

# DERBY AND DERBYSHIRE MINERALS LOCAL PLAN

## SAND AND GRAVEL SUPPORTING PAPER

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## **1. Introduction and Background**

- 1.1 Sand and gravel deposits are accumulations of rock fragments and mineral grains, which have been derived from the weathering and erosion of hard rocks by glacial and river action. Sand and gravel was the principal source of primary aggregate until 1979 when crushed rock output exceeded it for the first time. By 2012, it accounted for just 22% of total aggregate supply<sup>i</sup>.
- 1.2 Between 2014 and 2030, it is estimated through the Local Aggregate Assessment 2014 that Derbyshire and Derby will have to provide around 18.5 million tonnes of sand and gravel in order to meet the level of demand based on the latest national demand forecast. Taking account of permitted reserves at the end of 2013 of just over 9 million tonnes, the resulting shortfall that the plan will have to meet is around 9.5 million tonnes. There is also the requirement to maintain a minimum 7 year landbank of sand and gravel at all times.

## **2. National Policy**

- 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 recognises also that minerals are a finite resource, so it is important to make best use of them in order to secure their long-term conservation.
- 2.2 It sets out the need to maintain a steady and adequate supply of aggregate, the details of which will be set out in a Local Aggregate Assessment to be reviewed annually. The Minerals Local Plan will make provision for this mineral by allocating specific sites, preferred areas and/or areas of search and locational criteria and at all times maintaining a landbank of at least 7 years for sand and gravel. It goes on that the impacts of mineral operations should be minimised and the benefits maximised. It also sets out the Government's aim to reduce the consumption of primary aggregates

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<sup>i</sup> Mineral Products Association, Key Facts at a Glance 2013

by promoting greater efficiency of use and encouraging greater use of recycled and secondary aggregates.

2.3 National Planning Practice Guidance (NPPG) (2014) sets out that a Local Aggregate Assessment 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 as to whether it might be appropriate to increase supply.

2.4 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 the Plan.

2.5 It also states that the suitability of each proposed site, whether an extension to an existing site or a new site, should 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), and;
- positive and negative environmental impacts (including the feasibility of a strategic approach to restoration).
- the cumulative impact of proposals in an area.

### **3. Derbyshire and Derby's Sand and Gravel Resources**

3.1 Derbyshire and Derby have substantial resources of sand and gravel in the river valleys of the Trent, Lower Derwent and the Lower Dove, occurring within the fluvial/alluvial and terrace deposits, as shown on Map 1 below. The formation of these drift deposits took place following the last ice age when considerable amounts of sand, gravel, silt and clay, in the form of glacial and weathered rock deposits, were eroded rapidly by glacial melt waters and deposited in wide tracts in the areas alongside these rivers.

The thickness of the river valley deposits varies considerably, ranging from less than one metre thickness in some areas to as much as 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<sup>ii</sup>. There has been little mineral working in the Lower Dove Valley, with most to date having taken place in the Trent and the Lower Derwent Valleys, reserves being of particularly high quality, both in geological and commercial terms, in the area of the Trent Valley between Long Eaton and Willington and on into Staffordshire.

