Lincolnshire Local Aggregate Assessment
(Reporting 2018 data)

December 2019

Tables

FIGURES

Figure 1: The county of Lincolnshire

Summary

The National Planning Policy Framework (NPPF) requires mineral planning authorities to plan for a steady and adequate supply of aggregates by preparing annual Local Aggregate Assessments (LAAs). Each LAA is required to:

- forecast the demand for aggregates based on both the rolling average of 10 years sales data and other relevant local information;
- analyse all aggregate supply options, as indicated by landbanks, mineral plan allocations and capacity data; and
- assess the balance between demand and supply, the economic and environmental opportunities and constraints that might influence the situation, and conclude if there is a shortage or a surplus of supply and, if the former, how this is being addressed.

This is the seventh LAA for Lincolnshire and includes the most recent published aggregate sales and reserves data for the county relating to 2018. It is also the fourth LAA to be produced since the first part of the Lincolnshire Minerals and Waste Local Plan (LMWLP), the Core Strategy and Development Management Policies document (CSDMP), was adopted in June 2016 and the third following the adoption of the Site Locations document (SLD) on 15 December 2017. The key points from this LAA are set out in the table at the end of this summary.

Sand and gravel

Lincolnshire currently has 12 sand and gravel quarries (excluding dormant sites). These are split between three production areas with three in the Lincoln/Trent Valley, four in Central Lincolnshire (including a site straggling the county boundary, but currently extracting reserves in North Lincolnshire) and five in South Lincolnshire. In 2018 sales for the county amounted to 2.32 million tonnes (mt), maintaining a recent rise in sales over the 10 year average for the period 2009 to 2018 (2.06mt). At a sub-county level, sales in 2018 were 1.13mt in the Lincoln/Trent Valley, higher than the 10 year average (0.97mt); 0.34mt in Central Lincolnshire, rising closer to the 10 year average (0.37mt); and 0.85mt in South Lincolnshire, higher than the 10 year average (0.73mt).

After considering local factors, national growth projections and recent production levels, it has been concluded that the calculation of landbanks should continue to be based on the rolling 10 year average sales. On this basis, the permitted reserves for the county of 19.67mt at the end of 2018 provided a landbank of 9.55 years. At a sub-county level, the reserves/landbanks were 8.16mt/8.5 years in the Lincoln/Trent Valley; 5.81mt/15.72 years in Central Lincolnshire; and 5.70mt/7.81 years in South Lincolnshire.

At the end of 2018, two planning applications involving the winning and working of sand and gravel were pending determination by the county council's Planning and Regulation Committee. These comprise:

- an application in the Lincoln/Trent Valley Production Area to extract 7mt of sand and gravel and to consolidate existing planning permissions (which has subsequently been approved subject to the completion of a section 106 agreement); and

- an application to extract 292,500 tonnes of sand and gravel for an agricultural reservoir in the South Lincolnshire Production Area.

Together with the remainder of sites allocated in the Site Locations document, there should be sufficient sand and gravel resources to last beyond the LMWLP period which extends to 2031.

Crushed rock

Lincolnshire produces both limestone and chalk crushed rock aggregate. Both have limitations as aggregate, but the use of chalk is particularly restricted. As a result the two minerals are considered separately.

There are currently 13 limestone quarries in the county (excluding dormant sites). In 2018 sales of limestone aggregate amounted to 1.28mt, significantly higher than the 10 year average (0.60mt). This increase is, in part, likely to reflect the short term increased demand associated with specific highways projects, for example the initial phases of construction of the A15 Lincoln Eastern Bypass which is due to be completed in 2020. There is, however, evidence to suggest that there has been some sustained growth in sales, in particular the three year average figure has reached 0.96mt and the sales distribution data demonstrates an increasing catchment area.

To reflect the higher level of demand, the method for calculating the landbank has been adjusted from that used in the last LAA (which calculated the landbank using the last 10-years average sales approach). Instead the landbank has been calculated using the last 3-years average sales. Using this approach, the permitted reserves of limestone (20.86mt) provide a landbank of 21.73 years. Although no sites have been allocated in the Site Locations Document, these reserves should last beyond the period of the Lincolnshire Minerals and Waste Local Plan.

There are currently two chalk quarries in the county (excluding dormant and suspended sites). In recent years no sales information has been provided for chalk sales. Annual sales are still estimated by the council to be below 80,000 tonnes with estimated reserves of 5.07mt. These figures would give a landbank in excess of 63 years. As with limestone, no sites have been allocated for the extraction of chalk in the SLD.

Summary of Findings							
	2019 sales (mt)	**10-year average sales (mt)**	**3-year average sales (mt)**	**Comparison of 3-year average to 10-year average**	**Provision rate set by this LAA (mt)**	**Permitted reserves (million tonnes)**	**Land-bank (years)**
Sand and gravel (land won) - county total	2.32	2.06	2.29	↑ (increase 10-20%)	2.06	19.67	9.55
Lincoln/Trent Valley Production Area	1.13	0.96	1.15	↑ (increase 10-20%)	0.9	8.6	8.50
Central Lincolnshire Production Area	0.34	0.37	0.31	↓ (decrease 10-20%)	0.37	5.81	15.72
South Lincolnshire Production Area	0.85	0.73	0.83	↑ (increase 10-20%)	0.73	5.70	7.81
Limestone (crushed rock aggregate)	1.28	0.60	0.96	🡅 (increase >20%)	0.96	20.86	21.73

Key:

←→ Sales relatively level (<10% change)

↑ Moderate increase in sales (10-20%)

↓ Moderate decrease in sales (10-20%)

🡅 Significant increase in sales (>20%)

🡇 Significant decrease in sales (>20%)

Introduction

1.1 The National Planning Policy Framework (NPPF) requires an annual **Local Aggregate Assessment (LAA)** to be produced by mineral planning authorities in order to plan for a steady and adequate supply of aggregates.

1.2 This document is the LAA for the county of Lincolnshire. It is the seventh time that a LAA has been prepared for Lincolnshire. The LAA sets out the current supply and demand for aggregates in the county and indicates the provision that will be needed in order to ensure that Lincolnshire continues to make an appropriate contribution to the steady and adequate supply of aggregates. Revised LAAs will be produced annually as part of the Lincolnshire Minerals and Waste Local Plan monitoring procedures.

National Planning Policy Framework

1.3 The National Planning Policy Framework (NPPF) states that mineral planning authorities should plan for a steady and adequate supply of aggregates by:

- preparing an annual LAA, 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);
- participating in the operation of an aggregate working party and taking the advice of that party into account when preparing their LAA;
- making provision for the land-won and other elements of their LAA in their mineral local plans taking account of the advice of the aggregate working parties and the National Aggregate Co-ordinating Group as appropriate. Such provision should take the form of specific sites, preferred areas and/or areas of search and locational criteria as appropriate;
- taking account of published national and sub national guidelines on future provision which should be used as a guideline when planning for the future demand for and supply of aggregates;
- using landbanks of aggregate minerals reserves principally as an indicator of the security of aggregate minerals supply, and to indicate the additional provision that needs to be made for new aggregate extraction and alternative supplies in mineral plans;
- making provision for the maintenance of landbanks of at least seven years for sand and gravel and at least 10 years for crushed rock, whilst ensuring that

the capacity of operations to supply a wide range of materials is not compromised. Longer periods may be appropriate to take account of the need to supply a range of types of aggregates, locations of permitted reserves relative to markets, and productive capacity of permitted sites;
- ensuring that large landbanks bound up in very few sites do not stifle competition; and
- calculating and maintaining separate landbanks for any aggregate materials of a specific type or quality which have a distinct and separate market.

National and regional guidelines

1.4 For over 40 years, geographical imbalances in the occurrence of suitable natural aggregate resources and the areas where they are needed have been met through the Managed Aggregate Supply System (MASS). The underpinning concept behind MASS is that mineral planning authorities which have adequate resources of aggregates make an appropriate contribution to national as well as local supply. Government guidance on the MASS is set out in the Government's online Planning practice guidance (PPG). This states that mineral planning authorities are expected to prepare LAAs to assess demand for and supply of aggregates. These should contain three elements:

- a forecast of the demand for aggregates based on both the rolling average of 10-years sales data and other relevant local information;
- an analysis of all aggregate supply options, as indicated by landbanks, mineral plan allocations and capacity data e.g. marine licenses for marine aggregate extraction, recycled aggregates and the potential throughputs from wharves. This analysis should be informed by planning information, the aggregate industry and other bodies such as local enterprise partnerships; and
- an assessment of 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 a surplus of supply and, if the former, how this is being addressed.

1.5 The PPG lists sources of information that may assist in the preparation of a LAA, which includes published national and sub national guidelines on aggregate provision.

1.6 Prior to the publication of the NPPF, national aggregate policy was set out by the Government in Mineral Policy Statement 1, which required mineral planning authorities to make provision for the sub-regional apportionment of the National and Regional Guidelines for Aggregate Provision 2005-2020, which was most recently updated in June 2009. The 2009 guidelines required the East Midlands

region to provide 500mt of crushed rock, 174mt of sand and gravel, and 110mt of alternative materials between 2005 and 2020.

1.7 On 8 January 2010, the **East Midlands Aggregates Working Party (EMAWP)** agreed to recommend a basis for apportioning the regional guidelines between the counties within the East Midlands together with the Peak District National Park for inclusion in the East Midlands Regional Plan. This **Sub-Regional Apportionment (SRA)** was based on the average of the past seven years sales (2001-2007), expressed as a percentage share of regional sales. For Lincolnshire, this would require the county to provide 52.5mt of sand and gravel and 18mt of crushed rock (limestone) from 2005 to 2020 – amounting to an average of 3.28mt of sand and gravel and 1.1mt of crushed rock (limestone) each year over this 16-year period.

1.8 At its meeting on 5 March 2010, the East Midlands Regional Assembly's Housing, Planning & Transport Joint Board subsequently agreed that the revised SRA figures be included in the draft replacement regional plan policies for submission to the Secretary of State. The Partial Review was submitted to the Secretary of State on 26 March 2010 as a Revised Draft East Midlands Regional Plan. However this was not progressed following the Secretary of State's decision to revoke Regional Spatial Strategies (RSS) on 6th July 2010. As a result, the SRA figures were not subject to any formal examination.

1.9 At the meeting of the EMAWP in February 2013, doubts were expressed about the validity of the 2009 Guidelines. It was considered that the figures were out of date as they were only based on aggregate output from a period of economic growth, and that they should not be taken into account in identifying future levels of provision. It was further agreed that future levels of provision be based on a rolling average of 10 years sales data and other relevant local information, in accordance with the NPPF.

1.10 Although the SRA is considered to be out of date, it is still referred to in this LAA as it is a requirement of the NPPF to have regard to the latest national and sub-national guidelines in future provision.

Lincolnshire Minerals and Waste Local Plan

1.11 The **Lincolnshire Minerals and Waste Local Plan (LMWLP)** covers the period up to the end of 2031 and has been prepared in two parts. The first part, **the**

Core Strategy and Development Management Policies (CSDMP) document (adopted on 1 June 2016) sets out:

- the key principles to guide the future winning and working of minerals and the form of waste management development in the county; and
- the criteria against which planning applications for minerals and waste development will be considered.

1.12 The second part of the Lincolnshire Minerals and Waste Local Plan, the **Site Locations document (SLD)** (adopted on 15 December 2017) includes proposals and policies for the provision of land for the winning and working of minerals (sand and gravel) and waste development and identifies sites where future minerals development is expected to take place.

1.13 In relation to sand and gravel, the CSDMP continues the long established approach of subdividing the county into three production areas. This reflects the fact that Lincolnshire covers a very large area of land with most of the active workings clustered into three groups, each generally serving the surrounding production area. These production areas are broadly assumed to serve the following district/city/borough council areas:

- **Lincoln/Trent Valley Production Area** - Lincoln, North Kesteven and West Lindsey;
- **Central Lincolnshire Production Area** - Boston and East Lindsey; and
- **South Lincolnshire Production Area** - South Holland and South Kesteven.

Figure 2 below shows the proposed spatial strategy for sand and gravel in the CSDMP including the three production areas.

1.14 Policy M2 of the CSDMP makes provision for 42.66mt of sand and gravel to be extracted at a rate of 2.37mt per annum over the period 2014-2031. This level of provision is based on the average annual sales during the preceding 10 year period (2004-2013), as set out in the LAA 2015 (reporting 2013 data) for the county. This provision is split between the three production areas as follows:

- Lincoln/Trent Valley, 18.00mt (1.0mt per annum)
- Central Lincolnshire, 9.00mt (0.5mt per annum)
- South Lincolnshire, 15.66mt (0.87mt per annum)

1.15 The policy states that provision for the release of this sand and gravel will be made through the SLD, which will give priority to extensions to existing "Active Mining Sites" (i.e. sites classified as active under the Planning and

Compensation Act 1991 or the Environment Act 1995). The policy goes on to state, however, that new quarries will be allocated where they are required to replace existing workings that will become exhausted during the plan period, provided they are located in the defined Areas of Search.

