



Norfolk County Council

Norfolk Minerals and Waste Local Plan

Monitoring Report - Mineral Data
Local Aggregate Assessment
for calendar year 2021

December 2022



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Executive Summary

Summary of sand and gravel conclusions	Performance in 2021	In comparison with previous year (2020 data)
Land-won sand & gravel sales (million tonnes, Mt)	1.491	 + 0.179 (1.312)
Permitted reserves of sand & gravel (Mt)	19.957	 + 5.446 (14.511)
Annual production as a % of Apportionment figure	58%	 +7 (51%)
Landbank based on 10 years sales average (years)	14.3	 + 3.7 (10.6)
Landbank based on 3 years sales average (years)	14.5	 +4 (10.5)
Landbank based on Apportionment figure (years)	7.77	 + 2.12 (5.65)
Number of allocated sites without planning permission	15 (but 5 sites are unlikely to be delivered)	17 (but 5 sites are unlikely to be delivered)
Potential yield (Mt) from allocated sites without planning permission	15.75Mt (but 5 sites with 3.2Mt are unlikely to be delivered) The potential yield has been revised for six allocated sites.	15.24 Mt (but 5 sites with 3.2Mt are unlikely to be delivered)

E.1 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 2021 are shown below.

Sand and Gravel key facts

- Annual production was 1.491 million tonnes (mt) up to 31 December 2021.
Annual production was 11.9% up on production in 2020 of 1.312mt
- The 10-year average of annual production was 1.389mt up to the end of 2021.
- The 10-year average for 2021 was 0.7% up on the 2020 figure of 1.369mt.
- The 10-year average for 2021 plus 10% was 1.528mt up to 31 December 2021.
- The 3-year rolling average was 1.377mt up to 31 December 2021.
The 3-year rolling average was 0.5% down on the 2020 figure of 1.384mt.
- 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 2021 (1.491mt) was 58% of the apportionment target; this was up by 12% on the annual production for 2020, which was 51% 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 of annual production is 1.689 mt.

- There were three planning permissions granted for additional sand and gravel extraction totalling 5,848,900 tonnes, in 2021.
- Reserves of sand and gravel at 31 December 2021 were 19.957 million tonnes, an increase of 27.3% on the 2020 figure (14.511 million tonnes).
- Based on the 10-year average production figure of 1.389mt, the remaining allocated sites in the Minerals Site Specific Allocations Plan (excluding sites in Shropham and Swardeston which are no longer expected to be delivered) would provide a further 9.0 years of sand and gravel resource (12.54 Mt).

Carstone key facts

- Annual production was 138,779 tonnes up to 31 December 2021.
Annual production was 49.7% up on production in 2020 of 55,907 tonnes.
- The 10-year rolling average was 82,785 tonnes up to 31 December 2021.
The 10-year rolling average was 0.3% down on the 2020 figure of 75,138 tonnes.
The 10-year rolling average plus 10% was 91,064 tonnes up to 31 December 2021.
- The 3-year rolling average was 78,188 tonnes up to 31 December 2021.
The 3-year rolling average was 20.6% up on the 2020 figure of 67,354 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 2021 (138,779 tonnes) was 69% of the apportionment target; this was 59.7% higher than the 2020 figure.

Carstone production in Norfolk has reached the apportionment target once in the last twenty years. The 20-year average of annual production is 108,371 tonnes.

Recycled and secondary aggregate key facts

- The figures for recycled aggregates production over the last 10 years have been produced using the Environment Agency's Waste Data Interrogator and the method set out in Chapter 3 of the 'Recycled Aggregates Data – Guidance on assessing levels of recycled aggregates' (May 2020). It should be noted that the data contains mixed construction and demolition waste and 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 approximately 341,000 tonnes up to 31 December 2021. With the addition of 20% to cover the proportion likely to be processed by mobile plant at construction sites, the annual production is calculated to be 409,200 tonnes.
Annual production was approximately 41.8% up on production in 2020 of 240,400 tonnes.
- The 10-year rolling average was 274,600 tonnes up to 31 December 2021. With the addition of 20% to cover the proportion likely to be processed by mobile plant at construction sites, the 10-year rolling average is calculated to be 329,420 tonnes.
- The 3-year rolling average was 292,900 tonnes up to 31 December 2021. With the addition of 20% to cover the proportion likely to be processed by mobile plant at construction sites, the 3-year rolling average is calculated to be 351,400 tonnes.
The 3-year rolling average was approximately 1% up on the 2020 figure of 289,900 tonnes.

Conclusion

E.2 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 is higher than the 10-year, 3-year or 20-year 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.

E.3 Average annual sales of 1.39 million tonnes for sand and gravel and 0.082 million tonnes for carstone (as at 31/12/21) have been derived from a ten-year average sales-based assessment compliant with the NPPF and NPPG. The landbank of permitted reserves has been calculated from the 10-year sales average plus 10% to provide flexibility for future growth.

E.4 The emerging Minerals and Waste Local Plan (NM&WLP) is the most appropriate place to determine a revised target for Core Strategy Policy CS1, having regard 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 2038, 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.

E.5 The Initial Consultation document proposed that the 20-year average would provide the best approach as this time period includes data from at least one complete economic cycle, alternatives such as the 10-year rolling average were also included in the consultation document. The 20-year average production contained in the Initial Consultation covered the period from 1997-2016 and was 1,980,000 tonnes per annum (tpa) for sand and gravel and 126,500 tpa for carstone.

E.6 The six-week Preferred Options consultation on the NM&WLP took place during September and October 2019. More recent minerals data was available, and the 20-year average production contained in the Preferred Options document covered the period from 1999-2018 and was 1,868,000 tpa for sand and gravel and 121,400 tpa for Carstone.

E.7 The Pre-Submission version of the NM&WLP was published in September 2022. More recent minerals data was available and the 10-year average production over the period 2011-2020, plus 10% to provide flexibility for future growth was used to calculate future provision of aggregate mineral extraction. This was 1,506,000tpa for sand and gravel and 83,000tpa for Carstone.

E.8 The adopted Minerals Plan is up to date in relation to the supply of aggregate, and the County Council considers that sufficient sand and gravel allocations within the plan to meet the current adopted CS1 target, to 2026, are deliverable.

E.9 Norfolk County Council undertook a Single Issue Silica Sand Review of the Minerals Site Specific Allocations Plan. This was examined in March 2017 and found sound and legally compliant; and was adopted by the Council in December 2017. Silica sand is a nationally important industrial mineral and is not used for aggregate uses in Norfolk.

E.10 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 mixed inert construction and 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 emerging Minerals and Waste Local Plan 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.

E.11 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

1.1 This document is Norfolk's Local Aggregate Assessment. In order to 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.

1.2 Annual monitoring of aggregate production and reserves in Norfolk has been carried out since 1975. In 2021 almost all the active sites produced sand and gravel, although there are three carstone (a type of sandstone) workings 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 sections 7 and 8.

1.3 The National Planning Policy Framework (NPPF) (July 2021) paragraph 213 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).

