

RAW MATERIALS FOR THE CONSTRUCTION INDUSTRIES

The location of the principal quarries in Cornwall and the types of stone produced are shown in *Figure 15.4*.

Greenstone is a convenient local term for a variety of basic igneous rocks. Principal greenstone quarries, active at the moment, include Greystone Quarry [SX 363 805] near Launceston (Camas Ltd) and Dean Quarry [SW 800 202] in the Lizard (Redland Aggregates Ltd). There are also several other smaller quarries in the Lizard and Launceston areas. Greenstones generally yield good materials for roadmaking, including the all-important wearing surface which must use a stone with a sufficiently good Polished Stone Value to minimize the risk of skidding. Slightly weathered or rotted greenstone can be used for the base course of roads, but the freshest rock is reserved for the wearing course.

One of the earliest building stones used in Cornwall was Cataclews stone, which was originally obtained from a dolerite intruded into Upper Devonian rocks at Cataclews Point [SW 873 761], west of Padstow (Reid *et al.*, 1910). An altered ultrabasic rock at Polyphant [SX 258 827] has also been worked since the 11th century for an easily carved stone that can be used for delicate interior work. Many churches in east Cornwall and farther afield (including Canterbury and Exeter cathedrals) have interior features made of Polyphant stone. Launceston Priory and Launceston parish church also contain much Polyphant stone, but it has not weathered well, presumably because the stone contains a substantial proportion of talc. Small quantities of serpentine are extracted from a quarry near Kynance Cove for the manufacture of ornaments in Lizard Town.

Large granite quarries for aggregate are worked at Hingston Down (ARC Southern) [SX 409 720], Luxulyan (Camas Ltd) [SX 053 592],

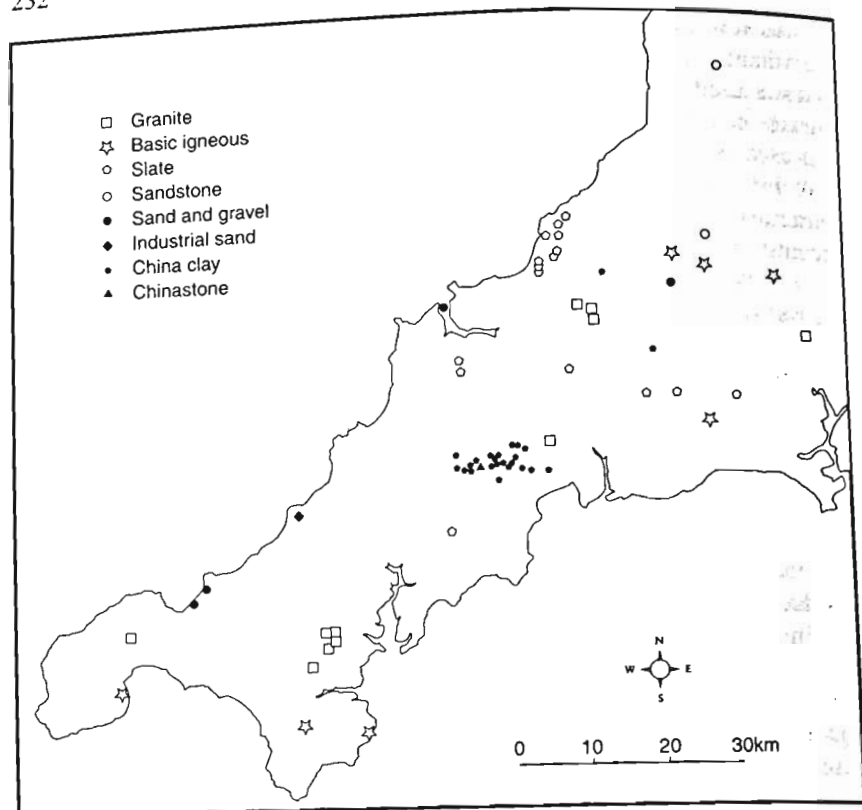


Figure 15.4. Sites from which constructional raw materials are currently obtained

Carnsew Quarry [SW 764 355], near Falmouth and at Castle-an-Dinas [SW 489 341] in the Land's End granite (Penryn Granite Ltd). There are also many small granite quarries in the Carnmenellis granite and a few on Bodmin Moor. Crushed granite makes an excellent aggregate for general usage.

