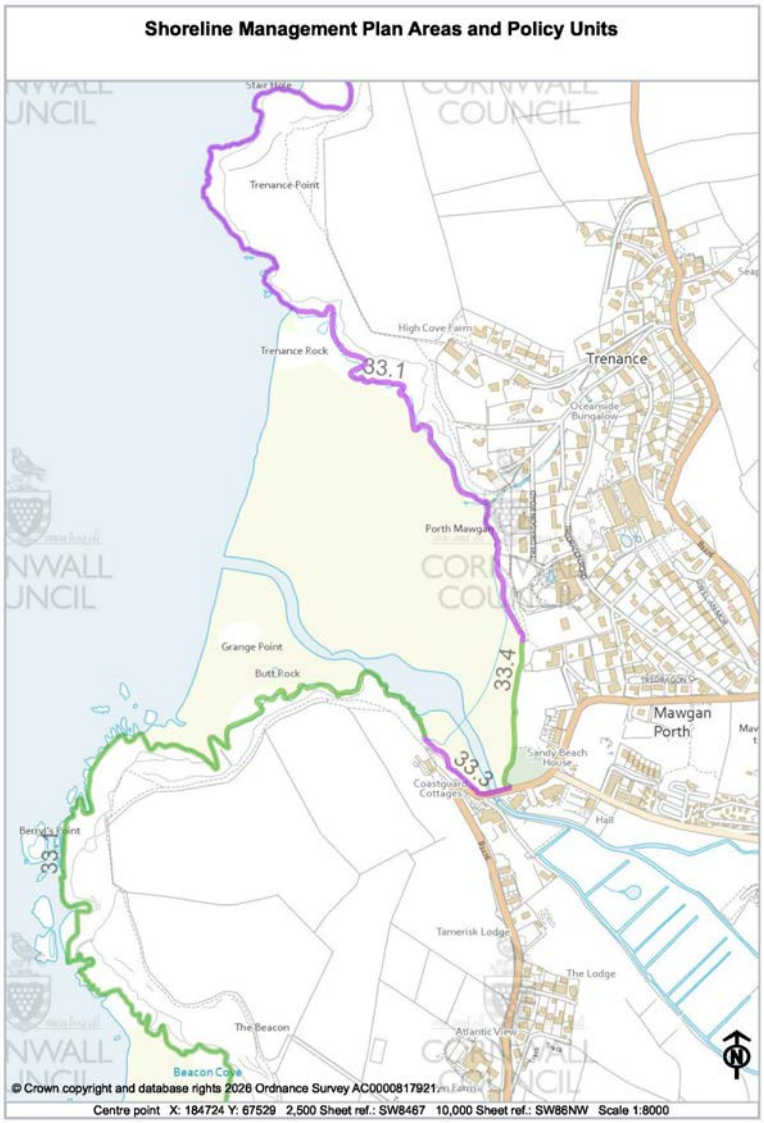


Figure 2: Shoreline Management Plan Areas and Policy Units

3. Historical Imagery and Mapping Change

3.1. Historical Imagery

3.1.1. A review of available historical map imagery (Georeferenced Maps viewer - Map images - National Library of Scotland, 2025) has been undertaken to assess the change in the dune at Mawgan Porth.

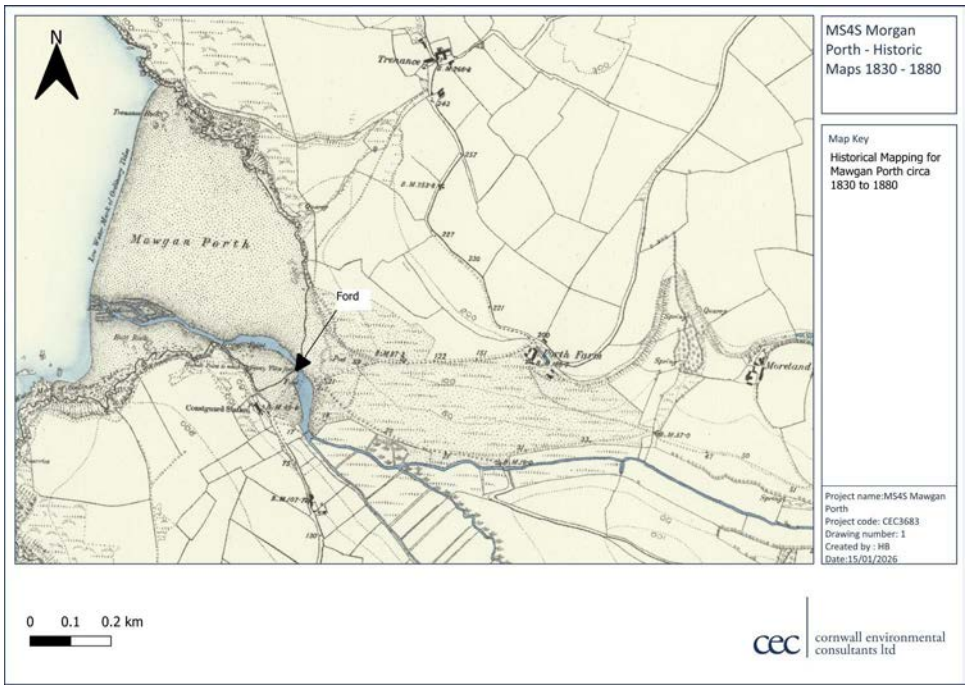


Figure 3: Historical Mapping from Mawgan Porth 1830 - 1880

3.1.2. The earliest available images date from the 1830-1880s, , these show that the vegetation extended back through the valley, predominantly north of the river. The vegetation shows rough pasture, over sand, indicating that this was most likely dune vegetation. The only river crossing at this time was a ford, in mapping available from 1888-1915 the crossing becomes a bridge, located further inland.

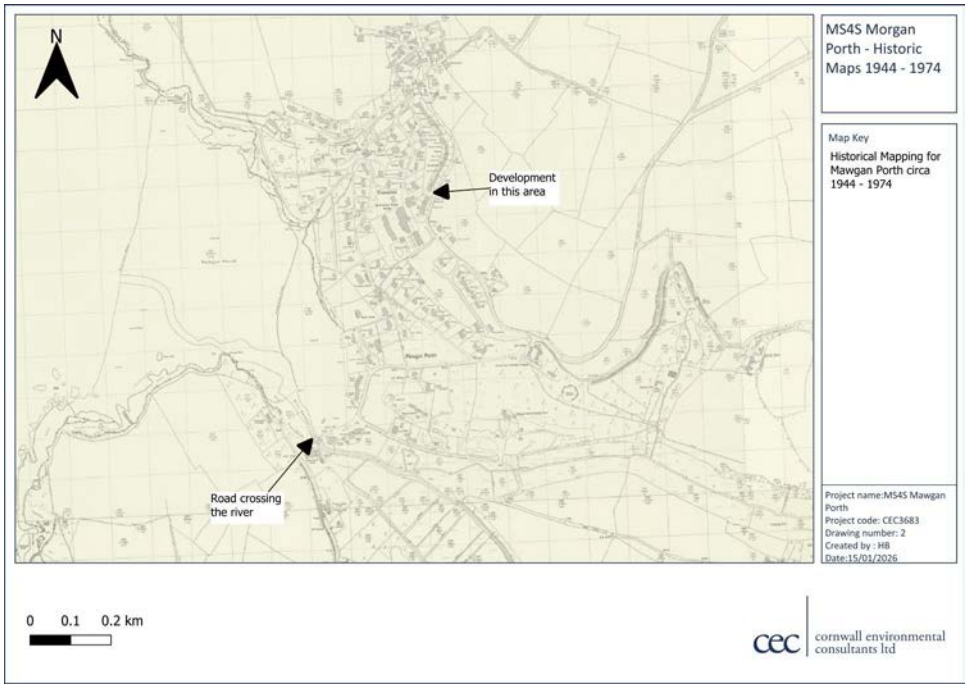


Figure 4: Historical Imagery from Mawgan Porth circa 1944 - 1974

3.1.3. The imagery from 1944 - 1974, Figure 4 shows the construction of the road crossing the river, and the development of a settlement within the vegetated area. This, coupled with historic photographs show that the start of more significant residential development in Mawgan Porth began in the 1950s.



Figure 5: Present Day Aerial Imagery of Mawgan Porth (early 2000s onwards)

3.1.4. Present day (2000s onward) aerial photography (Figure 5) shows that there has been significant change in Mawgan Porth since the 1970s. Predominantly, houses on higher cliffs, the number of buildings and commercial development which are now situated within the valley basin, along with the number of

caravan parks is increasing and becoming more formalised to accommodate the change in tourism needs. This all leads to a squeezed dune system where vegetation is now confined to a small footprint with migration routes for sand very limited.

4. Historical Features and Designations

4.1. Historic Features

4.1.1. A review of historical features has been undertaken from Cornwall Council's historic and natural environment mapping. See Figure 6.

4.1.2. Historical Features within 200m of the site include:

- Prehistoric submerged forest
- Early medieval settlement and cemetery
- Post medieval coastguard station
- Removed WW2 Minefield and Scaffolding

4.1.3. Although there are currently no historic features within the dunes, coastal erosion and dune mobility may expose currently buried archaeological and historical features within the dune system. If archaeological remains or previously unrecorded historical features are exposed during management works or through natural erosion processes, works in the immediate area should cease and advice sought from Cornwall Council's Strategic Historic Environment Service (Historic Environment Record team).

4.1.4. Cornwall Council Historic Environment Service: https://www.cornwall.gov.uk/her Email: her@cornwall.gov.uk Tel: 0300 1234 202

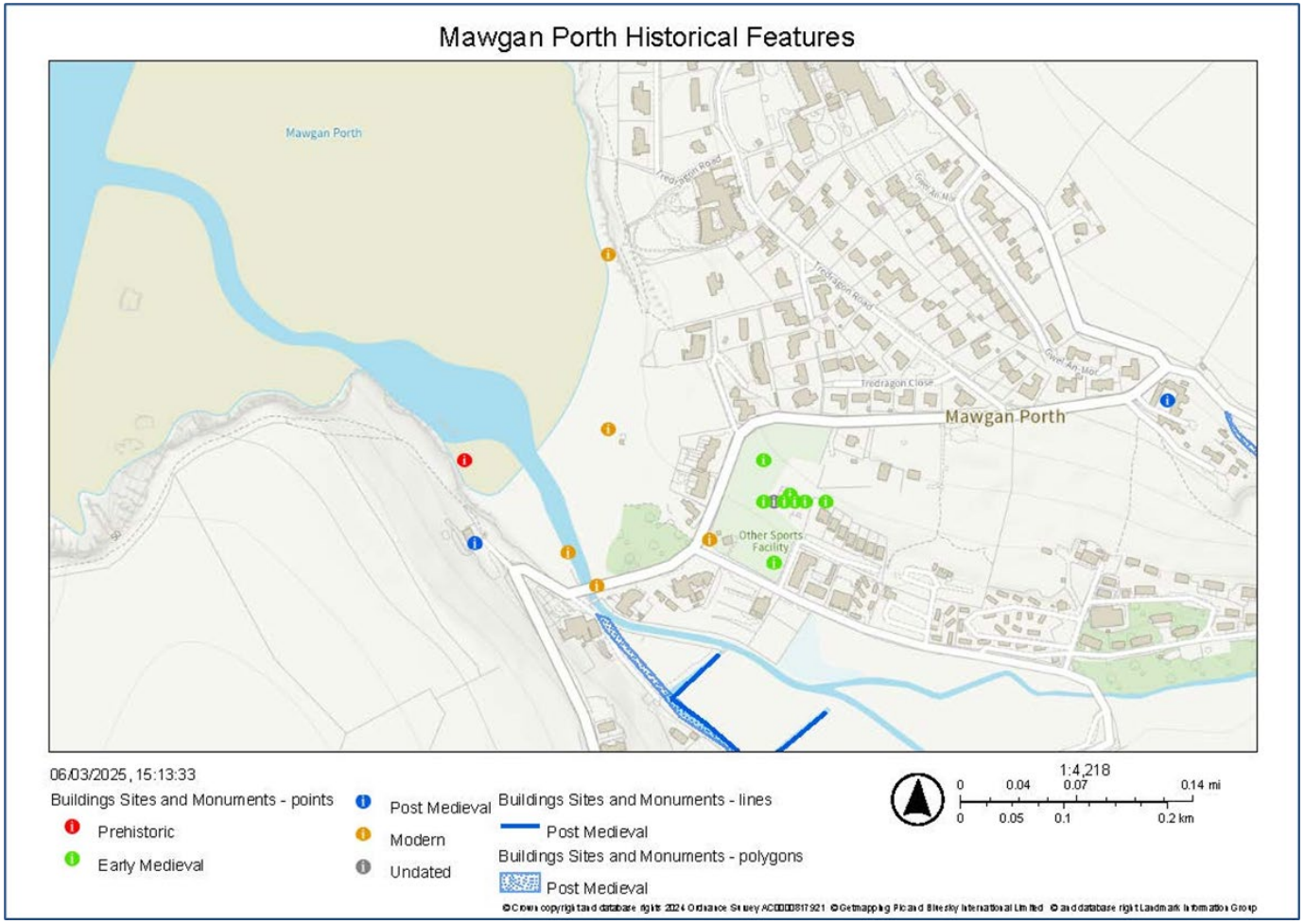


Figure 6: Historical Features within the Morgan Porth Dune Area

4.2. Biological, Landscape and Geological Designations

4.2.1. Table 4 below identifies the statutory and non-statutory biological, landscape and geological designations within and adjacent to Mawgan Porth see Figure 7

Table 4: Biological, landscape and geological designations affecting the site.

Category	Designation Type	Name / Status	Designated for
Biological	Special Area of Conservation (SAC)	Bristol Channel Approaches SAC (adjacent)	Species of Principal Importance (SPI) Harbour porpoise – NB.This is a marine designation so consent will not be required for works on sand dunes.
Biological	Special Protection Area (SPA)	None	N/A
Biological	Marine Conservation Zone (MCZ)	None	N/A
Biological	Site of Special Scientific Interest (SSSI)	None	N/A
Biological	Local Nature Reserve (LNR)	None	N/A
Biological	County Wildlife Site (CWS)	Mawgan Porth to Newquay CWS	Designated for the Habitats of Principal Importance (HPIs) Maritime cliff and slopes, and Coastal Sand Dunes and SPIs small heath and wall butterflies, black oil beetle, adder, common lizard, skylark and linnet.
Landscape	Cornwall National Landscape	None	N/A
Landscape	Conservation Area	None	N/A
Geological	Geological Site of Special Scientific Interest (SSSI)	None	N/A
Geological	Cornwall Geo Conservation Site	None	N/A
NB: Not all of the designations identified above fall within or directly overlap the site; some are adjacent to the dune system and have been included for ecological context. Dune restoration and management activities are unlikely to adversely affect these adjacent designations and would not normally require specific consent where works do not directly affect the designated site or its qualifying feature.			

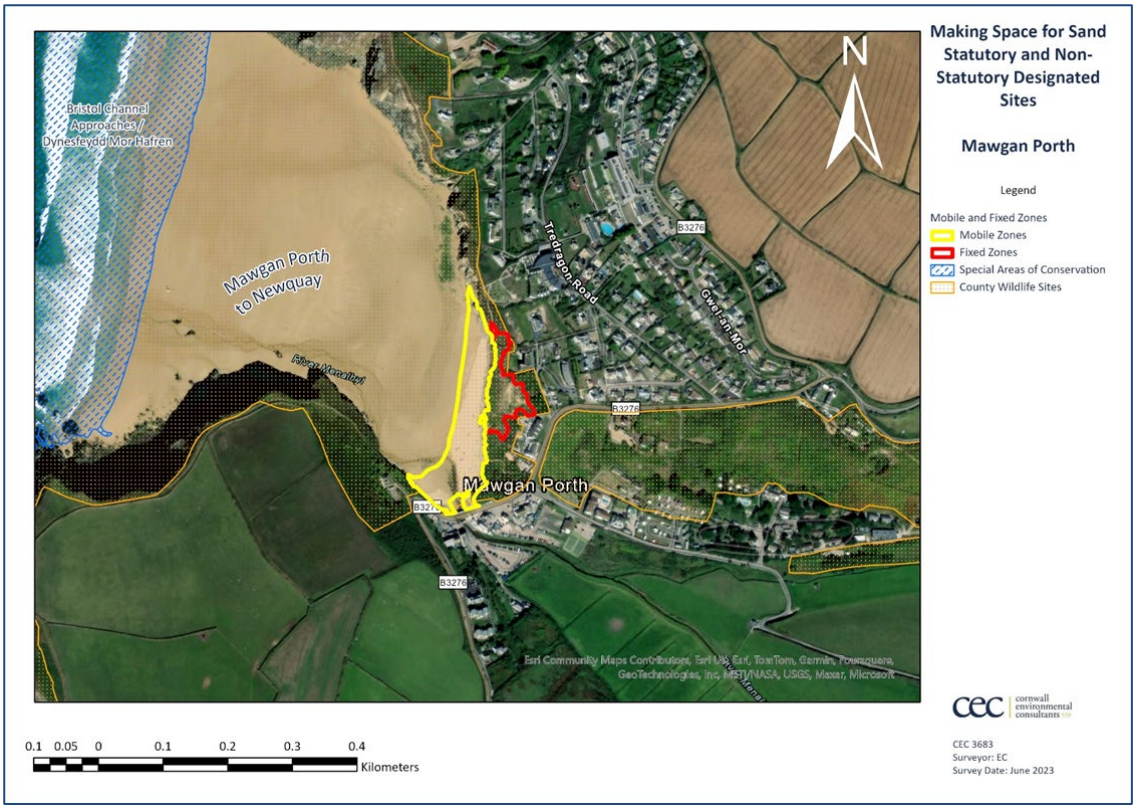


Figure 7:Biological Designated Sites in relation to Mobile and Fixed Zones

5. Ecology

5.1. Baseline

5.1.1. A baseline survey for Mawgan Porth was undertaken in June 2023, this was then checked and expanded in January 2025 to encompass the vegetated area at the southern area of the dunes, see Figure 8

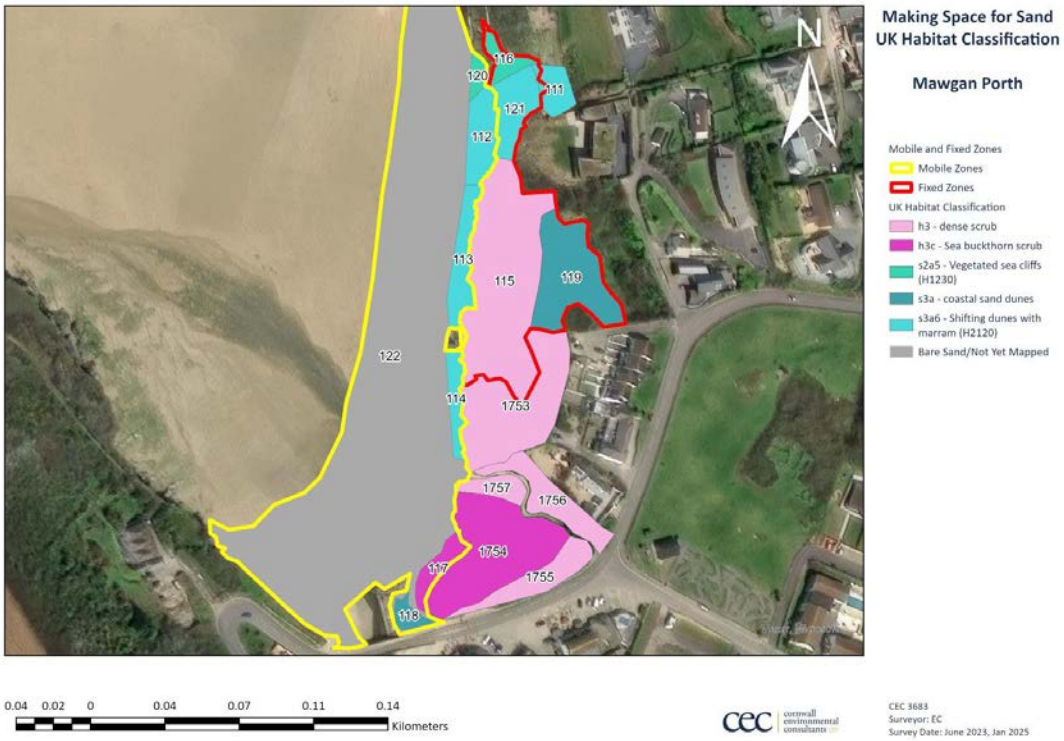


Figure 8: UK Habitat Classification of Baseline Habitats

Reference Ecosystems

5.1.2. Through the assessment of historic mapping, it is assumed that the reference ecosystem is a mosaic of shifting dune with marram and dune grassland. Although there is some of this habitat remaining, a significant amount has been lost to development and erosion, the remaining habitat is fragmented and under pressure from invasive species.

