Norfolk County Council

Norfolk Minerals and Waste Local Plan

Monitoring Report - Mineral Data
Local Aggregate Assessment & Silica Sand Assessment
2016

October 2017

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Executive Summary

There are two general mineral types which are extracted for aggregate use in Norfolk. These are sand and gravel and carstone, and key facts on the production of these minerals during the calendar year 2016 are shown below.

Sand and Gravel key facts

- Annual production was 1.62 million tonnes (mt) up to 31 December 2016.
  Annual production was 14% up on production in 2015 of 1.41mt
- The 10 year average of annual production was 1.41mt up to the end of 2016.
- The 10 year average for 2016 was 5% down on the 2015 figure of 1.49mt.
- The 3 year rolling average was 1.47mt up to 31 December 2016.
  The 3 year rolling average was 14% up on the 2015 figure of 1.29mt.
- Norfolk's apportionment of sand and gravel from sub-national guidelines is currently 2.57mt, having previously been 2.98mt until the end of 2010 and 3.4mt prior to 2003.
  The annual production for 2016 (1.62 mt) was 63% of the apportionment target; this was up 8% on the annual production for 2015, which was 55% of the apportionment target.
  Sand and gravel production in Norfolk has not reached the apportionment target in the last twenty years. The 20 year average is 1.98 mt.
- There were no planning applications or planning permissions for new sand and gravel extraction in 2016.
- Reserves of sand and gravel at 31 December 2016 were 16,536,440 tonnes, a decrease of 10% on the 2015 figure.
- Based on the 10 year average production figure of 1.41mt, the remaining allocated sites in the Minerals Site Specific Allocations Plan would provide a further 13.3 years of sand and gravel resource (18.70 mt).

Carstone key facts

- Annual production was 106,438 tonnes up to 31 December 2016.
  Annual production was 58% up on production in 2015 of 67,320 tonnes.
- The 10 year rolling average was 98,839 tonnes up to 31 December 2016.
  The 10 year rolling average was 4% down on the 2015 figure of 102,801 tonnes.
- The 3 year rolling average was 77,982 tonnes up to 31 December 2016.
  The 3 year rolling average was 42% up on the 2015 figure of 54,901 tonnes.
- Norfolk's apportionment of carstone from sub-national guidelines is currently 200,000 tonnes, having previously been 250,000 prior to 2003.
  The annual production for 2016 (106,438 tonnes) was 53% of the apportionment target; this was up 20% on the 2015 figure.
  Carstone production in Norfolk has reached the apportionment target once in the last twenty years. The 20 year average is 126,500 tonnes.
- There was one planning permission granted for new carstone extraction in 2016. This was an extension to an existing permitted carstone extraction site, and was for increased depth of working, which resulted in an increase in the permitted reserve of 360,000 tonnes.

Recycled and secondary aggregate key facts

Please note that the data contains inert and Construction/Demolition waste; some parts of this waste stream are unsuitable for use as recycled aggregate, however it is not possible to disaggregate these wastes from the totals.

- Annual production was 435,000 tonnes up to 31 December 2016.
  Annual production was approximately 21% up on production in 2015 of 359,000 tonnes.

- The 10 year rolling average was 435,900 tonnes up to 31 December 2016.
  The 10 year rolling average was nearly 7% down on the 2015 figure of 466,800 tonnes.

- The 3 year rolling average was 423,670 tonnes up to 31 December 2016.
  The 3 year rolling average was approximately 2% up on the 2015 figure of 414,330 tonnes.

Conclusion

Norfolk's share of the sub-national guideline figures (the apportionment) for sand and gravel of 2.57 million tonnes per annum and carstone of 0.2 million tonnes per annum represent higher figures than the average figures derived from local production. These higher figures were used in Core Strategy Policy CS1 as the basis for allocations to plan for the provision of a steady and adequate supply of aggregate and provide flexibility.

Average annual sales of 1.41 million tonnes for sand and gravel and 98,839 tonnes for carstone (as at 31/12/16) have been derived from a ten year sales based assessment compliant with the NPPF and NPPG. The Mineral Planning Authority does not consider it prudent at this time (prior to the planned Norfolk Minerals and Waste Local Plan Review) to base allocations purely on a rolling average of ten years' sales, as having regard to paragraph 14 of the NPPF, flexibility is required in allocations.

The forthcoming Minerals and Waste Local Plan Review will be the most appropriate method of determining any revised target for Core Strategy Policy CS1, having regarding to the data in this LAA. The aim of any revised target will be to achieve an adequate and steady supply of aggregate over the revised plan period to 2036, recognising that Norfolk has not met the apportionment figure for many years. Minerals sales figures for Norfolk will be used to determine the most appropriate production figure for site allocations to be based on, considering the need to balance flexibility in supply to meet growth targets, while ensuring the timely completion and restoration of aggregate extraction sites.

The Minerals Plan is up to date in relation to the supply of aggregate, and the County Council considers that the sand and gravel allocations within the plan to meet the CS1 target are deliverable. Therefore, it is not considered necessary to conduct a review into the aggregate allocations in the Plan as a result of the LAA. However, the aggregate allocations will form part of the forthcoming Minerals and Waste Local Plan Review.

Norfolk County Council has recently undertaken a Single Issue Silica Sand Review of the Minerals Site Specific Allocations Plan. The Inspector's Report has been received, and the Single Issue Silica Sand Review is due to be considered for adoption by the Council in December 2017. Silica sand is a nationally important industrial mineral and is not used for aggregate uses in Norfolk.

Secondary & Recycled Provision Allowance to 2026 – the locally derived data available on secondary and recycled aggregate is variable and not considered completely comprehensive because many operations, such as on site recovery, are not recorded. The data contains inert and Construction/Demolition waste; some parts of this waste stream are unsuitable for use as recycled aggregate, however it is not possible to disaggregate these wastes from the totals. This makes it difficult for Norfolk County Council to reduce the level of land won aggregate provision on this basis. The work carried out to produce the aggregate apportionment figures for the period 2005-2020 took account of the capacity of facilities to provide recycled and secondary aggregates i.e. the assumptions are built into the apportionment figure. Planned aggregate provision will be reviewed as part of the forthcoming Minerals and Waste Local Plan Review but it is not proposed to make any adjustments to the forecast mineral requirement figures based on secondary and recycling aggregate provision due to the quality of the data.

Marine Sources Requirement to 2026 – the total of less than 500 tonnes of marine sourced aggregate represents such a small percentage of the total aggregates used in Norfolk it is not proposed to make any adjustments to the mineral requirement figures based on marine sourced aggregates.

1. Introduction

This document is Norfolk's Local Aggregate Assessment. In order provide information on all of Norfolk's mineral extraction in one place, data on non-aggregate minerals has been included in separate sections at the end of this LAA. The non-aggregate minerals worked in Norfolk are silica sand, clay and chalk.

Annual monitoring of aggregate production and reserves in Norfolk has been carried out since 1975. In 2016 almost all the active sites produced sand and gravel, although there are three carstone (a type of sandstone) quarries in West Norfolk producing fill and aggregates. In addition there is one clay working, three active chalk workings and one major silica sand operation in the County. These existing sites are listed in this document in section 9.

The National Planning Policy Framework (NPPF) (March 2012) paragraph 145 requires Mineral Planning Authorities to plan for a steady and adequate supply of aggregates by determining their own levels of aggregate provision based on a rolling average of 10 years sales data and other relevant local information. The National Planning Practice Guidance (NPPG) contains current government guidance regarding Local Aggregate Assessments (LAA).

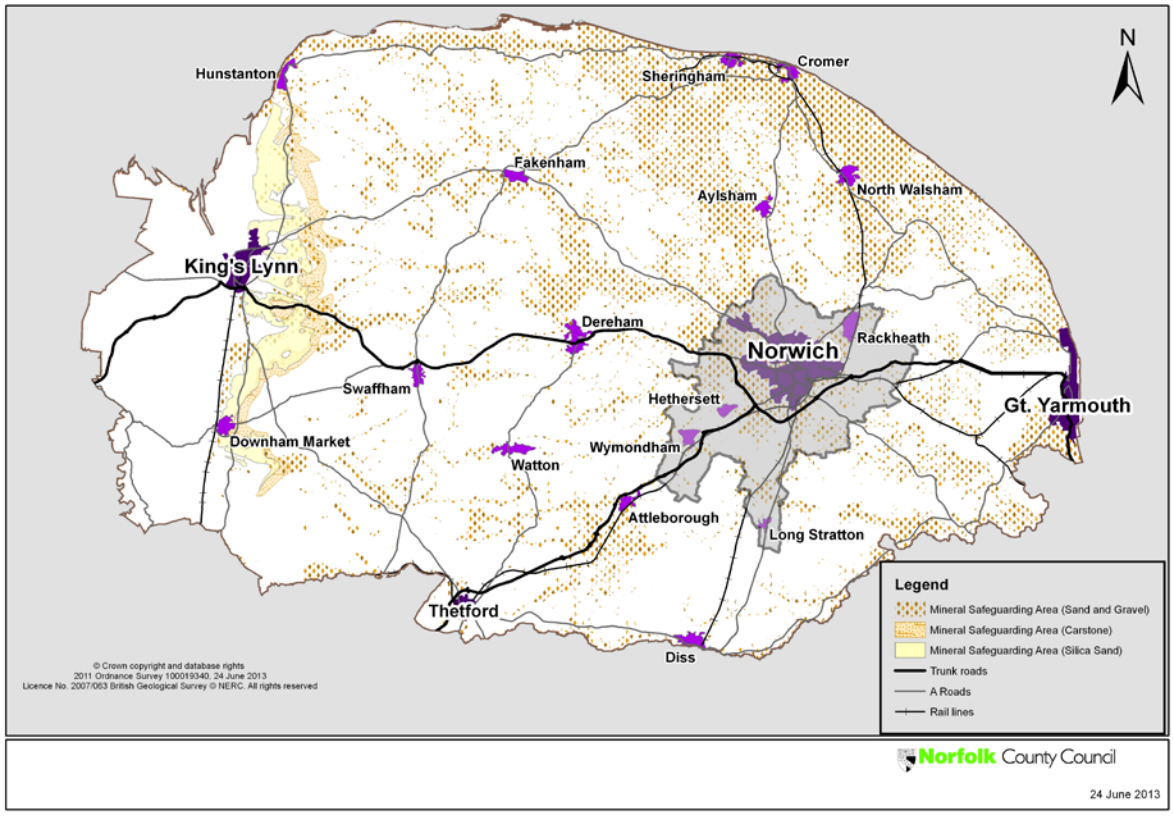
The NPPG contains similar requirements to the previous MASS guidance in relation to LAA's and states that LAAs are a monitoring report to provide "an annual assessment of the demand for and supply of aggregates in a mineral planning authority's area."

LAAs should include:

- a forecast of the demand for aggregates based on both the rolling average of ten-year sales data, and other relevant local information;
- an analysis of all aggregate supply options; 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.

