Nottinghamshire County Council

Nottinghamshire Minerals Local Plan

Background Paper

Brick clay

January 2012

Purpose of background paper

This background paper summarises the evidence used to identify the main planning and environmental issues that surround future brick clay extraction and what reasonable options exist for making adequate provision in the new Minerals Local Plan.

This background paper also reviews current Minerals Local Plan policies to assess how relevant these still are and how the circumstances may have changed since the Plan was adopted in December 2005.

Other background papers supporting the Minerals Local Plan

- Aggregates - estimating future aggregate requirements to 2030
- Aggregates - sand and gravel, options for meeting shortfalls
- Aggregates - Sherwood Sandstone, options for meeting shortfalls
- Aggregates – Limestone (crushed rock), options for future provision
- Alternative aggregates
- Archaeology
- Biodiversity
- Building stone
- Coal
- Development management policies
- Gypsum
- Hydrocarbons – oil and gas
- Industrial dolomite
- Landscape character
- Minerals safeguarding
- Silica sand

The Government launched its consultation on the draft National Planning Policy Framework on the 25th of July 2011. This proposes to replace nearly all existing Planning Policy Statements (PPS) and Minerals Policy Statements (MPS) into a single streamlined and much shorter document. The final NPPF is not expected to be issued until mid 2012 and its contents could change from the draft in response to consultation.

This background paper therefore bases its assumptions on the current national policy guidance but the potential implications of the proposed new guidance are considered where this differs from the current position.

The intention is to revise the background papers as necessary when the new guidance is issued and to assess the implications before the County Council reaches a decision on the preferred approach of the new Minerals Local Plan.

Index

1. Introduction

1.1 Brick clay describes the 'clay and shale' used in the manufacture of building and construction products such as facing bricks, pavers roofing tiles and clay pipes. In Nottinghamshire all clay extracted is used for this purpose but nationally other important uses of clay and shale include cement production and a range of other constructional applications.

1.2 Clay and shales are widely distributed in Great Britain, especially England, but only a few resources are suitable for making bricks. The most important are the Oxford Clay worked in Bedfordshire and Cambridgeshire, the Carboniferous shales worked in north-east England and Scotland, the Etruria Marl, a very high quality and scarce clay, worked in Staffordshire and the West Midlands and the Mercia Mudstone worked in the Midlands including Nottinghamshire.

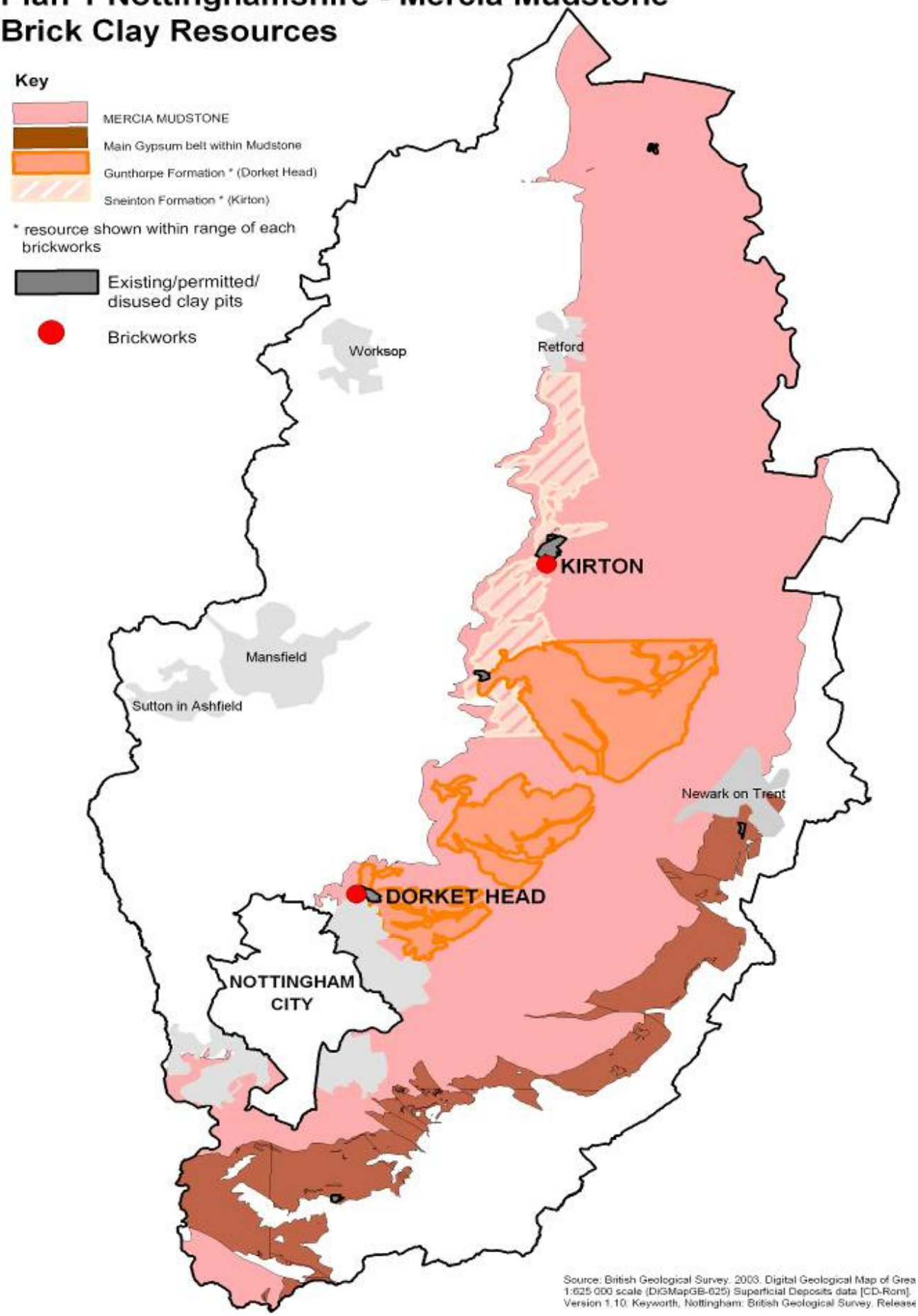
2. Nottinghamshire's brick clay resources

