

Nottinghamshire and Nottingham Local Aggregates Assessment

Containing 2017 sales data

Published May 2019

Index

Summary	3
Introduction	5
Aggregates in Nottinghamshire and Nottingham City	6
Primary aggregates	6
Alternative aggregates.....	8
Local production	9
Sand and gravel	9
Sherwood Sandstone	12
Crushed rock (including aggregate limestone).....	15
Alternative aggregates.....	17
Future Aggregate Provision	20
Sand and gravel provision	21
Sherwood Sandstone provision	22
Crushed rock (limestone) provision	22
Future Growth.....	25
Conclusion.....	30

Summary

The Nottinghamshire and Nottingham Local Aggregates Assessment (LAA) is a document that is to be produced under the requirements set out in the National Planning Policy Framework (NPPF) and covers the geographical area of Nottinghamshire, including the Nottingham City unitary authority area. It monitors annual sales data for aggregate minerals between 2008 and 2017 as well as identifying other relevant local information to enable the Mineral Planning Authorities to plan for a steady and adequate supply of minerals.

Aggregate minerals are made up of sand and gravel, Sherwood Sandstone and crushed rock and are used in the construction industry. Their main uses include concrete, mortar, asphalt, railway ballast and bulk fill.

The LAA sets out:

- Summaries of past aggregate sales, number of active quarries and the distribution of the extracted mineral;-
- The latest 10 and 3 year average sales data and a comparison to the previous average sales data; and,-
- The key issues that could affect the future demand for aggregates over the next plan period.

Key Findings

Nottinghamshire is an important producer of sand and gravel and Sherwood Sandstone and has a large export market, particularly to South Yorkshire and the wider East Midlands. Crushed rock production is minimal with most imported from Derbyshire and Leicestershire.

Whilst aggregate mineral resources are present in the Nottingham City area, the opportunities to work these minerals are limited due to the built-up nature of the area. As a result, the majority of aggregates consumed in the City are supplied from either Nottinghamshire or further afield.

The Nottingham City Land and Planning Policies document contains policies against which any proposal for minerals development within the City boundary would be assessed, including a Minerals Safeguarding Policy, however it does not include demand forecasts for aggregate minerals.

Sales of aggregate minerals fell significantly as a result of the recession in 2007 and since this time have remained subdued. This can be seen most dramatically in the sand and gravel sales and between 2008 -2009. In 2009 and 2016, sales of sand and gravel fell to their lowest level since records began in 1973.

The 2017 sales data shows a small increase in sand and gravel sales and a small fall for Sherwood Sandstone sales compared to the 2016 data. Crushed rock (limestone) output remains at zero.

The latest 10-year average sales figures show that sand and gravel has steadily fallen since the first LAA was published in 2013, whilst Sherwood Sandstone sales have remained broadly stable and sales of crushed rock (limestone) has continued to decline. This is due to the greater influence of the subdued sales on the monitoring period for sand and gravel and the lack of replacement quarries coming forward to replace worked out quarries.

The 3-year average sales figure shows a similar pattern, with sand and gravel sales steadily falling and Sherwood Sandstone remaining broadly stable and crushed rock (limestone) remaining at zero (see table 1).

Table 1: Sales and landbank figures as of December 2017

	2017 sales (million tonnes)	10 year sales average 2008-2017 (million tonnes)	3 year sales average 2015-2017 (million tonnes)	Permitted reserves (million tonnes)	Landbank (years)
Sand and gravel	1.3	1.53	1.36	17.92	11.69
Sherwood Sandstone	0.38	0.37	0.36	3.8	10.27
Crushed rock (limestone)	0.00	0.002	0.00	3.34	1670*

*The landbank figure should be used with caution as sales have been at zero for a number of years.

Introduction

- 1.1 The requirement to prepare a Local Aggregates Assessment (LAA) was introduced in the National Planning Policy Framework (NPPF) in March 2012 and is a continued requirement within the 2018 NPPF. The LAA should include the latest 10 years average sales data taking into account any important local considerations, sub national and national guidelines on aggregate provision. The data contained in the LAA will then enable the Minerals Planning Authorities (MPAs) to make provision for a steady and adequate supply of aggregate minerals in their area over the life of the Minerals Local Plan.
- 1.2 The Planning Practice Guidance also sets out an additional requirement to identify the 3 year average sales figure in particular to identify the general trend of demand as part of the consideration of whether it might be appropriate to increase supply.
- 1.3 This LAA sets out the aggregate minerals found in the geographical area of Nottinghamshire including Nottingham City, the current situation in terms of annual sales, the number of active quarries and the amount of aggregate that will need to be provided over the plan period.
- 1.4 It is important to note that whilst aggregate mineral resources are present in the Nottingham City boundary, the opportunities to work these minerals are limited due to the built up nature of the area. As a result the majority of aggregates consumed in the City are supplied from either Nottinghamshire or further afield.
- 1.5 The Nottingham City Land and Planning Policies document contains policies against which any proposal for minerals development within the city boundary would be assessed against, including a Minerals Safeguarding Policy, however it does not include demand forecasts for aggregate minerals.
- 1.6 The information used in this LAA is supplied by the East Midlands Aggregate Working Party and relates to the period 1st January to 31st December 2017.
- 1.7 The Aggregates Working Party is made up of MPAs from across the region and industry representatives. Its role is to provide technical advice about the supply and demand for aggregates and undertake annual monitoring of aggregate production and levels of permitted reserves across the East Midlands. This information is supplied to MPAs and to the National Aggregate Co-ordinating Group to inform national aggregate provision.
- 1.8 The LAA is required to be updated on an annual basis and will enable the County and City Councils to monitor ongoing patterns and trends in aggregate sales and ensure that adequate reserves are maintained over the plan period.

Aggregates in Nottinghamshire and Nottingham City

- 2.1 Aggregates account for around 90% of minerals used in construction and are essential in maintaining the physical framework of buildings and infrastructure on which our society depends. Aggregates are usually defined as hard granular materials and include sand and gravel, Sherwood Sandstone and limestone. Their main uses include concrete, mortar, Roadstone, asphalt, railway ballast, drainage courses and bulk fill. Alternative aggregates are also used within Nottinghamshire, which include secondary and recycled materials.

Primary aggregates

- 2.2 Plan 1 illustrates the following primary aggregates that are found in the geographical area of Nottinghamshire and Nottingham.

Sand and gravel

- 2.3 Important alluvial (river) sand and gravel deposits are found in the Trent and the Idle Valleys which have made Nottinghamshire an important producer of sand and gravel in the East Midlands. Limited extraction also occurs in glaciofluvial sand and gravel deposits near East Leake, south of Nottingham. Sand and gravel is mainly used in ready mixed concrete production, although Nottinghamshire's reserves are particularly valuable because they meet high strength concrete specifications as the gravel is made up of quartzite.

Sherwood Sandstone

- 2.4 Although defined as sandstone, this rock formation rapidly breaks down to sand when extracted. The sandstone occurs as a broad north-south belt stretching from the border with South Yorkshire, southwards to Nottingham. The mineral is mainly used to produce asphalt and mortar sand. There is relatively little overlap with the uses for which alluvial and glacial sand and gravels are suitable. Sherwood Sandstone is also used for non-aggregate industrial and other specialist end-uses.

