

**Broad Character: Industry**

**Character Type: Extractive Industry**

**Regional Perspective: Southern England**

**Compiled by Seazone Solutions Ltd / M A Ltd, January 2011, after comment from D Hooley, English Heritage**

**INTRODUCTION: DEFINING/DISTINGUISHING ATTRIBUTES**

The Character Type Extractive Industries (minerals) includes the following Sub-types:

- Aggregate dredging
- Aggregate quarrying
- Quarrying
- Mining (coal)
- Mining (metals)
- Mining (other)
- Mining (unspecified)

This Character Type dominates in many areas of the region's coastal and marine zones, with examples of a broad range of mining and quarrying present. Along the coastal zone these range from chalk and gravel in Hampshire, Purbeck Marble in Dorset, and limestone and chalk on the Isle of Wight.

The Southern England marine region is an important source of marine aggregates with a long-standing history of extraction, much of the dredged aggregate also being brought ashore on the region's coast. Sand/gravel from this region accounted for about 20% of total sand and gravel supply in England and Wales (Highley *et al*, 2007).



**Dredger in action (© Hampshire & Wight Trust for Maritime Archaeology)**

**HISTORICAL PROCESSES; COMPONENTS, FEATURES AND VARIABILITY**



**Gravel piles on aggregate wharf (© Hampshire & Wight Trust for Maritime Archaeology)**

Purbeck Marble (quarried from cliffs on the Isle of Purbeck in Dorset) has been in great demand for centuries. It was first quarried in the Roman period, and was used later in the construction of the region's cathedrals eg Chichester. Once quarried, the stone was transported further by ship or barge to be used in buildings further afield.

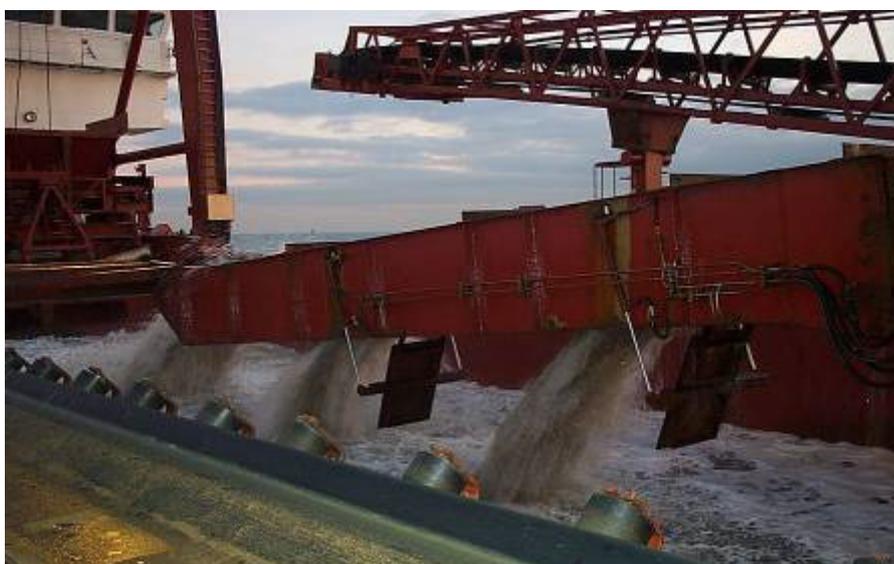
Quarr limestone from the Isle of Wight was used in the late 11th century to build Canterbury and Chichester cathedrals. However, by the seventeenth and eighteenth centuries the quarries at Quarr were no longer producing the best quality stone and their pre-eminence had been displaced by the beach limestone quarries at Bembridge ([www.aggregate.com/PageFiles/20/AboutUs-History-Isle-Wight-BardonVectisPt1.pdf](http://www.aggregate.com/PageFiles/20/AboutUs-History-Isle-Wight-BardonVectisPt1.pdf)). Here, limestone was being quarried from below the high water mark on the Bembridge Ledges off the northeast tip of the Isle of White from Tyne Ledge at the entrance to Bembridge Harbour around past the Foreland to Whitecliff Bay (Fenn, 2009). The Tertiary Bembridge Limestone which is exposed on the ledges was easily split along its bedding planes in to blocks which could be used in masonry. The locality was accessible by boat and therefore the limestone was readily transported by sea, not only for use on the island but across the Solent on the mainland. It was only the coming of brick making on an industrial scale in the 19th century that brought an end to offshore quarrying (James et al, 2010).

