

Eastney Beach Habitat Restoration and Management Plan

Supplementary Planning Document

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Appendix B



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Contents

Section 1: Introduction	2
Section 2: What is vegetated shingle?	4
Section 3: Eastney Beach.....	6

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Section 1: Introduction

1.1 Eastney Beach is a designated Local Wildlife Site (LWS) as the beach is home to a large amount of vegetated shingle, which is a priority habitat. The Portsmouth Plan sets out a policy framework to ensure that any impacts to LWS and the habitats they support are properly considered during the planning process.



1.2 The Seafront Masterplan was adopted in April 2013 with ambitious proposals to develop and enhance the seafront. The Masterplan recognises that the vegetated shingle at Eastney Beach supports a wide variety of species and is highly valued by those who use it and by the large number of residents and visitors who visit every day. The area is also identified for a number of development opportunities in the future which, together with others along the seafront, will maximise the potential of the seafront as a whole.



1.3 Beaches along the Seafront are regularly and heavily used by a wide range of residents for a variety of purposes, and the different sections of the Seafront offer a welcome variety of experiences, from the more managed, open, beach west of the Pier, to the more semi-natural, 'wilder' sections further towards Eastney. To continue to be able to provide residents with this diversity of choice and to enhance it, this Plan should be used to clearly define the different areas of provision and management of the different sections of the Seafront.



1.4 These twin aspirations of conserving and enhancing the biodiversity of Eastney Beach and maintaining and

Figure 1: The valuable habitat at Eastney Beach. From the top: Sea Holly, *Eryngium maritimum*, Yellow Horned Poppy *Glaucium flavum* and Sea Beet *Beta vulgaris* subsp. *maritima*.

enhancing diversity and quality of choice are clearly consistent with the Seafront Masterplan and Policy PCS9 'The Seafront' of the Portsmouth Plan. This Restoration and Management Plan will therefore be an essential part of the successful implementation of the Seafront Masterplan.

- 1.5 It is likely that developments in this area identified in the Seafront Masterplan will result in adverse impacts on the LWS and habitats within it unless mitigation measures are used to remove this impact. Developers may well find it difficult to address the impacts that their scheme would cause on an individual basis, particularly in the case of smaller developments. This may be due to the costs involved, the difficulties of co-ordination of a number of smaller projects by different organisations and due to impacts being occurring on land outside the applicant's control.
- 1.6 This management and restoration plan will provide a coherent, strategic approach to this issue. Future development aspirations would be able to link in to this wider strategy to help facilitate the on-going management and restoration of the LWS and thus enable developers to ensure that the impacts of their developments on the vegetated shingle habitat are mitigated and compensated for.
- 1.7 The objectives of this SPD are therefore to ensure that the natural environment of Eastney Beach is preserved for the future whilst also providing mitigation options so that the development identified in the Seafront Masterplan can go ahead. The SPD also ensures the existing and future variety of choice of beach provision for residents is maintained and enhanced. Finally, in line with national planning policy (NPPF paragraph 109), is to enhance the biodiversity value of the site. The biodiversity objectives will broadly be achieved through measures to improve the quality and abundance of the vegetated shingle habitat. A glossary is provided at appendix 1 which explains some of the more technical terms used.



Figure 2: From the left: Sea-Kale *Crambe maritima* and Nottingham Catchfly *Silene nutans*

Section 2: What is vegetated shingle?

- 2.1 Shingle is defined as sediment with particle sizes in the range 2-200 mm¹. The term 'vegetated shingle' can be applied to all vegetated or potentially vegetated shingle - i.e. that which is identified as shingle at the surface on geological maps. However, the nature of shingle dictates that some may be regarded as agricultural land, whereas some may be regarded as a mobile resource to be used for sea defences, so there is much variation in the criteria used in various studies².

Distribution

- 2.2 Globally, the distribution of shingle beaches vegetated (or having the potential to be vegetated) has been largely determined by the limits of the Pleistocene glaciation period and are thus confined to higher latitudes. The extent of the coastal vegetated shingle resource within England is estimated at 42.76 km², largely concentrated along the south and east coasts. It is also well represented around Scottish coastlines.

Formation

- 2.3 Four environmental factors are responsible for the growth of a shingle beach³. There needs to be a suitable supply of material as well as the right wave, tide and wind conditions. The interactions between these factors is unpredictable so conditions without movement of the shingle occurring may exist for considerable periods, interspersed by times of marked activity resulting in stable and mobile shingle habitats varying both in time and space.

Structure

- 2.4 Shingle structures take the form either of spits, barriers or barrier islands formed by longshore drift, or of cusped forelands where a series of parallel ridges piles up against the coastline.

Species

- 2.5 There are two main types of vegetation communities supported by such shingle habitat, as described by the Joint Nature Conservation Committee and used for habitat monitoring purposes: Annual vegetation of driftlines⁴ and perennial vegetation of stony banks⁵.

