



**British
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Weymouth Relief Road: temporary excavations in Jurassic and Cretaceous strata (May 2009)

Cretaceous Survey and Research Programme

Open Report OR/09/035

BRITISH GEOLOGICAL SURVEY

CRETACEOUS SURVEY AND RESEARCH PROGRAMME

OPEN REPORT XX/00/00

Weymouth Relief Road: temporary excavations in Jurassic and Cretaceous strata (May 2009)

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M A Woods

Keywords

Weymouth Relief Road, Jurassic,
Cretaceous, Corallian Group,
Purbeck Group, Chalk Group.

Map

Sheet 342, 1:50 000 scale,
Weymouth

Bibliographical reference

WOODS, M A. 2009. Weymouth
Relief Road: temporary
excavations in Jurassic and
Cretaceous strata (May 2009).
*British Geological Survey Open
Report*, OR/09/035. 6 pp.

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British Geological Survey offices

BGS Central Enquiries Desk

Tel 0115 936 3143 Fax 0115 936 3276
email enquiries@bgs.ac.uk

Kingsley Dunham Centre, Keyworth, Nottingham NG12 5GG

Tel 0115 936 3241 Fax 0115 936 3488
email sales@bgs.ac.uk

Murchison House, West Mains Road, Edinburgh EH9 3LA

Tel 0131 667 1000 Fax 0131 668 2683
email scotsales@bgs.ac.uk

Natural History Museum, Cromwell Road, London SW7 5BD

Tel 020 7589 4090 Fax 020 7584 8270
Tel 020 7942 5344/45 email bgs-london@bgs.ac.uk

Columbus House, Greenmeadow Springs, Tongwynlais, Cardiff CF15 7NE

Tel 029 2052 1962 Fax 029 2052 1963

Forde House, Park Five Business Centre, Harrier Way, Sowton EX2 7HU

Tel 01392 445271 Fax 01392 445371

Maclean Building, Crowmarsh Gifford, Wallingford OX10 8BB

Tel 01491 838800 Fax 01491 692345

Geological Survey of Northern Ireland, Colby House, Stranmillis Court, Belfast BT9 5BF

Tel 028 9038 8462 Fax 028 9038 8461

www.bgs.ac.uk/gsni/

Parent Body

Natural Environment Research Council, Polaris House, North Star Avenue, Swindon SN2 1EU

Tel 01793 411500 Fax 01793 411501
www.nerc.ac.uk

Website www.bgs.ac.uk

Shop online at www.geologyshop.com

Foreword

This report provides a brief account of temporary excavations seen in May 2009 in connection with the construction of the new Weymouth Relief Road.

Acknowledgements

Dr I M West generously provided field advice about the stratigraphy of Purbeck Limestone Group and its relationship to the succession documented by Fisher (1856) at Upwey, near Weymouth.

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Figure 1. Lithological details of temporary sections in the Corallian Group [SY 67357 83332] and Purbeck Group [SY 67424 85147] . (a): Corallian Group. Thick shelled oyster accumulation; (b): Corallian Group. General view of exposed succession; (c) and (d): Purbeck Group. Possible calcrite in Bed 33 of Figure 2; (e): Purbeck Group. Chert nodules in Bed 46 of Figure 2; (f): Purbeck Group. Fibrous calcite ('beef') in Bed 50 of Figure 2; (g): Purbeck Group. Bed 51 (Cinder Bed) of Figure 2.

Figure 2. Temporary exposure in the Purbeck Group seen at [SY 67424 85147]. Numbers in square brackets refer to bed numbers of Fisher (1856) based on field information supplied by Dr I M West (*pers. comm.*, April 2009).

Figure 3. The Purbeck Group logged at [SY 67424 85147]. Number annotations correspond with bed numbers used on Figure 2.

Figure 4. The Chalk Group exposed in the main Ridgeway cutting for the new Weymouth Relief Road [c. SY 67346 85491]. (a): steep northward dipping strata with semitabular flints; (b): thick rubble of broken-up chalk with local exposures where cleared; (c): faulted interval; (d): general view southwards of Ridgeway excavation. Yellow rod is 1 metre.