The quantities of ballast required for laying and maintaining the Island's railway tracks in the early twentieth century meant that commercial quarrying of chalk was increasingly becoming a viable proposition. Though granite and limestone chippings were preferred for ballast, chalk was taken from Ashe quarry for the Ryde and Newport railway, providing access to the island's north east coast.



**Large quantities of chalk ballast were required for the Isle of Wight's railways such as that at Ryde (© Hampshire & Wight Trust for Maritime Archaeology)**

This region is an important source of marine aggregates with a long-standing history of extraction. The South Coast is one of seven Crown Estate regions in England and Wales where marine aggregates are dredged within designated licensed dredging areas. Marine aggregates are an important source of sand and gravel accounting for about 20% of total sand and gravel supply in England and Wales (Highley *et al*, 2007). In 2006 the total marine aggregate production in England and Wales was 24.3 million tonnes, of which nearly a third was produced in the South Coast region (James *et al*, 2010).



**Aggregates dredger in action (© Hampshire & Wight Trust for Maritime Archaeology)**

In 2008, 3.93 million tonnes of aggregate for construction purposes was dredged in the South Coast region ([www.thecrownestate.co.uk/dredge\\_areas\\_statistics](http://www.thecrownestate.co.uk/dredge_areas_statistics)). Of this, much was landed at eight wharves along the south coast from Poole to Shoreham. The most significant wharves are at Southampton and Shoreham which together take 70% of the tonnage landed in the region ([www.thecrownestate.co.uk/dredge\\_areas\\_statistics](http://www.thecrownestate.co.uk/dredge_areas_statistics)).

In 2009 there were twenty four licensed dredging areas in the Southern England region. These are clustered in three groups, two of which surround the Isle of Wight, with the third

group east of Selsey Bill (the 'Owers Bank'). In addition, seven licence application areas are currently being evaluated (James et al, 2010).

The location of these licensed dredging and application areas is primarily controlled by the marine distribution of sand and gravel of suitable quality and in sufficient quantity to sustain the economic extraction of marine aggregate. Other factors also have to be accounted for, including relevant legislation and effects on the cultural and natural environment and on economic activity including fisheries and shipping. The majority of the licensed areas are aligned along ancient river channel systems with their associated infill and marginal terraces, areas with high potential for surviving palaeoenvironmental remains (see 'Cultural Topography/Marine' Character Type text)..

### **VALUES AND PERCEPTIONS**

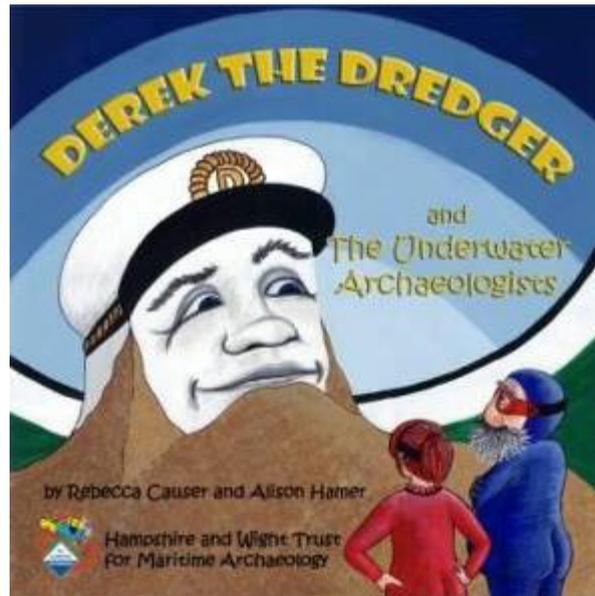
The region contains many tangible and non-tangible reminders of England's past quarrying and mining activities. The remains of these industrial processes on the present landscape/seascape can generate complex contrasting feelings in different people depending on their experience and background. Some people may view industrial remains as 'blots' on a seemingly 'natural' landscape' while others value them as reminders of the hard labouring life and part of the region's contributions to the country's industrial development. Their coastal distribution biases are also reminders of the vital roles of maritime transport in that development and in the growth of those industries concerned.

