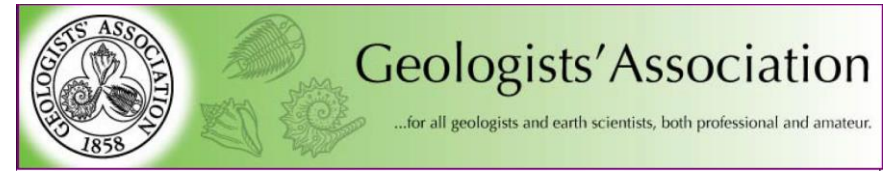


READING GEOLOGICAL SOCIETY



I NEED A **CONCRETE** ANSWER!

WHAT IS CONCRETE?

PLEASE EXAMINE THE SPECIMENS, DECIDE WHAT YOU NEED TO  
MAKE CONCRETE AND THEN DECIDE WHERE TO BUILD YOUR  
CEMENT WORKS

IT MIGHT HELP TO HAVE A GEOLOGIST ON YOUR TEAM

# GEOLOGISTS

**KNOW THE ANSWERS**

# **“Concrete”**

**What's the most important material in construction?**

**OR**

**Concrete comes in lorries!**

This activity involves a short discussion using some simple man made and geological specimens but which leads on to the use of geological maps and some understanding of industrial minerals and their extraction.

The discussion needs to be lead by someone with some knowledge of geology and geological maps. A small amount of preparatory work is required

Materials needed and which are illustrated below are :-

- a piece of concrete
- small bottles of
  - cement
  - aggregate (ballast)
  - chalk
  - clay
- small bottles of materials NOT found in concrete. For example
  - soil
  - brick dust
  - silica
  - sand
  - sugar
  - or whatever you can find

A geological map – ideally BGS Map Sheet 281 Frome 1:50 000 Solid and Drift, or better. A part of this sheet showing the Westbury area is included in this document by permission of BGS under Permit Number CP18/078 BGS © UKRI 2018. All rights reserved

BGS Source: <http://www.bgs.ac.uk/data/maps/maps.cfc?method=viewRecord&mapId=9856>

Part of the key from the map with arrows pointing at areas of KC clay and LeCk chalk. This is also part of this document and is also reproduced under the above permit.

## **The Discussion**

To take place between the “instructor” and the “students” The instructor will need to lead and point the students in the right direction.

**Question:** What's this piece of grey material with pebbles in it? It's common on building sites and is familiar to DIY people.

**Required Answer:** Concrete

**Q:** What's concrete made from?

Offer all the bottles so the student can make a selection.

**RA** Cement and aggregate

**Q:** Alright, what's cement made from?

Offer all the bottles again

**RA:** Clay and chalk, fired at 1400 deg C

**Q:** Where do Clay and Chalk come from?

**RA:** The ground.

**Q:** Where do we get it out?

**RA:** They come from quarries.

**Q:** If we want to build a cement works, where would be the best place to put it?

**RA:** Somewhere where chalk and clay are in close proximity, to limit transport

**Q:** But where are the quarries located?

**RA:** Maybe a geological map will help!

Now offer the key, point out the relevant formations marked KC – Kimmeridge Clay and LeCk - Lewes Chalk which are the rocks which will be used by our cement works.

**Q:** Any other considerations?

**RA:** Transport – a railway line would be almost essential

Now the instructor offers the map and the key.

The students should now examine the map, and with luck arrive at a suitable area. This is Just East of Westbury where there is LeCk Chalk shown and secondly to the North West is the KC Clay. A railway line crosses this area. The quarries can be identified on the map.

If all has gone well, the students will now have some knowledge of cement manufacture, the occurrence of some rocks and will have examined a geological map. And hopefully, we will have whetted their appetites for geology. We hope they have enjoyed this experience.