2.1 Brick clay in Nottinghamshire has been worked from a number of geological formations including the Coal Measures and Permian Edlington Formation, as well as the Mercia Mudstone. However, since the late 1970s only the Mercia Mudstone has been exploited with production taking place at brick pits at Dorket Head near Arnold and Kirton. Both pits support associated modern brickworks. It is likely that all future commercial interest in brick clay will be limited to the Mercia Mudstone and specifically the longer term supply for these brickworks.

2.2 Nottinghamshire also has fireclay resources which can be used to manufacture bricks. These exist as thin seams within the coal measures where they are normally only recovered in association with surface (opencast) coal mining. As fireclay extraction is closely linked with coal mining the limited additional planning issues this raises are considered in the background paper on coal.

2.3 The Mercia Mudstone is up to 300 metres thick and is exposed over most of eastern and southern Nottinghamshire making it the most extensive mineral resource in the county. In the past extraction has occurred within a number of different horizons, but current extraction is limited to the Sneinton and Gunthorpe Formations found at the base of the mudstone succession. According to the local brick clay industry it is only these two formations that have any future economic interest. The extent of the resource which the industry regards as being within economic range of the two brickworks is illustrated in Plan 1.

Plan 1 Nottinghamshire - Mercia Mudstone Brick Clay Resources



2.4 In addition to any environmental and other planning constraints not all of this resource will be economically viable as the physical and chemical quality of the clay varies. Detailed testing is essential before any commercial or other decisions can be made. 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, inter-bedded sandstones, and other impurities can also affect the suitability of the clay for brick manufacture.

3. Estimating future demand for brick clay

National

3.1 Prior to the current recession, national brick clay extraction averaged around 7 million tonnes per annum with over 90% being used to make bricks – about 2.3 - 2.7 billion every year[1]. The remainder was used to make tiles and pipes. According to the British Geological Survey, the current recession has caused national brick clay production to fall by an estimated 40%. This reflects the severe impact of the downturn on house building which is the biggest consumer of bricks.

3.2 Brick clay extraction has been in a general long term decline – falling from over 16 million tonnes in 1974 to less than 5 million tonnes in 2008[2]. However, this trend mainly reflects the demise of demand for 'common' bricks which have been replaced by concrete blocks and plasterboard in the inner leaves of cavity walls and internal walls in housing construction. Demand for facing and engineering bricks has in contrast remained much more stable, albeit fluctuating in response to the fortunes of the house building industry.

3.3 The industry has also seen many structural changes resulting in brick manufacture being concentrated within fewer, but generally larger, units each producing a much wider range of bricks. One consequence of this is that many brickworks import some clay for blending in order to produce the required range of bricks. For example, the very high quality clays such as those found in Staffordshire are particularly sought after and supply Nottinghamshire's brickworks. Indeed a number of brickworks have long since lost their local source of clay altogether and rely entirely on imports. The capital cost in constructing a modern highly automated brickworks is such that once the existing pit is exhausted, it is usually more economic to import clay from remote sources than to move the brickworks to a new clay pit.