The rolling average of 10 years sales data will inform the targets for mineral extraction requirements. The LAA is a part of the evidence base and will inform future reviews of the adopted Core Strategy and Minerals and Waste Development Management Policies Development Plan Document and the Minerals Site Specific Allocations DPD. It is important to note that the landbank figures included within the LAA are, as stated in the NPPG, "principally a monitoring tool to provide a Mineral Planning Authority with early warning of possible disruption to the provision of an adequate and steady supply of land-won aggregates". As landbanks relate to the provision of aggregates, a figure below 7 years for aggregate and 10 years for crushed rock should be used as a trigger to determine whether a review of the allocations plan is required.

Minerals in Norfolk



Map 1: Mineral resources in Norfolk

Sand and gravel is the main aggregate worked in Norfolk. A small amount of carstone is extracted mainly in west Norfolk for use as a building material or as a fill material. Crushed rock for asphalt production is imported in to Norfolk mainly by rail as no indigenous material is suitable for this use.

Norfolk is a county rich in important wildlife and designated landscapes. There are 12 Special Protection Areas (SPAs), seven Special Areas of Conservation (SACs) and 162 Sites of Special Scientific Interest (SSSIs). Significant habitats include the Wash, the Broads, the Brecks and the Fens. The Norfolk Coast Area of Outstanding Natural Beauty (AONB) runs, with a few breaks, from King's Lynn in the west along the coast to Winterton in the east, and covers 450 square km. These designations often restrict mineral activities.

New Capacity in Norfolk

The table below shows the new mineral reserves approved from 1 January to 31 December 2016.

Location	Applicant	Type of Facility	Reserve (tonnes)	
			Est. max Throughput Per Annum	Total
Snettisham	Frimstone Ltd	Carstone extraction	40,000 tpa	Approx. 360,000 tonnes additional reserve

Table 1: New Mineral Capacity in Norfolk 2016

2. Sand and Gravel

2.1 Production

Norfolk County Council carries out an annual survey for sand and gravel production, and the totals from this survey are included in this report. The totals for the last 10 years are shown in table 1 below:

Year	Production
2007	1,978,000
2008	1,584,000
2009	1,377,000
2010	1,196,000
2011	1,289,000
2012	1,131,941
2013	1,114,935
2014	1,359,620
2015	1,414,959
2016	1,622,566

Table 2: Sand and gravel 10 year sales 2007-2016
Source: Norfolk County Council - annual minerals survey

Sand and gravel is important as a construction aggregate and prior to the introduction of the NPPF and National Planning Policy Guidance it was planned using a system known as the Managed Aggregate Supply System. A key part of the MASS was an apportionment system for national need. A national requirement for sand and gravel was calculated, and this was then divided into sub-national requirements, which were in turn apportioned to individual MPAs as provision to be planned for.
Since the introduction of the NPPF, the MASS guidance has been cancelled and the national and sub-national requirements have become guidelines. These guidelines form part of the information relevant to the calculation of future demand in a Local Aggregate Assessment. The table below shows annual production as a proportion of the apportionment/guideline figure. It can be seen that the apportionment figure has not been met by production in the last 10 years, despite a number of workings having been mothballed during that time demonstrating that there was spare productive capacity.

Year	Apportionment/ guideline	Production	% Apportionment Produced
2007	2,980,000	1,978,000	66%
2008	2,980,000	1,584,000	53%
2009	2,980,000	1,377,000	46%
2010	2,980,000	1,186,000	39%
2011	2,570,000	1,289,000	50%
2012	2,570,000	1,131,941	44%
2013	2,570,000	1,114,935	43%
2014	2,570,000	1,359,620	53%
2015	2,570,000	1,414,959	55%
2016	2,570,000	1,622,566	63%

Table 3: Sand and Gravel production as a % of apportionment

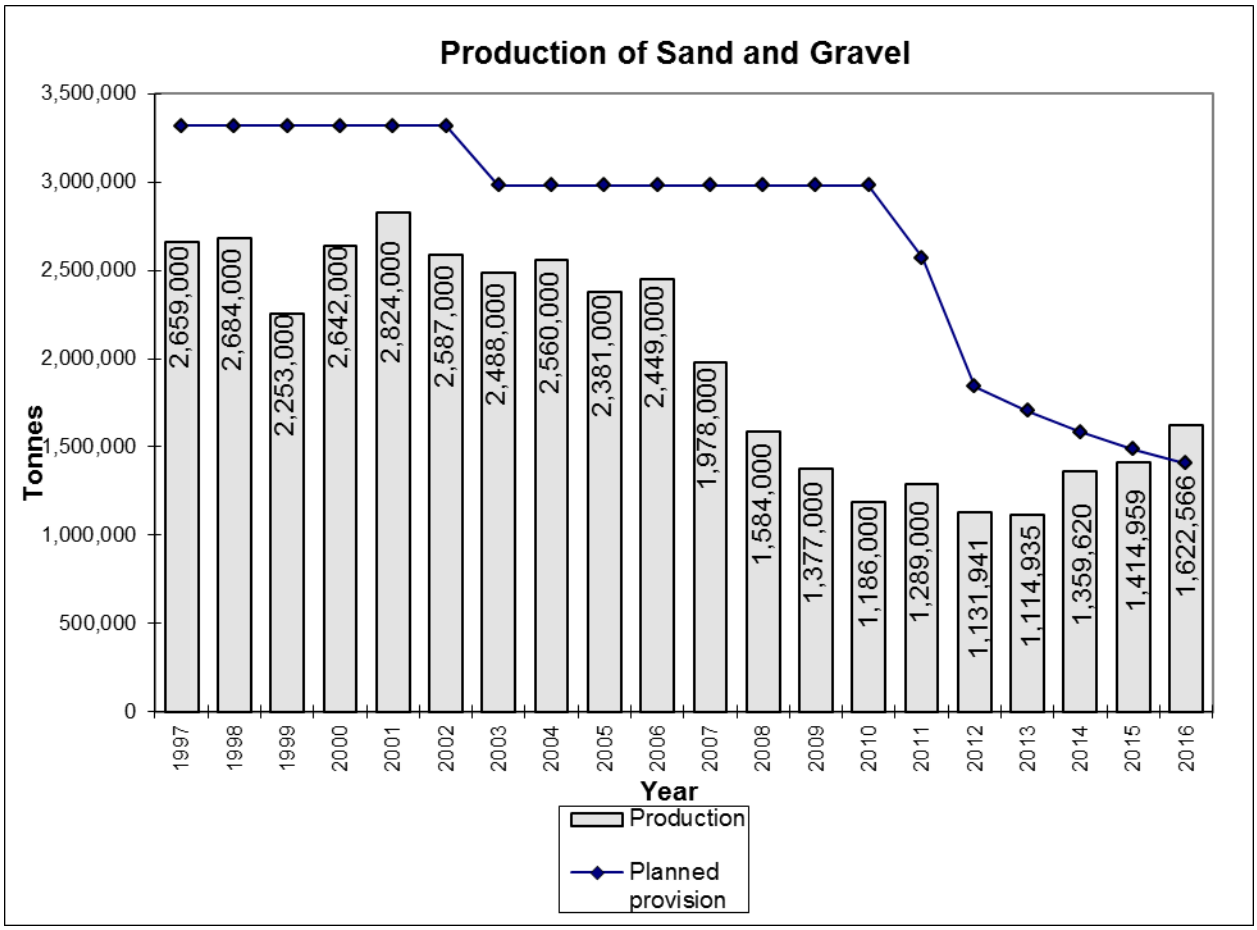


Figure 1: Sand and gravel sales 1997-2016

Source: Norfolk County Council – annual minerals survey.

Sand and gravel production in 2016 was 1,622,566 tonnes, representing an increase of 14% on the 2015 figure and the highest level of production since 2008. Production of sand and gravel continues to be well below the high levels of the late 1980s and early 1990s and below the average for the last twenty years of about 1.98 million tonnes (mt) per annum. **The average over the last 10 years was 1.41 million tonnes per annum.** The NPPG states that the 10 year rolling average is the starting point for the calculation of future demand for aggregate landbanks. The ten year rolling average is still falling, but at a decreased rate year on year, compared to the previous four reporting years.

Year	10-Year Average
2012	1.84 mt
2013	1.71 mt
2014	1.58 mt
2015	1.49 mt
2016	1.41 mt

Table 4: 10 year rolling average of sand and gravel production for the last five years

The rolling 3 year average is 1.47 million tonnes per annum. This indicates an increase for sand and gravel with this year's production increasing the 3 year average from 1.29 mt to 1.47 mt. The 3 year average is higher than the 3 year average seen in 2010 and all subsequent years, indicating a modest recovery. The three year rolling averages for the last 5 years are as follows:

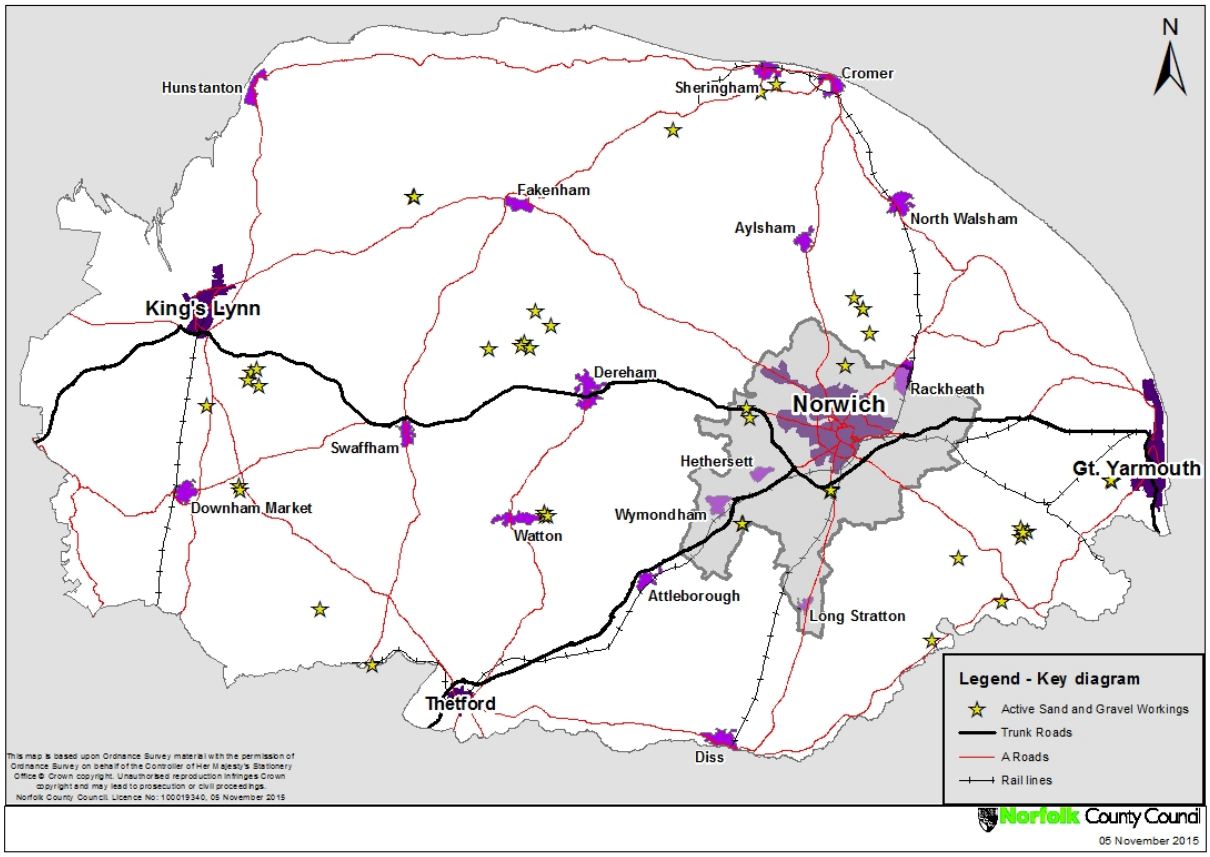
Year	3-Year Average
2012	1.20 mt
2013	1.18 mt
2014	1.20 mt
2015	1.29 mt
2016	1.47 mt

Table 5: 3 year rolling average of sand and gravel production for the last five years

The NPPG suggests the use of 3 year average figures to indicate recent trends in sales. As can be seen from the table above the rolling three year average since 2014 has shown a recent upward trend, with the three year average for 2016 showing production levels above the 10 year average for 2016.