Annual vegetation of driftlines

- 2.6 This habitat type occurs on deposits of shingle lying at or above mean high-water spring tides. It can include National Vegetation Classification (NVC) types SD2 Honkenya peploides – *Cakile maritima* strandline community (i.e. including sea sandwort and sea rocket) and SD3 *Matricaria maritima* – *Galium aparine* (sea chamomile and cleavers) strandline community on stony substrates. MC6 *Atriplex prostrata* – *Beta vulgaris ssp. maritima* (spear-leaved orache and sea beet) sea-bird cliff community and other vegetation with abundant *orache Atriplex spp.*

¹ http://jncc.defra.gov.uk/pdf/UKBAP_BAPHabitats-10-CoastVegShingle.pdf

² http://www.biodiversitysussex.org.uk/file_download/58

³ DOODY, P. and R RANDALL, 2003, Guide to the Management and Restoration of Coastal Vegetated Shingle, English Nature: Peterborough

⁴ <http://jncc.defra.gov.uk/protectedsites/sacselecion/habitat.asp?FeatureIntCode=H1210>

⁵ <http://jncc.defra.gov.uk/protectedsites/sacselecion/habitat.asp?FeatureIntCode=H1220>

Perennial vegetation of stony banks

- 2.7 This habitat occurs where the conditions allow for more stable vegetation development. There are some affinities with the annual driftline vegetation communities, including such species as yellow horned-poppay *Glaucium flavum*, the rare sea-kale *Crambe maritima* and sea pea *Lathyrus japonicus*. In more stable areas above this zone, where sea spray is blown over the shingle, plant communities with a high frequency of salt-tolerant species such as thrift *Armeria maritima* and sea campion *Silene uniflora* occur. These may exist in a matrix with abundant lichens. On the largest and most stable structures the sequence of vegetation includes scrub, notably broom *Cytisus scoparius* and blackthorn *Prunus spinosa*. Heath vegetation with heather *Calluna vulgaris* and/or crowberry *Empetrum nigrum* occurs on the more stable shingle structures, particularly in the north. This sequence of plant communities is also influenced by natural cycles of degeneration and regeneration of the shrub vegetation that occurs on some of the oldest ridges.

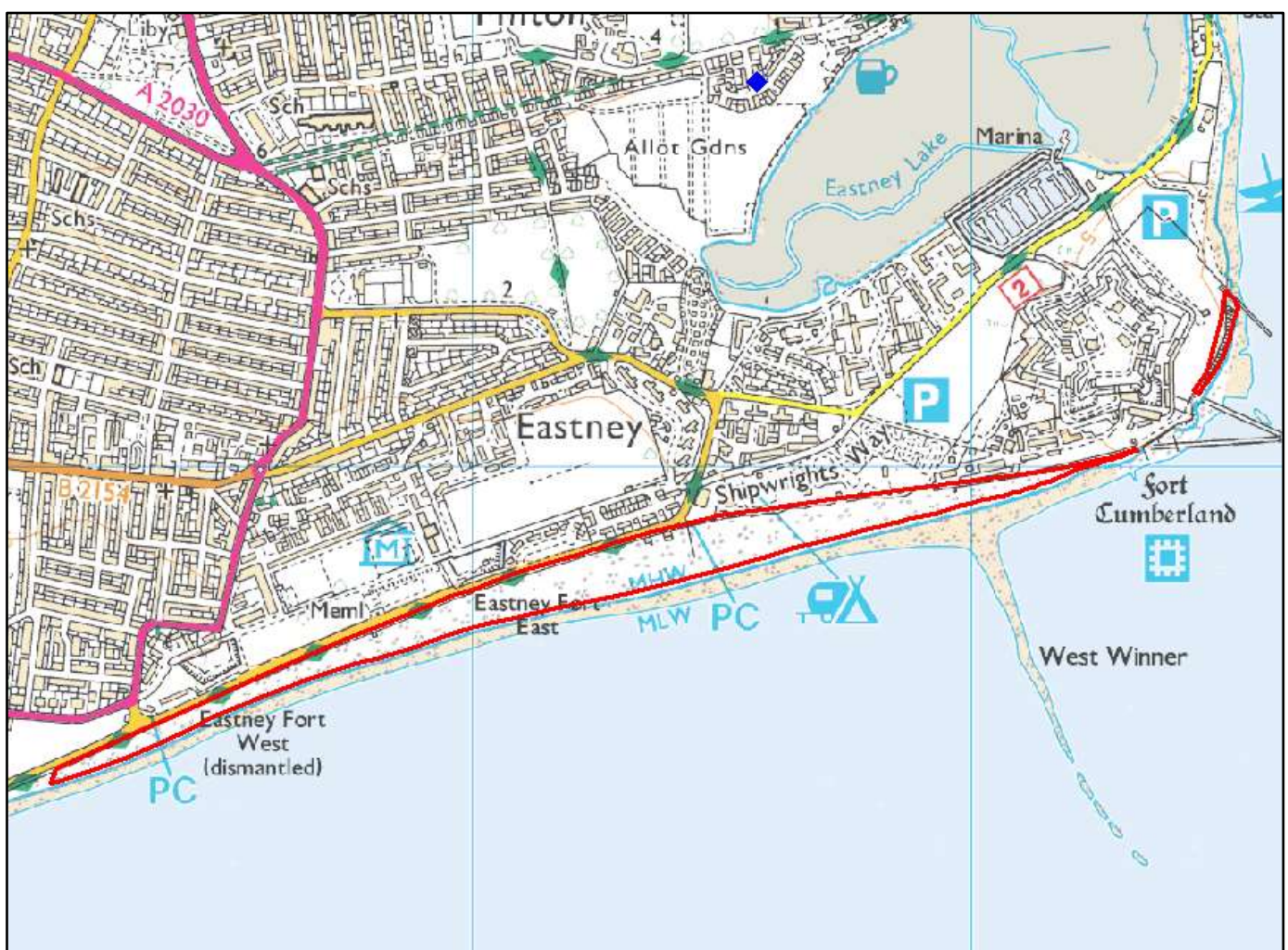
Value of vegetated shingle

- 2.8 Because shingle beaches are mobile structures developed in dynamic high-energy environments, they are highly efficient dissipaters of wave energy and can form important components of sea defences, with the vegetation higher up the beach contributing to the stability of the landward edges of such areas.
- 2.9 In social terms, vegetated shingle sites provide a recreational resource away from more traditional beaches. There are proven links between public health and recreational access to nature.
- 2.10 In ecological terms, they contribute to a higher level of biodiversity through the unique plant species that they support. This in turn supports a diverse assemblage of invertebrates which are themselves of value to other species such as birds. This ecological diversity also contributes to the social value of such sites.
- 2.11 Given the national scarcity of vegetated shingle as a habitat, Eastney Beach also provides a valuable resource for local schools to learn about how biodiversity can thrive, even in an urban location such as Portsmouth.

