

DERBYSHIRE AND DERBY MINERALS LOCAL PLAN

**Towards a Minerals Local Plan:
Winter 2021/2022 Consultation
– Proposed Draft Plan**

**Background Paper
Brick Clay and Fireclay**

December 2021

Contents

- 1 Introduction and Background
- 2 National and Local Planning Policy
- 3 Method of Working/Processing/Transportation/Restoration
- 4 Brick and Fireclay Resources
- 5 Need
- 6 Supply
- 7 Conclusions – Issues for Making Provision for the Supply of Brick Clay and Fireclay

1. Introduction and Background

- 1.1 This is one of a series of papers providing background information to accompany the preparation of the new Minerals Local Plan. The new Plan will include strategies and policies concerning the extraction of brick clay and fireclay. This paper provides detailed information regarding the economic considerations of working the mineral; national and local policy considerations; the way in which the mineral is worked and existing resource and future supply implications. It concludes with the issues that Plan will need to address.
- 1.2 Clay, shale and mudstones are fine grained sedimentary rocks that occur extensively in the United Kingdom. Despite being widespread only limited deposits of clay, shale and mudstones have sufficient qualities to make them economically important minerals. (When they are extracted for commercial use they are generally known by the term 'clay and shale'.¹)
- 1.3 Brick clay is the term used to describe the clay and shale used in the manufacture of structural clay products, notably facing and engineering bricks, pavers, clay tiles for roofing and cladding, and pipes. Brick manufacture is the largest use, by tonnage, of brick clay and bricks are one of the most visible components of the built environment in our villages, towns and cities. Most brick clays are red firing producing red coloured products. Fireclays are sedimentary mudstones that underlie almost all coal seams; they are particularly important for the manufacture of buff and pale-bodied facing bricks.²
- 1.4 Clay and shale can also be used for engineering and environmental purposes, i.e. capping and lining areas of landfill, and lining water bodies such as lakes, ponds and canals and for general constructional purposes (fill). Clay and shale is also of secondary importance, to limestone and chalk, in the production of cement. Further information on its use for this purpose can be found in the Background Paper on Cement, dated December 2021.

¹ British Geological Survey, Commissioned Report CR/03/281N - Definition and characteristics of very fine grained sedimentary rocks: clay, mudstone, shale and slate, 2003, p10

² Trends in UK Production of Minerals, UK Minerals Forum, January 2014, P17

2. National and Local Planning Policy

National Policy

- 2.1 The National Planning Policy Framework (NPPF)³, specifically relating to the preparation of local plans, requires Mineral Planning Authorities (MPAs) to identify strategic priorities including any relevant cross-boundary issues and to develop strategic policies to address them. Such policies should set out an overall strategy for the pattern, scale and quality of development and make sufficient provision for strategic matters which includes the supply of minerals. The policies should also provide a clear strategy for bringing sufficient land forward, and at a sufficient rate, to address objectively assessed needs over the plan period, in line with the presumption in favour of sustainable development.
- 2.2 The NPPF⁴ recognises that it is essential that there is a sufficient supply of minerals to provide the infrastructure, buildings, energy and goods that the country needs. It also recognises that since minerals are a finite resource, and can only be worked where they are found, it is important to make best use of them to secure their long-term conservation. Brick Clay and fireclay, amongst others, are identified as important minerals for which provision should be made for their extraction.
- 2.3 National planning policy⁵ requires that MPAs plan for a steady and adequate supply of industrial minerals by:
- a) co-operating with neighbouring and more distant authorities to ensure an adequate provision of industrial minerals to support their likely use in industrial and manufacturing processes;
 - b) encouraging safeguarding or stockpiling so that important minerals remain available for future use;

³ National Planning Policy Framework, July 2021 Paragraph 21

⁴ National Planning Policy Framework, July 2021 Paragraph 209

⁵ National Planning Policy Framework, July 2021 Paragraph 214

- c) maintaining a stock of permitted reserves to support the level of actual and proposed investment required for new or existing plant and the maintenance and improvement of existing plant and equipment⁶ ;
- d) taking account of the need for provision of brick clay from a number of different sources to enable appropriate blends to be made.

2.4 The NPPF⁷ also requires that MPAs should provide for coal producers to extract separately, and if necessary, stockpile fireclay so that it remains available for use.

Duty to Co-operate

2.5 Local Planning Authorities and County Councils (in two tiers areas) are under a duty to co-operate with each other and with other prescribed bodies on strategic matters which cross administrative boundaries. Joint working is particularly important in identifying whether development needs that cannot be met within a particular plan area could be met elsewhere.