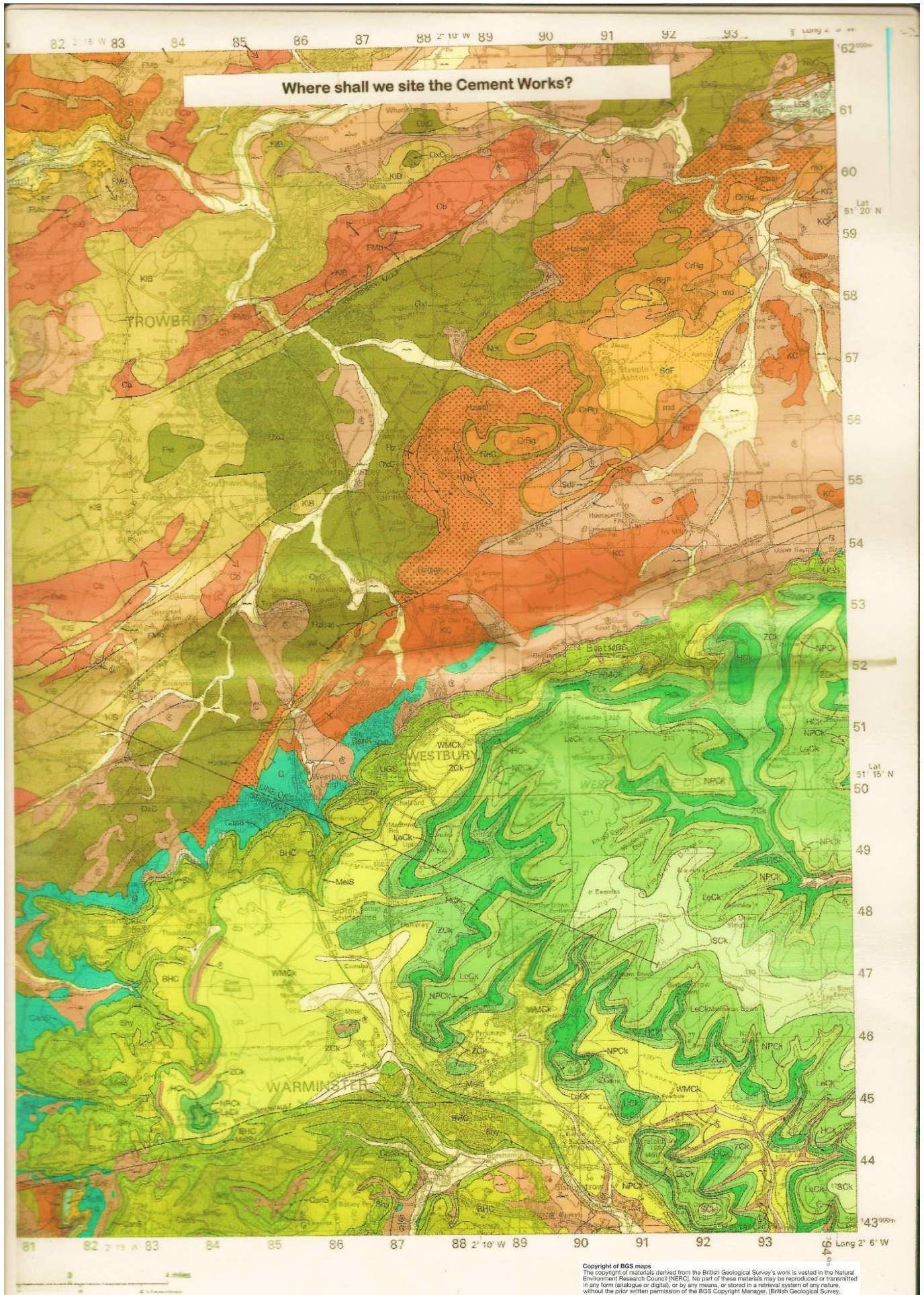
David Ward  
RGS and GA  
02 04 2019

Comments welcomed - please email [field.secretary@readinggeology.org.uk](mailto:field.secretary@readinggeology.org.uk)