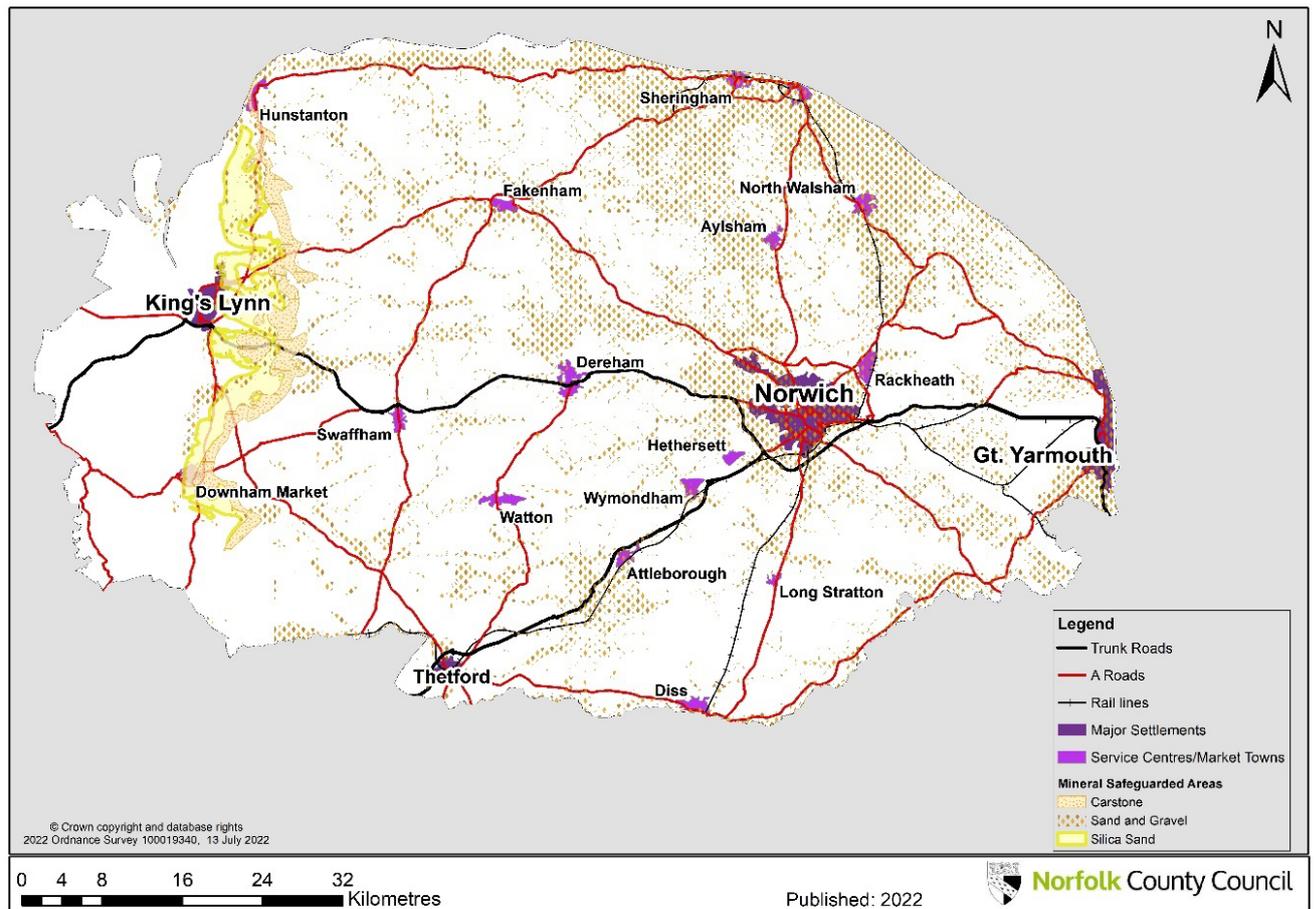
1.4 The NPPG contains similar requirements to the previous MASS guidance in relation to LAA's and states that LAAs are a monitoring report to provide "an annual assessment of the demand for and supply of aggregates in a mineral planning authority's area."

1.5 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.

1.6 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 the emerging Mineral and Waste Local Plan. 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 an early review of the Local Plan is required.

Minerals in Norfolk



Map 1: Mineral resources in Norfolk

1.7 Sand and gravel is the main aggregate worked in Norfolk. Sand and gravel resources are located throughout the county (except for the Fens area in the far west and south-west of Norfolk). Sand and gravel is used in the construction of roads and buildings and is a key ingredient in the production of concrete and mortar, asphalt coating for road, as a drainage medium and in the construction of embankments and foundations.

1.8 Carstone is a type of sandstone that is quarried in relatively small quantities in West Norfolk. It has traditionally been used as a vernacular building material, although it is no longer used to any significant degree. Although classed as a 'hard rock' it is not used as a hard rock (for example road surface dressing), instead it is mainly used as a fill material, to raise levels of land prior to construction, or in the formation of embankments. Therefore, carstone is often used in the construction of roads. Crushed rock for asphalt production is imported into Norfolk mainly by rail as no indigenous material is suitable for this use.

1.9 Norfolk is a county rich in important wildlife and designated landscapes. [Currently there are eight Ramsar sites, nine Special Protection Areas \(SPAs\), 12 Special Areas of Conservation \(SACs\) and 163 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 the location of mineral activities.

2. Sand and Gravel

2.1 Production

2.1.1 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.

2.1.2 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. The most recent MASS guidance and apportionments covered the period from 2005-2020.

2.1.3 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. Table 1 below shows annual production as a proportion of the apportionment/guideline figure. As the most recent apportionment figure only covered the period to 2020, for the purposes of table 1 it has been assumed that the annual guideline figure remains the same at 2.57 million tonnes per annum in 2021. It can be seen that the apportionment/guideline 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 (tonnes)	Production (tonnes)	% Apportionment Produced
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%
2017	2,570,000	1,604,973	62%
2018	2,570,000	1,511,054	59%
2019	2,570,000	1,328,907	52%
2020	2,570,000	1,312,091	51%
2021	2,570,000	1,490,500	58%

Table 1: Sand and Gravel production as a % of apportionment 2012-2021

Source: Norfolk County Council - annual minerals survey

2.1.4 In Figure 1, the planned provision is the annual apportionment of 3 million tonnes for the years 2003 to 2010. In 2011 the annual apportionment was reduced to 2.57 million tonnes per annum. From 2012 onwards the planned provision is the sand and gravel sales average from the previous 10 years, which is set out in Table 1 above.

