DERBYSHIRE COUNTY COUNCIL, DERBY CITY COUNCIL AND THE PEAK DISTRICT NATIONAL PARK AUTHORITY

Local Aggregate Assessment 2017

CONTENTS

LIST OF TABLES

LIST OF FIGURES

Cover photos: Tunstead and Old Moor Quarry, Buxton and Swarkestone Quarry, Barrow upon Trent

1. INTRODUCTION

Minerals are important to the local and national economy and play an important part in our everyday lives. They have many uses, including material for construction and for a wide variety of industrial and commercial purposes, including the manufacture of paint, paper and toothpaste. The planning system has to ensure that sites are available to provide a steady and adequate supply of minerals for these industries.

Aggregate minerals are those that are used by the construction industry, for example in road making, house construction, in the manufacture of concrete and as railway ballast. They include limestone, sandstone and sand & gravel. It is the future provision of these minerals with which this assessment is concerned.

Background

The National Planning Policy Framework (NPPF) requires Mineral Planning Authorities (MPAs) to plan for a steady and adequate supply of aggregates by determining their own levels of aggregate provision through the preparation an annual Local Aggregate Assessment (LAA). It sets out that this should be prepared either individually or jointly by agreement with another or other mineral planning authorities, based on a rolling average of 10 years sales data and other relevant local information, and an assessment of all supply options (including marine dredged, secondary and recycled sources). It is advised also that published National and Sub National Guidelines on future provision should also be taken into account. It should also assess the balance between demand and supply, and the economic and environmental opportunities and constraints that might influence the situation. It should conclude if there is a shortage or surplus of supply and, if the former, how this will be addressed.

It also seeks to ensure that, so far as is practicable, landbanks of non-energy minerals should be maintained in locations outside National Parks, Areas of Outstanding Natural Beauty (AONBs), World Heritage Sites, Scheduled Monuments and Conservation Areas, in order to conserve the nationally designated landscape and scenic beauty of these areas. As a result, future contributions of aggregate from areas covered by these designations, including the Peak District National Park, will need to be considered in light of this.

More detailed guidance on the preparation of LAAs was published in National Planning Practice Guidance in March 2014. This reinforces the above policy requirements, and sets out also that MPAs should look at the average 3 year sales in particular, to identify the general trend of demand as part of the consideration of whether it might be appropriate to increase mineral supply.

These new guidelines mark a substantial shift away from the previous 'historic shares' sub-regional approach to apportionment creation where a nationally prescribed regional apportionment figure was sub-divided proportionally within the region.

Derbyshire County Council, Derby City Council and the Peak District National Park Authority (PDNPA) have agreed to undertake a joint Local Aggregate Assessment. Whilst Government Guidance on preparing LAAs, published in October 2012, suggests that joint LAAs may be prepared where joint planning is taking place, this is not directly consistent with the more flexible approach to joint preparation of LAAs contained in national policy in the NPPF (referred to above). Justification for the preparation of a LAA on a joint basis between Derbyshire and the PDNPA lies in the known interactions in terms of aggregates production and consumption within this area and the perceived benefits of closer cooperation on minerals planning within the area.

This assessment sets out the current and future situation in Derbyshire, Derby and the PDNP with regard to all aspects of aggregate supply, in particular, setting out the amount of land-won aggregate that the area will need to provide. It follows the Practice Guidance on the Production and Use of Local Aggregate Assessments produced by the Planning Officers Society and Mineral Products Association (April 2015).

Derby does not produce any crushed rock or sand gravel but it is an important consumer of these minerals. **Unless otherwise stated, data on Derbyshire, including sales and movements of aggregate, incorporates information on Derby City.**

The LAA will be submitted to the Aggregates Working Party (AWP), an advisory body made up of MPAs and mineral operators across the region, for consideration and scrutiny. The AWP has a role to monitor the operation of the LAA system through providing technical advice, particularly on the apportionment of aggregate supply provision.

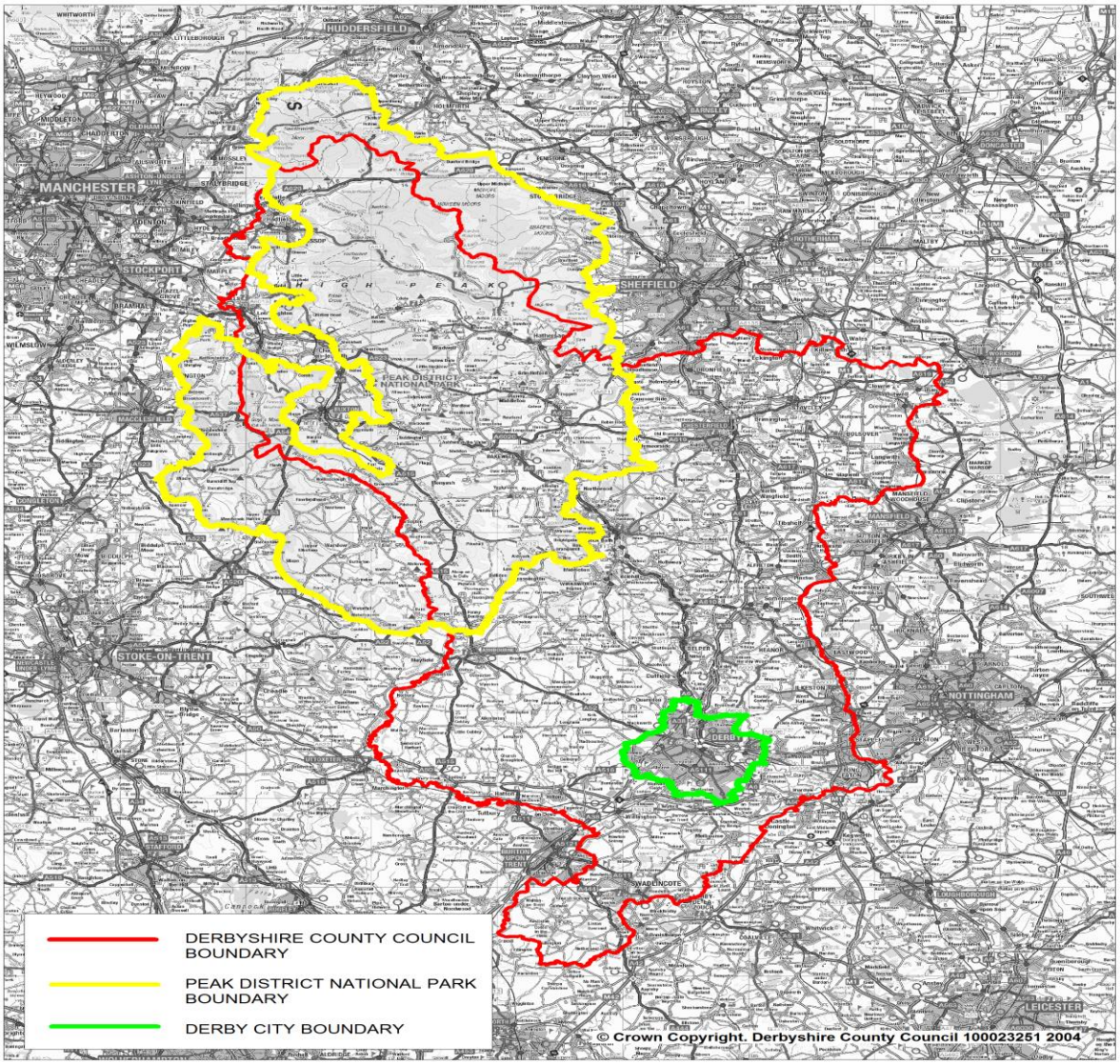
The work of MPAs and AWPs across the country will be overseen by a National Aggregate Co-ordinating Group (NACG) the main role of which will be to monitor the overall provision of aggregates in England and provide advice to AWPs and the Government. Specifically, the NACG will provide guidance to the Government on National and Sub-National requirements for aggregate supply. These proposed National and Sub-National Guideline figures will be taken into account by MPAs when preparing future Local Aggregate Assessments.

The latest survey information is from the calendar year 2016, and it is these figures on which this assessment is based. This information will continue to be updated on an annual basis.

Spatial Context

Derbyshire and the Peak District National Park are situated in the central part of England, mostly within the East Midlands region. The large conurbations of Nottingham, Sheffield, the North West and the West Midlands lie in close proximity to the area.