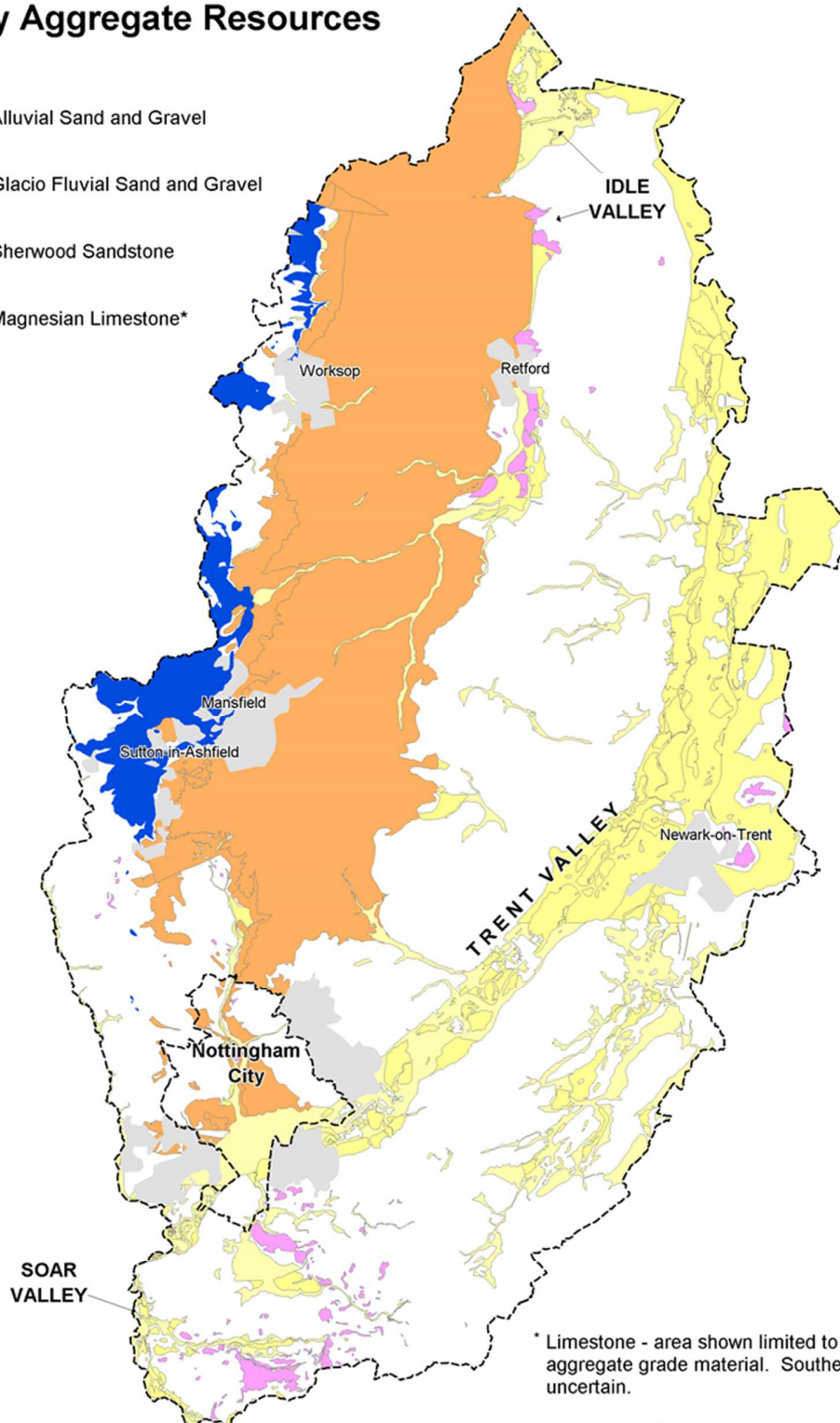
Magnesian Limestone

- 2.5 This resource occurs as a relatively narrow belt to the west of the Sherwood Sandstone. This outcrop comprises the southernmost limits of the UK's second largest limestone resource that extends from the Durham coast through Yorkshire into Derbyshire and Nottinghamshire. Limestone suitable for use as an aggregate is only found in the Mansfield area and to the north where the mineral is used mainly as a road sub-base material although some mineral is of industrial grade quality. Production is relatively small scale and the lowest in the East Midlands. Around Linby the limestone is suitable for building and ornamental purposes, although aggregates can be produced as a by-product of utilising reject building stone.

Plan 1 - Nottinghamshire - Primary Aggregate Resources

Key

- Alluvial Sand and Gravel
- Glacio Fluvial Sand and Gravel
- Sherwood Sandstone
- Magnesian Limestone*



* Limestone - area shown limited to aggregate grade material. Southern limit uncertain.

* Alluvial Sand and Gravel - minor tributaries and glaciofluvial - economic potential limited.

©Crown Copyright. All Rights Reserved. Nottinghamshire County Council 100019713 2016
 British Geological Survey. 2013. Digital Geological Map of Great Britain 1:625 000 scale (DiGMapGB-625)
 Superficial Deposits data [CD-Rom] Version 1.10. Keyworth, Nottingham: British Geological Survey.
 Release date 30-04-2003

Alternative aggregates

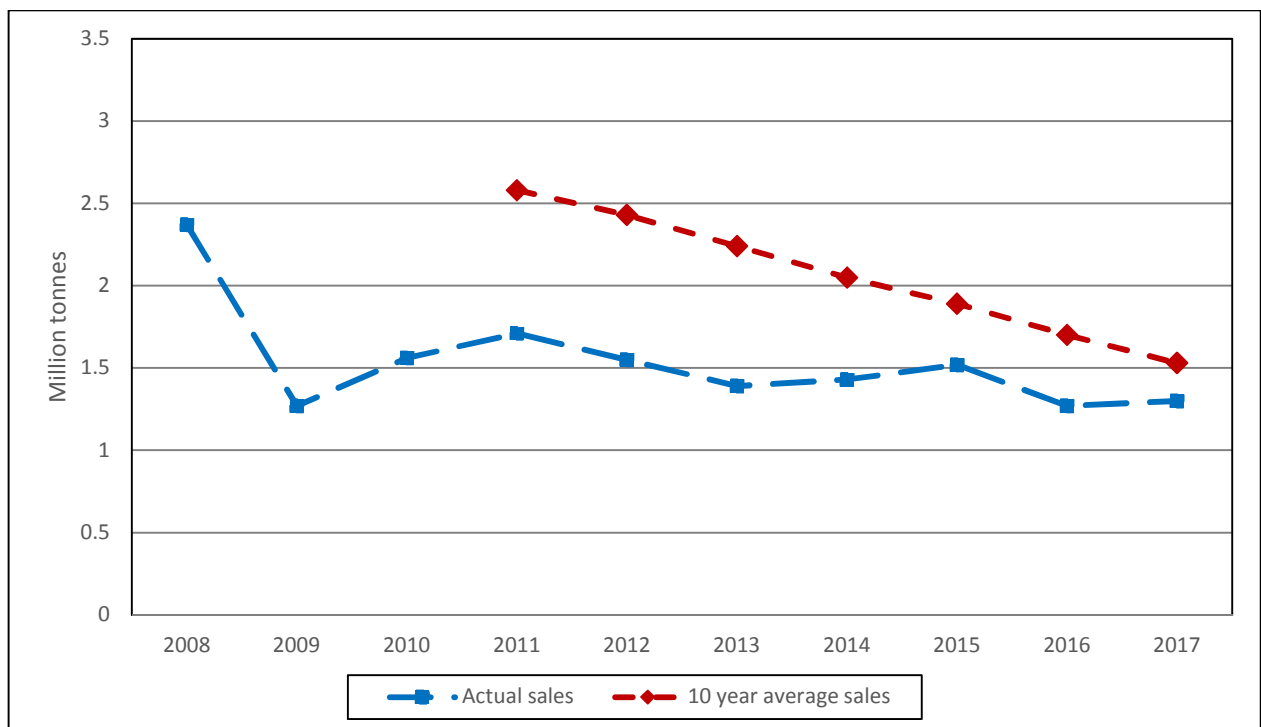
- 2.6 Alternative aggregates comprise secondary and recycled materials, although these terms are often used interchangeably. Recycled aggregates are materials that have been used previously and include some types of construction and demolition waste, asphalt road planings and used railway ballast. Secondary aggregates are by-products of other processes that have not been previously used as aggregates. They include colliery spoil, china clay waste, slate waste, power station ashes, blast furnace and steel slag, incinerator ashes and foundry sands.
- 2.7 Alternative aggregates are currently most widely used in lower grade applications such as bulk fill. However, the range of uses is widening due to advances in technology and the increasing economic incentive to use them instead of primary aggregates.
- 2.8 In Nottinghamshire, sources of alternative aggregates include construction and demolition waste, power station ash, river dredgings, road planings and rail ballast.

Local production

Sand and gravel

- 3.1 As shown in Figure 2, sales for sand and gravel fell from 2.37 million tonnes in 2008 to just 1.27 million tonnes in 2009, the lowest production figure since records began in 1973. This was a result of both the 2008 recession and production at Finningley quarry temporarily moving across the County boundary into Doncaster. In 2010 and 2011, extraction at Finningley quarry recommenced within the County boundary and with increased economic activity, sales did increase but fell again slightly in 2013. Small increases were recorded in 2014 and 2015, however sales fell back to 1.27 million tonnes in 2016 as approximately half of the annual output from Finningley moved out of the County boundary into Doncaster. Sales in 2017 increased slightly to 1.30 million tonnes, as shown in Figure 2 below.
- 3.2 Along with subdued sales since the recession, the number of permitted quarries coming online to replace worked out quarries has remained low.