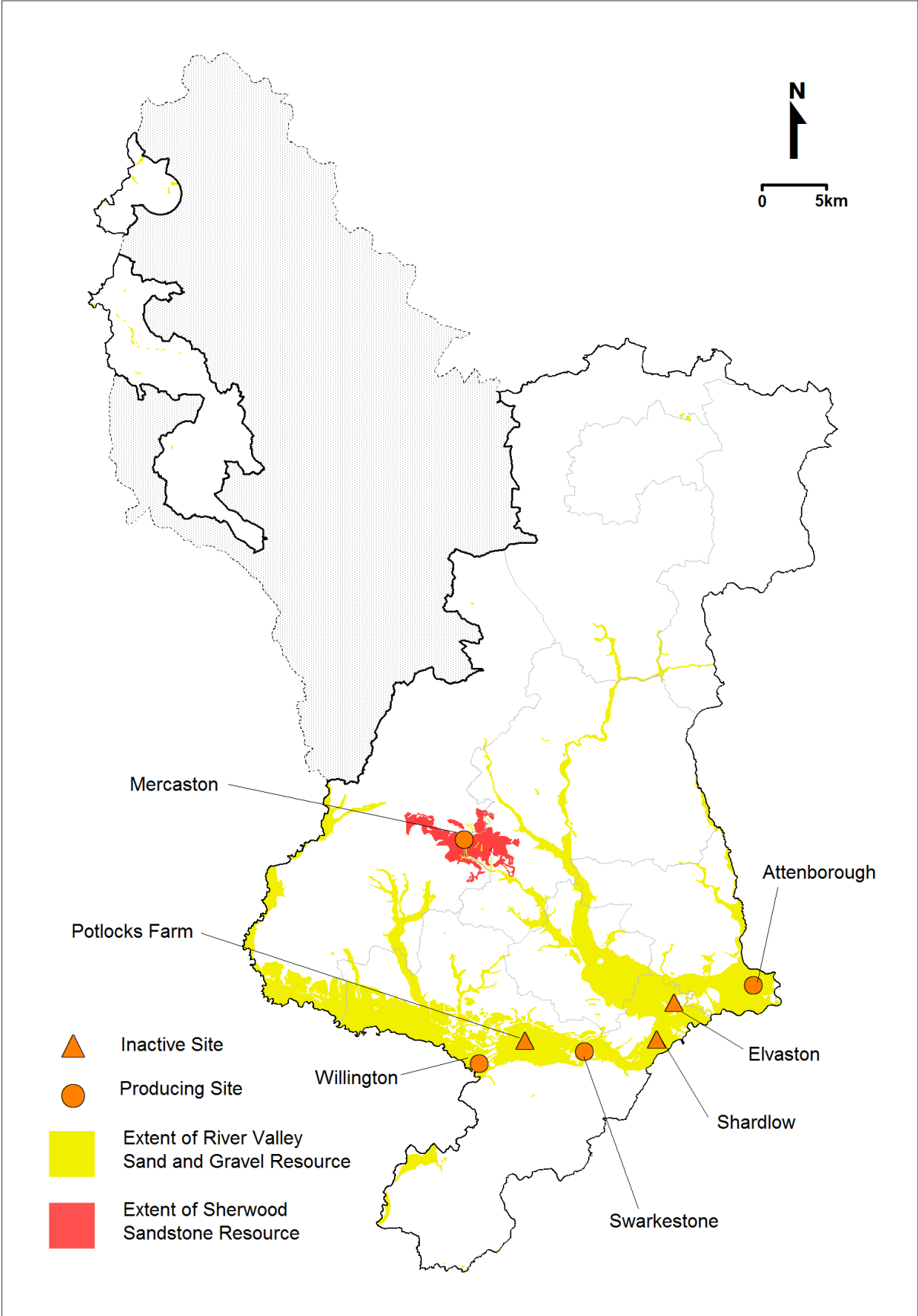
3.2 Deposits of sand and gravel also occur in the solid bedrock of the Sherwood Sandstones. These are much older than the river valley deposits, having been laid down around 230 million years ago in the Triassic geological period. Their thickness varies considerably from 100m to virtually nothing. The proportion of gravel also varies greatly but is usually much less than in the river valley deposits. It is an important source of soft building sand and there is currently only one operation in the county. This is located at Mercaston in an area between Derby and Ashbourne. The operator of this quarry has indicated that it has sufficient reserves to last this Plan period and has, therefore, not put forward any proposals for extensions to this quarry at this time.

3.3 Mineral resource information for the Plan area was compiled by the British Geological Survey in 1995<sup>iii</sup>. Resource information for sand and gravel in the Plan area has been defined from available geological information. Parts of the sand and gravel resource in the Plan area have, however, been evaluated by mineral companies and, therefore, knowledge of the economic potential of the resource has been established with a high level of confidence. In practice, mineral planning authorities are largely reliant on the mineral companies to supply detailed authoritative information on the quality and quantity of the resource.

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<sup>ii</sup> Minerals Local Plan, Derbyshire County Council 2000

<sup>iii</sup> British Geological Survey, Mineral Resource Information for Development Plans, Derbyshire: Resources and Constraints, 1995



**Map 1: Sand and gravel resources and sites in Derbyshire and Derby, 2013**



#### 4. The Current Supply Situation

4.1 Information regarding mineral production and reserves is collected annually through the Aggregates Survey organised by the Aggregates Working Party. Whilst information collected through this survey can often vary significantly from year to year, particularly regarding reserves, it is the best information available and we have to assume its reliability upon which to base the assumptions set out in the Minerals Local Plan.

4.2 Although there are limited resources of sand and gravel in Derby City, these are not currently worked.

4.3 As table 1 below shows, production of sand and gravel in Derbyshire between 2004 and 2013 has averaged 1.09 million tonnes (mt).

Table 1: Annual Production of Sand and Gravel in Derbyshire 2004-2013 (figures in million tonnes)

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
1.36	1.34	1.20	1.22	1.10	0.91	1.04	1.1	0.81	0.82	1.09

4.4 The following table shows how this material was used in 2013.

Table 2. Use of sand and gravel (figures in tonnes)

<b>Building Sand</b>	<b>Sand for Concrete making</b>	<b>Gravel for Concrete making</b>	<b>Other undefined uses for sand</b>	<b>Other undefined uses for gravel</b>
59,357	193,476	207,660	50,130	302,667

4.5 At the end of 2013, Swarkestone, Willington, Attenborough and Mercaston were the active sand and gravel quarries. Shardlow Quarry was mothballed at the end of the year. At this time, permitted reserves of sand and gravel in Derbyshire totalled around 9.4 mt.