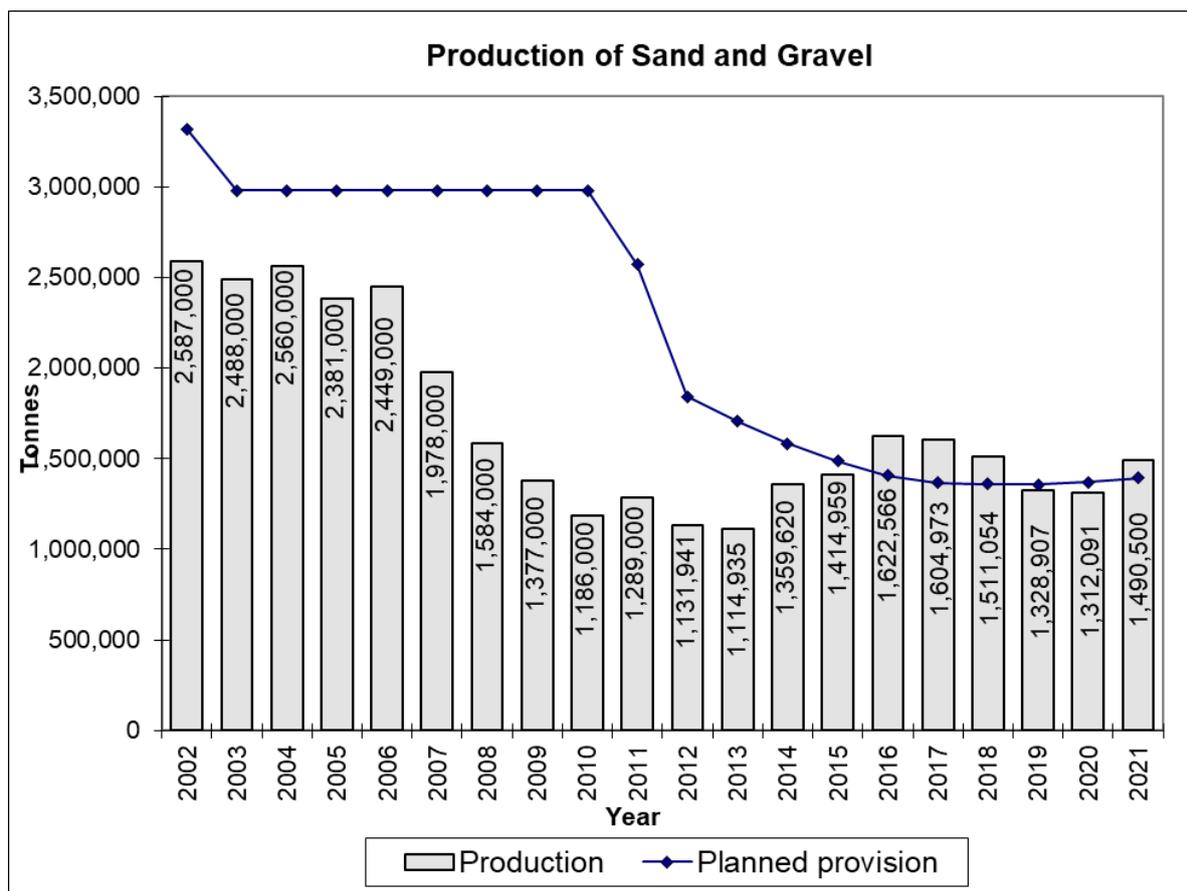


Figure 1: Sand and gravel sales in Norfolk 2002-2021

Source: Norfolk County Council – annual minerals survey.

2.1.5 Sand and gravel production in 2021 was 1,490,500 tonnes, representing an increase of 11.9% on the 2020 figure. Production of sand and gravel continues to be below the average for the last twenty years of 1.689 million tonnes (mt) per annum. **The production average over the last 10 years was 1.389 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 has been stable for the previous four reporting years.

2.1.6 The rolling 3-year average is 1.377 million tonnes (mt) per annum. This indicates a very slight decrease for sand and gravel with this year's production reducing the 3-year average from 1.38 Mt to 1.37 Mt. However, it is still higher than each of the five years from 2011 to 2015. The three-year rolling averages for the last 5 years are as follows:

Year	10-Year average	3-year average
2017	1.37 million tonnes	1.55 million tonnes
2018	1.36 million tonnes	1.58 million tonnes
2019	1.36 million tonnes	1.48 million tonnes
2020	1.37 million tonnes	1.38 million tonnes
2021	1.39 million tonnes	1.37 million tonnes

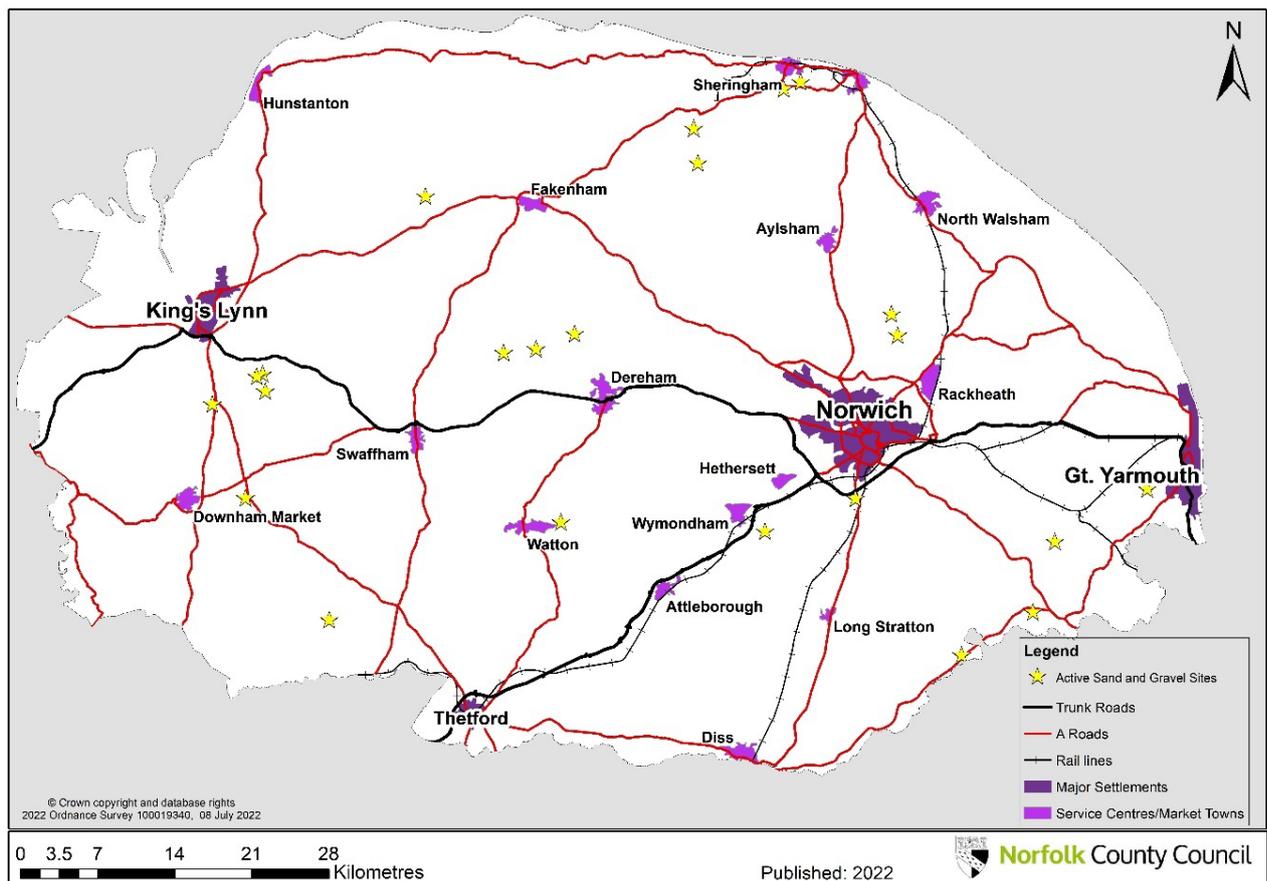
Table 2: 10-year and 3-year rolling average of sand and gravel production for the last five years

2.1.7 The NPPG suggests the use of 3-year average figures to indicate recent trends in sales. The rolling three-year average since 2015 has shown a general upward trend,

although the 3-year average has fallen in 2020 and 2021 and it is slightly below the 10-year average.

2.1.8 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. The emerging Norfolk Minerals and Waste Local Plan (Pre-Submission version 2022) calculates the forecast need by adding a 10% buffer to the 10-year production average.