Abandoned quarries are commonly seen as eyesores or hidden sites for illicit waste disposal. Overgrowth of vegetation may spoil, or eventually totally obscure geological and other historical features, removing their perception for many but in some cases enhancing their ecological value. The mining of Purbeck Marble has produced a number of cliff-edge quarries, the remains of which can be seen at Tilly Whim. These are typical old stone quarries right on the cliff edge called after a special type of wooden crane used to load stone onto boats, known as the 'whim'. The nearby 'Dancing Ledge' offers another example of man's shaping influence on Purbeck's landforms. A massive piece of stone was cut out of the cliff and shipped to Kent in order to construct Ramsgate Harbour, leaving behind a flat ledge the size of a ballroom dance floor ([www.dorset.co.uk/Purbeck](http://www.dorset.co.uk/Purbeck)).

### **RESEARCH, AMENITY AND EDUCATION**

From the 1990s, the growth and development of the offshore extraction and construction industries have increasingly affected the submerged archaeological resource. The high palaeoenvironmental potential of these submerged environments is increasingly being recognised at national and international level by both heritage organisations and seabed developers (see [www.jnapc.org.uk](http://www.jnapc.org.uk)). As a result, initiatives promoting environmentally-sustainable extraction have been developed. For example, the Aggregates Levy Sustainability Fund (ALSF) demonstrates how this scheme has enabled English Heritage to support a range of timely initiatives, providing new insights into understanding, mitigation, assessment, evaluation and potential of the marine historic environment through characterisation, remote survey and field investigation.

Educational programmes have enabled children to learn more about the region's industrial past. This process continues with the work from organisations like The Hampshire and Wight Trust for Maritime Archaeology which has carried out a number of these projects. It has also produced a wide range of educational initiatives including two 'Derek the Dredger' children's books, emphasising aspects of aggregate extraction, marine archaeology, marine biodiversity and how such industries work together; and the 'Aggregates to Outreach Teaching Pack' with curriculum-linked lesson plans and collection-handling (see [www.hwtma.org.uk](http://www.hwtma.org.uk)). The HWTMA is producing a teaching pack on the 'Mystery Wreck': remains of an unidentified wooden shipwreck that lies within a licensed dredging area in the Eastern Solent.



**Derek the Dredger children's book (© Hampshire & Wight Trust for Maritime Archaeology)**

A wealth of research has been produced on extractive industries addressing such issues as reducing the environmental footprint of quarrying and the sustainable provision of aggregates (see [www.sustainableaggregates.com/index.htm](http://www.sustainableaggregates.com/index.htm)). HSC provides a strategic-level understanding of the known cultural processes that have shaped an area proposed for aggregate licensing, allowing an assessment of maritime cultural seascape to be brought to the landscape considerations of the necessary Environmental Impact Assessment (EIA) along with an early estimation of the cultural research agenda to be implied by such extraction. At a more detailed level, geophysical survey enables assessment of the material historic environment data present within defined offshore aggregate extraction areas.

**CONDITION AND FORCES FOR CHANGE**

The condition of remains from the region's coastal and marine extractive industries is extremely variable: some sites have been almost entirely destroyed, and others are still in active use or being developed. Where derelict such an area may have become subject to character change: perhaps developed for housing or other commercial activities, damaging or removing remains of early industry, or to a wildlife conservation site where the effect is more one of neglect and masking.

In the past some gravel sites have become landfill waste sites eg those outside Hamble and Lymington. Others, such as Testwood near Totton have become nature reserves.