2.6 Strategic policy-making authorities should collaborate to establish cross border matters which they need to address in their plans and in accordance with the NPPF produce one or more statements of common ground. These should document the cross-boundary matters being addressed and progress in cooperating to address these.

Planning Practice Guidance

2.7 Planning Practice Guidance (PPG)⁸ sets out that the local plan should make it clear what is intended to happen in the area over the life of the plan, where and when this will occur and how it will be delivered. It adds that this can be done by setting out broad locations and specific allocations of land for different purposes; through designations where particular considerations apply; and through criteria-based policies to be taken into account when considering

⁶ These reserves should be at least 25 years for brick clay.

⁷ National Planning Policy Framework, July 2021 Paragraph 215

⁸ PPG, Paragraph: 002 Reference ID: 12-002-20140306

development. Local Plans are required to meet the objectively assessed development needs of the area including unmet needs of neighbouring areas where this is consistent with policies in the NPPF as a whole.

2.8 PPG⁹ sets out that MPAs should plan for the steady and adequate supply of minerals in one or more of the following ways (in order of priority):

- designating Specific Sites – where viable resources are known to exist, landowners are supportive of minerals development and the proposal is likely to be acceptable in planning terms. Such sites may also include essential operations associated with mineral extraction.
- designating Preferred Areas, which are areas of known resources where planning permission might reasonably be anticipated. Such areas may also include essential operations associated with mineral extraction, and/or
- designating Areas of Search – areas where knowledge of mineral resources may be less certain but within which planning permission may be granted, particularly if there is a potential shortfall in supply.

2.9 PPG¹⁰ provides specific advice on how MPAs should plan for industrial minerals. It suggests that recognition should be given to any marked differences in geology, physical and chemical properties, markets and supply and demand between different industrial minerals which can have different implications for their extraction. Such differences include:

- geology influencing the size of a resource, how it may be extracted, and the amount of mineral waste generated
- the market demand for minerals to be of consistent physical and/or chemical properties, resulting in the fact that industrial minerals are often not interchangeable in use
- the potential for the quality of a mineral extracted from a single site varying considerably

⁹ PPG, Paragraph: 008 Reference ID: 27-008-20140306

¹⁰ PPG, Paragraph: 086 Reference ID: 27-086-20140306

- the economic importance of the mineral as a raw material for a wide range of downstream manufacturing industries
- some industries are dependent on several industrial minerals and the loss of supply of one mineral may jeopardise the whole manufacturing process.

2.10 PPG¹¹ also sets out advice on the best way of providing for sufficient stocks of permitted reserves at individual sites. It advises that stocks of permitted reserves should be used as an indicator to assess whether further permitted reserves are required at an industrial minerals site. Stocks of permitted reserves should be calculated when a planning application is submitted to extract the mineral (through either a site extension or a new site) or when capital investment is proposed e.g. for a new kiln. The overall amount required should be directly linked to the scale of capital investment to construct and operate the required facility. For a brick factory the NPPF suggests providing a stock of permissions equivalent to at least 25 years.

Adopted saved local planning policy

2.11 The adopted Derby and Derbyshire Minerals Local Plan contains a saved¹² policy (MP32) to allow for the extraction of clay for use in the clay products industry. Notwithstanding that the Plan was adopted in 2002, the policy is broadly in accordance with the NPPF policies for planning for industrial minerals. However other matters such as the requirement for stocks of permitted reserves to be maintained and the need to recognise the importance of blending from alternative sources also need to be included.

3. Method of Working/Processing/Transportation/Restoration

Method of Working

3.1 Brick clays are worked entirely by open pit methods in shallow or deep quarries. The extraction is undertaken in a 'campaign' where there is a concentrated short period of excavation usually on an annual basis. The nature of extraction

¹¹ PPG, Paragraph: 088 Reference ID: 27-088-20140306

¹² Under Paragraph 1(3) of Schedule 8 to the Planning and Compulsory Purchase Act 2004

varies but typically within the Plan area annual clay and shale extraction is small scale, in terms of tonnage (around 50,000), with sites operating for many years.

- 3.2 The impracticability and cost of removing impurities is such that brick clays undergo little processing other than grinding and screening to remove any hard or coarse components. It is important therefore to extract clays selectively, avoiding contaminating material, to ensure that feed to the plant has consistent and predictable firing characteristics. Brick clays with different properties are often laid down in stockpiles as layers, which are later removed vertically to ensure a consistent mix. Open air stockpiling is common practice, allowing the stored brick clay time to 'sour', a process of weathering over several months to increase its ability to be moulded.
- 3.3 Fireclay extraction is not normally commercially viable on its own and almost all production is as a co- or by-product of surface coal production. However, only a small proportion of surface coal sites (less than 20%)¹³ will have associated fireclay recovery. Where fireclay is recovered for sale it must be worked carefully to ensure there is no contamination with associated minerals. Under favourable conditions fireclay can be worked down to a bed of less than 0.3m. Fireclays are then normally stockpiled before removal off site.