[1] UK Minerals Statistics Yearbook 2009 British Geological Survey 2011. Average and range taken from 2000-2007
[2] UK Minerals Statistics Yearbook 2009 British Geological Survey 2011 and earlier years

Local

3.4 The East Midlands is an important brick manufacturing area extracting well over one million tonnes of clay per annum – around one fifth of national production[3]. The region's biggest brick producer is Leicestershire which has six brick pits (also in the Mercia Mudstone) providing around half the regional production. Prior to the recession Nottinghamshire was extracting an estimated 350,000-400,000 tonnes per annum making it a significant regional producer. Derbyshire accounts for the remainder having 3 brick pits and one brickworks all located in the coal measures. At least one of these supplies limited quantities of clay to brickworks in Leicestershire and Nottinghamshire for blending. Derbyshire also produces clay for use in cement[4].

3.5 To the north of Nottinghamshire the brickworks at Epworth in the Isle of Axeholme, North Lincolnshire closed in 2000. The works were supplied by an adjacent clay pit in the Mercia Mudstone. The clay pit known as 'Low Melwood' is still active. At Maltby near Rotherham there is an active brick clay pit in the coal measures but no associated brickworks.

3.6 Nottinghamshire's brickworks produce only facing bricks and as such demand has remained relatively stable over the long term. The recession did however hit the local industry hard causing both of the County's brick pits to shut down temporarily in 2008/9. The markets served are national.

3.7 Clay can be used for other purposes, such as cement, bulk fill and in engineering. The potential for such uses being developed in Nottinghamshire is unknown, but consultation on the new Minerals Local Plan could help clarify if any potential exists.

4. Future provision

National policy

4.1 National policy on brick clay provision is set out in Annex 2 of Mineral Policy Statement 1 (MPS1) – Planning and minerals, published in 2006. The distinct policy requirement for brick clay is that the new Local Plan needs to base provision on maintaining a 25 year landbank of permitted reserves for each brickworks. This high figure reflects the level of capital investment needed to build and maintain these operations. However, this recommendation could drop to a minimum of 10 years if proposals in a draft National Planning Policy Framework (NPPF) are accepted. In terms of providing a landbank at the end of the plan period (2030) this means looking ahead to 2055 under current policy and 2040 under the proposed new policy. Any assessment must

[3] UK Minerals Statistics Yearbook 2009 British Geological Survey 2010
[4] Information collected from Local Authorities based on operator information.

also taken account of maintaining supplies of the different types of clay used in blending.

4.2 As there is no national forecast on clay then the landbank will normally be based on the estimated planned outputs made by the brick companies for the individual brick factories.

4.3 MPS1 also recommends that the potential to extract clay for other purposes, in particular for engineering (such as bulk fill, capping landfill sites, lining canals and ponds and in cement) should also be considered. Although this has not been a local issue to date, in principle such proposals could come forward in the future. A criteria based policy may be the only appropriate response unless specific evidence comes forward about future potential proposals.

Local provision

4.4 Permitted reserves at both brick pits are well below what is required to sustain either a 25 or 10 year landbank throughout the plan period. As discussed below the total estimated shortfall ranges from around 6 -11 million tonnes depending on what landbank criteria is applied. In order to establish an appropriate strategy for meeting this shortfall the reserve situation and potential future options for supplying each brickworks are considered below:

Kirton - Hanson Brick (see Plan 2)

4.5 Kirton clay pit provides both red and cream-firing clays, the former accounting for about 90% of production. Planned output is around 150,000 tonnes per annum.

4.6 **Cream firing clay:** Reserves of cream clay are located in the south east of the pit within a separate working area that was permitted in 1969 and which is still largely untouched. No recent information is available but reserves are believed to be sufficient until at least 2030. This suggests that if a shortfall in the landbank becomes evident towards the end of the plan period it will be small and unlikely to be of any strategic importance. Potential options could include permitting a small extension or importing cream clay from another source.

4.7 **Red firing clay:** The critical issue at Kirton concerns the long term supply of red firing clay. Extraction of this clay is currently progressing north of the mineral railway line within land allocated in the Minerals Local Plan (Policy M11.1). Reserves should be adequate until at least 2023 based on planned outputs but could be longer if house building rates remains subdued. Based on the proposed 10 year landbank this would result in shortfall of around 2.5 million tonnes by the end of the plan period. The current 25 year landbank would result in a shortfall of nearly 5 million tonnes. Potential options for meeting future shortfalls are summarised below:

(a) Extensions

4.8 In terms of direct extensions the only option is to continue north westwards towards Kirton village. This option was considered when the existing Minerals Local Plan was prepared but rejected because of the additional environmental impacts working this land would cause. These were the encroachment towards Kirton and landscape issues. The latter comprised the destruction of mature landscape areas – a local designation aimed at conserving such features. As a result the Minerals Local Plan allocation was limited to the area that avoided or at least minimised these impacts. The Plan did not, however, rule out a further extension but recommended that this be compared with alternatives when the Plan was next reviewed.

