
Chapter 11

CLAY



Working Clay Stockpiles at Dorket Head Clay Pit

Introduction

- 11.1 Clay is predominantly used in the manufacture of bricks, other end uses being pipes and tiles. About 8 million tonnes of clay are worked annually in Great Britain. In comparison Nottinghamshire's production of an estimated 350-400,000 tonnes per annum is quite small but it still supports locally important brick manufacturing industries at Dorket Head, near Arnold and at Kirton.
- 11.2 In the past, specialist clays such as pottery and fire clays, were also worked on a small scale in the County, the latter being associated with opencast coal extraction (see Chapter 12).

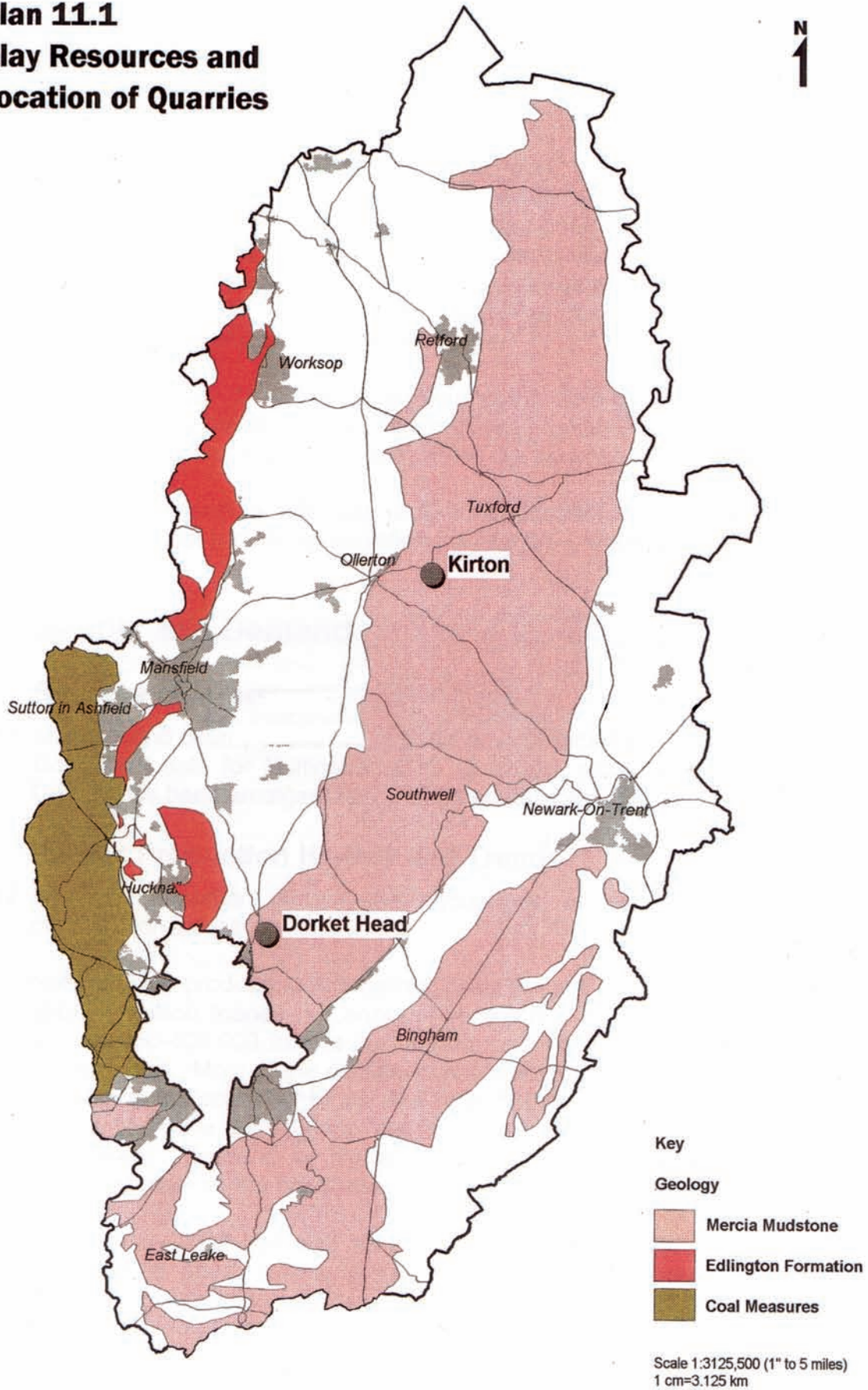
Geology

- 11.3 In Nottinghamshire, clay has been worked from the Coal Measures, the Edlington Formation and the Mercia Mudstone, (see Plan 11.1). Since the late 1970s only the Mercia Mudstone has been exploited. These mudstones which are up to 300 metres thick, outcrop over much of eastern and southern Nottinghamshire, and represent the largest potential mineral resource in the County. The mudstones also contain nationally important deposits of gypsum which are considered in Chapter 10.
- 11.4 There is no detailed assessment as to which parts of the Mercia Mudstone succession are best suited to manufacturing bricks, although locally, particular horizons appear to have been more attractive than others have. For example, in the Nottingham area most clay extraction has occurred in the 'Gunthorpe Formation'. Firing colour is very important, and does not necessarily correspond to the pink and green colours of the raw clay, which can fire to various shades from red to cream. Gypsum contamination, interbedded sandstones, and other impurities can also affect the suitability of the clay for brick manufacture.

