

Annex 4:
of
Appendix K: Environmental Statement:
Vegetated Shingle Methodology



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Appendix B: Environmental Statement
Vegetation Change Methodology





Guidelines for Good Practice when working on beaches with Vegetated Shingle.

Introduction to the guidelines

These guidelines are aimed at coastal defence engineers and others planning to carry out works on shingle beaches which host native shingle vegetation or have the potential to do so. Highly mobile beaches with no stable shingle would not be able to support vegetation. The guidelines indicate the various ways that vegetated shingle can be damaged during the works and suggest ways in which this damage can be avoided, or at least limited.

It is recognized that it will not always be possible to incorporate all the suggestions, for example during emergency works. There are also substantial cost implications involved with some of the measures. The guidelines should therefore be viewed as suggestions to be seriously considered and implemented where costs, time and resources allow. However, some of the suggestions take the minimum of time and effort, such as limiting the number of access points to the beach, and therefore may still be possible.

It is hoped that the guidelines will be used during the planning stage so that contractors can be given clear instructions as to the measures they are required to take to protect areas of vegetated shingle.

Introduction to vegetated shingle

Vegetated shingle is recognized as an internationally important habitat. It is scarce in Europe with the UK supporting a high proportion of the European resource. Elsewhere, coastal shingle has few occurrences outside Japan and New Zealand. Coastal vegetated shingle is listed as a priority habitat in the UK Biodiversity Action Plan (BAP) and supports 9 BAP priority species.

It is characterised by specialised plants that have adapted to survive in harsh coastal conditions where lack of fresh water and nutrients are compounded by fierce winds and impact by waves. Shingle habitats are also particularly important for invertebrates and for some breeding and roosting birds.



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Much has already been lost to housing developments, agriculture and coastal defence while the remaining areas face a number of threats including trampling and un-natural enrichment of the shingle substrate, for example by dog fouling and bonfires. One of the main long-term threats to vegetated shingle is as a result of man's intervention in natural coastal processes, with coast protection work changing the accretion rate of shingle to coastal areas. Trapped between urban development on the landward side and rising sea levels on the seaward side, vegetated shingle is also threatened by "coastal squeeze".

Shingle banks form a natural coastal defence, which may require replenishment in order to maintain the bank crest height and width. With coastal protection techniques moving towards a more integrated approach allowing natural processes to work where possible and relying more on "soft" defences rather than "hard" structures such as sea walls, there is an opportunity to create new, stable areas of shingle. If planned with care, these could be used to create new areas of shingle vegetation.

Vegetated Shingle Communities

Pioneer communities of vegetated shingle can begin to recover naturally from damage within a few years, as long as the seed bank remains intact and further damaging activities are halted. However, the more established communities, such as moss and lichen communities and closed-turf communities are unlikely to recover as they take many decades to develop. Some can take hundreds of years to establish. It is important that these types of vegetated shingle communities are not damaged, as they are extremely rare.

Threats from coastal defence engineering works

Vegetated shingle can be damaged in a number of ways when coastal defence and other works are being carried out on the beach. It should be noted that damage could be done not only by vehicles and machinery but also by trampling, especially on the older communities.

Damage can be in a variety of forms:

- ***Physical damage to plants***
- ***Physical damage to communities (pioneer, intermediate, closed-turf, moss and lichen etc)***
- ***Disturbance to breeding birds***
- ***Movement and/or compaction of shingle***
- ***Destruction of the seed bank***
- ***Imported marine-dredged shingle causing nutrient enrichment***
- ***Imported shingle of unsuitable type/size[†]***
- ***Nutrient enrichment through mixing of the shingle and soil layers***

Measures to prevent damage or to offset unavoidable damage

There are a number of measures that can be taken, both before the commencement of coastal defence operations and while the work is being carried out. It is important that all contractors are informed in advance

the procedures they must follow to limit any impact on the vegetated shingle.

Note: English Nature's consent must be sought before any work is carried out within a statutory designated site.