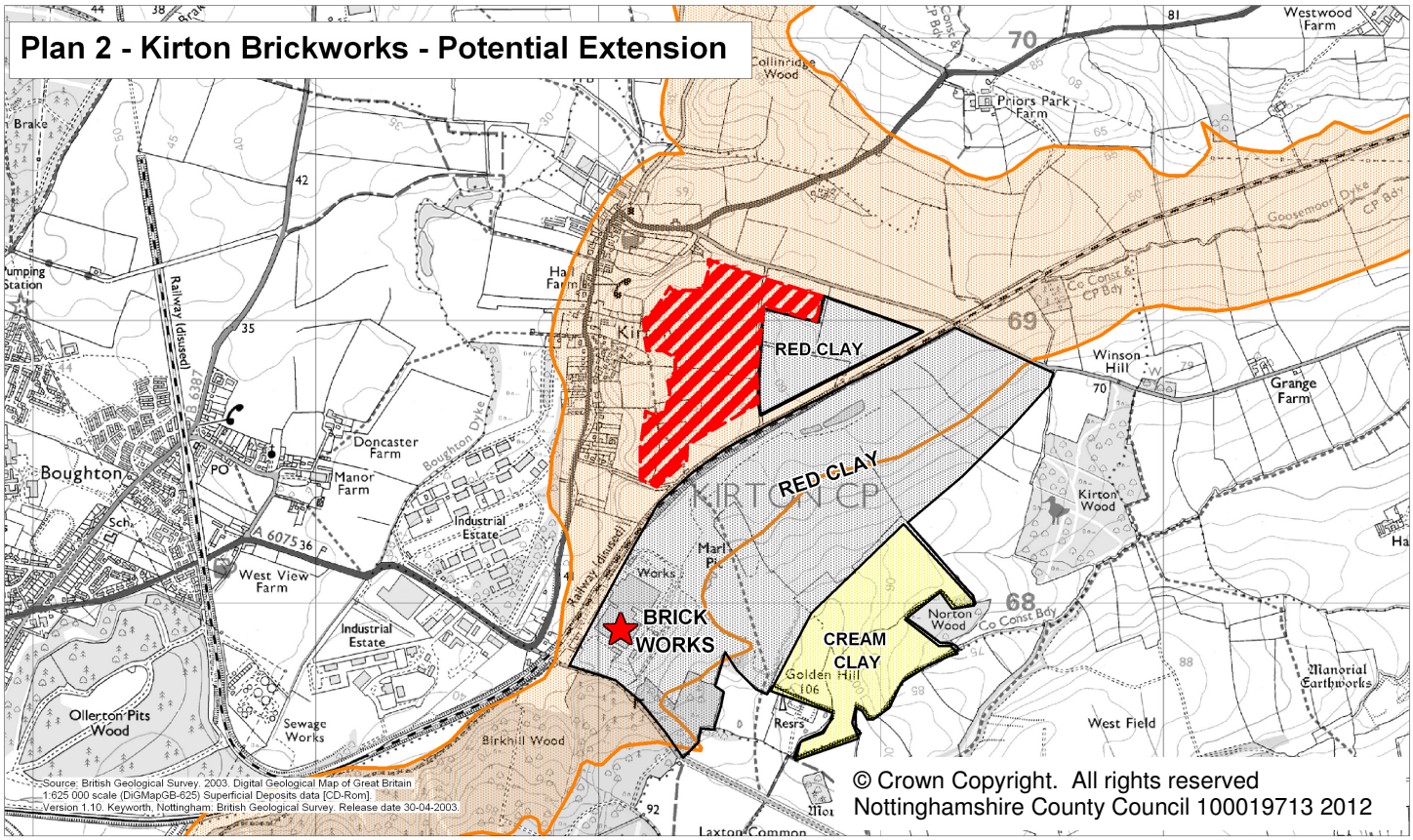
4.9 Hanson Brick the operator of the clay pit has since reconfirmed its wish to extend further north and west. This would yield a further 2.5 million tonnes, sufficient until at least 2041. Hanson Brick argue that this land can be worked without causing any unacceptable environmental impacts. Working this resource does have two important advantages. First, the clay can continue to supply the brickworks via internal haul roads and secondly travel distances are minimised so reducing carbon emissions and costs. The drawbacks in terms of encroachment towards the village and landscape issues remain, albeit the way landscapes are assessed has recently changed in response to new national policy guidance. This follows the development of a new 'Landscape Character Assessment' approach which has superseded the mature landscape area designations (see separate Background Paper on this issue for details and implications). The Landscape Character Assessment information published by Newark and Sherwood District Council in 2010 records this area as being of good landscape condition meaning that there will still be significant landscape and visual impact issues to consider.