2.2 Active Sand and Gravel extraction sites in Norfolk in 2021



Map 2: Sand and Gravel extraction sites in Norfolk in 2021

Parish	Operator	Address	End date of Permission
Beeston Regis	Norfolk Gravel Ltd	Briton's Lane, Beeston Regis, Sheringham (new permission for extension area granted 23/10/2020)	22/02/2042 (31/12/2032)
Burgh Castle	Folkes Plant & Aggregates Ltd	Welcome Pit, Butt Lane, Burgh Castle, Great Yarmouth	31/12/2025
Carbrooke	4 Leaf Enterprises Ltd	Carbrooke Quarry, Mill Lane, Carbrooke	09/08/2027
Crimplesham	Mick George Ltd (Frimstone)	Crimplesham Quarry, Ashcraft Farm, Main Road, Crimblesham	31/12/2027 (southern site)

Parish	Operator	Address	End date of Permission
Earsham	Earsham Gravels Ltd	Earsham Quarry, Bath Hills Road, Earsham (new permission for land off Hall Road and Pheasants Walk, Earsham granted 9/11/2020)	31/12/2020 (09/11/2040)
East Beckham	Gresham Gravel Ltd	East Beckham Quarry, Holt Road, Upper Sheringham	31/12/2031
East Bilney	Middleton Aggregates Ltd	East Bilney Quarry, Rawhall Lane, East Bilney, Nr Dereham	31/12/2029
East Rudham	Longwater Gravel Co Ltd	Coxford Abbey Quarry, Docking Road, Syderstone, Fakenham	20/05/2027
Feltwell	L P Pallett Quarry (Feltwell) Ltd	Feltwell Quarry, Lodge Road, Feltwell, Thetford	22/02/2042
Horstead with Stanninghall	Longwater Gravel Co Ltd	Horstead Quarry, Buxton Road, Horstead	31/12/2024
Horstead with Stanninghall	Tarmac Trading Ltd	Stanninghall Quarry, Norwich Road, Horstead	31/07/2037
Holt	Breedon Trading Ltd	Holt Quarry, Hunworth Road, Holt	31/12/2030
Kirby Cane	The Lyndon Pallet Group Ltd	Kirby Cane Quarry, Yarmouth Road, Kirby Cane, Bungay	31/12/2025
Litcham	East Anglian Stone Ltd	Punch Farm Quarry, Watery Lane, Litcham	01/08/2031
Longham	McLeod Aggregates Ltd	Bittering / Longham Quarry, Reed Lane, Longham, Dereham	31/12/2032
Middleton	Middleton Aggregates Ltd	East of Mill Drove, Blackborough End, King's Lynn	31/12/2024
Middleton	William George Sand and Gravel Ltd	Land off Mill Drove, Blackborough End, King's Lynn	31/12/2024
Pentney	Middleton Aggregates Ltd	Pentney Quarry, Abbey Road, Pentney	31/12/2024
Raveningham / Norton Subcourse	Breedon Trading Ltd	Norton Subcourse Quarry, Loddon Road, Hales	20/02/2036
Stody	Mick George Ltd (Frimstone)	Briston Stody Estate, Breck Farm, Stody	31/03/2026
Swardeston	Tarmac Trading Ltd	Mangreen Quarry, Ipswich Road, Swardeston, Norwich	02/10/2023
Tottenhill	Mick George Ltd (Frimstone)	Watlington Quarry, Watlington Road, Tottenhill	31/12/2023
Wymondham	Longwater Gravel Co Ltd	Wymondham Quarry, Stanfield Road, Wymondham	30/03/2026

Table 3: Active sand and gravel extraction sites in 2021

2.3 Sand and gravel landbank of permitted mineral reserves

2.3.1 Three planning permissions were granted in 2021 for additional sand and gravel extraction: 650,000 tonnes at Horstead Quarry, 1,450,000 tonnes at Mayton Wood Quarry and 3,748,900 tonnes at Stanninghall Quarry which together add 5,848,900 tonnes of new permitted reserves to the landbank.

2.3.2 Reserves of sand and gravel at 31 December 2021 were 19,957,158 tonnes, an increase of 27.3% on the 2020 figure. In addition to the 5,848,900 tonnes of reserve granted in planning permissions in 2021, there were also four planning applications for additional sand and gravel extraction in the process of being determined during 2021. These applications are listed in Appendix 1.

2.3.3 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 fourteen operators across twenty-four sites.

2.3.4 The landbank at 31/12/2021, based on the 10-year average production data plus 10%, was 13.0 years and therefore above the range for the landbank indicated in Policy CS1, and above the minimum target contained in national policy and guidance. The landbank is calculated as follows:

Permitted sand and gravel reserves (as at 31/12/21)	= 19.957 million tonnes
10-year average sand and gravel sales	= 1.389 million tonnes
Plus 10% of the 10-year average sales	= 1.528 million tonnes
19.957 million tonnes permitted reserve divided by 10-year average (+10%)	= 13.0 years
Resulting sand and gravel landbank	= 13.0 years

2.3.5 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.

2.3.6 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 Minerals and Waste Local Plan is required.

2.3.7 Figure 2 compares the permitted reserves each year with the target for a minimum of 7 years' worth of permitted reserves. From 2003 to 2011 the landbank target of 7 years of permitted reserves was calculated using the annual apportionment of 3 million tonnes, resulting in a minimum landbank target of 21 million tonnes. From 2005 to 2011 permitted reserves were continuously below the landbank target. From 2012 until 2020 the landbank target of 7 years of permitted reserves was calculated using the sand and gravel sales average from the previous 10 years and therefore the landbank target changes slightly each year. From 2012 onwards the landbank of permitted reserves for sand and gravel has always been above the minimum 7 years.

Year	Permitted reserve (million tonnes)	10-year average sales (million tonnes)	Landbank (years)
2012	14.560	1.842	7.9
2013	13.335	1.705	7.8
2014	15.316	1.585	9.7
2015	18.348	1.488	12.3
2016	16.536	1.406	11.8
2017	14.732	1.368	10.8
2018	13.312	1.361	9.8
2019	13.515	1.356	10.0
2020	14.511	1.369	10.6
2021	19.957	1.389	13.0