Section 3: Eastney Beach

Existing protection

- 3.1 Photos 1 and 2 (below) show, as example, how the extent of the habitat has changed since the end of the Second World War.
- 3.2 Eastney Beach is currently designated as a Local Wildlife Site (LWS). It was originally designated in the Portsmouth City Local Plan, which was adopted in 2006. In 2010, the designation was extended as more recent survey data showed that the vegetated shingle habitat had grown. The up to date boundary is shown in map 1.
- 3.3 Map 1 shows the extent of this designation.



Map 1: location of Eastney Beach LWS.

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- 3.4 It should also be noted that Eastney Beach is immediately adjacent to Langstone Harbour which is internationally designated as part of Chichester and Langstone Harbours Special Protection area and Ramsar site as well as the Solent Maritime SAC. In addition to this, SPA species regularly use a number of terrestrial sites either for feeding or roosting. There

are several such sites along the seafront, including one within the local wildlife site boundary. Langstone Harbour is also nationally designated as a Site of Special Scientific Interest.

- 3.5 This SPD does not address impacts which development may have on the international or national designations. How any impact would be addressed is set out in Policy PCS13 of the Portsmouth Plan. However given that international and national designations afford the sites legal as well as policy protection, this matter should be discussed with the city council at the earliest possible point.



Photo 1: Aerial photos of Eastney beach taken immediately after WWII.

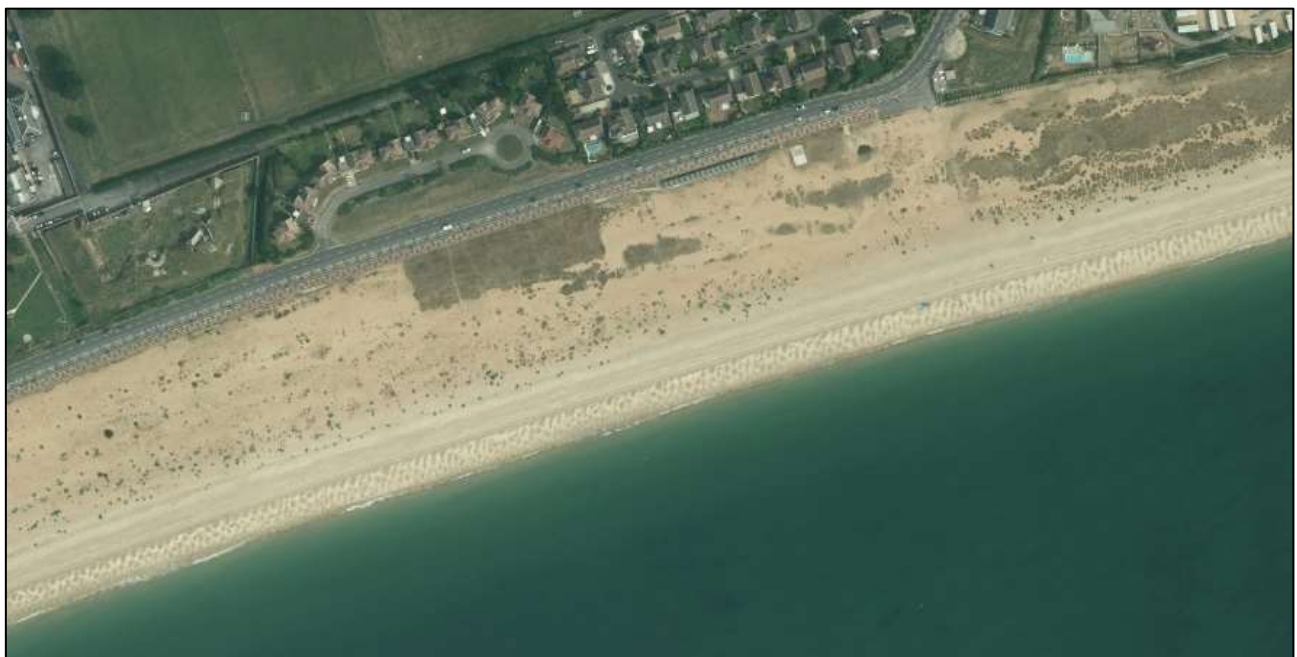


Photo 2: Aerial photo (2013) of the same area, showing areas of planted grassland and other vegetation establishment