4.10 If working all of this resource is considered to raise unacceptable environmental impacts then one option might be to work a smaller area if this overcomes or at least significantly reduces them. However this will bring forward the need to develop a new greenfield site as considered below.

(b) New greenfield sites

4.11 No alternative options have been put forward by Hanson Brick, but there is, in theory at least, plenty of scope for developing new clay pits within economic range as shown on Plan 1. The deliverability of any of these areas is very uncertain and with the possible exception of the resource immediately east of Kirton Road most options would have to rely on road transport to take the clay to the brickwork. Nevertheless at some stage, even if not until the 2040s, such options will have to be considered if the brickworks are to remain in production.

Plan 2 - Kirton Brickworks - Potential Extension



Sneinton Formation (Red Clay)

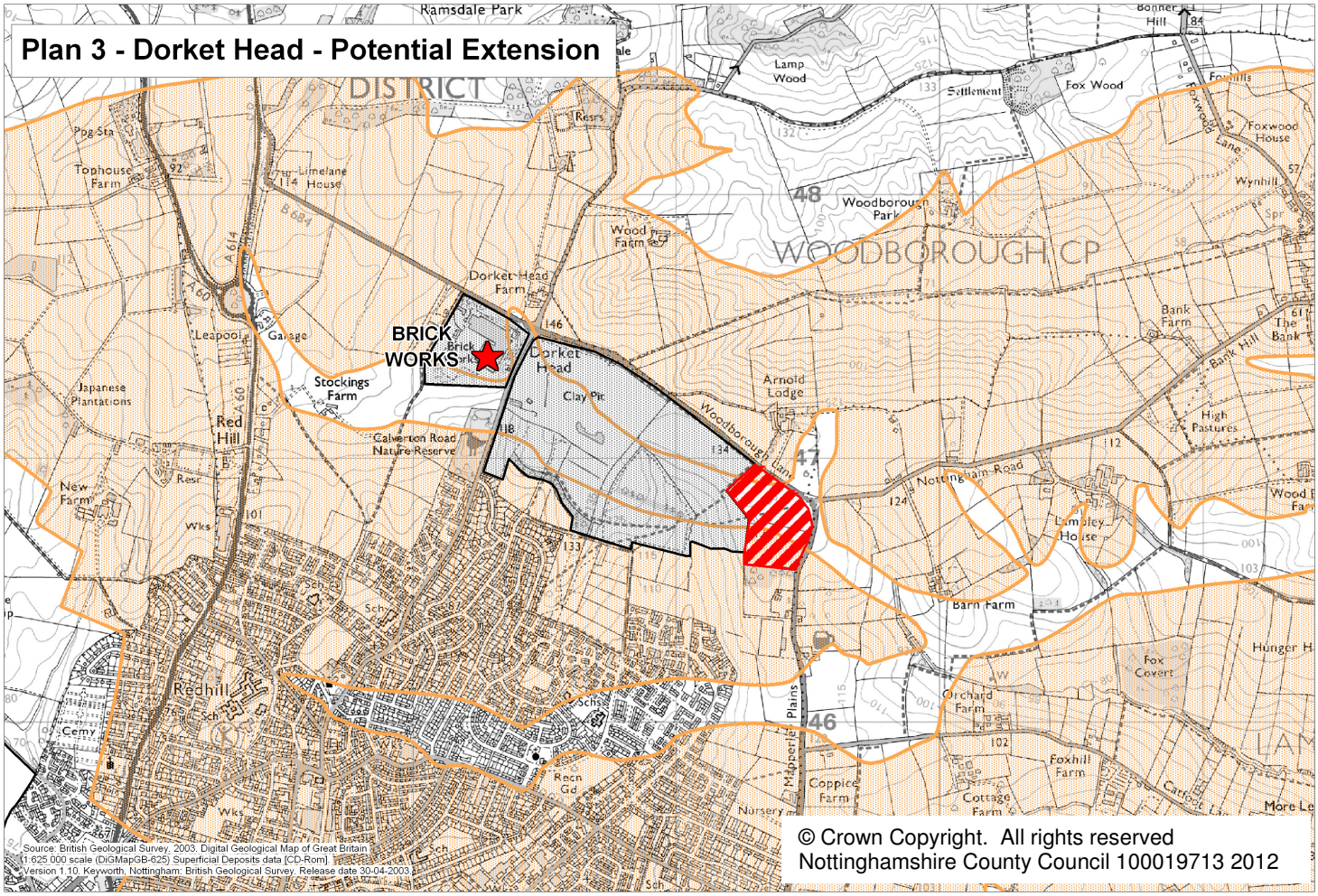
Cream Clay - Permitted Reserves Kirton.