The NPPG suggests that the 10 year rolling average, 3 year rolling average and the sub-national guidelines should all be considered in order to establish a broad understanding of current and future mineral demand, especially during reviews of planned provision.

2.2 Sand and Gravel extraction sites in Norfolk in 2016



Map 2: Sand and Gravel extraction sites in Norfolk in 2016-2017

Sand and Gravel extraction		
Parish	**Operator**	**Address**
Attlebridge	Cemex	Reepham Road
Beeston Regis	Carter Concrete	Britons Lane
Burgh Castle	Folkes Plant	Butt Lane
Buxton	Frimstone	Adj Mayton Wood Landfill
Carbrooke	Four Leaf Enterprises	Mill Lane
Carbrooke	Frimstone	Summer Lane
Crimplesham	Frimstone	Main Road
Earsham	Earsham Gravels	Bath Hills Road
East Beckham	Gresham Gravels	Holt Road
East Bilney	Middleton Aggregates	Rawhall Lane
East Rudham	Longwater Gravel	Coxford Abbey Quarry, Docking Road
Feltwell	Lyndon Pallet Group	Lodge Road
Horstead	Longwater Gravel	Grange Farm, Buxton Road, Horstead
Horstead	Tarmac	Trafford Estate, Horstead
Holt	Cemex	Ducks Hole Farm, Hunworth Road
Kirby Cane	Lyndon Pallet Group	Leet Hill, Yarmouth Road
Litcham	East Anglian Stone	Punch Farm, Watery Lane
Longham	McLeod Aggregates Ltd	Bittering Quarry, Reed Lane, Bittering
Middleton	Middleton Aggregates	Mill Drove (west)
Middleton	Middleton Aggregates	Mill Drove (east)
Mundham	Earsham Gravels	Mundham Road
Pentney	Middleton Aggregates	Abbey Farm
Raveningham / Norton Subcourse	Cemex	Loddon Road
Spixworth	Tarmac	Grange Farm, Buxton Road
Stanfield	East Anglian Stone	Nr Highfields Lodge on B1146
Stody	Frimstone	Breck Farm, Melton Constable
Swardeston	Tarmac	Mangreen Hall Farm
Tottenhill	Frimstone	Watlington Road
Weeting	Lignacite	Off High Street, Brandon
Wymondham	Longwater Gravel	Stanfield Road

Table 6: Sand and Gravel extraction sites in 2016-2017

2.3 Sand and gravel landbank of permitted mineral reserves

Reserves of sand and gravel at 31 December 2016 were 16,536,440 tonnes, a decrease of 10% on the 2015 figure.

The decrease in the landbank was due to two factors. No new planning permissions for sand and gravel extraction were granted in 2016. When combined with the year's production (1.62 mt) and a reassessment of reserve by a number of operators (down by a total of 0.08 mt) this gave the overall decrease in reserve of 10%.

The Norfolk 'Core Strategy and Minerals and Waste Development Management Policies DPD', was adopted by the County Council in September 2011. Policy CS1 of the Core Strategy states that the sand and gravel landbank will be maintained at between 7 and 10 year's supply. An upper limit of 10 years was placed on the landbank in Norfolk to ensure the timely working and restoration of mineral workings. This is because of the nature of mineral working in Norfolk which is undertaken by over ten operators across more than thirty sites.

The landbank at 31/12/2016, based on the 10 year average in the NPPF, was 11.8 years and therefore above the range for the landbank indicated in Policy CS1, and national policy and guidance.

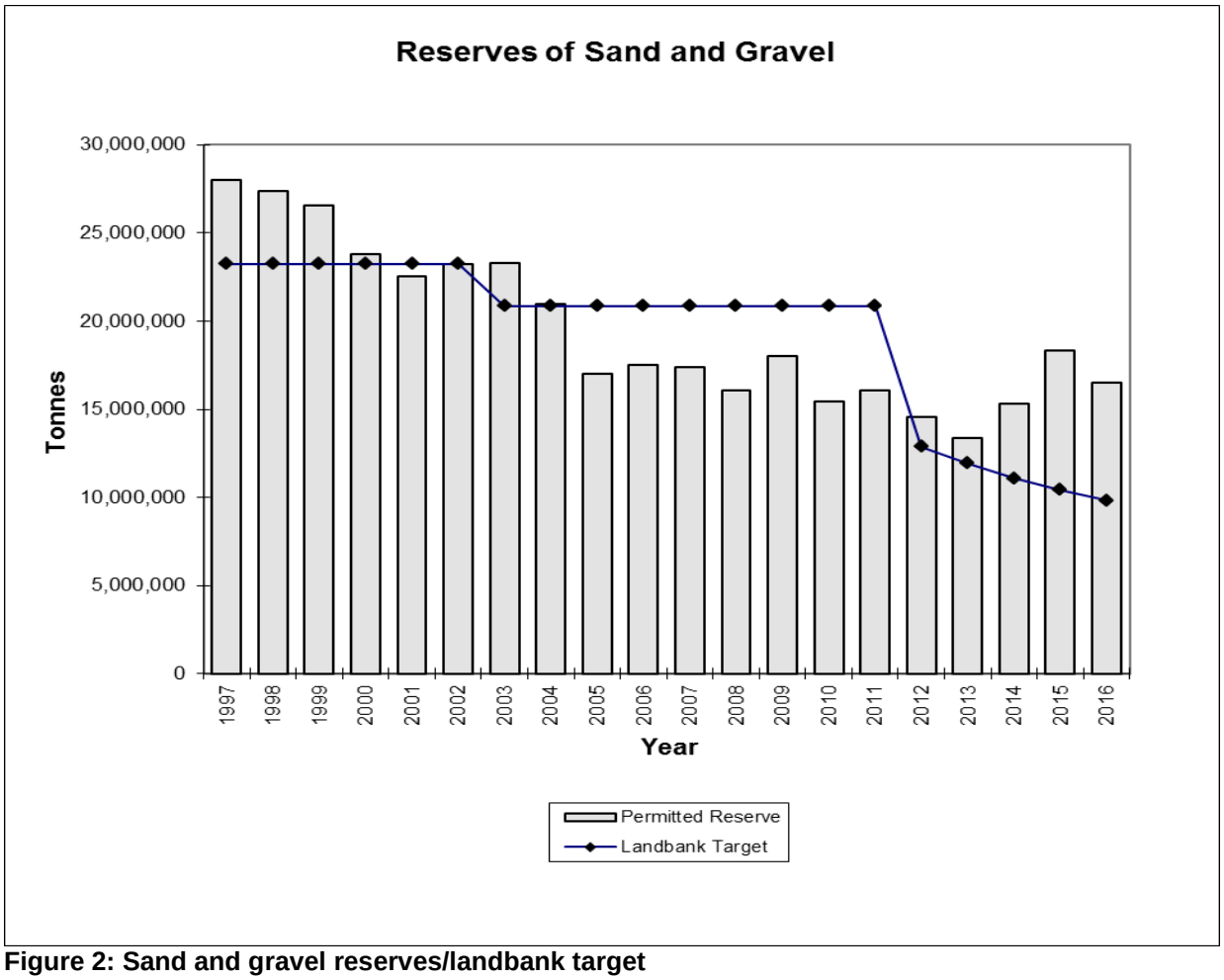


Figure 2: Sand and gravel reserves/landbank target
Source: Norfolk County Council – annual minerals survey

	Sand and gravel
Permitted reserves (as at 31/12/16)	16,536,440 t
10 year average sales	1,406,102 mt
Resulting Landbank (years)	11.8

Table 7: Sand and gravel landbank calculation

Source: Norfolk County Council – annual minerals survey

Policy CS1 sought to provide for the planned provision of a steady and adequate supply of mineral, by indicating a requirement to make specific site allocations having regard to the sub national guidelines (the apportionment), and the 10 year rolling average.

It is important to note that the landbank figures are, as stated in the NPPG, "principally a monitoring tool to provide a Mineral Planning Authority with early warning of possible disruption to the provision of an adequate and steady supply of land-won aggregates". As landbanks relate to the provision of aggregates, a figure below 7 years for aggregate should be used as a trigger to determine whether a review of the allocations plan is required.

The Mineral Site Specific Allocations DPD allocated 26 sand and gravel sites which contained 2.5mt more than the total tonnage required in CS1, at the point of examination (March 2013). The estimated resource for the 26 sites was 27.51mt compared with a requirement based on policy CS1 of 25.04mt. Table 8 shows the status of all of the sand and gravel specific site allocations in the adopted Minerals Site Specific Allocations DPD.

Norfolk County Council adopted the Mineral Site Specific Allocations DPD in October 2013. By the end of 2016 planning permission had been granted for 8.45mt of sand and gravel. All mineral planning applications submitted so far for allocated sites have been found suitable and granted permission.

This leaves an estimated further 18.70 mt of allocated sand and gravel resource which had not received planning permission at the end of 2016. Up to March 2017 no planning applications were in the process of being determined for allocated sand and gravel resources.

As shown in Table 7, the permitted reserve was 16.54mt on 31/12/2016 and the sand and gravel landbank on 31/12/2016 was 11.8 years. The 10 year average sales of sand and gravel in the period to the end of 2016 were 1.41mt per annum. Based on this 10 year sales average, the remaining allocated sites would provide 13.3 years of sand and gravel resource. This resource plus the existing permitted reserve would last until 2041.