Processing

- 3.4 Historically, most urban areas had brickworks and associated clay pits. Nowadays, most facing bricks, engineering bricks and related clay-based building products are manufactured in large automated factories. These represent high capital investment in plant (including kilns for firing) and are increasingly dependent on raw materials with predictable and consistent firing characteristics in order to achieve high yields of saleable products. Continuity of supply of consistent raw materials is of paramount importance. Blending different brick and fireclays to achieve improved durability and to provide a

¹³ British Geological Survey, Mineral Planning Factsheet, Fireclay, 2006

range of fired colours and textures is an increasingly common feature of the brick industry.

Transportation

- 3.5 Whilst in the past brick clay and fireclay was consumed locally, today increasing tonnages are transported to large scale automated brickworks for blending purposes and to serve plants with no clay reserves. Generally, clays are transported to the plant by road and the finished product is usually delivered to the market by road. Brick clay is a high weight and low value commodity and as such transportation affects costs significantly. Fireclay has a slightly higher value than brick clay, which means that longer journeys are more economically feasible.

Restoration

- 3.6 The nature of the brick clay market raises particular issues for clay working in terms of the length of time taken to work and restore sites and in terms of the need for stockpiling. Fluctuations in the economy impact on the construction industry and the consequent demand for structural clay products especially bricks. Periods of decline may lead to the mothballing or closure of extraction and processing facilities, including brickworks, which may result in a landscape of inactivity. There is a particular need to minimise the impact of stockpiled clay material both on the environment and local amenity.
- 3.7 If brick or fireclay clay is worked in association with surface coal mining, schemes usually require short extraction periods with quick restoration which limits stockpiling opportunities. Brick and fireclay may be stocked at the brick works or clay products site rather than at the excavation site although it is usually the latter.

4. Brick and Fireclay Resources

General

4.1 The character of clay, shale and mudstones can vary markedly depending on their geological age and the extent to which they have been buried and altered by tectonic events e.g. earthquakes etc. Clay is the least mature and occurs most commonly in the younger sedimentary rocks that form outcrops in southern and eastern England. More mature shale and mudstone deposits are associated with older rocks forming outcrops in central and northern England (including the Plan area). In these areas shale and mudstones are commonly found interbedded with sandstones.¹⁴

4.2 Whilst clays occur extensively in many parts of the United Kingdom and resources are, therefore, potentially very large, only certain sources have the specific geological properties suitable for manufacturing structural clay products.

Brick clay

4.3 Brick clays are essentially sedimentary clays, shale and mudstones of different geological ages and compositions. These range from relatively soft, plastic clays to hard mudstones. Their chemical properties, which are related to their mineral composition and their physical properties, particular grain size, are critical in determining their suitability for the manufacture of structural clay products. These properties include strength, water absorption (porosity) and frost resistance, and thus durability and performance in service. Importantly, they also affect aesthetic appearance, such as colour and texture; most brick clays are red 'firing' producing red coloured products.

Fireclay

4.4 Fireclays are sedimentary mudstones that occur as seatearths or fossil soils that underlie almost all coal seams. Fireclays are typically thin (normally <1m, although rarely 3m) and extraction on their own would not be economically viable because of the high overburden to mineral ratios. In contrast to brick

¹⁴ British Geological Survey, Commissioned Report CR/03/281N - Definition and characteristics of very fine grained sedimentary rocks: clay, mudstone, shale and slate, 2003, Page 10

clays, which are normally red-firing due to the presence of iron oxides, fireclays have relatively low iron contents and are particularly valued for the production of buff coloured bricks and pavers. Bricks made from fireclay also exhibit superior technical properties, such as strength and durability.

