DERBYSHIRE AND DERBY MINERALS LOCAL PLAN

Towards a Minerals Local Plan:

Spring 2018 Consultation

Background Paper
Crushed Rock for Aggregate

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DERBYSHIRE County Council

Derby City Council

Contents

1. Introduction and Background

1.1 Crushed rock is produced from hard rock formations, particularly limestone and sandstone, by mechanical crushing. Crushed rock resources vary greatly and the many markets for its use can be divided into two main types, depending mainly upon the physical or chemical properties of the mineral. Limestone which is valued for its specific chemical properties is used primarily in the chemical and manufacturing industries and is commonly referred to as 'industrial' limestone. This is discussed in a separate paper. This paper is concerned with the limestone, which (together with a small amount of sandstone) is valued mainly for its physical properties and is used as an aggregate for construction purposes, mainly as fill material, roadstone and in the manufacture of concrete (quarries which produce mainly industrial type limestone also produce some aggregate quality stone as a by-product). Nationally, in 2015, 45% of total UK aggregate production came from crushed rock.[i]

2. National Policy Guidance

2.1 The National Planning Policy Framework (NPPF) (2012) recognises that minerals are essential to support sustainable economic growth and our quality of life and that it is important therefore that there is a sufficient supply of material to provide the infrastructure, buildings, energy and goods that the country needs. It also recognises that minerals are a finite resource so it is important to make best use of them to secure their long term conservation.

2.2 It seeks to minimise the extraction of primary aggregates in favour of secondary and recycled aggregate.

2.3 At paragraph 145, it specifies that Mineral Planning Authorities (MPAs) should plan for a steady and adequate supply of minerals by preparing a Local Aggregate Assessment and through this, making provision for aggregates by the allocation of new sites, preferred areas and/or areas of search. In addition,

[i] MPA, The Mineral Products Industry at a Glance 2015

MPAs should also maintain a landbank (stock of permitted reserves) of crushed rock which will last for at least 10 years.

2.4 National Planning Practice Guidance (NPPG) (2014) explains that the Managed Aggregate Supply System seeks to ensure a steady and adequate supply of aggregate mineral, to handle the significant geographical imbalances in the occurrence of suitable natural aggregate resources, and the areas where they are most needed. It requires MPAs which have adequate resources of aggregates to make an appropriate contribution to national as well as local supply.

2.5 It sets out that at the local level, MPAs should prepare Local Aggregate Assessments (LAAs) which should include a forecast of the demand for aggregates based on both the rolling average of 10-years sales data and other relevant local information and an analysis of all aggregate supply options. It should also look at average sales over the last three years to identify the general trend of demand as part of the consideration of whether it might be appropriate to increase supply. LAAs will be monitored on a sub-national and national level.

2.6 It also sets out that aggregate landbanks should be used as a trigger for a mineral planning authority to review the current provision of aggregates in its area and consider whether to conduct a review of the allocation of sites in any existing adopted Plan.

2.7 It also states that the suitability of each proposed site, whether an extension to an existing site or a new site, must be considered on its individual merits, taking into account issues such as:

- need for the specific mineral
- economic considerations (such being able to continue to extract the resource, retaining jobs, being able to utilise existing plant and other infrastructure)

- positive and negative environmental impacts (including the feasibility of a strategic approach to restoration)
- the cumulative impact of proposals in an area.

3. The Geology and Geographical Distribution of Limestone and Sandstone in Derbyshire and Derby

3.1 The area of Derbyshire covered by the Plan (i.e. excluding the Peak District National Park), produces the second highest annual output of limestone in England. (Derby City does not have any reserves of hard rock so this paper refers mainly to Derbyshire) It has long been one of the most important producers of crushed rock from limestone in the country. Limestone is the name given to the group of sedimentary rocks in which the calcium carbonate content exceeds 50%.