Table 4. Sand and gravel permitted reserves and landbank in Norfolk

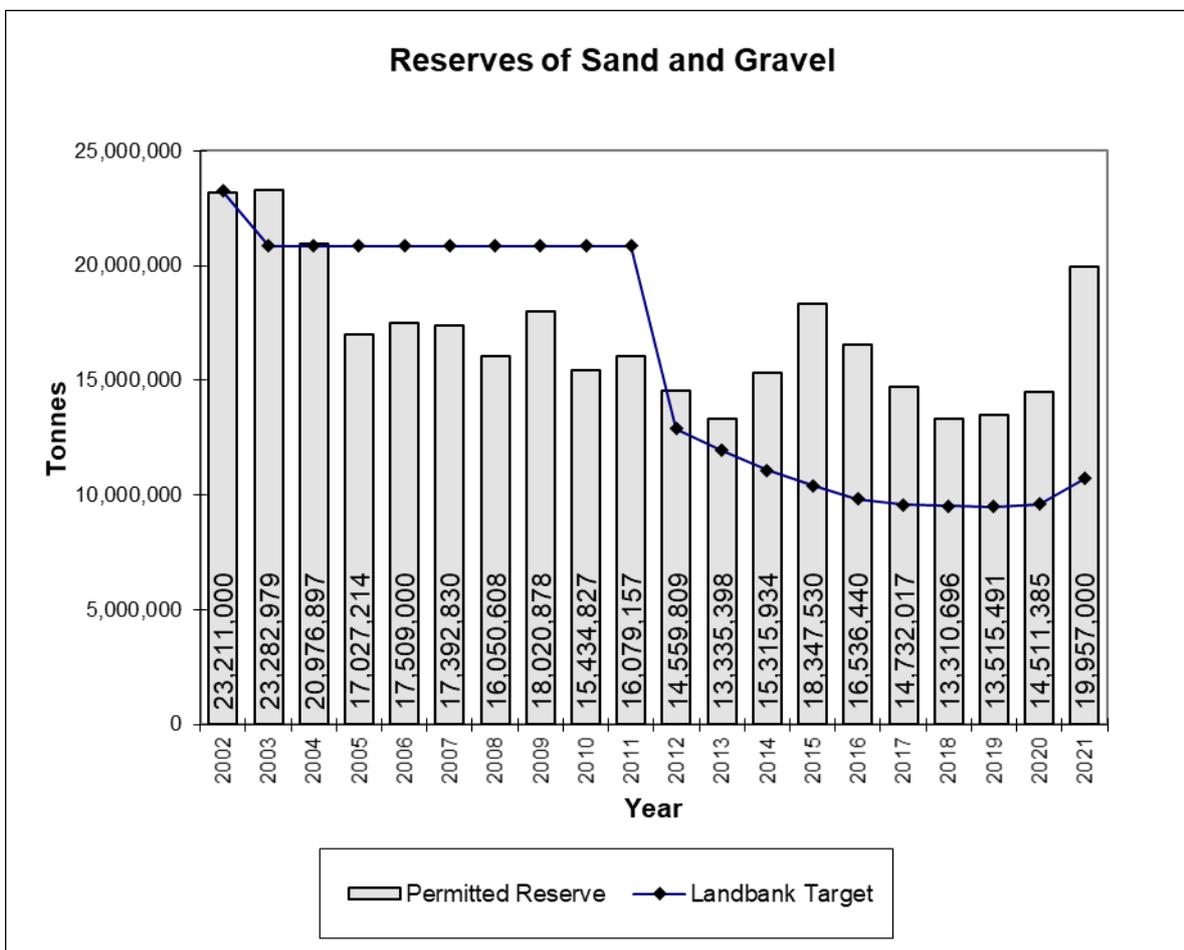


Figure 2: Sand and gravel permitted reserves and landbank target in Norfolk

Source: Norfolk County Council – annual minerals survey

2.3.8 The Minerals 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 27.59Mt compared with a requirement based on policy CS1 of 25.04mt. Table 5 shows the status of all the sand and gravel specific site allocations in the adopted Minerals Site Specific Allocations DPD. Since

2017, the mineral resource estimates for six of the allocated sites have been revised by the proposers of the sites. Therefore, the estimated resource for the 26 allocated sites is now **24.686Mt**, which is slightly below the requirement contained in Policy CS1. The following paragraphs calculate the remaining allocated mineral resource based on the revised total of 24.686Mt.

2.3.9 Norfolk County Council adopted the Minerals Site Specific Allocations DPD in October 2013. By the end of 2021 planning permission had been granted for 11.84Mt of sand and gravel extraction from allocated sites. Two of the allocated sites had received planning permission for only part of the site. All mineral planning applications submitted so far for allocated sites have been found suitable and granted permission.

2.3.10 This leaves an estimated further **15.75Mt** of allocated sand and gravel resource which had not received planning permission at the end of 2021. However, the allocated sites in Shropham (MIN 108, MIN 109 and MIN 110) and Swardeston (MIN 79 and MIN 80) are no longer expected to be delivered; together these five sites are estimated to contain 3.21 Mt, which reduces the deliverable allocated sand and gravel resource which has not received planning permission to **12.54Mt**.

2.3.11 As set out in paragraph 2.3.4., the sand and gravel permitted reserve was 19.957mt on 31/12/2021 and the sand and gravel landbank on 31/12/2021 was 13 years. The 10-year average sales of sand and gravel in the period to the end of 2021 were 1.389mt per annum. Based on this 10-year sales average plus 10% (totalling 1.528mt), the remaining allocated sites (excluding those in Shropham and Swardeston) would provide 8.5 years of sand and gravel resource. This resource plus the existing permitted reserve would last 21.5 years; until 2043. Therefore, the permitted and allocated sites together would provide sufficient resources past the end of the adopted plan period (2026).

Location (district / parish)	Site reference	Date permission granted	Allocated resources (tonnes)	31/3/12-31/12/21 Permitted reserve (tonnes)
Breckland / Beetley	MIN 10	April 2015 (part of site)	2,400,000 (but revised to 1,855,000 in 2017)*	680,000
Breckland / Beetley	MIN 51	N/A	1,300,000 (but revised to 500,000 in 2017)*	0 (no planning permission)
Breckland / Shropham	MIN 108	Site not expected to be developed	150,000	0 (no planning permission)
Breckland / Shropham	MIN 109	Site not expected to be developed	400,000	0 (no planning permission)
Breckland / Shropham	MIN 110	Site not expected to be developed	150,000	0 (no planning permission)
Breckland / Snetterton	MIN 102	N/A	1,500,000 (but revised to 980,000 in 2017)*	0 (no planning permission)
Broadland / Attlebridge	MIN 55	N/A	525,000	0 (no planning permission)
Broadland / Buxton with Lammas & Frettenham	MIN 37	June 2021	1,450,000	1,450,000
Broadland / Felthorpe	MIN 48	N/A	1,900,000	0 (no planning permission)

Location (district / parish)	Site reference	Date permission granted	Allocated resources (tonnes)	31/3/12-31/12/21 Permitted reserve (tonnes)
Broadland / Horstead with Stanninghall	MIN 64	Nov 2012 (part of site) May 2021 (remainder of site)	950,000	1,000,000
Broadland / Spixworth & Horsham St Faith & Newton St Faith	MIN 96	N/A	1,000,000 (but revised to 1,600,000 in 2017)*	0 (no planning permission)
King's Lynn & West Norfolk / Pentney	MIN 19	Application submitted Jan 2021	700,000 (but revised to 400,000 in 2017)*	0 (no planning permission)
King's Lynn & West Norfolk / East Rudham	MIN 45	May 2014 (part of site)	3,600,000 (but revised down to 2,260,000)*	1,560,000
King's Lynn & West Norfolk / Tottenhill	MIN 76	April 2019	285,000	285,000
King's Lynn & West Norfolk / Watlington	MIN 75	November 2015	335,000	335,000
North Norfolk / Aylmerton	MIN 69	October 2020	750,000	1,000,000
North Norfolk / East Beckham	MIN 84	August 2014	1,600,000	1,600,000
North Norfolk / Holt	MIN 71	N/A	1,100,000	0 (no planning permission)
North Norfolk / North Walsham	MIN 115	N/A	1,100,000	0 (no planning permission)
South Norfolk / Heckingham & Norton Subcourse	MIN 83 & MIN 91 & MIN 90	February 2015	2,331,000	2,370,000
South Norfolk / Stoke Holy Cross	MIN 81	October 2015	955,000	960,000
Stoke Holy Cross, Swainsthorpe & Swardeston	MIN 79	Site not expected to be developed	1,750,000	0 (no planning permission)
South Norfolk / Swardeston	MIN 80	Site not expected to be developed	760,000	0 (no planning permission)
South Norfolk / Wymondham	MIN 118	January 2014	600,000	600,000
Total	N/A	N/A	27,591,000 (but revised down to 24,686,000 in 2017)	11,840,000

*where mineral resource estimates were revised in 2017 this was done by the site proposer when the site was resubmitted for consideration in the emerging Minerals and Waste Local Plan

Table 5: Status of sand and gravel site allocations

2.3.12 The production of a new Minerals and Waste Local Plan (NM&WLP) has commenced because five years have passed since the adoption of the Minerals SSA DPD, and the requirement for a review was specified in the adopted document. The M&WLP will extend the Plan period to the end of 2038; this would coincide with the Plan period for other emerging Local Plans in Norfolk. Of the remaining 19 sites allocated in the adopted Minerals Site Specific Allocations DPD, 14 were carried forward for consideration into the review process, following confirmations of continued landowner willingness. A 'call for sites' was undertaken in 2017 and 24 additional sites for potential future sand and gravel extraction were submitted by landowners, mineral operators or agents, plus one further site submitted in response to the Initial Consultation.