Figure 1: Derbyshire, Derby and the Peak District National Park



Derbyshire and Derby have a population of around 1,018,400[1]. The majority of the population of Derbyshire and Derby lives in urban areas, with around three quarters living in settlements in the eastern half of the county. The largest settlements are Derby in the south and Chesterfield in the north. There are 430,000 households in Derbyshire and Derby. By 2031, it is estimated that the

[1] 2011 Census and includes the area of Derbyshire within the Peak District which is around 30,000 (around 7,000 people live in the area of the National Park outside Derbyshire)

population of the area will have increased to 1,149,460, an increase of 11%. It is estimated that there will be a further 96,000 households by 2031, the largest increases expected to be in Derby, Amber Valley and South Derbyshire. This population growth, in turn, will create the need for further employment opportunities and improvements in infrastructure.

As such, it is crucial that Derby City and Derbyshire County Councils and the PDNPA, as the MPAs for the area, are able to ensure a steady and adequate supply of mineral to realise these growth aims and to maintain the infrastructure already developed. Since the area also supplies a significant amount of aggregate to a large part of the country, particularly crushed rock, this need to maintain a steady and adequate supply of mineral applies also to this much wider area.

National and Sub National Aggregate Guidelines

The Government produced the 2005-2020 aggregate guidelines in 2009. The East Midlands Aggregates Working Party (EMAWP) used these figures to provide the Region's MPAs with their aggregate apportionments for this period.

These sub regional (i.e. county level) figures were considered and endorsed by the East Midlands Regional Assembly in 2010. They would then have been incorporated into the Regional Plan through the partial review process. However, with the abolition of the Regional Assemblies in March 2010, the revised Regional Plan did not progress so the figures have not been tested through public examination and not included in any Plan.

At the meeting of the East Midlands AWP on 4 February 2013, it was agreed that these figures were based on information which is now out of date, as they were only based on aggregate output from a period of economic growth, and should, therefore, not be taken into account when determining the new apportionment figures.

It was agreed by all members of the group, therefore, to base the new apportionment figure on the 10 year average of sales and to consider any flexibility in this figure, taking account primarily of local circumstances, particularly future economic growth.

2. AGGREGATE RESOURCES

Primary Aggregates

The geology of Derbyshire, Derby and the Peak District National Park gives rise to the following commercially viable primary aggregate deposits:

- Hard rock, including limestone and sandstone/gritstone
- Alluvial sand and gravel (river valleys)
- Sherwood Sandstones

For centuries, the rich geology of Derbyshire, Derby and the Peak District National Park has encouraged the search for workable minerals. **The principal sources of Limestones and Sandstones/Gritstones** were formed during the Carboniferous, Permian and Triassic Periods, between 354 and 200 million years ago. Most of the National Park and the northern part of Derbyshire is underlain by limestone and gritstone (a hard form of sandstone) from the Carboniferous period.

The principal sources of Carboniferous limestones, which are worked in Derbyshire and the Peak District National Park are found mainly in an area which stretches from Buxton, in a south easterly direction through the southern half of the National Park, towards the Matlock and Wirksworth/Cromford area. This rock provides a valuable and important raw material which is used in crushed form, both as high grade aggregate for concrete making and roadstone (where the physical properties of certain deposits are important) and for industrial purposes (as a result of the chemical composition of certain deposits).

The Permian Limestone was formed slightly more recently, around 250 million years ago. This is found and worked in the north east of the county, in the area around Bolsover and Whitwell in the north east of the county. In terms of its use for aggregates, it is a lower grade material than the Carboniferous Limestone and is used principally as constructional fill. The specific chemical content of the resource in certain areas, particularly around Whitwell, makes it an important raw material for high quality industrial products.

Whilst total resources of sandstone and gritstone within Derbyshire and the Peak District National Park are large, the quantity and quality of the limestone in the area means that the focus for aggregate production is on limestone rather than sandstone and gritstone. Relatively small amounts of sandstone/gritstone are quarried for aggregate in the north west of the area, around Glossop and Hayfield. The more extensive use of this mineral is for building stone.

The river valley sand and gravels were laid down much more recently, at the end of the last ice age (around 14,000 years ago).

Derbyshire has substantial resources of sand and gravel in the river valleys of the Trent, Lower Derwent and Lower Dove, occurring within the fluvial/alluvial and terrace deposits, as shown on Figure 2 below. The thickness of the river valley deposits varies considerably, ranging from less than one metre thickness in some areas to eight or nine metres thick in other areas. The gravel content of the deposits is usually high (50%-70%), the remainder being sand and fine silts. The majority of working to date has taken place in the Trent and the Lower Derwent Valleys, with reserves being of particularly high quality, both in geological and commercial terms, in the area of the Trent Valley between Long Eaton and Willington.

Deposits of sand and gravel also occur in the solid bedrock of the **Sherwood Sandstones**. These are much older than the river valley deposits, having been laid down around 230 million years ago in the Triassic period. Their thickness varies considerably from 100m to virtually nothing. The proportion of gravel to sand varies greatly but is usually much less than in the river valley deposits. It is a source of soft building sand and also sharp sand for concrete. There is currently only one operation in the county. This is located at Mercaston in an area between Derby and Ashbourne.

Derby City has only limited mineral resources. There is no hard rock and only a small amount of sand and gravel.

Secondary and Recycled Aggregates

Along with primary aggregate, described as being minerals which are extracted directly from the ground, there are also secondary and recycled aggregates, which can substitute, and therefore reduce the need for, primary aggregates. Recycled aggregates are those derived mainly from construction and demolition projects. Examples include the re-use of brick and concrete, being

reprocessed to be used in new developments, rather than being disposed of in a landfill site. This often takes place using mobile plants on redevelopment sites. Secondary aggregates are created as a by-product of a construction or industrial process. Examples include power station ash resulting from combustion, which can be used in the production of bricks and cement.

The benefits of maximising the use of both secondary and recycled aggregate are two-fold. Firstly, the use of these aggregates reduces the need to extract primary material in the first instance, leading to a reduction in the need for quarry sites. Secondly, the re-use of material reduces the amount of waste that needs to be disposed of, thereby reducing the need for landfill sites. Such a reduction in the need for quarry and landfill sites has clear environmental and social benefits.

3. ASSESSMENT OF LOCAL RESOURCES, RESERVES AND PRODUCTION

Sand & Gravel

Resources and Reserves

Sand and gravel resources of glacio-fluvual origin are concentrated along the river valleys in the south of the county, the most important being the Trent Valley to the south of Derby, as well as the adjoining river valleys of the Lower Derwent and Dove. Currently, the mineral is only worked in the Trent Valley in Derbyshire. Deposits of sand and gravel also occur in the solid bedrock of the Sherwood Sandstones. There are no resources of sand and gravel in the Peak District National Park.

In 2016, there were four active operations producing sand and gravel, three along the Trent Valley (Glacio-fluvial) and one at Mercaston (Sherwood Sandstone). One site (Elvaston) was inactive and there is a further site with permitted reserves at Potlocks Farm, Willington, which is not operational. Returns from the mineral operators show that the landbank is spread fairly evenly amongst the sites. Table 1 below indicates that Swarkestone will run out of reserves in the next year. A planning application is currently under consideration for an extension to Swarkestone to maintain production for the next seven years.

Table 1: Permitted Sand and Gravel Quarries in Derbyshire

Quarry	Operator	Status/End date
Swarkestone	Tarmac	Active. Estimated lifespan 1 year to 2017
Shardlow	Hanson	Active. Estimated lifespan of remaining reserves at end of 2016 is 10 years to 2026.
Willington	Cemex	Active. Estimated lifespan, 7 years reserves to 2023)
Mercaston	Hanson	Active. Estimated lifespan, over 20 years
Elvaston	Tarmac	Not currently being worked. Permission granted in 2013 for extension.
Potlocks Farm, Willington	Hanson	Not currently being worked but current permission would allow it to be worked.