5.1.3. The UK Habitat Classification of shifting dune with marram references the species marram, sea sandwort and sea couch. For dune grassland the species referenced are red fescue, lady's bedstraw, pyramidal orchid and wild thyme.

5.2. Habitat Mapping

5.2.1. As an output of the Making Space for Sand project habitat mapping was carried out at this location. This was done based on UK Habitat Classification, with a project specific methodology for scrub habitat. This was due to there being no suitable classification of 'dune scrub'. As a result, any scrub on dunes was mapped within the scrub broad habitat category in order to make more meaningful restoration gains to dune habitat.

Site survey recorded habitats

5.2.2. Across the site ~0.5ha of vegetated habitat was mapped. Areas of beach extending into the sea were not mapped. See Appendix A for full details of recorded habitats on site and their appropriate classifications.

Open Dune

5.2.3. The Open Dune area equates to ~0.2ha, approximately 35% of the site and includes habitat shifting dunes with marram (s3a6). This habitat type refers to polygons 111, 112, 113, 114, 118, 119 and 121. A second area which was east of the scrub was also representative of sand dune habitat, however limited access could not classify this section of the habitat to a greater degree of accuracy. All polygons are classified as open dune under the Phase 1 habitat mapping methodology.

5.2.4. Shifting Dune with marram (s3a6) under UK Habitat Classification are also classified as HPI. Where this habitat has been recorded, marram is the dominant species. The habitat condition is described as 'poor' under BNG condition assessment criteria, with the exception of one area towards the north of the site which is moderate condition (see Figure 8). Other species recorded within the dune area include sea spurge, sea bindweed and wild carrot.

5.2.5. A limitation to the condition of the dunes at this location is the presence of invasive non-native species, the removal of these species has the potential to improve the condition of the dunes when coupled with scrub control. Another limiting factor is the human intervention in the form of rock armour.

Maritime Cliff and Slopes (s2a5)

5.2.6. At the northernmost section of the site, the dunes meet a section of vegetated sea cliff, this area is ~ 0.04ha and equates to ~5% of the site area. This refers to polygons 116 and 120. This is also a priority habitat. Species recorded within this area include wild carrot, silver ragwort, kidney vetch, thrift, sorrel and common cat's ear. This habitat was recorded as being in a moderate condition, the installation of a footpath running down the cliff, and the addition of at the base is considered negative in terms of BNG.

Scrub

Japanese Rose Dominant Dense Scrub (h3)

5.2.7. Japanese Rose dominant dense scrub equates to ~0.3ha, approximately 55% of the mapped vegetated habitat, polygon 113.

5.2.8. There is no suitable classification for this habitat within the BNG metric, as a result it has been classified as 'introduced shrub', a low distinctiveness habitat with no fixed condition.

5.2.9. As it is a Schedule 9 invasive non-native species, efforts should be made to facilitate the removal and control of the Japanese Rose on site and to prevent it from becoming prolific in the dune habitat.

Other Sea Buckthorn (h3c)

5.2.10. There is a small section of sea buckthorn scrub within the site boundary equating to ~0.03ha, ~5% of the site area, polygon 117. Sea buckthorn is not native to Cornwall and will become invasive. This section of the site links to a wider area which is impacted by non-native scrub (see below).

Dense Scrub – Adjacent to site boundaries

5.2.11. To the south of the site, there is a large area of scrub which fell outside of the site boundary. This scrub is dominated by non-natives species such as tamarisk and sea buckthorn. There is potential for scrub from this area to impact the dune area if is not controlled.

Non-native Invasive Plants

5.2.12. There were several non-native invasive plants recorded during the site survey, these included Japanese rose, red valerian and sea buckthorn.

5.2.13. Breakdown of the Habitat types and their percentage cover can be seen in Table 5

Table 5: Breakdown of baseline habitats - Mawgan Porth

Habitat Type	Percentage Cover
Coastal Sand Dunes	28%
Vegetated Sea Cliffs	3%
Sea Buckthorn Scrub	18%
Introduced Shrub (Japanese Rose dominant)	50%*

*total may not equal 100% due to rounding.

5.2.14. The data collected at Mawgan Porth shows that there is a dominant scrub cover which will over stabilise the dune and decrease its resilience. The presence of scrub at this density will cause an increase in organic matter in the substrate which when breaking down will increase the nutrient loading on the dunes, detrimental to the desired dune habitat.

5.2.15. Although there is limited vegetation diversity within the dune area, the site extends into vegetated sea cliffs, which are also an Annex 1 habitat and host a relatively diverse species range important for invertebrate communities and protected species.

5.2.16. The presence of invasive species at Mawgan Porth is detrimental to the condition of the dunes, without suitable control measures put in place this will result in the loss of irreplaceable habitats.

5.2.17. There are a number of possibilities for Biodiversity Net Gain by the enhancement and creation of habitats of a higher distinctiveness, this is predominantly associated with the removal of invasive species at the site.

Biodiversity Net Gain (BNG)

5.2.18. A BNG Baseline was undertaken in December 2023, this was revised to include the additionally mapped areas in January 2025. The baseline results are shown below in Table 6.

Table 6: Biodiversity Net Gain Baseline

Coastal Sand Dunes	3.2
Scrub (Japanese Rose) *Introduced shrub	1.59
Maritime Cliff and Slope	0.62
Other sea buckthorn scrub	0.56
Total BNG Units	5.97

5.2.1. The baseline BNG assessment for Mawgan Porth shows that despite having a smaller area, coastal sand dunes have a significantly higher BNG score than that of the Japanese rose dominated scrub habitat.

5.2.2. Opportunities for BNG include the removal of dense Japanese rose (introduced shrub) to allow these areas (polygons 115, 1753, 1755, 1756 and 1757) to return to a coastal sand dune habitat (condition assessment: poor), would see an increase in BNG units of 3.18.

5.2.3. Supplementing this, improvement in the condition of the current dunes would see a total increase in units of up to 4.92. Improvements in dune condition could be achieved by implementing active scrub control within the dune polygons (polygon numbers 111, 112, 113, 114, 118, 119 and 121) to preserve the habitat, additionally increasing species diversity in accordance with the habitat's indicator species under the UK Habs classification, in this case planting salt tolerant species (for example sea spurge, sand sedge, sea bindweed, lady's bedstraw) could be undertaken.

5.2.4. The only other BNG criterion that could potentially be improved at this location relates to ensuring that coastal processes supporting the habitat are not modified by hard engineering or other forms of negative intervention; however, removal of the existing rock armour would be expensive and time-consuming, and there is currently no evidence to suggest that such action would be advisable.

6. Coastal Change

6.1. Introduction

6.1.1. Coastal change refers to the natural and human induced processes that will change features of the coastline. These can be caused by a number of factors, either in isolation or combination. These include erosion, sediment deposition, sea level rise, storm events and human activity. Observations of change can be made, however they cannot be entirely managed and so building resilience is fundamental to adapt to these changes.

6.2. Topographic Data

6.2.1. Between 2007 and 2024, the period considered within this report, there has been a total of 39 topographic surveys at Mawgan Porth, four of which are baseline surveys, 32 are interim surveys and zero post-storm surveys.

6.2.2. Analysis of topographic data suggests the survey unit has remained stable between 2007 and 2024. Up until 2013 the beach was accreting, then in the winter period of 2013/2014 this energetic period caused a significant impact to the beach. The beach began to recover the subsequent year; however, beach levels have still not returned to the pre-2013 levels.

6.2.3. Analysis of the combined profile (the combination of the mobile and beach zone) can be seen in the below graph. This shows that Mawgan Porth has been accreting at 3.9m^{2}y^{-1}. See Figure 9.

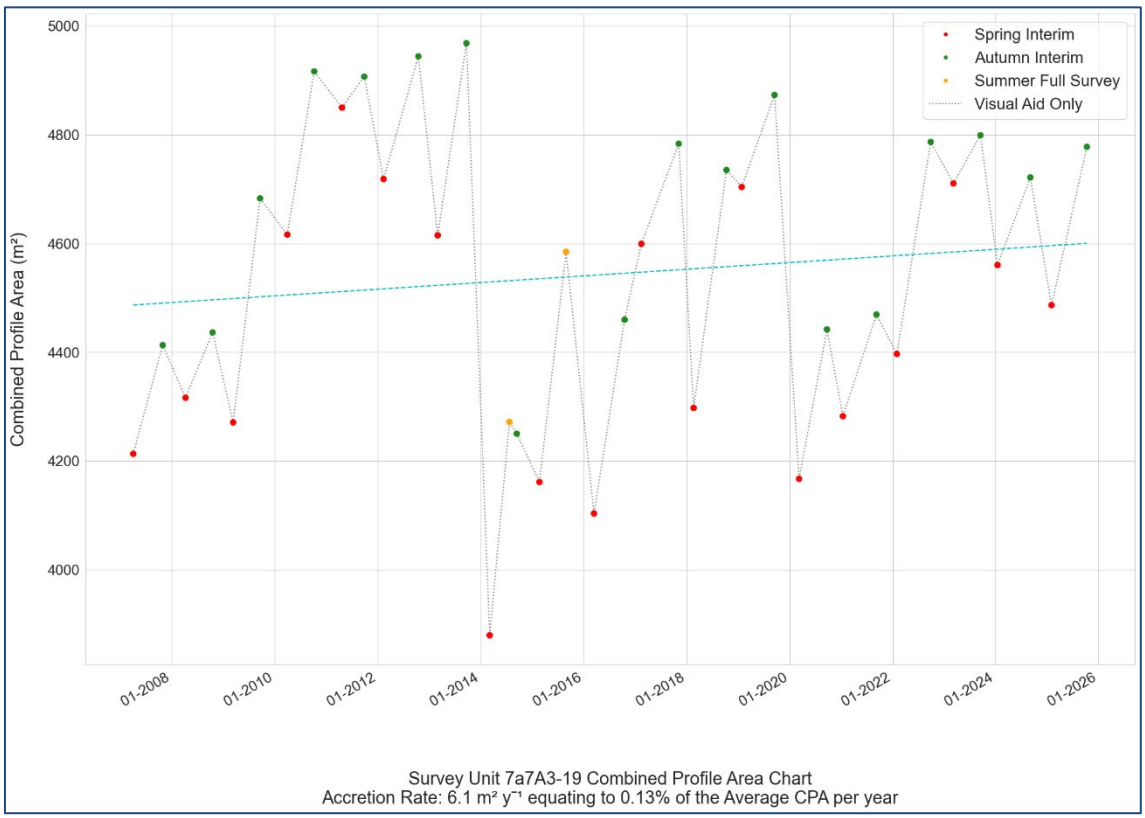


Figure 9: The combined profile analysis for Mawgan Porth, including spring (red), summer (yellow) and autumn (green) survey completed between 2007 and 2024

6.3. LiDAR Data

6.3.1. In addition to the topographic surveys, LiDAR (Light Detection and Ranging) is used to gather data. This is a remote sensing technology that measures distances to the Earth's surface, creating precise, 3D maps of environments. It is increasingly used in topographic surveys, and environmental monitoring. See Figure 10 for the Beach Zone Volume over time and Figure 11 for the Mobile Zone (dune) Volume over time. The R^2 values show how well the trend line explains the variation in the data, with values closer to 1 indicating a stronger fit and values closer to 0 indicating a weaker fit.

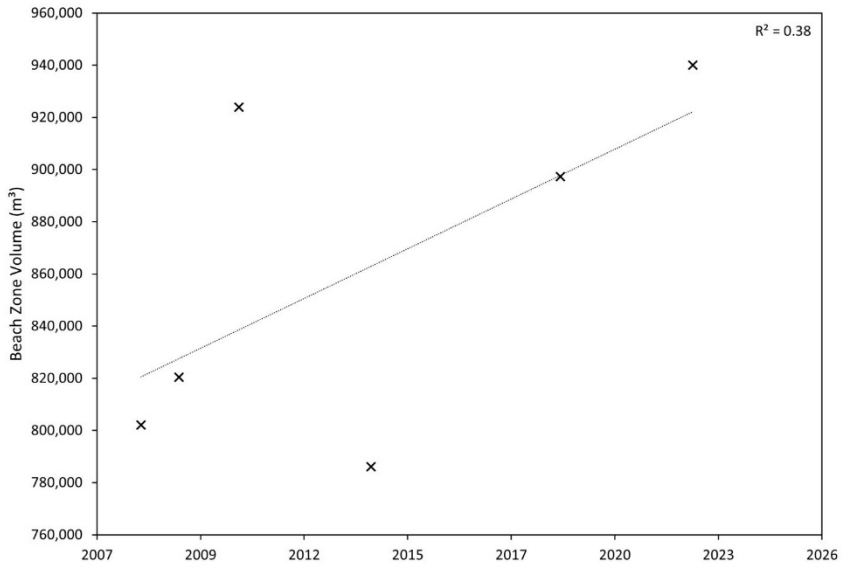


Figure 10: Beach Zone Volume from 2007 to 2022 LiDAR data

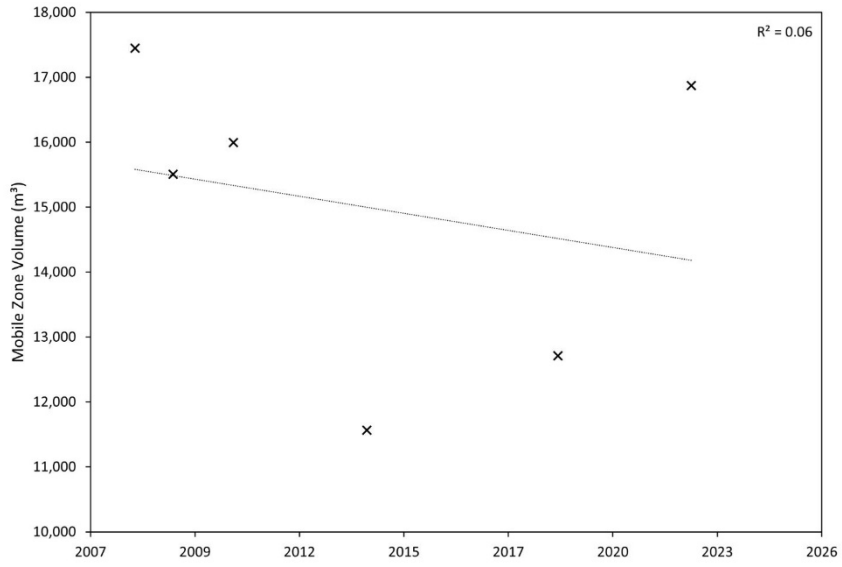


Figure 11: Mobile Zone Volume from 2007 to 2022 LiDAR data

6.3.2. Volume extracted from 6 LiDAR flights from2007 to 2022 (Figure 11) have shown the Mobile Zone to be gradually eroding, being particularly impacted by the 2013/14 storms losing 28% of material, however, there has been a recent recovery with the highest volume on record captured during the most recent October 2022 survey.

6.3.3. Whereas, unlike the Mobile Zone the Beach Zone shows a story of accretion, seeing a much larger fluctuation between surveys. Similarly, to the topographic data, the Beach Zone volume has accreted between 2007 and 2023 despite a 15% loss in material following the 2013/14 winter, the Beach Zone also recorded the highest volume during the October 2022 survey.

6.3.4. The Dune Toe contours have retreated up to 9 m across the length of the dune system. Overall Mawgan Porth beach has remained relatively stable between 2007 and 2024, despite large fluctuations in material from the 2013/14 winter storms but experiencing beach recovery since 2015.



Figure 12: LiDAR Change In elevation model from 2007 – 2024

6.3.5. Figure 12 shows the overall change in elevation across the beach and mobile zone areas as a visual model from 2007 to 2024, showing accretion of material in blue, and erosion in red.

6.4. Dune Toe Modelling

6.4.1. Sediment is defined as natural material that has broken down by weathering and erosion, this includes sand, silt and clay. Movement of sediment on beach areas forms part of natural geomorphological process, however changes in weather including more extreme storm events can result in a greater loss of sediment from our beaches.