Method of Working and Environmental Impact

- 11.5 After stripping soils, the clay can easily be removed by scrapers or hydraulic excavators, where it is taken by dumptruck or conveyor to the brickworks. Extraction may be carried out intermittently, perhaps just once a year, in order to create a large stockpile, which is then worked for the intervening period. Despite the thickness of the deposit, excavations do not normally exceed 30 metres, and are often much less. Geological and hydrological constraints, quarrying logistics and planning controls are frequent limiting factors.
- 11.6 Potentially the most intrusive aspects are the brickworks themselves, which more closely resemble industrial, rather than mineral processing operations. These may be located in rural areas where industry in general might be considered inappropriate. Fortunately the depth of working, and the normally dry working conditions can allow plant, buildings and machinery to be located on the quarry floor, so reducing visual impact and noise. Proposals to extend or build new brickworks will be judged against the provisions of Policies M3.10 and M3.11.

**Plan 11.1
Clay Resources and
Location of Quarries**



Reclamation and After-use

- 11.7 There are two main options for reclamation of clay pits. The first is to landfill and reclaim back to original levels, and the second is to restore to a lower level.
- 11.8 The relatively impermeable nature of clay means that many pits are geologically well suited to receive domestic and other non-inert wastes. Providing other planning and environmental criteria are met, there will often be strong economic and planning incentives to use clay pits for landfill. This will be the case especially where ground configurations do not favour a low-level scheme. This was a factor at the Dorket Head claypit which is currently being filled with domestic and other waste.
- 11.9 Low level reclamation may be another option. The current workings at Kirton brickworks are being progressively restored back to their previous agricultural use, by reprofiling the hillside from which the clay has been extracted.
- 11.10 Whilst an agricultural after-use is normally possible, alternative options, such as woodland or nature conservation may be the preferred option.

Supply and Demand

Sources of Information

- 11.11 National and county production figures are published by Government sources. Consistent data for Nottinghamshire is limited, because in some years the County has been amalgamated with other counties.

Recent Production History and Trends

- 11.12 National production of clay, like aggregates, is largely dependent on the construction industry.
- 11.13 National clay production has halved since the mid-1970's and now stands at about 8 million tonnes per annum. In contrast Nottinghamshire's output of around 350-400,000 tonnes per annum has remained very stable over the same period. Most of the decline in national production is due to a reduction in demand for 'common' bricks that have been substituted by other products. Levels of house construction, the main user of bricks, have also generally been lower. Demand for higher quality 'facing and engineering' bricks has remained more stable and these form the bulk of Nottinghamshire's output.
- 11.14 The industry itself has also seen many structural changes resulting in brick manufacture being concentrated within a fewer but generally much larger units producing a much wider range of bricks. One consequence of this is that many brickworks now import some clay for blending in order to produce the required range of bricks. The very high quality clays such as those found in Staffordshire are particularly sought after.

Consideration of Future Demand

- 11.15 There is no national demand forecast for clay but it is reasonable to assume that demand will remain broadly similar to recent levels. A recent Government report, 'Brick Clay: Issues for Planning', 2001, reviews current and future issues in planning for the supply of brick clay. The report puts forward recommendations for future planning guidance on brick clay.
- 11.16 The report recommends that guidance should emphasise the need for an integrated long term approach involving a landbank of permitted reserves of at least 25 years in order to maintain a security of supply of brick clays. It recommends guidance on the objectives to be resolved over that time and stresses the need for flexibility of the long term approach. It supports regular short term adjustments (no longer than 5 years) to development plan policy to meet emerging circumstances. Whilst demand will be strongly influenced by the level of house construction activity, the commercial success and marketing strategy of each company may also be a significant factor in determining local levels of production. Any further rationalisation of the industry could also have a major impact.
- 11.17 Although these recommendations have yet to be endorsed in Government guidance, it is accepted that the large capital investment needed to build and maintain brickworks will generally favour a long-term approach. For a new brickworks and clay pit 25 years is probably a reasonable initial minimum landbank, but for subsequent extensions this may be less critical. In any event with only two brickworks in Nottinghamshire it is more relevant to consider the needs of each operation separately rather than as part of an overall countywide landbank.
- 11.18 The main strategy of the Plan will therefore be to maintain supplies of clay to both brickworks throughout the Plan period and where practical beyond.