Summary

This report provides a stratigraphical overview of Corallian, Purbeck and Chalk Group temporary exposures, created in April and May 2009, in connection with the construction of the new Weymouth Relief Road. At the time of report compilation, the key exposures seen are in the upper part of the Corallian Group (Clavellata Formation), lower to middle Purbeck Group (Worbarrow Tout Member & basal Stair Hole Member) and White Chalk Subgroup (including Seaford Chalk Formation and Newhaven Chalk Formation).

1 Introduction

Construction on the new Weymouth Relief Road began in early 2009. Major excavation works were undertaken in April 2009, and in May 2009 the BGS visited the site to examine the stratigraphy revealed by these excavations. Ongoing work at the site is scheduled to create further temporary sections that will be the subject of future work.

2 Section Details

The key sections are described in ascending stratigraphical order below.

2.1 CORALLIAN GROUP

The higher part of the Corallian Group was seen in a temporary section at [SY 67357 83332] (Figure 1a, b). It comprised 1.7 m of hard, orange-brown weathering, richly bioclastic limestone. The fauna is dominated by thick oyster shells, provisionally identified as *Deltoideum delta* (Smith). The characteristic trioniid bivalve *Myophorella clavellata* (Parkinson) was also seen nearby. Excavations at this site were at an early stage, and more extensive stratigraphy should be visible at a later date.

2.2 PURBECK GROUP

A detailed section was logged in the lower and middle part of the Purbeck Group at [SY 67424 85147] (Figure 2). Representative lithological samples were collected from all but one of the beds shown on Figure 2. The correspondence of some of the logged beds to the outcrop succession is shown on Figure 3.

The logged succession corresponds to the Warbarrow Tout Member and basal Stair Hole Member of Westhead and Mather (1996). The Cinder Bed occurs at the top of the logged succession.

Key lithological details of the succession are shown on Figure 1, c – g.

2.3 CHALK GROUP

The Chalk Group was only briefly accessible because of ongoing excavation works. Exposure was limited because of a thick interval of broken-up chalk rubble covering the excavation (Figure 4). Available exposures seen at [SY 67346 85491] show steep northward dipping strata (Fig. 4a), with semitabular flints and locally abundant specimens of the inoceramid bivalve *Platyceramus*, suggesting assignment to the Seaford Chalk Formation. The echinoid *Echinocorys depressula*? Griffith & Brydone was found at [c. SY 67338 85572], suggesting a level within the upper part of the Newhaven Chalk Formation. Locally visible outcrops towards the northern end

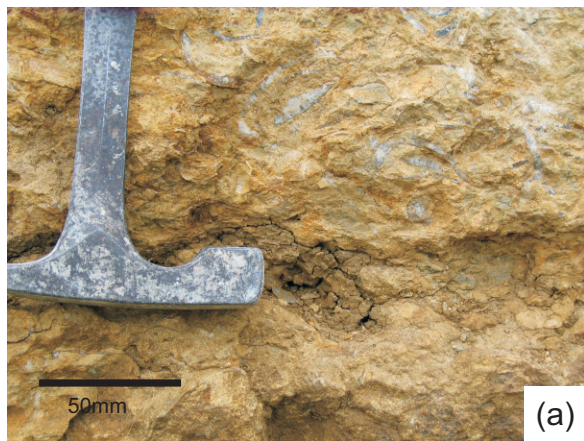
of the cutting show the presence of faulting (Figure 4c), and a hardground with glauconitised pebbles was seen at [c. SY 67372 85523], possibly within the Newhaven Chalk Formation.

References

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FISHER, O. 1856. On the Purbeck strata of Dorsetshire. *Transactions of the Cambridge Philosophical Society*, **9**, 555 – 581.

WESTHEAD, R K & MATHER, A E. 1996. An updated lithostratigraphy for the Purbeck Limestone Group in the Dorset type-area. *Proceedings of the Geologists' Association*, **107**, 117 – 128.