6.4.2. The toe of the dune is defined as where the dune and beach separate, the data collected defines this as the vertical limit of the beach profile that is impacted by wave action. This has been determined by the sum of Mean High Water Spring level, and the wave runup height during 1% exceedance events.

6.4.3. In the case of Mawgan Porth, it can be seen from the University of Plymouth's report that the modelling from 2007-2020 show that the dune is retreating (~0.47m/yr) and losing volume (~0.64m3/m/yr). The report also shows that significant sediment was lost during the winter storms of 2013/2014. This data is

presented in the time series change graphs shown below.

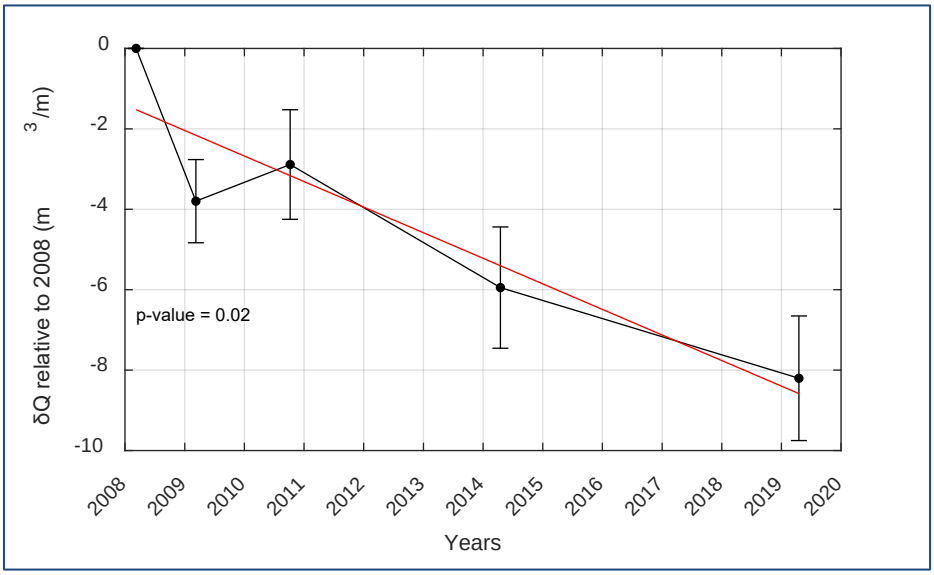


Figure 13: Time series change for change in dune volume at Mawgan Porth from 2008 -2019

6.4.4. Figure 13 shows the change in dune volume, as calculated by LiDAR data, from 2008 to 2019. This shows the dune is retreating with the black dots indicating the value relative to 2008, the error bars showing potential error in the LiDAR data and the red line showing the linear regression. This shows since the analysis started, the volume loss has been ~8m^3/m.

6.4.5. Figure 14 below shows the change in the dune toe position from 2008 to 2019, derived from LiDAR data relative to 2008. Again, with the black dots showing the value, the error bars showing standard deviation of the longshore distribution, the red line showing linear regression. This shows erosion since analysis began of 6m in total.

6.4.6. Please note that the p-value shows how likely the observed data would be if there were no real effect: small p-values suggest the data are unlikely under that assumption, and large p-values suggest the data are compatible with no effect. In this case the p-value of 0.02 means that the result is statistically significant and the below p-value of 0.12 is not statistically significant.

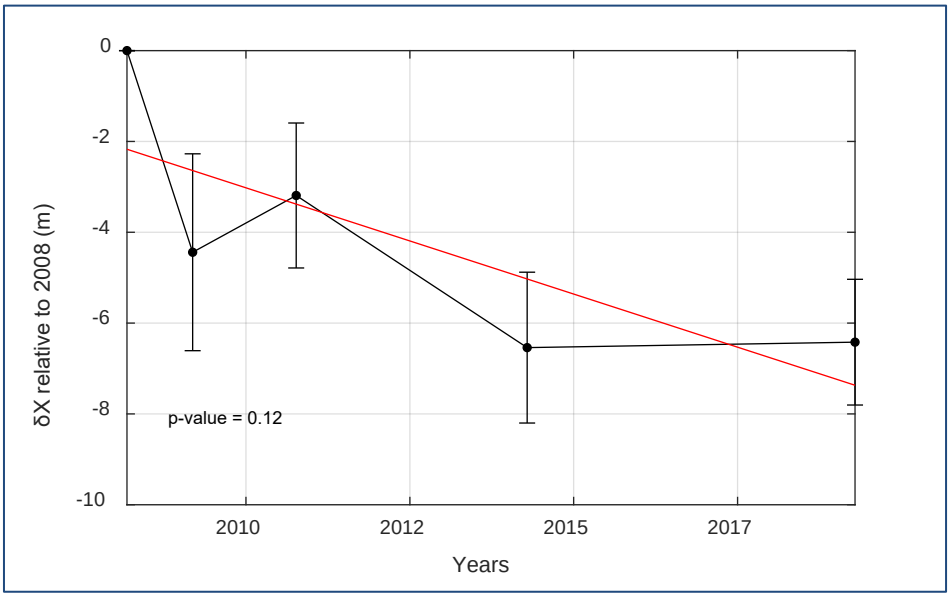


Figure 14: Time series change for change in dune toe at Mawgan Porth 2008-2019

6.5. Predicting Future Change

National Coastal Erosion Risk Mapping (NCERM)

6.5.1. The National Coastal Erosion Risk Mapping (NCERM) is an evidence-based dataset for England and Wales, showing areas at risk of coastal erosion. It has been developed to help guide investment and planning decisions and inform Shoreline Management Plans. The dataset was updated in 2024 and published in early 2025 (data.gov.uk).

6.5.2. This mapping provides a baseline of coastal erosion for the coastline of England showing the areas at risk of coastal erosion until 2105. Predicting the exact position of an eroding shoreline over time is difficult. The influence of sea level rise on erosion rates in the longer term is also uncertain. The rate of erosion can vary depending on the geology and the natural processes at the coast. Hard rocks are worn away slower than softer material such as sand. This means erosion may not be the same along a stretch of coast.

6.5.3. Erosion risk zones displayed on the map include the area between the backshore feature (such as a cliff) and the Mean High Water Spring (MHWS) tidal position. These are shown for three climate change scenarios:

6.5.4. Present Day (2020) –uses historical erosion rates to provide future projections without calculating any additional impacts of climate change and rising sea levels. Shown in Figure 15 and Figure 16 as beige

6.5.5. Climate Change Higher Central –uses sea level rise data from 70th percentile (UK Climate Projections 2018 (UKCP18) Representative Concentration Pathway (RCP)8.5 climate projection. Shown in Figure 15 and Figure 16 as light purple.

6.5.6. Climate Change Upper End –uses sea level rise data from 95th percentile UKCP18 Representative Concentration Pathway (RCP) 8.5 climate projection. Shown in Figure 15 and Figure 16 as dark purple.

6.5.7. This means using the Climate Change Upper end as an example, that 95% of the possible scenarios fall below this level, while 5% fall above it. The RCP 8.5 value is a scenario used in climate modelling that considers the continued growth and production of greenhouse gas emissions. When planning for coastal change these worst-case scenarios, through more precautionary, help ensure that coastal management

is, in the longer term, more resilient.

6.5.8. Unless otherwise stated, the erosion risk zones are based on the scenario that the Shoreline Management Plan (SMP) policy for the area has been delivered. A change in the policy, or the ability to deliver the policy intent, may affect the erosion projections.

6.5.9. The map provides the best estimate of coastal erosion risk at a national scale. It uses the best available national and local data along with methods which can be applied at a national scale. The erosion projections associated with NCERM are intended for guidance and cannot provide details for individual properties. The NCERM data considers the predominant risk at the coast and frontages considered to be more at risk from flood risk or areas of complex cliff are not always included.

National Coastal Erosion Risk Mapping Projections (NCERM)

6.5.10. The NCERM projection lines show the latest projected erosion lines based on a range of different scenarios. For the example of modelling how this may impact the mapped habitats in Mawgan Porth, the projections of 'No Future Intervention' for the long term (to 2105) have been used.

6.5.11. The area at risk of coastal erosion for Mawgan Porth under No Active Intervention with Present Day Climate is 10m by 2055 and 18m by 2105, for Climate Change Higher Central it is 12m (2055) and 29m (2105) and for Climate Change Upper End it is 13m (2055) and 32m (2105) see Figure 15 and Figure 16.

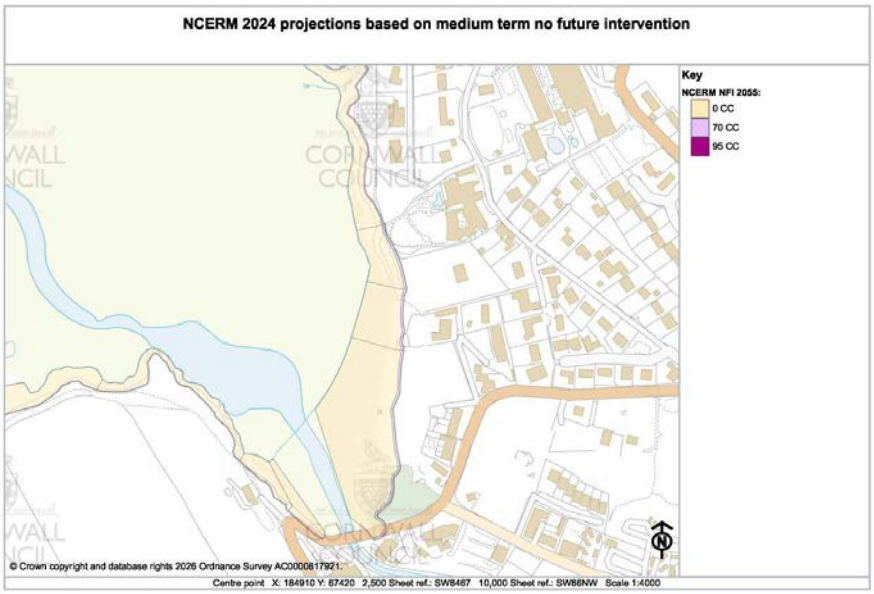


Figure 15: NCERM medium term projections, based on no future interventions

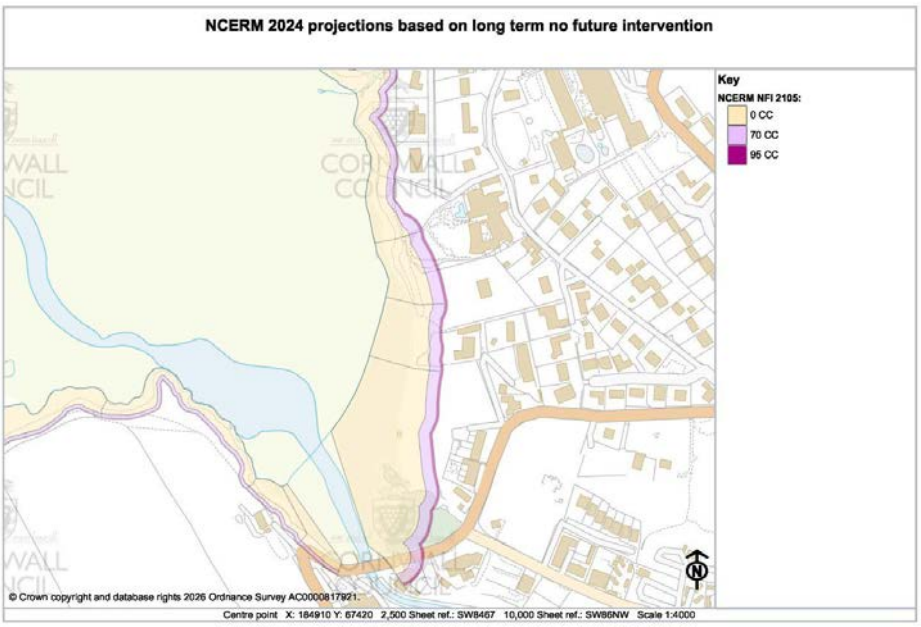


Figure 16: NCERM long term projections, based on no future interventions

Bruun Rule Projections

6.5.12. As part of the Making Space for Sands project, the University of Plymouth have analysed 31 dune systems within the Making Space for Sand project, full results can be seen in the Dune Evolution Report and accompanying paper 'Predicting dune evolution on a regional scale for coastal management' (Brodie et al 2025). The main aim of the paper is to develop and evaluate an approach for coastal managers to predict the future position of the beach-dune interface as a result of sea level rise (SLR) along a varied coastline.

6.5.13. To achieve this aim, the following objectives have been set:

- quantify dune change (dune toe position and dune sediment volume) for 31 Cornish dune sites using airborne LiDAR;
- develop a robust methodology for extracting the environmental parameters required for applying the Bruun Rule;
- apply the Bruun Rule to 31 Cornish beach-dune sites;
- relate the historic rates of dune change with the Bruun Rule predictions; and
- evaluate the use of the Bruun Rule in combination with historic rates of retreat for predicting the impact of SLR on dune systems on a regional scale

6.5.14. In the case of Mawgan Porth, the estimated retreat of the dune using the Bruun Rule is ~0.31m/year, this would equate to a total retreat of ~40m from the 2020 toe position by 2100 based on 50% confidence.

6.5.15. Where projections and modelling take place, a 'confidence interval' is applied. The confidence interval is

a range of values in which the true value lies. In the case of the Bruun rule projections, where there is a 5% confidence, this indicates a low probability of this occurrence, whereas a 95% confidence indicates an almost certain chance. The Bruun rule projection lines are shown at 50% confidence, meaning that there is an equal chance of the dune to retreating to this point as not, with the 90% interval applied (the range from 5%-95%).

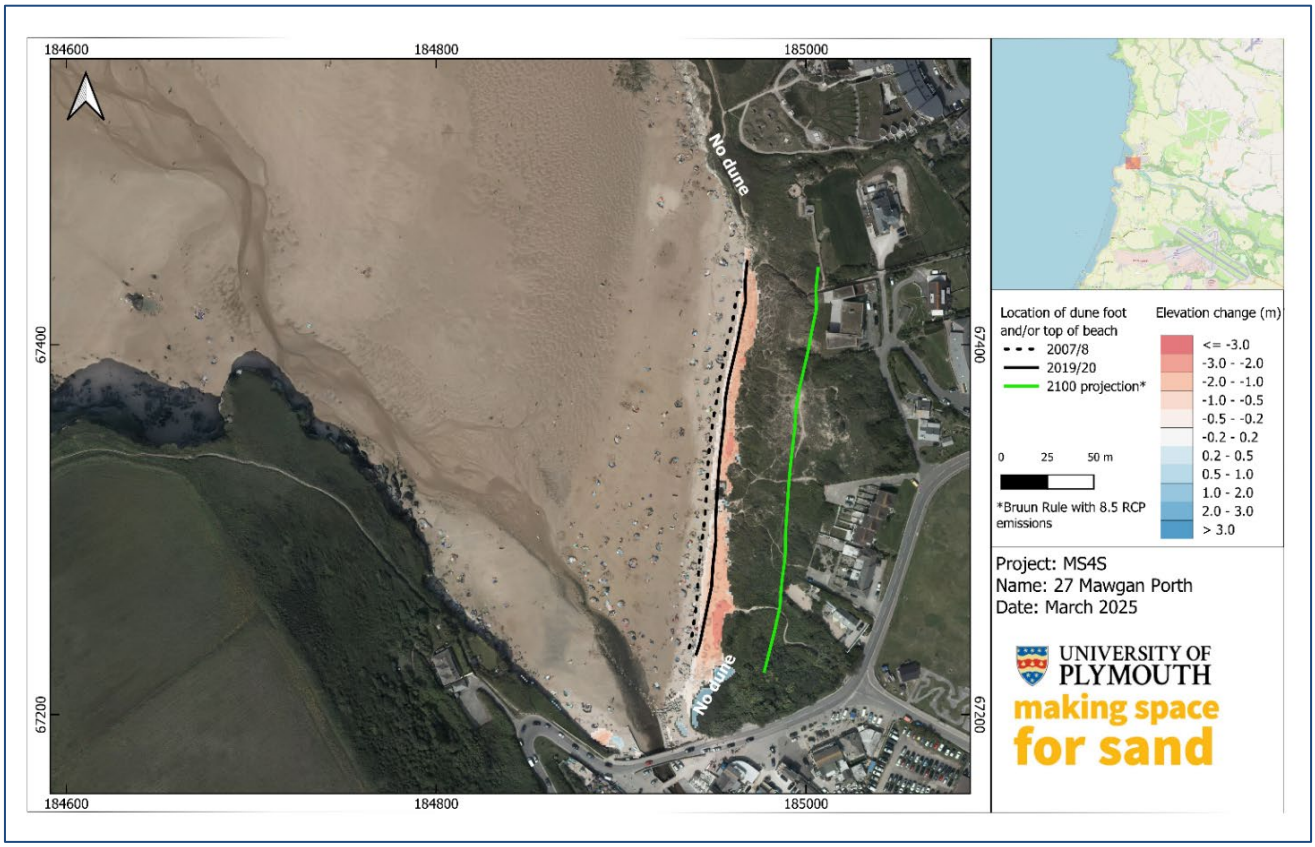


Figure 17: Elevation changes, historic dune toes and Bruun Rule Projection lines for Mawgan Porth

6.5.16. The visual presented in Figure 17 shows projected changes in elevation and the dune toe at Mawgan Porth.

6.5.17. The areas shaded blue at the southern end of the site show an increase in elevation, this is from the accumulation of sediment. Areas shaded red show a decrease in elevation, from erosion of sediment. The visual shows that across the length of the current dune toe there will be erosion due to the loss of sediment from the beach area. The deeper the shade of red or blue, the greater the level of erosion or accumulation.

6.5.18. The dotted black line shows the dune toe location in 2007/2008, the solid black line marks the edge of the dune toe and/or the top of the beach as seen by data collected in 2019/2020.

6.5.19. The solid green line marks the projected rate of erosion by 2100 at 50% confidence, by using the Bruun Rule. This assumes the highest baseline climate change scenario where emissions continue to rise throughout the twenty-first century, Representative Concentration Pathway (RCP 8.5).