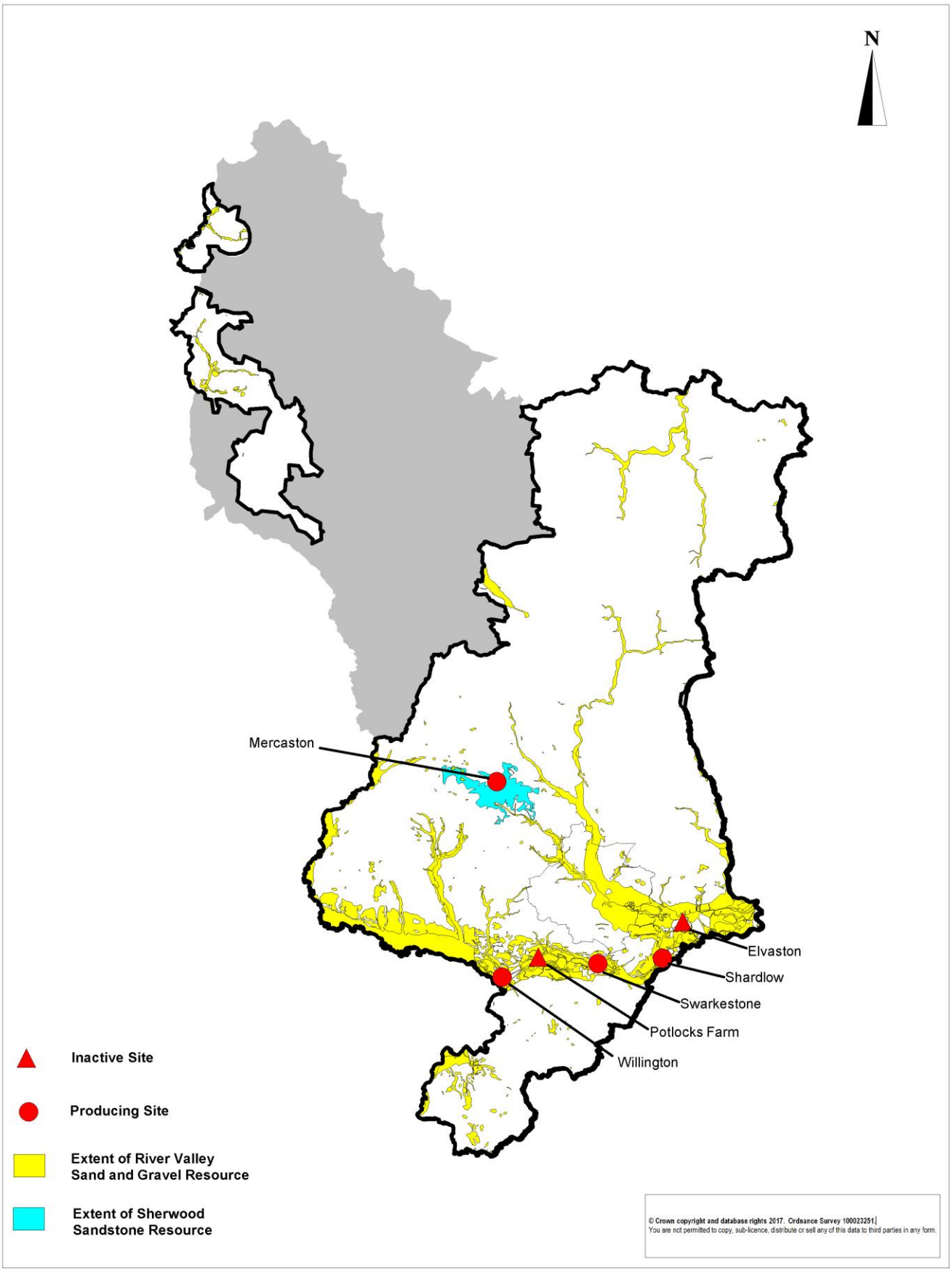


Figure 2: Sand and Gravel Resources in Derbyshire with Sand and Gravel Sites 2016

At the end of 2016, estimated permitted reserves of sand and gravel in Derby and Derbyshire from the above quarries amounted to around 12.53 million tonnes.

This stock of reserves with planning permission is known as the landbank. The landbank includes active quarries and also inactive quarries but only those which have valid conditions for working. Government policy requires landbanks to be maintained for all aggregate minerals, with the landbank for sand and gravel required to be at least 7 years. The current length of the landbank for sand and gravel in Derbyshire (using the proposed provision figure) is calculated as follows:

Landbank of permissions	=	12.53 million tonnes
Annual Provision rate	=	1.04 million tonnes
Landbank period	=	12 years

Recent Production

Sales of primary sand and gravel originating from Derbyshire are shown in the table below.

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average
1.22	1.10	0.91	1.04	1.1	0.81	0.82	0.95	1.13	1.29	1.04

Table 2: Sales of Sand and Gravel in Derbyshire 2007-2016[2] (million tonnes)

Table 3 shows how the material was used in 2016.

Table 3: Use of sand and gravel 2016 (figures in tonnes)

Building Sand	Sand for Concrete making	Gravel for Concrete making	Other undefined uses for sand	Other undefined uses for gravel
48,800	318,520	378,288	441,490	99,160

The figures in Table 2 show that production has averaged 1.04 million tonnes over this 10 year period. The figures indicate a gradual recent recovery in production after the recession affected production levels particularly in the middle part of this period. This pattern mirrors broadly that of

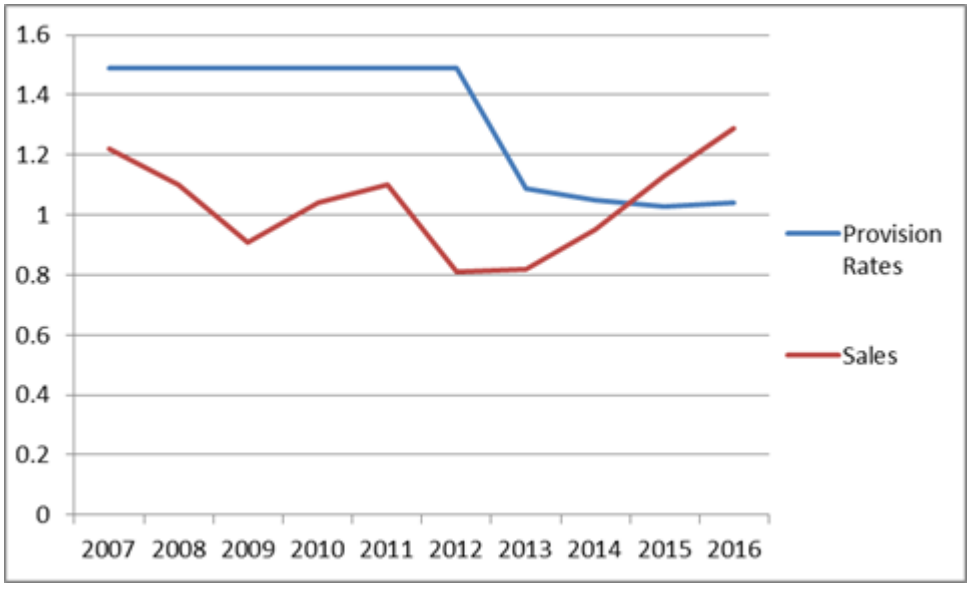
[2] Source: Annual Monitoring Surveys

the whole East Midlands Region, where production was around 9 million tonnes at the start of the 10 year period, declining to around 6 million tonnes between 2009 and 2013 before recovering in 2014 and reaching around 7 million tonnes in 2016.

For the most recent 3 years (2014-2016), production has averaged 1.12 million tonnes in Derbyshire. This figure will be monitored on an annual basis to highlight recent changes in production and the MPAs will respond to any significant changes which come to light. Currently it indicates that the provision figure based on the 10 year average remains appropriate.

The graph below shows sales against the county's provision rate for the period. Throughout most of this period, it is worth noting that sand and gravel sales have not met the level of provision, generally being around 200,000 to 300,000 tonnes below the agreed provision rate. 2015 and 2016 figures indicate that sales have now moved slightly higher than the provision rate.