(a)



(b)



(c)



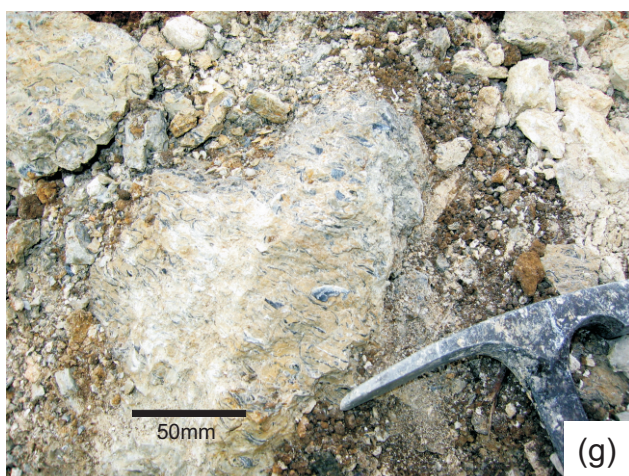
(d)



(e)



(f)



(g)

Figure 1. Lithological details of temporary sections in the Corallian Group [SY 67357 83332] and Purbeck Group [SY 67424 85147]. (a): Corallian Group. Thick shelled oyster accumulation; (b): Corallian Group. General view of exposed succession; (c) & (d): Purbeck Group. Possible calcrite in Bed 33 of Figure 2; (e): Purbeck Group. Chert nodules in Bed 46 of Figure 2; (f): Purbeck Group. Fibrous calcite ('beef') in Bed 50 of Figure 2; (g): Purbeck Group. Bed 51 (Cinder Bed) of Figure 2.