1.16 At the base date for Policy M2 (1 January 2014), the county already had permitted reserves of sand and gravel of 22.90mt. During the preparation of the SLD, further reserves of 8.64mt of sand and gravel were either granted permission or were subject to a committee resolution to grant planning permission pending the completion of S106 Agreements. This reduced the shortfall to 11.12mt. divided between the three production areas as follows:

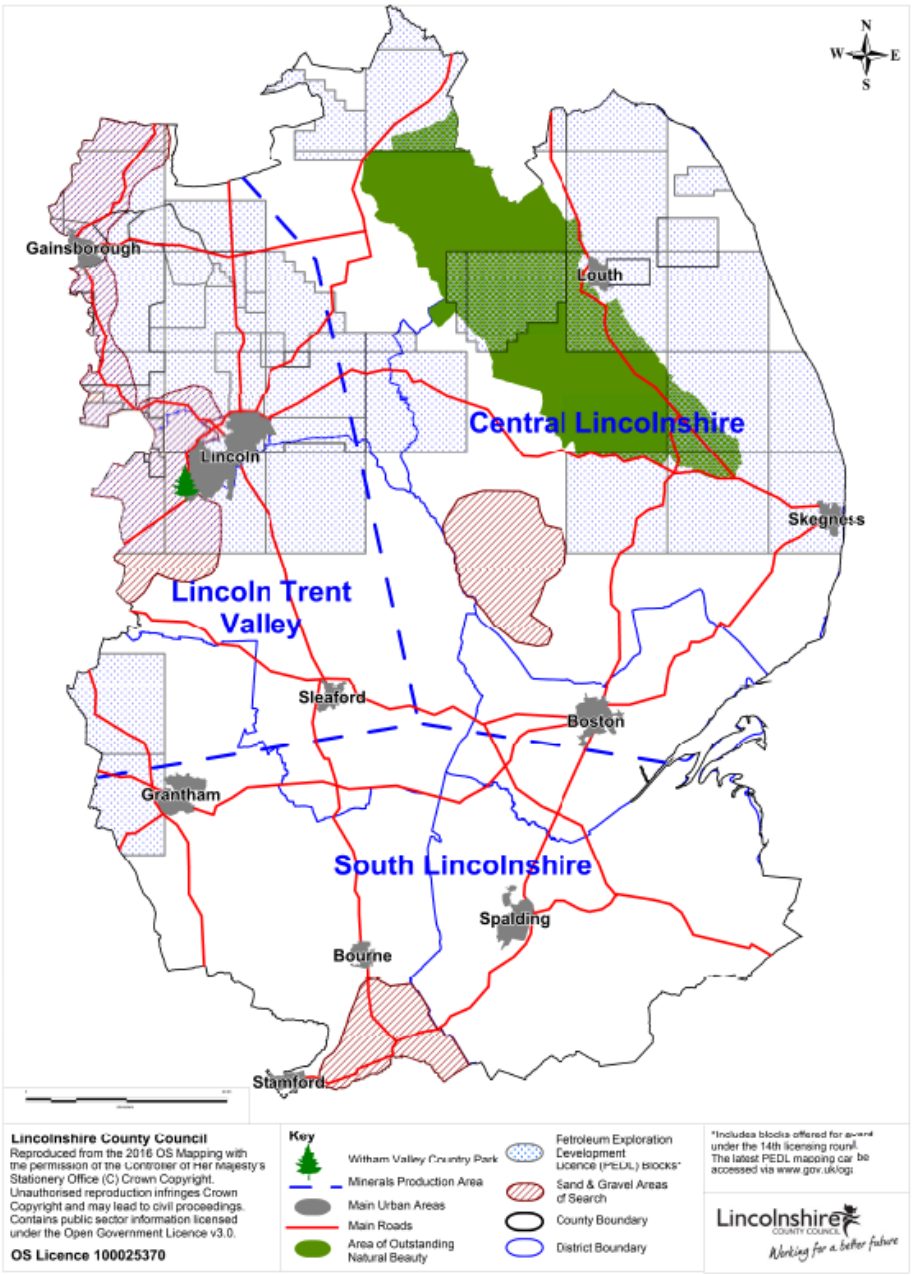
- Lincoln/Trent Valley, 4.56mt
- Central Lincolnshire, 1.21mt
- South Lincolnshire, 5.35mt

The SLD makes provision for this shortfall by the allocation of eight sites.

1.17 In addition, for sites not allocated in the SLD, the CSDMP allows planning permission to be granted where the criteria in Policy M4 are met. This includes situations where there is a proven need that cannot be met from the existing permitted reserves, or where there is a specific shortfall in the landbank of the relevant production area.

1.18 For limestone and chalk, the policy position set out in the CSDMP is that there are sufficient reserves available to meet the requirements during the plan period. No new sites have therefore been allocated.

Figure 2: Sand and gravel production areas in Lincolnshire



Source: Lincolnshire Minerals and Waste Local Plan: Core Strategy and Development Management Policies (June 2016)

2. Types of Aggregate Produced in Lincolnshire

Sand and gravel

2.1 Lincolnshire has sand and gravel resources in fluvial (river), glacial, coastal and wind-blown deposits. During the 70s the BGS (previously the IGS – Institute of Geological Sciences) carried out extensive sand and gravel resource assessments for much of Lincolnshire and the results were published in a series of Mineral Assessment Reports (MARs).

2.2 In 2010, the county council commissioned the BGS to reassess the sand and gravel resources identified in the MARs and identify potential resources in areas of the county not covered by the MARs. The subsequent Lincolnshire Sand and Gravel Assessment (External Report CR/10/049) indicates that the principal areas containing the highest quality resources are:

- fluvial deposits in the Trent Valley north of Gainsborough;
- fluvial deposits lying between the Rivers Trent and Witham, to the west of Lincoln;
- an area of fluvial deposits underlying the floodplain of the River Witham south-east of Lincoln;
- spreads of river terrace deposits and glaciofluvial deposits around Woodhall Spa; and
- fluvial deposits around Market Deeping.

2.3 Of these, the resources around Market Deeping, west of Lincoln and around Woodhall Spa have been, or are currently, worked. The thick and extensive sand and gravel resources that underlie the Witham floodplain southeast of Lincoln have not been exploited. The report indicates that resources in the Trent Valley north of Gainsborough are also thick, extensive and likely to be of good quality but are not currently worked.

2.4 Outside the area of the county that had been the subject of MAR surveys, the BGS report states that available data proved too sparse and unfavourably distributed to systematically identify and classify sand and gravel resources. However, such data as was available indicated that suitable resources may exist in fluvial deposits around Sleaford, between Billingborough and Dowsby and near Long Bennington.

Limestone

2.5 A variety of hard rocks are, when crushed, suitable for use as aggregates. Their technical suitability for different applications depends on their physical characteristics, such as crushing strength and resistance to impact and abrasion. Higher quality aggregates are required for coating with bitumen for road surfacing, or for mixing with cement to produce concrete. For applications, such as constructional fill and drainage media, with less demanding specifications, lower quality materials are acceptable.

2.6 Lincolnshire has limited resources of rock suitable for use as crushed rock aggregate. The Lincolnshire Limestone Formation of Middle Jurassic age (Inferior Oolite) is the major limestone unit in Lincolnshire. Its outcrop runs north to south through Grantham and Lincoln, forming the prominent escarpment of the Lincoln Edge.

2.7 Crushed Lincolnshire Limestone provides aggregates, which are of relatively low strength and with poor resistance to frost damage (they have moderate to high values of water absorption). They are, therefore, generally only suitable for use as constructional fill or sub base material.

2.8 Limestone is currently worked for aggregates at a number of small to medium-sized quarries, mostly between Stamford and Lincoln. Several also produce agricultural lime and small amounts of building stone.

Chalk

2.9 Chalk is a relatively soft, fine-grained, white limestone, consisting mostly of the debris from planktonic algae. The chalk in Lincolnshire is divided into five distinct formations: the Ferriby Chalk, with a red-coloured chalk at the base; the Hunstanton Formation, or Red Chalk; the Welton Chalk; the Burnham Chalk; and the Flamborough Chalk. The Burnham and Welton Chalks are of higher purity (generally greater than 97 per cent calcium carbonate), while the overlying Flamborough Chalk and the underlying Ferriby Chalk are mainly of medium purity (greater than 93% calcium carbonate). The Burnham and Flamborough Chalks are concealed beneath drift which thickens towards the coast.

2.10 Chalk has been extracted within Lincolnshire for both aggregate and industrial purposes, including iron making, lime production for steel manufacture and industrial fillers, for constructional purposes and agricultural use. The chalk in Lincolnshire is harder and contains less moisture than the chalk in southern England and can therefore be used for aggregate purposes, but only for less demanding applications such as fill and sub-base material.

3. Land-won aggregates in Lincolnshire

Introduction

3.1 Production and sales data for aggregate minerals is collected on an annual basis through an aggregate survey undertaken on behalf of the East Midlands Aggregates Working Party (EMAWP). Annually published EMAWP reports present data on production and reserves for the county and the East Midlands back to the early 70s. The Annual Monitoring Report for 2017 is the latest published report which is relied upon in this LAA for data regarding the East Midlands. However, the county council has collated the results for the 2018 survey relating to Lincolnshire and it is this previously unpublished data which is primarily referred to in this LAA.

3.2 Every fourth year Aggregate Working Parties are committed to conducting a major in-depth Aggregate Minerals Survey. These surveys are collated nationally for England and Wales by the British Geological Survey to provide an in-depth understanding of national and sub-national sales, inter-regional flows, transportation, consumption and permitted reserves of primary aggregate. In addition, the EMAWP normally extends the Annual Monitoring Report for those years to include more details of the aggregate flows between counties.

3.3 An Aggregate Minerals Survey was due to be carried out for 2018, but this has been delayed by the Government. The most up-to-date Aggregate Mineral Surveys are therefore those carried out for the years 2009 and 2014, the latter of which had also been delayed by the Government. These surveys are used in this LAA to provide data on the flow of aggregates into and out of the county and how these flows have changed between the two surveys. Due to the postponement of the Aggregate Monitoring Survey for 2018, it was agreed by the EMAWP that the East Midlands Annual Minerals Survey would seek information on sales destinations from operators to help bridge the gap in aggregate flow data. This has provided helpful information on the distribution of sales in 2018, but as it is not a national survey it does not provide the same level of detail as a full AM Survey, particularly with respect to imports.

Land-won sand and gravel

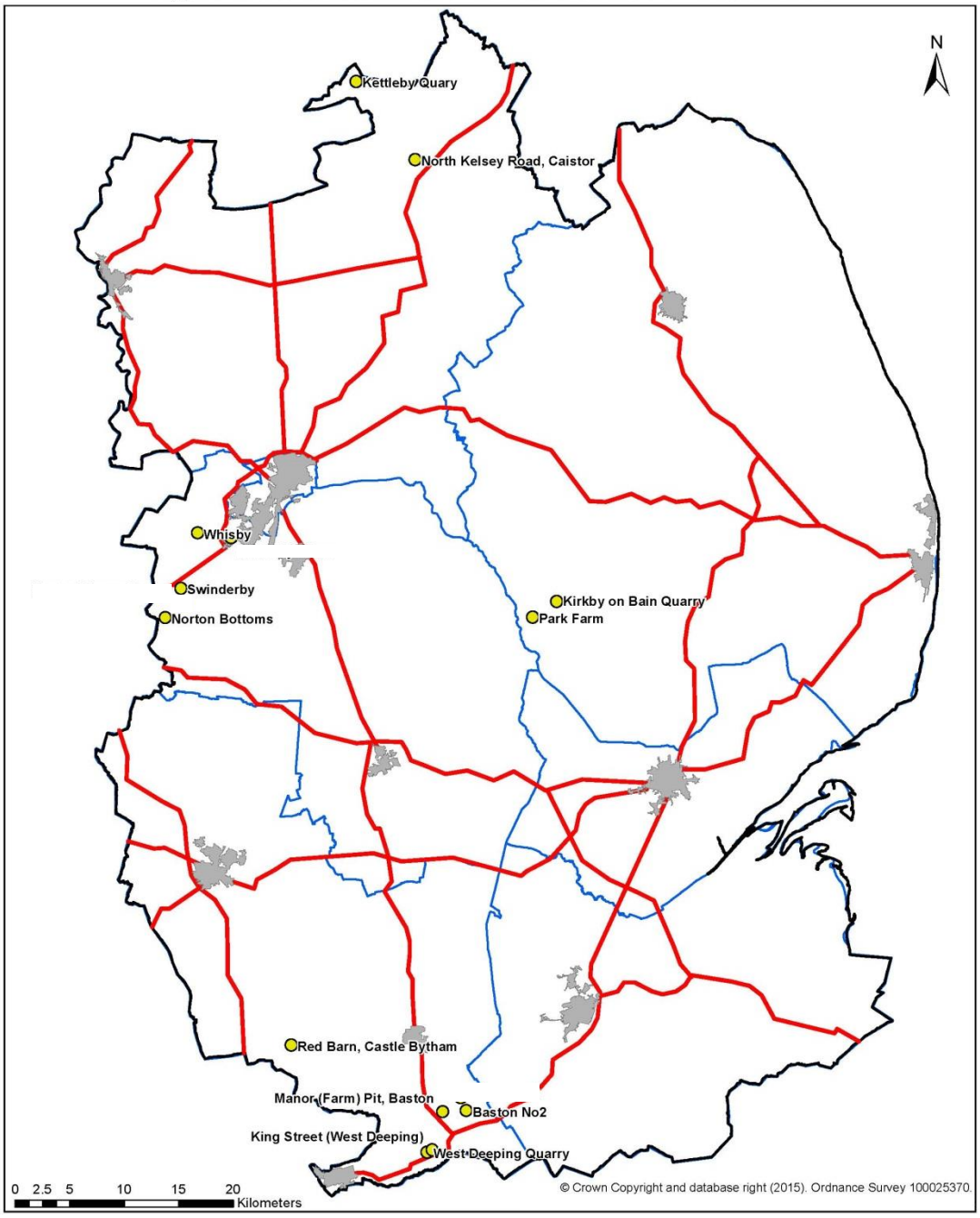
Production sites

3.4 Table 1 lists the sand and gravel sites in the county that were included in the 2018 Survey. The table excludes sites classified as "Dormant" either under the Planning and Compensation Act 1991 or the Environment Act 1995.