Therefore, the permitted and allocated sites together would provide sufficient resources past the end of the plan period (2026). The allocated sites in Shropham are not expected to be delivered; together these sites equate to 700,000 tonnes, which equates to approximately 6 months of the current average sales. Without these sites, there would still be sufficient resources past the end of the plan period. The Minerals SSA DPD, will be reviewed as part of the forthcoming Minerals and Waste Local Plan Review.

Location (parish)	Site reference	Permission granted	Allocated resources (tonnes)	31/3/2012-31/12/2016 Permitted reserve (tonnes)
Breckland				
Beetley	MIN 10	April 2015 (part of site)	2,400,000	680,000
Beetley	MIN 51		1,300,000	
Shropham	MIN 108	Site not expected to be developed	150,000	
Shropham	MIN 109	Site not expected to be developed	400,000	
Shropham	MIN 110	Site not expected to be developed	150,000	
Snetterton	MIN 102		1,500,000	
Broadland				
Attlebridge	MIN 55		525,000	
Buxton with Lammas & Frettenham	MIN 37		1,450,000	
Felthorpe	MIN 48		1,900,000	
Horstead with Stanninghall	MIN 64	Nov 2012 (part of site)	950,000	350,000
Spixworth & Horsham St Faith & Newton St Faith	MIN 96		1,000,000	
King's Lynn and West Norfolk				
Pentney	MIN 19		700,000	
East Rudham	MIN 45	May 2014 (part of site)	3,600,000	1,560,000
Tottenhill	MIN 76		285,000	
Watlington	MIN 75	November 2015	335,000	335,000
North Norfolk				
Aylmerton	MIN 69		750,000	
East Beckham	MIN 84	August 2014	1,600,000	1,600,000
Holt	MIN 71		1,100,000	
North Walsham	MIN 115		1,100,000	
South Norfolk				
Heckingham & Norton Subcourse	MIN 83	February 2015	674,000	2,370,000
Heckingham & Norton Subcourse	MIN 91		1,146,000	
Norton Subcourse	MIN 90		511,000	
Stoke Holy Cross	MIN 81	October 2015	955,000	960,000
Stoke Holy Cross, Swainsthorpe & Swardeston	MIN 79		1,750,000	
Swardeston	MIN 80		760,000	
Wymondham	MIN 118	January 2014	600,000	600,000
Total			**27,500,000**	**8,455,000**

Table 8: Status of sand and gravel site allocations

Source: Norfolk County Council

3. Carstone

3.1 Production

Norfolk County Council carries out an annual survey for carstone production. The totals for the last 10 years are shown in table 4 below, and for the last 20 years in Figure 3 below:

Year	Production
2007	196,389
2008	215,633
2009	66,298
2010	58,337
2011	62,308
2012	118,288
2013	37,193
2014	60,189
2015	67,320
2016	106,438

Table 9: Carstone 10 year sales 2007-2016

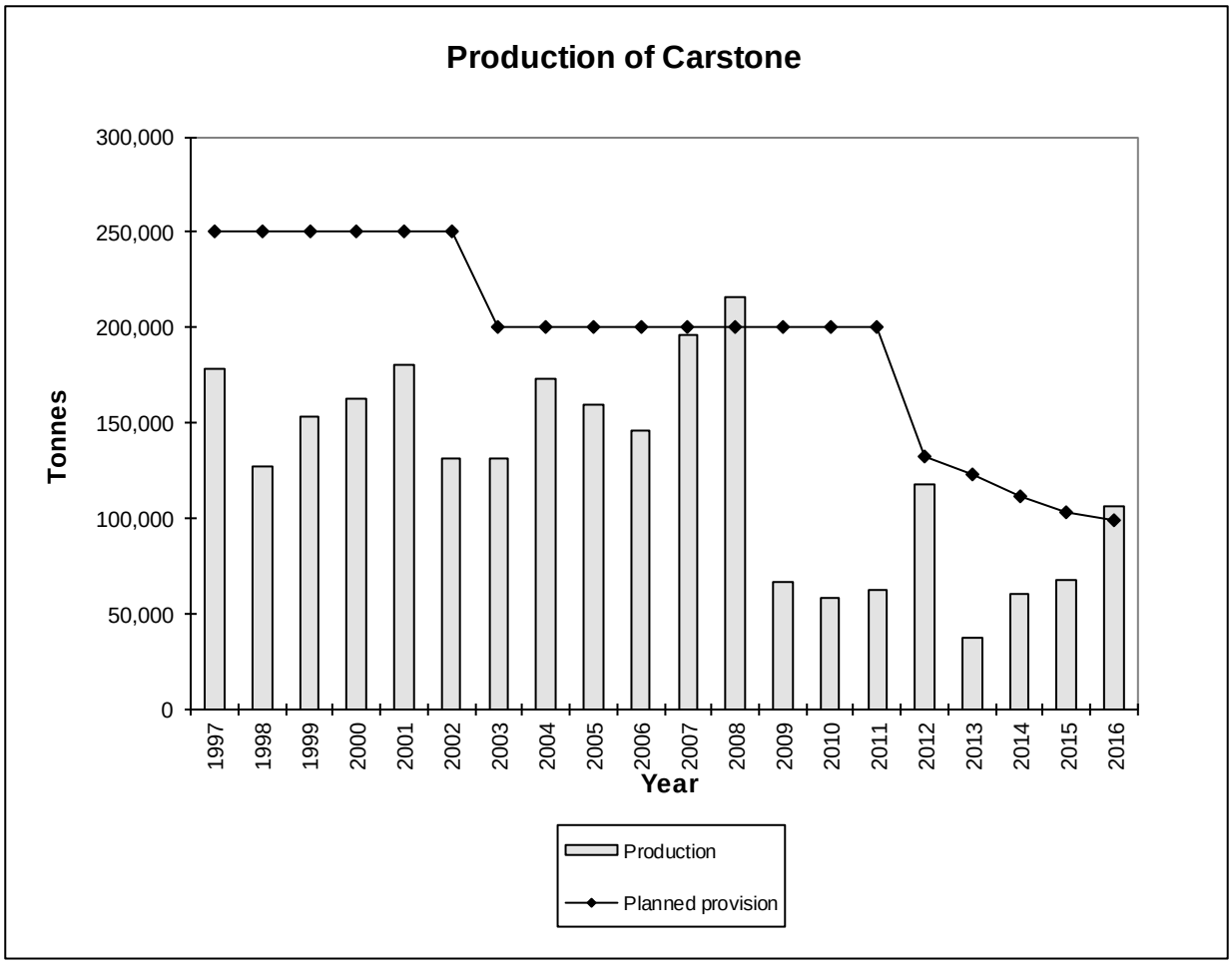


Figure 3: Carstone production 1997-2016
Source: Norfolk County Council – annual minerals survey.

Carstone production in 2016 was 106,438 tonnes, representing an increase of 58% over the 2015 figure. This is below the average for the last twenty years (126,500 tonnes) but above the average for the last ten years **(98,839 tonnes)**. The NPPG states that the 10 year rolling average should be used in the calculation of aggregate landbanks.

Year	10-Year Average
2012	132,000 t
2013	123,000 t
2014	112,015 t
2015	102,801 t
2016	98,839 t

Table 10: 10 year rolling average of carstone production for the last five years

The rolling 3 year average is 77,982 tonnes per annum. The production of carstone is concentrated into relatively few workings and the production fluctuates significantly from year to year dependent on individual construction projects that require significant amounts of fill material, as can be seen in table 4 above. These fluctuations mean that the three year rolling average can also vary significantly year to year. This means that it is of less value in helping to identify production trends for carstone compared with sand and gravel. The three year rolling averages for the last 5 years are as follows

Year	3-Year Average
2012	79,644 t
2013	72,596 t
2014	71,890 t
2015	54,901 t
2016	77,982 t

Table 11: 3 year rolling average of carstone production for the last five years

The NPPG suggests that the 10 year average, 3 year average and the sub-national guidelines should all be had regard to in order to establish a broad view of mineral demand, especially during reviews of planned provision.

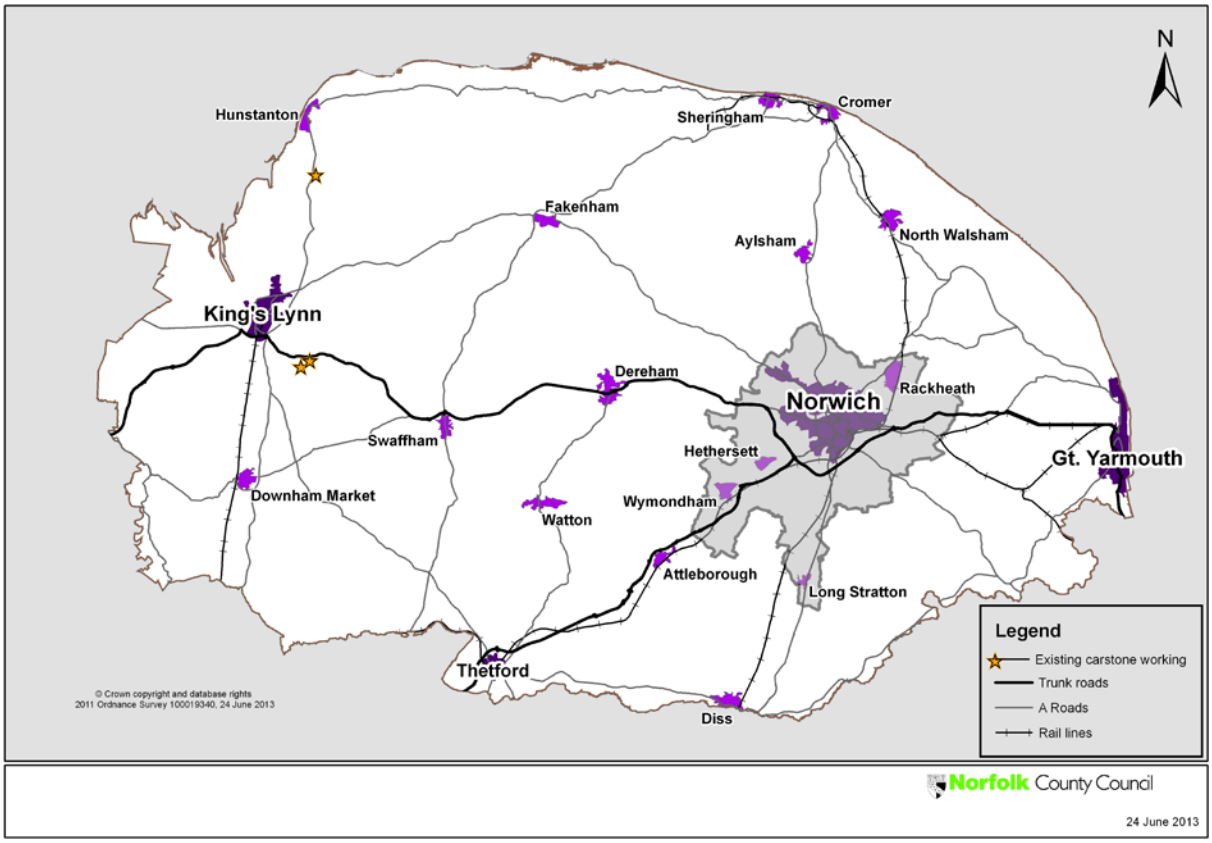
Carstone is mainly used as a construction aggregate, however prior to the introduction of the NPPF and National Planning Policy Guidance carstone was planned as part of the national hard rock requirement. A key part of the MASS was an apportionment system for national need. A national requirement for hard rock was calculated, and this was then divided into sub-national requirements, which were in turn apportioned to individual MPAs as provision to be planned for.