Figure 2: Sales of sand and gravel 2008-2017 against the 10 year average sales figure. (Figures in million tonnes)



Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Sales (Million tonnes)	2.37	1.27	1.56	1.71	1.55	1.39	1.43	1.52	1.27	1.30

Resources and landbank

- 3.3 The landbank is calculated by dividing existing permitted reserves by the level of production based on the average sales over the last 10 years. This is in line with guidance set out in the National Planning Practice Guidance.
- 3.4 Permitted reserves currently total 17.89 million tonnes, with average sales over the last 10 years standing at 1.53 million tonnes per annum. Therefore, as of December 2017 the landbank stood at 11.69 years of production. This is above the minimum 7-year landbank requirement set out in the NPPF.
- 3.5 There are eleven permitted sand and gravel quarries in Nottinghamshire, although at present only nine are in full production with a further quarry, Girton, only working existing stockpiles (see Table 2).

Table 2: Permitted sand and gravel quarries in Nottinghamshire

Site	Operator	Status	Permitted reserves (mt)
Langford Lowfields	Tarmac	Active	1.00
Girton	Tarmac	Inactive	3.56
Besthorpe	Tarmac	Active	1.2
Sturton Le Steeple	Tarmac	Yet to be worked	7.1
East Leake	CEMEX	Active	2.0
Cromwell	CEMEX	Active	1.36
Misson West	Hanson	Active	0.0015 (15,000 tonnes)
Misson Newington	Hanson	Active	0.2
Scrooby	Rotherham Sand & Gravel	Active	0.65
Finningley	Tarmac	Active	0.28
Misson Bawtry Road	Rowley	Active	0.54
		TOTAL	17.89

Geographical spread of sand and gravel quarries

- 3.6 Historically a geographical spread of sand and gravel quarries has developed across Nottinghamshire, resulting in three geographic areas. This has occurred due to the location of sand and gravel reserves along the Trent and Idle Valley but also due to where key markets are within Nottinghamshire and neighbouring authorities. As of December 2017, the location of quarries with planning permission in Nottinghamshire is set out in table 3.

Table 3: Current location of quarries in Nottinghamshire

Geographic Area	Total tonnage in the area (million tonnes)	Percentage of total reserves
Idle Valley	8.77*	49%
Newark	7.12	39.8%
Nottingham	2	11.2%

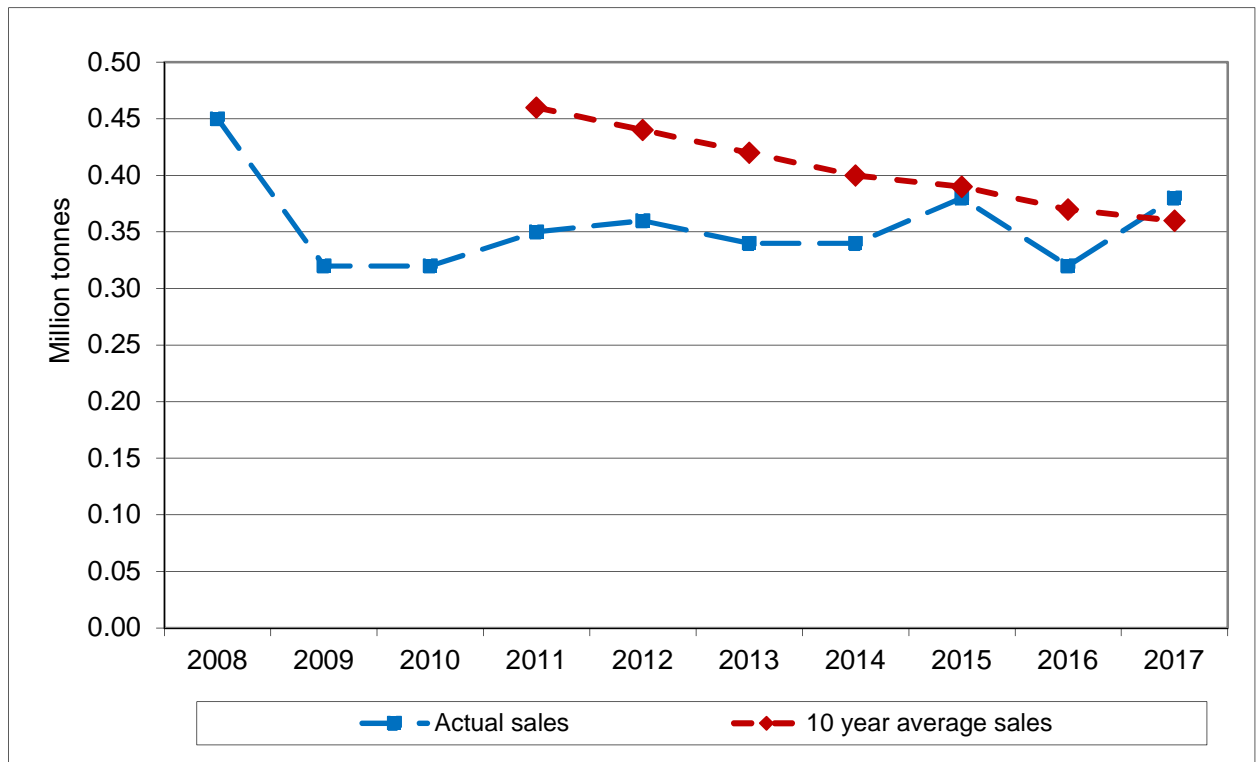
*Of the 8.77 million tonnes in the Idle Valley, 7.1 million tonnes is in the Sturton Le Steeple quarry, which is currently inactive.

- 3.7 Whilst this shows the current geographic spread, it is important to note that over time, as reserves are worked and additional reserves are granted planning permission, this spread will change.

Sherwood Sandstone

3.8 Historically Sherwood Sandstone sales have been much lower than sand and gravel sales as it is generally used in different, more specialist markets. Sales fell from 0.45 million tonnes in 2008 to a low of 0.32 million tonnes in 2009. Since 2010 sales have remained relatively stable, between 0.32 and 0.38 million tonnes a year, (see Figure 3 below) with sales in 2017 at 0.38 million tonnes.

Figure 3: Sales of Sherwood Sandstone, 2008-2017 against 10 year average sales figure. (Figures in million tonnes)



Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Sales (million tonnes)	0.45	0.32	0.32	0.35	0.36	0.34	0.34	0.38	0.32	0.38

Resources and landbank

3.9 There are five permitted Sherwood Sandstone quarries although at present only three are being worked, with one dormant and one inactive site (see Table 4 below). Permitted reserves currently total 3.8 million tonnes, with average sales over the last 10 years standing at 0.36 million tonnes. Therefore, as of December 2017 the landbank stood at 10.55 years. This is above the minimum 7 year requirement.

Table 4: Permitted Sherwood Sandstone quarries in Nottinghamshire

Site	Operator	Status	Permitted Reserves (mt)
Burntstump	Tarmac	Active	1.79
Bestwood 2	Tarmac	Active	1.13
Carlton Forest	Tarmac	Dormant	0.05
Two Oaks Farm	Mansfield Sand Company	Active	0.34**
Scrooby Top	Rotherham Sand & Gravel	Inactive	0.48
TOTAL			3.79