Figure 3: Sales of Sand & Gravel 2007-2016 against past and current provision rate (figures in million tonnes)



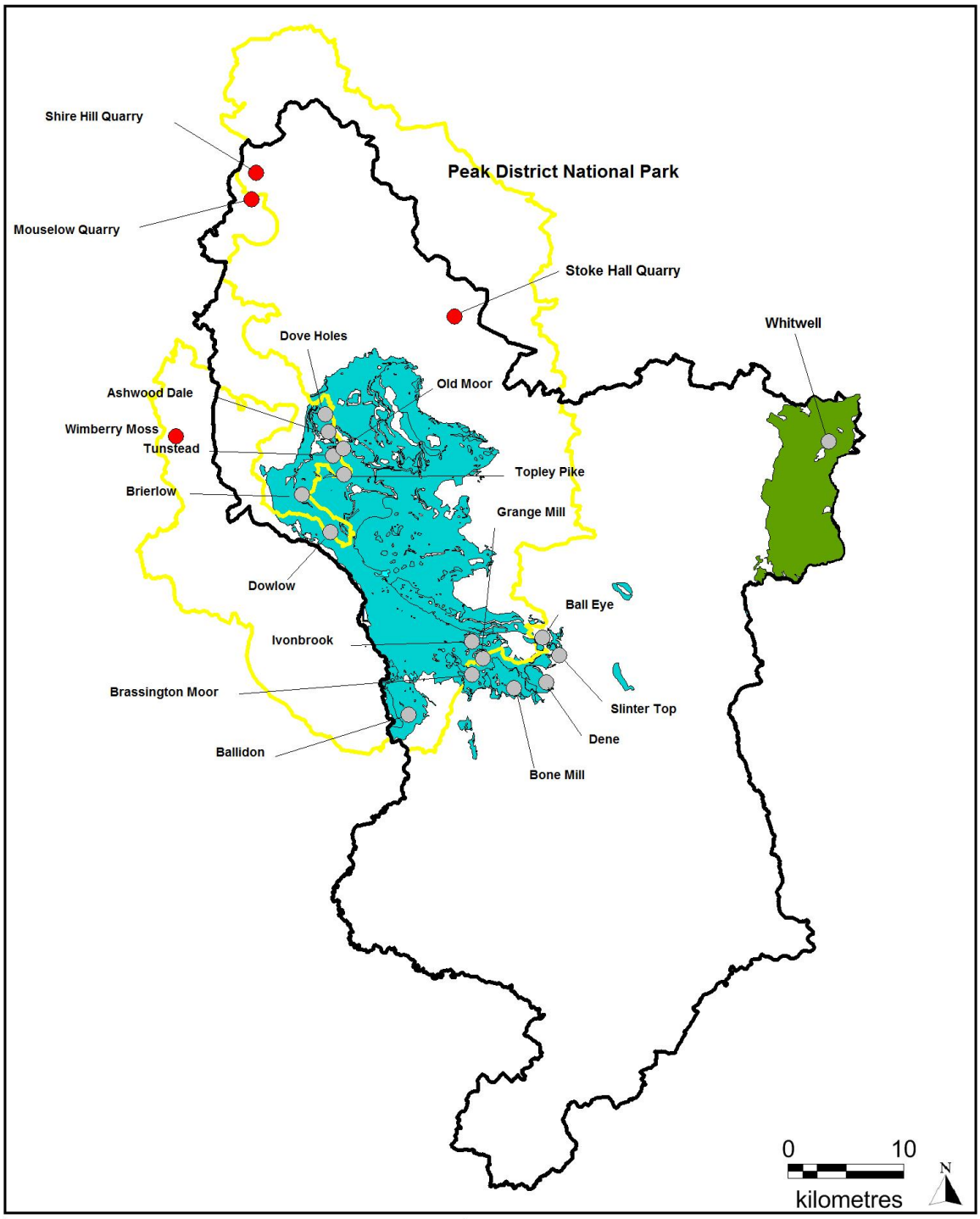
Crushed Rock

Resources & Reserves

Derbyshire and the PDNP is one of the largest producers of aggregate grade crushed rock in this country. Crushed rock for aggregate is supplied from Derbyshire and the PDNP, overwhelmingly from the Carboniferous limestone. Quarries within the area covered by the two authorities supplied just under 12.5 million tonnes of aggregate grade crushed rock in 2016.

Relatively small amounts of sandstone aggregate are quarried from Mouselow Quarry in the north west of Derbyshire (around 2-6,000 tonnes annually) and in the Peak District National Park at Shire Hill Quarry near Glossop.

In 2016, there were a total of nineteen quarries producing crushed rock for aggregate in the area, fifteen of these exploiting the Carboniferous Limestone resource, one exploiting the Permian Limestone resource and three gritstone quarries. Those marked with a (i) in Table 4 below extract limestone for the industrial market as their principal product but also produce significant quantities of limestone for use as aggregate.



Title:
Hard Rock Resources and Active Hard Rock Quarries within the plan area producing Aggregate in Derbyshire. (Note the Plan area covers the geographical county of Derbyshire excluding the Peak District National Park.)

Key
- Limestone Producing site
- Sandstone Producing site
- Extent of Surface Carboniferous Limestone Resource
- Extent of Surface Permian Limestone Resource

Figure 4: Hard Rock Resources and Active Hard Rock Quarries producing aggregate in Derbyshire and the Peak District National Park 2016

Table 4: Active Hard Rock Quarries currently producing Aggregate in Derbyshire and the Peak District

Quarry	Operator	Aggregate	End date
Derbyshire Quarries			
Ashwood Dale, Buxton (i)	Omya UK	Limestone	2042
Brierlow Quarry, Buxton (i)	Lhoist	Limestone	2042
*Dove Holes Quarry, Buxton (Beelow Quarry)	Cemex	Limestone	2042
Dowlow Quarry, Buxton (i)	Hope Construction Materials	Limestone	2042
Dene Quarry, Cromford	Tarmac	Limestone	2042
*Tunstead Quarry, Buxton (i) (Old Moor Quarry)	Tarmac	Limestone	2042
Ball Eye Quarry, Cromford	Deepwood Mining	Limestone	2042
Slinter Top Quarry, Cromford	Slinter Mining Co.	Limestone	2021
Bone Mill Quarry, Cromford	Longcliffe Quarries	Limestone	2042
Grange Mill Quarry, Cromford (i)	Ben Bennett Jnr.	Limestone	2042
Longcliffe Quarry, Longcliffe (i)	Longcliffe Quarries	Limestone	2042
Whitwell Quarry, Bolsover (i)	Tarmac	Limestone	2025
Glossop Quarry (Mouselow)	Wienerberger	Sandstone	2042
Stancliffe Quarry	Marshalls Stone	Sandstone	2042
Hall Dale Quarry	Marshalls Stone	Sandstone	
Peak District National Park Quarries			
Ballidon Quarry, Parwich	Tarmac	Limestone	31/12/2040
*Old Moor Quarry, Buxton (i) (Tunstead Quarry)	Tarmac	Limestone	31/1/2040
Topley Pike Quarry, Buxton	Aggregate Industries	Limestone	21/2/2042
Ivonbrook Quarry, Grangemill	Aggregate Industries	Limestone	31/12/2014

Stoke Hall Quarry, Grindleford	Marshalls	Gritstone	21/2/2042
Wimberry Moss Quarry, Rainow, Cheshire	AM & D Earl	Gritstone	21/2/2042
Shire Hill Quarry, Glossop	Marchington Stone	Gritstone	21/2/2042

The following sites have permitted reserves but currently are not working.

Table 5: Permitted Hard Rock Aggregate Quarries in Derbyshire and the Peak District National Park currently not in production

Quarry	Operator	Aggregate	End date
Derbyshire Quarries			
Bolehill Quarry, Wingerworth	Block Stone Ltd.	Sandstone	2042
Hayfield Quarry		Sandstone	2042
Birch Vale Quarry, New Mills		Sandstone	2042
Hindlow Quarry, Buxton	Tarmac	Limestone	2042
Middle Peak Quarry, Wirksworth	Tarmac	Limestone	2042
Crich Quarry, Crich	-	Limestone	2042
Hillhead Quarry, Buxton	Tarmac	Limestone	2042
Bolsover Moor, Bolsover	Tarmac	Limestone	2042
Peak District National Park Quarries			
*Beelow Quarry, Buxton (Dove Holes)	Cemex	Limestone	21/2/2042
+Stanton Moor Quarry	Blockstone	Gritstone	21/2/2042

** Cross boundary quarries (associated quarry in brackets)*

+ In suspension

(i) extract limestone for the industrial market as their principal product but also produce quantities of limestone for use as aggregate.

These tables show that there is a good spread of sites amongst a number of operators and indicate that, although some of the sites have larger reserves than others, particularly in the Buxton area where the most significant resources are found, the landbank is not bound up in a small number of sites to an extent where it could stifle competition and disrupt supply. It also indicates that the majority of the sites are likely to continue to operate throughout the Plan period, therefore ensuring continuity of supply.