Table 1: Sand and gravel sites included in the 2018 survey

Site	District	Production Area
Whisby Quarry	North Kesteven	Lincoln/Trent Valley
Norton Bottoms Quarry	North Kesteven	Lincoln/Trent Valley
Swinderby Quarry	North Kesteven	Lincoln/Trent Valley
Park Farm, Tattershall Thorpe	East Lindsey	Central Lincolnshire
Kirkby on Bain Quarry	East Lindsey	Central Lincolnshire
North Kelsey Road Quarry, Caistor	West Lindsey	Central Lincolnshire
Kettleby Quarry, Bigby (1)	West Lindsey	Central Lincolnshire
Manor (Farm) Pit, Baston	South Kesteven	South Lincolnshire
Red Barn, Castle Bytham*	South Kesteven	South Lincolnshire
Baston No 2 Quarry	South Kesteven	South Lincolnshire
King Street, West Deeping	South Kesteven	South Lincolnshire
West Deeping Quarry (Rectory Farm)	South Kesteven	South Lincolnshire
(1) Permitted reserves are situated in North Lincolnshire, but extensions have been allocated in the Site Locations document *Inactive during 2018		

Figure 3: Sand and gravel quarries in Lincolnshire (excluding dormant sites)



Key

- Sand & Gravel Quarries
- Main Urban Areas
- Main Roads

Date: 02 June 2015

Regional production

3.5 For many years Lincolnshire was the second highest producer of sand and gravel in the region after Nottinghamshire, but since 2013 has overtaken that county for year on year production. For the 10 year period 2008-2017 (the latest 10 year period for which data is available for the East Midlands) the production of sand and gravel in Lincolnshire as a proportion of the total output in the East Midlands has averaged around 32% (see Table 2).

Table 2: Sales of sand and gravel (aggregate) 2008-2017

Year	East Midlands Region (mt)	Lincolnshire (mt)	Lincolnshire as percentage of Regional Sales
2008	7.54	2.27	30.1
2009	5.51	1.99	36.1
2010	5.84	1.79	30.6
2011	6.24	1.92	30.8
2012	5.88	1.85	31.5
2013	6.04	1.88	31.1
2014	6.85	2.15	31.4
2015	6.91	2.19	31.7
2016	6.95	2.17	31.2
2017	6.79	2.38	35.0
Average	**6.46**	**2.06**	**31.9**

Source: EMAWP Annual Monitoring Report 2017

3.6 During this period, sales initially fell from 2.27mt in 2008 to under 2mt in 2009 and remained below that level to the end of 2013. From 2013 to 2016 there was a slight recovery with sales reaching just under 2.2mt per annum. In 2017 there was a further increase in sales to 2.38mt, but this level is still well below pre-recession levels or the level set by the SRA. Concurrent with the increase in sales in 2017 is a rise in Lincolnshire's contribution to regional sales, which increased to 35%.

Local production

3.7 Table 3 shows sales from the three production areas over the last 10 years and the average proportion of sales from each area. Over this period, the Lincoln/Trent Valley Production Area has consistently provided the highest annual contribution to total county sales, averaging 0.96mt (46.6%). This is followed by the South Lincolnshire Production Area at 0.73mt (35.4%), with the Central Lincolnshire Production Area providing the lowest contribution at 0.37mt (18%).

Table 3: Sales of sand and gravel by production area 2009-2018

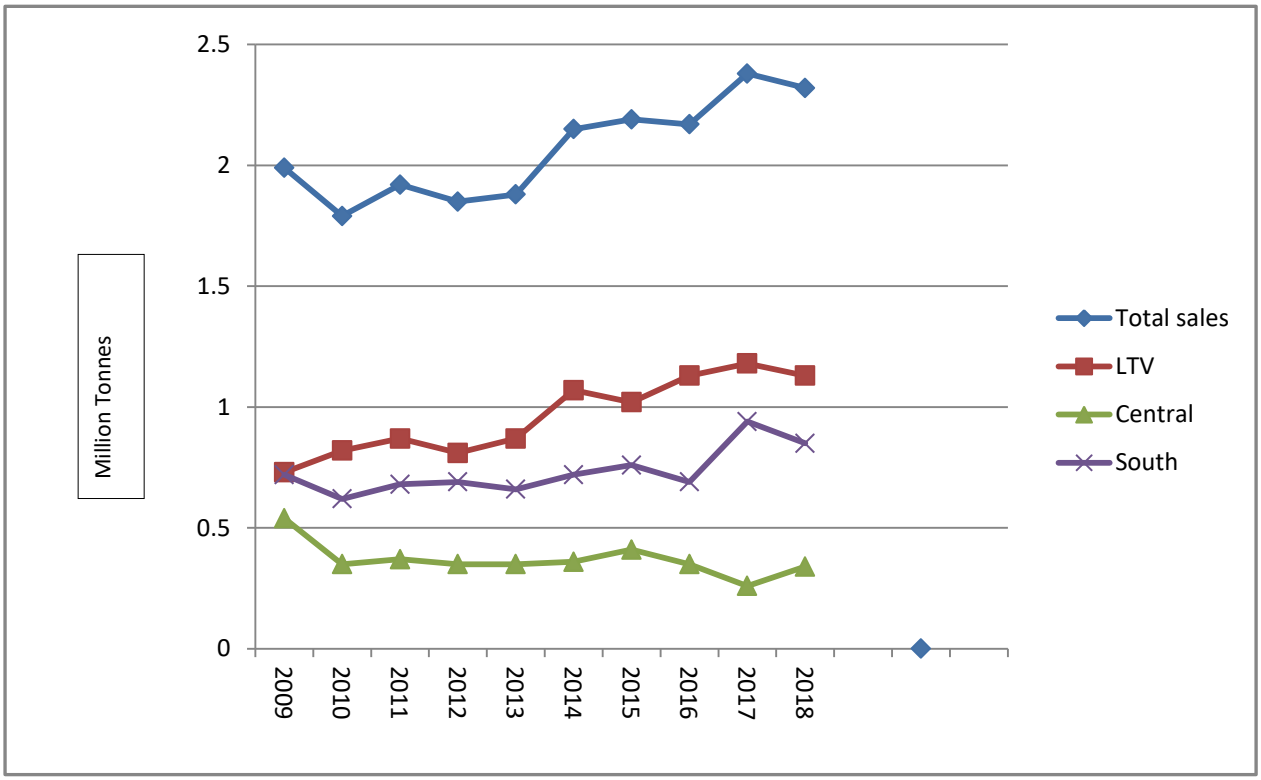
Year	Total Sales (mt)	Production Area					
		Lincoln/Trent Valley		Central Lincolnshire		South Lincolnshire	
		(mt)	%	(mt)	%	(mt)	%
2009	1.99	0.73	**36.7**	0.54	**27.1**	0.72	**36.2**
2010	1.79	0.82	**45.8**	0.35	**19.6**	0.62	**34.6**
2011	1.92	0.87	**45.3**	0.37	**19.3**	0.68	**35.4**
2012	1.85	0.81	**43.8**	0.35	**18.9**	0.69	**37.3**
2013	1.88	0.87	**46.3**	0.35	**18.6**	0.66	**35.1**
2014	2.15	1.07	**49.8**	0.36	**16.7**	0.72	**33.5**
2015	2.19	1.02	**46.6**	0.41	**18.7**	0.76	**34.7**
2016	2.17	1.13	**52.1**	0.35	**16.1**	0.69	**31.8**
2017	2.38	1.18	**49.6**	0.26	**10.9**	0.94	**39.5**
2018*	2.32	1.13	**48.7**	0.34	**14.7**	0.85	**36.6**
Av. (2009-2018)	2.06	0.96	**46.6**	0.37	**18.0**	0.73	**35.4**
Av. (2016-2018)	2.29	1.15	**50.2**	0.31	**13.6**	0.83	**36.2**

Source: EMAWP Annual Monitoring Reports. * Lincolnshire Annual Minerals Survey Data 2018.

3.8 National minerals guidance on the managed aggregate supply system also requires MPAs to look at the last three years of sales to identify the general trend of demand as part of the consideration of whether it might be appropriate to increase supply. This information is also provided in Table 3. During the three year period 2016-2018, annual sales of sand and gravel in the county averaged 2.29mt. This figure represents an 11.0% increase over the 10 year average of 2.06mt, but is still below the provision rate set in the CSDMP of 2.37mt.

3.9 At a sub-county level, a comparison of the 3 year and 10 year average sales for the Central Lincolnshire Production Area shows a 16.2% reduction in sales. For the Lincoln/Trent Valley Production Area, on the other hand, the 3 year average is 10.7% higher than the 10 year average and in the South Lincolnshire Production area it is 11.4% higher. The growth in the relative importance of these Production Areas since 2014 is illustrated in Figure 4. For the Trent Valley, this appears to be due to operators with quarries on both sides of the Lincolnshire/Nottinghamshire county boundary focussing production in Lincolnshire, thus lowering production in Nottinghamshire and increasing production in the Lincoln/Trent Valley Production Area. For the Southern Production Area this may, in part, be linked to the construction works associated with the A14 improvement scheme and growth in the Peterborough area. However, strategic "mothballing" of sites in Cambridgeshire to concentrate production in Lincolnshire may also be taking place.

Figure 4: Sand and gravel sales by production area 2009-2018



3.10 The Annual Minerals Survey Data for Lincolnshire 2018 demonstrates that the permitted reserves of sand and gravel at the end of that year totalled some 19.67 million tonnes for the county, being comprised of: 8.16 million tonnes within the Lincoln/Trent Valley Production Area; 5.81 million tonnes in the Central Lincolnshire Production Area; and 5.70 million tonnes in the South Lincolnshire Production Area.

3.11 Table 4 calculates the landbank of permitted reserves (expressed as the number of years' supply remaining) for the county based on three alternative provision rates: the Sub Regional Apportionment (SRA); the CSDMP; and the 10 year average annual sales. Although it was previously agreed by the EMAWP that the SRA is out-of-date (see Introduction), it is included in this section because the NPPF requires it to be taken into account. The table also sets out the landbank for each production area based on the latter two provision rates. The SRA is not used for the production areas because it has never been formally sub-divided between them.

Table 4: Landbank of sand and gravel based on alternative provision rates (as at 31 December 2018)

Production Area	Permitted Reserves as at 31.12.18 (mt)*	Sub-Regional Apportionment 2005-2020+		Lincolnshire Minerals and Waste Local Plan ^		10 Year Average Annual Sales (2009-2018)	
		Annual Rate (mt)	Land-bank (Years)	Annual Rate (mt)	Land-bank (Years)	Annual Rate (mt)	Land-bank (Years)
Lincoln/Trent Valley	8.16	N/A	N/A	1.00	8.16	0.96	8.50
Central Lincolnshire	5.81	N/A	N/A	0.5	11.62	0.37	15.72
South Lincolnshire	5.70	N/A	N/A	0.87	6.55	0.73	7.81
Lincolnshire (Total)	**19.67**	**3.28**	**6.00**	**2.37**	**7.16**	**2.06**	**9.55**

* Source: Annual Minerals Survey Data for Lincolnshire 2018
+ The SRA relates to the county as a whole and has not been subdivided between the three Production Areas.
^ As set out in the Core Strategy and Development Management Policies document (adopted June 2016)

3.12 The National Planning Policy Framework states that mineral planning authorities should make provision for the maintenance of landbanks of at least seven years for sand and gravel. It also states that longer periods may be appropriate to take account of the locations of permitted reserves relative to markets, and the productive capacity of permitted sites.

3.13 Table 4 shows that at the end of 2018, the landbank for the county exceeded seven years' supply except when based on the SRA annual rate, which as previously discussed is now out of date. The landbank also exceeded seven years' supply for each production area based upon 10 years average sales. There is a slight shortfall in the South Lincolnshire Production Area of 0.45mt when set against the Local Plan rate.

3.14 At the end of 2018, two planning applications involving the winning and working of sand and gravel were pending determination by the county council's Planning and Regulation Committee. These comprise:

- an application to extend Norton Bottoms Quarry to extract 7mt of sand and gravel and to consolidate existing planning permissions (which has

subsequently been approved subject to the completion of a Section 106 Agreement); and

- an application to extract 292,500 tonnes of sand and gravel for an agricultural reservoir at Tithe Farm Pastures, Tithe Farm, Langtoft.