Note: ** Pending reassessment by the mineral operator

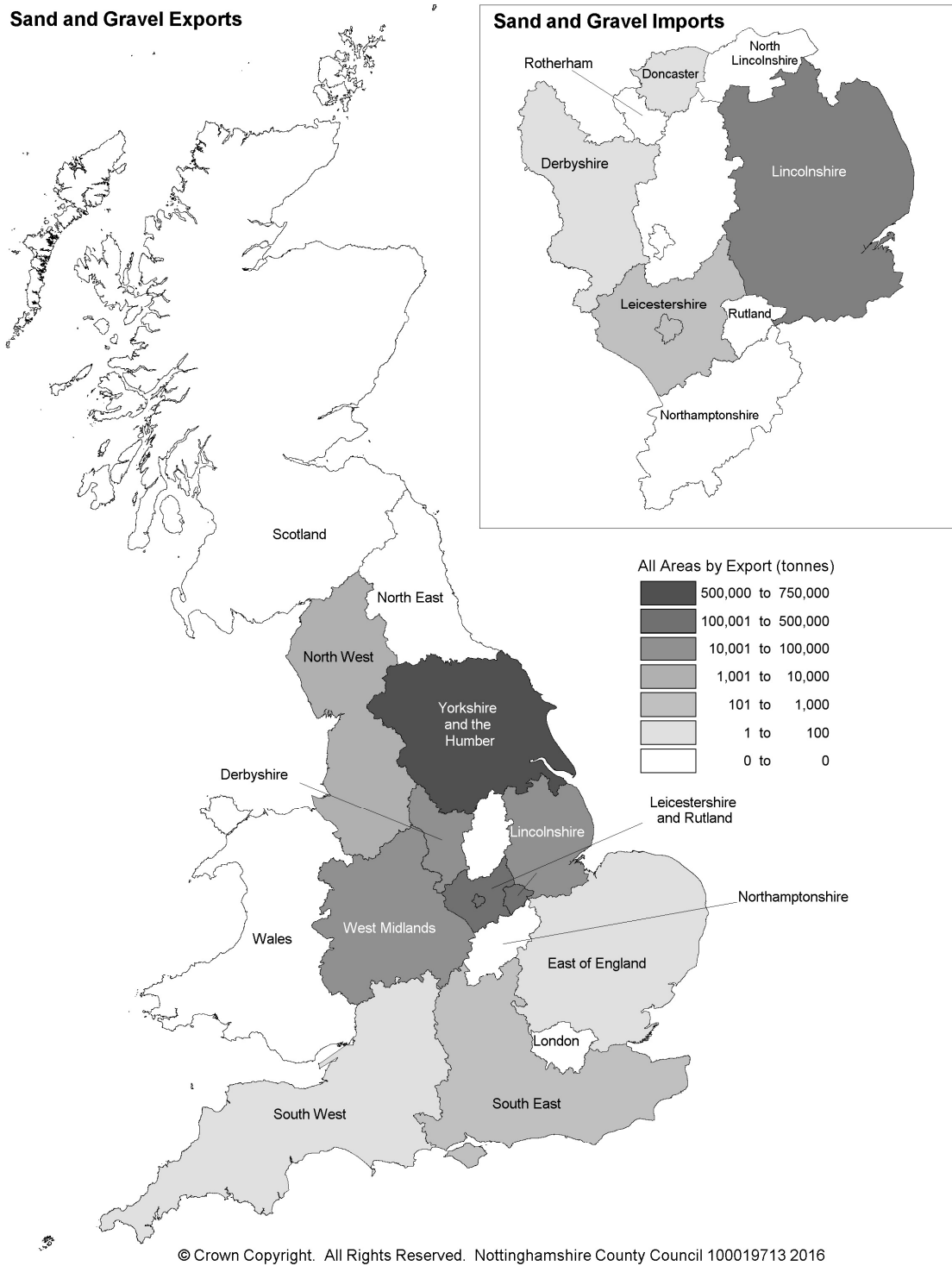
Imports and exports of sand and gravel (including Sherwood Sandstone)

- 3.10 Imports and exports of aggregates are only recorded as a one year snap shot every four years as part of the full surveys undertaken by the East Midlands Aggregate Working Party (EMAWP). The most recent full survey was undertaken in 2014. The surveys do not include a breakdown for Sherwood Sandstone, hence all sand and gravel import and export figures in this report include Sherwood Sandstone.
- 3.11 The amount of sand and gravel and Sherwood Sandstone known to be exported from Nottinghamshire is 1.07 million tonnes, or 60% of the total amount extracted (1.77 million tonnes). However an additional 210,000 tonnes is classified as having an unknown destination. If this 210,000 tonnes is also exported the figure rises to 72%. However it should be noted that the export figure in 2009 (the last time such data was collected) was 52% so it is considered more likely that this 210,000 tonnes actually served markets within Nottinghamshire.
- 3.12 The results of the 2014 full survey shows that Nottinghamshire exported approximately 400,000 tonnes to Rotherham and Doncaster making it the main export market followed by other neighbouring authorities in the East Midlands¹. This is due to limited resources elsewhere and the quality of the gravel that meets the specifications for making high strength concrete. However some is transported a much greater distance. See Figure 4.
- 3.13 Imports of sand and gravel from elsewhere in the East Midlands were lower compared to the amount extracted from the County's own quarries. However, the amount imported still totalled approximately 530,000 tonnes. It is likely that these imports supply markets close to the county boundary.
- 3.14 Given the relatively low value and bulky nature of aggregates, transport forms a major part of its cost. As a result the distance minerals can be economically transported by road is relatively limited. National figures identify the average distance travelled in 2016 was 30 miles². No data is available at the local level.

¹ Source: Aggregate Minerals Survey 2014, conducted by the Department of Communities and Local Government

² Minerals Products Association

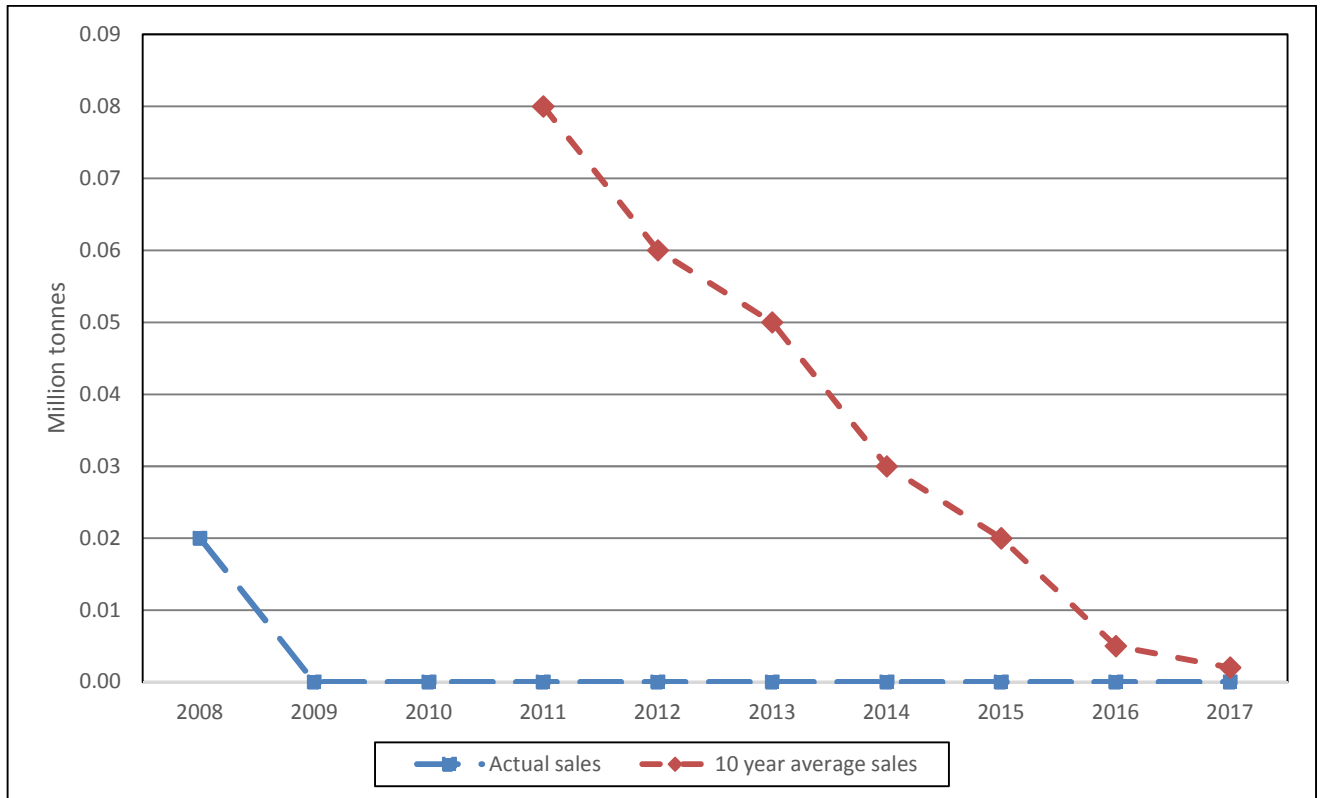
Figure 4: Sand and gravel (including Sherwood Sandstone) imports and exports to and from Nottinghamshire, 2014 (tonnes)



Crushed rock (including aggregate limestone)

3.15 Crushed rock sales (predominately aggregate limestone) in Nottinghamshire have stood at zero over the majority of the 10 year period. This lack of sales has continued in 2017. (see figure 5 below).