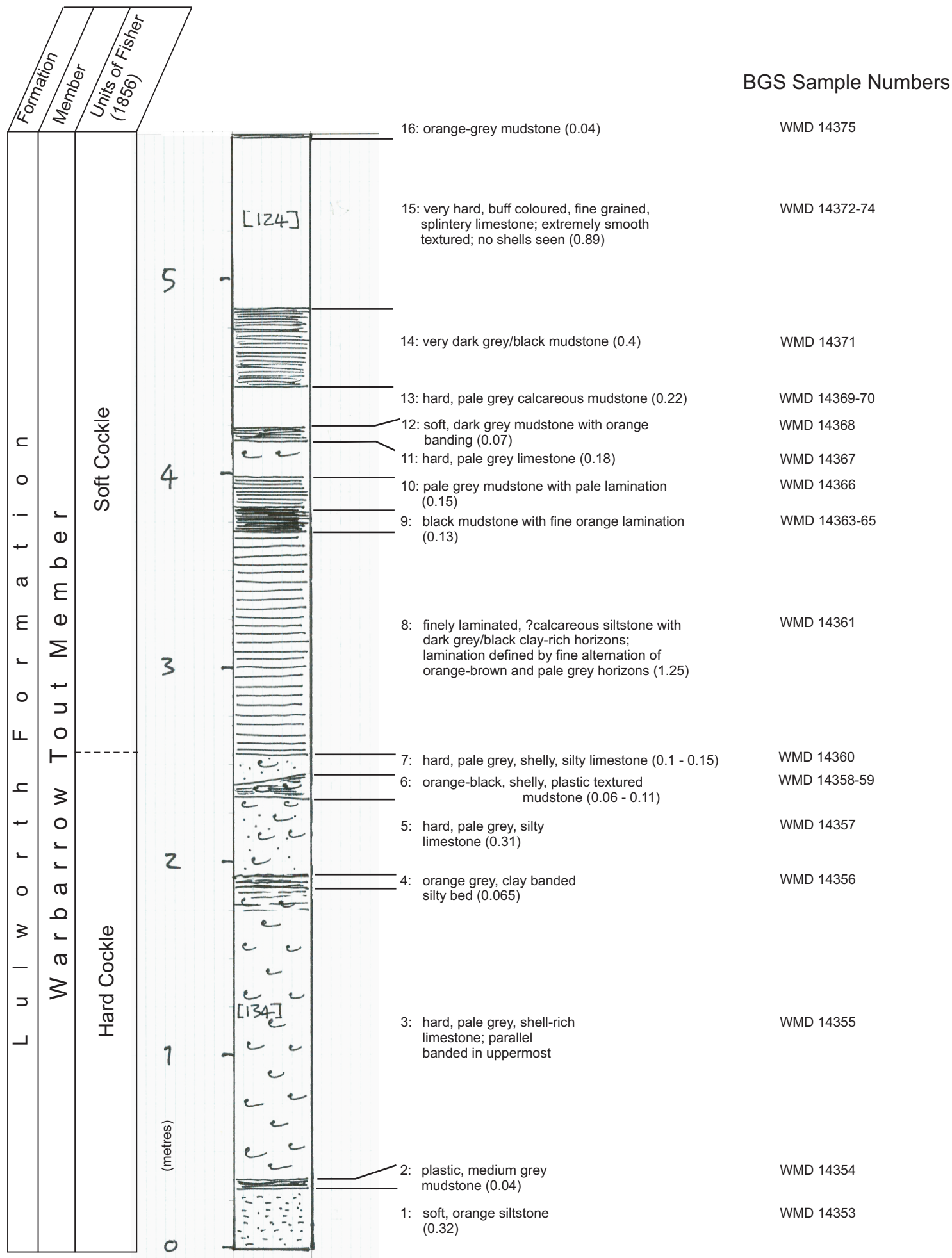


Figure 2. Temporary exposure in the Purbeck Group seen at [SY 67424 85147]. Numbers in square brackets refer to bed numbers of Fisher (1856) based on field information supplied by Dr. I. M. West (pers. comm., April 2009).

