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# A31 D101 Dunsville Quarry

## Site information

**Site name:** Dunsville Quarry

**Site key:** D101

**Grid reference:** [SE 655 075] (centred on)

**Site type:** active quarries and pits

**Local authority:** Doncaster Metropolitan Borough Council, South Yorkshire

**Site dimensions:** 800 m x 600 m

**Site owner:** Marshall Natural Stone

**Conservation status:** Regionally Important Geological

**Site date:** no date

**Field surveyor:** Scott Engering Date: 19/2/07

## Stratigraphy and rock types

**Time unit:** Triassic **Rock unit:** Sherwood Sandstone Group

**Rock type:** Sandstone (undifferentiated) **Details:** Fluvial sandstone with large scale cross bedding

**Time unit:** Anglian, Middle Pleistocene **Rock unit:** Older River Gravel (River Terrace Deposits)

**Rock type:** Sand And Gravel **Details:** Sequence of sorted and cross bedded sand and gravels

## Site map

(Figure 141) — D101 Dunsville Quarry

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## Site description

Large active sand and gravel pit that has altered substantially since the 1997 RIGS survey. The main changes are the extension of workings up to the boundary to the north at Woodhouse Lane and up to Lings Farm, where upwards of 10 m of Sherwood Sandstone are exposed with a cap of river gravel. Also, to the east of the access road of Woodhouse lane, the quarry has been worked up to the boundary, with similar exposure of Sherwood Sandstone. The northern face is part of the active area of the quarry and not effectively accessible and the eastern part is full of water filled pits, with quicksands and was not visited during this survey.

The quarry has been extended past its 1997 boundaries to the west of Lings Farm and the area centred on [SE 651 078], as shown on the existing site boundary map has been extended to the eastern boundary, adjacent to the gardens of the houses on High Street. The exposures in this part of the quarry as noted in the 1997 survey and comprising good clean sections of Sherwood Sandstone with overlying orange fluvioglacial sands and cryoturbated Older River Gravel no longer exist. There are now only gorse covered embankments, capped with largely overgrown sections of Older River Gravels. Also, to the eastern part of the quarry, there are now large mounds of topsoil obscuring the sand and gravel.

In 1997, sediments comprising thin layers of pebbles alternating with cross bedded orange sand were being extensively quarried but exposures of sand and gravel are now rare. These deposits were apparently identified as belonging to the Barnby Dun Station Channel, one of several subglacial channels that cross the Doncaster region. These have now been worked out and the quarry has been deepened considerably and now works the Sherwood Sandstone which is by and large free of pebbles and uniform and comprises massive, cross-bedded friable sandstone. However, the following were observed: At [SE 65775 07817], cryoturbated sand and gravel is seen to overlie the Sherwood Sandstone to the immediate north of the quarry entrance.

At [SE 65175 07905], in the north-west corner adjacent to Lings Farm paddock, there are poorly exposed sections of Older River gravel with ventifacts. Of particular interest is the occurrence of 1.25 – 1.5 m of thin bedded red and green marl in the lower section of a quarry face. It extends to a length of approximately 100 m from [SE 65197 07870] to [SE 65175 07776] with an apparent dip of about 10 degrees to the west. Where it outcrops continually along the northern part of the exposure towards the base of the quarry face, it forms a very distinct spring line, a few metres above the general level of the water table in the quarry. It was dripping heavily along its length and this has been exploited by a lush growth of mosses and liverworts and other species, forming a very distinctive feature in otherwise very barren quarried Sherwood sandstone faces.

Discontinuous beds of marl have been exposed in various parts of the quarry, according to Geoff Nutt, the quarry manager since 1972 and in places thin flaggy beds may be seen, At [SE 65665 07697], an exposure of these is 2 m thick.

Occasionally, along exposed oblique joint planes, there are fluted solution features that appear to have been formed over a length of time, as the recently quarried faces do not have this characteristic.

At the eastern end at [SE 64958 07724], 1 metre of very cryoturbated yellow sand is overlain by 2 m of Older River Gravel. The beds of cryoturbated sand have been differentially weathered and this brings these structures into strong relief.

The manager has indicated that Marshalls are receptive to the idea of sensitive restoration and management of quarries in their possession and at Stainton, they are implementing a biodiversity action plan. This could be advantageous, if similar management plans are adopted at this quarry. The exposures that were considered to be the best seen at the gravel pits seen during the 1997 survey are no longer available and so there is good potential to reexpose some quarry faces. There is good evidence, in the cryoturbation and ventifacts, of the lower periglacial surface and typical exposures of Older River Gravel and clearly seen unconformable relationships with the Sherwood Sandstone.