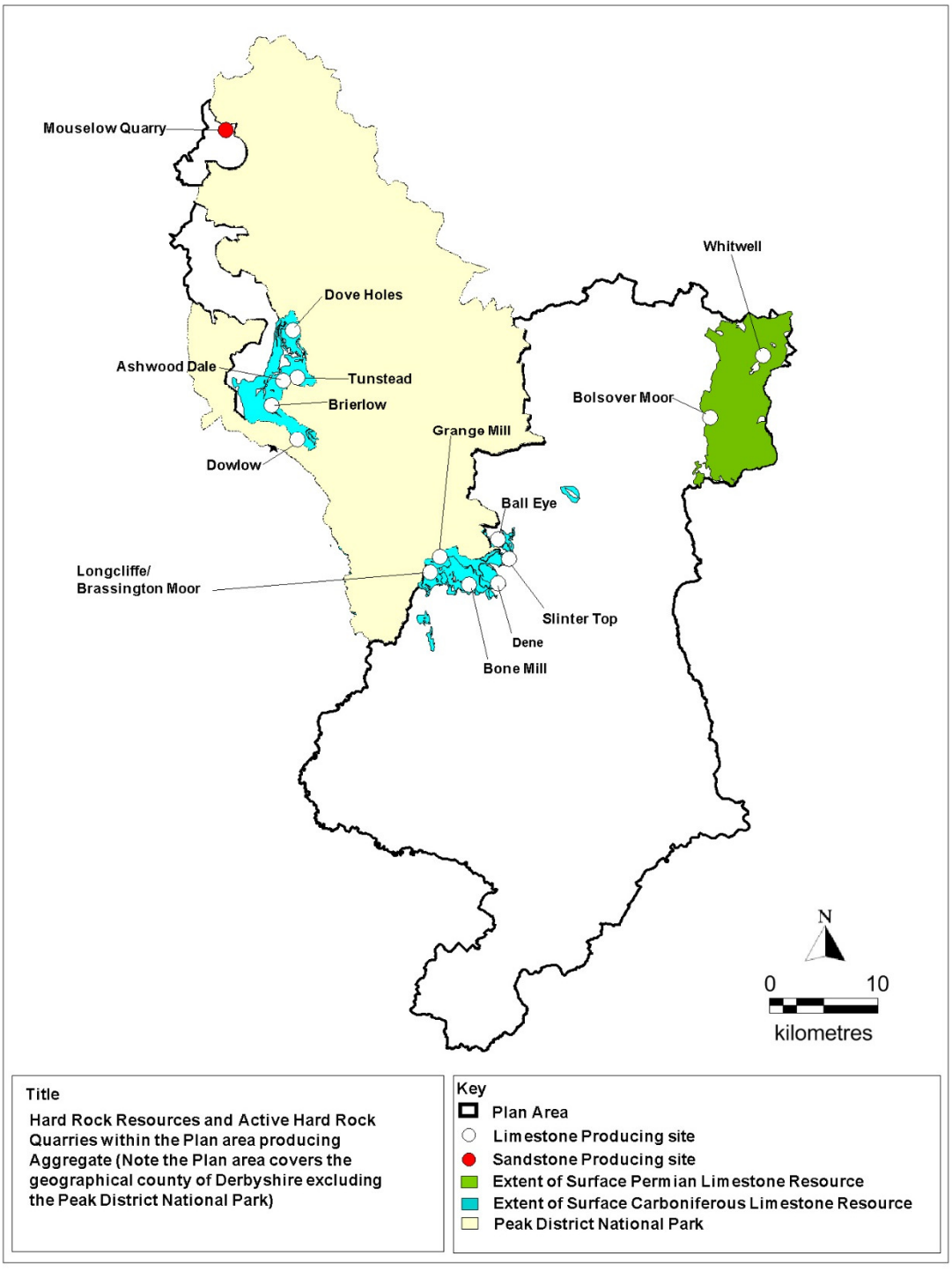
3.2 Carboniferous limestones were laid down in shallow tropical seas in the Carboniferous period around 350 million years ago. Millions of living organisms decayed in these seas, forming an organic rich sediment, which over time became lithified (turned into rock) by natural pressures in the earth's crust, to form the rock seen today. Many of the sandstones and gritstones quarried in Derbyshire were also laid down during this period by large rivers flowing in to the shallow seas and depositing their sediment within deltas. As the seas became shallower, with increased sedimentation from these rivers, together with a possible drop in sea level, vegetation was able to grow. This organic material gradually decayed and eventually formed the coal measures. Subsequent rises in sea level flooded these areas once again to form the shallow seas where the conditions once again favoured the formation of limestones.