6.6. Habitat loss from modelling predictions

6.6.1. By using the modelling and the baseline habitat data, predictions in habitat loss can be calculated.

Table 7: Projected Habitat Loss from NCERM Mapping

Habitat Type	Area Loss	% Loss	Area Retained	% Retained
Dense scrub (Japanese rose dominant)	0.5	74	0.1	26
Sea Buckthorn scrub	0.2	83	0.04	17
Vegetated Sea Cliffs	0.04	100	0	0
Coastal Sand Dunes	0.03	17	0.13	83
Shifting Dunes with Marram	0.22	92	0.02	8
TOTAL	0.99	73	0.4	27

6.6.2. Analysis of the mapped habitat information (Table 7) shows that under the NCERM long term, no future intervention, 5% confidence scenario, there will be a loss of 0.99ha of habitat, 73% of the land mapped. Within this, a total of 0.25ha of dune habitat is at risk of being lost. (note that land inaccessible or within private ownership was not mapped and so figures for this habitat loss cannot be accounted for). See Figure 16 and Figure 17.

6.6.3. The exercise of predicting habitat loss from projections is repeated in below, made under the Bruun Rule projections.

6.6.4. Using the predicted dune toe line from the Bruun rule data, the potential habitat loss up to 2100 can be estimated.

6.6.5. If this prediction were to hold true, a total habitat loss is projected to be 1.04ha (Table 8), out of the total mapped area of 1.36ha. This equates to 77% of the current mapped area being lost. Plans of habitat retention are shown in Figure 19.

Table 8: Habitat Loss and Retention Projections for Mawgan Porth from the Bruun Rule

Habitat Type	Area Loss	% Loss	Area Retained	% Retained
Dense scrub (Japanese rose dominant)	0.5	74	0.2	27
Sea Buckthorn scrub	0.2	97	0.008	3
Vegetated Sea Cliffs	0.04	100	0	0
Coastal Sand Dunes	0.03	17	0.13	83
Shifting Dunes with Marram	0.22	99	0.02	1
TOTAL	1.04	77	0.32	23

6.6.6. The loss and retention data from the Bruun Rule projections draw many parallels to that of the NCERM projections, however the following limitations must be considered when comparing the data:

- The projections are from two different scenarios – NCERM showing no future interventions, at 5% confidence up to 2105 and Bruun being 50% confidence up until 2100.
- Bruun projections are limited to the sandy dune area only, meaning that where the 'line' stops, and extension had to be made to extend to the edge of the mapped habitat area.

6.6.7. When considering both datasets, there is a greater proportion of habitat loss from the Bruun rule projections, with almost a complete loss of the important shifting dunes with marram habitat. The only retention of the habitat in this scenario is along the cliff to the north.

6.6.8. There is a greater proportion of Sea Buckthorn loss in the Bruun Rule projections than with NCERM, this could be attributed to the extension of the projection lines under Bruun Rule to take into account all of the vegetated habitat.

6.6.9. Within the other measured habitats, there is minimal difference between the two projections.

6.6.10. Whichever modelling approach is applied—whether the Bruun Rule or NCERM—the long-term trajectory points toward coastal dune squeeze. Both frameworks indicate that rising sea levels and ongoing shoreline adjustment will drive landward migration of the beach–dune system while fixed backshore constraints limit that movement. As a result, the dunes will become progressively narrowed reducing their capacity to dissipate wave energy and buffer inland areas from erosion and flooding. The modelling suggests that the current degree of natural resilience and coastal protection will be sustained only in the short to medium term, after which their protective effectiveness is likely to diminish without adaptive management or additional space for landward migration.

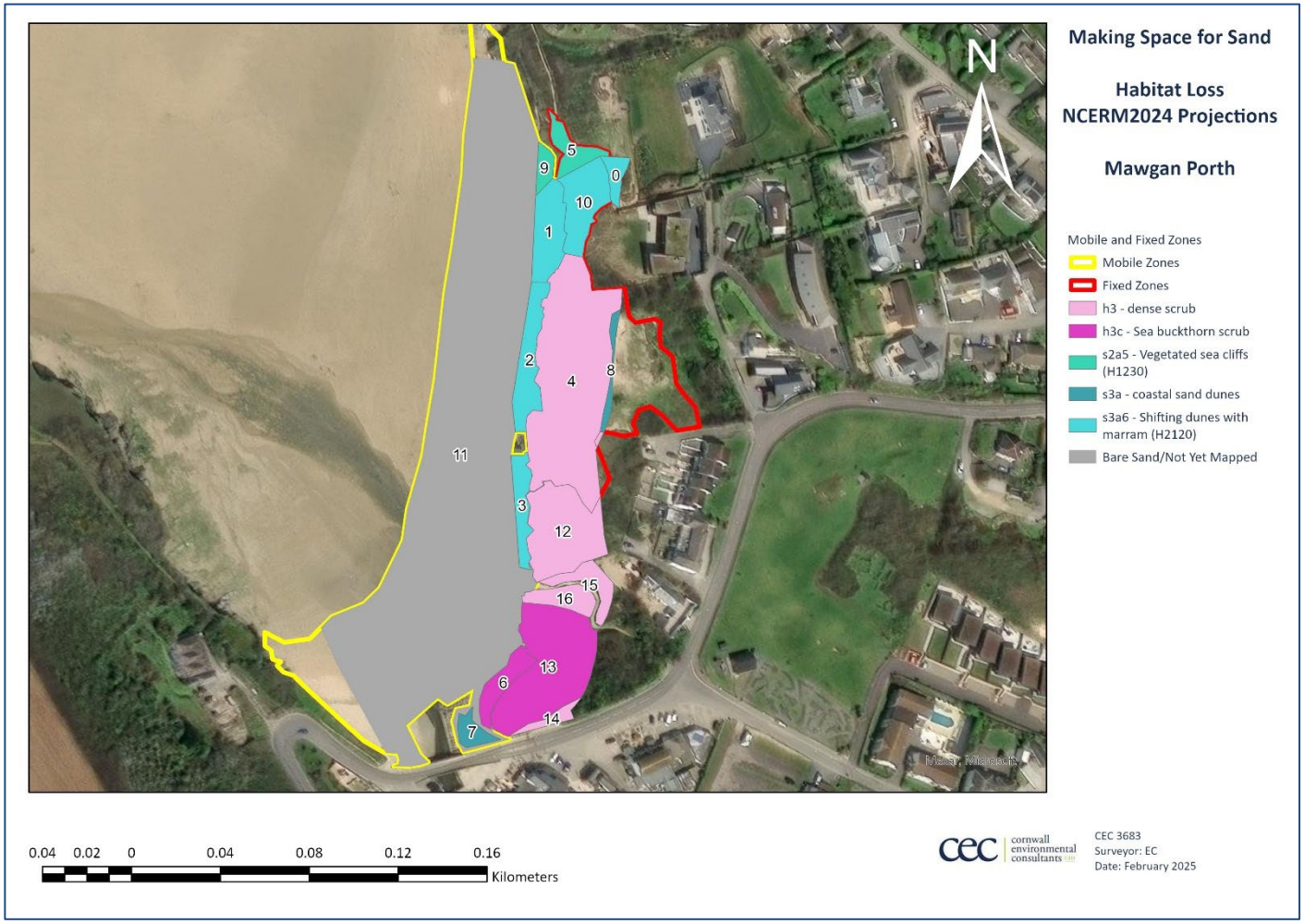


Figure 18: Projected Habitat Loss (NCERM)

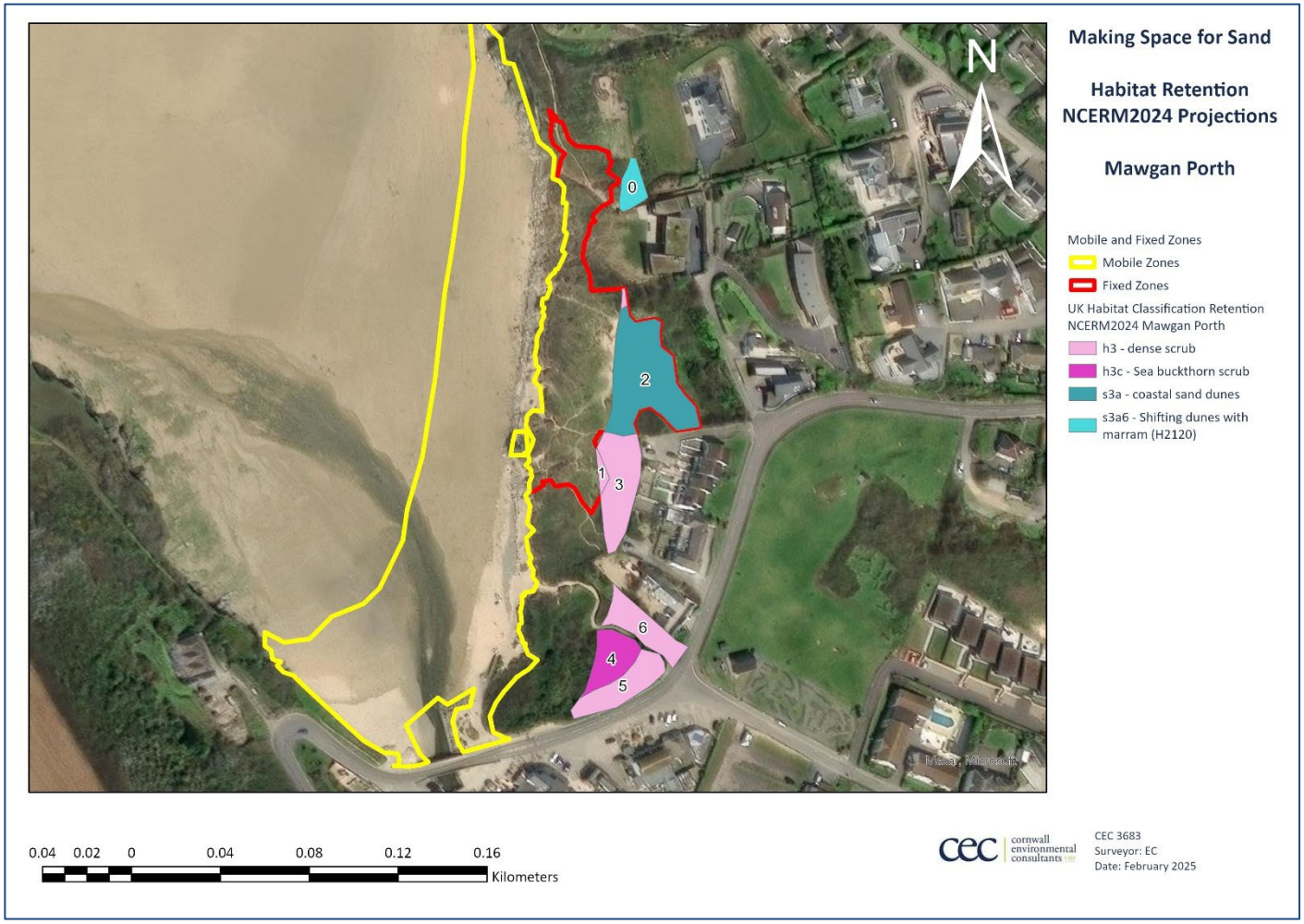


Figure 19: Projected Habitat Retention (NCERM)

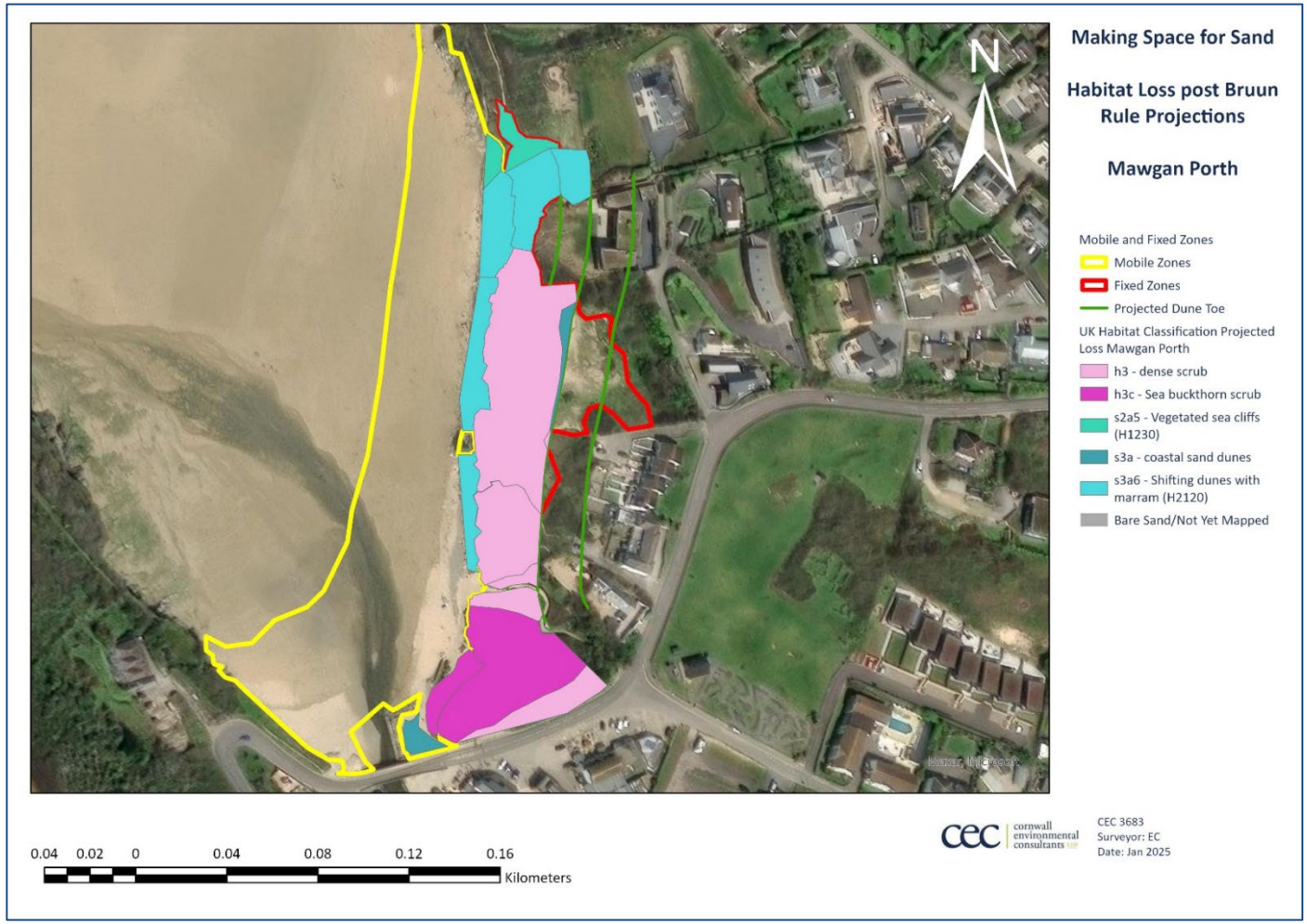


Figure 20: Projected Habitat Loss (Bruun Rule)

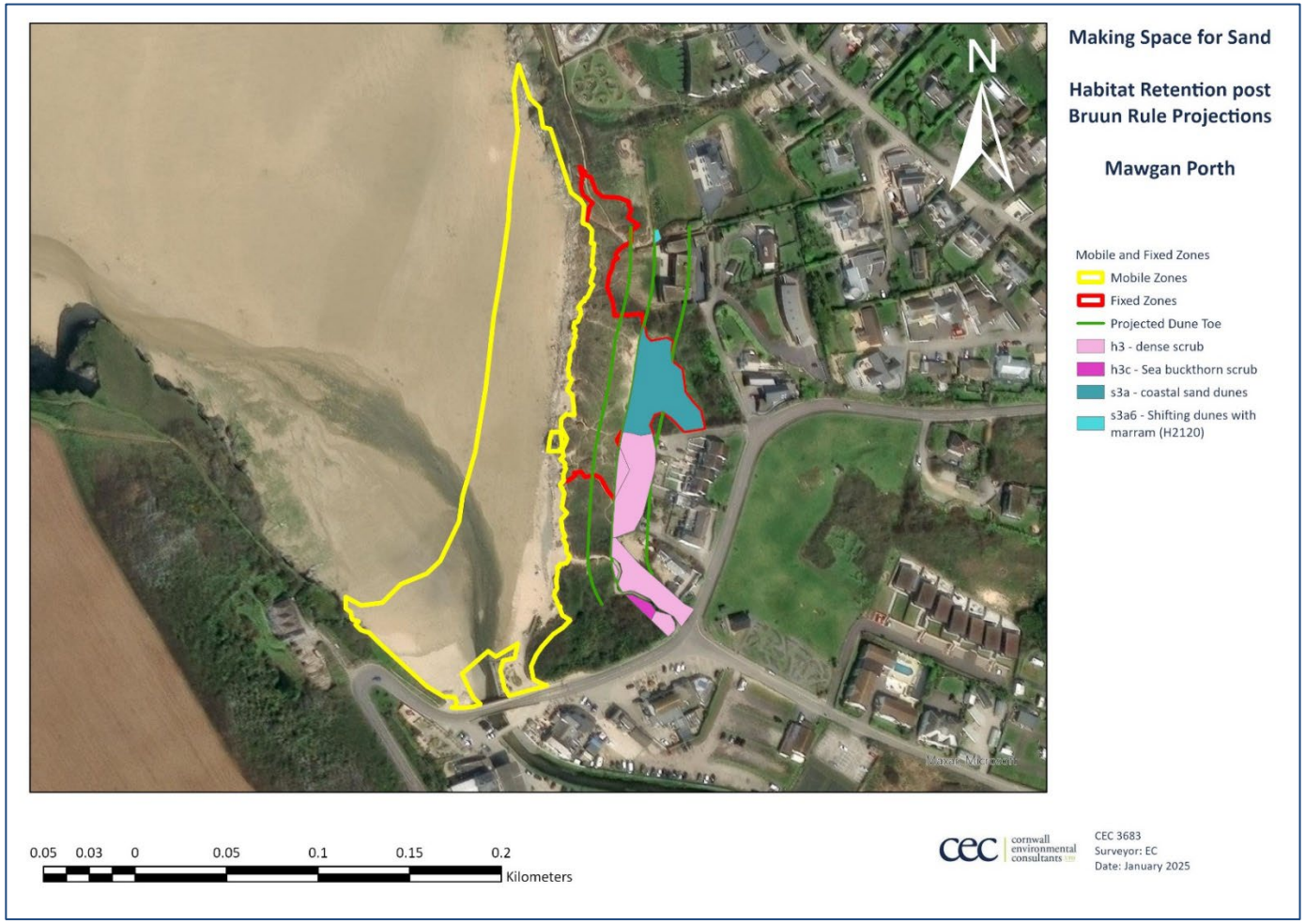


Figure 21:Projected Habitat Retention (Bruun Rule)

6.7. Infrastructure at risk

6.7.1. A map showing the relationship between the projected NCERM erosion extents and adjacent infrastructure is provided below in Figure 22.