Preventative measures that can be taken are:

- *Brief the works unit/contractors before commencement of work to ensure that each individual is clear about the measures being taken.*
- *Limit the number of beach access points for vehicles.*
- *Clearly define beach access points avoiding any vegetated areas where possible. If the loss of some vegetation is unavoidable, ensure that it is limited to the pioneer community and not the established, closed-off communities that will not recover.*
- *Mark off any particularly valuable or important areas of vegetation prior to commencement of operations to ensure its protection. Use old groyne timber, tape or any other highly visible barrier laid around the perimeter. Keep all vehicles, machinery and people out of the marked area.*
- *If possible, wash imported marine-dredged shingle to prevent nutrient enrichment.*
- *If possible, use imported shingle of a suitable type/size¹ for vegetation, at least in those more stable areas where plants are likely to re/colonise.*
- *If possible, limit vehicle movement along the beach to below High Water Mark to prevent impact to vegetation or compaction of shingle on the ridge.*
- *Limit work to the period outside the bird nesting season. Shingle nesting birds generally nest between March and August.*

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- **Include information about the shingle vegetation protection measures that are being taken, in any interpretation on the site**
- **Seek advice from the West Sussex Vegetated Shingle Project (WSVSP) or other coastal conservation body.**

¹ Land-sourced shingle tends to have sharp edges and be more angular than marine-sourced shingle, making it less suitable for coastal shingle vegetation. Pebble size is very important in determining which plants can grow. Pebbles with an average size greater than 8cm diameter are normally unsuitable for vegetation. Shingle species generally prefer an average diameter of up to 4cm. Patches of different sized pebbles are the most desirable as they allow a mosaic of vegetated and bare shingle areas to develop. A variety of pebble sizes will also allow a greater variety of species to colonise.

Measures that can be taken to offset unavoidable damage

- **If the loss of an area of vegetated shingle is unavoidable it may be possible to incorporate the creation of a new area elsewhere along the coast in order to ensure no net loss of this very rare habitat. Opportunities for creation of vegetated shingle habitat should be sought during all planning stages of coastal defence.**
- **If unavoidable damage to an area of vegetated shingle is foreseen, liaise with the WSVSP about seed collection prior to work to ensure that restoration can be attempted after the work is complete. (Up to 6 months notice may be required for this, depending on the time of year)**

Information and advice

The West Sussex Vegetated Shingle Project Officer can be contacted at:
 Town Hall,
 Clarence Road,
 Bognor Regis,
 West Sussex
 PO21 1LD
 Telephone 01903 737949

The East Sussex Coastal Biodiversity Project Officer can be contacted at:
 East Sussex County Council
 County Hall
 St. Anne's Crescent
 Lewes
 East Sussex
 BN7 1UE
 Telephone 07786 171465

Plant ID cards for contractors

A guide for identifying vegetated shingle communities is available from both the West Sussex Vegetated Shingle Project and East Sussex Coastal Biodiversity Project.

GIS survey data

Vegetated shingle along the West Sussex coast from East Head to Shoreham has been mapped and the information is available on CD ROM in both MapInfo and Arc View formats. To obtain a copy please apply to:

Sussex Biodiversity Record Centre,
 Woods Mill, Henfield, West Sussex BN5
 9SD.

Glossary of terms

<i>Coastal defence</i>	<i>a combination of both Coast Protection (generally to prevent erosion – where the land is higher than sea level) and Sea Defence (to prevent flooding- where the land is lower than sea level).</i>
<i>Coastal squeeze</i>	<i>the shrinking of coastal habitats caught between rising sea level and fixed coastal defences.</i>
<i>Interpretation</i>	<i>means of displaying explanatory information for example in the form of a leaflet or notice board.</i>
<i>Nutrient enrichment</i>	<i>increase in nutrient content (soil/humus etc) of shingle.</i>
<i>Vegetated shingle</i>	<i>shingle supporting a wildlife community of flora and fauna.</i>
<i>Pioneer communities</i>	<i>plant and animal communities that establish within a relatively short time and are usually the first to colonise a new area.</i>
<i>Intermediate communities</i>	<i>plant and animal communities that are intermediate between pioneer and established, closed-turf communities.</i>
<i>Closed-turf communities</i>	<i>species rich plant and animal communities that develop over a relatively long time, gradually building up a layer of soil and humus over the shingle, eventually completely covering it with vegetation, with no bare shingle visible.</i>