Figure 5: Sales of aggregate limestone, 2008-2017 against 10 year average sales figure. (Figures in million tonnes)



Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Sales (million tonnes)	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Resources and landbank

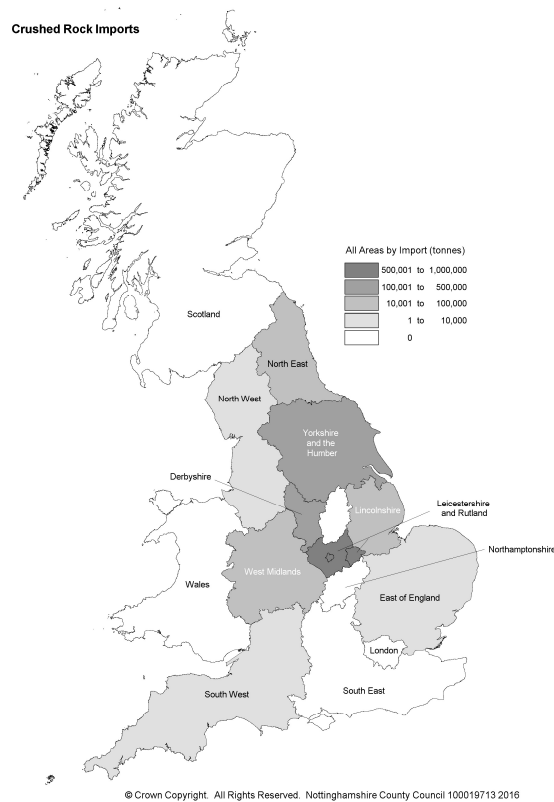
3.16 Nottinghamshire only has one dedicated aggregate limestone quarry (at Nether Langwith). The quarry was originally opened to supplement a much larger quarry in Derbyshire, however it has been mothballed since 2007. Some aggregate is also produced from reject stone at a building stone quarry at Linby although this tonnage is small. Given that no aggregate is currently being worked, the landbank is theoretically increasing rapidly, however this figure should be used with caution. Permitted reserves currently total 3.34 million tonnes, with average sales over the last 10 years standing at

0.002 million tonnes. Therefore, as of December 2017 the landbank stood at 1670 years. This is significantly above the minimum of 10 years and will continue to increase rapidly whilst Nether Langwith quarry remains dormant.

Imports and exports of crushed rock

- 3.17 Limestone resources in Nottinghamshire and Nottingham are relatively limited therefore the majority of crushed rock is imported. The 2014 Full East Midlands Annual Minerals Survey states that 1.26 million tonnes of crushed rock were imported into Nottinghamshire, whilst no mineral was exported.
- 3.18 The survey identified Leicestershire, Derbyshire (including the Peak District National Park Authority) and Yorkshire and Humberside (predominately Doncaster Metropolitan Borough Council) as the main sources of crushed rock.
- 3.19 The Leicestershire LAA states that adequate reserves are available to meet expected future demand over the plan period. The Derbyshire LAA also states that adequate reserves remain available to meet expected future demand from outside Derbyshire. This takes into account the reduction in output from the Peak District National Park. The Doncaster and Rotherham LAA identifies a 33-year landbank for crushed rock based on 2015 figures. The Humber LAA (2017) also states that adequate reserves remain, with a 9.4 year landbank for crushed rock.

Figure 6: Crushed rock imports into Nottinghamshire, 2014 (tonnes)



Source: East Midlands Aggregate Working Party 2014

Alternative aggregates

- 3.20 Production figures for secondary and recycled aggregates are limited to national estimates. Since 1980 there has been a significant increase in annual alternative aggregate production in Great Britain (GB), rising from 20 million tonnes to a high of 71 million tonnes in 2007 (25% of total aggregates sales). Sales of recycled aggregates also fell in line with the sales of primary aggregates and production as a result of the recession. In 2016 sales of recycled aggregates was 66.9 million tonnes (29% of total aggregates sales)³. Despite this, Britain is still the best in Europe for recycling aggregates and it is estimated that alternative aggregates use in GB is around three times higher than the European average.
- 3.21 The British Geological Survey and Minerals Products Association acknowledge that further significant growth is likely to be limited due to the high levels that are already being recycled along with changing construction methods which are also likely to reduce the availability and quality of these materials in the future.
- 3.22 Local data for alternative aggregates is very limited however the main types of alternative aggregates in Nottinghamshire are set out below:

Power station ash

- 3.23 Fly ash and furnace bottom ash (FBA) from power stations can be used as alternatives to virgin aggregates in the manufacture of concrete, cement and other construction materials. Nottinghamshire has three power stations which produce around 1.7 million tonnes of ash each year⁴. There is limited local information as to how much of the ash is sold, but nationally around 70 per cent of total fly ash and 100 per cent of FBA produced in 2014 was sold for use in construction products and engineering materials. The remaining material is often stored in stockpiles and can be sold at a later date⁵.
- 3.24 As all of Britain's coal fired power stations are set to close by 2025 and be replaced with other types of power generation, the availability of power station ash is likely to fall significantly in the future.

Construction and demolition waste

- 3.25 Construction and demolition waste is made up of a range of materials including rubble, metals, glass, plastic and other construction materials.
- 3.26 National estimates suggest that around 80-90% of construction and demolition waste is re-used or recycled. Old concrete and rubble is often crushed on site using mobile processing plant and used in situ as bulk fill. The remainder of the materials such as metal is taken off site and sent to be processed elsewhere.

³ Minerals Products Association – The Mineral Products Industry at a Glance 2016

⁴ East Midlands Aggregate Working Party - Annual Survey and Report 2014

⁵ UK Quality Ash Association

- 3.27 There are no up to date figures for the amount of construction and demolition waste generated in Nottinghamshire but estimates suggest that around 1 million tonnes was produced in 2010/11⁶.
- 3.28 There are currently 15 dedicated aggregates recycling facilities which have a maximum permitted capacity of 1.1 million tonnes. There are also 22 general transfer facilities which are able to handle construction and demolition waste but no separate data on capacity is available.
- 3.29 Worn out rail ballast is taken by rail to recycling centres for crushing into aggregate. As this material comprises high quality limestone or granite it can be re-processed for high-grade uses. There are approximately 7 rail ballast recycling sites across the country. One of these is located at Toton railway sidings in Stapleford. Table 4 sets out annual throughputs.
- 3.30 Road planings produced as a result of highway resurfacing schemes can be used as a recycled aggregate to form a range of surfaces such as car parks, driveway or tracks. The availability of this material will vary depending on the level of highway maintenance being carried out at any given time (these figures are already included in table 5 below).
- 3.31 Table 5 sets out estimates for the amount of inert waste (considered suitable for recycled aggregates) that has passed through permitted recycling and transfer facilities in Nottinghamshire⁷. The figures show that over the 10 year period, throughput hit a low in 2010 before steady increasing to 2015.

Table 5: Throughputs of inert waste (considered suitable for recycled aggregates) at permitted recycling and transfer facilities.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Ballast recycling facility, Toton. (million tonnes)	0.21	0.31	0.26	0.18	0.05	0.11	0.10	0.13	0.15	0.13
All other sites (million tonnes)	0.26	0.09	0.08	0.20	0.08	0.10	0.21	0.28	0.32	0.34
Total (million tonnes)	0.47	0.40	0.34	0.38	0.13	0.21	0.31	0.41	0.47	0.47

⁶ Data sourced from Local estimate based on national data contained in the Waste Resources Action Programme Study of construction, demolition and Excavation Waste Arisings, use and Disposal for England.

⁷ Data sourced from the Environment Agency Waste Data Interrogator

- 3.32 No sales data exists for specific types of recycled or secondary aggregates. However, as these types of aggregates are available on the open market, their contribution is already taken into account when calculating future demand for primary aggregates.
- 3.33 Planning policies relating to recycled and secondary aggregates can be found in the Nottinghamshire & Nottingham Waste Core Strategy (adopted December 2013).