There is likely to be a greater reliance on marine aggregates in the future as pressure on land-based sources continues to increase, although marine sand and gravel themselves are a relatively finite resource in economic quantities (James et al, 2010). The Crown Estate issues prospecting area licences to companies to undertake geological and geophysical surveys for the assessment of sediments and geology in an area, and its potential as an aggregate resource. In 2009 there were four prospecting areas in the Southern England region, three surrounding the Isle of Wight, and one in the south east corner of the Owers Bank area (James et al, 2010).

**RARITY AND VULNERABILITY**

In terms of rarity, extraction industries are restricted by the distribution of their resource: in some cases as for Purbeck Marble in Dorset, that is very restricted indeed.

In terms of vulnerability, raising awareness of the region's industrial remains is a prerequisite for efforts for their conservation and for their continued role in the cultural legibility of the region's coastal and marine seascape for present and future generations.

#### **PUBLISHED SOURCES**

Beavis, J, 1971 "The use of Purbeck Marble in Roman Britain", Proceedings of the Dorset Natural History and Archaeological Society, 92, 181–204

BGS. 1999. *Minerals in Britain. Past Production... Future Potential*. Nottingham: BGS on behalf of DTI

Fenn, R W D, 2009 An outline of the history of quarrying and brick making on the Isle of Wight until 1939

Hampshire County Council, 2010, Hampshire County Integrated Character Assessment 2 *Status: Draft March 2010* South East New Forest Coastal Plain

Highley, D E, Hetherington, L E, Brown, T J, Harrison, J D, and Jenkins, G O, 2007 The strategic importance of the marine aggregate industry to the UK. British Geological Survey Research Report OR/07/019.

LDA Design, 2010 Dorset Coast: Landscape and Seascape Character Assessment

Leach, Rosemary (1978), An investigation into the use of Purbeck marble in medieval England, 2nd edition.

James, J W C, Pearce, B, Coggan, R A, Arnott, S H L, Clark, R, Plim, J F, Pinnion, J, Barrio Frójan, C, Gardiner, J P, Morando, A, Baggaley, P A, Scott, G, Bigourdan, N, 2010 The South Coast Regional Environmental Characterisation. British Geological Survey Open Report OR/09/51

Treleven, H, 1998 "Extracting Purbeck Marble", Hatcher Review, 5(45), 48–54.

#### **WEBSITES**

<http://www.aggregate.com/PageFiles/20/AboutUs-History-Isle-Wight-BardonVectisPt1.pdf>

<http://www.alsf-mepf.org.uk/projects/rec-projects.aspx>

[http://www.bbc.co.uk/hampshire/content/articles/2008/01/08/gravel\\_feature.shtml](http://www.bbc.co.uk/hampshire/content/articles/2008/01/08/gravel_feature.shtml)

<http://www.bgs.ac.uk/mineralsuk/maps/maps.html>

<http://www.bmapa.org/>

<http://consult.hants.gov.uk/portal/pdpp/hmp/hmprc>

<http://www.dorset.co.uk/Purbeck/>

[http://www3.hants.gov.uk/other\\_minerals\\_topic\\_paper\\_12.6.08.pdf](http://www3.hants.gov.uk/other_minerals_topic_paper_12.6.08.pdf)

[http://www.iwight.com/living\\_here/planning/Countryside/Nature\\_Reserves/Shide\\_Chalk\\_Pit/](http://www.iwight.com/living_here/planning/Countryside/Nature_Reserves/Shide_Chalk_Pit/)

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<http://www.mineralsUK.com>

<http://www.sustainableaggregates.com/index.htm>

[http://www.thecrownestate.co.uk/dredge\\_areas\\_statistics](http://www.thecrownestate.co.uk/dredge_areas_statistics)

<http://www.westsussex.gov.uk/default.aspx?page=8180>

[http://en.wikipedia.org/wiki/Purbeck\\_Marble](http://en.wikipedia.org/wiki/Purbeck_Marble)

[http://en.wikipedia.org/wiki/Shide,\\_Isle\\_of\\_Wight](http://en.wikipedia.org/wiki/Shide,_Isle_of_Wight)