
A9 D4 Watchley Craggs

Site information

Site name: Watchley Craggs

Site key: D4

Grid reference: [SE 476 068] (centred on)

Site type: disused quarries, pits and cuttings

Local authority: Doncaster Metropolitan Borough Council, South Yorkshire

Site dimensions: 350 m x 5 m

Site owner: Trustees of MWA Warde – Norbury

Conservation status: Regionally Important Geological Site **Date:** 14/9/97

Field surveyor: Scott Engering **Date:** 16/2/07

Stratigraphy and rock types

Time unit: Permian **Rock unit:** Wetherby Member, Cadeby Formation, Zechstein Group

Rock type: Dolostone **Details:** Thin bedded, fine grained flaggy limestones with fine cross-laminations and vugs

Time unit: Permian **Rock unit:** Yellow Sands Formation, Rotliegendes Group

Rock type: Sandstone **Details:** Laminated and cross bedded, fine grained yellow, grey and orange friable sandstone

Site map

(Figure 45) — D4 Watchley Craggs

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 reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Licence Number: 100017897 [2007]

Site description

Extensive outcrop of well bedded limestone unconformably resting on excellent exposures of yellow/grey and orange Yellow Sands Formation. Several exposures occur around the southwest extremities of a finger like outcrop of the Cadeby Formation. Starting from [SE 47924 07118], the survey follows the escarpment in a clockwise direction until it disappears at the fault bound junction with Upper Coal Measures shales at [SK 47674 06642]. Access is along Watchley Lane and paths through the woods which can be very muddy.

From [SE 47924 07118] to [SE 47761 07012], there is very little exposure, with the occasional outcrop of well bedded flaggy buff limestone. Various mounds, excavations and rock debris indicate the site of quarrying but no exposures of Yellow Sands Formation visible. The only evidence is in the very sandy soil at the edge of ploughed fields, where unseeded soils are yellow grey and very sandy in appearance.

Exposure A at [SE 47562 06856], beneath undermined tree roots measures 4.5 m x 2.25 m of pale yellow- grey fine grained sandstone with steep cross bedding picked out by orange iron rich laminations. Very similar in appearance to Melton Park (D15) but the upper section is more yellow/orange in colour. Exposure B [SE 47555 06871] comprises 1 m of yellow sands, overlain by 2 m of fine grained well bedded and flaggy fine grained sandy limestone, with individual beds generally 50–75 mm and with a maximum 150 mm in thickness. The discontinuity between the limestone and yellow sands is marked by a rippled bedding plane. The Yellow Sands are yellow/orange with horizontal laminations but no steep cross bedding.

Exposure C [SE 47545 06860] comprises 3–4 m of well bedded flaggy fine grained, yellow limestone. A variety of sedimentary structures are displayed, including fine cross laminations and occasional thicker, ooidal beds which are sometimes vuggy. The Yellow Sands Formation is seen only as a small exposure at the base of the outcrop. The large section of the exposed face has been blackened by fires. Access to these exposures for a detailed view is up a vegetated mound of scree which can be muddy and slippery. The area is also accumulating rubbish, including car wheels, bottles and cans etc.

Exposure D [SE 47515 06863] and E [SE 47486 06794] comprise 3.5–4 m sections through well bedded and flaggy sandy limestone, with yellow beds at the base.

Exposure F [SE 47482 06676] is 6 m exposure of yellow/orange sands, up to 400 mm thick, overlain by largely overgrown flaggy limestone. Concentrations of iron mark the position of horizontal beds. The sands are friable and, where weathering, have fine encrustations of white salts.

Exposure G [SE 47559 06699] is 16 m x 1.3 m and provides a section of orange sandstone overlain by metres of well bedded flaggy limestone. Although defaced and partially reddened through fire, it is the most complete exposure of the Yellow Sands Formation and displays the lithological variation between orange and yellow horizontally bedded sands.

Exposure H [SE 47594 06671] comprises 4 m of well bedded flaggy limestone overlying 300 mm of horizontally bedded orange sand.

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 end of Watchley Lane for 2–3 vehicles. Rating: 6

Safety of access Access to exposure along unmade track and patches. Vegetated slope to exposure very slippery when muddy. Rating: 8

Safety of exposure Very good. No dangerous overhangs. The best exposures are safely accessible from a well worn path. Rating: 8

Permission to visit The Trustees of MWA Warde – Norbury, The East Office Hooton Pagnell, Doncaster DN5 7BW
Rating: D/K

Current condition The exposures furthest away from Watchley Lane are very good but the nearest are being increasingly littered. Rating: 8

Current conflicting activities

Rubbish disposal and large fires obscuring rock face. Some vandalism at the remote sites

Restricting conditions No collecting

Nature of exposure Exposed sand pit beneath natural limestone escarpment

Multiple exposures/prospect for trail If permission obtained, combine with visit to sites at Hooton Pagnell

Notes Overall good access, with correct footwear etc, although a moderately long walk from the parking area

Culture, heritage & economic

Aspect/Description/Rating

Historic, archaeological & literary associations Industrial archaeological interests associated with foundry industry and building of estate properties/boundary walls. Rating: 7

Aesthetic landscape Very limited due to position in woodland but it is located on the limestone escarpment. Rating: 8