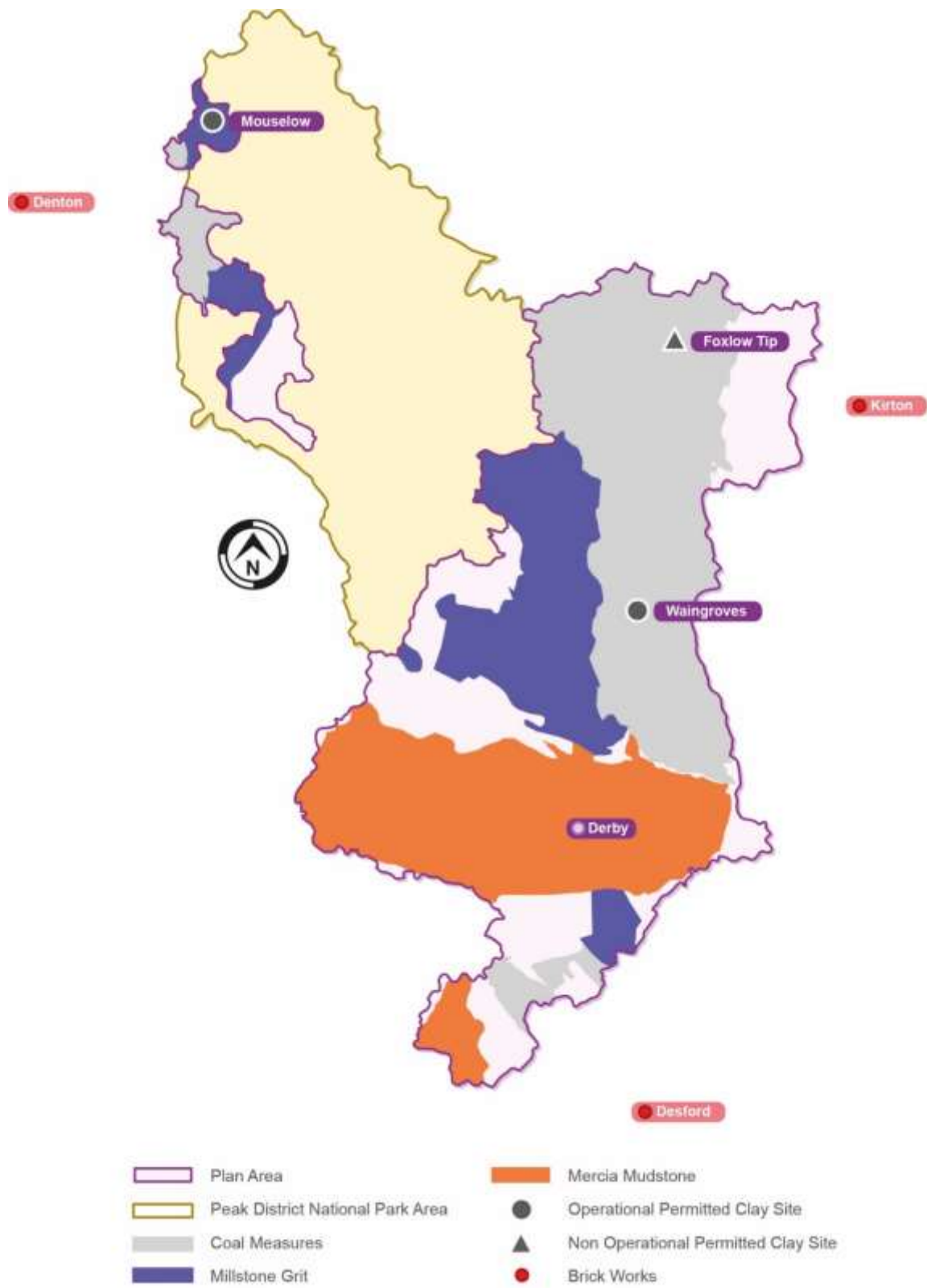
Plan area

- 4.5 Clay, shales and mudstones occur extensively in the Plan area but only a small proportion are suitable for brick manufacture (most are too high in carbon and sulphur). The most important economic resources are of Carboniferous age and are associated with the Millstone Grit and the Coal Measures the latter being also a potential source of fireclays. The red silty mudstones of the Triassic, Mercia Mudstone Group outcrop extensively in the southern part of the County, but they do not contain any permitted reserves and are not anticipated to be of future economic importance.
- 4.6 There are currently only three brick clay operations within the Plan area, all working Carboniferous shales. Originally these quarries were opened to supply nearby brickworks which have since all been demolished. At Mouselow Quarry, Glossop black shales of the Millstone Grit are worked and transported to a brickworks at Denton, east Manchester. At Waingroves Quarry, Ripley mudstones and shales of the lower coal measures are extracted and transported to Forterra Building Products Ltd brickworks sites in Leicestershire and Nottinghamshire. Coal measure mudstones and shales have also been recovered from land adjoining a former foundry waste tip at Foxlow Tip, Barrow Hill, Staveley originally intended to supply the now demolished Phoenix Brickworks at Barrow Hill. The clay is now stockpiled on the extraction site.
- 4.7 Fireclays are closely associated with coal seams and thus resources are confined to coalfields. The most recent active surface coal mining site within the Plan area was at Lodge House Farm, Smalley where a small amount (up to 50,000 tonnes) of potential marketable fireclay was extracted in association with the coal and used to supply the nearby Denby pottery. The resources and sites are shown on Figure 1 entitled Clay Resources, Quarries and Manufacturing Sites – 2019.