Permitted

Extensions proposed by Industry

Brickworks

Plan 3 - Dorket Head - Potential Extension



4.12 The only known alternative resource within range of Kirton that has been tested is at Bilsthorpe but at present this is being promoted by Ibstock Brick as a replacement to its Dorket Head site as discussed below.

Dorket Head - Ibstock Brick (see Plan 3)

4.13 Clay extraction at Dorket Head is progressing in advance of a major waste disposal scheme, which commenced in 1990. The brickworks is located in the original quarry and clay is conveyed to the works via a tunnel passing beneath Calverton Road separating the two sites. An extension to the clay pit was granted in 1998 that secures reserves until at least 2023. Annual production is around 200,000 tonnes per annum. The proposed new 10 year landbank requirement would result in shortfall of around 3.5 million tonnes by the end of the plan period. The current 25 year landbank would result in a shortfall of over 6 million tonnes. Potential options for meeting future shortfalls are summarised below:

4.14 The existing Minerals Local Plan considered the option of an eastern extension which in purely operational terms made most sense. It also probably represents the ultimate limits of this brick pit. The land was however seen as having some significant environmental constraints, in particular the loss of a 'mature landscape area' which extends across the whole site. The Plan suggested that importing clay from a remote site (or providing a new replacement brickworks and clay pit) may prove to be a more acceptable option. An alternative resource was identified near Bilsthorpe, but it was unclear if this represented the most suitable option within the extensive Mercia Mudstone. The policy response to this situation is set out in M11.2 reproduced below.

Minerals Local Plan 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,

(c) 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.

Since the Minerals Local Plan was adopted matters have moved forward and the following situation applies.

(a) Extensions

4.15 Ibstock Brick has confirmed its intention to extend eastwards (see Plan 3) and has submitted a 'scoping opinion' that is the formal process that precedes a possible future planning application that requires an environmental impact assessment. Although landfill was initially proposed, Waste Recycling Group the landfill operator has since recently withdrawn from the scheme. A planning application to extend east which would reclaim the land back to a lower level has yet to be submitted.

4.16 As note above in Para 4.8 at Kirton the mature landscape area designation has since been replaced by a Landscape Character Assessment approach. The records for this area indicates that the proposed extension is within land of good landscape condition indicating that there will still be significant landscape and visual impact issues to consider.