© Copyright Blom Aerofilms Ltd, 2013

- 3.6 While LWS are not legally protected, the Portsmouth Plan sets out a policy framework to ensure that impacts to LWS and the habitats they support are properly considered during the planning process. Where developments may affect a LWS, Policy PCS13 '*A Greener Portsmouth*' states that the Council will protect green infrastructure by:
- Recognising the benefits of local sites for nature conservation and its enjoyment for residents and visitors
 - Ensuring that the intrinsic habitat value of the site can be retained or enhanced through development proposals
 - Allowing development only if it clearly outweighs the substantive nature conservation value of the site, an impact on the site cannot be avoided or mitigated and compensatory measures are provided.
- 3.7 Additionally, Policy PCS9 '*The Seafront*' states that new development will contribute to the revitalisation of the seafront, tourism and the wider regeneration strategy for Portsmouth, and that this will be achieved by (amongst other things) encouraging and supporting proposals for small scale restaurants, cafés and other uses and activities that will diversify the leisure and cultural offer without detracting from the open character of the seafront, and by protecting the nature conservation value at Eastney Beach.
- 3.8 This was carried through into the Seafront Masterplan SPD, one of the objectives of which includes protecting the valuable wildlife habitat at Eastney Beach. The objective is reflected in the various proposals for Eastney Beach in section 4 of the Seafront Masterplan, which recognises that the area is quieter and less developed than other areas of the Seafront, providing an opportunity for visitors to 'escape'. The masterplan sets out that new development and public realm opportunities in the area must not detract from the 'informal' and tranquil atmosphere that visitors value.

Surveys

- 3.9 A Hampshire-wide survey in 2000⁶ covered areas not previously mapped, despite the County including some of the larger shingle units in the UK. This survey focused on strandline communities of fringing beaches and the numerous spits and included chenier banks and harbour island sites (for example, Portsmouth) not represented elsewhere within the 1994 inventory. The estimates of the shingle habitat resource were lengths rather than areas and the community mapping was based on 140 quadrats that have been used to identify NVC and affinities with NVC community types. These quadrats have extended into transitions with saltmarsh and grasslands. As has been found elsewhere there are many variants that do not match well with the current NVC and where there is overlap with terrestrial and MC community types on a shingle and shingle matrix substrate.

⁶ COX, J. and K. CROWTHER, 2001, *Survey of Solent Strandline Vegetation: July – September 2000 - A Report to Hampshire County Council*.

- 3.10 The baseline conditions at the site as presently understood (gained from an analysis of existing survey reports^{7 8}) can be described in the following key points.
- 3.11 As a general description, the habitats on site support a good diversity of shingle and maritime grassland species. These include the Nationally Scarce suffocated clover (*Trifolium suffocatum*), the County Scarce sea bindweed (*Calystegia soldenella*), night-flowering catchfly (*Silene noctiflora*) and sea radish (*Raphanus raphanistrum maritimum*).
- 3.12 There are notable areas of more stable grassland, which generally conform to typical vegetation for this habitat. However, it is believed that much of the more stable grassland is a result of deliberate sowing, notable an area of beach was sown deliberately to provide a dog exercise area. This is highlighted in the aerial photos from after WW2, examination of recent aerial photos (see aerial photos at the end of this outline Plan) and examination of the vegetation and species lists in the HBIC, ECOSA and Arbtech reports that show that while there are maritime species present in this community, there are areas of amenity grassland variant community.
- 3.13 A typical full range of vegetation zones, from bare shingle nearer the high tide line through to scrub communities on the landward side of the habitat extent, is not present at Eastney and will not form, due to the high visitor pressure and presence of sea wall and urban development on the landward side. Management of later succession stages into scrub through grazing and / or scrub control is therefore not necessary. However, there are small areas where succession is proceeding, where patches of bramble scrub have developed. There are also clearly significant areas of maritime grassland habitats, typical of vegetation zones further up the shingle bank in more stable areas – however as discussed these areas are largely anthropogenic in nature so are not all necessarily typical of the site's natural processes that would have occurred in the absence of human intervention.
- 3.14 There are areas of invasive species such as holm oak and sycamore as well as ground flora such as spear thistle and ragwort, both negative indicators of vegetation composition (as described in the Common Standards Monitoring for this habitat – see references at the end of his document).

Pressure from existing use

- 3.15 There is a high degree of litter and dog waste on the site. Although the City Council employs officers to manage the beach, this is an ongoing issue that needs to continue to be managed.
- 3.16 Access to the beach is high by members of the public, with one of the more popular activities being dog walking. It is believed that some of the more stable grassland areas were deliberately seeded as a resource for dog walkers.

Pressure from future use

- 3.17 Further development proposals are likely to come forward along the seafront, through the implementation of the Seafront Masterplan⁹. These will include a mix of smaller proposals

⁷ ECOSA, 2012, *Southsea Beach Huts, Southsea, Hampshire – Extended Phase 1 Ecological Assessment* (see http://publicaccess.portsmouth.gov.uk/online-applications/files/06BCFF91174C56D080B5EB7B418F90B5/pdf/13_00791_FUL-ES_APPENDIX_1_-EXTENDED_PHASE_1_ECOLOGICAL_ASSESSMENT-595896.pdf)

⁸ ARBTECH, 2013, *Ecological Walkover* (see http://publicaccess.portsmouth.gov.uk/online-applications/files/70200EF8001045831F962BB36A764784/pdf/13_00791_FUL-ES_APPENDIX_2_-ARBTECH_REPORT-595897.pdf)