Granite is also worked for dimension stone on the west side of Bodmin Moor at De Lank [SX 101 753] and Hantergantick [SX 103 757] quarries. De Lank granite was used in the construction of the Eddystone, Bishop Rock and Beachy Head lighthouses, and Tower and Blackfriars bridges in London. High-quality dimension stone, renowned for its strength, was formerly extracted from a number of quarries in the the Luxulyan valley. This stone was used in the construction of the British Museum, the old London Bridge and Plymouth breakwater.

Another rock of granitic composition that has been extensively used as a dimension stone for building is Pentewan stone (a felsite dyke). This was formerly obtained from small quarries [SX 025 475] on the cliff just

northeast of Pentewan and also inland in a quarry [SX 022 478] north of the village. Pentewan stone is easily worked and of excellent durability, and was used in the construction of St Austell parish church and Antony House. However, much of what is nowadays called 'Pentewan stone' may well have come from other quarries extracting similar material at Sticker [SW 985 504; SX 974 505] and Polgooth [SW 997 503]. Other felsitic dyke material has also been worked in the west of the county and in the vicinity of Bodmin Moor to be used for building purposes.

Outside of the granite areas, slate is extensively used for building, both for walls and roofing. Delabole quarry [SX 073 840] near Tintagel, is the largest and best known source of roofing slate, which has a pleasant pale grey colour. The quarry is said to have been continuously worked since Tudor times and a considerable export trade was already in existence by 1602 (Reid *et al.*, 1910). A group of slate quarries in the Wadebridge area has yielded large quantities of 'St Issey stone' used for constructing 'Cornish hedges' and for a variety of purposes where a natural stone finish is desired. There are also many small slate quarries throughout Cornwall that are used locally for walling and construction. Most are producing Devonian slate, but in the Launceston area Carboniferous roofing and building slates were formerly worked.

Sandstone is extracted on a small scale from a few localities in north Cornwall, and was formerly worked from quarries in the Gramscatho Group in mid-Cornwall, as well as the Staddon Grits in southeast Cornwall. Its main use is as a walling stone.

Apart from a few pockets in the Launceston area, limestone is almost absent from Cornwall, and none is presently worked. In the past, agricultural lime was frequently obtained from beach sands containing seashells fragmented by wave action. Sands of this type are found in the Hayle and Padstow estuaries and in the Bude area. A canal was built in the early 19th century (opened 1823) from Bude to Holsworthy to take such sand to the farms of mid-Devon situated on the sour 'Culm' soils. Where these Quaternary sands are locally cemented by CaCO_3 (Godrevy Point, Padstow and Fistral Bay), they have had limited use as a building stone.

Sand and gravel have not been worked extensively in Cornwall, although sands in the Hayle and Padstow estuaries and adjoining areas are still used as a source of fine sand for building purposes. During the 1960s and 1970s, when alluvial Sn was being worked, sand and gravel were an important by-product, as for example in Hydraulic Tin's workings at Bissoe.

Bricks were formerly produced from small plants scattered all over Cornwall that mostly worked superficial clays. None are now produced in Cornwall, but a brickworks at Millbrook [SX 435 528], near Torpoint, was active up to the late 1960s. Specialist brickworks, supplying tiles for

china clay pan kilns, were active in the St Austell area (Wheal Remfry brickworks [SW 928 578]) until around 1972.

Waste materials from the china clay industry now represent some of the most widely used raw materials by the construction industry in South West England. In the 1980s about 1.5 million tonnes of this waste was used in the construction industry, but the present figure is appreciably lower, due to recession in the building industry.

It is worth recording some cautionary events concerning the use of unconventional raw materials in the local construction industry. One concerns the employment of old metalliferous mine waste to make concrete blocks known as 'mundie blocks'. Mundie means iron pyrites. When exposed to a damp atmosphere pyrite slowly oxidizes, releasing sulphuric acid which dissolves the cement, so that blocks eventually crumble. This process takes a long time to become apparent and has only become a serious problem in recent years. A number of properties have had to be demolished and rebuilt in consequence. Cases of concrete cancer have also been reported in Cornwall. The mechanism involves a normal or high alkali cement being used in conjunction with a reactive chert in the sand or aggregate. This produces a gel that expands when wet and cracks the concrete.

The extractive mineral industry remains one of Cornwall's most important industries, and looks set to maintain this role in the future.