

Minerals

Dorset has diverse mineral resources with stone continuing to be extracted from quarries and sand and gravel from both land based areas and licensed areas out at sea. Dorset minerals include Portland and Purbeck stone, chalk, clay and hydrocarbons (oil and gas). Minerals in the form of aggregate (sand, gravel and crushed rock from land or from marine dredged sources) are primarily used as raw materials by the construction industry, and for rock armour. Sand is used for beach replenishment.

This topic paper is primarily in relation to marine aggregates and offshore hydrocarbons. For land/coastal based information please refer to the [Dorset County Council's minerals topic paper \(2009\)](#):

Introduction

On the coast Portland is the main area for quarrying blockstone and crushed aggregates. 40% of Portland has planning permission for quarrying and in 2012 6 quarries operated on Portland. Purbeck stone is an established industry used for building, paving, roofing, monumental and ornamental work. The stone is quarried within 10 square kilometres of Swanage, Dorset.

Extracting aggregates from the sea need facilities on the coast such as ports and processing plants and needs ways of transporting the material to the desired end location.

the Dorset Coast since the 1930s. The onshore oil industry at Wytch Farm is Western Europe's largest onshore field, discovered in 1974. There are also smaller fields being exploited in Wareham and Kimmeridge.

Dorset's onshore oil industry combines commercial success with high standards of environmental management.

Offshore Dorset's geological history has created an area with proven oil and gas reserves. Commercial oil deposits result from an unusual combination of geological factors, comprising:

- a **source** rock for oil – usually shale - where time and heat lead to oil being formed from trapped plant and animal remains;
- an **oil trap**: comprising a **reservoir** of porous rock to hold oil and allow it

impermeable **cap** to confine the oil within the reservoir, and a **structure** which ensures oil accumulates – normally a fold or a fault in the rocks.

Mineral Demand

The Dorset aggregate demand arises from the construction and maintenance of buildings, roads and sea-defence. The majority of aggregates have come from land although some are from marine sources.

Key aggregate demand in Dorset is for:

- Development of infrastructure within the Bournemouth-Poole conurbation
- Defences built as protection in some areas on the coast from flooding and erosion
- Road construction e.g. the Weymouth relief road opened in 2011

Beach replenishment schemes use marine dredged sand from Poole Harbour channels to replenish three local beaches in 2006 to protect them from coastal erosion. e.g Bournemouth beach used 1505000t, Poole used 672000t and Swanage beach used

143592t. This was done as part of a £5 million coastal protection project. See:

<http://www.poolebay.net/projects.htm> and <http://www.dorsetforyou.com/396732>

Demand for gas in Dorset continues to grow with Dorset's population standing at 715 042 in 2010, with 25.6% being over 65. The total number of dwellings in the Dorset area in 2010 is estimated at 192 625 and with colder winters predicted the need for oil and gas to heat homes will increase especially in more rural and isolated areas. More information at <http://www.dorsetforyou.com/339524>

Production

Aggregates:

In 2007 in the South West the production of crushed rock aggregates was 26 million tonnes (mt), an increase of 5% on 2006. Sand and gravel produced was 4.1mt in 2007, a decrease of 11% on 2006. In 2010, Dorset produced 1.41 mt of sand and gravel, 0.26 mt crushed rock. Reserves of crushed rock for aggregate purposes are adequate to meet demand for the next 15-20 years, but new sites may have to be considered sooner rather than later. Crushed rock is a by-product from the quarrying of Portland stone.

In 2007 marine dredged landings of sand and gravel in the south-west area, mainly dredged from the Bristol Channel was 0.8%, an increase of 20% from 2006. In the South Coast dredging area in 2009, 18 production licences permitted the extraction of approximately 10.5 million tonnes of material per annum and over the same ten year period the average annual utilisation of the permitted tonnage was 49%; in 2009 the utilisation level was 36%. Two of these licences lie to the east of the Marine Management Area (MMA); Hanson Aggregates Marine Ltd and Tarmac Marine Dredging Ltd hold licenses and currently dredge the South West Isle of Wight block, whilst Hanson Aggregates Marine Ltd and CEMEX UK Marine Ltd are licensed to and currently dredge the Needles Isle of Wight block.

In 2007 0.1mt of sand and gravel was from licensed dredging areas off the South coast and landed at Poole (Ref: South West Regional Aggregate Working Party, Annual Report 2007. In 2010, 0.09 mt were landed at the Port of Poole. Poole also imports a small quantity of crushed granite from Northern Ireland.