Since the introduction of the NPPF, the MASS guidance has been cancelled and the national and sub-national requirements have become guidelines. These guidelines form part of the information relevant to the calculation of future demand in a Local Aggregate Assessment. The table overleaf shows annual carstone production as a proportion of the apportionment/guideline figure. It can be seen that the apportionment figure has only been met by production once in the last 10 years.

Year	Apportionment	Production	% Apportionment Produced
2007	200,000	196,389	98%
2008	200,000	215,633	108%
2009	200,000	66,298	33%
2010	200,000	58,337	29%
2011	200,000	62,308	31%
2012	200,000	118,288	59%
2013	200,000	37,193	19%
2014	200,000	60,189	30%
2015	200,000	67,320	33%
2016	200,000	106,438	53%

Table 12: Carstone production as a % of apportionment

3.2 Carstone extraction sites in Norfolk



Map 3: Carstone extraction sites in Norfolk in 2016-2017

Carstone Extraction		
Parish	**Operator**	**Address**
Middleton	Middleton Aggregates	Mill Drove
Snettisham	Frimstone	Norton Hill

Table 13: Carstone extraction sites in Norfolk in 2016-2017

3.3 Carstone landbank of permitted mineral reserves

Reserves of Carstone at 31 December 2016 were 2,050,000 tonnes which represents an increase of 18% from 2015 figures. One new planning permission was granted in the reporting period for an increase in working depth at an existing site, and the increase represents this additional permitted reserve of carstone.

The Norfolk 'Core Strategy and Minerals and Waste Development Management Policies DPD', was adopted by the County Council in September 2011. Policy CS1 of the Core Strategy states that carstone will be maintained at 10 years' supply. The landbank at 31/12/2016 calculated on the 10 year rolling average sales, as set out in the NPPF was 20.7 years, above the figure for the landbank indicated in Policy CS1, and national guidance.

It is important to note that the landbank figures are, as stated in the NPPG, "principally a monitoring tool to provide a Mineral Planning Authority with early warning of possible disruption to the provision of an adequate and steady supply of land-won aggregates". As landbanks relate to the provision of aggregates, a figure below 10 years for crushed rock should be used as a trigger to determine whether a review of the allocations plan is required.

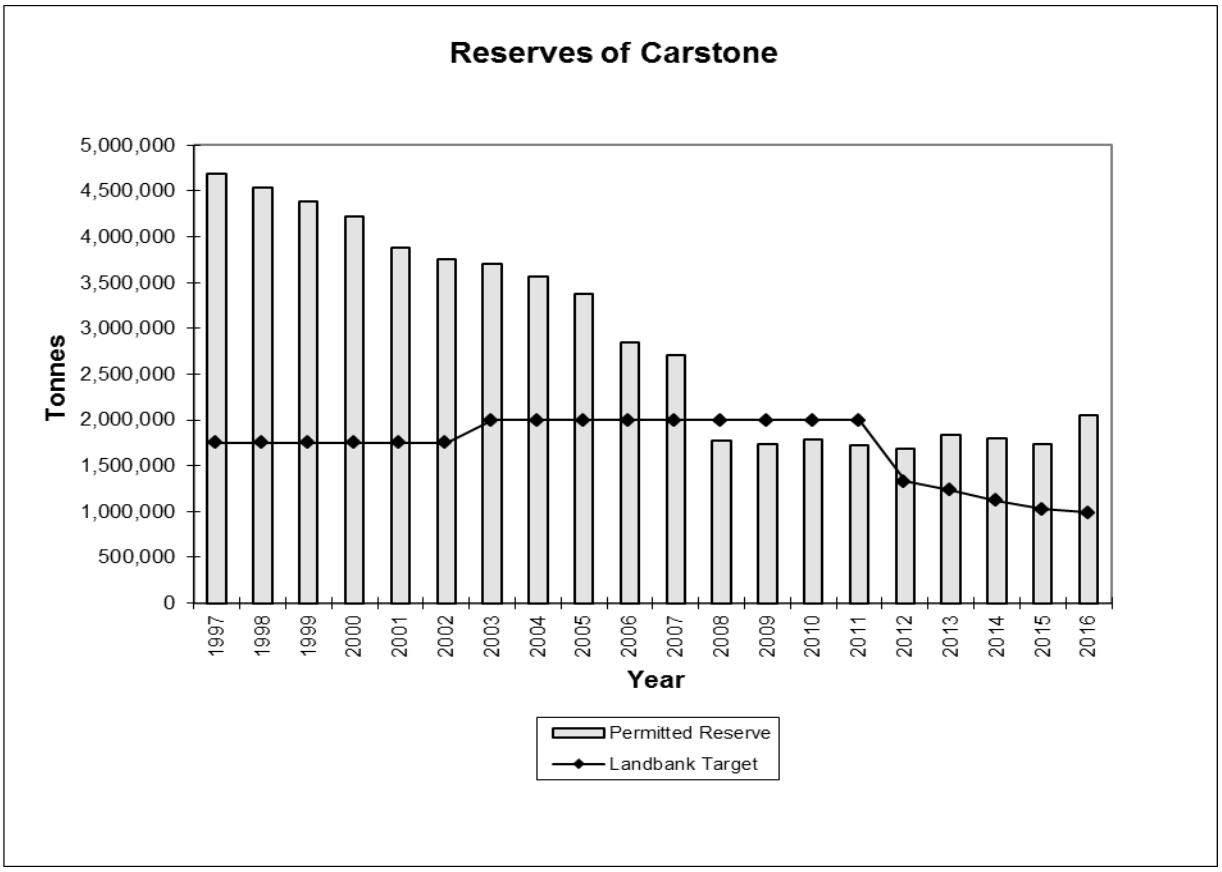


Figure 4: Carstone reserves/landbank target 1997-2016
Source: Norfolk County Council – annual minerals survey.

	Carstone
Permitted reserves (as at 31/12/16)	2,050,000 t
10 year average	98,839 t
Landbank (years)	20.7

Table 14: Carstone Landbank calculation

Source: Norfolk County Council – annual minerals survey.

The Mineral Site Specific Allocations DPD allocated 1 carstone site which contained 0.14mt more than the total tonnage required in CS1, at the point of examination (March 2013). The estimated resource for the site was 1.42mt compared with a requirement based on policy CS1 of 1.28mt.

Norfolk County Council adopted the Mineral Site Specific Allocations DPD in October 2013. By the end of 2016 no planning application had been submitted for the extraction of carstone at the allocated site.

Therefore, 1.42 mt of allocated carstone resource remains at the end of 2016. Up to March 2016 no planning applications were in the process of being determined for allocated carstone resources.

As shown in Table 14, the permitted reserve was 2.05mt on 31/12/2016 and the carstone landbank on 31/12/2015 was 20.7 years. The 10 year average sales of carstone in the period to the end of 2016 were 98,839 tonnes per annum. Based on this 10 year sales average, the remaining allocated site would provide 14.4 years of carstone resource. This resource plus the existing permitted reserve would last until 2051.

Therefore, the permitted and allocated sites together would provide sufficient resources past the end of the plan period (2026). On this basis there is not currently a requirement to review the Minerals SSA DPD.

4. Secondary and recycled aggregate

In addition to its resources of land won aggregates, secondary and recycled aggregates are also sourced within Norfolk:

Secondary aggregates are by-product wastes e.g. power station ash and colliery spoil that can be used for industrial and low-grade aggregate purposes, either solely or when mixed with primary aggregates.

Recycled aggregates are aggregates produced from recycled construction waste such as crushed concrete, planings from road surfacing etc. Secondary and recycled aggregates can replace primary materials for many uses.

Data for the production of recycled and secondary aggregates is limited, and less reliable than that for other types of aggregate. This part of the assessment reviews the recent reported levels of recycled and secondary aggregate production and the reliability of data to establish whether it would be feasible to reduce the amount of land won mineral required.

4.1 Overall inert and Construction/Demolition waste management figures in Norfolk

It is estimated that in 2016/17 over 435,000 tonnes of the inert and construction/demolition waste, received at transfer stations and recycling centres, was recovered. This is an increase on the 2015/2016 figure of 359,000 tonnes and this could be a result of increased construction activity. This figure includes waste recovered at quarries, and sold as recycled aggregates, as well as waste management facilities.

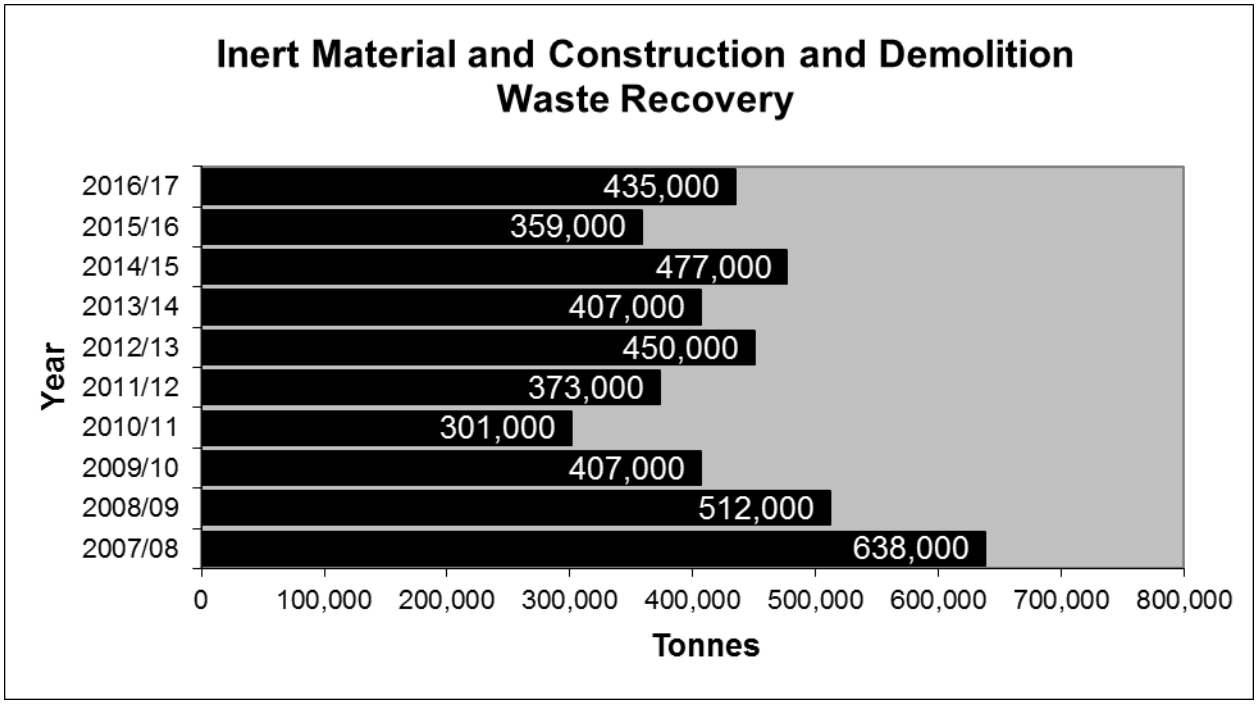


Figure 5: Inert Material and Construction/Demolition Waste Recovery
Source: Norfolk County Council – annual waste survey/ Environment Agency returns.