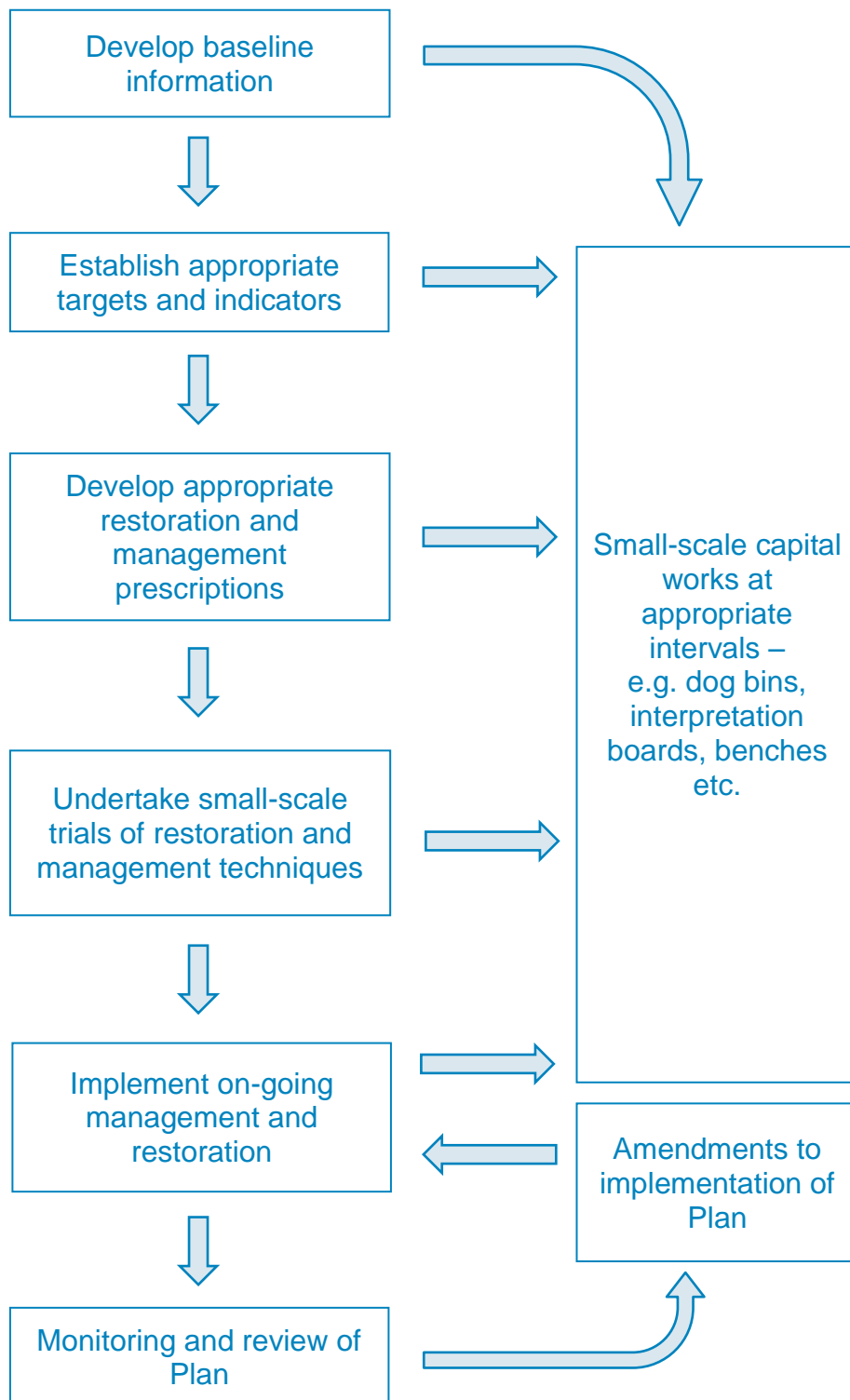
(such as concessions) as well as larger proposals for key buildings and recreational facilities.

- 3.18 Impacts from such proposals are currently unknown. However, they are likely to result in some or all of the following:
- Permanent direct habitat loss (through loss of habitat within development footprint);
 - Permanent indirect habitat loss (through increase in activity from nearby development)
 - Temporary habitat loss (during construction activity);
 - Habitat degradation across a wider area around the developments (due to increased recreational pressure)

Future Management

- 3.19 Previous planning history has shown that smaller developments are extremely likely to result in uncompensated permanent impacts to the LWS and habitats within it. There is likely to be increasing development pressure and consequent recreational use of the site. These proposals – particularly the smaller ones – may well find it difficult to address the impacts they would cause on an individual basis. This may be due to the costs involved, co-ordination of a number of smaller projects by different organisations, and impacts being experienced on land outside the applicant's control.
- 3.20 A coherent, strategic approach to future management is therefore recommended. Future development aspirations would thus be able to link in to this wider strategy through mechanisms such as developer contributions to help fund the on-going management and restoration of the site and thus ensure that the impacts of their developments on the vegetated shingle habitat are mitigated and compensated for.
- 3.21 Beaches along the Seafront are regularly and heavily used by a wide range of residents for a variety of purposes, and the different sections of the Seafront offer a welcome variety of experiences, from the more managed, open, beach west of the Pier, to the more semi-natural, 'wilder' sections along Eastney. To continue to be able to provide residents with this diversity of choice and to enhance it, this Plan can be used to help clearly define the different areas of provision and management of the different sections of the Seafront.
- 3.22 In summary, the management and restoration of the beach is proposed to comprise a number of key stages, as follows

⁹ <https://www.portsmouth.gov.uk/ext/documents-external/dev-seafront-masterplan-final.pdf>



- 3.23 Splitting the Plan up into such stages should make it easier to develop a ‘phasing’ approach so that developments coming forward that need to engage with it and thus provide contributions can result in the Plan being implemented in step with the impacts.
- 3.24 There are however a variety of constraints and limitations likely to affect the implementation and success of this Plan. Therefore the Plan has been drafted to try and be sufficiently flexible to address these.
- Compared to many important areas of vegetated shingle, Eastney Beach is relatively small. Therefore, it will be more sensitive to small changes. Thus, for example, a 0.1ha impact at Eastney would be proportionally greater than at a larger vegetated shingle site. Therefore, care needs to be taken to ensure restoration measures proceed only once successfully trialled on a small scale.
 - High public use – need to ensure the buy-in and understanding of residents and visitors
 - Uncertain success of measures – due to non-typical general environment and site specifics;
 - Site pressures will change as developments take place, making planning of the restoration and enhancement difficult;
 - Established methods such as grazing and large-scale mechanical operations are not possible on this site.