2.3.13 The Initial Consultation document of the NM&WLP was subject to public consultation for six weeks in June-August 2018. In the Initial Consultation document, a total of 25 sites were proposed to be allocated as suitable for future sand and gravel extraction to meet the forecast need during the NM&WLP period.

2.3.14 The Preferred Options (PO) document of the M&WLP was subject to public consultation for six weeks in September-October 2019. In the PO document, a total of 20 sites were proposed to be allocated as suitable for future sand and gravel extraction to meet the forecast need during the NM&WLP period. Two sites were withdrawn from the Local Plan process and one site received planning permission before the PO stage.

3. Carstone

3.1 Production

3.1.1 Norfolk County Council carries out an annual survey for carstone production. The totals for the last 10 years are shown in table 6 below, and for the last 20 years in Figure 3 below:

Year	Apportionment (tonnes)	Production (tonnes)	% Apportionment Produced
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%
2017	200,000	97,578	49%
2018	200,000	106,278	53%
2019	200,000	39,878	20%
2020	200,000	55,907	28%
2021	200,000	138,779	69%

Table 6: Carstone production in Norfolk as a % of apportionment

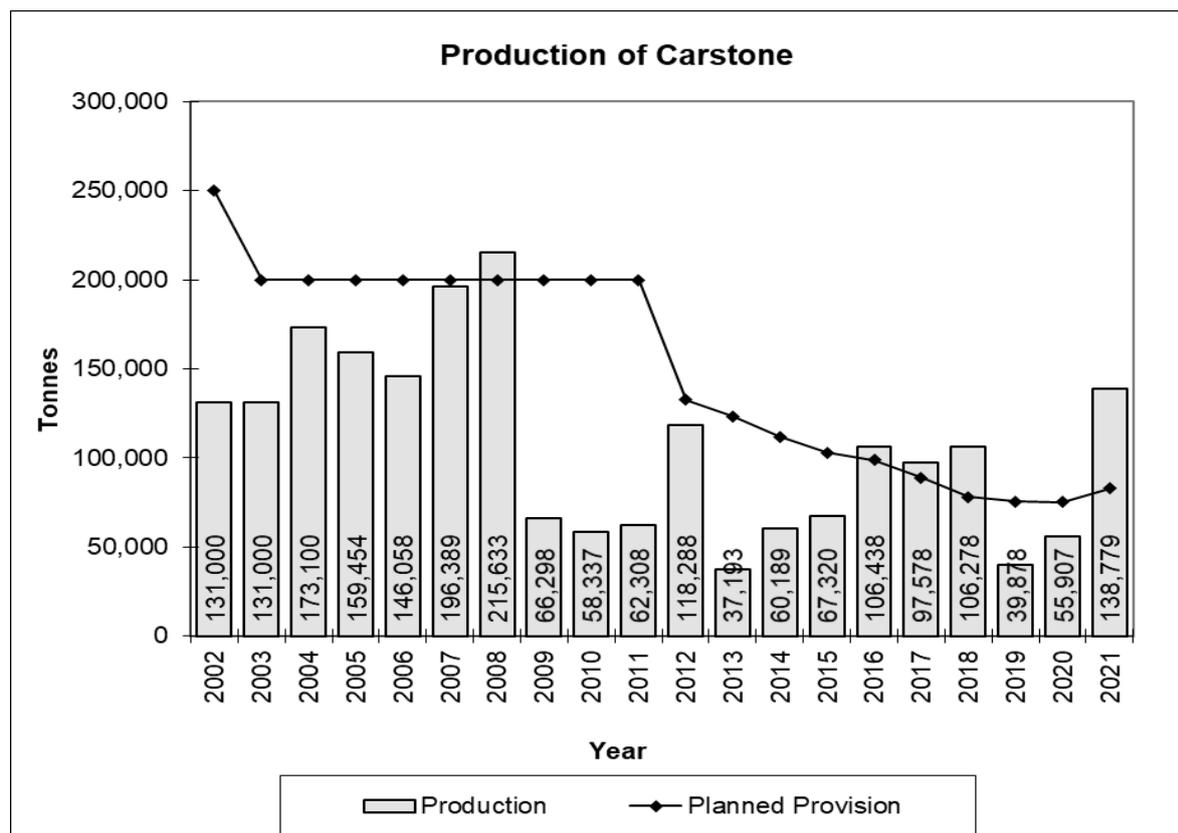


Figure 3: Carstone production 2002-2021 in Norfolk Source: NCC – annual minerals survey.

3.1.2 In Figure 3 the planned provision is the annual apportionment of 200,000 tonnes per annum from 2003 to 2011 which was only met in 2008. From 2012 onwards the planned provision was based on the previous 10-year sales average; this was only met in 2016, 2017, 2018 and 2021. The ten-year average sales from 2017 to 2021 are set out in table 7 below.

3.1.3 Carstone production in 2021 was 138,779 tonnes, representing an increase of 59.7% compared with the 2020 figure of 55,907 tonnes. Carstone production in 2021 was above the average for the last twenty years (108,371 tonnes) and above the average for the last ten years (**82,785 tonnes**). The NPPG states that the 10-year rolling average should be used in the calculation of aggregate landbanks.

3.1.4 The rolling 3-year average is 78,188 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 7 below. These fluctuations mean that the three-year rolling average can also significantly vary 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	10-Year production average (tonnes)	3-year production average (tonnes)
2017	88,958	90,445
2018	78,023	103,431
2019	75,381	81,245
2020	75,138	67,354
2021	82,785	78,188

Table 7: 10-year and 3-year rolling average of carstone production in Norfolk

3.1.5 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. The emerging Norfolk Minerals and Waste Local Plan (Pre-Submission version 2022) calculates the forecast need by adding a 10% buffer to the 10-year production average.