3.15 Under the three provision rates set out above, the applications if granted would increase the landbank:

- for the Lincoln/Trent Valley Production Area, by 7.0 years (based on the CSDMP) or 7.3 years (based on the 10 year average);
- for South Lincolnshire, by 0.34 years (based upon on the CSDMP) or 0.4 years (based on the 10 year average)
- for the county, by 2.22 years (based on the SRA), 3.08 years (based on the CSDMP) or 3.54 years (based on the 10 year average).

Productive capacity

3.16 The individual operator returns for the aggregate surveys are treated as confidential and as a consequence current production levels or mineral reserves from individual sites cannot be reported. Previously, productive capacity and potential lifespan of quarries has been estimated from the information contained in the planning application and other public files. In practice, however, this approach has proved to be unreliable because it does not take into account any fluctuations in production levels from those set out in the original applications, or any reassessments of reserves by the operators. To remedy this situation the former quantitative approach of estimating the reserves at each quarry has been replaced by a more qualitative approach as set out in Table 5. This assesses whether any issues are likely to develop during the next 7 years (the minimum period for which a landbank needs to be maintained) that might affect productive capacity, an approach which is more in line with Policy M3 of the CSDMP. As indicated in Table 5, no such issues have been identified.

Production area	Site	Operator	Current status	Planned production level (tonnes per annum)	Provision Rate set by CSDMP	10 year average production 2009/2018 (tonnes)	Planning Permission End Date (MPA estimated end date in brackets)	Comment and source of information
Lincoln/ Trent Valley	Whisby	Tarmac	Active	300,000^			19/04/2067	Information based on 2014 application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 7 years.
	Swinderby Quarry	Cemex	Active	550,000-600,000^			24/06/2073	Information based on 2008 application and information provided by Cemex for the Site Locations document. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 7 years.
	Norton Bottoms	Breedon	Active	*500,000^			24/02/2064	Information based on 2015 Scoping Request. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 7 years.
Total				**1,400,000**	**1,000,000**	**960,000**		**No issues identified with Productive Capacity**
Central Lincolnshire	Park Farm, Tattershall Thorpe	Cemex	Active	230,000^			31/12/2027	Based on 2007 application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 7 years.
	Kirkby on Bain Quarry	Aggregate Industries	Active	250,000^			20/03/2069	Information based on 2015 application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 7 years.
	North Kelsey Road Quarry, Caistor	Breedon	Active	22,400^			21/06/2019	Information based on 2014 application. Permitted reserves are nearing exhaustion, but further reserves have been allocated in the SLD.
	Kettleby Quarry, Bigby	Breedon	Active	70,000-100,000^			15/04/2074	Information based on 2013 application in North Lincolnshire. The remaining permitted reserves in North Lincolnshire are unknown, but further reserves have been allocated in the SLD.
Total				**602,400**	**500,000**	**370,000**		**Provision has been made to maintain Productive Capacity**
South Lincolnshire	Manor (Farm) Pit, Baston	Cemex	Active	250,000-350,000^			15/02/2066 (2018)	To be replaced by a new quarry on King Street, West Deeping. Information taken from 2013 application and details provided by Cemex for the Site Locations document.
	Red Barn, Castle Bytham	Bullimores	Inactive	100,000^			25/09/2067	Information based on 2005 application. When work recommences, the site should have sufficient reserves for at least 8 years.
	Baston No 2 Quarry	Hanson	Active	250,000^			22/02/2042	Information taken from 2011 application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 7 years.
	Rectory Farm, West Deeping	Breedon/ Tarmac	Active	250,000-350,000^			05/06/2052	Information based on 2018 ROMP application. Site currently operated by Breedon. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 7 years.
	King Street, West Deeping	Cemex	Active	250,000-350,000^			24/10/2057	Based on 1989 application, with production based on Manor Pit (the site it will replace) -provided by Cemex for the Site Locations document.
Total				**1,400,000**	**870,000**	**730,000**		**Provision has been made to maintain Productive Capacity**

Table 5: Productive capacity: sand and gravel production areas

*Includes applications with a Committee resolution to grant planning permission subject to completion of S106 Agreements
^Production capacity not limited by Planning Permission

3.17 As Table 5 shows there are two quarries with end dates that fall within the Minerals and Waste Local Plan period. North Kelsey Road Quarry is scheduled to be completed in 2019, however, there is land allocated in the Site Locations Document for an extension to the east of this site which if brought forward, would potentially extend the life of the quarry to beyond 2031.

3.18 The second site, Park Farm Quarry has a projected end date falling in 2027 which being close to the end of the plan period and some 8 years hence is not of any particular significance to production capability at this time.

3.19 It is however clear when comparing Table 5 with Table 3 that planned production levels and any purported shortfalls in production capability based on these levels should be viewed with caution as they vary significantly from actual sales.

Exports and imports

3.20 Details of the flow of aggregates into and out of the county are provided through the two National Aggregate Mineral Surveys carried out in 2009 and 2014, with more limited information provided by the annual survey carried out in 2018. The results of the three surveys with respect to sand and gravel extracted in the county are summarised in Table 6, and compared in Figure 5. These show that the proportion of sand & gravel known to have been taken to destinations in the county has declined rapidly from 76.3% in 2009 to 24.4% in 2018. Production levels have, however, risen moderately during this period reflecting the growth in exports. Most notably exports to the East of England rose from 4.6% of sales in 2009 to 21.7% in 2018. Most of this material went to destinations in the adjoining areas of Cambridgeshire and Peterborough. This may be due to the fact that the main extraction area in the South Lincolnshire Production Area lies close to the county boundary with those areas. It is therefore possible that mineral operators have rationalised their operations - "mothballing" sites in Cambridgeshire and Peterborough in favour of concentrating production in Lincolnshire.

Table 6: Destination of sand and gravel sales from Lincolnshire in 2009, 2014 and 2018*

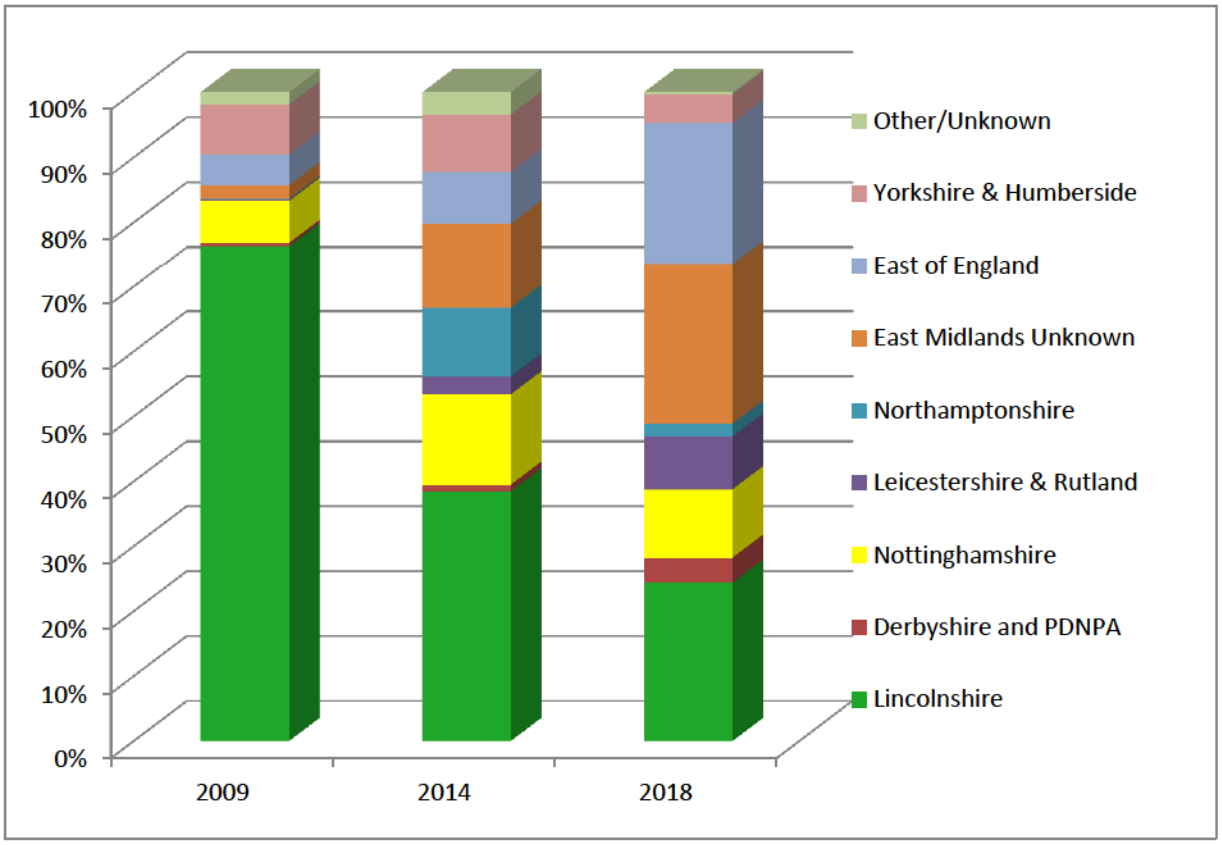
Destination (all by road)		2009[a]		2014[b]		2018[c]	
		Tonnes	**%**	**Tonnes**	**%**	**Tonnes**	**%**
East Midlands	Lincolnshire	1,515,900	76.3	826,144	38.4	569,939	24.4
	Derbyshire and PDNPA	10,872	0.5	22,585	1.0	90,208	3.9
	Nottinghamshire	127,665	6.4	298,681	13.9	245,984	10.5
	Leicestershire & Rutland	3,766	0.2	58,593	2.7	189,686	8.1
	Northamptonshire	2,500	0.1	228,336	10.6	46,595	2.0
	EM Unknown	42,204	2.1	280,967	13.1	575,949	24.7
	Total	**1,702,907**	**85.7**	**1,715,306**	**79.8**	**1,718,361**	**73.6**
East of England	Bedfordshire	-	-	-	-	34,732	1.5
	Cambridgeshire & Peterborough	-	-	-	-	430,973	18.5
	Norfolk	-	-	-	-	7,876	0.3
	Suffolk	-	-	-	-	39	0
	East of England (Unknown)	92,165	4.6	170,453	7.9	33,000	1.4
	Total	**92,165**	**4.6**	**170,453**	**7.9**	**506,620**	**21.7**
Yorkshire & Humberside	Humber Region	-	-	-	-	16,898	0.7
	North Yorkshire	-	-	-	-	59	0
	South Yorkshire	-	-	-	-	41,094	1.8
	West Yorkshire	-	-	-	-	9,608	0.4
	Y & H Unknown	153,129	7.7	189,331	8.8	36,900	1.6
	Total	**153,129**	**7.7**	**189,331**	**8.8**	**104,559**	**4.5**
Other	**Total**	**1,407**	**0.1**	**^ 73,991**	**3.4**	**6,348**	**0.3**
Unknown	**Total**	**36,421**	**1.8**	**-**	**0**	**-**	**-**

Source: (a) EMAWP AM2009 Survey; (b) Lincolnshire LAA May 2017; (c) Previously unpublished Annual Mineral Survey Data for Lincolnshire 2018

*Includes 13,094 tonnes of non-aggregate)

^ see previous LAA for greater breakdown.

Figure 5: Comparison of the destination of sand and gravel sales during the three survey years of 2009, 2014 and 2018



3.21 The surveys also show that exports from Lincolnshire to the rest of the East midland grew rapidly between 2009 (7.2%) and 2014 (28.2%), but fell slightly to 24.5% in 2018. These figures, however, mask the fact that the amount of sand & gravel sold to unspecified destinations in the East Midlands rose dramatically from 2.1% in 2009 to 13.1% in 2014, then rising again to 24.7% in 2018. Some of this material may have been taken to destination in Lincolnshire, but in practice it is considered likely that a large proportion is exported to other counties in the East Midlands. This is because the production area showing the largest increase in production levels is the Lincoln/Trent Valley, where the principal extraction area lies adjacent to Nottinghamshire – a county where it is known that at least one major site adjacent to the county boundary has been "mothballed". In contrast, the Central Lincolnshire Production Area, where most of the extraction is undertaken well away from the county boundary, has generally experienced falling production from 2009 (0.54mt) to 2018 (0.34mt) indicating low levels of demand, at least in that part of the county.

3.22 In 2009 the total exports of sand and gravel from the county of 470,000 tonnes, were more than offset by the total imports of 503,000 tonnes (Collation of the Results of the 2009 Aggregate Monitoring Survey for England and Wales, DCLG, October 2011) making the county a slight net importer of sand and gravel. In contrast, by 2014 only 163,000 tonnes of sand and gravel were imported into the county (Collation of the Results of the 2014 Aggregate Monitoring Survey for England and Wales, DCLG, March 2016) a reduction of 68% on 2009, making the county a significant net exporter of sand and gravel (some 1,160,000 tonnes). Details of imports are unavailable for 2018.

3.23 The county council recognises the need to work across local authority boundaries and beyond Lincolnshire to determine if there is likely to be any major changes in movement of sand and gravel into and out of the county over the plan period so that this can be taken into account.

3.24 The LAAs of the adjoining Mineral Planning Authorities do not specifically state that Lincolnshire will need to make a higher level of provision of sand and gravel available for export in the future. However, as illustrated by Table 6, exports of sand and gravel increased significantly between 2009 and 2018, particularly to counties across the East Midlands and to the adjoining areas of Cambridgeshire and Peterborough in the East of England.