6.7.2. The NCERM projections indicate that a number of assets at Mawgan Porth may become increasingly vulnerable to coastal change over the longer term. The mapped erosion extents intersect sections of the main coastal road, which is subject to a Managed Realignment policy within the Shoreline Management Plan, and extend towards areas containing commercial premises and residential properties. These assets provide important transport, residential and economic functions within the village and may become increasingly exposed as the coast adjusts in response to coastal processes and sea-level rise.

6.7.3. It is important to note that the NCERM projections represent a potential future shoreline position rather than the point at which impacts first occur. As the coastline retreats towards the projected erosion extents, areas seaward of the erosion line are likely to experience increasing coastal influence, including erosion, storm damage, tidal inundation and disruption to access. Consequently, infrastructure may be affected before the projected erosion line directly reaches an asset. The NCERM projections should therefore be used as a strategic indicator of future risk and to help inform long-term adaptation planning.

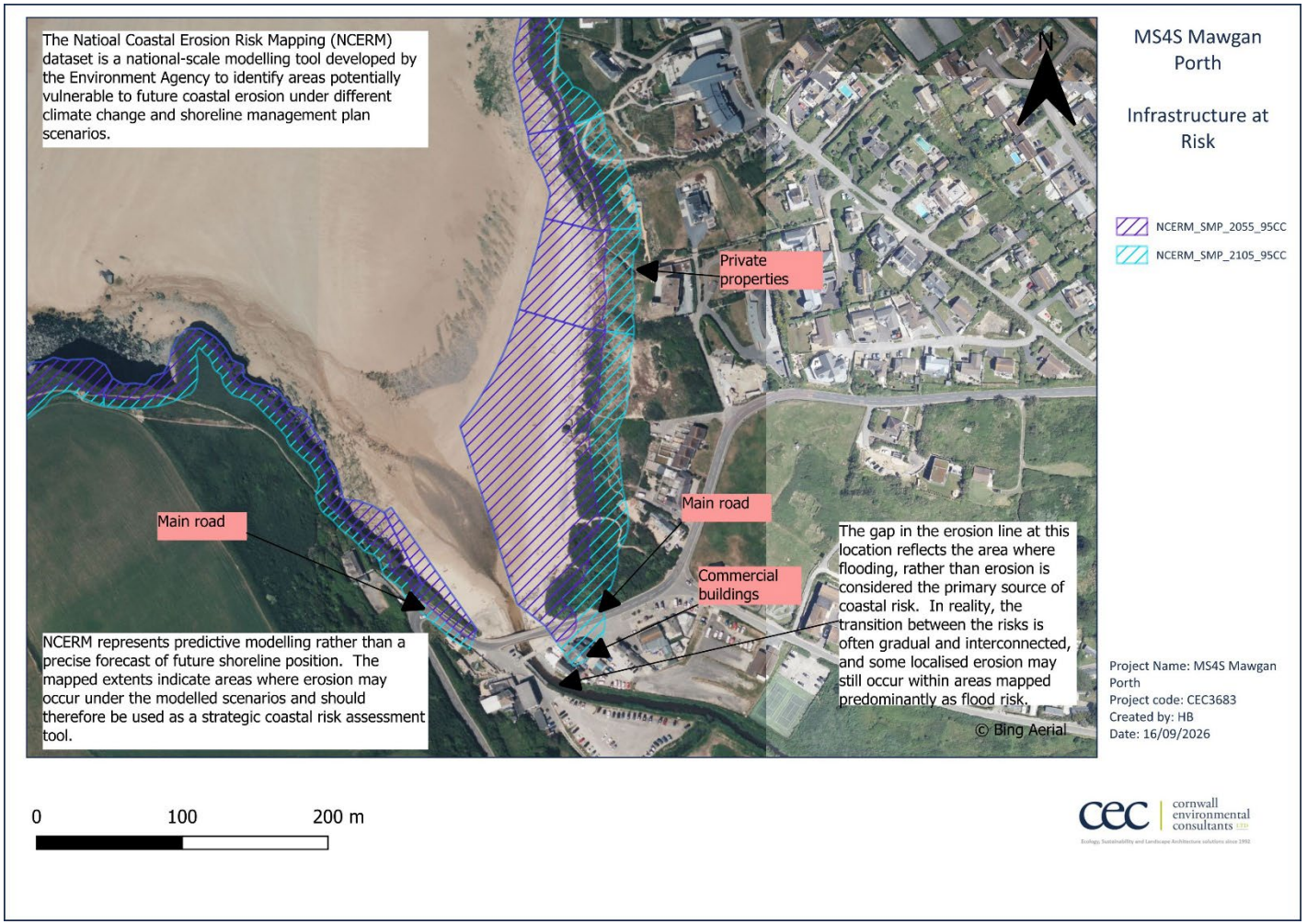


Figure 22: Infrastructure at risk Mawgan Porth

7. Management Plan

Full details for the timelines for management and seasonal restriction can be found in the document CEC3683 Beach Dune Management Plan Strategic Overview.

7.1. Strategic Context and Vision

7.1.1. Mawgan Porth lies within a dynamic coastal area where dune systems form a natural defence against coastal flooding and erosion. In accordance with the Shoreline Management Plan policy for this frontage, while allowing natural processes within the dune system where possible, the long-term approach is to:

- Maintain and enhance a resilient, naturally functioning dune system
- Support natural sediment movement and dune mobility where compatible with protection of infrastructure
- Balance coastal protection with biodiversity enhancement
- Embed community stewardship in long-term management

7.1.2. The dune system is recognised as a natural flood and erosion buffer, a priority habitat, a recreational and landscape asset and a transitional zone between marine and terrestrial environments

7.2. Baseline Condition and Key Issues

7.2.1. Evidence gathered through scientific beach surveys, habitat mapping and community monitoring indicates that the Mawgan Porth dune system is currently constrained by three principal pressures:

1. Habitat Condition – Scrub encroachment and non-native invasive species

7.2.2. The dune system is in poor ecological condition, largely due to dense growth of Japanese rose and sea buckthorn. These invasive shrubs are causing scrub encroachment, reducing open dune habitat, limiting natural sand movement, and decreasing habitat diversity. As a result, structural variation across mobile, semi-fixed, and fixed dunes is limited, which weakens natural dune processes and reduces resilience to coastal change.

2. Ongoing Erosion and Storm Scarping

7.2.3. The dune frontage experiences episodic erosion, particularly during storm events. Dune toe retreat is part of the natural coastal process. Under the SMP policy (PU 33.4 – No Active Intervention), this erosion is anticipated.

7.2.4. At PU 33.3 (road frontage), Managed Realignment indicates that future adaptation and not indefinite defence is the strategic direction.

7.2.5. As a result, management must not seek to prevent natural erosion across the system. Instead, it must:

- Support natural adjustment.
- Avoid hard engineering that would conflict with SMP intent.
- Enhance natural buffering capacity through ecological restoration.

3. Limited Space for Dune Roll-Back (Coastal Squeeze)

7.2.6. The dune system is relatively narrow, infrastructure and development lie immediately landward, roll-back potential is therefore constrained, particularly near the road frontage. This creates coastal squeeze, where dunes are trapped between erosion from the seaward side and fixed infrastructure landward.

7.2.7. Future management must maximise resilience within the existing footprint, avoid artificial stabilisation that reduces adaptive capacity and accept that some landward migration and habitat change is inevitable.

7.2.8. Active management is required to restore dynamic dune processes and improve biodiversity condition.

7.2.9. The long-term objective for Mawgan Porth is to maintain a resilient, naturally functioning dune system that provides effective coastal protection, supported by maintaining and improving its ecological condition.

7.3. Required consent

7.3.1. Any works that are taking place within the dune environment, must be done with the landowner's consent.

7.3.2. The dunes are also within the Mawgan Porth to Newquay County Wildlife Site (CWS) and guidance from the County Wildlife Site Ecologist at Cornwall Wildlife Trust is readily available to support management decisions.

7.3.3. Because the site is not a designated Site of Special Scientific Interest or Special Area of Conservation or a Species Protection Area there is no need to consult with Natural England before any works can take place.

7.4. Past/Recent Management

Cornwall Wildlife Trust (CWT)

7.4.1. At the time of writing Cornwall Wildlife Trust, funded by the MS4S project, has been engaging with the local community by organising work parties and providing tools to support with the removal of invasive species on the dunes. Cornwall Wildlife Trust also monitored the progress of removal of species though digital mapping.

Mawgan Porth Dune Group

7.4.2. The Mawgan Porth Dunes Group ('The Dunies') was established from within the local community through the Making Space for Sand community engagement programme. This included public meetings and site visits, followed by support with communication, task planning, risk assessments, equipment, training and event promotion.

7.4.3. The aim is for The Dunies to become increasingly self-sufficient, enabling the group to continue supporting practical management of the dunes after the Making Space for Sand project has ended.

7.4.4. At the time of writing, removal of INNS was being undertaken by the group through local work parties and involved the hand removal of Japanese rose through hand digging and use of tree poppers. See Figure 23



Figure 23: Area of cleared INNS by Community Group

7.5. Future Management

7.5.1. Management of the Mawgan Porth dune system must respond to its current poor ecological condition, ongoing erosion, and limited capacity for landward roll-back, within the context of Shoreline Management Plan policy (PU 33.4 No Active Intervention). The overarching approach is therefore to restore natural dune function, improve ecological resilience, and work with, rather than resist, coastal processes.

Table 9: Future Management at Mawgan Porth

Action	Short Term	Medium Term	Long Term	Who
INNS	Intensive removal of Japanese rose and sea buckthorn in priority zones. Map and monitor regrowth.	Transition from large-scale removal to targeted follow-up control. Maintain low scrub thresholds. Monitor regrowth of native species – if none growing consider planting native salt tolerant species.	Periodic maintenance control only. Prevent re-establishment through rapid response strategy Ongoing monitoring of overtly mobile sediment that might have been released from the INNS/ Scrub removal. Managed realignment of infrastructure,	Landowner with support from community group

Action	Short Term	Medium Term	Long Term	Who
			should create new area for dunes, include this area for INNS monitoring and management.	
Scrub management		Once INNS are under control attention can shift to scrub management of native species. Removal should take place on a rotational basis to avoid creating large areas of bare sand at a time. (See Figure 24)	Periodic maintenance control only. Prevent re-establishment through rapid response strategy Ongoing monitoring of overtly mobile sediment that might have been released from the INNS/ Scrub removal.	Landowner with support from community group
Salt tolerant species including marram planting for areas of INNS removal	Targeted marram planting along vulnerable dune toe sections. Use sand fencing if needed.	Monitor toe stability. Replant where storm damage occurs. Avoid over-stabilisation. Monitor areas of INNS removal, replant where necessary. Realignment of road should create new space for dunes to migrate to – prefer natural recolonisation of vegetation, with planting as a last resort.	Allow natural reshaping of dune toe where space permits. Stabilise only where SMP requires protection of assets.	Landowner with support from community group
Access management	Create path/paths through sea buckthorn area at south of the site as part of removal.	Rationalise paths as habitat recovers. Consider rope fencing in high-pressure zones. Produce adaptation plan for managed realignment of main road to identify options for relocation.	Plan long-term adaptation of access routes as the dune system migrates. Maintain sustainable access aligned with dune morphology. Relocate paths if dune migration requires.	Landowner with support from Community group
Intellectual Access	Install interpretive	Refresh signage.	Maintain and evolve	Landowner with support

Action	Short Term	Medium Term	Long Term	Who
(Signage and Education)	signage explaining dune dynamics ,restoration works, how visitors can help the process. Promote volunteer group.	Introduce digital interpretation, including QR codes, monitoring updates and, where feasible, electronic interpretation displays at key access points, allowing information to be updated as the dunes and management activities change. Annual guided walks Develop a "Living with a Dynamic Coast" interpretation programme linked to climate change.	the "Living with a Dynamic Coast" interpretation programme as the coastline changes. Use monitoring results, repeat photography and evidence of coastal change to update interpretation and demonstrate how the dune system, infrastructure and management are adapting over time.	from Community group
Management of overtly mobile sediment	Monitor wind-blown sand affecting road/village. Use soft engineering (sand fencing, brushwood). Avoid hard structures	Redistribute accumulated sand within dune system where necessary. Allow mobility where not posing risk.	Accept natural mobility as core function. Intervene only for safety or significant infrastructure threat	Landowner with support from Community group
Rock armour at dune toe	Retain existing rock armour pending further assessment	Commission a study to assess the implications of retaining, modifying or removing the rock armour	Implement recommendations of the study in accordance with the SMP approach and wider adaptation of the frontage	Landowner with coastal processes specialist
Monitoring and Review	Establish fixed-point photography, vegetation surveys and dune profiling.	5 Year formal review. Update management in response to storm events and coastal projections	5 year rolling reviews aligned with SMP updates.	Landowner/ Southwest Coastal Monitoring/Ecologist
Community Stewardship	Support Mawgan Porth Dune Group with tools, training and coordination	Transition toward greater independence with secured funding streams	Fully embedded local stewardship	Landowner/ Local group

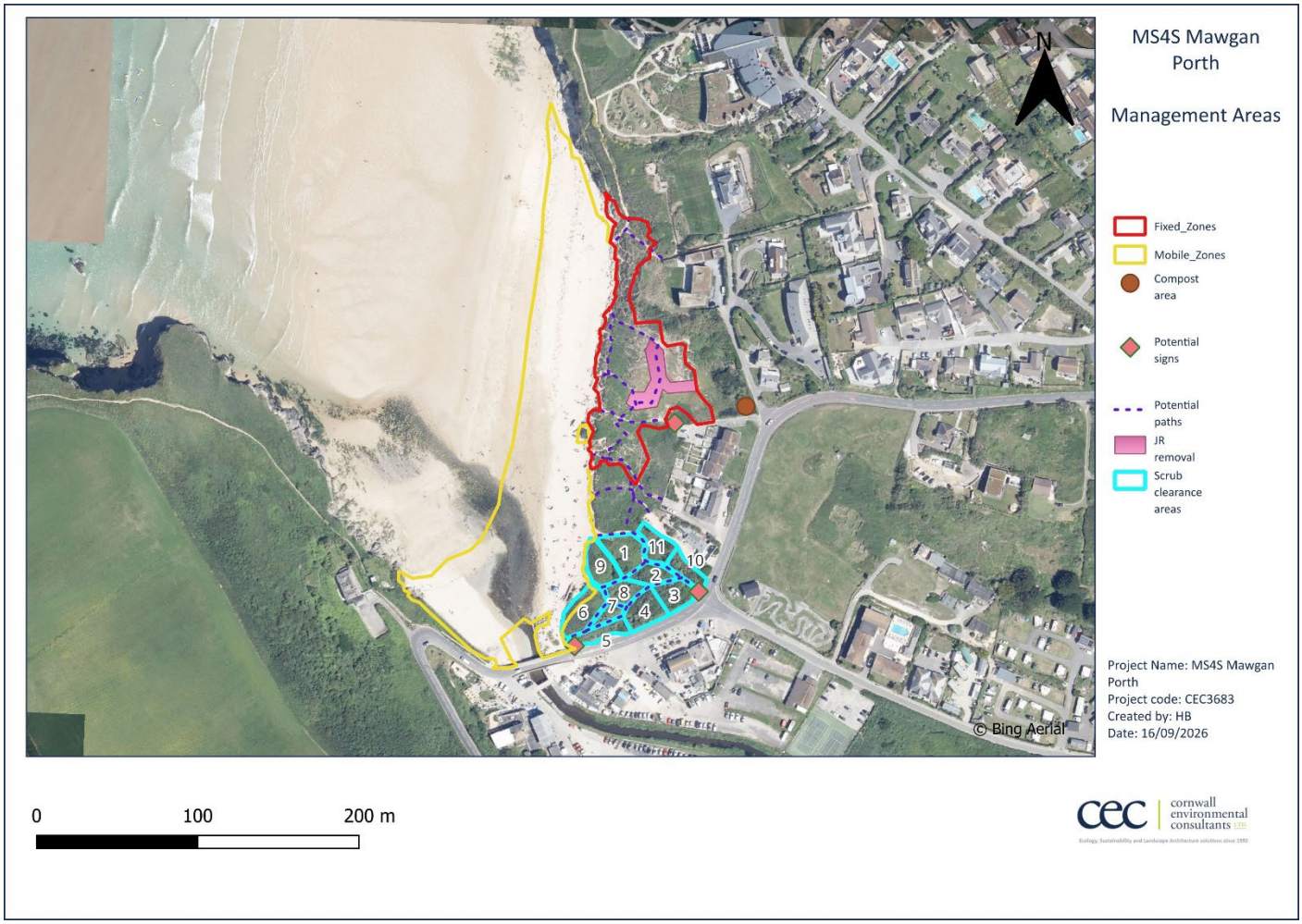


Figure 24: Management Areas

7.6. Short-term Planned Management Activities

7.6.1. Short term plans for management at Mawgan Porth have been focused on stopping the spread of invasive species, particularly Japanese rose (see Figure 25) across the site, this was being delivered by community volunteers at the time of writing.

7.6.2. The location of the current Japanese rose management was chosen because it was the closest area that was not currently at risk of immediate erosion from the sea. Moving out from the pathways where the Japanese rose is less dense has made removal by hand tools more practical. This location had the added advantage of halting the spread of this species into the remaining dune habitat areas. Future clearance should continue outwards from the existing managed area, progressively enlarging the area cleared until all the Japanese rose has been removed. Previously cleared areas should continue to be monitored for regrowth, with any new growth removed before it becomes re-established.

7.6.3. Once the Japanese rose is removed from an area, it should be left bare to see what nearby species colonise the area, however, if after 2 years nothing is growing in the area, salt tolerant species including marram grass should be planted in the area, see Section 7.8



Figure 25: Japanese rose at Mawgan Porth

Access Management

7.6.4. Fragmentation is advantageous for dune habitat especially in areas of dense invasive species and scrub, but sometimes there may be areas, such as areas of new planting, where footfall is undesirable. The creation of paths through the scrub introduces controlled disturbance through footfall. This not only helps break up dense vegetation but encourages small areas of bare sand and promotes early successional dune habitats without causing widespread destabilisation.