The geology of the Quaternary in the region is very complex and the quarry manager has indicated that he has encountered extreme variation within the sediments in a limited geographical area, both from his experience of excavating deposits within the site boundaries and from boreholes on adjoining land, which includes the West Moor depression and is interpreted as an alluvial fan. There is therefore considerable research and educational potential at this site.

## **RIGS assessment of site value**

Ratings: 1–2 very poor; 3–4 poor; 5–6 acceptable/useful; 7–8 quite good; 9–10 very good/excellent; N/A not applicable; D/K don't know

## **Access and safety**

Aspect/Description/Rating

**Road access & parking** Limited parking at site offices. Rating: 5

**Safety of access** Safety varies in relation to the water table and there are dry areas, ponds and quicksands. Fieldwork precautions required. Rating: 5

**Safety of exposure** Care needed to avoid working plant and precautions needed to negotiate variations in the water table described above. Rating: 5

**Permission to visit** Private ownership by Marshalls. The longstanding quarry manager is very co-operative. Rating: 7

**Current condition** Exposures noted in the 1997 survey are obliterated but there is potential for further exposure with good management. Rating: 5

**Current conflicting activities** Active quarryin

**Restricting conditions** Active quarryin

**Nature of exposure** Quarried faces in friable sandstone and sand and gravel

**Multiple exposures / prospect for trail**

**Notes** Limited due to isolation from other RIGS sites

## **Culture, heritage & economic**

Aspect/Description/Rating

**Historic, archaeological & literary associations** Associations with the regional minerals industry and local economic history. Rating: 6

**Aesthetic landscape** Typical appearance of sand and gravel pit. Good potential for restoration and conservation as a nature reserve. Rating: 7

**History of earth sciences** An extremely good opportunity to add further to the Quaternary history of South Yorkshire and adjoining counties. Rating: 8

**Economic geology** Good example of sand and gravel extraction industry with potential to demonstrate restoration techniques. Rating: 8

**Notes** Potentially a good site to retain geodiversity interests when the sand pit is finally restored

## **Education and science**

**Surface processes** Glaciofluvial deposition and erosion of sandstone bedrock. Erosional surfaces, especially along oblique joint planes. Rating: 7

**Geomorphology** Periglacial structures are well developed on adjacent land. Rating: 6

**Sedimentary** Wide range of bedding relationships, sedimentary structures and lithologies. Rating: 6

**Fossils** Not applicable. Rating: 0

**Igneous** Not applicable. Rating: 0

**Metamorphic** Not applicable. Rating: 0

**Tectonic:** structural Unconformity. Seen in current exposures. Rating: 6

**Minerals** Not applicable. Rating: 0

**Stratigraphy** Good site for stratigraphic correlation of Quaternary deposits in Doncaster. Rating: 8

**Notes** Very good site to demonstrate sedimentary processes and structures in Mesozoic, Quaternary and modern sediments. Other natural history interests

## Geodiversity value

A good site to demonstrate a wide variety of sedimentary processes. Rating: 7

## Site photographs D101 Dunsville Quarry

(Figure 142) General view to the west. [SE 65175 07905].

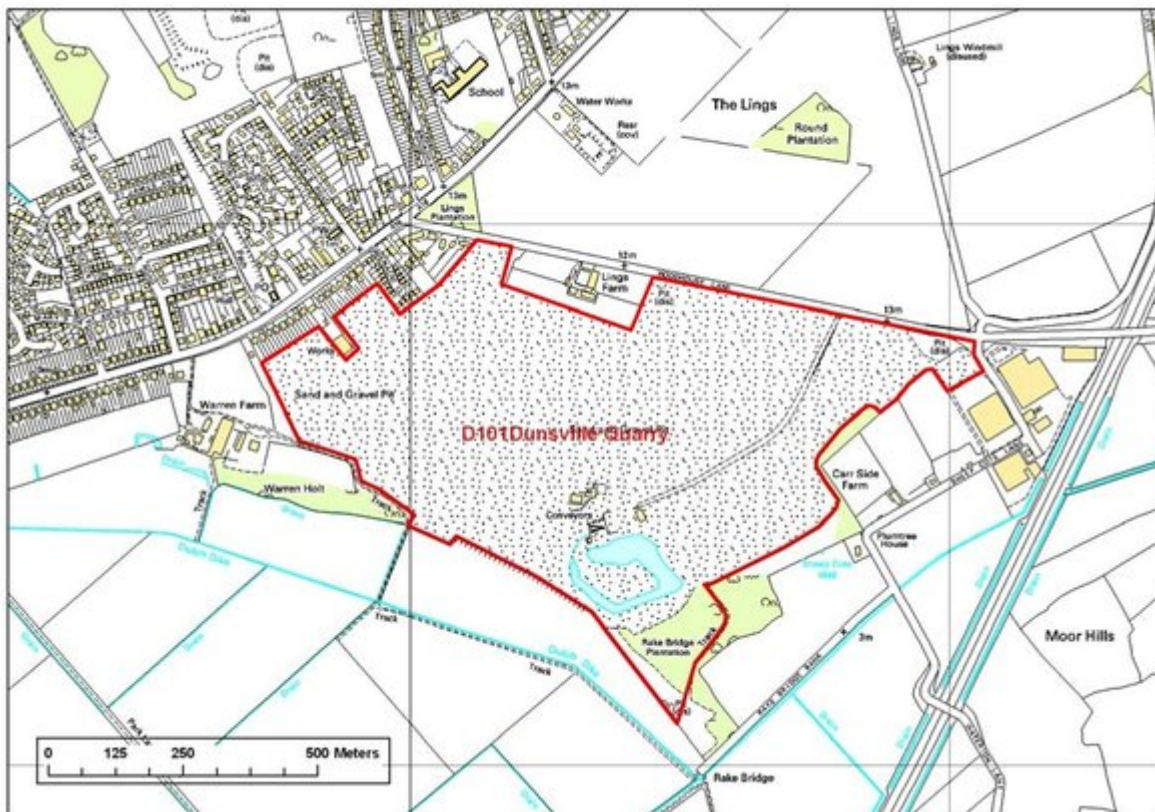
(Figure 143) General view to south west from quarry entrance. [SE 65775 07817].