## Materials for the Concrete Game

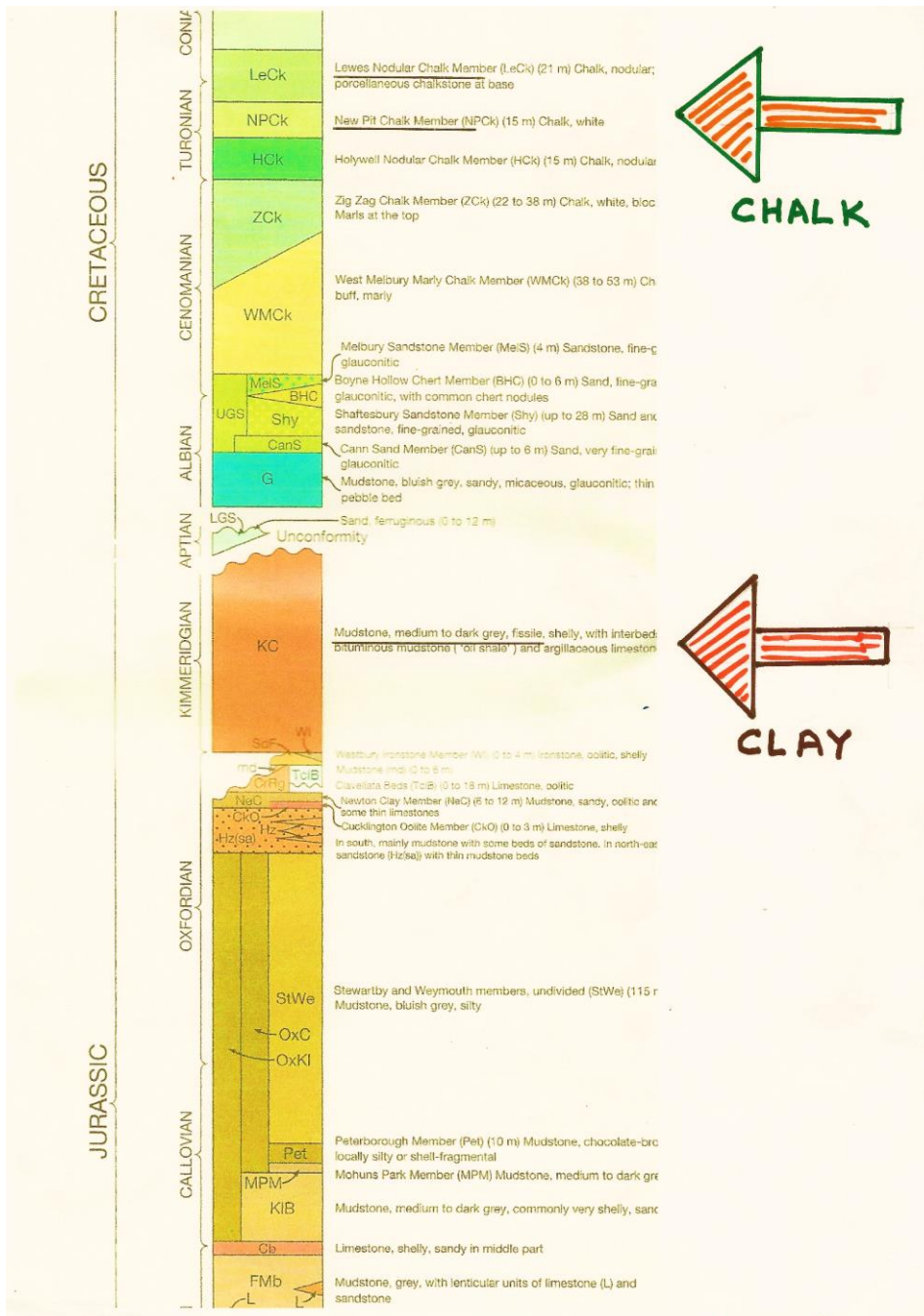








## Key for Geological Map



This page and the previous page contain extracts from the BGS sheet identified here.

BRITISH GEOLOGICAL SURVEY  
1:50 000 Series  
ENGLAND AND WALES SHEET 281  
**FROME**  
Solid and Drift Geology

Original geological survey at 1:63 360 scale, published on Old Series sheets 14 and 15, in 1845 and 1857 respectively. South-eastern corner of sheet (mainly Cretaceous rocks) surveyed at 1:10 560 scale by F. J. Bennett and A. J. Jules-Browne in 1895. Surveyed at 1:10 560 scale by D. R. A. Ponsford, F. B. A. Welch, G. W. Green and G. A. Kellaway in 1943-45 and 1954-58. Additional information by G. W. Green in 1961. Published 1965.

Area south of grid north '15' surveyed at 1:10 000 scale by C. R. Bristow and R. K. Westhead in 1959-64.

Reconstituted on to the 1:50 000 scale in 1987, with amendments and additions by C. R. Bristow, R. K. Westhead and G. W. Green. Additional information by R. J. Wyatt in 1997. Compilation by R. A. Edwards.

P. J. Strange, Regional Geologist.  
Published 2000. David A. Falvey, PhD, Director, British Geological Survey.

**Bibliographical reference**  
BRITISH GEOLOGICAL SURVEY. 2000. Frome, England and Wales Sheet 281. Solid and Drift Geology. 1:50 000. (Keyworth, Nottingham: British Geological Survey).

Geological map © NERC 2000. All rights reserved

**Ordnance Survey of Great Britain**  
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The representation on this map of a road, track or path is no evidence of the existence of a right of way.

**NORTH POINTS**  
At the centre of the sheet, true north is 0° 13' east of grid north.  
At the centre of the sheet, magnetic north is predicted to be 3° 50' east of grid north in 1999. Annual change is about 1" to the east. Magnetic information supplied by the Global Seismology and Geomagnetism Group of the BGS.