Future Provision

Kirton

- 11.19 Kirton clay pit provides both red-firing and cream-firing clays, the former accounting for about 90% of demand. Reserves of cream clay are located in the south east of the pit within a separate working area. Reserves of cream clay should be sufficient until at least 2030.
- 11.20 Extraction of red clay has progressed steadily eastwards along the hillside that parallels the mineral railway line as far as Kirton Road. The pit is being progressively reclaimed back to agriculture by reprofiling the land. It is estimated that red clay reserves will be exhausted by 2009. Options to extend the clay pit are largely limited to land north of the railway line where economically workable red firing clays are known to exist. There are, however, two main environmental issues, which constrain the extent of mineral extraction in this area.

- 11.21 First, there is the proximity of Kirton village and the need to minimise the impact on residential amenity. In this respect a ridgeline to the east of the village, which effectively screens the existing workings, needs to remain intact in order to screen any workings north of the railway line and maintain the landscape character of the area.
- 11.22 Secondly, two mature landscape areas (MLAs) are also present. These comprise a block of land east of the village and a field south of Kirton Road.
- 11.23 In considering future mineral extraction proposals, the most logical next phase would be to extend into the land east of the farm access track that runs north - south between Kirton Road and the railway. This land is remote from the village, the main constraint being a field designated as an MLA. Providing this field is protected, then the environmental impact of clay extraction should be very limited. The extent of reserves in this area is uncertain, but may be sufficient for the plan period. This land is therefore allocated for mineral extraction.
- 11.24 The main planning issues are:
- (a) the MLA is protected from the affects of mineral extraction;
 - (b) advance screening along the northern boundary is carried out to minimise views into the site from Kirton Road;
 - (c) all extracted clay is transported to the brickworks by internal haul routes;
 - (d) reclamation should progressively restore the land back to an acceptable landform, by reprofiling the land using similar techniques to that used within the current red clay.

POLICY M11.1 KIRTON ALLOCATION

15 hectares of land to the north of Kirton Brickworks are allocated for clay extraction.

- 11.25 Once this area is worked out, the only remaining option north of the railway line is to continue west of the farm access road. However, the need to preserve the ridgeline and MLA which occupies the large field north of Primrose Lane may severely restrict what is environmentally acceptable. This option would therefore have to be compared against other possible options, which would be a matter for the next review of the Plan.
- 11.26 The red clay resource may extend east of Kirton Road, but its extent, quality and viability are unknown and it is much more remote from the brickworks. It may, however, be the only potential local option left to supply the brickworks once the northern extension is worked out.

Dorket Head, Arnold

- 11.27 Clay extraction at Dorket Head is progressing in advance of a major waste disposal scheme, which commenced in 1990. The brickworks are located in the original quarry and clay is conveyed to the works via a tunnel that goes

under a road separating the two sites. An extension to the clay pit was granted in 1998 that secures reserves until at least 2020.

- 11.28 Whilst a further eastern extension is geologically possible, environmental constraints, in particular the loss of a Mature Landscape Area which extends across the whole site, suggest that the present permitted area may represent the acceptable limit of clay extraction.
- 11.29 In the longer term importing clay from a remote site or a new replacement brickworks and clay pit may prove to be a more acceptable option. At present alternative potential resources have only been identified in the Bilsthorpe area, but it is unclear if these represent the most suitable options within the extensive Mercia Mudstone. Nevertheless, it is accepted that there are operational advantages to be gained from extending the Dorket Head clay pit in an easterly direction which have to be balanced against the impact on the environment which also includes the advantage of not needing to import clay from a remote site, should the brickworks remain.

POLICY M11.2 DORKET HEAD – FUTURE PROVISION

Proposals to extend Dorket Head clay pit should take into account the environmental constraints at the site, the operational benefits to be gained by phased working and restoration and the likelihood of alternative locations offering a lesser environmental impact. Proposals will be permitted elsewhere which either:

- (a) maintain supplies of clay to the Dorket Head brickworks; or**
- (b) provide a replacement brickworks and clay pit,**

providing such proposals are subject to a satisfactory working and reclamation scheme.

Proposals for a new brickworks and clay pit should, where practical, include the reclamation of the Dorket Head brickworks site. In granting planning permission the County Council will impose conditions to ensure that commencement of extraction is phased to replace the expected exhaustion of reserves at Dorket Head.

New Brickworks and Clay Pits

- 11.30 Because brickworks supply wide national markets the possibility of other companies wishing to develop a new brickworks and clay pit in Nottinghamshire cannot be ruled out. The most recent example of this was when permission was granted for a new brickworks and clay pit at Belle Eau Park, Bilsthorpe in 1992, although this permission subsequently lapsed without the development commencing.
- 11.31 Proposals for new sites must conform to Chapters 3 and 4, but, unlike extensions, there may be no persuasive 'need' arguments to counterbalance any environmental and other planning problems. Accordingly, proposals for greenfield sites are only likely to be acceptable which can satisfy the

environmental protection and reclamation policies as set out in Chapters 3 and 4. In weighing up the environmental impact, regard will be made to the economic, employment and any other benefits the proposal may make.

POLICY M11.3 NEW BRICKWORKS AND CLAY PITS

The County Council will only permit proposals to develop new clay workings and associated brickworks where the economic, employment and/ or other planning benefits significantly outweighs any environmental impact.