3.3 The principal sources of Carboniferous Limestones within Derbyshire are found outcropping mainly around Buxton (Woo Dale and Chee Tor Limestones) and

also in the area around Matlock and Wirksworth/Cromford (Bee Low and Monsal Dale Limestones).

3.4 Sometimes, there is a significant content of calcium magnesium carbonate within the limestone. Where this occurs and where it is accompanied by a significant quantity of magnesium carbonate, the mineral is known as Dolomite. This is characteristic of the Permian Limestone which was formed slightly more recently, around 250 million years ago. This is found outcropping in the north east of the county around Bolsover and Whitwell.

3.5 Whilst total resources of sandstone and gritstone within Derbyshire are large, deposits of acceptable quality for use as aggregates are much scarcer and this restricts substantially the demand for their exploitation. Relatively small amounts of this material are quarried in the north west of the county around New Mills and Hayfield.



Map 1: Crushed rock (aggregate) resources and active quarries in Derbyshire 2017

4. Current Permitted Sites and Production

4.1 The following sites were producing crushed rock for aggregate in 2016:

Active Hard Rock Quarries currently producing Aggregate in Derbyshire

Quarry	Operator	Aggregate	End date
Ashwood Dale, Buxton	Omya UK	Limestone	2042
Brierlow Quarry, Buxton	Lhoist	Limestone	2042
Dove Holes Quarry, Buxton	Cemex	Limestone	2042
Dowlow Quarry, Buxton	Hope Construction Materials	Limestone	2042
Tunstead Quarry, Buxton	Tarmac	Limestone	2042
Ball Eye Quarry, Cromford	Deepwood Mining	Limestone	2042
Slinter Top Quarry, Cromford	Slinter Mining Co.	Limestone	2021
Dene Quarry, Cromford	Tarmac	Limestone	2042
Bone Mill Quarry, Cromford	Longcliffe Quarries	Limestone	2042
Grange Mill Quarry, Cromford	Ben Bennett Jnr.	Limestone	2042
Longcliffe Quarry, Longcliffe	Longcliffe Quarries	Limestone	2042
Whitwell Quarry, nr. Bolsover	Tarmac	Limestone	2025
Glossop Quarry	Wienerberger	Sandstone	2042

4.2 These 13 quarries produced a total of 8.62 million tonnes of crushed rock for aggregate in 2016. This showed a significant recovery on the previous year's production, bringing the figure back to the production rate prior to the recession, as can be seen from the table below.

4.3 Table 1: Recent Production of Crushed Rock (Aggregate) in Derbyshire (Figures in million tonnes)

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average
9.07	6.90	7.36	6.62	6.35	6.24	5.70	4.17	5.77	8.62	6.68

4.4 Historically, production of crushed rock for aggregate has been focused on these broad areas around Buxton, Matlock/Cromford/Wirksworth and Bolsover.

4.5 The following hard rock were not in production in 2016 (inactive) but could, in theory, be reactivated at relatively short notice because a new set of working conditions would not have to be agreed before recommencement of working:

Permitted Hard Rock Aggregate Quarries in Derbyshire and the Peak District National Park currently not in production

Quarry	Operator	Aggregate	End date
Hayfield Quarry		Sandstone	2042
Hindlow, Buxton	Tarmac	Limestone	2042
Middle Peak, Wirksworth	Tarmac	Limestone	2042
Hopton and Intake, Middleton	Tarmac	Limestone	2042
Hillhead, Buxton	Tarmac	Limestone	2042
Bolsover Moor, Bolsover	Tarmac	Limestone	2042

5. Provision to be Met

5.1 The NPPF requires MPAs to plan for a steady and adequate supply of aggregates by preparing a Local Aggregate Assessment (LAA) for their area. This will be based on a rolling average of the previous 10 years sales data (currently 6.68 million tonnes) and other relevant local information and an

assessment of all supply options. The 2017 LAA determines that DCC will provide 6.95mt of aggregate crushed rock per annum to 2030. The LAA is available at www.derbyshire.gov.uk/environment/ planning/planning_policy