The overall landbank of crushed rock in the area i.e. aggregate and industrial grade is around 1202 million tonnes. It has been estimated that of this, 349 million tonnes is of industrial (non-aggregate) grade. (182 million tonnes in Derbyshire and 167 million tonnes in The Peak District). As a result, there is an estimated reserve of rock for **aggregate** use at these active and inactive sites of over 853 million tonnes (639mt limestone and 0.4mt of sandstone/gritstone in Derbyshire + 213mt limestone and 1.35mt of sandstone/gritstone in the Peak District National Park[3]). This would be sufficient for over 90 years provision based on the current provision rate of 9.34mtpa. The required landbank for aggregate crushed rock is at least 10 years. (The landbank excludes dormant sites. These are where no minerals development may be carried out lawfully until such time as a new scheme of conditions has been submitted to, and approved by, the mineral planning authority.)

Recent Production

The average annual sales figure for the 10 year period 2007 to 2016 is 9.34 million tonnes. This figure comprises 6.68mt for Derbyshire and 2.66mt for the PDNP. For the most recent three years, production of crushed rock in Derbyshire and the Peak District has averaged 9.30 million tonnes. Production of aggregate in this 10 year period dropped significantly in the PDNP from 2009, from previous annual levels of around 4mt to around 1.7mt between 2009 and 2012, with a gradual recovery from 2013 to 2016 to levels closer to 4mt. In Derbyshire, production of aggregate crushed rock dropped progressively from 2009 to 2014, with a significant drop in production in 2014 before recovering to some extent in 2015 and with a significant recovery in 2016, as shown in Table 6 below.

[3] This represents a significant increase in the aggregate landbank for the Peak District National Park from the previous year, and is due largely to operators' reassessment of reserves and the revised assessment split at Tunstead/Old Moor Quarries between Derbyshire and the Peak Park.

Table 6: Sales of Aggregate Crushed Rock 2007-2016 (million tonnes)

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average
DCC	9.07	6.90	7.36	6.62	6.35	6.24	5.70	4.17	5.77	8.62	6.68
PDNP	3.80	4.12	1.74	1.68	1.49	1.78	2.60	2.72	2.83	3.80	2.66
Joint	12.87	11.02	9.10	8.30	7.84	8.02	8.30	6.89	8.60	12.42	9.34

Table 7: How Aggregate Crushed Rock produced in the area is used, 2016 (Figures in tonnes)

Roadstone /Asphalt	Concrete Aggregate	Other screened graded aggregate	Construction fill	Railway Ballast	Total
1,695,224	3,992,735	5,479,569	1,257,222	0	12,424,750

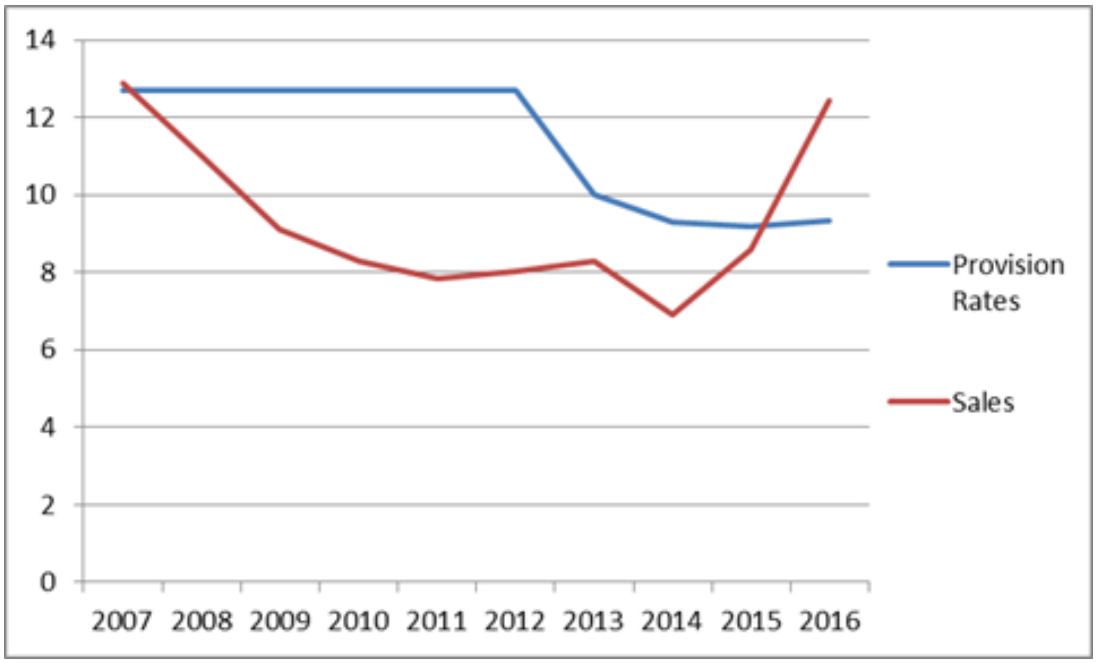


Figure 5: Sales of Aggregate Crushed Rock 2007-2016, against provision rate (figures in million tonnes)

Secondary and Recycled Aggregates

Information on secondary and recycled material that arises in Derby and Derbyshire is often inconsistent and unreliable. This is particularly true for secondary aggregates for which no throughput figures exist. Aggregates from secondary sources have diminished with the demise of heavy industry e.g. steel manufacturing and coal mining.

Recycling of construction and demolition waste (and hence the production of recycled aggregate) is often dealt with at temporary sites and sites exempt from permitting by the Environment Agency and hence good quality data on locations of production and amounts produced is not available. Additionally, a large and unknown proportion of this material is often re-used/recycled on site, and therefore does not enter the waste stream, as such making it difficult to record. Due to the rural setting and limited development taking place, no significant secondary and recycled material arises from the PDNP.

In order to attempt to estimate arisings for recycled aggregates, we have to use national and regional surveys that are only carried out periodically. This data then has to be extrapolated to the local level. Although information about this waste stream is relatively poor, some estimates do exist. Nationally, it is estimated that recycled aggregates currently make up around 25% of aggregate use.

The extensive and detailed work to produce the National and Sub National aggregate apportionment figures for the period 2005-2020 took account of the capacity of facilities to provide recycled and secondary aggregates. These propose that the East Midlands region should provide 110 million tonnes of alternative aggregate materials between 2005 and 2020, equating to 6.8 million tonnes per annum. This is equivalent to 14% of the region's total aggregate supply, so the re-use of recycled and secondary aggregate is expected to be a significant feature of mineral supply. There is, however, no provision of the 110mt figure to individual Mineral Planning Authorities in the region.

A study undertaken on behalf of the Government estimated (subject to a significant margin of error, estimated to be plus or minus 15%) that in 2008, there were 43.5 million tonnes of aggregates produced from recycled materials in England. By applying the growth rate from the East

Midlands Regional Waste Strategy 2006, it is estimated that from 2012 to 2030, Derby and Derbyshire will produce around 3 million tonnes of recycled aggregate on an annual basis.

The overall assumption regarding the provision of alternative aggregates meant that the previous regional apportionment figures for primary land won aggregates were set at a lower level than they otherwise would have been. The use of alternative aggregates manifests itself in the recent sales figures for primary aggregate, which will be used to determine future provision of primary aggregate. It is expected that use of alternative aggregates will continue around this current rate for the foreseeable future.

Further more detailed work will be undertaken on this issue to determine more precisely the production and use of recycled and secondary aggregates in Derby and Derbyshire. Future LAAs will update the position with this work and the potential implications, if any, for future supply patterns.

4. CALCULATING THE FUTURE PROVISION OF AGGREGATES

The Future Provision of Sand and Gravel

To determine the future provision of sand and gravel, the NPPF states that the previous 10 years sales need to be taken into account, together with published National and Sub National Guidelines, as well as any other relevant information.

Recent Sales

As set out in the previous section, the average of the previous 10 years' sales of sand and gravel in Derby and Derbyshire is 1.04 million tonnes per year. A ten year rolling average of sales is considered to be a valid and robust basis for assessing a local provision rate for two main reasons. Firstly, the time period ensures that historic sales, which are no longer of relevance to current minerals supply, are not taken into account. In broad terms, recent sales are more likely to be lower than more historic sales due mainly to improvements in construction technologies. Secondly, the ten year period is also considered to be long enough to ensure that short-term fluctuations in sales do not mask a true evaluation of what is considered to be a suitable amount of mineral to provide for. The most recent 3 year average of 1.12 million tonnes gives an indication that production is recovering since the downturn in production as a result of the recent economic recession.