3.25 To date, Lincolnshire has been able to accommodate the increased demand for exports because the internal market has been significantly depressed, resulting in annual production levels which have generally been lower than those forecast in the CSDMP. However should demand in Lincolnshire change and return to pre-recession levels, supply issues may arise with production in the county unable to meet both increased internal demand together with the higher demand from the surrounding counties. This is a situation that could, in part, be avoided through neighbouring authorities making sufficient provision in their local plans, wherever possible, to meet demand currently being met by imports - in line with the NPPF. In particular, the NPPF states, amongst other things, that policies in mineral local plans should aim to source mineral supplies indigenously. Therefore, it is considered inappropriate for MPAs to disregard the contribution to demand increasingly being met from neighbouring authorities in plan making and the production of LAAs unless it can be clearly demonstrated that there are very good reasons why the sand & gravel cannot be sourced indigenously.

Crushed rock (limestone and chalk)

Production Sites

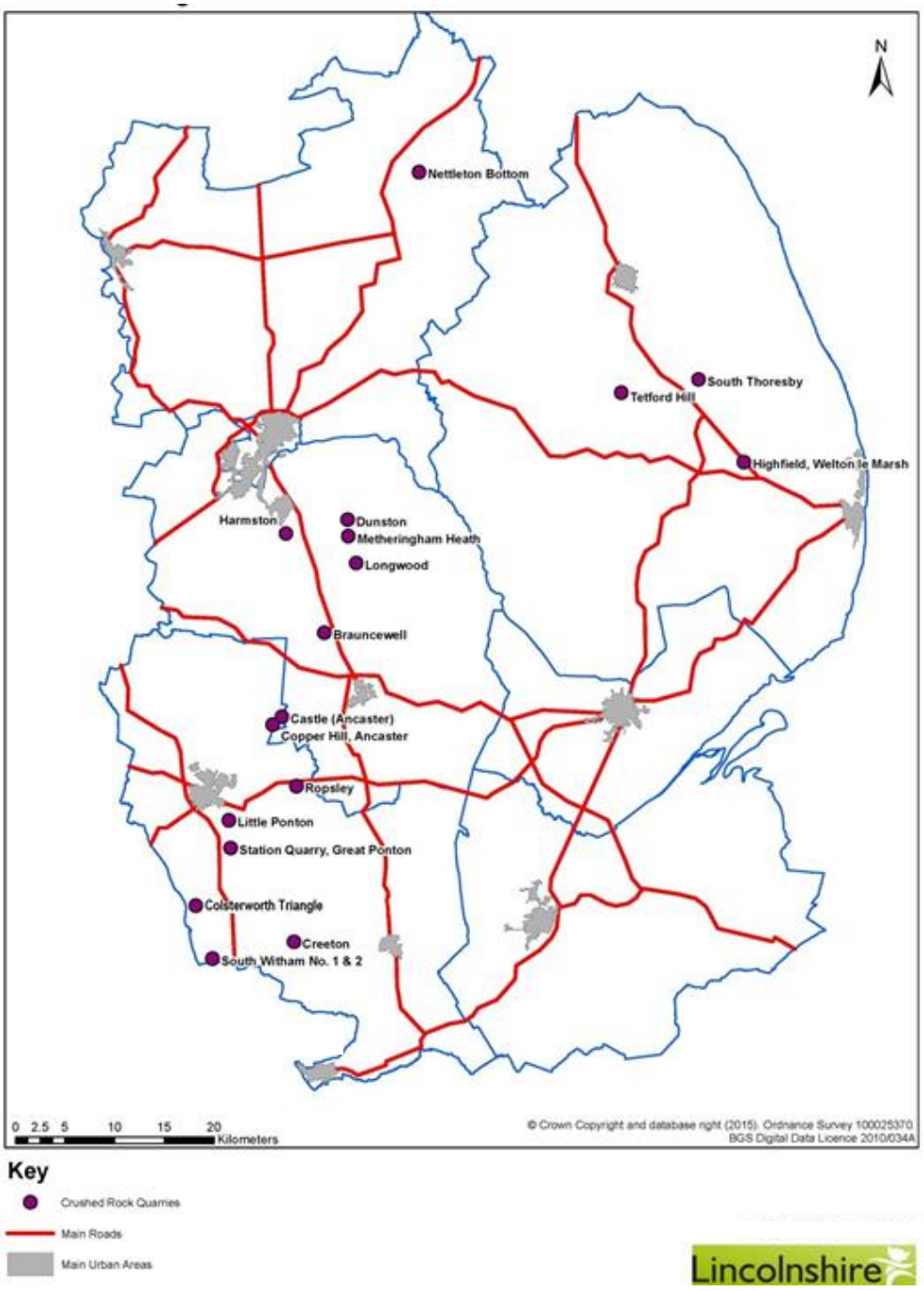
3.26 There were 17 sites in Lincolnshire at the end of 2018, excluding sites classified as dormant under the Environment Act 1995 or the Planning and Compensation Act 1991 (see Table 7 below). It has become established practice in Lincolnshire to calculate separate landbanks for limestone and chalk due to the significant constraints on using chalk as an aggregate. For this reason, Lincolnshire's SRA for Crushed Rock excluded chalk.

Table 7: List of Crushed Rock Sites 2018

Quarry Name	District	Material
South Thoresby	East Lindsey	Chalk
Highfield, Welton le Marsh		
Tetford Hill*(1)		
Nettleton Bottoms*	West Lindsey	Chalk
Longwood	North Kesteven	Limestone
Brauncewell		
Dunston^		
Metheringham Heath^		
Harmston*		
Castle (Ancaster)^	South Kesteven	Limestone
South Witham (Breedon Aggregates)		
Creeton^		
Station Quarry, Great Ponton^		
Little Ponton		
Colsterworth Triangle		
Ropsley*		
Copper Hill, Ancaster^		

* inactive or not producing aggregates during 2018
^ also produces building stone
(1) Currently subject to the suspension provisions of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011.

Figure 6: Current crushed rock quarries in Lincolnshire



Sales of limestone

3.27 The county's production of limestone (aggregate and non-aggregate) amounted to 1.42mt in 2018 of which 1.28mt was for aggregate purposes. Over the 10-year period 2009-18, average sales of aggregate were 0.60mt per annum (see Table 8 below).

Table 8: Sales of limestone extracted in Lincolnshire 2009-2018

Year	Aggregate Sales (mt)	Non-Aggregate Sales (mt)	Total (mt)
2009	0.46	0.17	0.63
2010	0.45	0.14	0.59
2011	0.39	0.26	0.65
2012	0.51	0.19	0.70
2013	0.45	0.22	0.67
2014	0.38	0.21	0.59
2015	0.43	0.19	0.62
2016	0.76	0.27	1.03
2017	0.85	0.13	0.98
2018*	1.28	0.14	1.42
Av.(2009-2018)	0.60	0.19	0.79
Av.(2016-2018)	0.96	0.18	1.14

Source: EMAWP Annual Monitoring Reports. *Annual Mineral Survey Data for Lincolnshire 2018

3.28 Most of the limestone sales are for aggregate purposes, about 90% in 2018 with an average of 75% over the 10-year period 2009-2018. The relatively low output of the Lincolnshire Limestone as an aggregate when compared to that from other areas reflects the limitations on its uses. Sales of limestone for aggregate purposes from Lincolnshire operations only represents a small proportion of the total output in the East Midlands. Even with the recent increase in sales, Lincolnshire's contribution is only 2.2% over the period 2008-17, which is the latest available dataset for the East Midlands as a whole covering a 10 year period (Table 9).

3.29 The 10 year average for limestone sales at 0.60mt per annum, masks a significant variation in sales over this period from a low of 0.38mt in 2014 to a high of 1.28mt in 2018.

Table 9: Total sales of limestone aggregate in Lincolnshire compared to total crushed rock sales in the East Midlands 2009-2018

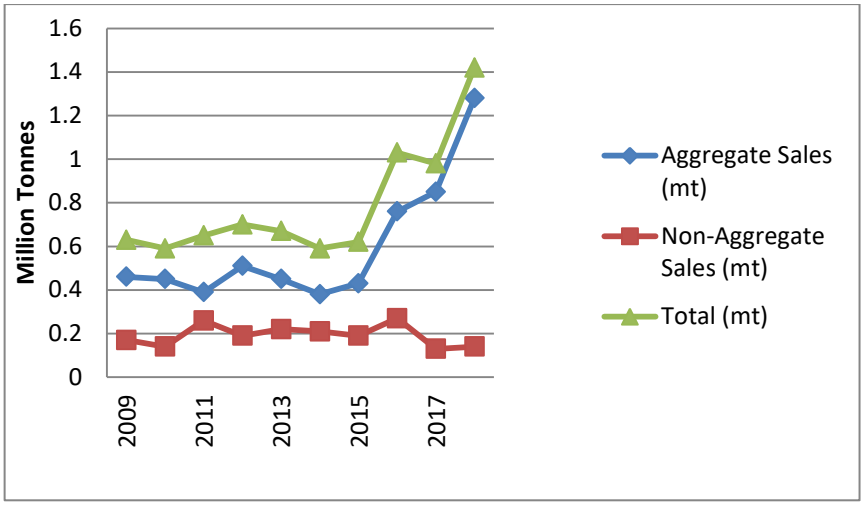
Year	East Midlands Region (mt)	Limestone aggregate sales (mt)	Lincolnshire as percentage of regional crushed rock sales
2008	26.70	0.52	1.9
2009	21.54	0.46	2.1
2010	21.17	0.45	2.1
2011	20.09	0.39	1.9
2012	19.74	0.51	2.6
2013	22.17	0.45	2.0
2014	21.9	0.38	1.7
2015	23.0	0.43	1.9
2016	28.12	0.76	2.7
2017	28.41	0.85	2.9
Average	**23.28**	**0.52**	**2.2**

Source: EMAWP Annual Monitoring Reports

3.30 National planning practice guidance on the managed aggregate supply system requires MPAs to look at the last three years of sales to identify the general trend of demand as part of the consideration of whether it might be appropriate to increase supply.

3.31 During the three year period 2016-2018, average annual sales of limestone for aggregate have amounted to 0.96mt. This is 0.36mt higher than the 10 year average (0.60mt), an increase of 38%, which is similar to the provision rate set in the CSDMP (0.62mtpa). This comparison does not, however, provide the full picture. As shown on Figure 7, sales for the first seven years of the 10 year period were relatively level, averaging 0.44mt per annum. Since then sales have climbed sharply and in 2019 reached 1.28mt, which is nearly three times higher than the seven year average for 2008-2014.

Figure 7: Trends in sales for limestone extracted in Lincolnshire 2009-2018



Sales of chalk

3.32 The last major chalk producer in Lincolnshire, Singleton Birch Ltd, ceased mineral extraction in the county around 10 years ago to focus production at their operations in North Lincolnshire. By 2009 sales had declined to 50,465 tonnes (40,000 tonnes for aggregate and 10,465 tonnes for non-aggregate). Since then there have been no reliable data for chalk sales. However, from the limited activities observed within the county's chalk quarries, it would appear that production remains at a low level. It is estimated by the county council that this is less than 80,000 tonnes per annum.

Landbank of limestone

3.33 The National Planning Policy Framework states that mineral planning authorities should make provision for the maintenance of landbanks of at least 10 years for crushed rock. It also states that longer periods may be appropriate to take account of the locations of permitted reserves relative to markets, and the productive capacity of permitted sites.

3.34 It is estimated that permitted reserves of limestone for aggregate purposes as at 31 December 2018 totalled some 20.86mt (Annual Mineral Survey data 2018), excluding dormant sites. Table 10 sets out the landbank of permitted reserves for the county (expressed as the number of years' supply remaining) based on four alternative provision rates: the Sub-Regional Apportionment (SRA); the CSDMP; the ten-year average annual sales; and the three-year average annual sales. The latter has been included due to the sharp increase in sales during the past three years. The table shows that at the end of 2018 the landbank of limestone for the county significantly exceeded 10 years under all four provision rates.

Table 10: Landbank of limestone (Aggregate) based on alternative provision rates (as at 31 December 2018)

Permitted reserves (as at 31.12.18) (mt)	Sub-Regional Apportionment 2005-2020*		Lincolnshire Minerals and Waste Local Plan*		10 year average sales		3 year average sales	
	Annual rate (mt)	Landbank (years)	Annual rate (mt)	Landbank (years)	Annual rate (mt)	Landbank (years)	Annual rate (mt)	Landbank (years)
20.86	1.1	18.96	0.62	33.65	0.60	34.76	0.96	21.73

* As set out in the Core Strategy and Development Management Policies document (adopted 2016)

3.35 The level of permitted reserves in Table 10 has taken into account figures supplied by mineral operators which incorporated revised estimates of overall mineral reserves. These indicate an increase in the estimated aggregate/non-aggregate split in the material recovered at some sites resulting in a slight rise in the aggregate landbank figure since 2017.

Landbank of chalk

3.36 It is estimated that the permitted reserves of chalk as at 31 December 2018 were 5.07mt (EMAWP Monitoring Report 2018). As no reliable sales figures have been available since 2009, it is not possible to calculate the landbank based on the average of the past 10 years of sales. However, based on estimated sales of 80,000 tonnes per annum, the landbank would be over 63 years.