4.6 This stock of reserves with planning permission is known as the landbank. The term permitted reserve includes current non-working sites but excludes those sites where mineral working cannot take place until there has been a review of the planning conditions attached to their planning permission. Government guidance requires landbanks to be maintained for all aggregate minerals, with the recommended landbank period for sand and gravel being at least 7 years. The current length of the landbank for sand and gravel in the Plan area is calculated as follows:

Landbank of permissions = 9.4 million tonnes  
 Annual Provision Rate  
 (see 5.2 below) = 1.09 million tonnes  
 Landbank period = 8.6 years  
 (landbank ÷ annual apportionment)

#### 4.7 Dormant Sites

There has been no working at Egginton Pit for a number of years now and it is now classified as being dormant i.e. a new set of conditions would have to be approved before it could be worked again. Mugginton pit in the Sherwood Sandstones is also classified as being dormant. Reserves at these quarries are estimated to be 2.2 million tonnes and 0.6 million tonnes respectively. The reserves at these quarries are, therefore, not included in the landbank above because they no longer have a planning permission.

**Table 4: Sand and gravel provision – reserves and requirements**

	<b>Sand and Gravel</b>	<b>Million Tonnes</b>
	<b>Requirement</b>	
	Production Requirement 2014-2030	18.5
<b>Reserves</b>		
	Permitted Reserves (Landbank) at 31/12/2013	9.4 <sup>iv</sup>
<b>Shortfall</b>		
	Shortfall 2013 – 2030	9.1

<sup>iv</sup> RAWP Survey 2012 figures, excluding 2.8 mt on “dormant” sites

## **5. Future Provision**

5.1 Mineral planning authorities such as Derbyshire County Council and Derby City Council are now required to determine the level of sand and gravel that they should provide in order to maintain a steady and adequate supply, taking account of the previous 10 years' sales, published national and sub national guidelines and other relevant information and set these out in a Local Aggregate Assessment. The levels set should of course be reasonable and realistic and should be set within the context of the national requirement for minerals.

5.2 For the 10 year period from 2004 to 2013, sales of sand and gravel extracted from Derbyshire averaged 1.09 million tonnes. The draft Local Aggregate Assessment indicates, therefore, that, based on an annual provision rate of 1.09mt, Derbyshire and Derby will provide 18.5 million tonnes of sand and gravel from 2014 to 2030. There are already permitted reserves of 9.4 million tonnes, which means that additional provision will have to be made in the Minerals Local Plan for around 9 million tonnes of sand and gravel to 2030.

## **6. Allocating Sites in the Plan**

6.1 Extensions to existing sites can offer benefits, mainly in terms of reduced environmental disturbance, especially where access, infrastructure and mitigation measures are already in place, but the disadvantage is the potential cumulative impact that continued extraction could have on an area if successive extensions are permitted. New sites can relieve the cumulative impact from other areas but then bring the impacts of mineral extraction to an area previously unaffected.

6.2 Currently, all active sand and gravel workings in Derbyshire are located in the Trent and Derwent Valleys in an area stretching from Attenborough in the east of the valley to Willington further west. There is further potential in this area, at least in the short to medium term, for new permissions to take the form of extensions to existing sites rather than wholly new sites. Resources are, however, gradually becoming depleted in this area and at some point, in order to maintain production, sites will have to be

located in areas which have so far been largely unaffected by mineral extraction. The area of the Dove Valley around Foston and Sudbury is the main area with potential for sand and gravel working, although much of this has yet to be explored.

6.3 The Councils have asked mineral operators to put forward sites they wished to be considered for extraction. Ten sites have been put forward for consideration for sand and gravel extraction; six of these extensions to existing sites and four new sites. These would provide in total around 38 million tonnes of sand and gravel. Sites that are allocated in the Plan are likely to be from this list. All these sites will be assessed against the same criteria, which have been developed with stakeholders and local communities, to determine their potential for future sand and gravel working.