Local production conclusion

- 3.34 Compared to historic (pre-2007) sales of sand and gravel and Sherwood Sandstone, the 2017 sales data clearly reflects the continued subdued nature of sales from Nottinghamshire. The figures also reflect the lack of new quarries becoming active which would have replaced worked out quarries
- 3.35 At the end of 2017, Nottinghamshire's sand and gravel landbank was above the 7 year minimum requirement and has steadily been increasing in recent years. With Permitted reserves remaining relatively stable and the 10 year sales average continuing to fall, this has resulted in the increase to the landbank. Further reserves will, however, need to be released over the life of the Minerals Local Plan to 2036, as existing quarries are worked out, and so ensure Nottinghamshire has a steady and adequate supply for future mineral provision.
- 3.36 Exports of both sand and gravel and Sherwood Sandstone are likely to remain a significant proportion of sales. This trend is likely to continue over the next plan period as sand and gravel resources, particularly those in Rotherham and Doncaster are limited.
- 3.37 At the end of 2017, Nottinghamshire had sufficient permitted reserves of Sherwood Sandstone to meet the 7 year minimum landbank. Further reserves will, however, need to be released over the life of the Nottinghamshire Minerals Local Plan to 2036, as existing quarries are worked out.
- 3.38 Crushed rock sales remain at zero with the county's needs being met by imports from adjoining counties. At the end of 2017, the landbank was technically well above the minimum 10 year landbank, however this figure should be treated with caution as sales have been at zero for a number of years.
- 3.39 Recycled and secondary aggregates continue to play an important role in meeting wider aggregate demand, however the ability of recycled aggregates to replace primary aggregates will be dependent on a range of issues such as availability, cost, and the technical specifications required for specific end uses. As these types of aggregates are available on the open market, their contribution is already taken into account when calculating future demand for primary aggregates.

Future Aggregate Provision

- 4.1 In order to provide a steady and adequate supply of aggregates over the plan period, the NPPF states that a LAA should be prepared based on the last 10 years average sales data and taking into account any important local considerations and national and sub national guidelines.

National and Sub-National Aggregate Guidelines

- 4.2 Prior to the introduction of the NPPF, the supply of land-won aggregates in England was based on national and sub national guidelines for aggregates provision published by the Department for Communities and Local Government (DCLG). The most recent guidelines covering the period 2005-2020 were published in 2009.
- 4.3 The East Midlands Aggregate Working Party used these guidelines to produce draft apportionment figures for each MPA. The figures were then approved by the East Midlands Regional Assembly in 2010 and were to be incorporated into the Regional Plan via the review process. However due to the abolition of the Regional Spatial Strategy the figures were never adopted.
- 4.4 The guidelines for the East Midlands stood at 174 million tonnes for sand and gravel and 500 million tonnes for crushed rock over the 2005-2020 period. For Nottinghamshire the guidelines were equivalent to 3.81 million tonnes per annum (a combined figure for sand and gravel and Sherwood Sandstone).
- 4.5 It was decided at the Aggregate Working Party meeting in February 2013 that the draft 2009 figures were considered 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.
- 4.6 Long term demand for aggregates to be provided for in the Minerals Local Plan will be reviewed annually through the LAA using the 3 and 10 year sales averages as the key evidence base specifically monitoring trends. Annual monitoring of the Local Plan will also take place based on the updates to the LAA and if required early review may be necessary.

Sand and gravel provision

- 4.7 The biggest planning issue for Nottinghamshire and Nottingham is the long term provision of sand and gravel over the plan period.
- 4.8 Based on the most recent data, the 10 year average figure stands at 1.53 million tonnes. This figure has steadily fallen since the first LAA was produced in 2013 and reflects the greater influence of the recession and continued lower level of economic output over the most recent 10 year period. The three year average figure has also slowly fallen since the first LAA was produced and stands at 1.36 million tonnes. Table 6 sets out the average production figures.

Table 6: Sand and Gravel average sales figures

	2013 LAA (2002-2011)	2014 LAA (2003-2012)	2015 LAA (2004-2013)	2016 LAA (2005-2014)	January 2017 LAA (2006-2015)	October 2017 LAA (2007-2016)	Current LAA (2008-2017)
10 year average sales (million tonnes)	2.58	2.43	2.24	2.05	1.89	1.7	1.53
	(2009-2011)	(2010-2012)	(2011-2013)	(2012-2014)	(2013-2015)	(2014-2016)	(2015-2017)
3 year average sales (million tonnes)	1.51	1.61	1.55	1.46	1.45	1.4	1.36

Resource depletion in the Idle Valley and the north of the County

- 4.9 The Idle Valley, located in the north of the County, has a long history of sand and gravel extraction. Traditionally a large proportion of this, 30%, has supplied markets in Rotherham and Doncaster due to its close proximity and limited mineral reserves elsewhere.
- 4.10 Resource depletion is now starting to limit output, and since 2006 the number of active quarries has fallen from 8 to 5. This has seen output fall from around 1.2 million tonnes in 2006 to around 500,000 tonnes in 2017. Some of the reduction in output is due to the delay in implementing the permitted quarry at Sturton Le Steeple.
- 4.11 The impact of resource depletion in the Idle Valley on the Rotherham and Doncaster markets is discussed further in the following chapter.

Marine won sand and gravel

4.12 Marine won sand and gravel is not used in Nottinghamshire due to the availability of locally sourced land won material and the high costs involved in transporting the mineral long distances. It is therefore assumed that marine sources are not a significant issue for Nottinghamshire and will therefore not form part of this assessment.

Sherwood Sandstone provision

4.13 Sherwood Sandstone sales are much lower than sand and gravel and historically have been in steady decline. The most recent 10 year average figure reflects the long term decline and the greater influence of the low level of economic output and stands at 0.36 million tonnes. The 3 year average figure has remained stable and stands at 0.33 million tonnes. Table 6 sets out average sales figures.

Table 6: Sherwood Sandstone average sales figures

	2013 LAA (2002-2011)	2014 LAA (2003-2012)	2015 LAA (2004-2013)	2016 LAA (2005-2014)	January 2017 LAA (2006-2015)	October 2017 LAA (2007-2016)	Current LAA (2008-2017)
10 year average sales (million tonnes)	0.46	0.44	0.42	0.40	0.39	0.37	0.36
	(2009-2011)	(2010-2012)	(2011-2013)	(2012-2014)	(2013-2015)	(2014-2016)	(2015-2017)
3 year average sales (million tonnes)	0.33	0.34	0.35	0.35	0.37	0.35	0.33

4.14 No additional specific local factors have been identified when considering the future apportionment for Sherwood Sandstone.

Crushed rock (limestone) provision

4.15 Crushed rock (limestone) is only worked from one quarry in Nottinghamshire and production has been limited due to the seasonal working of the site and abundance of limestone worked in Derbyshire and Leicestershire.

4.16 The most recent 10 year average figure is 0.002 million tonnes which reflects sales earlier in the 10 year period. The 3 year average figure is 0.00 million tonnes (see Table 7).

Table 7: Crushed rock average sales figures

	2013 LAA (2002-2011)	2014 LAA (2003-2012)	2015 LAA (2004-2013)	2016 LAA (2005-2014)	January 2017 LAA (2006-2015)	October 2017 LAA (2007-2016)	Current LAA (2008-2017)
10 year average sales (million tonnes)	0.08	0.06	0.05	0.03	0.02	0.005	0.002
	(2009-2011)	(2010-2012)	(2011-2013)	(2012-2014)	(2013-2015)	(2014-2016)	(2015-2017)
3 year average sales (million tonnes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Future provision

- 4.17 A pre-cast concrete factory was built near Worksop in 2009 and produces concrete structures on site for delivery and installation at construction sites. The factory uses crushed limestone as part of the production process.
- 4.18 No recent data on consumption is available however this was previously around 40,000 tonnes per annum. The factory is currently supplied by quarries in Derbyshire as the only limestone quarry in Nottinghamshire is mothballed.

Future aggregate provision conclusion

- 4.19 National guidance states that consideration should be given to the national and subnational demand forecasts, however these are now considered out of date as they were based purely on a period of economic growth over a shorter timescale than the 10 year sales average stated in the NPPF.
- 4.20 The 10 year sales average for sand and gravel continues to fall as a greater period of recession data is taken into account and current quarrying output in Nottinghamshire remains flat. The 3 year average sales figures have shown a small but steady decline indicating sales have not increased in the last three years. Based on current sales data, it is considered appropriate to base future provision for sand and gravel on the 10 year sales average.
- 4.21 The 10 years sales average for Sherwood Sandstone has slowly fallen, although it remains more stable than sand and gravel sales. The 3 year average is much closer to the 10 year average and has remained generally flat indicating steady sales. Based on the current sales data, it is considered appropriate to base future demand for Sherwood Sandstone on the 10 year average.