The 10 year average figure for inert material and construction/demolition waste recovery is **435,900 tonnes per annum**. This was a decrease on the ten year rolling average for 2015/2016 of 466,800 tonnes per annum. This decrease is as a result of another high year from the peak of the previous housing boom, when a significant number of flats on brownfield sites were being developed, being removed from the rolling average. The rolling 3 year average for 2016/2017 is approximately **423,670 tonnes per annum**. This is an increase on the 3 year average for the previous year, which was 414,330 tonnes per annum. This could highlight an upward trend in activity on brownfield land, an increase in general construction activity or decreased onsite reuse, against a background of still falling long term averages as the very high figures from the last boom are progressively removed from the data. It should be noted that the quantity of inert material and C&D waste reported through waste management facilities excludes that which is used directly on site in place of aggregate. The quantity of inert and C&D waste used directly on site is unreported and therefore cannot be included in the data on secondary and recycled aggregates.

It is difficult to establish the percentage of the recovered material that can be sold as recycled aggregate. Construction Demolition Excavations Waste (CDEW) comprises a range of materials, of which the “hard” elements (e.g. concrete, bricks, stone, road planings, rail ballast and glass) can be recycled for use as aggregates. Other elements of CDEW; due to their “soft” and/or organic nature; (e.g. soil, timber and plasterboard) are unsuitable for aggregate use. There is also a risk for double counting with some of the figures where waste is handled at more than one facility.

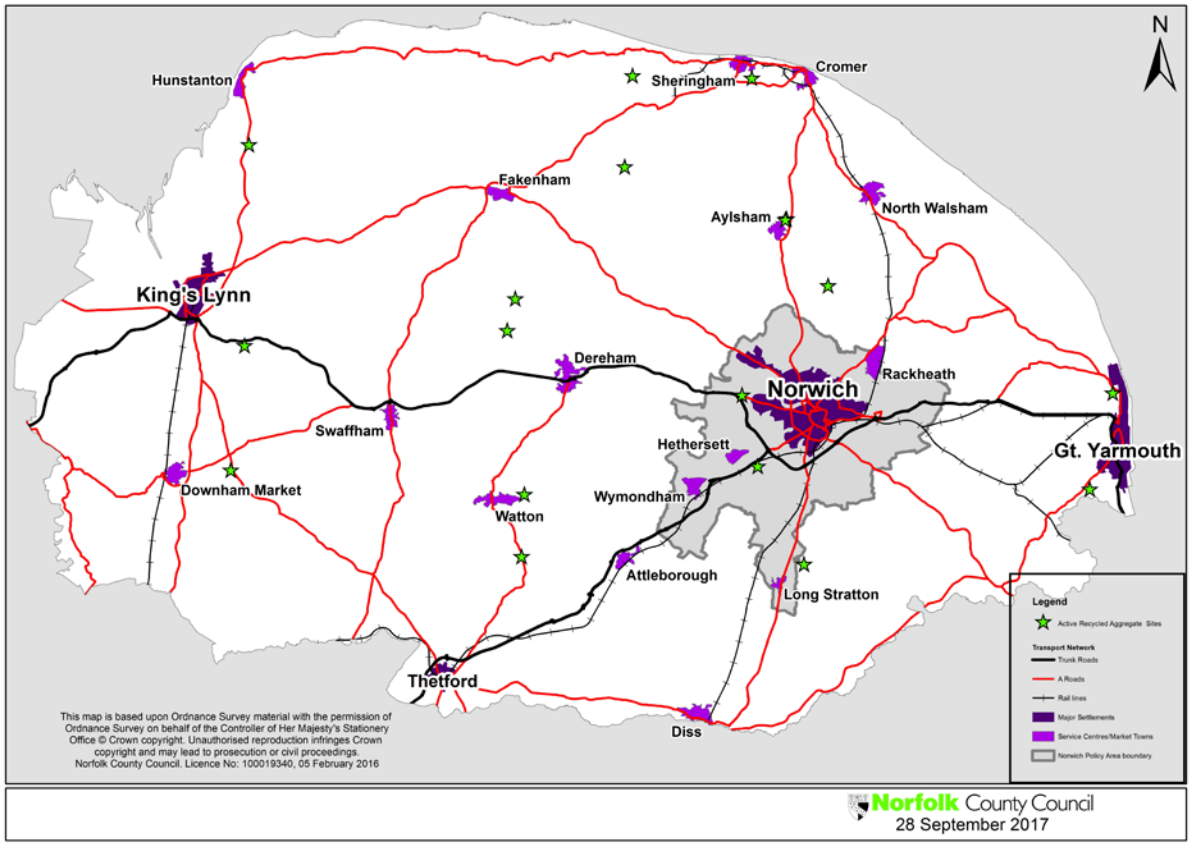
4.2 Recycling Aggregate at Mineral Workings

Information about the amount of material from recycling aggregate as an ancillary operation at minerals workings is variable. The figure which has been included in the overall quantities of material recovered includes sales figure of recycled material leaving the quarry site, and material used in quarry restoration. This is the tenth year that this figure has been reported, however, there does not seem to be any positive correlation shown in the data between recycled aggregate quantities and construction activity. It may be that the quantities of recycled aggregate are more dependent on both the type of site developed and construction activity, rather than just the amount of construction activity.

4.3 Secondary and Recycled Aggregate Sources

Company	Location
Aylsham Plant Hire Ltd	Aylsham
Richardson Recycling Ltd	Morningthorpe
Carter Concrete	Beeston Regis
Childerhouse, Mr R	Breckles
East Anglian Stone Ltd	Stanfield
E E Green & Son	Great Yarmouth
Frimstone Ltd	Snettisham
Frimstone Ltd	Carbrooke
Frimstone Ltd	West Dereham
Frimstone Ltd	Buxton
Frimstone Ltd	Crimplesham
Glaven Pits Ltd	Letheringsett
Highways Contractors	West Caister
Longwater	Coxford Abbey Quarry, East Rudham
Middleton Aggregates Ltd	Middleton
Middleton Aggregates Ltd	Ketteringham
Middleton Aggregates Ltd	Beetley
Morrisey Builders	Melton Constable
Mr Rounce	Aylmerton
R & C Bettinson	Heywood
R J Holbrook	Shropham
R G Carter	Costessey
T Farrow Construction	Bergh Apton

Table 15: Secondary and Recycled Aggregate Sources in 2015-2016



Map 4: Secondary and recycled aggregate sources in Norfolk over 20,000 tonnes per annum

5. Materials sourced outside the County

5.1 Imports and exports

Quantifying intra county imports and exports has been a longstanding issue. However, the 2014 Aggregate Minerals Survey (AM2014), undertaken jointly between the Department for Communities and Local Government (DCLG) and the British Geological Survey (BGS) provided broad land-won sand and gravel import and export figures for MPAs/ regions. The data within the AM 2014 along with additional information obtained through direct correspondence with the BGS has enabled the County Council to achieve a better understanding of the situation regarding imports and exports. Norfolk is a net importer of crushed rock, and a net exporter of sand and gravel.

5.2 Crushed Rock

Norfolk, due its geology, relies on importation for the majority of its crushed rock (carstone is the only indigenous source and is not suitable for Asphalt production, due to its composition). The majority of this material is imported by rail into Norwich. Information about volumes of material imported through the railhead is commercially confidential. However the Collation of the Results of the 2014 Aggregate Minerals Survey for England and Wales the (AM2014) indicated that the East of England (4.7 Mt) is one of the main importing regions and that the East Midlands and South West have the largest export figures representing 58 per cent (16.4 Mt), 27 per cent (5.6 Mt) of their respective total crushed rock sales.

Of the total crushed rock consumed in Norfolk (308,000 tonnes) (Table of primary aggregates by sub-region in AM2014):

- 60-70% came from quarries within Leicestershire.
- 10-20% came from Norfolk (carstone).
- 10-20% came from Shropshire.
- Cornwall, Cambridgeshire, Derbyshire, Peak District National Park, Yorkshire Dales National Park, Northumberland National Park, and Powys each supplied less than 1%.

Source: Table of primary aggregates by sub-region from the 2014 aggregate minerals survey for England and Wales & British Geological Survey (BGS).

5.3 Sand and Gravel

Norfolk, due to its geology, has considerable sand and gravel resources. The relative weight and value of sand and gravel means that this mineral does not normally travel significant distances, and a number of cross-boundary movements are likely to be as a result of the proximity of mineral workings to the market and therefore transport costs, regardless of their relationship to any administrative boundary, or lack of potential supply in another area. Neighbouring Mineral Planning Authorities plan to supply the demand in their own areas, by allocating sites, and therefore Norfolk does not need to make planned provision to supply additional aggregates.

Imports of sand and gravel

Of the total 1,341,000 tonnes of land-won sand and gravel consumed in Norfolk (Table of primary aggregates by sub-region in AM2014):

- 80-90% came from quarries within Norfolk.
- Suffolk supplied between 1-10%.
- Cambridgeshire supplied between 1-10%.
- Devon, Central Bedfordshire, Peterborough, Lincolnshire and Staffordshire each supplied less than 1%.

Exports of sand and gravel

Of the total sales of 1,148,000 tonnes sand and gravel produced in Norfolk (Table 2 in AM2014):

- 20-30% of Norfolk's production was exported somewhere in the East of England.
- 10-20% of Norfolk's production was exported to Suffolk.
- Less than 1% of Norfolk's production was exported to Cambridgeshire and Peterborough, Essex, Southend and Thurrock, Derbyshire and Peak National Park, Leicestershire and Rutland, Lincolnshire, Northamptonshire, Cumbria and Lake District National park.

It is considered that there is a degree of double counting regarding these figures and that it seems likely that some of the amount attributed to being consumed somewhere in the East of England was consumed in Norfolk and not exported.

Source: Table of primary aggregates by sub-region of the 2014 aggregate minerals survey for England and Wales

5.4 Marine sources

The last estimate of the total marine sand and gravel consumed in Norfolk was (less than 500 tonnes, Table 2 in AM2014):

- This represents much less than 1% of total sand and gravel (both land-won and MSG) for Norfolk

Source: Table 2 of the 2014 aggregate minerals survey for England and Wales & British Geological Survey (BGS).