Productive capacity

3.37 As stated previously, individual operator returns for the aggregate surveys are treated as confidential. Therefore Tables 11 and 12 provide qualitative assessments of whether any issues are likely to arise that may affect the supply of limestone or chalk within the next ten years. These demonstrate that productive capacity can be maintained for both limestone and chalk.

3.38 For limestone, there is only one quarry with an end date that falls within the plan period: Dunston Quarry (end date 2025). However, as Table 11 indicates, there are no restrictions on production levels for all but two of the 14 quarries in the county. Therefore should any site close, there are a sufficient number of other sites that can step up production to compensate.

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3.39 For chalk, it is estimated that sales are no more than 80,000mt per annum. Therefore, given the substantial reserves (5 million tonnes), which are located at quarries which are not subject to output restrictions, there is nothing to suggest there are any issues regarding productive capacity at this time.

Table 11: Productive Capacity: Limestone

Site	Operator	Current status	Planned production level (tonnes per annum)*	Provision rate set by CSDMP (tonnes per annum)	3 Year average production (tonnes per annum) (2)	Planning Permission End Date	Comment and Source of Information
Longwood	Longwood Quarries	Active	200,000 *			21/2/2042	Information based on 2013 ROMP application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 10 years.
Brauncewell	Brauncewell Quarries Ltd	Active	200,000 *			17/04/2042	Information based on 2007 application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 10 years.
Dunston	Len Kirk Plant Hire Ltd	Active	50,000-80,000 *			27/05/2025	Information based on 2017 application.
Metheringham Heath	Longwood Quarries Ltd	Active	(1) Not specified / not limited			21/02/2042	Information based on 2006 application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 10 years.
Harmston	Harmston Waste Management	Active	30,000*			21/02/2042	Information based on 2016 application. Site is not currently extracting limestone
Castle Quarry (Ancaster)	Goldholme Stone	Active	(1) 156,000			10/12/2049	Information based on 2007 application. The site is subject to limitations on vehicle movements.
Copper Hill Quarry (Ancaster)	Ancaster Copper Hill Stone	Active	30,000			17/03/2044	Information based on 2013 application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 10 years.
South Witham	Breedon	Active	150,000-200,000*			29/08/2078	Information based on 2017 application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 10 years.
South Witham	N/A	Inactive	Inactive			02/02/2042	Information from 2014 application.
Creeton	Creeton Quarry Ltd	Active	100,000*			21/02/2042	Information based on 2011 application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 10 years.
Station Quarry, Great Ponton	Harmston Waste Management	Active	100,000*			10/10/2055	Information based on 2011 ROMP application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 10 years.
Little Ponton	Geo Quarries Ltd	Active	30,000-100,000*			02/02/2042	Information based on 2013 ROMP application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 10 years.
Colsterworth Triangle	CESL	Active	150,000*			08/06/2066	Information based on 2015 application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 10 years.
Ropsley	Roplsey Quarry Ltd	Inactive	Not specified *			21/12/2042	Information based on 2012 ROMP application. Site monitoring visits do not indicate any problems with maintaining sales levels during the next 10 years.
			County total > 1,346,000	**620,000**	**960,000**		**General comment: Both the CSDMP provision rate and the 3-year average sales rate fall below the total planned production level for limestone. One permission is due to lapse within the next 10 years, but continued demand could be met by the remaining active quarries.**

(1) The Quarry operates primarily for building stone, but periodically may produce significant quantities of aggregate
(2) The 3 year average, which is higher than the 10 year average, has been used to demonstrate that this will not have a detrimental effect on the productive capacity
* Production capacity not limited by planning permission

Table 12: Productive Capacity: Chalk

Site	Operator	Current status	Planned production level (tonnes per annum)*	Planning permission end date	General comment on planned production levels
South Thoresby	GBM	Active	Unknown*	27/11/2052	Based on recent sales brochure for the site
Highfield Quarry (Welton le Marsh)	Welton Aggregates Ltd	Active	Not specified*	21/022042	Information based on 2002 IDO application
Tetford Hill	JEG Farms	Inactive	Un-determined	21/022042	The planning permission for this site is currently subject to the suspension provisions of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011.
Nettleton Bottom	Able UK Ltd	Inactive	60,000*	26/10/2058	Information based on 2014 ROMP application Site currently inactive
			Total: Unknown		**General comment: There is no planned provision rate for chalk due to the low level of demand and lack of reliable information on sales. However, given the substantial permitted reserves, no significant issues have been identified with respect to stepping up productive capacity if the need arises.**

*Production capacity not limited by planning permisssion

Exports and imports of crushed rock

3.40 Details of the flow of aggregates into and out of the county are provided through the two National Aggregate Mineral Surveys carried out in 2009 and 2014, with more limited information provided by the annual survey carried out in 2018. The results of the three surveys with respect to crushed rock produced in the county are set out in Table 13. Unlike the first two surveys, the 2018 data includes sales of limestone for non-aggregate purposes. However, as this represented less than 10% of total sales, it is only likely to have had a limited impact on the distribution data.

Table 13: Distribution of crushed rock sales from Lincolnshire in 2009, 2014 and 2018*

Destination		2009 (a)		2014 (b)		2018 (c)	
		Tonnes	%	Tonnes	%	Tonnes	%
East Midlands	Lincolnshire	323,149	64.5	328,862	87.2	925,525	65.1
	Derbyshire & PDNPA	-	-	-	-	9,000	0.6
	Nottinghamshire	-	-	-	-	60,073	4.2
	Leicestershire/ Rutland	5,000	1.0	44,896	11.9	89,000	6.3
	Northamptonshire	-	-	-	-	39,022	2.7
	East Midlands – Unknown	40,000	8.0	-	-	164,000	11.5
	Total	**368,149**	**73.5**	**373,758**	**99.1**	**1,286,620**	**90.5**
East of England	Bedfordshire	-	-	-	-	25,000	1.8
	Cambridgeshire/ Peterborough	-	-	-	-	64,599	4.5
	East of England - Unknown	5,000	1.0	-	-	-	-
	Total	**5,000**	**1.0**	**-**	**-**	**89,599**	**6.3**
Yorkshire and the Humber Region	**Total**	-	-	-	-	**45,000**	**3.2**
Other	**Total**	**8,787**	**1.8**	**-**	**-**	**26**	**0**
Unknown	**Total**	**^119,017**	**23.8**	**3,433**	**0.9**	**-**	**-**

Source: (a) EMAWP AM2009 Survey; (b) Lincolnshire LAA May 2017; (c) previously unpublished 2018 Lincolnshire Mineral Survey data

* The 2018 data includes 141,132 tonnes of limestone sold for non-aggregate purposes

^ The sales data in the EMAWP report included a late return from an operator, but was inadvertently not included in the distribution data of that report. To remedy has been included in this table for 2009 under "Unknown" and the percentages have been amended accordingly.

3.41 The data for 2009 is less complete than for the other years with 119,017 tonnes of limestone going to unspecified destinations. Whilst this places some constraints on the interpretation of the data, Table 8 appears to indicate that there were no

substantial changes between this survey and the 2014 Survey. In contrast, the 2018 Survey shows a big increase in sales of Lincolnshire Limestone with greater amounts being exported to other areas of the East Midlands, the East of England and to the Yorkshire and Humber Region.

3.42 Imports of crushed rock into Lincolnshire totalled 317,000 tonnes in 2009 which rose to 446,000 tonnes in 2014. Lincolnshire was therefore a net importer of crushed rock in both years, but with a higher amount (398,000 tonnes) in 2014. The EMAWP report on the AM2009 survey indicates that imports were primarily from elsewhere in the East Midlands: Derbyshire (94,700 tonnes); Peak District National Park (39,863 tonnes); Leicestershire and Rutland (114,425 tonnes); and Northants (5,000 tonnes). No data is available for 2018.

3.43 The crushed rock produced in Lincolnshire is of a relatively low strength and with poor resistance to frost damage. It is therefore generally only suitable for use as construction fill or sub-base material. The recent upturn in sales of crushed Lincolnshire Limestone indicates an increased demand for this material for less demanding applications.

3.44 Higher quality crushed rock suitable for road surfacing or for concrete production needs to be imported into the county, principally from Derbyshire and Leicestershire. It is likely that Lincolnshire will continue to rely on imported, higher quality crushed rock to supply projects that require this material. Neither Derbyshire County Council nor Leicestershire County Council have identified any supply issues for crushed rock in their most recent LAAs (2018 data).

3.45 Despite its limitations, sales of crushed limestone extracted in the county have risen over the past three years indicating an increased demand for this material from both within the county and from adjoining areas for use in less demanding applications.

4. Recycled/Secondary Aggregate

4.1 Despite difficulties in obtaining reliable data, the National and Regional Guidelines for Aggregates Provision have set figures for “alternative aggregates” (aggregate materials other than land or marine won) which regions should aim to achieve. Alternative aggregates fall into two categories: recycled aggregates, which come from the reprocessing of materials that have previously been used in construction; and secondary aggregates, which are by-products of either quarrying/mining operations (such as colliery spoil) or industrial processes. The latest Guidelines propose that the East Midlands provide some 110mt of alternative aggregates for the period 2005 – 2020.

4.2 A number of national surveys have been conducted to measure and gain an understanding of the extent to which recycled and secondary materials have been used. The most recent study, undertaken by Capita Symonds for 2005 arisings, was published in February 2007. The survey methodology was very similar to that used in earlier surveys undertaken for 2001 and 2003.

4.3 Lessons learned during the earlier surveys mean that the findings of the 2005 survey were considerably more robust at regional level. However, at sub-regional level, they remained unreliable. The estimate for the production of recycled aggregate in Lincolnshire and Nottinghamshire in 2005 was 1,732,133 tonnes. In addition, 172,151 tonnes of recycled soil (excluding topsoil) was produced and re-used.

Recycled aggregate

4.4 Recycled aggregates are produced through the processing of Construction, Demolition and Excavation (CD&E) waste. This waste arises from the construction and demolition industries, including excavation during construction activities, and is made up of mainly inert materials such as soil, stone, concrete, brick and tile. Construction and demolition waste is generally suitable for a high level of treatment and recycling, while excavation waste is mainly soil and sub-soils that are managed differently.

4.5 Waste arising from the construction and demolition industries is difficult to measure for two reasons:

- firstly, due to the weight and transport costs associated with this waste stream, significant quantities of materials are recycled and re-used on site where they arise and, therefore, do not enter the recorded waste stream; and
- secondly, a proportion of CD&E waste is removed to be managed or incorporated into development at sites where the waste activity is considered to be low risk and therefore exempt from the environmental permitting system.

This means that data is only available for the rest of the material which is managed through permitted waste facilities. As a result the estimates made are at best the minimum quantity of waste arisings, and reflect the quantity of waste managed off-site in facilities that require planning permission and environmental permits.

4.6 Table 15 lists the main sites that were producing recycled aggregates in 2017. This updates the list in the Lincolnshire Waste Needs Assessment to take into account gains and losses of waste throughput, changes in management capacities, and sites which have closed or become inactive. These have been assessed utilising information from:

- planning applications;
- the Environment Agency's (EA) Waste Data Interrogator;
- the EA Site/Permit Register; and
- the county council's waste site monitoring and enforcement records.

4.7 As Table 14 shows existing CD&E recycling capacity in Lincolnshire is estimated at around 935,433 tonnes per annum. The current waste throughput is recorded from the EA's Waste Data Interrogator (2017) as 242,218 tonnes; however this figure only records arising's managed through permitted waste sites and as previously stated, does not account for the potentially significant volume of aggregates produced through exempt sites. However with overcapacity estimated in the region of 700,000 tonnes overall there is more than sufficient consented capacity for CD&E recycling at this time.

4.8 The general trend in respect of CD&E waste management is for decreasing disposals of CD&E waste to landfills, quarries and exempt facilities and an increasing diversion of waste, especially through recycling. This will lead to a greater provision of CD&E waste as recycled aggregate assisting the council in working towards future recycled aggregate production requirements, and achieving a reduction in the demand for primary aggregate.

4.9 The council's waste needs will be periodically reviewed and the relevant findings will be reported in subsequent LAAs.