7.6.5. In the short term, there is an opportunity to undertake a small, early intervention within the sea buckthorn-dominated area at the southern end of the site, before the more extensive rotational clearance is undertaken in the medium term. Establishing paths along the indicative routes shown on Figure 24 would begin to break up the dense scrub, introduce small areas of controlled disturbance and guide visitor movement. These paths could then be retained and developed as the wider rotational scrub clearance progresses.

Signage and Interpretation

7.6.6. In the short term, interpretation signage should be installed at key access points and, where appropriate, along newly created paths to explain the dune management taking place, help guide visitor movement and explain why access to some areas may be restricted.

7.7. Medium Term Management

Invasive Non-native Species (INNS) Removal

7.7.1. It is recommended to focus initially on the current area of on the Japanese rose removal. Clearance should continue progressively outwards from the area already cleared, (see Figure 26 and Figure 27) expanding until all the Japanese rose has been removed, leaving areas adjacent to properties till last should avoid any overtly mobile sand to be an issue.

7.7.2. Once the Japanese rose is under control, a second area of invasives removal has been highlighted at the southern end of the site, adjacent to the main access area of the dunes. This is a sea buckthorn dominated area, removal of invasives here should be done periodically and allowed to recover so as not to create an excess of loose sand that has potential to blow into the road/village. See Table 10 for scrub removal techniques advantages and disadvantages.



Figure 26: Example - area at Mawgan Porth before removal of INNS.



Figure 27: Example - area at Mawgan Porth after removal of INNS.

7.7.3. If there are available resources for brush cutters and suitably trained people to remove the sea buckthorn scrub, it should be removed in rotational compartments see Figure 24 for compartment areas. Two or three compartments should be removed every year, and these compartments should not be adjacent i.e. year one – compartments 1, 7 and 3, year two compartments 6 and 2, year three compartment 5, 8 and 10, year four compartment 4, 9 and 11 This should only be completed outside of bird nesting season (September to February inclusive).

7.7.4. Note: A lot of waste will be created if brush cutters are used, and so removal from site by a licenced waste carrier would be necessary see Table 11 for different ways of disposal and their advantages and disadvantages.

7.7.5. If there is no access to a brush cutter, hand tools should be used, and cutting back from the paths, as with the Japanese rose will be the most efficient way of doing it, this will be time consuming and it is unlikely that all scrub will be removed at once, therefore the rotational compartments are less needed.

7.7.6. As small amounts of waste will be created from this slower approach, composting on site, in an area of habitat that is not sensitive could be an alternative to a licenced waste carrier (see Figure 24) for area used at the time of writing). This needs regular monitoring to ensure there is no regrowth of the waste plants.

7.7.7. If there are available funds to use herbicides to control invasive non-native species (INNS) such as sea buckthorn and Japanese rose, this is a method of control which could be considered, however, they are generally regarded as a last resort. This is because chemical control risks damaging sensitive dune flora, disrupting natural dune succession, and affecting soil organisms. UK guidance encourages environmental managers to prioritise non-chemical methods such as cutting, excavation, or manual removal wherever feasible. Public perception also tends to be negative, with many visitors expressing discomfort or distrust around chemical use in natural coastal landscapes, particularly where visible die-back is present.

7.7.8. Where herbicide is necessary, it should be applied selectively and precisely by trained and certified operators, and only in suitable weather conditions to prevent drift onto native vegetation. The most appropriate timing is usually late summer to early autumn, when systemic herbicides are most effectively transported to the roots. Overall, herbicide can support the restoration of invaded dune habitats, but only

when other approaches are impractical or ineffective, and when applied in a way that minimises ecological and social impacts.

Scrub management

7.7.9. Once INNS have been brought under control, management should shift to the phased removal of native scrub, which can be found in the northern area of the site, too much scrub also degrades the dunes by over stabilising them and also by shading out dune species.

7.7.10. As described with the sea buckthorn area, this should also be done by clearing small, scattered patches rather than large or neighbouring areas at the same time. This prevents the creation of extensive bare ground, reducing the risk of excessive mobile sand and helping to maintain overall habitat stability. It is also far better for wildlife, as it avoids the wholesale loss of nesting, sheltering and foraging habitat in any one season, ensuring that species dependent on scrub continue to have suitable cover throughout the management cycle. Techniques for scrub management are largely similar to INNS removal so please refer to Table 10 for methods that are suitable for Mawgan Porth.

Access management

7.7.11. As the rotational removal of sea buckthorn progresses in the medium term, the paths initially established through this area can be retained and developed as part of the wider restoration of the dune habitat. Continued use of these routes will help guide visitor movement while maintaining small areas of controlled disturbance and bare sand within the recovering dune habitat.

7.7.12. A similar approach could be used as clearance of the Japanese rose progresses. Existing desire lines (informal routes formed through repeated pedestrian use) could, where appropriate, be incorporated as designated paths through the cleared areas. This would help fragment the remaining dense vegetation, guide visitor movement and introduce controlled disturbance as the area is progressively restored to dune habitat. Indicative routes are shown on Figure 24.

7.7.13. Retaining a small area of scrub adjacent to the road and neighbouring buildings is advised to help reduce windblown sand affecting infrastructure. Given the Shoreline Management Plan policy of Managed Realignment for the road frontage, an adaptation plan should be developed in the medium to long term to consider how access, infrastructure and dune roll-back can be accommodated as coastal change progresses.

7.7.14. It may be useful, particularly with paths within the Japanese rose area (as it is lower) to delineate paths formally, paths can be delineated in many ways, chestnut paling, bark mulch, board walks and post and rope see Section 7.10 for the advantages and disadvantages on each type.

7.7.15. The landowner is responsible for managing access at Mawgan Porth Beach to protect dune habitats while allowing visitor use. Some routes also form part of the South West Coast Path and are public rights of way; therefore, where proposed access management could affect these routes, management should be undertaken in consultation with Cornwall Council.



Figure 28: Example of paths through dunes, post and rope fencing from Porthtowan

Intellectual access.

7.7.16. To help the public understand the dunes, why management is taking place, why they might not be able to go to places they could before, it is advisable that signs be installed at appropriate locations (Figure 24).

7.7.17. In the medium term, existing signage should be reviewed and updated in response to visitor patterns, changes in management and any emerging sensitive areas. Digital interpretation could also be introduced, ranging from QR codes linking to regularly updated online information to, where feasible, electronic interpretation displays at key access points. These could provide changing information on dune management, monitoring results, coastal change, volunteer activities and upcoming works without the need to continually replace physical signs.

7.7.18. A "Living with a Dynamic Coast" interpretation programme could also be developed, using monitoring

results, repeat photography and information on coastal change to help visitors understand how the dunes are changing, why management is taking place and how management may need to adapt in response.

7.7.19. See Section 7.11 for sign ideas ranging from budget friendly to top of the line, Figure 24 shows access points onto the dunes where signs may be useful.

Management of overtly mobile sediment

7.7.20. As mentioned previously, this site currently has no issue with overly mobile sediment, as it is over stabilised. However, as INNS and scrub removal techniques are more successful it is possible that this may become an issue over time. Also, storms may produce scouring of the dunes in places. This can be dealt with in many ways, fencing, burying of Christmas trees, planting of marram (See Figure 29) etc. please see Section 7.10 for the advantages and disadvantages of each technique.



Figure 29: Example of chestnut paling and marram grass planting to trap sand at Crantock

Rock Armour

7.7.21. Rock armour is currently present along part of the toe of the dune system. While this provides localised protection from erosion, it also represents a constraint to the natural interaction between the beach and dune system and may influence sediment movement and the ability of the dune frontage to respond naturally to coastal processes

7.7.22. In the medium term, it is recommended that a study is commissioned to understand the potential effects on coastal processes of retaining, modifying or removing the rock armour located at the toe of the dune system. This should consider the implications for sediment movement, beach and dune morphology, erosion rates and the infrastructure located landward of the dunes.

7.7.23. Removal of the rock armour may allow greater interaction and sediment movement between the beach and dune system, supporting more natural coastal processes. However, it could also result in an increased rate of erosion and retreat of the dune frontage. No removal or modification of the rock armour should therefore be undertaken without appropriate coastal processes assessment and consideration of the implications for the wider dune system and adjacent infrastructure.

Monitoring and review

7.7.24. Monitoring is an integral part of dune management. Ideally, ecological condition will be assessed by a qualified ecologist undertaking vegetation surveys every five years. Specifically, looking at dune condition,

assessing whether INNS have returned, and whether areas of bare sand are naturally be colonised by native dune species, these surveys will inform whether more INNS removal is required and whether supplementary planting is necessary to restore habitat or stabilise sand.

7.7.25. Access infrastructure and signage should also be monitored regularly by the landowner, to ensure they remain effective in directing footfall and preventing erosion where not needed and fragmentation where it is. Responsibility for managing windblown sand affecting adjacent roads or neighbouring properties will remain with the landowner

7.7.26. The South West Coastal Monitoring Programme undertakes regional surveys of coastal processes and beach morphology, including beach profile, topographic and aerial surveys. These long-term datasets can be used to observe changes in the beach and dune system at Mawgan Porth, including patterns of erosion, accretion and changes in beach and dune morphology. The available data should be reviewed as part of ongoing adaptive dune management and incorporated into the five-year reviews of this management plan.

Community Stewardship

7.7.27. Ideally, community stewardship will play an increasing role in the long-term care and management of the dunes at Mawgan Porth. Support could be provided to the Mawgan Porth Dune Group (Figure 30) through access to tools, training and coordination, enabling volunteers to participate safely and effectively in activities such as vegetation management, INNS control, path maintenance and monitoring. At the time of writing this support was being given by a Cornwall Wildlife Trust Community Engagement Officer, funded by the Making Space for Sand project. The aspiration would be to transition toward greater independence of the community, with locally led initiatives supporting ongoing works. In the longer term, stewardship would ideally become fully embedded within the community, fostering a strong sense of ownership and resilience while complementing the wider management framework



Figure 30: The Mawgan Porth 'Dunies' at work

7.8. Long term management

7.8.1. In the medium to long term, management will transition toward maintaining a dynamic, diverse dune system, rationalising access, using soft sediment management techniques, and preparing for adaptation at the road frontage where realignment may ultimately be required. The findings of the coastal processes study should be used to inform the future management of the rock armour at the dune toe, including whether its retention, modification or removal is appropriate. As coastal change progresses, access routes and associated infrastructure may need to be reviewed and adapted to accommodate landward dune migration while maintaining safe and sustainable access. If this is to happen, there will be space for the dune system to migrate and be able to function naturally.

7.8.2. All actions will be guided by monitoring, periodic review, and partnership working led by Cornwall Council as Coast Protection Authority, supported by the Landowner, environmental partners and community stewardship.

8. Appropriate Management Techniques

8.1. Invasive Non-Native Species (INNS) Management

8.1.1. Landowners have a legal and ethical duty to manage INNS.

8.1.2. The species that are having the most detrimental impact on the dunes at Mawgan Porth are sea buckthorn and Japanese rose. These species are problematic because they over-stabilise the dunes, reducing the natural shifting dynamics that many native plants rely on, and they shade out and outcompete other species, leading to a loss of plant diversity and altering the structure of the dune ecosystem.

8.1.3. The removal of INNS should be carried out in the short and medium term, with the aim of completely eradicating them from the dunes. In the longer term, ongoing monitoring is essential, with any new growth promptly removed before the species can take hold again.

8.1.4. See Table 10 for potential scrub/INNS removal methods and how appropriate they are in this area.

Table 10: Potential scrub/INNS removal methods

Management Type	Advantages	Constraints	Suitable course of action for the site
Heavy plant	Fast for large areas of invasives Effective at removing large root systems Invasives less likely to grow back Less physically demanding	Requires good site access for machinery Limited by steep slopes Not suitable for sensitive areas – may damage good surrounding habitat Expensive – machinery and operative	No – access is too steep
Small plant	Fast removal of above ground plant material Effective at weakening persistent species Minimal set up required Ideal for narrow access	Limited by very steep slopes May damage surrounding vegetation (but more able to select than heavy machinery) Require equipment and trained operative Risk of regrowth	Yes – the area is small, brush cutters would be ideal, particularly in the sea buckthorn area.
Hand digging	Very precise Minimal impact on surrounding vegetation Minimal set up required	Labour intensive Slow progress – can lead to disheartened volunteers Risk of re-growth	Yes – The area is relatively small, and access is easiest by foot.
Herbicide Treatment	Can treat inaccessible areas Effective for persistent species	Expensive machinery and operative Risk of poisoning non-target animals and plants if not	Yes – if there are the funds this is an option as a last resort. As

Management Type	Advantages	Constraints	Suitable course of action for the site
	If done correctly (i.e. weed wipe, spot spraying) reduces off-target damage to other dune vegetation. Best used when infestations are localised, preventing the species from forming dense thickets. Less physically demanding	applied carefully. Timing is restricted to late summer to early autumn due to high leaf area and good herbicide uptake. Chemical use may be limited by site sensitivity, proximity to water, other legal restrictions. Requires careful handling and legal compliance Will need a trained professional to carry out. May need repeat applications Not popular with the public	discussed in Section 7.6.6
Cutting back plants to prevent seed dispersal	Can remove a large amount of vegetation quickly Less physically demanding than removing roots	Works for some species better than others	No – The invasive species on Mawgan Porth use rhizomes more than seeds to disperse so would not be effective
Grazing	Good for large areas Can reach rough terrain Can create habitat diversity Low cost compared to machinery	Selective feeding may leave scrub/ invasives Risk of over grazing / compaction The animals need to be looked after Fencing may be required	No – the area is too small to support more than one animal and it would need fencing.

8.1.5. The use of herbicides within dune systems should be considered only as a last resort for the control of invasive non-native species where there is a clear ecological justification. Alternative management approaches should be considered first, and herbicide should only be used where non-chemical methods are unlikely to provide effective control, would result in greater ecological damage, or are not realistically achievable due to site constraints, available resources or the scale of the infestation.

8.1.6. Where herbicide use is deemed necessary, application should be undertaken by trained and certified operators using the minimum quantity required to achieve the management objective. Herbicides should be applied in a highly targeted manner, for example through stump treatment, weed wiping or spot application to regrowth, rather than through broad-scale spraying. This helps minimise impacts on

nontarget species, reduces damage to surrounding dune vegetation and supports the long-term restoration of naturally functioning dune habitats.

8.1.7. After removing, disposal is an important part of the process, see Table 11 for disposal methods and suitability for Mawgan Porth.

Table 11: Disposal of Invasive Species

Disposal type	Advantages	Constraints	Suitable course of action for the site
Burying INNS (with permit)	Allows on-site disposal Suitable for rhizomatous plant material (Japanese Knotweed)	Requires and environmental permit. Conditions of permit must be followed. Not suitable for sensitive habitats without permission	No – not enough space on site to bury
Burying INNS without permission	Cost effective Avoids need for permit	Must comply with RPS178 conditions Only allowed on land of low habitat value (Sand dunes are not considered low value)	No – there is not enough space
Burning INNS on site	Reduces volume of waste Effective for killing plant material so regrowth doesn't occur	Requires a D7 exemption Must comply with local byelaws Poor air quality for nearby neighbours	No – too close to neighbours
Composting	Low cost On site disposal	Not suitable for some INNS as some fragments may survive composting – however this is not considered an issue for the species at Mawgan Porth.	Yes – for small scale disposal only. At back of dunes in scrub habitat - monitoring for re-growth of arisings is required.
Off-site disposal (licenced waste carrier)	Most secure and compliant disposal method Suitable for contaminated soil and plant material Full audit trail via waste transfer notes	Requires use of a licensed waste carrier Waste must be taken to an authorised landfill or disposal site. Higher cost	Yes – suitable for large scale disposal

* Never chip invasive species, many of them can grow from small pieces

8.1.8. At the time of writing there are no plans in place to facilitate the removal of this from site and so the

vegetation is being stockpiled after removal see Figure 24.

8.1.9. As Mawgan Porth is a relatively small dune system, with properties immediately adjacent, it is not suitable to bury/burn material on site. Action such as this would need to be undertaken using the required waste exemptions.

8.1.10. Removal via a licenced waste contractor is the most suitable course of action especially if large quantities of waste are envisaged, but also has a cost associated.

8.2. Planting of Marram and other salt tolerant plants

8.2.1. The planting of marram and other salt tolerant plants may be required in the medium term in areas where INNS removal has been successful, and also in the future if erosion should become an issue, perhaps due to a scarp being created during a storm and stabilisation may be required. Establishing vegetation in this area helps reduce erosion, enhances habitat quality and promotes dune resilience.

8.2.2. In areas where marram is to be used to stabilise sand, planting should be undertaken during the spring or autumn growing season see Table 12 For advice on planting. Then monitoring of this area should be conducted in particular noting as to whether other species colonise. If after two to three years it is still solely marram, the planting of other salt tolerant species is advised.

8.2.3. When it comes to sourcing marram, it is always best if it can be harvested from an area nearby where it is abundant. This is because the grass will be suited to the conditions, it helps to continue the particular genetics of the grass in the area, and it is also sustainable and cost effective. The best time to divide mature marram grass clumps is during late spring to early summer or in early autumn, when milder conditions support root recovery and avoid the stress of frost or flowering.

8.2.4. It is not always possible, to harvest marram from site if the area to be planted is large and requires more plants than can be harvested. In that case it can be sourced in two ways. One option is to work with the National Wildflower Centre at the Eden Project, who are able to grow marram grass from seed collected directly from the site. This guarantees that any planted material matches the local genetic stock. However, this approach requires a significant lead-in period to collect seed, propagate plants and grow them to a suitable planting size, and it is typically more expensive than purchasing commercially available stock. Despite this, it provides the strongest ecological justification and long-term benefit to the dune system.

8.2.5. The other option is to source marram grass from a reputable supplier specialising in UK native species. This is a quicker and often more cost-effective option than commissioning propagation from local collected seed. These nurseries generally provide marram of broad UK provenance, suitable for dune restoration and compliant with native species guidelines. While this does not provide the same level of genetic fidelity as using seed collected directly from Mawgan Porth, it still ensures that planting stock is UK origin and appropriate for coastal environments. This approach is therefore well suited to projects where time or budget constraints limit the ability to grow plants from site specific seed.



