Meldon Quarry - Summary of Key Elements

Location:	About 3 Km southwest of Okehampton, Devon, about 1 Km off the B3260.
Operated by:	Bardon Aggregates, a subsidiary company of Aggregate Industries
O.S. Grid Ref:	SX 567 925 (quarry office)
O.S. Map Nos:	1:25 000 Outdoor Leisure 28 Dartmoor (North Sheet)
	1:50 000 Landranger Sheet 191, Okehampton and North Dartmoor.
BGS Map No:	1:50 000 Sheet 324 Okehampton.
Status:	Geological SSSI.
General Geology:	Within the Dartmoor granite metamorphic aureole. A major folded and overturned succession of Devonian and Carboniferous rocks comprising cherts and subordinate shales and limestones, *The Meldon Chert Formation*, a series of volcanic tuffs and mudstones (with two dolerite intrusions that were injected at high temperatures) of *The Meldon Shale and Quartzite Formation*, and older Devonian rocks comprising *The Slate-with-Lenticles Formation*.
Geodiversity Highlights:	• Contact and regional metamorphism of country rocks by dolerite intrusions and the Dartmoor Granite. • Dolerite intrusions injected concordantly into country rock. • Wide diverity of rock types. • Varied mineralogy from contact metamorphism and hydrothermal activity. • Faulting bringing older Devonian rocks into contact with Carboniferous rocks. • Geochemistry of naturally occurring rocks and impact on acid water generation. • Large scale folding with inverted southern limb, all beds dipping to the north. • Cleavage/bedding relationships display “way up” criteria. • Banded Cherts and Volcanic Series exposed in section.
Geodiversity Context:	• Deposition of sediments into a basin that was flanked to the north and south by continental masses. • The cherts, interbedded shales and subordinate tuffs represent basinal facies of the Lower Carboniferous starved of detrital accumulation. • Contemporaneous volcanic eruptions and intrusion of sills occurring in the Lower Carboniferous with continued deposition into the basin prior to any major uplifting. • Folding and thrusting in Variscan Orogeny by pressure of colliding continent from the south during the Late Devonian and Carboniferous. • Intrusion of Dartmoor Granite at end of Carboniferous/early Permian causing thermal metamorphism.

Loc 25 General View of Eastern End of Quarry
Grid Ref SX 57247 92698 Photo ME25d Facing E

General view of east end of quarry. Note that the Meldon Shale & Quartzite Formation and two concordant dolerite bodies (Carboniferous in age) all dip from upper right to lower left. Note also rust coloured seepages along rock interfaces. All rock types are exposed along the benches. (See photos ***ME26e, ME27a, ME28a*** and ***ME33c*** for examples of rock types)

Loc 08 Detail of Chiastolite Slate and Dolerite Contact
Grid Ref SX 56911 92697 Photo ME08c Facing NW

Detail of the contact between chiastolite slates, part of the Meldon Shale & Quartzite Formation (left of pin) and dolerite (right of pin). Note that the dolerite intrusion is concordant with the fabric of the slates.

Loc 26 Detail of Hornfels

Grid Ref SX 57477 92748 ***Photo ME26e*** ***Facing NE***

Detail of metamorphosed mudstone (Hornfels) baked hard by the thermal action of the Dartmoor granite emplacement. Note the general curved and conchoidal fracture patterns.

Loc 27 Chiastolite Crystals

Grid Ref SX 57286 92954 ***Photo ME27a*** ***Facing SE***

Detail of chiastolite crystals seen in the chiastolite slates (part of the Meldon Shale & Quartzite Formation. The crystals were formed by the metamorphism of slates by the Dartmoor granite emplacement. The presence of chiastolite is characteristic within the metamorphic aureole of regionally metamorphosed argillaceous rocks.

Loc 28 General View of Banded Chert Beds

Grid Ref SX 57049 92989 Photo ME28a Facing NE

View of well bedded and banded radiolarian cherts of the Meldon Chert Formation. The cherts are associated with subordinate shale and limestone beds and were formed in deepwater basins that were starved of detrital accumulation. Regional metamorphism by the Dartmoor granite emplacement has bleached the originally dark coloured cherts to a pale grey and white colour. The inset shows a detail of banding that is separated either side by subordinate mudstones.

Loc 33 Metaliferous Mineralisation in Dolerite

Grid Ref SX 57269 92689 Photo ME33c Facing NE

Photo of thin vein of iron pyrites, metaliferous mineralisation (left to right in middle of photo) accompanied by bleaching of the surrounding purple dolerite. Abundant metaliferous mineralisation was caused by late stage hydrothermal activity associated with the Dartmoor granite emplacement. The inset shows detail of decomposing iron sulphide (silver colour) to limonite (orange brown in colour). The breakdown of sulphide minerals in the quarry promotes the production of acid water run off that has to be treated before discharging into the local water course.