Develop baseline conditions

- 3.25 As discussed above, there is a reasonable amount of existing survey data relating to Eastney Beach. However, an update survey, including botanical, bird and entomological interest, that is designed to be repeatable, would be useful in better understanding the detail of the conditions at the site and to use as a monitoring tool for future review and amendment of the Plan and its implementation.
- 3.26 Natural England has set out a useful survey method for this habitat¹⁰, and the following is based on this. Essentially, the survey is based on quadrat samples at defined transects across the beach profile. Each sample should measure the following parameters:

Parameter	Description at a quadrat
Average Vegetation Height/s	Estimated height of the vegetation within the quadrat for i) ground layer, ii) field or sub-shrub layer, iii) shrub layer/understorey and iv) canopy. All measurements should be in metres.
Altitude (proximity to tidal frame / sea level rise)	Not so relevant in vegetated shingle, and may be determined from secondary sources (Lidar) more easily than from the ground.
Slope	Slope measurement (degrees).
Aspect	Octants (compass directions).
Geology of substrate	Principal geology of the shingle material (for example, chert, flint, shell).
Matrix materials	Estimate of the extent of matrix (sand, soil debris) within the shingle and the extent of litter.

¹⁰ MURDOCK, A., HILL, A.N., COX, J. & RANDALL, R.E. 2010. *Development of an evidence base of the extent and quality of shingle habitats in England to improve targeting and delivery of the coastal vegetated shingle HAP*. Natural England Commissioned Reports, Number 054

Substrate Particle Size	Particle size based on B axis measurements or estimated based on Comparison Cards categories.
Sorting	Extent of sorting of the particle size. Based on comparison card estimates.
Succession signs	Signs of succession: variations in the vigour of species, the predominance of growth phases, the age structure of populations of individuals, or signs of senescence, death or regeneration as indicated by Rodwell (2000).
Internal morphology	Morphology at the location of the quadrat / habitat for example, apposition ridges.
Management	Management classes within the vegetation adjacent to the quadrat: grazing (by which stock), recreational, cutting etc.
Land use	Land use within the vegetation adjacent to the quadrat – broadscale classification of the land use.
Pressures	Pressures and impacts adjacent to the quadrat location; Grazing (all types of stock), recreational pressure, waste disposal etc.

3.27 Ideally, such a survey would be undertaken from late spring to the end of August each year, although some annuals may be lost in later surveys, and driftline vegetation is usually only evident in later months.

3.28 Transects would be taken across the shingle from the foreshore extending beyond the last habitat that is considered to be vegetated shingle (so that the adjacent habitat is also described). The number of transects would be selected based on the complexity of the vegetation pattern present and the morphological formation of the shingle. The transect forms a standard repeatable alignment that allows for analysis of changes in widths of communities and the validation of habitat boundaries.

Establish targets and indicators

3.29 At present, the following targets and indicators have been used as a 'starting point' for this Plan. Following the development of the baseline data (see above), these can be amended as appropriate through the normal review process of the Plan.

Overall habitat extent

3.30 The general target for this habitat if it were managed as a SSSI would be no decrease in extent from the baseline, subject to natural change.

3.31 The causes of any changes in habitat extent need to be carefully considered. The site would not fail to reach its target if the extent has reduced due to natural processes rather than anthropogenic factors, including an inability of the habitat to extend landwards due to the presence of manmade features (in the case of Eastney, the sea wall, road and urban development).

3.32 However setting targets for this plan need to be slightly different; it is extremely likely that there will be some decrease in habitat extent as a result of future development (e.g. beach huts being constructed on the habitat). However it is important to consider that a proposal would have impacts extending beyond direct loss of habitat caused by the development.

Target 1 - no net decrease in habitat extent beyond that identified in the Seafront Masterplan SPD.