5.2 This figure has been set slightly higher than the 10 year average of 6.68mt for the following reasons. National policy seeks to reduce quarrying in National Parks. The Peak District National Park has a policy in its Core Strategy to reduce progressively the amount of aggregate grade crushed rock that is quarried from within the National Park. It was agreed, through discussions with members of the Aggregate Working Party that quarries within the Plan area (serving similar markets to those in the Peak District National Park which are likely to cease production) would compensate for the majority of the displaced provision by reducing the annual provision figure by 10% and adding this to the provision figure for Derbyshire. Since the run down in production in the Peak District National Park will last well in to the Plan period to 2030 and therefore have the potential impact of increasing progressively production from the quarries in the Plan area, it has been agreed that Derbyshire County Council will continue to increase its apportionment to compensate for decreasing production in the Peak Park over the whole Plan period. Secondly, by setting a slightly higher figure than recent past sales would otherwise suggest (the most recent 3 year average is 6.18mt), this provides a degree of flexibility should production increase and this provides a more secure platform to support economic growth as the economic recovery continues (an important underpinning principle of the NPPF). As a major producer of aggregate crushed rock, there may also be an increased demand for mineral resources from Derbyshire from other areas. Flexibility in our figures will help to allow for this potential demand.

5.3 We are also required to determine the amount of rock that already has permission for extraction in Derbyshire. A 'landbank' is a stock of valid planning permissions for the extraction of minerals – its aim is to ensure that the reserves are a sufficient size to enable continuity of production to be maintained. The landbank is the sum of all permitted reserves with valid planning permission. It excludes dormant sites (i.e. those that cannot be worked until new conditions

have been determined under the Review of Mineral Procedures (ROMP)) and is sometimes expressed in terms of the number of years of supply it provides. To take account of the logistics for bringing new crushed rock sites into production, the minimum landbank requirement for crushed rock in Derbyshire is established as 10 years.

5.4 There is an estimated reserve of around 639 million tonnes of rock for aggregate use in Derbyshire[ii]. This does not include reserves of crushed rock which are likely to be used for industrial purposes, which we have estimated at 182 million tonnes[iii] and also excludes dormant sites. The current length of the landbank for aggregate crushed rock (i.e. excluding estimated reserves of industrial limestone) in Derbyshire is calculated as follows:

Landbank	= 639 million tonnes
Annual Provision Rate	= 6.95 million tonnes
Landbank period (Landbank ÷ annual apportionment)	= 92 years

5.5 Table 2 below sets out the current reserves of aggregate grade crushed rock and the amount that Derbyshire has to provide for over the plan period to 2030. This is based on 2016 information, which is the latest available.

5.6 Table 2: Crushed rock (aggregate) provision – reserves and requirements

	Crushed Rock	**Million Tonnes**
A	Production Requirement 2017 to 2030	**+102.6**
B	Total permitted reserves, excluding reserves in dormant sites, at 31 December 2016	**+821**
C	**Less** estimate of permitted reserves of 'industrial' limestone (active and inactive sites)	**-182**

[ii] EMAWP Annual Report 2015

[iii] EMAWP Annual Report 2015

D (B-C)	Total reserves of crushed rock for aggregate (Landbank)	**+639**
E (D-A)	**Requirement** 2017 -2030	**-536.4**

6. Future Site Allocations

6.1 In determining whether any additional sites will need to be allocated for aggregate grade crushed rock in this Plan, we have considered the current supply situation and the level of permitted reserves (i.e. those with valid planning permissions to extract mineral).

6.2 It is clear from Table 2 that sufficient reserves of aggregate crushed rock are already permitted to satisfy the local apportionment level for the plan period to 2030 and beyond. As a result, there should be no requirement for any additional provision to be made for the extraction of crushed rock for aggregates in this plan period.