Table 14: Construction, Demolition and Excavation waste Recycling Sites in Lincolnshire (2017)

Site	LMWLP site no.	Operation#	Waste^	2017 WDI returns ^	Maximum Capacity#
Mansgate Quarry	172	Recycling	CD&E	101	50,000
Kirkby on Bain Quarry	171	Recycling	CD&E	2,512	20,000
Copper Hill Quarry	88	Recycling	CD&E (Haz)	9,743	15,000
Brauncewell Quarry Transfer Station	14	Recycling	CD&E	0	11,074
Brauncewell Quarry Recycling	14	Recycling	CD&E	20,503	34,000
Kettleby Quarry	170	Recycling	CD&E	0	15,000
South Witham Quarry (East)	181	Recycling	CD&E	0	20,000
Park Farm Quarry Tattershall	36	Recycling	CD&E	0	30,000
Swinderby Quarry	174	Recycling	CD&E	44,119	44,119
The Orange Skip Company	183	Recycling	CD&E	4,030	75,000
Creeton Quarry,	184	Recycling	CD&E	0	25,000
Caenby Hall Waste Transfer Station	47	Recycling	CD&E	14,840	10,719
South Thoresby Quarry	173	Recycling	CD&E	21,872	30,000
Castle Quarry	189	Recycling	CD&E	0	*
Baston No1 Quarry	191	Recycling	CD&E (Haz)	0	40,000
Harlaxton Engineering Services	192	Recycling	CD&E	3,048	50,000
Great Ponton Quarry (Station Quarry)	193	Recycling	CD&E	0	4,000
Inert Treatment Facility	13	Recycling	CD&E	55,365	180,000
Dunston Quarry	63	Recycling	CD&E	25,581	75,000
Lindum Group Ltd	71	Recycling	Haz, CD&E	0	75,000
Longwood Quarry	205	Recycling	CD&E	2,158	10,000
Sharpes Haulage	214	Recycling	CD&E	258	749
Colsterworth Landfill Site Aggregates Recycling Facility	219	Recycling	CD&E	16,100	20,000
Whisby Quarry	3a	Recycling	CD&E	0	75,000
Highfield Quarry	109	Recycling	CD&E (Haz)	21,216	25,000
Baston Asphalt Plant	225	Recycling	CD&E	772	772
Totals				**242,218**	**935,433**

see paragraph 4.6

^ Source: Environment Agency Waste Data Interrogator (2017)

* Not specified

Secondary aggregate

4.10 The most recent annual returns (Waste Dataflow DEFRA 2017) report that 39,016 tonnes of incinerator bottom ash was produced by the Energy from Waste Plant at North Hykeham that was exported for recycling into aggregates.

5 Marine won aggregates

5.1 The marine aggregates industry makes a significant contribution to the demand for sand and gravel in England and wales, contributing around 21% (15-20mt per annum) of national product, which is predominantly supplied to the South East of England and London. All of the offshore sand and gravel reserves are owned by The Crown Estate which awards commercial agreements to mineral operators for extraction.

5.2 The National and Regional Guidelines for Aggregates Provision 2005 to 2020 assume marine aggregates will not contribute to meeting demand in the East Midlands sub region. However, the coast off Lincolnshire is within the Humber Dredging Area which currently has primary reserves totalling 50.90mt. There are 10 dredging licences in place in this area permitted for the removal 5.9mt of material per annum. Current estimates suggest there are 26 years of primary marine aggregate permitted based upon the 10 year average offtake of 1.96mt, with 1 further licence if approved increasing the permitted tonnage by a further 0.6 mtpa. In 2018, 2.78mt of material was dredged from the permitted licensed tonnage with another 0.7mt dredged for beach nourishment (Marine Aggregates Capability & Portfolio 2018, The Crown Estate).

5.3 The latest distribution figures (2017) for material dredged from the Humber/North East region indicated that 68.5% was delivered to mainland Europe, 24.9% to the Humber/North East, and 6.6% to the Thames Estuary and East Coast (Marine Aggregates Capability & Portfolio 2018, The Crown Estate). Locally the 2018 figures for landings of material to the Humber wharves have maintained the upturn in the volume of aggregates landed at 0.140mt with only 0.02mt landed at the south bank Humber wharves (North and North East Lincolnshire). The remainder delivered to wharfs in Blythe and on the Rivers Tyne and Tees (Marine Aggregates - The Crown Estate Licences: summary of statistics 2018).

5.4 The lack of materials landed at Lincolnshire wharves has previously been interpreted as a consequence of limited landing opportunities for marine aggregates in the county. Navigable wharfage in Lincolnshire is limited to Boston and although there are wharfs at Gainsborough, Sutton Bridge and Fossdyke they are not equipped for landing aggregates or have an associated railhead. However there are suitable and large deep water ports in North East Lincolnshire at both Grimsby and Immingham that are not at present utilised to their full potential to provide wharfage for landing mineral from the Humber dredging area. This might suggest that when viewed in conjunction with the very limited landings for the area, direct access to ready markets and lack of demand in the Lincolnshire area that cannot already be met by existing resources could be the limiting factor for local growth in the marine aggregates sector.

5.5 Whilst marine aggregates have not been part of the aggregate supply to Lincolnshire they have been used for coastal defence works in the county. For example marine dredged material has been used as part of the Environment Agency's Lincshore Sea Defence scheme which is underway to protect the coast between Mablethorpe and Skegness. The Environment Agency "Lincshore" nourishment scheme was started in 1994 in order to provide a 1:200 year standard of protection. The nourishment involved sand placement on the beach at Whitehouse Corner, south of Ingoldmells Point to Mablethorpe and, based on changes in topographic surveys, the estimated volume between 1994 – 1995 was over 1.5 million cubic metres. The initial scheme of nourishment was completed in 1998 and continues along various stretches to top up beach levels at erosion hotspots. From 1994 to 1998 a total of 6.21 million cubic metres of sand and gravel, dredged offshore was added to the Lincshore coast. In 2017 504,401 tonnes of material was used and the Lincolnshire Beach Management 2018-2021 Scheme (part of the Saltfleet to Gibraltar Point Strategy 20018-2021) is the latest phase of work pumping around 40,000tonnes of sand to raise beach levels lost naturally to the sea. It has been estimated that 9 million cubic metres of sand would be required over the next 50 years to sustain the coast (Coastal Morphology Report Lincolnshire, Mablethorpe to Skegness RP023/L/2011 June 2011)

5.6 It is expected that the situation described above will continue. Lincolnshire is therefore not expecting marine aggregate to make a contribution to supply options in the area or to be landed in the county. However, it is recognised that there will be continued activity off the coast of Lincolnshire that is transported to other areas both in the UK and abroad and make a contribution to their supply options.

6. Local considerations and future demand

6.1 When looking ahead at possible future demand, the national Planning practice guidance states that LAAs must take into account other relevant local information in addition to the 10 year rolling supply. This section therefore considers the factors that may influence the demand for aggregate. It then sets out the approach the council will take to calculating the level of provision that needs to be made to meet the anticipated demand.

Population projections

6.2 Recent changes to the long term population trend projections (Source: Lincolnshire Research Observatory 2017) indicate that during the period 2016-2031 the population is projected to increase by 8% in the county (Table 15). At a district level, the largest increases would occur in South Kesteven (10%) and West Lindsey (10%), with the lowest increase in the East Lindsey (4%). Table 15 illustrates that despite clear imbalances between the districts, Lincolnshire's population is set to grow overall at around the same rate as the rest of the East Midlands and England.

Table 15: Population projection from 2016 to 2031

Administrative Area	Population		Increase in population (%)
	2016	2031	
Boston	67,700	71,800	6
East Lindsey	138,700	144,900	4
Lincoln	97,400	102,400	7
North Kesteven	113,600	123,200	8
South Holland	92,500	101,200	9
South Kesteven	140,900	155,500	10
West Lindsey	93,900	103,000	10
Lincolnshire	**744,800**	**808,792**	**8**
East Midlands	**4,725,400**	**5,127,100**	**9**
England	**55,268,100**	**59,789,800**	**8**

Source: Lincolnshire Research Observatory: population Trends 2017 based on Office for National Statistics population estimates and projections released 2017 and 2018)

Planned/proposed housing provision

6.3 The Practice Guidance on the Production and Use of Local Aggregate Assessments (December 2016) (Planning Officers' Society and Mineral Products Association) recommends comparing planned levels of housing provision with housing completions over the previous 10 years to provide an indication of relative scale and therefore of potential implications for aggregate demand and supply. In terms of the

previous provision, Table 16 sets out the net additional dwellings for the county and for each district for the 10 year period 2008-9 to 2017-18.

Table 16: Housing supply - net additional dwellings for each district for the 10 Year Period 2008-09 to 2017-18

Administrative Area	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Average
Lincolnshire	**3,408**	**3,353**	**2,613**	**2,222**	**1,750**	**2,105**	**2,496**	**2,224**	**2,367**	**2,711**	**2,706**
Boston	359	171	173	91	64	174	109	180	351	394	**225**
East Lindsey	664	999	312	262	226	338	491	323	348	471	**457**
Lincoln	332	432	468	435	212	246	166	133	130	265	**313**
North Kesteven	540	521	618	571	319	237	443	472	489	578	**492**
South Holland	447	319	243	167	199	254	255	293	266	296	**303**
South Kesteven	608	474	500	474	493	532	645	495	478	448	**554**
West Lindsey	459	438	300	222	237	324	387	328	305	259	**362**

Source: DCLG Table 122 Live tables on housing supply: net additional dwellings (15 November 2018)

6.4 The current situation with respect to planned housing provision in Lincolnshire is as follows:

- A joint local plan for the City of Lincoln, North Kesteven and West Lindsey known as the "Central Lincolnshire Local Plan" was adopted on 24 April 2017. This sets a housing target of 1540 dwellings (net) per annum for the local plan period (2012-2036). The plan is currently under review and was recently subject to a consultation ending on 18 July 2019.
- The East Lindsey District Council local plan is in two parts: a Core Strategy and a Settlement Proposals Document. The Core Strategy (adopted July 2018) covers the period February 2016-2031. This makes provision for the phased delivery of 7819 homes between 2017 and 2031 at 558 per annum.
- South Kesteven District Council is producing a new local plan to cover the period from 2011 to 2036. The Pre-Submission Draft Local Plan (2018) has been submitted for examination and the hearings took place between 8 and 31 May 2019. The plan makes provision for the annual delivery of 625 homes over the plan period.
- A joint local plan has been produced for Boston Borough and South Holland. This is known as the "South East Lincolnshire Local Plan" and covers the period 2011-2036. The plan was adopted on 8 March 2019 and includes provision for a net increase in dwellings of 310 per annum in Boston Borough and 467 in South Holland.

6.5 The provision made in the above plans and emerging plans amounts to 3500 (net) dwellings per annum for Lincolnshire. Table 17 compares the average annual levels of housing supply over the past 10 years with the planned/proposed annual levels of housing provision up to 2031. The table also groups the districts into the sand and gravel production areas to give an indication of how these production areas might be affected. However, it should be borne in mind that this is only an approximation as:

- the boundaries of the production areas do not strictly coincide with the district boundaries; and
- in practice some material does flow between the production areas, particularly where there are good transport links (for example, whilst Grantham is located in the South Lincolnshire Production Area, its proximity to the A1 means that developers can readily source sand and gravel from the Lincoln/Trent Valley Production Area).

Table 17: Comparison of net additions to housing stock over the past 10 years to planned/proposed net housing provision to 2031

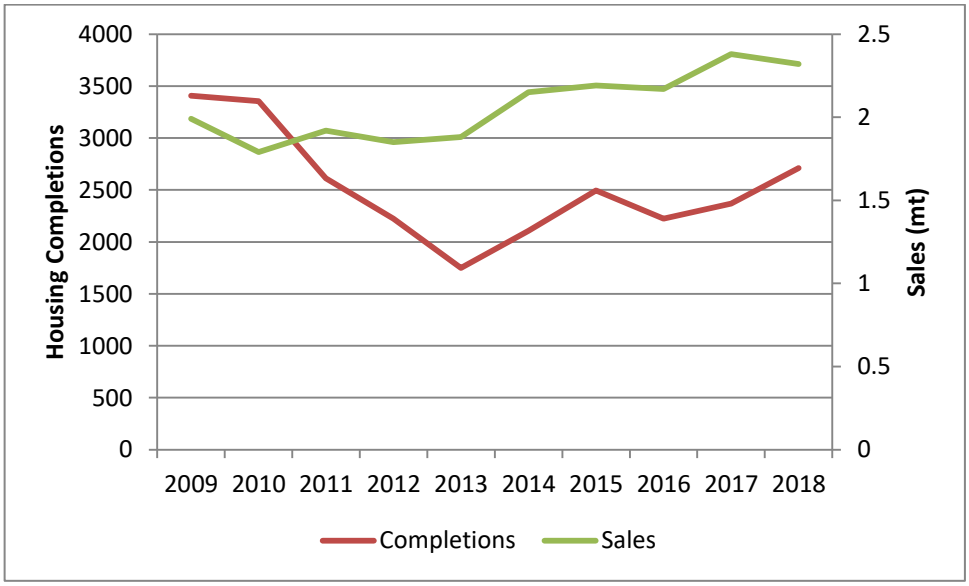
Production area	Administrative area	Average annual net additions to housing stock 2008/9-2017/18 (A)	Planned/proposed net housing provision to 2031 in recently adopted and emerging local plans (average per annum) (B)	Percentage increase in net housing delivery (A) required to meet planned housing provision (B)
Lincoln/Trent Valley	Lincoln	313	1,540	32.0
	North Kesteven	492		
	West Lindsey	362		
	Total for Lincoln/Trent Valley	**1,167**	**1,540**	**32.0**
Central Lincolnshire	East Lindsey	457	558	22.2
	Boston	225	310	37.8
	Total for Central Lincolnshire	**682**	**868**	**27.3**
South Lincolnshire	South Holland	303	467	54.1
	South Kesteven	554	625	12.8
	Total for South Lincolnshire	**857**	**1,092**	**27.4**
	County total	**2,706**	**3,500**	**29.3**

Source: *Adopted and emerging local plans in Lincolnshire (July 2019)

6.6 Table 17 illustrates that the annual level of planned/proposed housing provision set out in the adopted/emerging local plans is higher than the annual levels of net additional dwellings achieved in the previous 10 year period. For the county as a whole, this amounts to an increase of 29.3% in housing delivery that will be required to achieve plan provision levels. The greatest increase in net housing delivery (32.0%) is in the Lincoln/Trent Valley (which has the highest annual sand and gravel provision rate in the CSDMP) with the lowest in Central Lincolnshire (27.3%) (which has the lowest annual sand and gravel provision rate in the CSDMP).