Safeguarding

- 4.8 Since minerals are a finite resource it is important to ensure that non-minerals development does not needlessly prevent the extraction of known mineral resources of local and national importance. One way of achieving this is through the inclusion of resources within Mineral Safeguarding Areas. Whilst clay, shale and mudstones are widespread only limited deposits have sufficient qualities to make them economically important. Sources of brick clay and fireclay within the Plan area will be safeguarded through safeguarding of the predominant mineral i.e. sandstone and surface coal. More detailed information is available at Chapter 9.1 of the Proposed Draft Plan and in the Background Paper on Minerals Safeguarding, December 2021.

Figure 1: Clay Resources, Quarries and Manufacturing Sites 2019



5. Need

- 5.1 There are no national assessments of the need for brick clay or fireclay production. The industry is market-led, and production is related closely to trends in the construction industries. Brick clays are used in the manufacture of structural clay products, notably facing and engineering bricks, pavers, clay tiles for roofing and cladding, and pipes. Brick manufacture is the largest use of brick clay by tonnage with house building the principal consumer of bricks, together with other construction projects. A report¹⁵ on trends in the UK production of Minerals states that brick clay consumption has declined significantly since the 1970s from 18 million tonnes per annum (tpa) in 1974 to 4 million tpa in 2011. The initial decline was due mainly to the demise of common bricks in houses which have been replaced, in the inner leaves of cavity walls, by concrete blocks and, in internal walls, by blocks and plasterboard. The later decline can be attributed to a significant reduction in the number of new houses being built, together with a trend towards smaller houses and flats and the increasing use of timber framed prefabricated construction, which relegates bricks to an external cosmetic and weather facing skin, resulting in the need for fewer bricks. The report adds that, with increasing pressure for new homes, the declining trend in house building is likely to be reversed. In the past the United Kingdom has largely been self-sufficient in the manufacture and supply of bricks, but since the late 1990s there has been an increasing reliance on imports. The above factors, together with the reduction in the scale of surface coal mining have also led to a decline in the consumption of fireclays.
- 5.2 More recently, Government's initiatives to stimulate the housing market appear to be having some effects on the need for brick clay and fireclay. Figures indicate that the production of bricks has increased from 1.4 billion in 2010 to 2.0 billion in 2018¹⁶ and brick clay production has increased from 4 mtpa in 2010 to 4.5 mtpa in 2019.¹⁷

¹⁵ Trends in UK Production of Minerals, UK Minerals Forum, January 2014, Page 17

¹⁶ Great Britain Monthly Statistics of Building Materials and Components, January 2019, DBEIS

¹⁷ United Kingdom Minerals Yearbook 2020, BGS

Economic importance

- 5.3 In 2018, a total of 400 million tonnes of aggregates, industrial minerals and other manufactured mineral products were produced in Great Britain. This is over four times the total volume of energy minerals, produced in the UK. The mineral products industry¹⁸ directly contributed over £5.8 bn in 2018 to the UK economy. However, the importance of construction and industrial minerals as essential inputs to downstream industries, mainly within the manufacturing and construction sectors, also needs to be recognised. The Mineral Products Association estimates that the mineral products industry had a turnover of £16.3bn in 2018 and enabled a further £596.7bn turnover in industries downstream of the supply chain¹⁹.
- 5.4 Brick clay and fireclay working can provide an important source of local employment both in rural and former coal mining areas. In 2014, the most recent date for which statistics are available, 29²⁰ people were employed in clay and shale mining in Derbyshire; 6 were directly employed, 13 were employed by contractors and 10 were drivers (based on site in an average week).

Heritage importance

- 5.5 Clay bricks and tiles make an important contribution to the local architectural styles in our cities, towns and villages. The variety of clay used gives rise to the distinctive local variations in the built environment. Some brickworks specialise in hand-made products for the repair of historic and traditional brick-built features and buildings.²¹

Alternatives/Recycling

¹⁸ Defined as the extraction of mineral resources and their processing and manufacture into asphalt, cement, concrete, industrial and agricultural lime, mortar and slag and including some road freight activities.