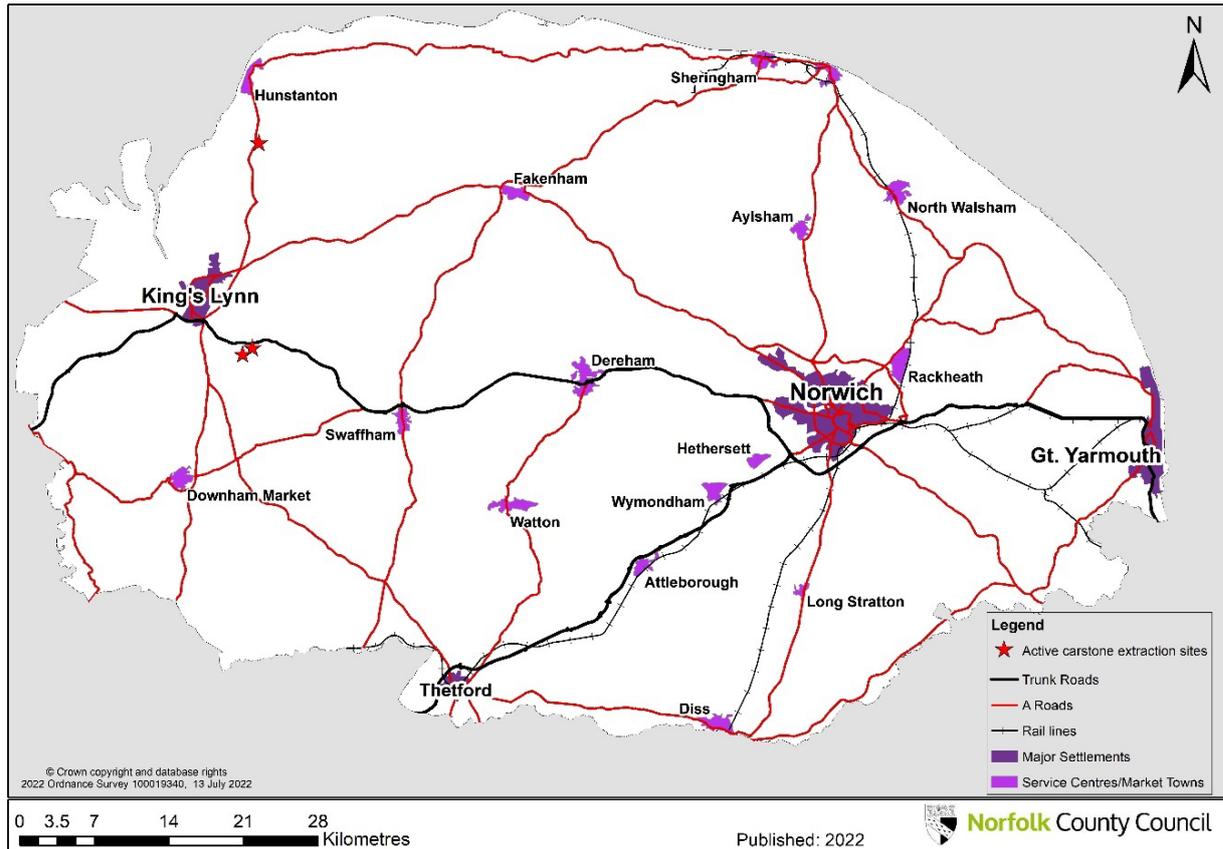
3.1.6 Carstone is mainly used as a construction aggregate, however prior to the introduction of the NPPF and National Planning Policy Guidance carstone was planned as part of the national hard rock requirement. A key part of the MASS was an apportionment system for national need. A national requirement 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. The most recent MASS guidelines covered the period from 2005-2020.

3.1.7 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. As the most recent apportionment figure only covered the period to 2020, for the purposes of table 6 it has been assumed that the annual guideline figure remains the same at 200,000 tonnes per annum in 2021. Table 6 shows annual carstone 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.

3.2 Carstone extraction sites in Norfolk

Parish	Operator	Address	End date of Permission
Middleton	Middleton Aggregates Ltd	West of Mill Drove	17/10/2026
Middleton	Middleton Aggregates Ltd	East of Mill Drove	31/12/2024
Snettisham	Frimstone Ltd	Norton Hill	04/09/2028

Table 8: Carstone extraction sites in Norfolk in 2021



Map 3: Carstone extraction sites in Norfolk in 2021

3.3 Carstone landbank of permitted mineral reserves

3.3.1 Reserves of Carstone at 31 December 2021 were 1,524,000 tonnes which represents a decrease of 8.4% from 2020 figures of 1,662,981 tonnes. No planning applications for carstone extraction were received in the year 2021; and no new planning permissions were granted for carstone extraction.

3.3.2 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 31/12/2021 calculated on the 10-year rolling average sales plus 10%, was 16.7 years, above the figure for the landbank indicated in Policy CS1, and national guidance. The Carstone landbank is calculated as follows:

Permitted reserves (as at 31/12/21) =	1,524,000 tonnes
10-year average	= 82,785 tonnes
Plus 10% of the 10-year average sales =	91,064 tonnes
1,524,000 permitted reserves divided by 10-year average (+10%) =	16.7 years
Landbank (years)	= 16.7 years

3.3.3 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 Minerals and Waste Local Plan is required.

3.3.4 Figure 4 compares the permitted reserves each year with the target for a minimum of 10 years' worth of permitted reserves. From 2003 to 2011 the landbank target of 10 years of permitted reserves was calculated using the annual apportionment of 200,000 tonnes, resulting in a minimum landbank target of 2 million tonnes. The permitted reserves reduced from 3.75 million tonnes in 2002 down to 2.7 million tonnes in 2007. The permitted reserves fell below 2 million tonnes (to 1.77 million tonnes) in 2008 and then remained fairly stable. From 2012 until 2020 the landbank target of 10 years of permitted reserves was calculated using the Carstone sales average from the previous 10 years and therefore the landbank target changes slightly each year. From 2012 onwards the landbank of permitted reserves for Carstone has always been above the minimum 10 years.

Year	Permitted reserve (million tonnes)	10-year average sales (tonnes)	Landbank (years)
2012	1.684	132,687	12.7
2013	1.841	123,306	14.9
2014	1.795	112,015	16.0
2015	1.735	102,801	16.9
2016	2.050	98,839	20.7
2017	1.950	88,958	21.9
2018	1.845	78,023	23.6
2019	1.721	75,381	22.8
2020	1.663	75,138	22.1
2021	1.524	82,785	16.7

Table 9. permitted Carstone reserves and landbank in Norfolk

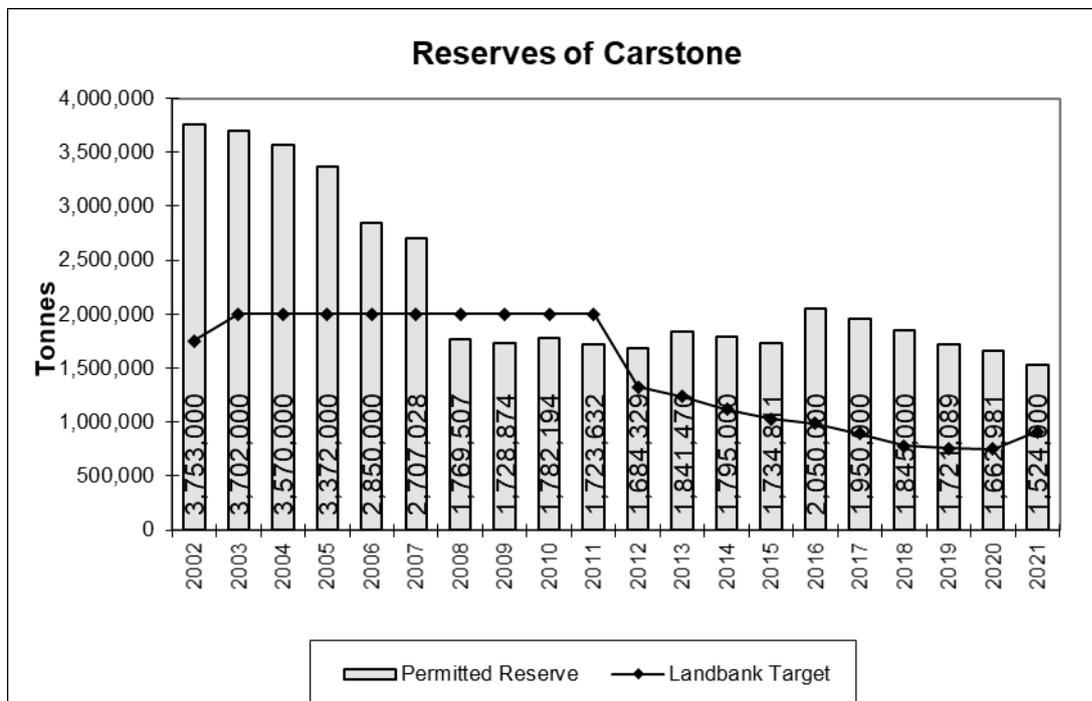


Figure 4: Carstone reserves/landbank target in Norfolk 2002-2021

Source: NCC – annual minerals survey.