<http://www.communities.gov.uk/documents/planningandbuilding/pdf/1392710.pdf>)

In 2009 the licensed area in the South Coast region was 204.46km², with 90.02 km² of that available to be dredged. From this 3.49 million tonnes of construction aggregate was dredged, plus 0.28 million tonnes specifically dredged for beach nourishment schemes; 2.35 million tonnes of this were landed at wharves along the South Coast, and 1.14 million tonnes were landed elsewhere in England. The Port of Poole has an active aggregates landing wharf, and some 0.09 mt were landed there in 2010. In contrast to the South East and South West regions, the area of seabed licensed in the South Coast region has remained very stable.

Hydrocarbons: Dorset has a long association with oil and gas exploration and production, with initial searches in the 1930s and the first commercial discovery at Kimmeridge in 1959. The discovery of a significant oilfield at Wytch Farm in 1973 has put Dorset in the forefront of onshore oilfield development and intensified the search for oil throughout southern England. The discovery of further commercial reserves, including those under Poole Bay, led to the Wytch Farm

development becoming the most productive onshore field in Europe, reaching output levels of 110,000 barrels per day (bpd). This has since fallen to a current level of around 10 - 20,000 bpd. Conventional oil and gas operations are the subject of a licensing system by the Department for Energy and Climate Change (DECC). Such licences (Petroleum Exploration and Development Licences), granted by the Secretary of State for Trade and Industry, grant exclusivity to operators in the licence area. They do not however give consent for drilling or any other operations. The licenced areas in the county mainly cover south and south east Dorset, including Purbeck. Much of the areas are sensitive environmentally, with habitats designated at the European level for their value, scattered amongst them, notably the Dorset Heaths SAC and Dorset Heathlands SPA. In addition, the Dorset AONB extends through three of the licenced areas, including where Wytch Farm is located in Purbeck. Such designations may present constraints on production and processing sites in the future and would need full consideration in line with the policies of the Minerals Core Strategy and relevant legislation.

Wytch Farm has a total of 95 wells, operating from 10 sites on the Isle of Purbeck. The Wytch Farm oilfield, located around the southern shores of Poole Harbour, hosts the majority of these sites, which lie within the Frome, Bridport and Sherwood oil bearing reservoirs. The smaller Wareham oilfield (west of Wareham) and Kimmeridge oilfield (at Kimmeridge Bay) are supplementary operations to the main oilfield production. Oil is processed at the Wytch Farm gathering station. Crude oil is exported by pipeline to a storage and loading facility at Hamble, Southampton, whilst gas is exported by pipeline directly into a gas pipeline transmission system at Sopley, north of Christchurch, for feeding into the main domestic gas network. Additionally, liquid propane is distributed direct to customers by road tanker. Extended reach directional wells have been drilled offshore into the Sherwood reservoir underlying Poole Bay, with the well of the greatest distance extending 11km from the onshore well site. This brings considerable environmental benefits by enabling the furthest parts of the reservoir to be drilled from an onshore site. Taken from the Minerals Core Strategy chapter 12

Production at Wytch Farm (which incorporates the three oilfields) is 10-20,000 barrels per day.

In part, oil is extracted using the extended reach drilling techniques, reaching over 10km out and 1638m under Poole Bay. The total estimated recoverable reserves of these fields are 480 million barrels, of which over 90% lie in the Sherwood reservoir.

Planning, Legislation and Licensing

Marine Aggregates:

National:

The industry is regulated by the Marine Management Organisation (MMO). Each dredger carries an electronic monitoring system (EMS) to track and record its movements every 30 seconds when it is actively dredging at sea. This ensures that vessels remain within their allocated licensed area.

The key national planning advice on minerals is set out in the National Planning Policy Framework (NPPF).

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Regional:

The South West Aggregate Working Party (SWAWP) advises Mineral Planning Authorities (MPAs) regarding annual production levels. MPAs are also required to work closely together to ensure that adequate quantities of mineral are produced to meet reasonable economic needs.

Standing Conference on Problems Associated with the Coastline (SCOPAC) which looks at the management of the shoreline from Lyme Bay to Shoreham-by-Sea are routinely consulted on licence applications.

The Inshore Fisheries and Conservation Authority (IFCA) and the Marine Management Organisation (MMO) are routinely consulted on with regards to licence applications within 6 miles.

County:

Dorset County Council is responsible for mineral planning, and is called a Mineral Planning Authority (MPA). Bournemouth and Poole Councils are MPAs also. Their key responsibilities include:

- formulating policies and plans to guide future development ('forward planning');

- regulating individual developments that are proposed through deciding planning applications ('development management');
- policing of existing developments to ensure that they are working within any legal constraints outlined in the planning permission ('monitoring and enforcement').