¹⁹ All figures taken from MPA Profile of the UK Minerals Products Industry, 2020

²⁰ Tables 13-16, DCLG, Mineral Extraction in Great Britain 2013, Business Monitor PA1007

²¹ British Geological Survey, Mineral Planning Factsheet, Brick clay, 2007

5.6 In terms of finding alternatives to primary materials for brick manufacture some secondary materials and waste types have been used in certain circumstances as a partial substitute for primary clay. Reclaimed bricks have also been used but they are expensive and therefore their impact in reducing the overall demand for brick clay is marginal.

6. Supply

6.1 The past economic downturn and resultant recession in the construction sector has meant that the need for building products and hence brick and fireclay has been low. This national picture has been reflected locally in that there are no brickworks within the Plan area and only three sites with planning permission for brick clay working. Brick clay from the two active sites is exported to adjoining MPAs. Estimated annual production, permitted reserves and estimates of the lifespan of existing quarries are shown in Figure 2 below. The locations of the quarries and the brickworks/clay products site they serve are shown on Figure 1. There is currently no fireclay extraction within the Plan area.

Figure 2: Production and Permitted Reserves at Clay and Shale Quarries within the Plan area

Quarry	Estimated Permitted Reserves 2019	Anticipated annual production over plan period	Estimated lifespan of sites (in years) based on estimated average production over plan period	Estimated date that permitted reserves will be worked out based on estimated average production over plan period	Expiry date of planning permission
Brick Clay					
Mouselow	985,000	45,000	22	2041	2042
Waingroves	3,650,000	60,000	62	2080	2042
Foxlow Tip	250,000 *		N/A	N/A	2029

All figures in tonnes

*See explanation of reserves figures below

Mouselow, Glossop

- 6.2 A clay and shale quarry, operated by Wienerberger UK, is located at Mouselow, near Glossop. The quarry has been operational for many years, at least since 1879 and historically there was a brick factory on the site. Brick clay extraction is undertaken by the 'campaign' method; the material is then stockpiled on site. The raw material is removed offsite to the customer, which is Wienerberger UK's Denton Brickworks, in east Manchester, some 12 km (8 miles) away.

Geology

- 6.3 The quarry is worked primarily to extract shale for use in brick making. The shales are part of the Millstone Grit Group which consists of an interbedded sequence of shales, mudstones and sandstones.
- 6.4 The uppermost shales which remain in the knoll feature in the western part of the site are currently the main source of brick making material. Below the upper shales, lies a 6-metre-thick deposit of high sulphur shales which are no longer suitable for brick making as the sulphur content is higher than that which can be used in the Denton factory.
- 6.5 In addition, a 4 to 8-metre-thick bed of sandstone occurs between the upper shales and the lower high sulphur shales. The sandstone is used as a high-quality building stone with a minor amount, which is not suitable for use as building stone, being crushed and used as a construction aggregate.

Permitted Reserves

- 6.6 Planning permission was granted, in 2019, for a lateral extension to the quarry which provides an additional 850,000 tonnes (470,000 cubic metres), using a conversion factor of 1.8 tonnes per cubic metre. When taken together with the permitted reserves of high-quality shale that existed at 2018 i.e. 180,000 tonnes (100,000 cubic metres), permitted reserves at Mouselow total some 1,030,000 tonnes (572,000 cubic metres). Taking off anticipated production in 2109 of 45,000 tonnes produces permitted reserves of 985,000 tonnes at the end of 2019. Granting of the planning permission resulted in the relinquishment of

permitted reserves totalling some 1,080,000 tonnes (600,000 cubic metres) of lower high sulphur shales.

Production

- 6.7 Extraction from Mouselow has been substantially reduced from the levels experienced in the 1990s due to the closure of Cheadle brickworks, which it also supplied, and reduced output of the Denton brickworks. Output from Mouselow is currently around 45,000 tpa and is unlikely to increase in the immediate future. If the economy improves further in the longer term, output may rise to approximately 54,000 tpa. Based on the annual estimated production of 45,000 tonnes (25,000 cubic metres) permitted reserves are estimated to last for 22 years until 2041 beyond the end of the plan period in 2038.