History of earth sciences Locally very important as a rare occurrence of the Yellow Sands Formation. Rating: 8

Economic geology Once a significant local industry, extracting sand for building and the foundry industry as a moulding sand. Rating: 8

Notes Once had local significance as a source of local building sands and the foundry industry

Education and science

Surface processes Differential weathering of hard limestone and friable sandstone. Rating: 6

Geomorphology Located on limestone escarpment with Carboniferous dip and scarp topography to the west. Rating: 7

Sedimentary A variety of lithologies and sedimentary structures 8

Fossils Not applicable 0

Igneous Not applicable. Rating: 0

Metamorphic Not applicable. Rating: 0

Tectonic: structural The south-western part of the escarpment is terminated by a fault. Rating: 5

Minerals Not applicable. Rating: 0

Stratigraphy One of very limited number of localities to study Yellow Sands Formation and relationship to Wetherby Member. Rating: 8

Notes Has rarity value and interests for graduates and research students studying Permian. With permission, it is also potentially a good field visit site

Geodiversity value

A very good site, for the rarity value, lithological variety and historic/industrial archaeological interests. Rating: 8

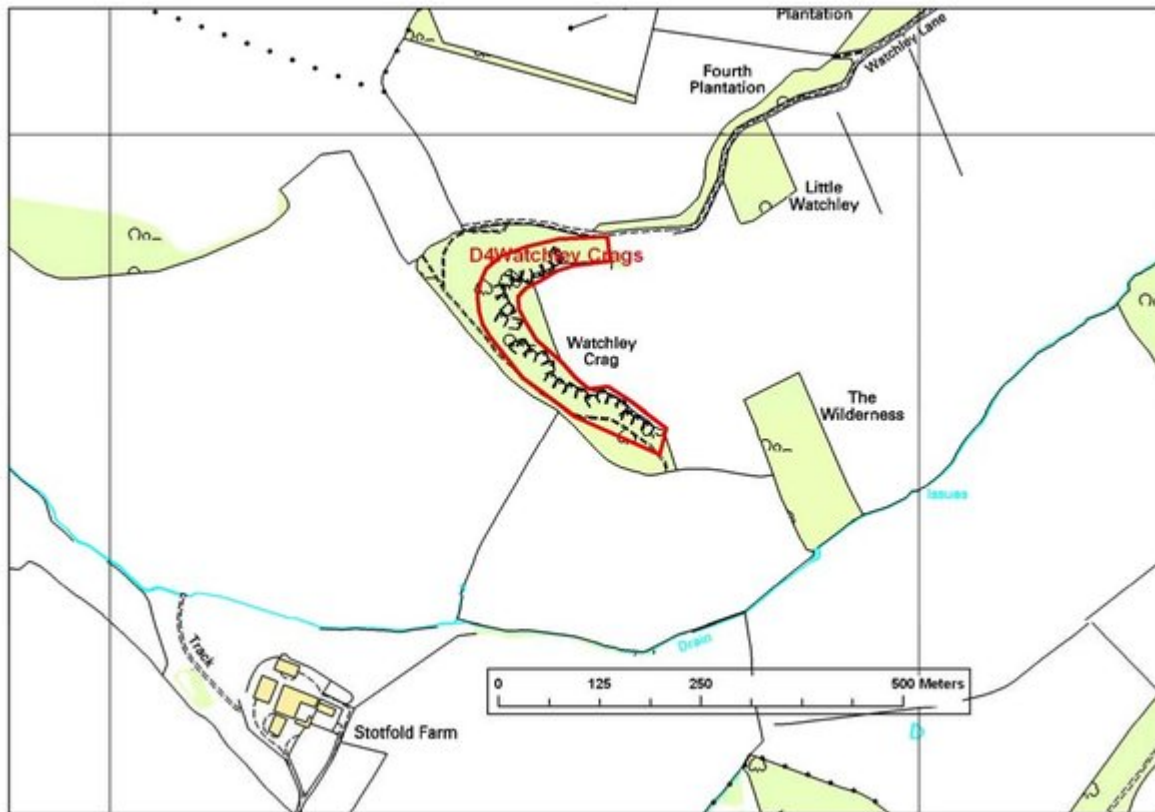
Site photographs D4 Watchley Crags

(Figure 46) Exposure C - extensive fire damage to exposure of flaggy limestone. [SE 47545 06860].

(Figure 47) Exposure C - detail of fine grained, cross-laminated limestone. [SE 47545 06860].

(Figure 48) Exposure F - detail of the Yellow Sands Formation and overlying limestone of the Cadeby Formation. [SE 47482 06776].

(Figure 49) Exposure G - general view of the junction between the Yellow Sands Formation and the Cadeby Formation. [SE 47482 06776].



(Figure 45) D4 Watchley Crag. 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 reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Licence Number: 100017897 [2007].



(Figure 46) Exposure C - extensive fire damage to exposure of flaggy limestone. [SE 47545 06860].



(Figure 47) Exposure C - detail of fine grained, cross-laminated limestone. [SE 47545 06860].



(Figure 48) Exposure F - detail of the Yellow Sands Formation and overlying limestone of the Cadeby Formation. [SE 47482 06776].



(Figure 49) Exposure G - general view of the junction between the Yellow Sands Formation and the Cadeby Formation. [SE 47482 06776].