Vegetation composition and zonation

- 3.33 As discussed, vegetated shingle can generally be broken down into annual vegetation of driftlines and perennial vegetation of stony banks. The NVC only describes part of the pioneer phase of perennial shingle vegetation, namely SD1 *Rumex crispus* – *Glaucium flavum* shingle community although IHS includes several NVC communities in SS31.
- 3.34 At Eastney, the pioneer vegetation for the most part extends from the shingle ridge (typically demarcated by a strip of Babbington's orache being closest to the water) right up to the sea wall. The more stable perennial vegetation does not immediately conform to the typical zonation and composition of typical vegetated shingle sites, most likely due to the higher levels of historic human intervention and ongoing high visitor pressure.
- 3.35 The non-typical nature of the zonation and composition of the communities on some sections of Eastney means that it is therefore not immediately clear how to address targets for these characteristics. The completion of the proposed baseline data gathering would inform this; however at this stage, the following sets out consideration and broad parameters for this.
- 3.36 In order to achieve the objective of no net loss of biodiversity, targets need to include a target for the restoration of lower-quality areas of the habitat that currently support some of the less diverse and untypical grassland and scrub areas.
- 3.37 The purpose of the objective is to compensate for likely habitat loss by restoration of the retained areas of MG6a grassland in the grassland area to SD1a community, and enhancement of other areas of MG6a with higher amenity grassland variant elsewhere on nearby beach sections. Precise locations of this restoration are yet to be defined. While at this stage the preferred option is to initially restore the rectangular section central to the beach hut development strip, this may be less acceptable as it may impact on future projects. It may therefore be the case that other areas of similar grassland further east may be a more appropriate location. Alternatively, smaller-scale trial restoration measures might be carried out to the eastern MG6a areas prior to restoration of the central rectangle.
- 3.38 Shingle is recognised as being important for invertebrates; some of the rarest occur on sparsely-vegetated shingle, while the richest assemblages generally occur on stable shingle with an incomplete vegetation cover. Therefore complete clearance of an area of grassland is not desirable. Rather, it may be appropriate to reduce the area of grassland in scalloped strips and allowing pioneer vegetation to establish in the cleared areas. The scalloped edges would introduce a longer edge habitat (often a valuable element due to the variations on the vegetation structure and microhabitats) than if a straight interface was used.

Target 2a – restoration of 4.2ha of MG6a amenity variant grassland to SD1a.

Target 2b – enhancement of 4.2 ha of existing habitat supporting SD1a pioneer community.

- 3.39 There are small areas of MG1v community present. This community is generally a widespread grassland community found in many habitats. It is generally seen as a typical

rough grassland community comprising common and widespread species. While its value is limited, it is a recognised stage for the succession of vegetated shingle and therefore at this stage, intervention in these areas is not recommended. Given that it appears distinct from the planted ryegrass areas more typical of amenity grassland, it is considered that these are part of the natural succession of the site. It is notably present in two adjacent 'hollows' either side of the beach entrance opposite the Royal Marines museum; the different conditions here (less exposed to wind / salt spray, possibly more stable hydrology) are likely to have resulted in this community becoming established naturally. Management prescriptions are given below to maintain these areas.

- 3.40 These targets also recognise the importance of diverse vegetated shingle communities for invertebrates.
- 3.41 It should be noted that bare shingle is an important element of this habitat – the aim here is not to significantly reduce the areas of bare shingle, but to provide a more robust SD1a community, more likely to survive the additional recreational pressure that is likely to result from the proposed developments.

Restoration and management prescriptions

- 3.42 In general, typical management of vegetated shingle would be extremely non-interventionist. In some cases, succession is best managed through grazing. However this is wholly inappropriate for Eastney Beach. The busy nature of the site and the significant human intervention in the vegetation composition requires non-standard management techniques (although it is arguable that there is a standard management technique for vegetated shingle).
- 3.43 The following prescriptions are identified as likely to address the key pressures acting on the site and likely to meet the targets necessary to achieve the objectives. However, given the site characteristics, it is considered likely that ongoing management – particularly relating to reverting some of the amenity grassland areas to more typical SD1 communities will need flexibility in their extent and the methods employed.

Target 1 - no net decrease in habitat extent beyond that identified in the Seafront Masterplan SPD.

- a) Ongoing habitat mapping (repeats of initial baseline transects / quadrats);
- b) Regular litter-picking;
- c) Annual monitoring for first 5 years post-completion, followed by every 2-5 years subsequently (maybe using HBIC as part of normal survey schedule). Consider the use of fixed-point photography; Monitoring to be based on NE Common Standards Monitoring for vegetated shingle (see references below) to measure against targets and objectives.
- d) Targeted routine management of invasive species and bramble scrub as determined by monitoring;
- e) Ad-hoc management of succession to grassland (sown ryegrass / bent can be persistent so may re-colonise restored areas dependent on site conditions).

Target 2a - restoration of 4.2 ha of MG6a amenity variant grassland to SD1a.

- a) Establish small-scale trial plots (such as 3 plots per option, each approximately 10 sq m)
- b) Restoration of primary and secondary areas of MG6 amenity variant areas using methods as determined by small-scale trials (see below).
- c) Monitoring of restored areas as per elements for Target 1 above.

Target 2b - enhancement of 4.2 ha of existing habitat supporting SD1a pioneer community.

- a) Removal of invasive tree species (holm oak and sycamore) and spot clearance of thistle and ragwort;
- b) Clearance of some of the bramble areas (some bramble, in the right place, will provide some benefit as part of the overall vegetation mosaic);
- c) Collect seeds from existing SD1a vegetation and grow on as plug plants for planting in bare areas of shingle;
- d) Monitoring of enhanced areas as per elements for Target 1 above.

Small-scale trials

3.44 Restoration of smaller-scale, heavily-used vegetated shingle sites are not well documented in the literature. However a number of methods have been used in various scenarios. It is suggested that in order to identify the measures most likely to be successful, several of these are trialled at Eastney. The following options are considered appropriate here:

- a) Mechanical vegetation management – e.g. mowing / strimming (and removing arisings to reduce nutrients) – to see if this encourages more maritime species to become established; Trial plots may need to be fenced off temporarily with appropriate signage.
- b) Physical removal of grassland and common species – including root masses – to create areas of bare shingle; examination of natural colonisation;
- c) As b) but carried out in areas where SD1a species are present in a grassland matrix
- d) As b) but followed by new planting of SD1a species – plugs from gathered seeds, or seeds only. Transplanting may be ineffective as plants on shingle typically have long tap roots making successful moving difficult.
- e) Possibly consider fencing off three larger areas – one area of stable grassland, one area of pioneer shingle vegetation and one of bare shingle, to assess how they react in the absence of intervention and access.