Denton

- 6.8 The Denton factory is a substantial modern facility with the ability to produce over 50 million high quality bricks per year which are used in building work locally and further afield. There are 53 full time employees at Denton and Mouselow with additional contractors and heavy goods vehicle (HGV) drivers and indirect workers within Wienerberger and associated companies.
- 6.9 There are 49 different product groups currently manufactured at Denton and 95% of the production is unique within Wienerberger with no other factory producing the same range of products. Shale from Mouselow forms part of the raw material requirement for 35 out of the 49 product groups and is included in 80% of all the bricks manufactured. The Mouselow material has good consistency, low sulphur, good potash and medium carbon levels in comparison with other clay and shale sources and makes up 50% of the raw material used.
- 6.10 The remaining 50% of raw material is supplied from Harwood Quarry, Bolton, with other small quantities for blending from Bradford and Leicestershire. The Bolton source of material is 30km away from Denton but cannot be used

exclusively because of issues with colour and silica levels. The Bradford material is transported 65km to Denton and is again used as a blend to achieve the required mix. The Leicestershire material is transported 145km and consists of fireclay with specific refractory and colour properties. This fireclay material constitutes a small proportion of the brick making mix and is mixed with Mouselow material. These other raw materials cannot be used to the exclusion of the Mouselow clay and shale. There are very few other sources of brickmaking clay and shale within 25km of the Denton factory. Wienerberger has searched for alternative supplies extensively over recent years as the Denton factory uses a blend of raw materials to produce its range of products. Mouselow clay and shale is essential for the continued operation of the brickworks.

Waingroves, Ripley

- 6.11 A brick clay extraction site, operated by Forterra Building Products Ltd, is located at Waingroves, Ripley. Planning consent exists up to the year 2042. The brickworks at Waingroves ceased production in 2006 and has since been demolished. Brick clay extraction is undertaken by the 'campaign' method; the material is stockpiled on site. The excavated material is then removed off-site to the Company's brick works at Kirton in Nottinghamshire and at Desford in Leicestershire. Approximately 60% is transported to Nottinghamshire and 40% to Leicestershire. (Until 2015 brick clay was also transported to Measham brick works but the operator has informed the MPA that an alternative source of material has been found for this site.) The brick clay is then blended with clay and shale material from other active quarries at the brickworks, chiefly because being a Carboniferous Shale it gives a far stronger fired product than ones made purely from Keuper Marl and helps the brick to be frost resistant. As a result, it is used to manufacture bricks destined for engineering specifications rather than general house building.
- 6.12 Permitted reserves at Waingroves, at 2019 are estimated to be around 3.65 million tonnes. Production has averaged around 60,000 tonnes in recent years as shown in Figure 3. This trend is likely to continue for the short term until the

new brickworks at Desford is commissioned, estimated at 2021/2022, when clay usage from Waingroves is anticipated to subsequently rise to around 115,000 tpa. Taking this increase into account indicates that Waingroves could maintain supplies for a further 34 years, well beyond the Plan period. The planning permission includes conditions requiring on-going restoration including site profiling, planting and landscaping.

Figure 3: Annual Production of Brick Clay extracted from Waingroves Quarry

Year	Extraction in Tonnes
2011	81,000
2012	66,000
2013	69,000
2014	No figures
2015	59,000
2016	63,000
2017	63,000
2018	60,000
2019	No figures

Kirton

- 6.13 Kirton brickworks, Nottinghamshire operated by Forterra Building Products Ltd produces high quality facing bricks. Its main source of clay is the adjacent quarry located on the Mercia Mudstone resource. Nearly all (90%) of the mineral extracted is red firing clay, but some cream firing clay is also extracted. Permitted reserves of red firing brick clay are anticipated to be adequate until 2044. Reserves of cream firing clay are located to the east of the brickworks within a separate working area and are expected to be sufficient until at least 2030.

6.14 Nottinghamshire County Council, in its adopted Minerals Local Plan March 2021, identifies the existing reserves as being sufficient to enable a 25-year stock of permitted reserves to be maintained at Kirton over the plan period. It makes reference to the ongoing importation of clay from Waingroves Quarry for blending purposes.

Desford

6.15 Desford brickworks, operated by Forterra Building Products Ltd, is located in Leicestershire. The works are supplied principally with brick clay from an adjoining quarry. In 2019 planning permission was granted for a new brickworks and an extension to the existing quarry which would provide additional reserves to be worked over a 38 year period. The new brickworks, estimated to be commissioned in 2021/22, would increase brick production from between 75 and 85 million to up to 180 million bricks per year. Imports of raw materials from Waingroves would increase accordingly from approximately 24,000 tpa to 75,000 tpa. Leicestershire County Council adopted its new Minerals and Waste Plan in 2019. The Plan includes policies to allow for the additional working of brick clay to ensure the supply of material to the brickworks and to maintain a 25-year stock of permitted reserves.