6.3 Having regard to current national policy, however, there may be cases where proposals come forward for new aggregate crushed rock quarries or extensions to existing quarries, which offer significant economic and/or social benefits to the local community and/or the environment, but which would not lead to a significant increase in the overall landbank of aggregate crushed rock. An emerging policy has been included in the Strategy for Aggregate Crushed Rock to address this issue.

7. Current and Future Demand for Crushed Rock

7.1 Nationally, demand for crushed rock declined significantly during the global recession as a result of a downturn in construction activity. Production is now recovering as demand increases and the first quarter of 2017 figures show an improvement on the last quarter figures for 2016 of 2.1%[iv]. Production figures give a good indication of demand. In Derbyshire, sales of crushed rock have

[iv] Mineral Products Association Press Release 12 May 2017

been steady in recent years, at around 6-7 million tonnes per year. There was a drop in production to around 4mt in 2014 but this recovered again in 2015 to closer to 6mt and increased significantly in 2016 to around 8.6mt.

7.2 Table 3: How Crushed Rock Aggregate produced in Derbyshire is used, 2016 (Figures in tonnes) (EMAWP Annual Report 2016)

Roadstone /Asphalt	**Concrete Aggregate**	**Other screened graded aggregate**	**Construction fill**	**Railway Ballast**	**Total**
1,695,224	1,992,735	3,679,569	1,257,222	0	8,624,750

8. Method of Working

8.1 Vegetation, soil and overburden is stripped initially, to reveal the bedrock. Explosives are then used to loosen the rock to enable it to be extracted, usually in a series of benches to allow for progressive working downwards. The broken rock is then transported by dump trucks or conveyor system to a processing plant, where it is crushed and graded in to various sizes for its end use.

9. Restoration Issues

9.1 The extraction of hard rock has the potential for substantial impact on the environment. The scale of the operations and the relatively small quantities of waste material involved compared to the rock which is removed means that it is not generally possible to restore land to its original levels following completion of working. This means that the configuration of the land is changed permanently, although, where the operation can be designed so as to be visually contained by the existing topography in advance of working, visual impact can be limited. Progressive restoration is difficult to achieve, although an early start can often be made in the treatment of the quarry face or floor. Final restoration depends to a large extent on the depth of the quarry. In cases where the depth is not too great, the quarry floor can be restored for agriculture.

Bolsover Moor Quarry is a good example of this. Built development can also be viable in such cases. Former crushed rock quarries can also provide good opportunities for recreation activities such as climbing and abseiling. Natural regeneration is usually more appropriate where the quarry is deeper and many quarries can become important areas for wildlife and natural history in such cases. Restoration blasting techniques can be used to create more varied slope sequences consisting of rock screes, buttresses and headwalls which can be selectively vegetated to replicate natural limestone valley sides.

10. Markets

10.1 The areas referred to in Section 4 above provide the majority of crushed rock from Derbyshire. Around 67% of Derbyshire's limestone aggregates production is sold outside the county. The largest share of these exports is to the North West Region (22% of total production). 14% of total production is sold to other counties within the East Midlands and 24% to more distant markets notably the Yorkshire and Humberside, the West Midlands and the East of England regions.[v]

11. Transportation

11.1 Transport of the mineral by road is predominant, with 69% being transported by this means; all transportation of Derbyshire mineral within the East Midlands Region was by road. 31% of all crushed rock produced in Derbyshire was transported by rail. This was to markets outside the East Midlands Region, mainly to the North West, the Yorkshire and Humberside and the East of England regions.[vi]

12. Contribution to the Economy

12.1 The extraction of rock provides benefit to the economy in terms of the supply of the material from the region and the direct employment at the quarry as well as

[v] EMAWP Annual Report 2009

[vi] EMAWP Annual Report 2009

indirect employment mainly through the use of haulage contractors. Direct employment in limestone and sandstone working in Derbyshire (including the Peak District National Park) provided 461 jobs and indirect employment through contractors and drivers provided a further 713 jobs.[vii]

12.2 The largest proportions of mining, energy and water supply workers are now found in the limestone quarrying areas around Buxton and Wirksworth.[viii]

[vii] Annual Mineral Raised Inquiry Survey Results 2013, Feb 2015 DCLG
[viii] 2001 Census Atlas of Derbyshire