6.7 The Minerals Products Association estimates that a typical house uses up to 50 tonnes of aggregates in its construction (https://www.mineralproducts.org) suggesting there should be a clear correlation between aggregate production and housebuilding. In practice, however, Figure 8 shows that a strong correlation between sales of sand and gravel and housing completions in Lincolnshire does not exist. Furthermore, given that a growing proportion of the sand & gravel sales have been exported out of the county in recent years, the correlation is likely to be even weaker than the graph suggests. It is therefore clear that as a guide to sand and gravel demand this relationship should be considered with extreme caution.

Figure 8: Comparison of sand and gravel sales with housing completions in Lincolnshire 2009 – 2018



6.8 Despite the aspirations of Local Plan provision, housebuilding in Lincolnshire has seen a steep decline of almost 50% in completions from a high of 4,525 in 2007 to the current figure of 2,711 in 2017. Since 2011 the trend for housing completions has averaged just 2194pa indicating that notwithstanding the dubious correlation to sand and gravel demand the level of housing delivery is

unlikely to increase significantly enough to impact upon mineral supply in the shorter term. The situation shall however continue to be monitored on an annual basis through the LAA and subsequent plan reviews.

Economic conditions

6.9 The most recent Local Economic Assessment was produced for Lincolnshire by the Lincolnshire Research Observatory in 2011. The assessment highlights a number of key issues and challenges for the county including:

- a poor performing economy with low GVA (Gross Value Added);
- low unemployment, skills and wages;
- difficult trading conditions for local businesses;
- fast growing but ageing population;
- rural inaccessibility issues;
- urban deprivation issues;
- rise in house price not in line with wages and house builds; and
- projected reduction in greenhouse gases.

6.10 Despite these issues, the assessment states that the county's economy is set to grow up to 2030 at an average rate of around 2.3% per year which is slightly over that seen for 2016 (2.0%). However, figures from 2018 show overall UK GDP growth at 1.4% its lowest level since 2012 down from 1.8% in 2017 (https://www.cnbc.com/2019/02/11/uk-2018-economic-growth-weakest-since-2012.html)

6.11 The construction industry had a weak start to 2018 with construction output at 1.6% in the first quarter, however productivity has risen steadily to 2.1% in the third quarter driven by new work orders according to analysis carried out by the Office for National Statistics (https://www.ukconstructionmedia.co.uk/news/ons-construction-output-q3/). Due to these encouraging figures the Construction Products Association had forecast construction growth at 2.3% for 2019 however this figure has been revised down to 0.3% due to the uncertainties over the UKs withdrawal from the European Union (https://www.constructionproducts.org.uk/news-media-events/news/2019/january/uk-construction-growth-downgraded-again-as-uncertainty-intensifies/)

6.12 There had been some reported growth in manufacturing and in confidence for the East Midlands Region as a whole during 2017, however notwithstanding evidence for an uplift in the coastal visitor economy in 2018, current data would indicate that overall and for the time being, a period of constrained growth and uncertainty will continue throughout 2018 and probably for a while longer

(Lincolnshire Research Observatory: Lincolnshire Economic Briefing Q3 2017 and Q2 2018).

Infrastructure

6.13 The National Infrastructure Delivery Plan 2016-2021 (Infrastructure and Projects Authority) identifies two key projects and programmes in Lincolnshire which will have an impact on the demand for aggregate:

- The Lincoln Eastern Bypass – which aims to minimise traffic congestion, support Lincoln's growth as a principal urban centre, and serve as a step towards the completion of an eventual ring road around Lincoln. Work commenced on this in December 2016 and is scheduled for completion in October 2020 and;
- The Boston Barrier (and associated work to existing defences) – which will reduce the risk of flooding to around 15,000 properties over the next 100 years. Construction commenced in 2018 with an anticipated completion date in late 2019.

6.14 A further scheme identified in the plan, Lincshore, is the previously mentioned flood defence scheme covering beaches from Mablethorpe to Skegness. This, however, only uses sand dredged from the sea bed which is pumped onto the beach to replace levels lost to the sea during the winter.

6.15 The Greater Lincolnshire Strategic Economic Plan 2014-2030 sets out the actions that the Greater Lincolnshire Local Enterprise Partnership will champion, to achieve economic growth in Greater Lincolnshire (an area which includes the county of Lincolnshire and the area covered by the two unitary authorities of North Lincolnshire and North East Lincolnshire). The Plan includes the following schemes within the county which will affect demand for aggregate:

- Grantham Southern Relief Road (a new relief road, bridge and connections that will facilitate a major sustainable urban extension with a mix of employment land and up to 4,000 new homes), which is currently under construction and is scheduled for completion in Winter 2022/2023;
- Boston Quadrant, Phase 1 (mixed use development that will enable housing and employment land to be developed and deliver a new distributor road to reduce congestion in the town centre, which is currently under construction.

6.16 The Central Lincolnshire Infrastructure Delivery Plan 2015-2036, is the first step in planning for and delivering the infrastructure that is required to support growth in Central Lincolnshire. The plan sets out the high level aspirations for the county

and the delivery of projects as they emerge will be monitored for their potential impacts for aggregates consumption as they progress.

Calculating aggregate provision/landbanks

6.17 Whilst the considerations set out above could affect the future demand for aggregate during the remainder of the plan period (ending in 2031), any such changes in demand could impact on sand & gravel very differently from crushed rock. For sand and gravel there are good reasons why demand may not rise significantly:

- Firstly, attempts to link the future demand for sand & gravel with planned housing provision and economic considerations in the council's Local Aggregate Assessment 2014 significantly over-estimated demand levels and resulted in the council having to significantly revise the basis for calculating the landbank in subsequent LAAs. Figure 8 incorporating the more recent 2018 housing completions and sand and gravel sales data demonstrates that there is little correlation between these two variables.

- The 10-year average sales for the county as a whole and for each production area still fall below the annual provision rate set by the CSDMP. Furthermore, whilst most of the infrastructure projects identified have commenced, the three-year sales averages are still below the annual provision for the county and for each Production Area as set out in the CSDMP, except in the Lincoln/Trent Valley. However, even in the Lincoln/Trent Valley sales are not significantly higher than the planned provision rate.

- Notwithstanding the above, there is evidence set out in Section 3 that internal consumption of sand and gravel has actually declined and that the recent increase in sales is due to a greater quantity being exported to counties with their own indigenous supplies. This situation is therefore likely to be resolved as markets improve and sites which have been "mothballed" in those counties, particularly Nottinghamshire and Cambridgeshire, come back into production.

- The recent sales data continues to reinforce the view of the EMAWP that the Sub-Regional Apportionments are out-of-date and should not be used as a basis for calculating landbanks.

It is therefore considered that the future provision rate for calculating the landbanks for sand and gravel should continue to be based on the average of the last 10 years of sales (2009-2018) (see Table 4).

6.18 For crushed rock (limestone) the situation is very different. In the last three years sales have increased significantly, averaging 0.96mt. Sales at this level have not been seen since before the commencement of the recession in 2007, with sales in 2018 (1.28mt) actually exceeded the SRA (1.1mt).

6.19 Sales of Lincolnshire Limestone have historically been quite volatile and appear to be more sensitive to the economic conditions than sales of sand & gravel. This is probably due to the fact that it has limitations as an aggregate which results in sales being disproportionately hit during times of recession – perhaps because demand for lower grade aggregates can more readily be met from alternatives such as recycled aggregates.

6.20 Lincolnshire Limestone aggregate demand rose sharply from 2016 to 2018, which is likely to be associated with materials being sourced for infrastructure projects and short term highways projects including the construction of the A15 Lincolnshire Eastern Bypass. Several of these projects are nonetheless scheduled to be completed by 2020, after which demand for limestone is likely to recede. However, there has been a marked increase in the volume and destinations for exports of limestone in addition to the increased indigenous consumption, suggesting there may also be some general growth in demand for limestone products.

6.21 Lincolnshire imports significant quantities of high grade crushed rock aggregate from Derbyshire and Leicestershire. It is therefore important that sufficient reserves of Lincolnshire Limestone are made available to ensure that this lower grade aggregate is used for meeting less demanding applications – which may help to conserve reserves of higher grade crushed rock currently imported into the county.

6.22 Given that recent sales indicate a sharp increase in demand, it is considered appropriate to move away from calculating the landbank based on the average of the past 10-years sales and instead use more recent sales data.

It is therefore considered that the future provision rate for calculating the landbank for crushed rock aggregate (Lincolnshire Limestone) should be based on the average of the last three years sales (2016-2018) (see Table 10).

7. Future provision

Crushed rock

7.1 Lincolnshire has sufficient permitted reserves of crushed rock to last well beyond the period of the CSDMP which ends in 2031 (see Section 3). The county council has therefore not allocated further sites in the SLD. Policy M5 (Limestone) and Policy M6 (Chalk) of the CSDMP do, however, allow further reserves to be released provided they meet a proven need that cannot be met by existing sites/sources and accord with all development management policies and restoration policies set out in the CSDMP.

Sand and gravel

7.2 At the end of 2018, Lincolnshire had sufficient permitted reserves of sand and gravel for all three Production Areas, based on average sales over the period 2009-2018, to meet the 7 year minimum landbank. Further reserves will, however, need to be released to maintain production over the period of the CSDMP. The SLD proposes to do this by:

- granting planning permissions for extensions to both the Whisby Quarry and the Kirkby on Bain Quarry (which have subsequently been granted); and
- granting planning permission for the sites allocated in the plan, subject to the proposals being in accordance with the development plan.

7.3 The SLD allocates eight sites for the winning and working of sand and gravel. These sites cover the areas where applications are expected during the plan period. As some of these sites would not be required until well into the plan period, at current production levels they would only be partially worked during this period. Table 18 (taken from the SLD) demonstrates how the requirement for a steady and adequate supply of sand and gravel would be met from the allocated sites.

Table 18: Sites included in the SLD for the extraction of sand and gravel and the estimated contribution to the shortfall in the provision of sand and gravel 2014-2031

Production area (and shortfall)	Site reference	Site name	Total reserves	Estimated contribution to the shortfall
Lincoln/ Trent Valley **(shortfall 4.56 mt)**	MS04-LT MS05-LT	Swinderby Airfield Norton Bottoms Quarry, Stapleford	7.0mt 6.8mt	2.25mt 2.31mt
Total			13.8mt	**4.56mt**
Central Lincolnshire **(shortfall 1.21mt)**	MS07/08-CL MS09-CL MS15-CL	Kettleby Quarry, Bigby North Kelsey Road Quarry, Caistor Kirkby on Bain (Phase 2)	3.25mt 0.15mt 3.1mt	0.86mt 0.13mt 0.22mt
Total			6.5mt	**1.21mt**
South Lincolnshire **(shortfall 5.35mt)**	MS25-SL	Manor Farm, Greatford	3.0mt	2.79mt
	MS27-SL	Baston No 2 Quarry, Langtoft	2.5mt	1.40mt
	MS29-SL	West Deeping	2.2mt	1.16mt
Total			7.7mt	**5.35mt**

Source: Lincolnshire Minerals and Waste Local Plan: Site Location document

7.4 As illustrated, the county council has made provision for sand and gravel that is over and above the estimated shortfall for the plan period which amounts to an additional 16.88mt of allocated reserves for the county.

7.5 The level of provision made in the SLD is based on the average 10 years' sales for the period 2004-2013 (in accordance with Policy M2 of the adopted CSDMP). Moving forward, the current 10 year average sales figures for the period 2009-2018 for the county as a whole and for the three Production Areas are below the annual provision rates set by the CSDMP.

7.6 In addition to the existing mineral provision, Policy M4 of the CSDMP allows planning permission to be granted for sites not allocated in the Site Locations document where required to either meet a proven need that cannot be met from existing sites, or to meet a specific shortfall in the landbank. In the case of a shortfall to the landbank, the site would need to form an extension to an existing working or be located in the relevant Area of Search set out in the CSDMP. In all

cases, proposals would need to accord with all the Development Management Policies and Restoration Policies of the CSDMP.

Conclusion

7.7 Based on the average of the last 10 years of sales data (2009-2018), the county council considers that it is making more than sufficient provision for the supply of sand and gravel for the period of the Lincolnshire Mineral and Waste Local Plan, which ends in 2031. This is through existing permitted reserves, applications with committee resolutions to grant planning permission subject to the completion of S106 agreements, and the sites allocated in the Site Locations document. Even if sales were to rise significantly in the near future, the LMWLP is likely to provide sufficient flexibility to accommodate increases in production.

7.8 There has been a significant rise in sales of crushed rock (Lincolnshire Limestone) over the past three years, which has prompted a revised method for calculating the landbank, which is now based on the average of the last three years of sales. Notwithstanding the proposed increase, the current level of permitted reserves should be sufficient to cover the plan period.