(Figure 144) General view of Sherwood Sandstone to north quarry face. [SE 65775 07817].

(Figure 145) Development of spring line along a bed of marl in Sherwood Sandstone. [SE 65237 07846].

(Figure 146) Exposed joint plane in Sherwood Sandstone, showing ersoional surface. [SE 65230 07820].

(Figure 147) Cryoturbated Older River Gravel. [SE 65775 07817].



(Figure 141) D101 Dunsville Quarry. This map is based upon Ordnance Survey topographic material with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office, © Crown copyright. Unauthorised





(Figure 142) General view to the west. [SE 65175 07905].



(Figure 143) General view to south west from quarry entrance. [SE 65775 07817].

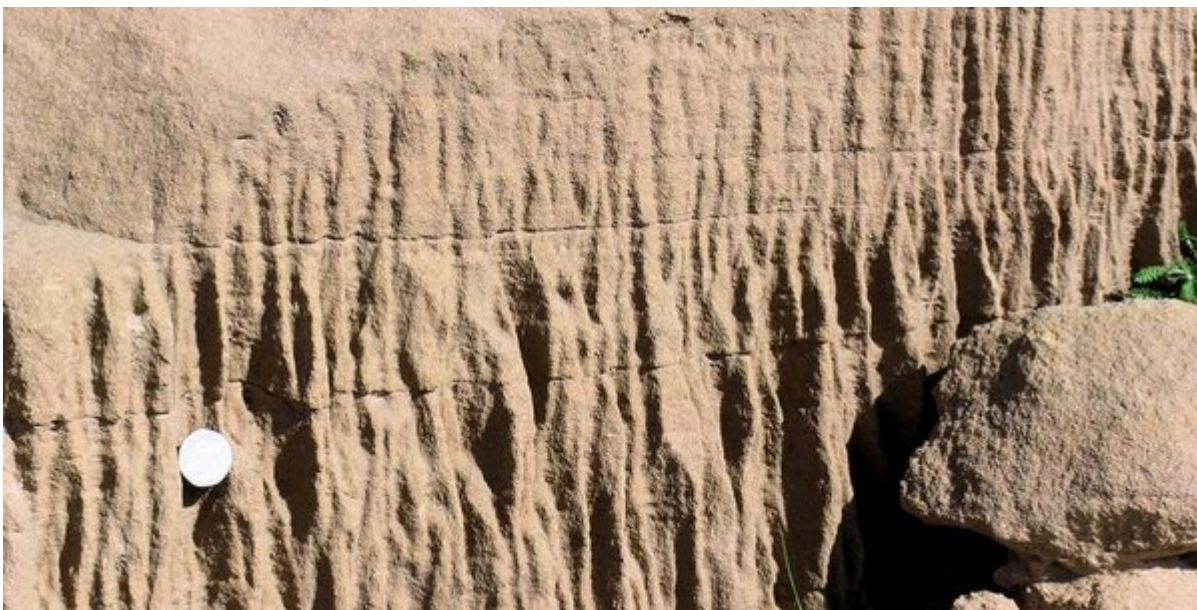


(Figure 144) General view of Sherwood Sandstone to north quarry face. [SE 65775 07817].





(Figure 145) Development of spring line along a bed of marl in Sherwood Sandstone. [SE 65237 07846].



(Figure 146) Exposed joint plane in Sherwood Sandstone, showing erosional surface. [SE 65230 07820].



(Figure 147) Cryoturbated Older River Gravel. [SE 65775 07817].