6. Supply and Demand Assessment

6.1 Supply

The NPPF paragraph 145 states that "……minerals planning authorities should plan for a steady and adequate supply of aggregates," based on a rolling average of 10 years sales data, other relevant local data and an assessment of all supply options. The sand & gravel and carstone quarries in the Norfolk and the recycling sites have been listed in the previous section of the report. The total sales of aggregates in Norfolk are shown in table 7 below.

Year	Sand & Gravel	Carstone	Inert and Construction Demolition Waste recovered[1]	Imports		Marine
				Crushed Rock	Sand and Gravel	
2007	**1,978,000**	**196,389**	**638,000**	No available information	No available information	
2008	**1,584,000**	**215,633**	**512,000**			
2009	**1,377,000**	**66,298**	**407,000**			
2010	**1,196,000**	**58,337**	**301,000**	**439,000**	**100,000**	**1,000**
2011	**1,289,000**	**62,308**	**373,000**	No available Information	No available information	
2012	**1,132,000**	**118,288**	**450,000**			
2013	**1,114,000**	**37,193**	**407,000**	**271,000**	**193,000**	**Less than 500**
2014	**1,359,620**	**60,189**	**477,000**			
2015	**1,414,959**	**67,320**	**359,000**			
2016	**1,622,566**	**106,438**	**435,000**			
Average 2007-2016	**1,406,102**	**98,839**	**435,900**			

Table 16: Total aggregate sales in Norfolk

Source: Norfolk County Council – annual surveys/Environment Agency returns/ BGS AM2014 (rounded).

1 – This figure contains a proportion of material which will be suitable for reuse as secondary and recycled aggregate

Sand and gravel supply

The data in section 2.3 shows that the sand and gravel landbank of permitted reserves equates to 11.8 years at the end of 2016, which is above the 7 year minimum target for permitted reserves required by the NPPF. Norfolk County Council has also allocated sufficient land in the Mineral Site Specific Allocations DPD to ensure provision of a steady and adequate supply of aggregate for the county up to the end of 2026. Imports of sand and gravel into Norfolk are significantly less than exports.

Carstone supply

The data in section 3.3 shows that the carstone landbank of permitted reserves equates to 20.7 years which is above the 10 year target for permitted reserves required by the NPPF. Norfolk County Council has also allocated sufficient sites in the Mineral Site Specific Allocations DPD to meet the provision of a steady and adequate supply of carstone required for the county up to the end of 2026. There are significant imports of crushed rock into Norfolk due to the unsuitability of carstone for more demanding uses.

The Council is therefore satisfied that an adequate and steady supply of minerals covered by this Local Aggregate Assessment will be met by the permitted reserves up to the end of the adopted Plan period in 2026.

Any potential increase in demand would be met by the adopted Mineral Site Specific Allocations.

Norfolk County Council will be commencing the planned review of the Minerals and Waste Local Plan in 2017. The review will extend the Plan period to 2036, and as part of the process consideration will be given to the need for any new allocations to provide an adequate and steady supply of minerals up to the end of 2036.

6.2 Demand

Population & housing growth

Forecasts produced by Office of National Statistics indicate that the Norfolk's population is likely to grow from 885,000 in 2015 to 1,015,500 by 2039 an increase of just under 15%. Accommodating this forecast population increase will be achieved through development planned for by Norfolk's Local Planning Authorities. The Planning Authorities in Norfolk have agreed, that adopted Plan reviews will extend the end dates of future Plans to at least 2036.

The Greater Norwich Growth Board (GNGB) is the body through which Broadland District Council, Norwich City Council, South Norfolk Council, Norfolk County Council, and the Broads Authority are working together to manage the delivery of growth. In the period between 2001 and 2026 the area is planning for 42,000 new dwellings (23,045 completions up to 2016) and 27,000 new jobs in the period between 2008 and 2026.
Breckland District Council is planning for 19,100 dwellings (8,328 completions up to 2016) in the period between 2001 and 2026 and 6,000 jobs.
Great Yarmouth Borough Council's strategy is planning for 7,140 dwellings over the period between 2013 and 2030 (553 completions up to 2016, 3,867 between 2001 and 2016).
The Borough Council of King's Lynn and West Norfolk is planning for 16,533 dwellings (8,929 completions up to 2016) in the period between 2001 and 2026 and 5,000 jobs (2001-21).
North Norfolk District Council is planning for 8,000 dwellings (5,409 completions up to 2016) and 4,000 jobs in the period between 2001 and 2021.
The completion rates show that there remains a number of new dwellings to be built between now and the end of the plan period. These new dwellings will all require aggregate materials for their construction, although modern methods of construction use considerably less aggregate than methods used in previous decades, and this decline in the intensity of aggregate use has been a continuing trend over a number of years.

Housing development is key to meeting the growth requirement in plans and is generally accompanied by other types of development such as roads, drainage, schools, health facilities, employment and retail. In addition, housing and related developments involving the use of alternative aggregates as well as primary aggregates.

Exports of Sand and Gravel

Norfolk is a net exporter of sand and gravel, although it is considered that a significant number of these exports are likely to be as a result of transport costs, due to the proximity of a sand and gravel working in Norfolk compared with one in the neighbouring county. However, as neighbouring Mineral Planning Authorities plan to

supply the demand in their areas suitable resources are allocated within these areas to meet this demand, and it does not need to be planned for in Norfolk.

Infrastructure projects

There are a number of key infrastructure initiatives planned in the County to support the anticipated level of growth. Projects such as:

Location	Projects
Rural Norfolk	Broadband
Attleborough	Town centre transport improvements
	A11 link road
	Wastewater treatment
	Snetterton energy supply
Downham Market	Sewerage upgrades
Great Yarmouth	Third River Crossing
	A12 junction improvements
	Vauxhall roundabout improvements
	Gapton Hall roundabout improvements
	Harfreys roundabout improvements
	Great Yarmouth local junctions
	A12/A143 link road
	Strategic flood defence
	Wherry Line rail improvements and train station improvements
	Acle Straight dualling
King's Lynn	Middleton/East Winch bypass
	Hardwick Junction
	Other A47 junctions
	Town centre gyratory improvements
	Hospital roundabout improvements
	New bus station
	Increased surface water storage
	Sewerage improvements
	Reinforcement of medium pressure gas system.
	Reinforcement of electricity network
	Strategic flood risk
	Fenline rail improvements
Norwich Policy area	Blofield to Burlingham dualling
	Norwich Northern Distributor Road
	North East sub-station improvements
	North East trunk sewer
	Bittern Line rail improvements
	Harford – sustainable transport corridor
	Thickthorn – junction, P+R & bus priority
	B1108/NRP traffic signals
	South West Norwich sewerage upgrade
	Easton/Longwater junction improvements
	Public transport, walking and cycling improvements
	Easton to North Tuddenham dualling
	Honingham "expressway"
	Wymondham water supply connection
	Wymondham electricity upgrades
	Norwich to Cambridge Rail
	Long Stratton bypass
	Long Stratton water supply

Location	Projects
	Long Stratton sewer upgrades
	Hapton electricity upgrades
	Norwich to London Rail
Thetford	A11 junction improvements
	Sewerage upgrades
	Electricity sub station
Wisbech fringe	Electricity reinforcement
	Bypass improvement
	Sewerage & drainage upgrades

Table 17: Infrastructure projects planned in Norfolk

6.3 Conclusion

Norfolk's share of the sub-national guideline figures (the apportionment) for sand and gravel of 2.57 million tonnes per annum and carstone of 0.2 million tonnes per annum represent higher figures than the locally derived figures. These higher figures were used in Core Strategy Policy CS1 as the basis for allocations to plan for the provision of a steady and adequate supply of aggregate and provide flexibility.

Average annual sales of 1.41 million tonnes for sand and gravel and 98,839 tonnes for carstone (as at 31/12/16) have been derived from a sales based assessment compliant with the NPPF and NPPG. In order to provide for flexibility to cater for a potential increase in demand, or a change in circumstances affecting the amount of mineral delivered from specific sites (as required by paragraph 14 of the NPPF) and having taken into account the 10 year rolling average of 2.05mt (as at 31/12/2010) the 'apportionment' figure was used to calculate the amount of allocations required in policy CS1. The Mineral Planning Authority does not consider it prudent at this time (prior to the planned Norfolk Minerals and Waste Local Plan Review) to base allocations purely on a rolling average of ten years sales, as having regard to paragraph 14 of the NPPF, flexibility is required in allocations.

The forthcoming Minerals and Waste Local Plan Review will be the most appropriate method of determining any revised target for Core Strategy Policy CS1, having regarding to the data in this LAA. The aim of any revised target will be to achieve an adequate and steady supply of aggregate over the revised plan period to 2036, recognising that Norfolk has not met the apportionment figure for many years. Minerals sales figures for Norfolk will be used to determine the most appropriate production figure for site allocations to be based on, considering the need to balance flexibility in supply to meet growth targets, while ensuring the timely completion and restoration of aggregate extraction sites.

The Minerals Plan is up to date in relation to the supply of aggregate, and the County Council considers that the sand and gravel allocations within the plan to meet the CS1 target are deliverable. Therefore, it is not considered necessary to conduct a review into the aggregate allocations in the Plan as a result of the LAA. However, the aggregate allocations will form part of the forthcoming Minerals and Waste Local Plan Review.

Norfolk County Council has recently undertaken a Single Issue Silica Sand Review of the Minerals Site Specific Allocations Plan, the Inspector's Report has been received, and is due to be considered for adoption by the Council in December 2017. Silica sand is a nationally important industrial mineral and is not used for aggregate uses in Norfolk.

The figures for aggregate need were apportioned to MPAs by the East of England Regional Aggregates Working Party (EoEAWP) based on national guidelines. The

EoEAWP has a valuable role in co-ordinating mineral provision. The EoEAWP's previous position was that all MPAs in the East of England should work with the 2009 EoEAWP apportionment figure in planning for future provision. However, the EoEAWP's position regarding apportionment was reviewed at its 2 November 2016 meeting. It was decided that the lack of an updated national guidelines rendered the current apportionment increasingly obsolete. It was agreed that MPAs within the EoEAWP would plan for future need based on Paragraph 145 of the NPPF. Paragraph 145 states that, these figures should still be taken into account, as a guideline, as part of the process for determining future demand for, and supply of, aggregates.

The 2005-2020 apportionment figures were based on a sound and thorough assessment of national need, and detailed debate. The methodology underlying the assessment of national need (2005-2020) was based on an assumption of continued growth especially in housing construction throughout the period, this has been significantly affected by the recession. Norfolk County Council will consider future mineral need as part of the Plan review, and will analyse past production across a range of time periods to determine the most appropriate level of mineral extraction to plan for.