Small-scale capital works

3.45 The targets would be supported through works such as

- a) Erection of interpretation boards – temporary to inform people of the restoration and enhancement work, as well as more permanent ones (if needed) to describe the biodiversity of the area. Possibly moving existing boards to new locations?
- b) Dog waste / litter bins (if considered appropriate);
- c) Installations of benches along the sea wall to help guide people around the site via less sensitive areas.

Implementation of longer-term restoration and management

- 3.46 Upon completion of the small-scale trials, these would be reviewed and the appropriate method implemented on a wider scale.
- 3.47 Given that developments that affect the site are likely to come forward over a period of time, the extent of the longer-term measures may need to be increased in phase with the developments.

Routine monitoring and review of the plan

- 3.48 The transect and quadrat surveys of the beach profile (see 4.1) should be repeated at appropriate intervals. This should ideally be at least every five years. The Plan should be reviewed in the light of the on-going monitoring.

Amendments to implementation of the plan

- 3.49 Any amendments to the Plan should result in corresponding amendments to the management activities on the site.

Appendix 1: Glossary

Annual vegetation	Plant species that complete all aspects of their lifecycle from germination to seed production within one year.
Baseline conditions	The conditions (such as extent of vegetation, or diversity of species) present at the start of a project that inform future works
Core Strategy (also known as the Portsmouth Plan)	This will include an overall vision as to how Portsmouth will develop. It will set out how much development is intended to happen where, when and by what means it will be delivered.
The Development Plan	The Development Plan comprises the Local Development Framework and the Minerals and Waste Development Framework.
European sites	These provide ecological infrastructure for the protection of rare, endangered or vulnerable natural habitats and species of exceptional importance within the European Union. These sites consist of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), whilst Government policy is to include Ramsar sites as well. Under the Conservation of Habitats and Species Regulations 2010 (the Habitats Regulations), plans or projects which could have a significant impact on European sites must be subject to a Habitats Regulations Assessment.
Habitat	The environment in which a species or range of species lives
Joint Nature Conservation Committee (JNCC)	JNCC is the public body that advises the UK Government and devolved administrations on UK-wide and international nature conservation.
Local Wildlife Site (LWS)	These are designated at a local level as they contain features of substantive nature conservation value. The purpose of designation is to provide recognition of this value, to give sites a degree of protection and to encourage access to wildlife and nature. Elsewhere in Hampshire these local sites are known as sites of importance for nature conservation (SINCs).

National Vegetation Classification (NVC)	The system of classifying natural habitats according to the vegetation communities they support
Natural England (NE)	The government's advisor on the natural environment
Partnership for Urban South Hampshire (PUSH)	A partnership of 11 local authorities in South Hampshire, from the New Forest in the west to Havant in the east, set up to co-ordinate economic development, transport, housing and environmental policy. Often referred to as the sub regional level.
Perennial vegetation	Plants that live for more than two years, producing new growth, flowers and seed over a longer period of time.
Portsmouth City Local Plan	This document (adopted in 2006) guides current development in the city. This will be replaced by a series of documents known collectively as the Local Development Framework.
The Portsmouth Plan	This is the name given to the core strategy of Portsmouth's Local Development Framework (see core strategy).
Quadrat	A standard unit of area for study of the distribution of an item over a large area. The quadrat is suitable for sampling plants, slow-moving animals (such as insects). When an ecologist wants to know how many organisms there are in a particular habitat, it would not be feasible to count them all. Instead, they would be forced to count a smaller representative part of the population, called a sample. Sampling of plants or animals that do not move much, can be done using a sampling square called a quadrat. A suitable size of a quadrat depends on the size of the organisms being sampled.
Ramsar	An internationally important wetland site given protection at the 1971 Ramsar Convention in Iran.
Seafront Masterplan SPD	The masterplan is intended to guide improvements to the Seafront area of the city. It provides further detailed guidance about how Policy PCS9 (The Seafront) of the Portsmouth Plan will be implemented. The masterplan: <ul style="list-style-type: none"> ▪ set out the background and context for development opportunities (including the

redevelopment and re-use of existing buildings), and public realm improvements;

- articulate a clear identity / role for each of the Seafront's six unique character areas, and
- establish a high quality baseline for proposals including design principles, potential mix of uses and guidance for buildings and public spaces.

Site of Special Scientific Interest (SSSI)	Areas designated by Natural England that are of national importance in terms of ecology or geology.
Special Area for Conservation (SAC)	An area of open water or land of international importance designated to conserve natural habitats and wild fauna and flora, which are considered rare or endangered and are recognised as being under a particular threat.
Special Protection Area (SPA)	An area of international importance for the conservation of wild birds and of migratory species, with a particular focus on wetlands.
Spp	This is the abbreviation for a species as a plural. So for example, " <i>Phaseolus spp</i> ". is just a short hand way of referring to an indefinite number of species of the genus <i>Phaseolus</i> .
Supplementary Planning Document (SPD)	Provides additional guidance to development plan policies for a specific area or a specific topic. SPDs only provide more detailed guidance on existing policies though, they do not create new policies.
Sustainable Development	Sustainable development is development that meets the social, economic and environmental needs of the present without compromising the ability of future generations to meet their own needs.
Vegetation community	The range of plants within a defined, generally uniform area.

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264