Figure 2: continued

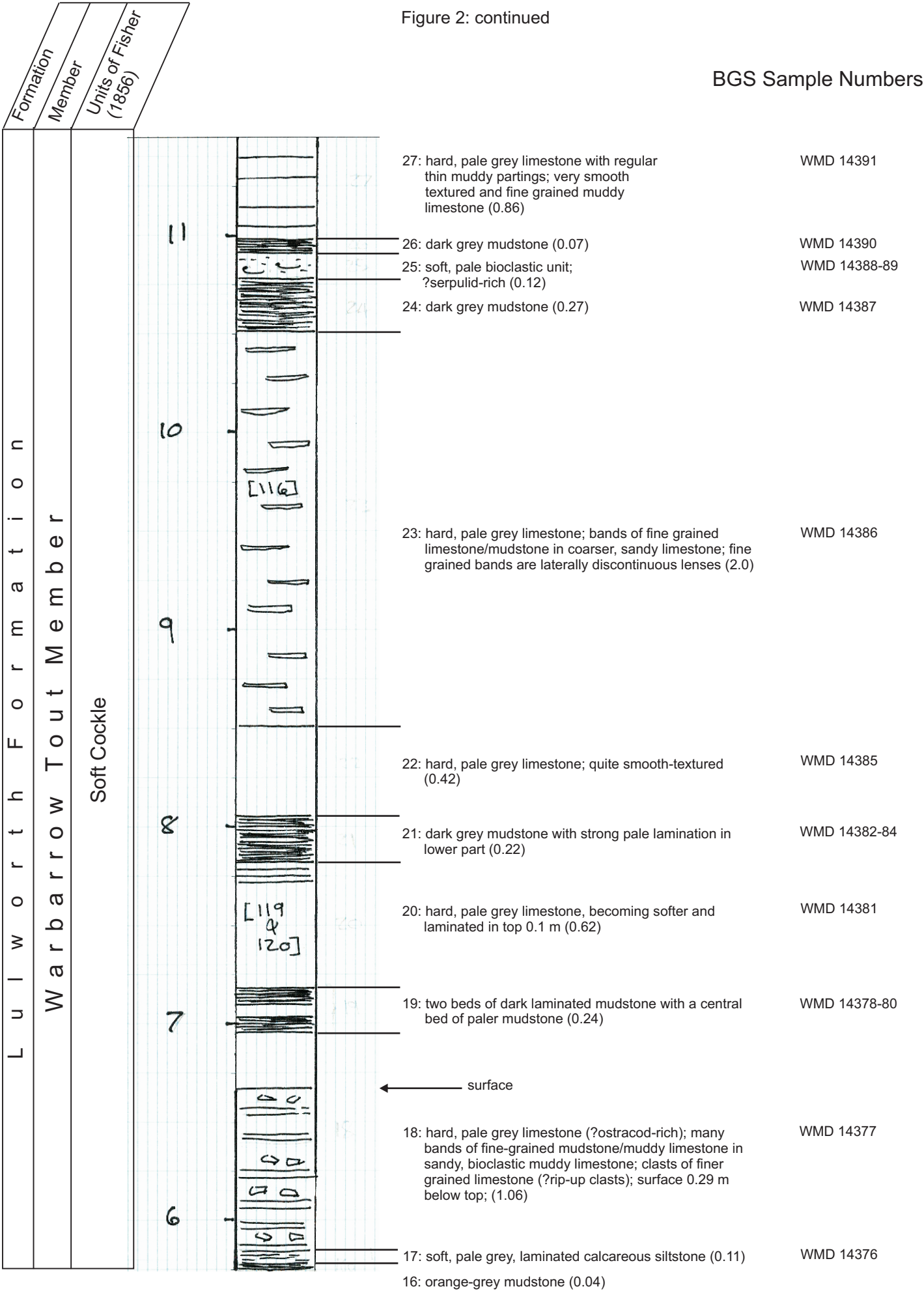


Figure 2: continued

BGS Sample Numbers

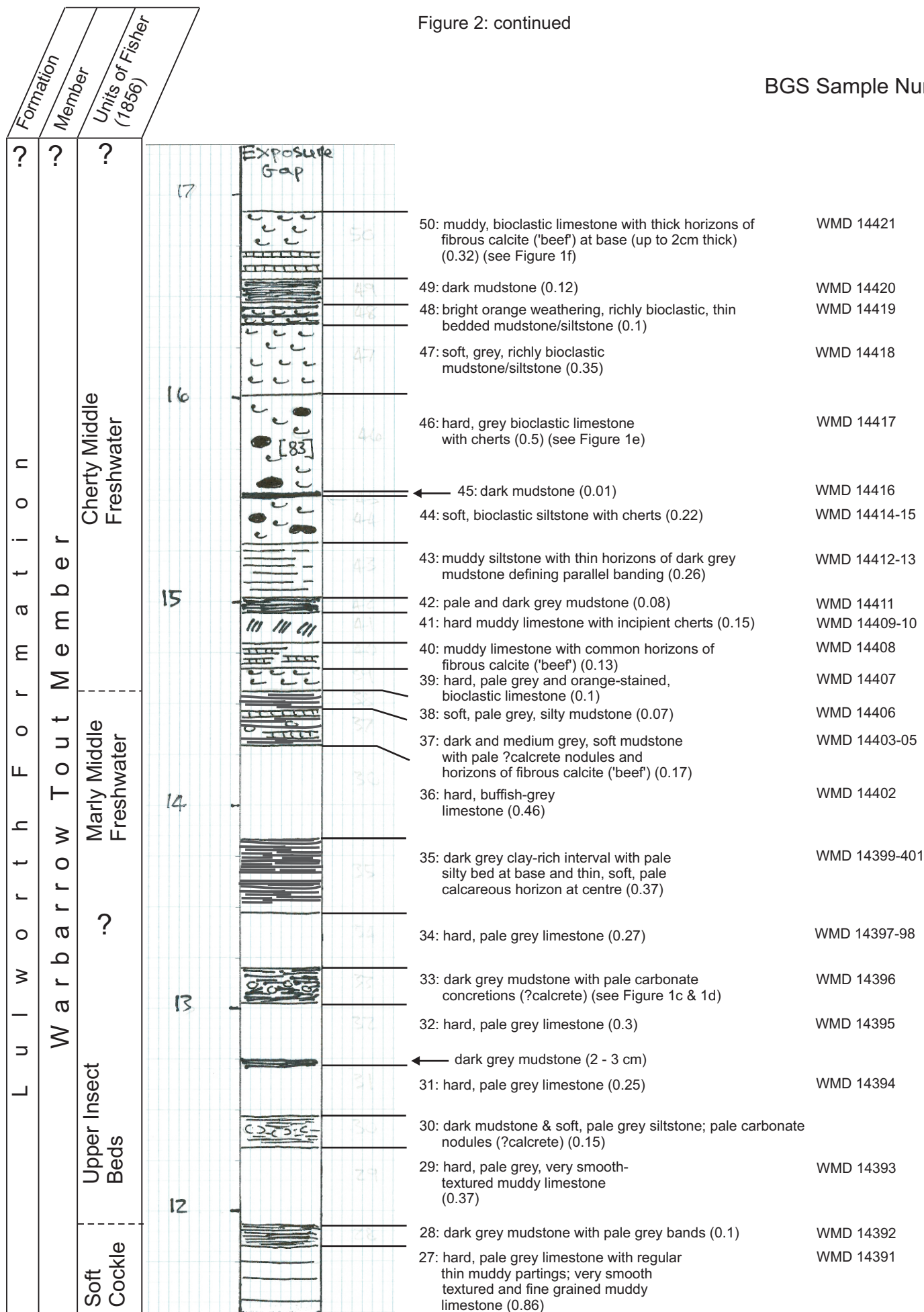
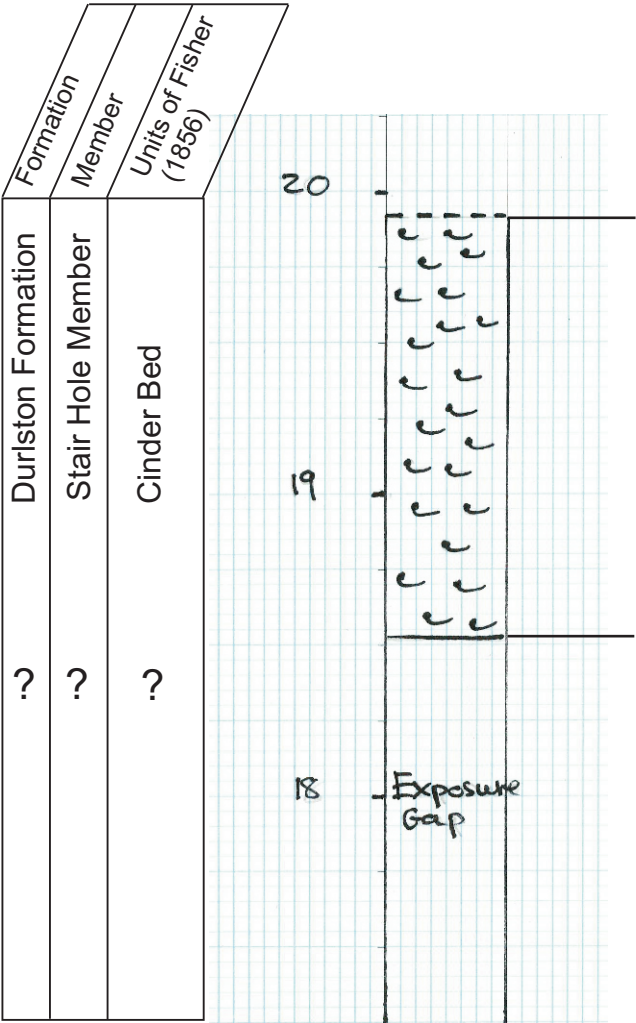