Other factors must also be considered in finalising the provision level for Derbyshire and Derby, as follows.

Imports and Exports

A national four-yearly monitoring survey (except for the latest 2014 survey which was five years after the 2009 survey) is conducted by the DCLG and the British Geological Survey (BGS) which includes analysis of the movements (imports and exports) of aggregates for each MPA in England and Wales.

The 2009 was the most recent survey to be undertaken for which the results have been published fully. For the 2014 Survey, a summary of the percentage breakdown of aggregates consumed by each sub-region in 2014 (shown as percentage ranges) is now available, however the actual

detailed sub regional figures are yet to be published in a national report. As a result some broad figures for the 2014 survey at national and regional level are also set out below. Both surveys show that, as well as producing sand and gravel, some sand and gravel is imported into the Plan area from surrounding areas, particularly from Nottinghamshire.

Both surveys show that the main export markets for sand and gravel are relatively local to the area.

In 2009, 48% of sand and gravel (434,550 tonnes) produced in the county was sold in Derbyshire and Derby. In 2014, this figure was 38%.

In 2009, 46% (420,000 tonnes) was exported to other MPAs within the East Midlands and for 2014 this figure was 31%. For 2009, of the remaining 6% which was sold to areas outside the East Midlands, the majority, 39,850 tonnes (4%), was to the West Midlands.

In 2009, Derbyshire imported around 396,000 tonnes of sand and gravel from other areas. This included 200,000 tonnes of sand and gravel from other MPAs in the East Midlands (mainly from Nottinghamshire) and a further 196,000[4] tonnes from other regions. In 2014, 356,000 tonnes was imported into the area from other areas. It exported around 480,000 tonnes in 2009 and 442,000 tonnes in 2014 (as set out above). It can be seen, therefore, that Derbyshire is a net exporter of sand and gravel. This implies that Derbyshire is providing sufficient sand and gravel to meet its own needs and therefore able to supply other local needs.

Table 8: Exports of Derbyshire's Sand and Gravel 2009[5] (Tonnes)

DESTINATION	(% of total production in brackets)
Derbyshire, Derby and & The Peak District	434,551 (48%)
Nottinghamshire	26,074 (3%)
Lincolnshire	12,020 (1%)
Leics & Rutland	6774 (0.7%)
Northants	No data

[4] Collation of the Results of the Aggregate Minerals 2009 Survey; BGS 2011
[5] East Midlands Aggregate Working Party Annual Report 2009

Unspecified in E Midlands	375,241 (41%)
Other Regions	
North West	542 (0.05%)
Yorkshire & Humber	9237 (1%)
West Midlands	39,850 (4%)
East of England	1707 (0.1%)
London	21 (0.002%)
South East	31 (0.002%)
South West	0
North East	118 (0.01%)
Wales	457 (0.05%)
Scotland	0

Marine won Sand and Gravel

Being land-locked, Derbyshire, and indeed the whole of the East Midlands, does not produce any marine sand and gravel. The National and Regional Guidelines have in the past assumed a zero figure for production of this resource in this region. Transport costs also limit the import of this marine resource to this central area of the country. It is assumed, therefore, that marine sand and gravel is not a significant issue for Derbyshire and will not, therefore, form a part of this assessment.

Future Supply from Adjacent Areas

There are also significant sand and gravel operations in other parts of the Trent Valley in areas which adjoin Derbyshire, including Staffordshire, Nottinghamshire and Leicestershire. Operations in these areas supply similar markets as the ones which operate in the Derbyshire part of the Trent Valley. It will be important, therefore, to determine likely future trends in production in these areas so that we can assess the potential impact on production in Derbyshire.

The Nottinghamshire LAA concludes that there will be adequate reserves to meet the apportionments set out for the plan period to 2030. As a result, there will be little significant alteration to the supply of sand and gravel from Nottinghamshire.

The Leicestershire LAA (2015) indicates that, as at the end of 2014, there are sufficient permitted sand and gravel reserves to last just over 7 years based on average rate of production over the last 10 years. The provision of additional reserves is being considered through the emerging Leicestershire Minerals and Waste Local Plan.

With regards to Staffordshire, the 2016 SRA guideline for sand & gravel from Staffordshire was 6.6Mtpa and subsequently, the former West Midlands Regional Assembly had recommended in respect of the 2020 guidelines a reduction of the SRA to 5.66Mtpa. This reduction corresponds to the current 10 years sales average of 5.4Mtpa. This trend might suggest a reduction in annual provision but Staffordshire County Council has confirmed that sites in proximity to Derbyshire have not reduced and there are options to maintain production capacity from these quarries.

It appears, therefore, that future production from quarries in adjoining MPAs, which serve similar markets to the Derbyshire sand and gravel quarries, will be sustained at similar levels for the foreseeable future. The overall balance of production from these areas supplying similar markets is, therefore, likely to remain similar.

Future Economic Growth

The Government supports an agenda which promotes sustainable growth to stimulate economic recovery. There are a number of planned growth areas and potential major infrastructure projects in the area, which would help to achieve this aim. These projects would require significant amounts of sand and gravel, and it would be desirable for this to be sourced from the local area to limit the distance that it is transported.

House Building

There is a strong national and regional agenda to increase house building. Future house building over the plan period will be a significant element in the use of the County's aggregates, as it has been in the past.

Within the Plan period, the D2N2 Growth Area will result in significant new housing development to the south of Derby and also in the area around Nottingham; an area which is already a significant market for sand and gravel produced in Derbyshire. Planned house building for the Derby Housing Market Area (Amber Valley, Derby City and South Derbyshire) as set out in draft Local Plans, for the period 2011-2028 is currently 33,388 homes[6]. This averages 1,854 dwellings per year.

For Nottinghamshire, proposed housing growth for the Plan period is 86,500, an annual rate of 4325, somewhat higher than that achieved annually for the 10 year period to 2010 (3600).[7] For the Greater Nottingham Housing Market Area, which is where most of Derbyshire's sand and gravel which travels to Nottinghamshire is used, the proposed housing provision figure to 2028, as set out in the District local plans, is 52,050. (The projected completions is 48,556[8])

Growth is also proposed in other areas which are close to Derbyshire's sand and gravel resources and may therefore add to the demand. Significant housing is proposed in East Staffordshire Borough, the Local Plan proposing almost 6,500 new houses in the Burton area and around 1500 in the Uttoxeter area.[9]

There is some potential for increased demand for sand and gravel from Derbyshire as a result of future housing developments within North West Leicestershire District and the northern part of Charnwood Borough (Loughborough and Shepshed). Housing completions within North West Leicestershire between 2011 and September 2015 totalled 2172, an average of 434 per annum. The District's emerging Local Plan proposes 11,207 new houses over the period 2011-2031[10], an average rate of 533 per annum. This represents an increase of 20% on recent completions.

Housing completions within Charnwood Borough between 2012 and 2014 averaged 600 dwellings per annum. The Borough's Local Plan proposes 13,940 new houses over the period 2011-2028 (some 37% of which is proposed in Loughborough/Shepshed), an average rate of 820 per annum[11]. This represents an increase of 36% on recent completions.

[6] Housing Delivery in the D2N2 Area, 2016
[7] Nottinghamshire Local Aggregate Assessment, 2015
[8] Housing Delivery in the D2N2 Area, 2015
[9] East Staffordshire Borough Local Plan, 2015.
[10] North West Leicestershire Publication Local Plan, June 2016.

[11] Charnwood Borough Council Local Plan, November 2015

There is, however, some uncertainty regarding the potential achievement of these planned future house building rates. Nevertheless, it seems reasonable to assume in overall terms that the demand for Derbyshire's sand and gravel as a result of new house building in the area will at least be maintained, and there are indications that there may be an increased demand for the mineral from the house building industry in future years.

Infrastructure Projects

Within the Plan period, major infrastructure projects are planned to take place in the area and in the surrounding areas which currently use sand and gravel quarried from Derbyshire within the Plan period. These include the proposed new high speed rail link (HS2), for which the development of Phase 2 between the West Midlands and Leeds may begin in the latter part of the Plan period. As part of the HS2 project, a new rail interchange hub is planned. This is likely to be at Toton in Nottinghamshire, close to the area of Derbyshire from which sand and gravel is produced. A new gas fired power station is proposed at Willington. There may also be a new regional rail depot built in the southern part of the area, near Burnaston.