**Table 5 - Sites put forward for sand and gravel extraction**

Site name	New site/ extension	Reserves (Million tonnes)	Estimated output per annum	Estimated life of site
<b>Trent Valley - East</b>				
Shardlow	Extension	4	450,000	Planning application submitted for 4mt – under consideration
Elvaston	Extension	1.5	250,000	
Foremark	New	11	500,000	
Chapel Farm	New	1	200,000	
<b>Trent Valley - West</b>				
Willington	Extension	2.0	270,000	
Attenborough	Extension	0.4	200,000	
Swarkestone North	Extension	4.5	300,000	
Swarkestone	Extension	5	300,000	

Site name	New site/ extension	Reserves (Million tonnes)	Estimated output per annum	Estimated life of site
South				
<b>Dove Valley</b>				
Egginton	New	1.8	300,000	
Foston	New	6.3	300,000	

## 7. Method of Working and Reclamation

7.1 There are three stages involved in the production of sand and gravel; extraction, processing and restoration. Extraction initially involves the stripping of topsoil, subsoil and overburden. These materials are used either in progressive restoration or stored and used at a later stage in the restoration programme. Extraction of the mineral is usually carried out in a de-watered working area by excavator. The excavated material is then either loaded into dump trucks for transportation to the processing plant or loaded into a hopper, which feeds a conveyor. At the plant, a series of crushing and screening operations grade and sort the minerals into the different sizes of sand and gravel required by the construction industry. The processed material is stored in stockpiles according to size before being transported to the customer or used on site in the manufacture of concrete. The plant and stockpile areas can be visually intrusive in the often open valley landscapes. Although the shallow nature of sand and gravel extraction results in high lateral land take, it also enables restoration to be undertaken to a high standard. The lack of waste produced on site does require importation of fill in many cases to restore land to original levels. Alternatively, areas extracted below the water table will return naturally to the water level, presenting opportunities for water-based after-uses.

7.2 Although most of the permitted sand and gravel workings in the Plan area have conditions requiring their restoration to agriculture, restoration to water and other wildlife and leisure uses is becoming more common as inert fill material becomes increasingly scarce. This is partly because there are now far fewer coal fired power stations, with the resultant decline in their by-product of pulverised fuel ash. Also,

construction and demolition wastes are now increasingly being recycled rather than used as fill material in restoration.

7.3 Former sand and gravel workings can be restored to a variety of end uses. Sites can be restored to agricultural uses where sufficient infill material is available. Many restored sites provide valuable areas for nature conservation, providing important opportunities to increase biodiversity (for example reed beds, wet grasslands, wet woodlands, ponds). They also provide opportunities for formal recreation (sailing, fishing, bird watching) and informal recreation (walking, cycling, picnicking). The majority of former sand and gravel workings are restored to a mixture of all these uses. The proportion of each use is dictated to a large extent by the proximity to airports and the amount of infill material that is available. Restoration to agriculture is a priority on sites close to airports; birdstrike is an issue where such sites are restored to water. We work closely with airport authorities in ensuring that sites close to airports are restored in such a way to minimise the risk of birdstrike.

## **8. Transportation**

8.1 All sand and gravel extracted from the Plan area is transported to its markets by road<sup>v</sup>. Viable alternatives are not currently available, but will be explored where possibilities arise.

## **9. Markets**

9.1 Sand and gravel is used primarily in the manufacture of ready mixed concrete, pre-cast concrete products and as bulk filling material. As previously shown in Table 2, a high percentage of Derbyshire's sand and gravel is used in the manufacture of concrete. Some of the active sand and gravel quarries in Derbyshire have ready mixed concrete plants on site, producing concrete for the pre-cast concrete plants within the county. These serve a national and regional market for products such as blocks, floors, pipes, kerbs and street furniture. Sand is used mainly in the production of mortars and asphalt.

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<sup>v</sup> EMAWP 2009 Annual Report

9.2 Most sand and gravel originating from Derbyshire is used within 10-15 miles of the quarries, mainly because of the high cost of transporting the material (local markets require local sources), but also because of competition from other sources of aggregates in the area. In 2009, 47% of the total sand and gravel output from Derbyshire was sold to markets within the Plan area, with 46% being exported to other counties within the East Midlands Region and the majority of the remaining 7% being used within the West Midlands Region.<sup>vi</sup> In 2009, Derbyshire and Derby imported around 200,000 tonnes of sand and gravel from other MPAs in the East Midlands (mainly from Nottinghamshire). It imported a further 196,000<sup>vii</sup> tonnes from other areas.

## **10. Contribution to the Economy**

10.1 The extraction of sand and gravel 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 indirect employment mainly through the use of haulage contractors. In 2013, the sand and gravel industry provided employment for 84 people in Derbyshire and Derby and the Peak District National Park. This included 26 in direct employment, 56 lorry drivers and 2 contractors<sup>viii</sup>.

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<sup>vi</sup> EMAWP 2009 Annual Report

<sup>vii</sup> Collation of the Results of the Aggregate Minerals 2009 Survey; BGS 2011

<sup>viii</sup> Annual Mineral Raised Inquiry 2013, DCLG February 2015