- 4.22 Crushed rock sales remain at zero as the majority of material used in Nottinghamshire is imported from adjoining authorities. Based on the current sales data it is not considered necessary to identify additional reserves.
- 4.23 Resource depletion in the Idle Valley along with continued demand from Rotherham and Doncaster will remain a long-term issue, however in the short term adequate reserves remain.
- 4.24 The potential use of marine sourced sand and gravel is not a significant issue for Nottinghamshire due to the availability of locally sourced land won mineral and the significant additional cost in transporting marine sourced minerals greater distances.

Future Growth

National Infrastructure Projects identified for Nottinghamshire

- 5.1 The 2016 National Infrastructure Plan identified two infrastructure schemes for Nottinghamshire; the Midland Mainline electrification (MME) programme estimated to start in 2019 and the A1/A46 junction improvements near Newark estimated to start between 2020 and 2025. However, in July 2017 the Department for Transport announced that the MME from Kettering to Leicester, Derby and Nottingham has been cancelled. The A1/A46 junction improvements have also been put back to around 2027.
- 5.2 Another National project within the area is the High-Speed Rail 2 line (HS2), with the proposed phase 2b route passing along the western boundary of the county and the East Midlands Hub, located at Toton, also falling within the county area. Construction is expected to begin in 2024, though this is subject to change. At this stage it is difficult to quantify the amount of aggregates for the section of the line in Nottinghamshire, with estimates of 30-40 million tonnes of aggregates for the phase 2b of the HS2 project.
- 5.3 On the boundary of Nottinghamshire is the East Midlands gateway Rail Freight Interchange, located near East Midlands Airport at Junction 23a of the M1. This National Infrastructure project began construction in 2016 and comprises of 10 warehouse units, a rail freight terminal and the construction of the Kegworth Bypass. The quantifiable amount of minerals required for the site and from Nottinghamshire is unknown.
- 5.4 It is likely that the schemes above will increase demand for minerals in Nottinghamshire. However, given the current lack of detail, the amount of minerals required is uncertain. Future LAAs will continue to monitor progress on these schemes and update the LAA as necessary.

Annual Minerals Raised Inquiry survey

- 5.5 The Annual Minerals Raised Inquiry (AMRI) survey is an annual survey undertaken by the Office for National Statistics which collects, collates and publishes a comprehensive set of statistics for the production of minerals. The survey covers all mineral working sites across the whole of Great Britain. The most recent version was published in March 2016 and includes 2014 data.
- 5.6 The data contained in the previous versions of the AMRI show that national sales of sand and gravel hit a low in 2012 of just over 50 million tonnes, however sales have increased since, and in 2014 stood at just over 56 million tonnes. Sales of crushed rock hit a low of just under 91 million tonnes in 2012, however sales have increased since, and in 2014 stood at just under 105 million tonnes.
- 5.7 The AMRI since 2016 has been discontinued with Prodcorn now collating information on other mining and quarrying data. In their 2017 provisional results, sales in other mining and quarrying had risen by £0.2 billion, increasing from £1.9 billion in 2016 to £2.1 billion in 2017.

East Midlands Aggregates Working Party – Annual Monitoring Report 2017

- 5.8 The EMAWP Annual Monitoring Report collates data relating to aggregates sales for each Minerals Planning Authority in the East Midlands. (The sales data for Nottinghamshire has been used in this report). Prior to the recession, in 2007 sand and gravel sales in the East Midlands stood at 8.91 million tonnes before falling to a low of 5.5 million tonnes in 2009 as a result of the recession. Since 2009 sales have steadily increased standing at 6.95 million tonnes in 2016. Sales in 2017 fell slightly to 6.79 million tonnes.
- 5.9 Although Nottinghamshire produces very little crushed rock, it is useful to monitor sales across the East Midlands as a wider indicator of demand. In 2007 crushed rock sales stood at 30.7 million tonnes. Unlike sand and gravel, sales did not reach a low point until 2012 when sales stood at 19.74 million tonnes. Between 2012 and 2016 sales steadily increased standing at 28.11 million tonnes in 2016. 2017 increased slightly by 1% to 28.41 million tonnes.

Population forecasts

- 5.10 The population of Nottinghamshire (the geographic County, including Nottingham City) is expected to grow from 1.14 million in 2017 to 1.25 million in 2036 (Minerals Local Plan period) based on 2014 Office of National Statistics data. Development associated with this growth is likely to be focused around the existing major urban areas of the Nottingham conurbation, Newark and Mansfield, however it is difficult to make direct comparisons between population growth and minerals use.

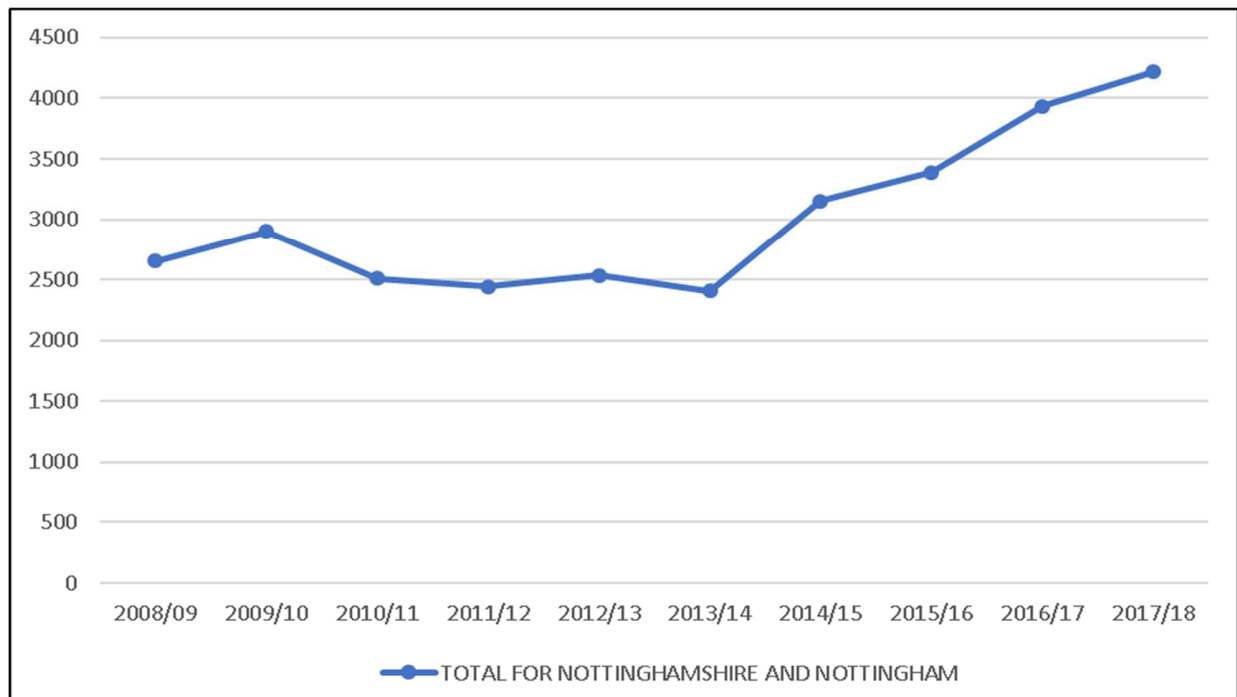
House building

- 5.11 The current government has a key objective to ensure that there is an adequate provision of housing across the country to resolve the housing crisis. Within Nottinghamshire, the seven District and Borough's within their Local Plans/core strategies along with Nottingham City Council Local Plan must ensure that the identified local housing needs are being met and will be in the future.
- 5.12 Based on the most recent 10 year housing trajectory data available from the districts (table 8) house building rates in Nottingham and Nottinghamshire are forecasted to peak in 2020/2021 at 8025 before steadily falling back to 3031 in 2027/2028.
- 5.13 Housing completions for the past 10 years are set out in Fig 7 and show an increase in completions in recent years. These figures are likely to reflect the local economic conditions and will be monitored against the 10 year trajectories.