Foxlow Tip, Barrow Hill

6.16 Planning permission was granted in 2009²² for the extraction of 600,000 tonnes of brick clay from land adjacent to Foxlow Tip, Barrow Hill, Staveley to supply the company's (Phoenix Brick Ltd) brickworks at Barrow Hill. The excavation lasted for three years. The proposal was to stockpile the clay for an additional eighteen years (21 years in total) on the footprint of the old tip. Clay would be removed off site at a rate of 30,000 tpa; and based on these estimates the permitted reserves would last approximately 20 years. Permission was also granted for the extraction of secondary aggregates and incidental coal. The

²² Planning Application CM2/0707/77

planning permission specified that clay extracted from the site was only to be used for the purposes of supplying the brickworks at Barrow Hill. However, the brickworks ceased production in Spring 2013 and has since been demolished.

- 6.17 The latest information, in 2018, from the operator²³ indicates that the brick clay reserves recovered from the tip totalled some 250,000 tonnes which is stockpiled on the extraction site. Planning permission has been granted for a waste treatment plant adjoining the former brickworks site. If the treatment plant is developed and performs as expected the operator has indicated that it could provide sufficient energy to make the development of a new brickworks a viable proposition in view of the stockpiled material.
- 6.18 The planning permission granted in 2009 includes a condition requiring the site to be restored progressively when the stockpiled clay is removed off site. The restoration scheme includes an agricultural after-use for most of the site, together with an area of habitat creation, reflecting the character of the 'riverside meadows' landscape. Final restoration is not envisaged until 2030 i.e. the end of the Plan period.
- 6.19 The applicant submitted a Section 73 application in 2012 (CM2/1012/86) not to comply with condition 4 (approved development) and 7b (duration) of the 2009 permission. The applicant sought to extend the time by which aggregate processing must cease and restoration completed from November 2012 to 30 April 2013. This application was approved in January 2013.
- 6.20 In 2015 the applicant submitted a Section 73 application (CM2/1215/123) to vary Condition 6 of the 2009 planning permission to allow the removal of 90,000 tonnes of clay to alternative customers in order to restore the site in accordance with the approved timescale. Permission was granted in May 2016.

²³ Memo from SUON Ltd dated 19/11/2018

- 6.21 An email from the operator in 2018 confirmed that no reserves had been exported from the site and approximately 250,000 tonnes of clay remained stockpiled.

Other uses of clay and shale

- 6.22 Clay and shale can also be used for engineering and environmental purposes i.e. capping and lining areas of landfill, and lining water bodies such as lakes, ponds and canals and for general constructional purposes (fill). These uses do not require the specialist properties of brick clay or fireclay and therefore the extensive clay and shale deposits within the Plan area can be used to source these uses. Clay for these purposes is often worked incidentally both in association with the extraction of other minerals and prior to non-mineral development or as borrow pits in association with major construction projects.

7. Conclusions – Issues for Making Provision for the Supply of Brick Clay and Fireclay

- 7.1 The NPPF does not set out figures for how much brick clay or fireclay should be produced. Production is market-led and closely related to the needs of consumers and to trends in the construction industries. During buoyant economic periods, the need for brick and fireclay increases for the production of bricks, tiles, terracotta pipes, refractory products, etc. Periods of decline can lead to mothballing or shutting down of extraction and processing facilities giving rise to longer than anticipated timescales for working and reclamation. A key issue for the Plan, therefore, is the need to maintain essential supplies to consumers when they are needed whilst seeking to encourage the rapid working and reclamation of sites to minimise impacts taking into account the need for stockpiling.
- 7.2 The change in the nature of brick manufacturing to large scale automated plants has led to a requirement for different sources of clays to enable their blending to produce a variety of products. Additionally, in order to develop or maintain new or existing brick manufacturing plants, NPPF requires that the level of

investment needed should be supported by a stock of sufficient permitted reserves (at least 25 years' worth).

- 7.3 Brick clay resources within the Plan area are currently and are likely to continue to be called upon to supply plants in adjoining authorities throughout the Plan period. Material from Mouselow Quarry supplies a brickworks at Denton, east Manchester and material from Waingroves Quarry supplies two brickworks, one in Leicestershire and one in Nottinghamshire. The importance of maintaining these supplies is identified as a strategic cross border issue, which we need to have regard to under the 'Duty to Co-operate'. In developing our strategy for brick clay provision, the Plan will need to ensure that such movements are appropriately taken into account.
- 7.4 The Plan will need to recognise the importance of fireclay and make provision for its extraction in association with any surface coal working.
- 7.5 The Plan will need to make provision for the working of clay and shale used for engineering and environmental purposes.