Depending on contractual arrangements/market drivers, these projects may demand sand and gravel from Derbyshire – the quantity of which is unknown. Future assessments will monitor progress with these major development proposals and respond as necessary.

The consequences of all these factors are discussed below.

Conclusions

The East Midlands Aggregates Working Party (EMAWP) has agreed an approach whereby the future provision rate should be based primarily on the previous 10 year average figure. The most recent production figures for 2016 show that production of sand and gravel at 1.29 million tonnes was slightly up on the previous year (1.13mt). This now means that for the most recent 3 years (2014-2016), production of sand and gravel has averaged 1.12 million tonnes, and for the last 10 years, the average is 1.04 million tonnes. Our projections indicate that the figure will increase slightly over the next few years, with the economy continuing to recover, but the production capacity of

the processing plants at the quarries will dictate that it cannot increase significantly above the identified provision rate.

Having taken account of all these factors, together with comments received through public consultation on the emerging Derbyshire and Derby Minerals Local Plan and the sustainability appraisal of the LAA, which favoured this approach, we consider that the most appropriate and robust approach will be to use the 10 year average figure of 1.04 million tonnes on which to base future apportionment of sand and gravel. This figure is very close to the most recent 3 year average of 1.12 million tonnes. Annual monitoring of this data will identify any significant increase in demand, enabling a review of the provision figure if needed, throughout the Plan period.

From the information above, it is likely that the demand for sand and gravel from Derbyshire may increase, as a result of the proposed housing growth and potential major infrastructure projects proposed for the area within the Plan period as the economy continues to recover. We consider that the current provision rate of 1.04mtpa provides a reasonable and realistic figure to meet this demand for sand and gravel. However, the figure will be reviewed on an annual basis to ensure that it takes account of any significant changes in sales and demand as well as any other new and emerging information, particularly relating to economic growth.

It should be noted that this proposed figure of 1.04mtpa is not a ceiling figure; there may be years when production is higher than this. It is intended, therefore, as an average figure to guide production over the Plan period.

Based on this proposed annual provision rate of 1.04 million tonnes, the proposed total apportionment for the 14 year period 2017-2030 that Derbyshire will provide is 14.56 million tonnes of sand and gravel (1.04 x 14). As set out above, there are already permitted reserves of 12.53 million tonnes. Additional provision will have to be made, therefore, for 2.03 million tonnes of sand and gravel for the Plan period to 2030.

This provision will be made in the emerging Minerals Local Plan through allocated sites and also preferred areas. Sites have been put forward by mineral operators which are being assessed through the Local Plan process and the sites which are allocated in the final Plan will address the

future requirement for sand and gravel to 2030. Annual monitoring will ensure that a seven year landbank is maintained throughout the Plan period.

The Future Provision of Crushed Rock

To determine the future provision of aggregate crushed rock in Derbyshire and the PDNP, the previous 10 years sales need to be taken into account, as well as any other relevant information.

Recent Sales

In determining the level of future provision of crushed rock, the Assessment should first consider past sales for the previous 10 years. This includes limestone and gritstone/sandstone.

As set out above, the average annual sales figure for the area for the 10 year period 2007 to 2016 is 9.34mt. This figure comprises 6.68mt for Derbyshire and 2.66mt for the PDNP. The most recent 3 year average is 9.30 million tonnes (6.18mt for Derbyshire and 3.11mt for the PDNP).

Imports and Exports

The 2009 was the most recent survey to be undertaken for which the results regarding national, regional and sub-regional movements of aggregates have been published fully. For the 2014 Survey, a summary of the percentage breakdown of aggregates consumed by each sub-region in 2014 (shown as percentage ranges) is now available, however the actual detailed sub regional figures are yet to be published. As a result, only broad figures for the 2014 survey at national and regional level are also set out below.

In 2009, 31% of the 9 million tonnes of aggregate grade crushed rock that was quarried from Derbyshire and the PDNP was used within this same area[12] and around 44% of the total production was consumed in the East Midlands (including Derbyshire and the PDNP). The figures for 2014 are 27% and 32% respectively. In terms of exports, a significant proportion of Derbyshire and Peak District's production goes to the North West, 25% in 2009 and 36% in 2014. Yorkshire/Humber, West Midlands and East of England together also take a significant amount (26% in 2009 and 8% in 2014) and the South East, London, Wales and the South West regions together take about 2%.

This information is shown in more detail in the table below. An example is that of the total 1,744,806 tonnes of aggregate rock that was produced in the Peak District, 445,018 tonnes was used in Derbyshire and the Peak District.

[12] Mainly within Derbyshire, as a result of the general restriction on development in the Peak District National Park.

Table 9: Exports of Crushed Rock from Derbyshire and Peak District Quarries, 2009 (Tonnes)[13]

	Produced in Derbyshire	**Produced in the Peak District**
DESTINATION		
Derbyshire Derby & Peak District	2,403,673 (33%)	445,018 (25%)
Nottinghamshire	715,272 (10%)	81,124 (5%)
Lincolnshire	94,700 (1%)	39,863 (2.3%)
Leics & Rutland	50,420 (0.006%)	10,107 (0.6%)
Northants	131,545 (1.8%)	459 (0.02%)
Unspecified in East Midlands	42,809 (0.6%)	No data available
Other Regions		
North West	1,690,722 (23%)	572,440 (33%)
Yorkshire & Humber	872,845 (12%)	266,164 (15%)
West Midlands	391,145 (5%)	135,077 (7.7%)
East of England	537,544 (7%)	188,977 (11%)
London	1486 (0.02%)	No data available
South East	141,384 (2%)	No data available
South West	39 (0.0005%)	559 (0.03%)
North East	20 (0.0002%)	No data available
Wales	6324 (0.08%)	4668 (0.3%)
Scotland	No data	350 (0.02%)
Unspecified in UK	283,820 (3.8%)	No data available
Totals	**7,363,748**	**1,744,806**

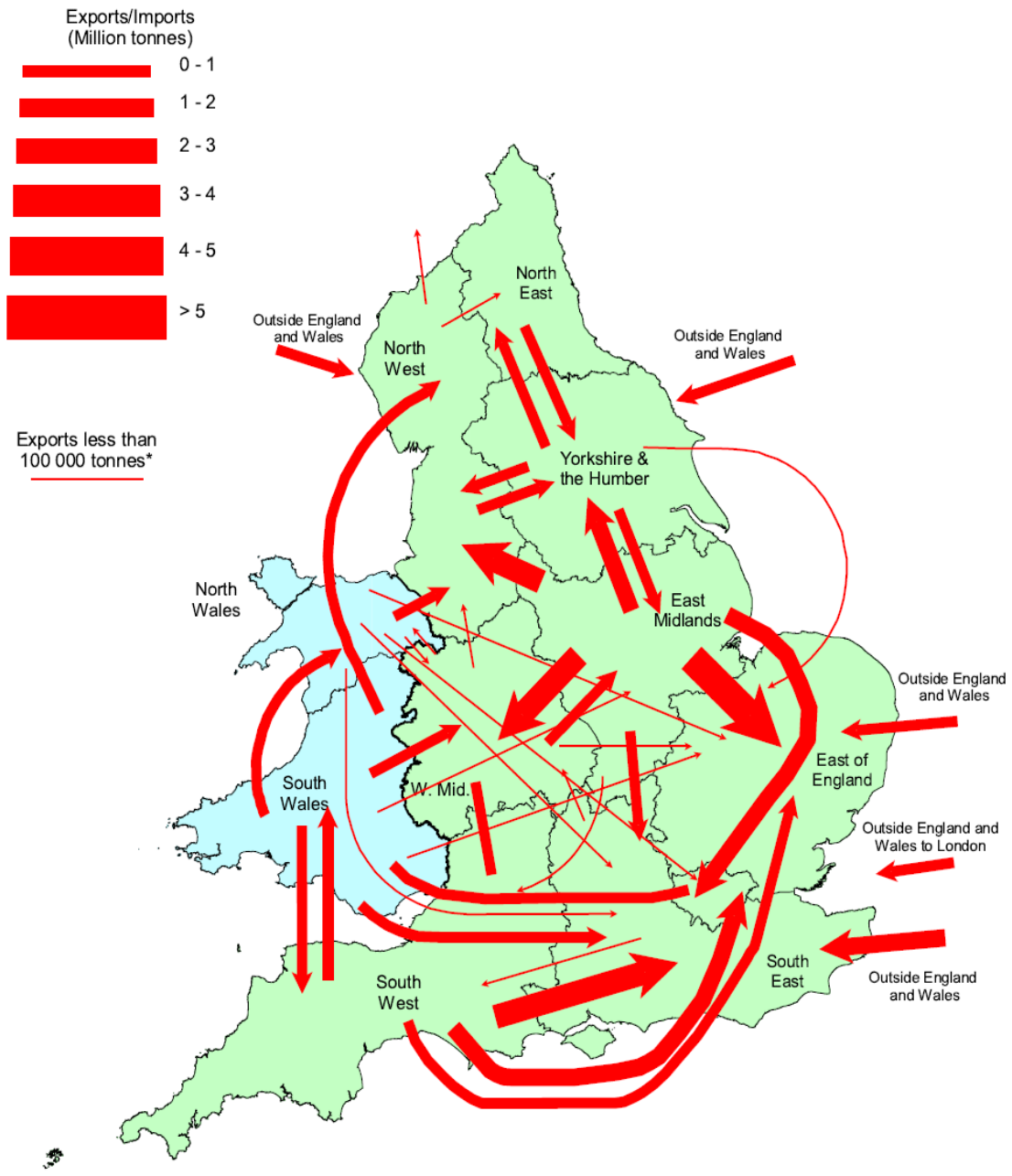
It is clear from the size of Derbyshire and the PDNP's landbank of aggregate grade crushed rock that it will be able to continue to supply these markets as required at least over the timescales covered by the authorities Development Plans. The area is, and is likely to continue to be, an important supplier of aggregate grade crushed rock at a wide geographical scale.

