

Dorset Aggregates

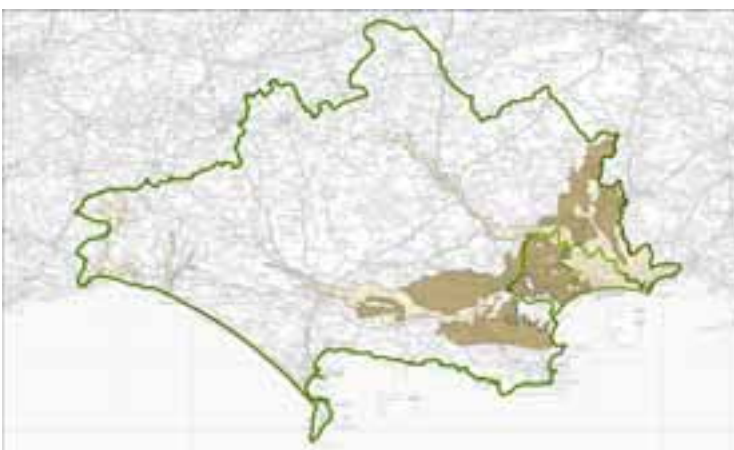


What are aggregates?

The term aggregates covers a wide range of naturally occurring and artificial materials which are used in the construction industry. They are commonly angular to rounded fragments of relatively inert materials which are generally used in association with, or bound together by, other materials such as cement to produce concrete and mortar. In an unbound state, aggregates also have a variety of uses - for instance as a fill material, as railway ballast or as filter media. Aggregates are used to provide the bulk, strength and wearing characteristics for many constructional and civil engineering structures. The physical properties required of aggregates vary widely according to their proposed usage. (High quality, clean, carefully size-sorted sand and gravel are needed for concrete manufacture as is some crushed rock. "Soft" sands for mortar manufacture or asphaltting require a different grain size and shape to the "sharp" sands used for concreting. Stone used in the sub-base of road construction needs to be resistant to frost damage and that in the wearing course needs to resist polishing by tyres. Much lower grade materials may be suitable for less critical uses, such as bulk fill in road embankments.

Where are aggregates found?

Three naturally occurring types of aggregate are produced in Dorset: land-won sand and gravel, marine-dredged sand and gravel (dredged off the Isle of Wight and landed at Poole) and crushed limestone rock. The diagram shows Dorset's land-won sand and gravel deposits.



Plateau Gravels are found capping many of the hills and ridges north of Dorchester to Wareham and around the fringes of Poole, Bournemouth and Wimborne. These gravels are thought to be the remnants of gravel deposited by river systems which dissected the Wessex Basin area during the Quaternary period.

Today, as a result of subsequent erosion, fragmented outcrops are all that remain of these deposits which, in the past, have been the main source of gravel in Dorset. Now, however, only isolated pockets remain available for the industry, the rest having been worked out or built upon.

Valley Gravels are found in the valleys of the Piddle, Frome, Stour and Avon. There has been only limited working of these deposits in the past in Dorset. These gravels have been deposited by more recent river systems (within the last 10,000 years) which have reworked older deposits, including the Plateau Gravels.

They now remain as terraces lining existing valley sides and underlying recent river alluvium. In addition, to the main areas of gravel working in South East Dorset, there is also one active sand and gravel site on the county boundary at Chard Junction.

Another important source of aggregate, the sands of the Poole Formation, were deposited much earlier in Tertiary times. These sands comprise a series of upward fining sequences, becoming more fine grained with increasing silt content towards the south east. The large variations in particle size, enable a wide range of products to be produced but their unpredictable distribution presents difficulties. They form by the most important source of sand in Dorset.



Aggregates are also produced in Dorset from crushed Upper Jurassic limestone which outcrops on Portland and Purbeck.

Some beds of Portland Limestone, for example, have a high proportion of cherty material, and have no value as building stone but have been extensively quarried and crushed for use as aggregate. There are currently three active quarries producing crushed rock.

Key Facts

Number of active sand and gravel sites in Dorset (2003)	16
Number of active Limestone quarries in Dorset (2003)	3
Total production of sand & gravel in Dorset (2003)	1.7 million tonnes (inc 0.1 mt marine dredged)
Total production of crushed rock in Dorset (2003)	0.31 million tonnes
Total production of sand & gravel in the South West (2003)	5 million tonnes
Total production of crushed rock in South West (2003)	22 million tonnes

Possible Issues for discussion

- **Should more aggregates be imported to meet Dorset’s needs?**
- **What considerations should apply to working in the AONB or other sensitive locations?**
- **How should sand and gravel operations be restored? What are suitable after uses?**
- **Should we utilise rail depots or wharfs for the export/import of aggregates?**
- **Should crushing of Portland stone be encouraged?**