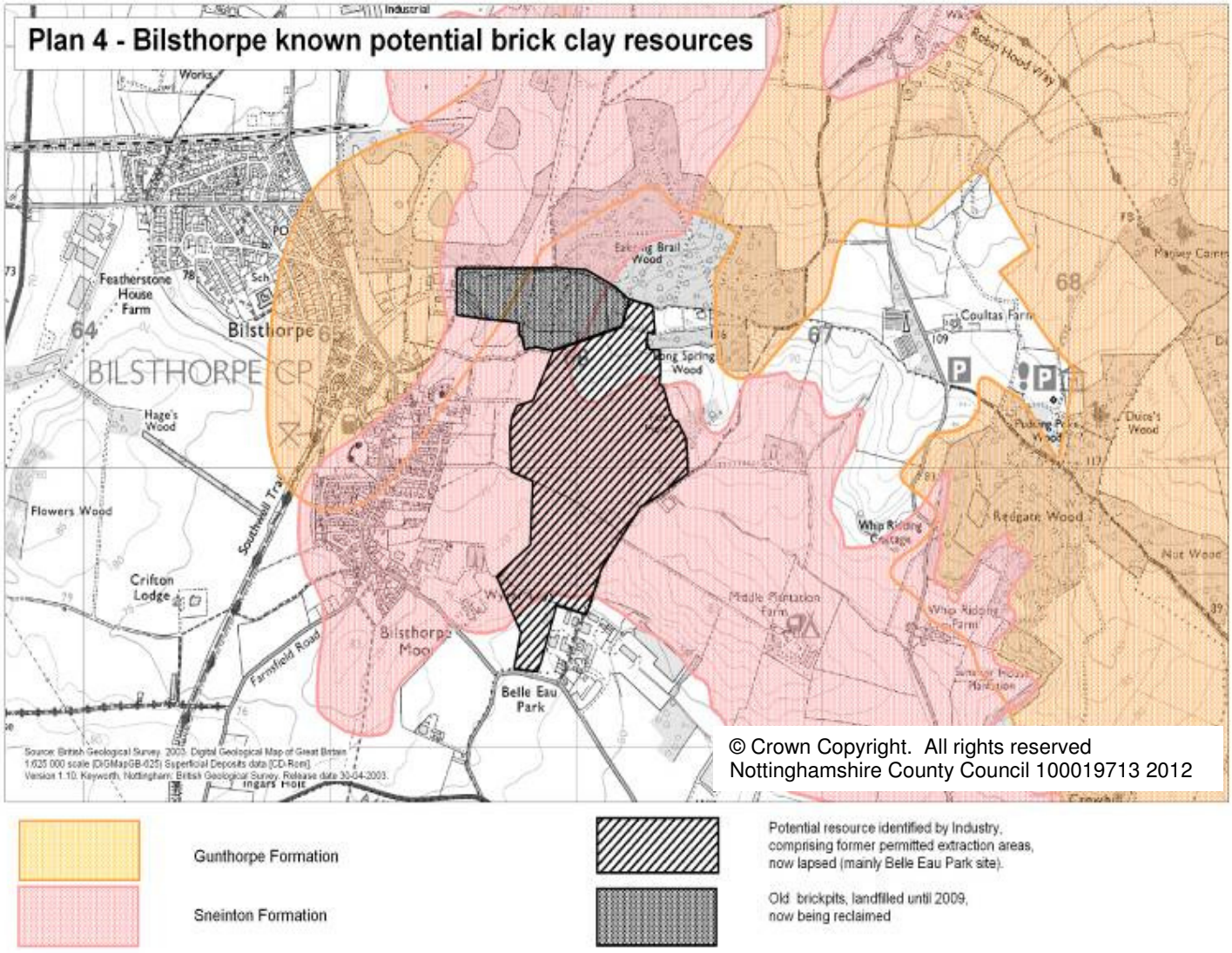
4.17 Ibstock Brick intend to phase this extension in with the existing consented area to ensure that the full range of clays can continue to be produced. If permitted this would extend the life of the brick pit to 2032. However, from 2027 Ibstock Brick will also need to start importing clay from a further alternative source which means that, with or without the eastern extension, a new greenfield site is unavoidable if supplies are to continue in the longer term.

The Bilsthorpe resource

4.18 Ibstock Brick has completed a detailed clay mapping exercise in relation to future supply and the resource at Bilsthorpe remains the company's preferred option. This resource is known to be suitable and available so in economic terms at least is deliverable. The resource lies to the south of an old clay pit at Bilsthorpe that has now been landfilled extending south to the Belle Eau Park Estate (see Plan 4). This area once had planning permission for a new brickworks and clay pit but this has since lapsed. It is estimated that the Belle Eau Park area contains approximately 4.5 million tonnes of clay enough for approximately 22 years production. Bilsthorpe is located on the boundary between the Gunthorpe and Sneinton formations. Whilst Plan 4 identifies these areas as entirely distinct the chemistry of the clays in this area are quite similar. Ibstock Brick also has control of an area of land adjacent, although it is unclear how much mineral this area contains. If these reserves were combined it is likely demand could be met for at least 25 years. Indeed, as noted above, this resource is also

within range of Kirton so it could supply this site as well, notwithstanding the different company interests and the commercial issues this raises.

4.19 Ibstock Brick recommends that the resource at Bilsthorpe should be safeguarded as a long term option. Although no other remote sites have been put forward, it is quite likely that other economically viable options will exist, including ones nearer to Dorket Head. It therefore remains unclear if the Bilsthorpe resource is in economic and environmental terms the most suitable option.



Developing a strategy for brick clay provision

4.20 The future of brick clay provision in Nottinghamshire has become more complex and potentially more uncertain and controversial than has been the case in the past. Both existing clay pits have limited options to extend and at least one new greenfield site will need to be developed by 2020 if not earlier. By around 2040 at the latest, both pits will become totally reliant on remote extraction which although a long time away is an issue that may need to be resolved well before the end of the plan period.

4.21 In line with general national minerals policy, both pits should be allowed to extend to the limits of what is environmentally acceptable before moving on to new greenfield options. For the new Local Plan the issue to resolve is whether any further extensions are acceptable in principle and to define what types of greenfield site are best suited to meet the longer term demand.

4.22 For new greenfield sites the new Local Plan can apply a broad area of search approach or, if the evidence permits, identify locations. The broadest option would be to simply identify the entire economic resource area with some criteria attached (see Plan1). This is not very helpful in guiding where future extraction will be acceptable but at a strategic level it may be the best that can be done if there is no credible evidence to support a more focused approach.