Figure 2: continued

BGS Sample Numbers



51: oyster-rich muddy limestone (CINDER BED) (at least 1.4 m seen) (see Figure 1g)

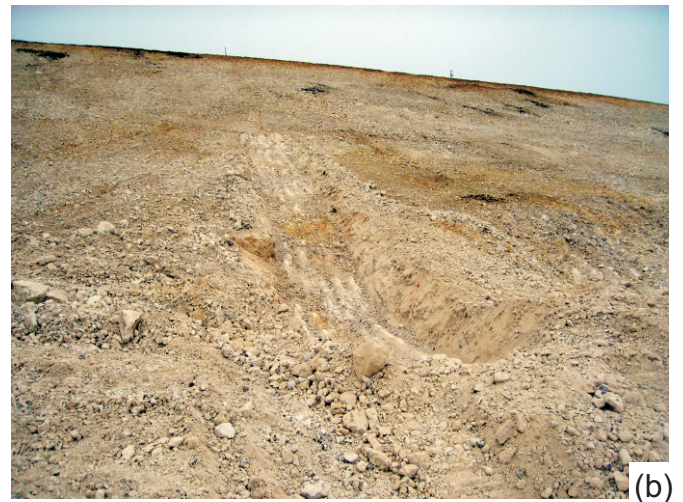
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Figure 3. The Purbeck Group logged at [SY 67424 85147]. Number annotations correspond with bed numbers used on Figure 2.



(a)



(b)



(c)



(d)

Figure 4. The Chalk Group exposed in the main Ridgeway cutting for the new Weymouth Relief Road [c. SY 67346 85491]. (a): steep northward dipping strata with semitabular flints; (b): thick rubble of broken-up chalk with local exposures where cleared; (c): faulted interval; (d): general view southwards of Ridgeway excavation. Yellow rod is 1 metre.