MPAs are, since the Planning and Compulsory Purchase Act 2004, required to produce a 'Minerals and Waste Development Framework' (MWDF), which shows how the MPA will plan for future provision of minerals and disposal of waste in their area. The Bournemouth, Dorset and Poole Minerals and Waste Development Framework, produced by Dorset County Council on behalf of Bournemouth and Poole, provides a more local policy context for minerals development.

Hydrocarbons:

National:

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Environment Agency: regulate Discharge Consents to watercourses.

Department of Food, Environment and Rural Affairs (DEFRA) and the Joint Nature Conservation Committee (JNCC) are consulted with regard to determine which projects (other than those where it is already compulsory under the Regulations) require assessment.

Regional:

Health and Safety Executive (HSE) is responsible for setting safety standards and inspection, and designating Control of Major Accident Hazard (COMAH) sites. Marine Pollution Control Unit (part of the Coastguard) approved emergency plans, and provide national backup for major incidents.

Standing Conference on Oil and Gas set out non-statutory policy view of local authorities regarding exploration in the English Channel.

County:

The Mineral Planning Authority is responsible for preparing a local plan to provide strategic guidance for hydrocarbons development, and for determining applications for oil and gas related development.

Block licensing process

Marine aggregates - The Crown Estate owns the mineral rights to the seabed extending to the edge of the UK continental shelf (UKCS) and issues consents for non-exclusive sampling and licences for commercial aggregate extraction. To obtain a licence, companies who have been successful in a tender round run by The Crown Estate must obtain a Dredging Permission (DP) from the government, a procedure which includes the submission of an Environmental Impact Assessment (EIA). If a favourable DP is granted, The Crown Estate will issue the applicant with a production licence.

Hydrocarbons - Oil and gas activity within the UK (its territorial seas and on the UK

Continental Shelf) is controlled by the Government. The issuing of licences carried out by Department of Energy and Climate Change (DECC) with different systems existing for the sea and for land (including some defined estuarine and near shore waters – termed ‘watery areas’).

For licensing purposes the UK Continental Shelf (UKCS) is divided into 1° by 1° quadrants, each of which is divided into 30 blocks - with an average size of around 230 square kilometres. There are currently two types of seaward licence:

- Exploration licences allow survey work and shallow drilling in any part of the continental shelf not already under a production licence. These are valid for three years, renewable for one further term of three years at the Secretary of State's discretion.
- Production licences grant the holder exclusive rights to explore for and produce petroleum in one or more particular blocks.

In 2012 32 licence blocks and part-blocks exist between the Dorset coast and the limit of the

UKCS in the English Channel, 20 of which lie at least partly within the 12 mile limit.

Licence blocks for land - are defined on 10km squares, relating to the national grid. Licences are referred to under different names due to the different times at which they were issued. A Mining Licence (ML) is the oldest type of licence which is still in force. An ML covers the area at Kimmeridge. Three areas, including that which covers Wytch Farm, are covered by Production Licences (PLs). Until 1996, different licences were issued for different stages of development. In 1996, at the Eighth Licensing Round, Petroleum Exploration and Development Licences (PEDLs) were introduced to reduce the bureaucratic burden of issuing a series of licences. PEDLs are therefore the most recent type of licence.

The EU Environmental Impact Assessment (EIA) Directive has resulted that for certain types of project a developer must provide information to the relevant competent authority - the body who must give consent for the development to take place - about any likely environmental effects. This information is presented as an Environmental Statement (ES).

Current trends for minerals

Marine Dredged Aggregates

The possibility exists of supplying some of Dorset's future needs by material dredged from the sea-bed; however the evidence are that there are few economic sources off the Dorset coast. The availability of marine aggregate off the Dorset is less of an issue than the fact that Dorset only has one quite small wharf. Dredges could bring material sourced some distance away, if the capacity to handle them existed. They could in theory be handled at Port of Poole itself or Portland Port, but indications are that these Ports do not wish to handle aggregates, a relatively low-value product.

Hydrocarbons

In the last 20 years, 19 exploration wells have been drilled in a total of 9 blocks offshore the Dorset Coast. The focus for the most recent exploration is on areas to the south of Wytch Farm. Compared to the North Sea, offshore Dorset has been well explored - although the intensity varies from block to block and some areas have not been looked at in detail. There is a continued pattern of interest from the industry in oil exploration off the Dorset Coast. Wytch Farm was sold by BP to Perenco

UK Ltd for \$610m in May 2011. The majority of planning permissions for the oilfield are time limited to 2016.

NorWest Energy is an Australian company with a keen interest in the oil industry in Dorset. Norwest energy has been granted a PEDL exploration licence for the 238 area. The PEDL 238 exploration licence lies in the west of Dorset north of the Perenco operated Wytch Farm. More information can be found at <http://www.norwestenergy.com.au/index.php/projects/uk/>

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