Figure 31: An example of marram transplanting from local source to fill in an area at Marazion in June 2025

Table 12:Marram planting

Action	Timing	Method
Harvesting marram – to be done if there is an area of marram grass that is plentiful and close to the location	Planting to be undertaking immediately after harvesting. Optimal time for this is late spring/early summer or early autumn, to avoid extreme temperatures or flowering time.	Plants selected for removal should be green and young. Plants may be removed by using a spade, the objective is to loosen the root system within the sand. This can be achieved by carefully inserting the spade alongside the target roots and moving it back and forth to loosen the sand, allowing the plant to be pulled out by hand. Removed plants should retain as much healthy root material as possible.
Source marram grass of local genetic provenance	Lead-in period required (seed collection + several months' propagation time.)	Work with the National Wildflower Centre (Eden Project) to grow marram from seed collected at Mawgan Porth. This is a more expensive option but ensures the planted marram is genetically matched to the site and maintains the integrity of local dune flora.
Source marram grass from a UK native-species specialist supplier	Can be ordered and delivered within standard nursery lead times	Purchase marram from a supplier specialising in UK-native coastal species. This is generally faster and more affordable than bespoke propagation, though it does not guarantee precise local genetic provenance. Plants will, however, be UK-origin and suitable for dune restoration.

Planting Marram	Marram grass may be planted at any time of year, but preferably September to April. March is the most favourable planting month, as there are less environmental impacts to contend with such as storms, frost and sea swells.	Holes or slots to be dug roughly 30 – 50 cm apart, loosely in a checkerboard pattern to ensure good coverage, while avoiding an overly regular planting arrangement. Divide the marram grass into small bundles for planting. Plant the marram grass in the sand so it sits as deep as it was previously (or deeper), helping to prevent roots from being exposed by sand movement before the plant is established.
Shielding marram from wind	At the same time as planting.	If the marram is planted in a windblown area the new plants will show signs of stress and planting may fail, so some kind of shielding may be necessary, see Section 8.10 for shielding and fencing techniques pros and cons.

8.2.6. Similarly, following scrub and invasive species control, it is recommended to monitor the cleared areas. Assessment should focus on natural recolonisation and recovery of dune vegetation which is preferable to active planting. Allowing natural regeneration supports native biodiversity and reduces management intervention. However, if after two to three years no species are found to be growing in the area, the planting of marram and other salt tolerant plants is recommended to enhance the botanical diversity within the dunes. See Table 13 for suitable species.

8.2.7. In the medium and long term, managed realignment of the road and presumably the buildings that line the road will leave space for the dune system to migrate to. Debris should be cleared completely. This allows natural dune regeneration in this area, and will promote coastal resilience, rather than constrained management around infrastructure.

8.2.8. In this case, as above, natural recolonisation is preferable, but monitoring should flag up any areas where stabilisation is critical, and the planting of marram and salt tolerant plants may be necessary in these areas.

Table 13: Suitable species for planting into the dunes.

Species	Scientific Name
Sand sedge	*Carex arenaria*
Sea bindweed	*Calystegia soldanella*
Sea holly	*Erygium maritimum*
Sea rocket	*Cakile maritima*
Sea spurge	*Euphorbia paralias*

8.2.9. These should be purchased from specialist native plant suppliers such as Naturescape British Wildflowers | Seeds. Bulbs & Plants | Naturescape



Figure 32: Example of marram planting and chestnut paling



Figure 33: Sea holly - salt tolerant species

8.3. Access

8.3.1. Table 14 outlines a range of management measures used to manage and direct public access in sand-dune systems, helping to protect sensitive habitats from trampling and erosion in some areas, but also help to fragment other areas. Many of these techniques can also be applied to shield newly planted vegetation or to trap and stabilise highly mobile sand, supporting dune restoration and recovery. The accompanying

table summarises each method, describing its main advantages and disadvantages, and indicates whether it is suitable for access management, planting protection, or sand-retention objectives.

Table 14: Types of access management, new planting shielding and sand retention.

Method	Pros	Cons	Suitable for access	Sheild new planting	Sand retention
Chestnut Paling	* Excellent sand-trapping ability * Visually acceptable / traditional coastal appearance * Durable and biodegradable * Effective at forming embryo dunes * Doubles as an access-control measure	* Higher cost than other materials * Needs maintenance after storms * Can become buried, needing re-setting * Potential trip hazards if damaged * leaves behind metal when degrades	Yes	Yes	Yes
Plastic / geotextile netting	* Low cost * Lightweight and easy to install, good for temporary works * Reasonably effective at sand capture	* Significant microplastic and debris risk * Short lifespan * Wildlife entanglement risk * Can look untidy when weathered	Yes	Yes	Yes
Recycled Christmas trees	* Extremely effective at trapping sand * Fully biodegradable * Quick to create embryo dunes * Good community involvement activity	* Short-lived (1–2 years) * Requires large, clean supply – only available at certain times of year * Needs anchoring to prevent blow-around * Can look messy	No	Yes	Yes
Bark mulch / brash / dune matting	* Reduces surface wind speed * Helps stabilise blowouts * Creates microsites for germination	* Can wash away in storms * Adds nutrients (undesirable in dune systems) * May import weed seeds * Provides minimal physical access control	No	Yes	Yes
Post and Rope Barriers	* Excellent at directing public access * Cheap and quick to install * Low visual impact	* No sand-trapping function * People sometimes step over * Ropes sag / vandalism risk	Yes	Yes	No

Method	Pros	Cons	Suitable for access	Sheild new planting	Sand retention
	* Flexible and easily moved				
Straw	* Reduces wind erosion effectively * Very cheap * Fully biodegradable * Useful for emergency stabilisation	* Very short lifespan * Introduces nutrients * High weed-seed risk * Can blow away without secure staking * not typically used in the UK	No	No	Yes
Boardwalks**	* Extremely effective at guiding access * Protects vegetation completely * Accessible (pushchairs, wheelchairs) * Long lifespan	* Expensive * Requires engineering * May become buried in mobile dunes * Can become hazardous if not kept in good condition * Can't move the path. * Visually prominent	Yes	No	No
Wire fencing (grazing enclosures)	* Allow control grazing. Protects planting from trampling Long lasting compared with rope	* Can appear visually intrusive * Expensive	Yes	Yes for protection but not wind	No

8.3.2. NOTE**: Boardwalks are a widely used access-management tool in sand-dune systems, providing a clear, durable route that helps keep visitors away from sensitive vegetation and erosion-prone areas. They are particularly effective where footfall is high, as they reduce trampling pressure and help stabilise adjacent dune surfaces by concentrating movement in a single corridor. However, boardwalks also have limitations: in highly mobile dune systems they can become buried by sand, undermined, or structurally damaged, leading to frequent repairs and high long-term maintenance costs. Their fixed alignment can also become unsuitable over time as dune morphology naturally shifts, meaning paths may need redesigning or relocating. Although they deliver strong access control benefits, these drawbacks mean that boardwalks are most useful in locations where visitor pressure is significant and dune movement is moderate enough to avoid continual intervention.



Figure 34: Recycled Christmas trees used to trap sand at Constantine Bay

8.4. Signage

8.4.1. Clear, well-placed signage is an important tool for gaining public support for dune-management work, helping visitors understand why certain interventions are happening and encouraging responsible behaviour. Good signs can guide people onto designated paths, remind dog walkers to pick up after their pets, and explain the purpose of activities such as scrub clearance, fencing or temporary access restrictions. By providing simple, positive messages, signage helps build trust and reduces conflict, making visitors more likely to cooperate with conservation efforts. Signs can vary widely in cost—from durable, professionally printed interpretation boards to lower-cost options such as laminated A4 signs used during short-term works. Using a mixture of permanent and temporary signs gives managers flexibility to communicate both long-term messages and timely updates about ongoing habitat restoration.

Ideas for signs

8.4.2. Install interpretive signage explaining:

- Why dunes move
- Why invasive species are removed
- What special species may be living here
- Why fencing is necessary
- Role of marram grass
- The history of the area
- Trails through and around the dunes

8.4.3. Use QR codes linking to:

- Dune management updates
- Volunteer opportunities
- Biodiversity monitoring results
- South West Coastal Monitoring data

8.4.4. Another way to increase awareness and understanding of the dunes is to work with Mawgan Porth Dune Group to deliver seasonal guided walks.

8.4.5. See Table 15 for examples of signs that can be used on the dunes:

Table 15: Examples of signs



Figure 35: Example of small disk explaining why access is restricted



Figure 36: Example of small disk sign showing the way through the scrub at Widemouth



Figure 37: Simple cost-effective signpost



Figure 38: Example of a sign highlighting a special species



Figure 39: Example of interpretation board – history trail at Summerleaze, Bude



Figure 40: Example of rubbing trail at Par Sands



Figure 41: Example of interpretation board at Widemouth Bay



Figure 42: Example of interpretation board at Par Sands

8.5. Overtly Mobile Sediment

8.5.1. It should be mentioned here that overtly mobile sediment is not currently an issue for these dunes, which are mostly over stabilised, this would only really become an issue if scrub/ INNS removal was to be undertaken all at once. Care and monitoring should be undertaken if / when removing scrub adjacent to the road or properties. Management of overtly mobile sediment is the responsibility of the landowner, and efforts should be taken to address areas where wind-blown sand begins to affect road access or adjacent properties.

Mid-Term Actions (2 - 5 years)

- Increase monitoring of known problem areas, particularly after storm events or periods of strong onshore winds.
- Remove sand from critical road access points where safety is compromised.
- Install temporary brushwood or sand fencing to trap wind-blown sediment.
- Construct temporary containment bunds where immediate protection of adjacent properties is required.
- Undertake targeted marram planting in small, priority areas to stabilise exposed sand.
- Maintain and repair sand fencing and bunds in the appropriate areas to ensure continued effectiveness.
- Review monitoring data to identify recurring hotspots and refine intervention locations.
- Engage with landowners to coordinate management efforts and reduce isolated interventions.

8.5.2. Long-Term Actions

- Allow shoreline evolution and sediment mobility to proceed naturally Support natural dune development and sediment accretion processes through ongoing soft management.
- Facilitate adaptation of infrastructure and land use to accommodate managed realignment of the road.
- Reduce reliance on reactive sand clearance by promoting resilient dune systems.
- Maintain adaptive management, reviewing actions in response to climate change and evolving coastal dynamics

8.6. Biodiversity Net Gain

8.6.1. The success of the above management techniques will be able to be measured by Biodiversity Net Gain. As mentioned in section 5.2.2 opportunities for BNG include the removal of dense stands of Japanese rose and the implementation of scrub management within the dune polygons. Along with the introduction of appropriate salt-tolerant species which would increase species diversity, improve habitat condition, and enhance long-term and ultimately improve the condition of the habitat, thereby resulting in a measurable increase in the BNG score.

9. Monitoring Plan

Overview

9.1.1. Monitoring is an essential component of dune management at Mawgan Porth, enabling the landowner and volunteer groups to understand how the system is responding to invasive species removal, changes in vegetation cover, visitor access and coastal processes. At present, there is no dedicated funding for structured monitoring. As such, this plan outlines a pragmatic, low-cost approach relying primarily on volunteers, the landowner, and free external datasets. If future funding opportunities, grants, or partnerships arise, the monitoring programme could be enhanced or expanded to include more detailed ecological and geomorphological assessments.

9.1.2. The following monitoring activities are recommended:

Invasive Non-Native Species (INNS) Monitoring

- Undertake simple walkover surveys **twice a year** (spring and late summer).
- Volunteers or the landowner can record locations of Japanese rose and sea buckthorn using printed maps, mobile photos or free GPS apps.
- Early detection of regrowth will help direct volunteer work parties.
- If funding becomes available, INNS mapping could be expanded and digitised

Monitoring Vegetation Recovery in Cleared Areas

- Use fixed-point photographs every six months to track natural regeneration.
- Record whether bare sand is colonised by pioneer species (e.g., marram, sand couch) or whether scrub is returning.
- If areas remain bare after two years, supplementary planting may be required when resources allow.
- Future grants could support structured vegetation surveys or planting programmes

Path and Visitor Access Monitoring

- Check designated paths and popular desire lines once per summer season.
- Note any new trampling, widening of routes or vegetation damage.
- Findings can guide small, low-cost interventions such as temporary signage or minor path adjustments.
- With funding, more durable access controls (e.g., chestnut paling) could be introduced if necessary.

Monitoring of Mobile Sand

9.1.3. Currently the dune system is over stabilised, scrub removal may increase mobility in future in which case

the following should be monitored:

- Volunteers should complete simple walkovers twice a year and after major storms.
- Record sand drift onto paths, roads or properties and any blowouts forming.
- If funds become available, temporary fencing, brushwood, or planting could be used more proactively.

Signage Effectiveness and Condition

9.1.4. Installation of new sign will depend on available resources, when signs are installed inspections should cover the following:

- Inspect signs annually, ideally before peak holiday season.
- Check for fading, damage, missing signs, or signs that no longer meet visitor needs.
- Replacement or installation of new signs will depend on available resources.
- Grant funding could support more durable, interpretation signs, smaller funds could support the small disk information signs as in Figure 36 or Figure 37.

Professional Ecological Survey (Funding Dependent)

9.1.5. A full dune condition assessment by a qualified ecologist should ideally be completed every five years.

- This would include vegetation composition, INNS distribution and scrub cover.
- At present this is not possible without finding but monitoring evidence collected by volunteers strengthen future funding applications.

South West Coastal Monitoring Programme (SWCM)

- The SWCM provides long term, standardised coastal monitoring for the South West, including biannual topographic beach surveys, LiDAR flights at intervals, and periodic aerial imagery, all freely available for Mawgan Porth.
- Since 2007, SWCM has undertaken repeated surveys at Mawgan Porth, including 38 topographic surveys and multiple LiDAR datasets that track beach levels, dune toe position and volumetric change.
- Their interactive dashboard also allows users to view historic profile change and generate beach unit reports.
- These datasets should be reviewed at least every five years alongside the ecological survey to support adaptive dune management, particularly in the context of storm impacts, beach recovery and long term dune erosion.

9.1.6. See Table 16 for a summary of this information.

Table 16: Short Term, Medium Term and Long Term Monitoring

Timescale	Monitoring focus	Activities	Frequency	Lead/Responsibility
Short term	Invasive Non-Native Species (INNS)	Inspect, map and record sea buckthorn and Japanese rose; remove priority stands; remove regrowth	As much as possible	Volunteers / Landowner
	Cleared Areas	Monitor natural recolonisation, vegetation establishment, photo points	Yearly	Ecologist (if funded) /Landowner
	Path & visitor access	Check desire lines; note trampling; suggest low-cost adjustments	Annually (summer)	Landowner with volunteer help
	Mobile sand/erosion risk	Walkovers; note sand drift; after storms	Twice annually + storms	Landowner with volunteer help
Medium Term	INNS control	Targeted eradication of regrowth; annual mapping review If road realignment has occurred include new area for INNS monitoring and management.	Annually	Landowner
	Vegetation and Dune Recovery	Evaluate regeneration; introduce marram/other species if recovery limited after 2-3 years; monitor cover and diversity	Annually	Landowner
	Access & Habitat Response	Review effectiveness of access management; refine paths if needed If road realignment has occurred monitor new area for dune species	Annually	Landowner
	Sand movement & risk	Assess sediment mobility; ensure infrastructure risk remains acceptable	Ongoing	Landowner
Long Term	INNS Eradication	Maintain low-level surveillance; rapid response to any re-establishment	As required	Landowner
	Ecological Review	Ecologist site review; assess habitat condition, species composition and dune resilience	Every 5 – 10 years	Ecologist / Landowner
	Geomorphological Trends	Review long-term topographic data to identify shoreline/dune changes.	Ongoing / via monitoring programme	South West Regional Monitoring Programmer

Timescale	Monitoring focus	Activities	Frequency	Lead/Responsibility
	Adaptive Management	Review management strategy; ensure alignment with SMP & policy; adjust interventions	Every 5 – 10 years	Landowner and Ecologist

9.2. Funding

9.2.1. At the time of writing a Community Engagement Officer organises work parties and engages volunteers at Mawgan Porth, along with procuring hand tools for the control and removal of invasive species, this has been funded by the Making Space for Sand project.

9.2.2. As the area is under a No Active Intervention policy there is unlikely to be any public funding for flood or erosion management, so in the future other sources of funding will be required

9.2.3. Finding community and environmental grants is easiest when you use a combination of databases, government services, environmental organisations and corporate or charitable funders. Helpful places to look include:

9.2.4. Grant search databases

- GrantFinder, Grants Online, and Funds Online – large databases covering national and local funding.
- Charity Excellence Framework – free "Funder Finder" tool.
- 360GrantNav – lets you explore UK funder data.
- My Funding Central – for smaller charities and community groups.

9.2.5. Government and local authority portals

- Find a Grant (GOV.UK) – official government funding search.
- Local councils – often run "Community Chest," climate funds, community ownership funds, or small local grant schemes.
- DEFRA – supports environmental and biodiversity initiatives.
- Landfill Communities Fund – delivered through bodies like Enovert for local green projects.

9.2.6. Environmental organisations and trusts

- The Wildlife Trusts – share opportunities for community nature work.
- Groundwork – grants and support for environmental improvements.
- National Lottery Community Fund – major funder of community led projects.
- Environmental Funders Network (EFN) – connects to environmental philanthropic funders.

9.2.7. Corporate and foundation schemes

- Aviva Community Fund – resilience and climate related projects.

- Veolia Environmental Trust – biodiversity and green space improvements.
- Tesco Stronger Starts and Asda Foundation – small local community grants.
- Naturesave Trust – conservation and sustainability funding.

9.2.8. Energy and sustainability specific funding

- Community Energy Fund – renewable energy projects.
- Salix Finance – public sector decarbonisation.
- Ashden Trust – climate and sustainable development focus.

9.2.9. Tips for searching

- Use keywords like “biodiversity,” “climate action,” “sustainability,” “green space,” “community garden.”
- Contact local CVS (Council for Voluntary Service) for tailored advice.
- Check local supermarkets – many run small community grant schemes

10. Pictogram

KEY DUNE SPECIES



Daucus carota - Wild carrot a perennial with leaves divided into narrow leaflets, and dense umbels (umbrella-like) flowers which initially look reddish, but bloom into white flowers from June to September.



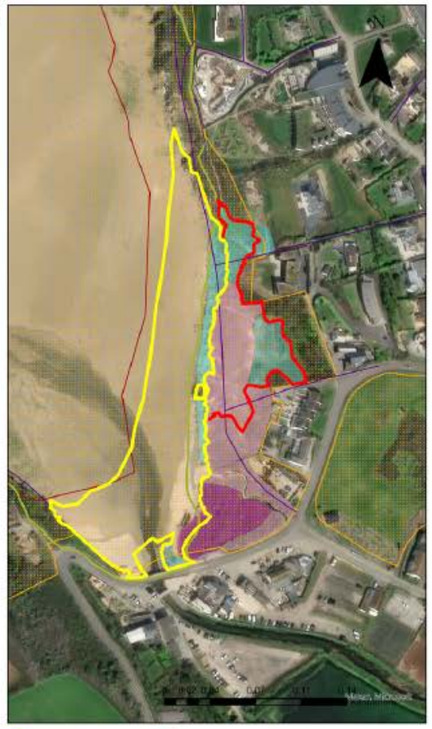
Euphorbia paralias - Sea spurge, upright stems up to 60cm with fleshy, grey-green leaves, cup-shaped greeny-yellow flowers June to October. Their milky white sap is toxic.