Table 8: 10-year housing trajectories

	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2025/ 2026	2026/ 2027	2027/ 2028
Ashfield	177	124	599	753	463	323	221	210	111	60
Bassetlaw	322	747	603	628	425	192	121	114	54	40
Broxtowe	293	557	1079	1019	768	1014	590	315	260	210
Gedling	590	805	932	1042	743	627	591	463	396	241
Mansfield	373	387	402	353	319	263	211	204	192	137
Newark	523	547	651	920	820	791	692	607	600	650
Nottingham City	1714	2064	2552	1428	920	842	953	1155	1116	984
Rushcliffe	703	1032	1207	1446	1314	1292	1151	885	710	709
TOTAL	4695	6263	8025	7589	5772	5344	4530	3953	3439	3031

Figure 7: Housing completions in Nottinghamshire



5.14 During the construction of new houses, a range of aggregate minerals will be consumed including sand and gravel for uses such as concrete, Sherwood Sandstone for mortar, clay for bricks and tiles along with crushed rock for more general construction uses. Data from the Minerals Products Association estimates that a typical new house uses up to 50 tonnes of aggregates, although the actual quantities for each type of aggregate are unclear. It is also worth noting that the Minerals Products Association estimate that new house building only accounts for around 20% of overall aggregate consumption.

Future demand from the Rotherham and Doncaster markets

- 5.15 The Rotherham and Doncaster Local Aggregates Assessment 2017 states that whilst its sand and gravel landbank stands at 29 years there are limited reserves of sharp sand remaining in the area, with this only being 23% of the landbank and that current permitted reserves may not be adequate to cover the plan period to 2028. Therefore, the authority will continue to rely on the import of sand and gravel from Nottinghamshire and other neighbouring authorities.
- 5.16 Given that Nottinghamshire has traditionally supplied a large proportion of sand and gravel to the Rotherham and Doncaster markets from the Idle Valley and North Nottinghamshire, their future requirements are unlikely to be completely new demand and this has been taken into account as part of the 10 year average sales figures. It is likely that in the short term, output from the Idle Valley and north Nottinghamshire will be maintained at current levels from existing permitted reserves.
- 5.17 A planning permission at Sturton Le Steeple with an estimated output of 500,000 tonnes per annum (including circa 150,000 tonnes per annum potential river barge transportation) was formally implemented in the first half of 2017 but has yet to come into active production due to delays in installing site infrastructure. If this quarry was fully operational it would provide a valuable long term source of sand and gravel to supply North Nottinghamshire and the Rotherham and Doncaster markets for approximately 20 years.
- 5.18 A call for sites exercise was undertaken as part of the new Minerals Local Plan evidence base which identified any remaining sand and gravel reserves in the Idle Valley that the industry wishes to be considered for allocation.
- 5.19 Longer term, output from the Idle Valley is likely to fall as the remaining resources are used up and this will be monitored through the LAA process. If sand and gravel from Nottinghamshire continues to supply this market in the longer term, it would need to be sourced from the Trent Valley close to Newark, a significantly greater distance from the markets. In this latter scenario other resources outside of Nottinghamshire may start to become increasingly viable for South Yorkshire markets, however at this stage it is difficult to predict the extent of this.
- 5.20 Paragraph 73 of the draft Rotherham and Doncaster 2016 LAA also notes that in 2014 half the crushed rock sales in the Boroughs were used for concreting aggregate, identifying a potential transition away from sharp sand to crushed rock for concreting products. If this is the case this could reduce the long term demand for sharp sand for concreting purposes.

Future demand from Leicestershire

- 5.21 The Leicestershire Minerals and Waste Local Plan identifies a sand and gravel shortfall of 13.57mt over the plan period to 2031. However only 7.2mt has been identified in the plan. As a result additional sand and gravel will need to be sourced from either unallocated quarries across Leicestershire or from reserves outside the county.

- 5.22 Some sand and gravel is already exported from Nottinghamshire to Leicestershire and at the last full survey (in 2014) it stood at 121,000 tonnes.
- 5.23 In the future additional sand and gravel from Nottinghamshire could potentially serve Leicestershire, however at this stage it is difficult to quantify the amount as it will depend on the actual shortfall in the future and the amount of sand and gravel being supplied by other Mineral Planning Authorities such as Lincolnshire and Derbyshire.
- 5.24 It is important to note the LAA is reviewed annually and an Annual Monitoring Report is prepared by the County Council to monitor the effectiveness of the Local Plan.

Future growth conclusion

- 5.25 National sales of aggregates (up to 2014) have steadily increased since the low experienced in 2012. This has also been the case (up to 2017) across the East Midlands area. This would suggest that demand for aggregates is increasing across the board however this is not the case in Nottinghamshire as sales have remained flat in 2017. The reasons for this have been set out earlier in the document.
- 5.26 No additional infrastructure projects have been identified since the last LAA was published. The existing projects include HS2 rail project and the East Midland Freight depot and the A46/A1 road improvements. Although these projects are likely to increase demand for aggregate, it is not possible at this stage to quantify the amount of additional aggregates that are likely to be needed from within the County.
- 5.27 The population of Nottinghamshire is expected to increase steadily over the plan period potentially increasing demand for the supply of aggregates although it is not possible to quantify this. Planned house building rates across Nottinghamshire are forecast to increase up to 2020/2021 before steadily falling to 2027/2028, however this should be monitored against actual housing completions as these will better reflect the health of the economy. House building is likely to contribute to overall demand for aggregates although it is just one element that needs to be considered.
- 5.28 Demand for sand and gravel from Rotherham and Doncaster is likely to continue into the future as sand and gravel resources are limited in this area. Remaining reserves within the Idle Valley will meet short term demand, however in the long term as this sand and gravel resource becomes worked out, sand and gravel will have to be transported further from elsewhere.
- 5.29 Demand for additional sand and gravel from Leicestershire may increase in the future, however at present its unclear as to the quantities that maybe needed and the timescales for this. To a certain extent demand will also depend on future economic conditions.
- 5.30 Based on the information available, it is not considered necessary to identify additional aggregate reserves to meet future growth over the plan period.

Conclusion

- 6.1 The provision of sand and gravel is the biggest issue for Nottinghamshire and Nottingham over the plan period. The 10 year sales average has fallen from 1.7 million tonnes in the LAA published in 2013 to 1.53 million tonnes in this LAA. This is largely due to the fall in sales due to the recession in 2007 and the continued subdued sales since, even though significant sand and gravel resources remain in the Trent Valley.
- 6.2 Additional reserves will need to be identified over the plan period to 2036 to replace existing quarries as they are worked out. As a result of the call for sites undertaken as part of the preparation of the new Minerals Local Plan a mix of extensions to existing permitted quarries and new quarries have been identified in the draft plan consultation document.
- 6.3 No major infrastructure projects are planned in the short term, however longer term, the proposed route of the HS2 and the potential highway improvements to the A46/A1 junction and the A46 near Newark could increase demand for aggregates. An increase in house building is forecast, however, housing completion rates are likely to be more unpredictable as they will be dependent on the economy.
- 6.4 Resource depletion in the Idle Valley is likely to be the biggest factor potentially influencing exports to South Yorkshire. The extent of the impact will depend on the level of demand, due to economic conditions and the increasing trend of replacing sharp sand with crushed rock in concreting products. However, it is likely that sand and gravel will either be sourced from quarries around Newark or from other areas outside of Nottinghamshire that may be closer.
- 6.5 Demand for additional sand and gravel from Leicestershire may increase in the future however at present its unclear as to the quantities that maybe needed and the timescales for this. To a certain extent demand will also depend on future economic conditions. As a result this will be monitored through annual sales and future Aggregate Working Party full survey minerals movement data.
- 6.6 Sherwood Sandstone sales are much lower than sand and gravel sales but have also fallen over the plan period. Additional reserves will be needed over the plan period and as part of the draft mineral plan extensions to the existing permitted quarries have been identified.
- 6.7 The importation of crushed rock from adjoining areas to meet the County's needs is set to continue as limestone sales from Nottinghamshire remain at zero. The permitted but mothballed quarry at Nether Langwith contains permitted reserves and could be re-opened by the operator to meet additional demand in the future.

- 6.8 Recycled and secondary aggregates continue to play an important role in meeting wider aggregate demand, however the ability of recycled aggregates to replace primary aggregates will be dependent on a range of issues such as availability, cost, and the technical specifications required for specific end uses. As these types of aggregates are available on the open market, their contribution is already taken into account when calculating future demand for primary aggregates.
- 6.9 The LAA will be reviewed annually taking account of the most recent aggregate sales data and any other relevant local data. This will ensure that there is an adequate and steady supply of aggregate minerals provided over the plan period and that any fluctuations in future requirements can be addressed.