4.23 Identifying Bilsthorpe as a satellite location for future brick clay extraction is possible if the evidence and outcome of public consultation supports this as being the most deliverable option. However to date this site has not been compared against any local greenfield alternatives which is a weakness if this site does raise significant concerns that other options might avoid.

New brickworks

4.24 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. However, as previously mentioned, the permission subsequently lapsed without the development commencing. In response to this situation the Minerals Local Plan contained a criteria based policy (M11.3) setting out how such proposals would be considered. Whilst it remains possible that such proposals could come forward this does look to be a very remote prospect and one that may no longer require policy support.

5. Other strategic planning issues - landfill

5.1 Many clay pits are geologically suitable for taking non-hazardous waste from municipal, commercial and industrial sources. This is because the low permeability of clay means that the pollution risks to ground water, especially aquifers used as a potable water supply will be minimised. Indeed there are many examples of clay pits in Nottinghamshire being used for non-hazardous waste landfill as currently occurs at Dorket Head and until recently at the former brick pit at Bilsthorpe.

5.2 Landfill does, however, raise other planning issues such as odour, noise, traffic and blown litter which are likely to continue for many years after mineral extraction has ceased. Indeed the environmental issues raised by landfill can be more significant than those raised by the mineral extraction itself. This means that whilst a site may be suitable for clay extraction it may not necessarily be suitable for landfill. On the positive side landfill may provide the best reclamation option as it does allow the site to be reclaimed back to something close to is original landform and ground level. This is most likely to apply where the clay pit is essentially a hole in the ground that when reclaimed will look very unnatural unless filled in. In practice brick pits cut into a hillside can allow the re-profiling of the land to blend it into the surrounding landscape as a suitable alternative. This approach has been successfully applied at Kirton and is now proposed for the potential extension at Dorket Head.

5.3 The need to landfill future clay workings can be optional in the sense that it is driven as much by the need to find new waste disposal capacity than it being the only way the land can be properly reclaimed. As landfill within the potential extensions to both brick pits is not being proposed then this issue is more relevant to any new greenfield sites. In this respect waste management both nationally and locally is going through a major transformation that is seeing landfill levels fall significantly as more waste is recycled, or sent for energy recovery. This is in response to the impact of meeting statutory targets for municipal waste recycling, the recession and increasing rates of landfill tax making waste disposal economically unattractive. The need to find new waste disposal capacity and the types of sites and locations are issues currently being considered in the emerging Nottinghamshire and Nottingham Waste Core Strategy which looks ahead to 2031. This has identified shortfalls in waste disposal capacity, but no specific sites have been put forward to date.

6. Summary of issues and options

6.1 In summary the new Minerals Local Plan will need to focus on the following key issues:

a) The Local Plan needs to promote a 10 or 25 year landbank of brick clay reserves at each of the two existing brick pits depending on the outcome of new Government policy guidance By the end of the plan period this translates into a total shortfall of between 6-11 million tonnes depending on what landbank requirement applies.

b) At Kirton, a major extension could largely meet the expected shortfall, but environmental issues mean that this option needs to be considered against greenfield sites about which little is currently known.

c) At Dorket Head a further extension is possible but will not be sufficient. Bilsthorpe is seen by the mineral operator as its preferred replacement option albeit other options as yet not identified may exist.

d) Clay pits can be geologically suitable for landfill but this is not being proposed at the current brick pits. Landfill could be an option at any new greenfield site if this is environmentally acceptable and subject to there being an identified need.

e) There seems little purpose in rolling forward the existing Minerals Local Plan policy that considers the development of a new brickworks and clay pit, but this option warrants future consideration.

f) The use of clay for other purposes than brick clay should be considered in line with national policy.

Key references

1. **Mineral Policy Statement 1 Planning and Minerals** Department of Communities and Local Government 2006
2. **Nottinghamshire Minerals Local Plan** Nottinghamshire County Council 2005
3. **Brick Clay Mineral Fact Sheet** British Geological Survey 2007
4. **UK Minerals Statistics Yearbook 2009** British Geological Survey 2011
5. **Leicestershire Minerals Core Strategy** Leicestershire County Council 2009
6. **Derbyshire Minerals Core Strategy Issues and Options Evidence Base Papers** Derbyshire County Council 2010
7. **'Report to Accompany Request for a Scoping Opinion' for proposed extension to Dorket Head** Ibstock Brick 2006
8. **Letter from Waste Recycling Group to County Council** 1 March 2011
9. **Kirton Quarry - Proposed Safeguarding Areas** Hanson 2009
10. **Email communication with North Lincolnshire, Derbyshire, Leicestershire, Rotherham and Doncaster County Councils** March/April 2011