Ammophila arenaria - Marram grass, dense, grey/green spiky tufts of rolled long thin leaves, flowers July and August, it's fibrous matted roots help to bind the sand and stabilise the dunes.



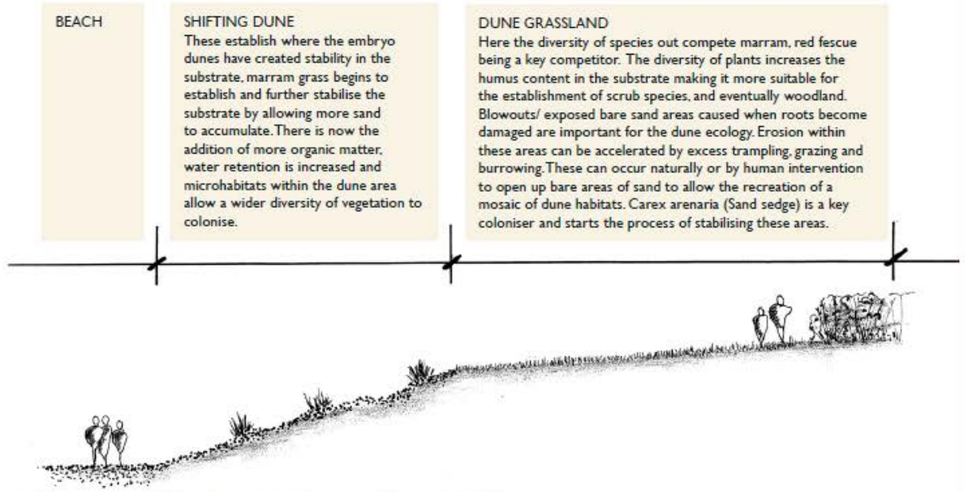
Calystegia soldanella - Sea bindweed is a trailing, rhizomatous perennial up to 1m across but only 10cm tall. Succulent stems, kidney-shaped leaves, pink upward-facing, trumpet-shaped flowers with five white stripes, in summer.





Anthyllis vulneraria - Kidney vetch is recognisable as clusters of small, yellow flowers from June to September sitting atop little woolly cushions. Leaves are divided into narrow leaflets that are silky.

Photographic credits - Cornwall Environmental Consultants : Dr Sally Lucker - Budding Nature : Cornwall Wildlife Trust



OPPORTUNITIES AND CONSTRAINTS

1. The dunes are within the Mawgan Porth to Newquay County Wildlife Site (CWS) designated for its vegetated sea cliffs and sand dune habitats.
2. **Scrub control** – Scrub, Hippopheae rhamnoides (Sea buckthorn) and Tamarix (Tamerisk) are encroaching into the dune area from the surrounding land outside the site area. Efforts should be made to control the spread of these plants, to protect the sensitive dune ecosystem.
3. **Invasive species** – - Currently Japanese rose is beginning to dominate particular within polygon 115. As a plant listed under Schedule 9 of the Wildlife and Countryside Act 1981 as invasive species the proposed treatment will be as follows:
   - Rosa rugosa (Japanese Rose) – small stands can be removed by hand, with larger areas treated with a deciduous specific herbicide which will target this plant without being detrimental to the surrounding grass species. Once plants have died back, they need to remain for six weeks, and can then be removed for commercial composting.

   Other non native invasive species which are not listed under Schedule 9 but need to be removed or managed where they are found on the boundaries of the site are:
   - Centranthus ruber (Red Valerian) – removed manually by hand
   - Tamarix (Tamerisk) can be manually removed by hand or mechanically
   - Hippophaea rhamnoides - Sea buckthorn – can be manually removed by hand or mechanically, and the stumps treated with herbicide to prevent regrowth within a few hours of the main trunk being cut.

UNWANTED PLANTS IN THE DUNE ECOSYSTEM



Hippophaea rhamnoides - Sea buckthorn a hardy, spiny, large deciduous shrub. It has narrow, willow-like, silvery leaves and thorny shoots, and very small, yellow-green flowers in racemes during spring, which are followed by small, bright orange berries on female plants.



Rosa rugosa - Japanese rose, listed on Schedule 9 of the UK Wildlife & Countryside Act as an invasive species. A suckering shrub which can develop new plants from its roots, as well as producing up to 800 seeds/year. Creates dense spiney thickets up to 1m tall smothering native dune vegetation.



Centranthus ruber - Red valerian, is a non native woody-based perennial, up to 1m in height with grey-green leaves and dense clusters of crimson, pink or white, slightly fragrant flowers from late spring to autumn.

Other unwanted speices on the dunes include Crocosmia x crocosmiiflors - Montbretia
Allium triquetrum - Three cornered garlic

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MAWGAN PORTH Making Space for Sand

11. References

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12. List of Appendices

A. Schedule 9 Wildlife and Countryside Act 1981 as amended

B. Condition Assessment Sheets

A. Schedule 9 Wildlife and Countryside Act 1981 as amended

PART II

PLANTS

Common name	***Scientific name***
[F18Alexanders, Perfoliate]	[F18Smyrnium perfoliatum]
[F18Algae, Red]	[F18Grateloupia luxurians]
[F18Archangel, Variegated Yellow]	[F18Lamiastrum galeobdolon subsp. argentatum]
[F18Azalea, Yellow]	[F18Rhododendron luteum]
[F19[F18Balsam, Himalayan]]	[F19[F18Impatiens glandulifera]]
[F18Cotoneaster]	[F18Cotoneaster horizontalis]
[F18Cotoneaster, Entire-leaved]	[F18Cotoneaster integrifolius]
[F18Cotoneaster, Himalayan]	[F18Cotoneaster simonsii]
[F18Cotoneaster, Hollyberry]	[F18Cotoneaster bullatus]
[F18Cotoneaster, Small-leaved]	[F18Cotoneaster microphyllus]
[F18Creeper, False Virginia]	[F18Parthenocissus inserta]
[F18Creeper, Virginia]	[F18Parthenocissus quinquefolia]
[F18Dewplant, Purple]	[F18Disphyma crassifolium]
[F19[F18Fanwort]]	*[F19[F18Cabomba caroliniana]]*
[F18Fern, Water]	*[F18Azolla filiculoides]*
[F18Fig, Hottentot]	*[F18Carpobrotus edulis]*
[F18Garlic, Three-cornered]	[F18Allium triquetrum]
[F19Hogweed, Giant]	[F19Heracleum mantegazzianum]
[F19[F18Hyacinth, water]]	*[F19[F18Eichhornia crassipes]]*
[F20Kelp, Giant]	[F20Macrocystis angustifolia]
[F20Kelp, Giant]	[F20Macrocystis integrifolia]
[F20Kelp, Giant]	[F20Macrocystis laevis]
Kelp, Giant	Macrocystis pyrifera

***Changes to legislation:** Wildlife and Countryside Act 1981, SCHEDULE 9 is up to date with all changes known to be in force on or before 06 May 2026. There are changes that may be brought into force at a future date. Changes that have been made appear in the content and are referenced with annotations. (See end of Document for details) View outstanding changes*

[F20Kelp, Japanese**]**	**[**F20Laminaria japonica**]**
[F18Knotweed, Giant**]**	**[**F18Fallopia sachalinensis**]**
[F18Knotweed, Hybrid**]**	**[**F18Fallopia japonica x Fallopia sachalinensis
[F18Knotweed, Japanese**]**	**[**F18Fallopia japonica**]**
[F21Knotweed, Japanese**]**	**[**F21Polygonum cuspidatum**]**
[F18Leek, Few-flowered**]**	***[**F18 Allium paradoxum**]***
[F18Lettuce, water**]**	***[**F18 Pistia stratiotes**]***
[F18Montbretia**]**	**[**F18Crocosmia x crocosmiiflora**]**
[F19**[**F18Parrot's-feather**]]**	***[**F19**[**F18 Myriophyllum aquaticum**]]***
[F19**[**F18Pennywort, Floating**]]**	***[**F19**[**F18 Hydrocotyle ranunculoides**]]***
[F18Potato, Duck**]**	**[**F18Sagittaria latifolia**]**
[F19**[**F18Primrose, Floating Water**]]**	**[**F19**[**F18Ludwigia peploides**]]**
[F19**[**F18Primrose, Water**]]**	**[**F19**[**F18Ludwigia grandiflora**]]**
[F18Primrose, Water**]**	**[**F18Ludwigia uruguayensis**]**
[F18Rhododendron**]**	**[**F18Rhododendron ponticum**]**
[F18Rhododendron**]**	**[**F18Rhododendron ponticum x Rhododendron maximum**]**
[F19**[**F18Rhubarb, Giant**]]**	**[**F19**[**F18Gunnera tinctoria**]]**
[F18Rose, Japanese**]**	**[**F18Rosa rugosa**]**
F22	**F22**
. . .	. . .
[F18Seafingers, Green**]**	**[**F18Codium fragile**]**
[F21Seafingers, Green**]**	**[**F21Codium fragile tomentosoides**]**
[F20Seaweed, Californian Red**]**	**[**F20Pikea californica**]**
[F20Seaweed, Hooked Asparagus**]**	**[**F20Asparagopsis armata**]**
Seaweed, Japanese	Sargassum muticum
[F20Seaweeds, Laver (except native species)**]**	**[**F20Porphyra spp except -**]**
	[F20p. amethystea**]**
	[F20p. leucosticta**]**
	[F20p. linearis**]**
	[F20p. miniata**]**
	[F20p. purpurea**]**
	[F20p. umbilicalis**]**

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[F18Stonecrop, Australian Swamp (otherwise known as New Zealand Pygmyweed)**]**	**[**F18Crassula helmsii**]**
[F20Wakame**]**	**[**F20Undaria pinnatifida**]**
[F19**[**F18Waterweed, Curly**]]**	***[**F19**[**F18*Lagarosiphon major***]]***
[F23**[**F18Waterweeds**]][**F23Waterweeds (except Nuttall's Waterweed)**]**	**[**F23**[**F18All species of the genus Elodea.**]][**F23All species of the genus Elodea, except Elodea nuttallii**]**

Textual Amendments

F18 Entries in Sch. 9 Pt. 2 added (E.W.) (6.4.2010) by The Wildlife and Countryside Act 1981 (Variation of Schedule 9) (England and Wales) Order 2010 (S.I. 2010/609), **art. 2(4)**

F19 Words in Sch. 9 Pt. 2 omitted (E.W.) (1.12.2019) by virtue of The Invasive Alien Species (Enforcement and Permitting) Order 2019 (S.I. 2019/527), art. 1(1), **Sch. 4 para. 1(3)(b)(i)** (with art. 1(2)(4)) (as amended by S.I. 2019/1213, regs. 1, **2(2)**)

F20 Words in Sch. 9 Pt. 2 added (17.3.1992) by S.I. 1992/320, **art. 3**

F21 Entries in Sch. 9 Pt. 2 removed (E.W.) (6.4.2010) by virtue of The Wildlife and Countryside Act 1981 (Variation of Schedule 9) (England and Wales) Order 2010 (S.I. 2010/609), **art. 2(5)**

F22 Words in Sch. 9 Pt. 2 omitted (E.) (4.5.2021) by virtue of The Wildlife and Countryside Act 1981 (Variation of Schedule 9) (England) Order 2021 (S.I. 2021/236), arts. 1(b), **2(3)**; and words in Sch. 9 Pt. 2 omitted (W.) (10.9.2025) by virtue of Legislation (Procedure, Publication and Repeals) (Wales) Act 2025 (asc 3), s. 9(2)(d), **Sch. 1 para. 53(b)**

F23 Words in Sch. 9 Pt. 2 substituted (E.W.) (1.12.2019) by The Invasive Alien Species (Enforcement and Permitting) Order 2019 (S.I. 2019/527), art. 1(1), **Sch. 4 para. 1(3)(b)(ii)** (with art. 1(2)(4)) (as amended by S.I. 2019/1213, regs. 1, **2(2)**)

Note. The common name or names given in the first column of this Schedule are included by way of guidance only; in the event of any dispute or proceedings, the common name or names shall not be taken into account.**]]**

B. Condition Assessment Sheet

Condition Sheet: COASTAL Habitat Type

UK Habitat Classification (UKHab) Habitat Types

Sparsely vegetated land - Coastal sand dunes
Sparsely vegetated land - Coastal vegetated shingle
Sparsely vegetated land - Maritime cliff and slopes

Habitat Description

See UKHab

On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	

Condition Assessment Criteria		**Habitat parcel reference**										
		Grid reference										
		7230	7299	7231	7228	7227	7232	7226	7148	7149		
		Criterion passed (Yes or No)										**Notes (such as justification)**
A	The parcel represents a good example of its specific habitat type, with characteristic indicator species present in the typical successional stages, transitions and or mosaics, at sufficient cover and frequency to be a good example.[1] **Note - this criterion is essential for achieving Good condition.**	N	N	N	N	N	Y	N	Y	Y		
B	Vegetation structure (sward height variation, zonation) is varied and not uniform.	Y	N	N	Y	Y	N	N	Y	Y		
C	Naturally open ground or bare surfaces are present as part of a sequence of colonisation and succession.	Y	N	N	N	N	Y	N	Y	Y		
D	Coastal processes needed to support the habitat are functional and are not modified by hard engineering or other forms of negative intervention.	N	N	N	N	N	N	N	N	N		
E	The landform reflects the interaction of coastal processes and geology, and there is a varied topography present supporting the relevant range of habitat types.	N	Y	N	Y	Y	Y	Y	Y	Y		
F	There is an absence of invasive non-native species[2] (as listed on Schedule 9 of WCA[3]). Combined cover of species indicative of suboptimal condition[4] and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area.	N	N	N	N	N	Y	Y	Y	Y		
G	Any scrub (including bramble *Rubus fruticosus* agg.) present accounts for less than 10% of the area within the habitat or bare substrate matrix. Blocks of scrub or woodland, which might be desirable in their own right should be classified and mapped separately.	N	N	N	N	N	Y	N	Y	Y		
H	Water quality and quantity (for example, seasonal fluctuations in dune slacks or seepages on cliff slopes) is sufficient to support the range of water-dependent parts of the habitat.	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Essential criterion achieved (Yes or No)		N	N	N	N	N	Y	N	Y	Y		

Number of criteria passed		3	2	1	3	3	6	3	7	7		
Condition Assessment Result (out of 8 criteria)	**Condition Assessment Score**	**Score Achieved ×/✓**										
Passes 7 or 8 criteria including essential criterion A	Good (3)								x	x		
Passes 5 or 6 criteria; OR Passes 7 criteria excluding essential criterion A	Moderate (2)						x		x			
Passes 4 or fewer criteria	Poor (1)	x	x	x	x	x		x				

Suggested enhancement interventions to improve condition score

Notes

Footnote 1 - Professional judgement should be used alongside the UKHab description.

Footnote 2 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.

Footnote 3 – Wildlife and Countryside Act 1981 (as amended).

Footnote 4 - General coastal species indicative of suboptimal condition: creeping thistle *Cirsium arvense* , spear thistle *Cirsium vulgare* , curled dock *Rumex crispus* , broad-leaved dock *Rumex obtusifolius* , common nettle *Urtica dioica* , bramble, white willow *Salix alba* hybrids, sea buckthorn *Hippophae rhamnoides* (only outside its restricted native range), and non-native garden plants.

Grassland species indicative of suboptimal condition: creeping thistle *Cirsium arvense* , spear thistle *Cirsium vulgare* , curled dock *Rumex crispus* , broad-leaved dock *Rumex obtusifolius* , common nettle *Urtica dioica* , creeping buttercup *Ranunculus repens* , greater plantain *Plantago major* and cow parsley *Anthriscus sylvestris* .

Heathland species indicative of suboptimal condition: bracken *Pteridium aquilinum.*

There may be additional relevant species local to the region and or site.

Condition Sheet: SCRUB Habitat Type

Habitat Types

Heathland and shrub - Blackthorn scrub
Heathland and shrub - Gorse scrub
Heathland and shrub - Hawthorn scrub
Heathland and shrub - Hazel scrub
Heathland and shrub - Mixed scrub
Heathland and shrub - Dunes with sea buckthorn (H2160)
Heathland and shrub - Willow scrub

Habitat Description

For Dunes with sea buckthorn see:	Dunes with sea-buckthorn (Dunes with Hippophae rhamnoides) - Special Areas of Conservation (jncc.gov.uk)
For other scrub types see:	ukhab – UK Habitat Classification

On-site or off-site, site name and location		**Survey date and Surveyor name**	
		Survey reference (if relating to a wider survey)	
Limitations (if applicable)		**Habitat parcel reference**	6784, 6785
		Grid reference	

	Condition Assessment Criteria	**Criterion passed (Yes or No)**		**Notes (such as justification)**
A	The parcel represents a good example of its habitat type - the appearance and composition of the vegetation closely matches its UKHab description (where in its natural range).[1] - At least 80% of scrub is native, - There are at least three native woody species[2], - No single species comprises more than 75% of the cover (except hazel *Corylus avellana* , common juniper *Juniperus communis* , sea buckthorn *Hippophae rhamnoides* (only in its restricted native range), or box *Buxus sempervirens* , which can be up to 100% cover).	N	N	
B	Seedlings, saplings, young shrubs and mature (or ancient or veteran[3]) shrubs are all present.	Y	N	
C	There is an absence of invasive non-native plant species[4] (as listed on Schedule 9 of WCA[5]) and species indicative of suboptimal condition[6] make up less than 5% of ground cover.	N	N	
D	The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.	N	N	
E	There are clearings, glades or rides present within the scrub, providing sheltered edges.	Y	Y	
	Number of criteria passed			

Condition Assessment Result (out of 5 criteria)	**Condition Assessment Score**	**Score Achieved ×/✓**
Passes 5 criteria	Good (3)	
Passes 3 or 4 criteria	Moderate (2)	
Passes 2 or fewer criteria	Poor (1)	

Suggested enhancement interventions to improve condition score

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