Secondary & Recycled Provision Allowance to 2026 – the locally derived data available on secondary and recycled aggregate is variable and not considered completely comprehensive because many operations, such as on site recovery, are not recorded. The data contains inert and construction/demolition waste; some parts of this waste stream are unsuitable for use as recycled aggregate, however it is not possible to disaggregate these wastes from the totals. This makes it difficult for Norfolk County Council to reduce the level of land won aggregate provision on this basis. The government carries out studies on secondary and recycled aggregate arisings in England, the most recent being in 2005 by DCLG. The work carried out to produce the aggregate apportionment figures for the period 2005-2020 took account of the capacity of facilities to provide recycled and secondary aggregates i.e. the assumptions are built in to the apportionment figure. This enabled the apportionment figures to be set at a lower level than they otherwise would have been. Despite, this aggregate production has not met this apportionment figure for many years. Planned aggregate provision will be reviewed as part of the forthcoming Minerals and Waste Local Plan Review, but it is not proposed to make any adjustments to the forecast mineral requirement figures based on secondary and recycled aggregate provision due to the quality of the data.

Marine Sources Requirement to 2026 – the total of less than 500 tonnes of marine sourced aggregate represents such a small percentage of the total aggregates used in Norfolk it is not proposed to make any adjustments to the mineral requirement figures due to marine sourced aggregates.

7 Silica Sand

The high quality silica sand extracted at Leziate, in Norfolk is not used as an aggregate it is an essential raw material for many industrial processes, including the manufacture of glass. Norfolk is one of the most important sources of silica sand in Britain, accounting for 20 per cent of total output and a much larger proportion of glass sand production.

The 10 year average production for the Leziate site for 2007-2016 was 681,900 tonnes. This is a decrease on the previous 10 year average (2006-2015) of 696,500 tonnes.

Year	10-Year Average
2012	N/A
2013	665,600
2014	636,500
2015	696,500
2016	681,900

Table 18: 10 year rolling average of silica sand production

The three year average of silica sand extraction in Norfolk from 2014-2016 was 785,400 tonnes. This is a decrease on the previous three year average (from 2013-2015) of 793,200 tonnes.

Year	3-Year Average
2009	609,000
2010	615,000
2011	669,000
2012	652,000
2013	777,100
2014	790,400
2015	793,200
2016	785,400

Table 19: 3 year rolling average of silica sand production

The silica sand reserve at 31/12/2016 was estimated at 2.62 million tonnes. This represents a landbank of 3.3 years based on the 10 year average figure, this is less than the “at least” 10 years for individual silica sand sites required in the NPPF.
No planning applications have been submitted for silica sand extraction in 2016. The Minerals Site Specific Allocations Plan allocated a site (MIN 40) for silica sand extraction; this site contains an estimated resource of three million tonnes. This represents a shortfall based on the amount planned for in Core Strategy Policy CS1 which was based on a forecast production volume of 750,000 tonnes per annum.

A Single Issue Silica Sand Review has been undertaken to address this predicted shortfall and the key stages of the process were:

- One specific site was proposed in a ‘call for sites’ in 2015. This is a 21 hectare site in the parish of Bawsey containing an estimated silica sand resource of 1.2 million tonnes, proposed by Sibelco UK Ltd. As the specific site contains insufficient resources to meet the identified shortfall Areas of Search were defined following the methodology set out in the Initial Consultation.

- Ten draft Areas of Search and the specific site were subject to public consultation in a Preferred Options consultation, in November-December 2015.
- The pre-submission publication version, containing six proposed Areas of Search and the specific site, was subject to a representations period in May-June 2016.
- Following analysis of representations Main Modifications were developed principally to remove one Area of Search and amend the boundary of another Area of Search, and these were subject to a representations period (September to October 2016).
- The Silica Sand Review was submitted to the Planning Inspectorate for examination in December 2016. The submitted document contained five proposed Areas of Search and one specific site allocation.
- Following the hearing sessions of the Examination in Public in March 2017, the Inspector recommended, in his report of October 2017, that Area of Search D be removed from the final adopted Plan, and that 1 hectare of Area of Search E be removed.
- The Silica Sand Review will, on adoption, contain one additional site specific allocation and four Areas of Search totalling 946 hectares.

The table below provides a national picture of silica sand production by end use over the most recent 14 years for which data is available.

Great Britain production of silica sand by end use

Year	Foundry uses	Glass manufacture	Other industrial uses	Agricultural, horticultural and leisure uses	Total
2014	>284,000	<1,288,000	982,000	1,394,000	3,948,000
2013	>302,000	<1,374,000	837,000	1,448,000	3,961,000
2012	340,000	1,489,000	782,000	1,277,000	3,888,000
2011	382,000	1,528,000	956,000	1,104,000	3,969,000
2010	353,000	1,582,000	913,000	1,222,000	4,070,000
2009	>297,000	<1,374,000	1,096,000	988,000	3,755,000
2008	443,000	1,932,000	1,186,000	1,216,000	4,777,000
2007	527,000	1,930,000	1,178,000	1,274,000	4,909,000
2006	…	2,206,000	1,306,000	…	5,174,000
2005	…	2,120,000	954,000	…	4,146,000
2004	…	2,663,000	…	838,000	5,011,000
2003	…	1,896,000	1,645,000	…	4,073,000
2002	…	1,940,000	1,331,000	…	3,833,000
2001	880,000	1,853,000	1,115,000	…	3,848,000

… Figures not available
Source: BGS UK Minerals Yearbooks

As stated above, the three year average of silica sand extraction in Norfolk in 2014 was 790,400 tonnes. This is approximately 20% of all silica sand production in Great Britain and 60% of the silica sand production used for glass manufacture sourced in Great Britain in the same period.

8 Other minerals worked in Norfolk

A number of other minerals besides sand and gravel, carstone and silica sand are worked on a minor scale in Norfolk. Demand for these minerals is such that they are not included in the planned provision of the Minerals and Waste Core Strategy, instead being dealt with on a case by case basis through the planning application process. The table below gives details of the other mineral workings in Norfolk.

Clay Workings		
Parish	**Operator**	**Address**
Middleton	Middleton Aggregates	Setch Road

Chalk Extraction		
Parish	**Operator**	**Address**
Caistor St Edmund	Needham Chalks Ltd	Norwich Road
Hillington	West Norfolk Super Lime	Grimston Road
Castle Acre	Needham Chalks Ltd	Dunham Road

Table 20: Other minerals worked in Norfolk in 2015-2016

9. Glossary

Aggregate Minerals: hard, granular materials which are suitable for use either on their own or with the addition of cement, lime or a bituminous binder in construction.

Apportionment (Minerals): The splitting of national supply guidelines for minerals demand between Minerals Planning Authorities or sub regions.

Area of Outstanding Natural Beauty: designated under the National Parks and Access to the Countryside Act 1949 for the purposes of preserving and enhancing their natural beauty.

British Geological Survey (BGS): A partly publicly funded body whose purpose is the advancement of geoscientific knowledge of the UK landmass and its continental shelf through survey, research and monitoring.

Core Strategy (for Minerals and Waste): This planning policy document contains the vision, objectives and strategic planning policies for minerals and waste development in Norfolk until 2026. The Minerals and Waste Core Strategy also includes Development Management policies which are used in the determination of planning applications to ensure that minerals extraction and associated development and waste management facilities can happen in a sustainable way.

Development Management: The process through which the Council determines whether a proposal for development should be granted planning permission, taking into account the development plan and any other material considerations.

Development Plan: This includes adopted Local Plans and neighbourhood plans and is defined in section 38 of the Planning and Compulsory Purchase Act 2004 (as amended) that set out the planning policies and proposals for the development and use of land. Decisions on planning applications must conform to the Development Plan, unless material considerations indicate otherwise.

East of England Aggregate Working Party: Established in the 1970's to identify and consider problems in the supply of aggregates. They provide technical advice in relation to the supply of, and demand for, aggregates in the East of England (including sand, gravel and crushed rock) to the Secretary of State, local government and mineral planning authorities.

Examination: Local Plans are subject to an independent examination by an independent planning inspector. The recommendations in the Inspector's report will inform the final adopted version of the Local Plan.

Industrial Minerals: Minerals which are worked for their commercial value, which are not fuel (fuel minerals or mineral fuels) and are not sources of metals (metallic minerals). In Norfolk, silica sand is the only industrial mineral currently extracted.

Landbank: A stock of mineral reserves with planning permission for their extraction.

Local Plan: The plan for the future development of the local area, drawn up by the local planning authority in consultation with the community. In law this is described as the development plan documents adopted under the Planning and Compulsory Purchase Act 2004 (as amended). Current core strategies or other planning policies, which under the regulations would be considered to be development plan documents, form part of the Local Plan. The term includes old policies which have been saved under the 2004 Act.

Managed Aggregate Supply System (MASS): guidance which firstly set out future national needs and targets for aggregate minerals for a period of years and then subdivided this into regional needs and targets. Regional Aggregate Working Parties then apportioned the regional targets to individual Mineral Planning Authorities for incorporation into Minerals Local Plans. Secondly MASS guidance also set out how items such as landbanks should be calculated and used in the determination of planning applications for minerals. The policy and guidance was cancelled by the publication of the NPPF in 2012.

Mineral Planning Authority: An organisation with statutory planning powers relating to minerals development, in most areas the County or Unitary Council.

Mineral Resources: Natural concentrations of minerals in or on the Earth's crust that are or may become of economic interest because they are present in such a form, quality and quantity that there is potential for eventual economic extraction.

National Planning Policy Framework: This document sets out the Government's planning policies for England and was published on 27 March 2012. The NPPF must be taken into account in the preparation of Local and neighbourhood Plans, and is a material consideration in planning decisions. It states that in order to be considered sound a Local Plan should be consistent with national planning policy.

National Planning Practice Guidance: A web-based resource published by the Department for Communities and Local Government (DCLG) on 6 March 2014 and updated as needed. It is available at: http://planningguidance.planningportal.gov.uk/blog/guidance/

Permitted reserves: Saleable minerals in the ground with planning permission for extraction. Usually expressed in million tonnes.

Restoration: Operations designed to return an area to an acceptable environmental state, whether for the resumption of the former land use or for a new use following mineral working. Involves the reinstatement of land by contouring, the spreading of soils or soil making materials etc.

Site Specific Allocations: Also known as Specific Sites - where viable resources are known to exist, landowners are supportive of minerals development and the proposal is likely to be acceptable in planning terms. Such sites may also include essential operations associated with mineral extraction. This is the preferred way to plan for the steady and adequate supply of minerals as it provides the necessary certainty on when and where development may take place.

Site of Specific Scientific Interest (SSSI): Sites designated by Natural England under the Wildlife and Countryside Act 1981

Special Areas of Conservation (SAC): SSSIs given special protection under the European Union's Habitats Directive, which is transposed into UK law by the Habitats and Conservation of Species Regulations 2010.

Special Protection Areas (SPA): SSSIs which have been identified as being of international importance for the breeding, feeding, wintering or the migration of rare and vulnerable species of birds fond in European Union countries. They are European designated sites, classified under the EC Directive on the Conservation of Wild Birds.