Although it can be seen that Derbyshire and the PDNP export a significant amount of aggregate grade crushed rock, some is also imported into the area. This is likely to be a result of market

[13] East Midlands Aggregate Working Party Annual Report 2009

forces and commercial decisions, as well as the need to import any particular types of aggregate which cannot be supplied from within the sub-region as a result of geological or resource constraints. In 2009, Derbyshire and the Peak District imported 588,000[14] tonnes of aggregate grade crushed rock, the majority of which (450,000 tonnes) was imported from Leicestershire/Rutland. Data shows that the majority of the remainder is imported from the

Figure 6: Crushed rock inter-regional flows



[14] Collation of the Results of the Aggregate Minerals 2009 Survey; BGS 2011

North West, Yorkshire and Humber and the West Midlands regions. The figure was 541,000 tonnes for 2014.

It is apparent, therefore, that Derbyshire and PDNP is a significant net exporter of aggregate grade crushed rock to other areas, amounting to an average of around 9 million tonnes each year. Derbyshire has significant resources of hard rock compared to many other areas in the country and it will be important, therefore, to maintain this level of supply in order to sustain and stimulate national economic growth.

Future Supply from Adjacent Areas

Leicestershire is the only adjoining authority which produces aggregate crushed rock to any significant extent. The Leicestershire LAA indicates also that there will be sufficient reserves in the future to sustain production at recent levels. It is likely, therefore, that the overall balance of production from areas supplying similar markets to Derbyshire and the PDNPA is likely to remain similar over the timescales covered by the authorities Development Plans.

Future Economic Growth

Limestone from Derbyshire and the Peak District is a resource of national importance, which does not exist to such an extent in most other areas of the country. As can be seen from Table 9 above, the markets for this product are, therefore, much wider than they are for sand and gravel.

Proposed sustainable economic growth in many areas which already draw on the resource is likely, therefore, to at least maintain the demand and may lead to an increase in demand for the mineral over the Plan period. There are a number of proposals which should be taken into account in this respect and could lead to an increase in demand for crushed rock (limestone) from this area.

The Government supports an agenda which promotes sustainable growth to stimulate economic recovery. There are a number of planned growth areas and potential major infrastructure projects in the area, which would help to achieve this aim. These projects would require significant amounts of crushed rock from Derbyshire.

There is a strong national and regional agenda to increase house building. Future house building over the Plan period will be a significant element in the use of the area's aggregates.

It is likely that proposed housing and economic development in the Three Cities Growth Area (an area proposed for economic growth centred on Nottingham, Leicester and Derby), particularly in the area to the south of Derby and around Nottingham[15], will result in an increased demand for Derbyshire's mineral resources, as well planned development in the Sheffield City Region and Manchester City Region Growth Areas, which are important existing markets for aggregate crushed rock from Derbyshire. There may also be an increased demand as a result of development in the Milton Keynes and South Midlands Growth Zone. The proposed high speed rail link (HS2) Phase 2 between Birmingham and Leeds and a possible Regional Rail Depot near East Midlands Airport may also increase the demand for crushed rock aggregate from this area within the Plan period.

It is not possible to assess precisely the demand for aggregates associated with these projects at this stage, but future assessments will monitor progress with these major development proposals and respond as necessary.

Progressive Reduction in Quarrying from The Peak District National Park

The PDNP has a policy in its Core Strategy (Policy MIN1) which does not allow for further new quarries or extensions to existing quarries, in order to reduce progressively the amount and proportion of aggregate grade crushed rock that is quarried from within the National Park in order to protect the nationally important landscape.

Another important consideration in this respect is that the NPPF seeks to provide for the maintenance of landbanks for non-energy minerals outside areas such as National Parks. Future contributions of aggregate from the Peak District National Park will need to be considered in light of this.

The PDNP also calculated the annual average distribution of mineral used for aggregate purposes from quarries due to close before 2020. However, most of the quarries where permissions were due to expire between 2010 and 2020 have in fact ceased mineral extraction early due in part to the recent economic conditions. Assuming these average distribution figures are removed from the PDNP's total average distribution of aggregates, the depletion curve demonstrates a reducing output from 4.4mtpa to an estimated 3.2mtpa by 2016. However, this depletion was effectively almost achieved by 2012.

[15] See page 27 for details of proposed housing numbers

Because of data protection issues, there is always a degree of uncertainty about implementation of projected closure dates, a factor made far more uncertain by the present economic downturn. However, on present projections, it seems likely that the depletion of existing reserves from the PDNP will continue to 2026. The PDNP has argued through the previous apportionment process at regional level and the development of its Core Strategy that an apportionment figure of 3.2mtpa was more realistic for the National Park than the endorsed figure of 4.05mt. This is based on the loss of the known aggregates sites whose permissions are time limited and expire during the plan period with the remaining sites producing at their peak levels. This would give a provision rate closer to the 10 year average of 2.66mt.

Through previous discussions with members of the Aggregate Working Party in preparing the 2005-2020 apportionment figures, it was agreed that quarries in Derbyshire (i.e. those within the county boundary not covered by the National Park) (serving similar markets to those in the National Park which are likely to cease production) would compensate for the majority of the displaced provision from the PDNP. Derbyshire County Council has agreed to continue this approach throughout this Plan period.

Conclusions

The average of the previous 10 years' sales figures is 9.34mt. As well as taking account of this 10 year average figure, other important local and wider matters must be taken into consideration in formulating the final provision rate, as set out above.

Taking account of all the issues discussed above, it seems pragmatic to use the 10 year sales figure as a basis, but to reduce the PDNP figure by 10% and apply this additional amount to the DCC figure. This works out as 9.34 million tonnes per annum (6.95mtpa for Derbyshire and 2.39mtpa for the PDNP). This proposed figure for Derbyshire allows for the continued compensation for the progressive loss of production from the PDNP. As the run down in production from the National Park continues over time, DCC's share of this figure will increase progressively. Production of crushed rock will continue to be monitored on an annual basis and, along with other factors such as the NPPF requirement to maintain landbanks outside National Parks, will inform the review of provision rate figures in future LAAs.

As a result, from 2017 to 2030, Derbyshire and the PDNP will make provision for 130.8 million tonnes of aggregate grade crushed rock (9.34mt x 14 years). Assuming 9.34mt per annum is worked over 14 years, and that no further reserves are permitted in this time, there will still be a landbank of aggregate grade crushed rock of 722mt by 2030, sufficient to last around 77 years at current production rates. There is sufficient supply, therefore, to meet future demand for aggregate grade crushed rock, which this area currently supplies.

This document has been the subject of a sustainability appraisal. This is available on our website at www.derbyshire.gov.uk

Produced by Derbyshire County Council, Derby City Council and the Peak District National Park Authority. If you have any queries regarding this document, please contact The Minerals Planning Team, Derbyshire County Council, County Hall, Matlock, DE4 3AG. Tel. 01629 539816 or email ETC.Wastemin@derbyshire.gov.uk