3.3.5 The Minerals Site Specific Allocations DPD allocated one 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.

3.3.6 Norfolk County Council adopted the Minerals Site Specific Allocations DPD in October 2013. By the end of 2021 no planning application had been submitted for the extraction of carstone at the allocated site.

3.3.7 Therefore, 1.42 mt of allocated carstone resource remains at the end of 2021. No planning applications were in the process of being determined for allocated carstone resources.

3.3.8 As set out in paragraph 3.3.2, the permitted reserve was 1.524mt on 31/12/2021 and the carstone landbank on 31/12/2021 was 16.7 years. The 10-year average sales of carstone in the period to the end of 2021 was 82,785 tonnes per annum. Based on this 10-year sales average plus 10% (totalling 91,094 tonnes), the remaining allocated site would provide 15.6 years of carstone resource. This resource plus the existing permitted reserve would last until 2053. Therefore, the permitted and allocated sites together would provide sufficient resources past the end of the plan period (2026).

3.3.9 The production of a new Minerals and Waste Local Plan (NMW&LP) has commenced because five years have passed since the adoption of the Minerals SSA DPD, and the requirement for a review was specified in the adopted document. The emerging Minerals and Waste Local Plan will extend the Plan Period to the end of 2038; this would coincide with the Plan period for other emerging Local Plans in Norfolk. The site allocated in the adopted plan, has been carried forward into the review following a confirmation of continued landowner willingness. A 'call for sites' was also undertaken in 2017 however no additional sites for potential future carstone extraction were submitted by landowners, mineral operators or agents.

3.3.10 The Initial Consultation document of the NM&WLP was subject to public consultation for six weeks during June-August 2018, the site allocated in the current adopted plan was proposed to be allocated as suitable for future carstone extraction to meet the forecast need during the NM&WLP period.

3.3.11 The six-week Preferred Options Consultation took place during September-October 2019 and the site allocated in the current adopted plan continues to be considered suitable to allocate for future carstone extraction to meet the forecast need during the NM&WLP period.

3.3.12 The representations period on the Pre-Submission version of the NM&WLP took place in autumn 2022 and the site allocated in the current adopted plan continues to be considered suitable to allocate for future Carstone extraction to meet the forecast need during the NM&WLP period to the end of 2038.

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 Inert / Construction and Demolition (C&D) waste management figures

4.1.1 In previously published Local Aggregate Assessments data on inert construction and demolition waste recovery was taken from Norfolk County Council's surveys of waste management facilities and mineral workings with data from the Environment Agency's Waste Data Interrogator (WDI) used in 2019 and 2020. In this year's LAA the method of collating and analysing this data has been changed to be consistent with one of the approach contained within Chapter 3 of the guidance note "Recycled Aggregates Data – Guidance on assessing levels of recycled aggregates" (2022) produced by representative from the National Waste Technical Advisory Body Chairs and Aggregate Working Party Chairs. The new method has been used to analyse data from the WDI over the past 10 years and replaces the data previously used within Norfolk's Local Aggregate Assessments as it is considered to be more accurate.

4.1.2 For recycled aggregates, data has been taken from the WDI for every year using the waste following non-hazardous waste codes: 01 04 08 (waste gravel and crushed rocks), 01 04 09 (waste sand and clays), 17 01 01 (concrete), 17 01 02 (bricks), 17 01 03 (tiles and ceramics), 17 01 07 (mixture of concrete, bricks, tiles and ceramics), 17 03 02 (bituminous mixtures), 17 05 08 (track ballast), 17 09 04 (mixed construction and demolition waste). Using only these waste codes means that only those wastes considered to be inert and therefore acceptable for the production of recycled aggregates have been reported.

4.1.3 In terms of facility types and locations, the WDI data was filtered to only include the waste types above that were received at facilities located in Norfolk. It should be noted that the waste could have originated both within Norfolk and outside Norfolk. Waste facility categories of transfer and treatment were selected. This excludes the waste facility categories of landfill, storage, on/in land and use of waste. Where information on the fate of the waste received at a facility was available (which is only the case for the years 2017-2021) quantities of waste with fates to landfill, incineration and transfer for disposal have been excluded. Waste recorded as being received by mobile plant in the WDI has been excluded because this data is not available for most years and also because mobile plant are only listed in the WDI based on the registered address of the company, which is not necessarily where the mobile plant is actually used.

4.1.4 It is difficult to establish the percentage of the recovered material that can be sold as recycled aggregate. The data contains mixed construction and demolition waste; some parts of this waste stream are unsuitable for use as recycled aggregate (such as plastics, timber, metal and soils), however it is not possible to disaggregate these wastes from the totals. The guidance document also recognises that there may be an element of over-estimating/double counting associated with the use of data from the WDI, where waste is handled at more than one facility.

4.1.5 The guidance document acknowledges that “whilst the data provided in the WDI can be used as a proxy for recycled aggregates, the data reported is not ‘sales’, it is in fact arisings of material suitable for use as a recycled aggregate, therefore not all the material identified through the WDI will be sold as a recycled aggregate. In addition, some waste material may be stockpiled at a particular site to be sold at a later date.”

4.1.6 The guidance document also notes that data from the WDI may exclude a proportion of waste material which is processed by mobile plant at construction sites and it suggests that to ascertain the overall recycled aggregate figure an additional 20% could be applied, although this is based on a report from 2005 and therefore is not current data. In addition, there will be variations in usage of mobile plant year to year and some areas may have a higher or lower proportion of mobile plant. Therefore, Table 10 below shows what the annual tonnage of inert C&D waste recovered would be with and without the addition of 20% to cover waste processed on construction sites by mobile plant.

4.1.7 In the Environment Agency’s Waste Data Interrogator (WDI), it is reported that in 2021 around 341,000 tonnes of the relevant inert / construction and demolition waste categories received at waste management facilities in Norfolk, was recovered. This is an increase of over 100,000 tonnes (41.8%) on the 2020 figure of 240,400 tonnes, which is likely to be due to the impact of the Covid-19 pandemic on waste arisings during 2020. With the addition of 20% to cover the proportion likely to be processed by mobile plant at construction sites, the annual production in 2021 is calculated to be 409,200 tonnes.

4.1.8 The 10-year rolling average was **274,600** tonnes per annum up to 21 December 2021. With the addition of 20% to cover the proportion likely to be processed by mobile plant at construction sites, the 10-year rolling average is calculated to be 329,420 tonnes. Waste Data Interrogator data prior to 2012 has not been analysed and therefore comparable previous 10-year averages are not available.

4.1.9 The rolling 3-year average was **292,900** tonnes up to 31 December 2021 and therefore slightly higher than the 10-year average. With the addition of 20% to cover the proportion likely to be processed by mobile plant at construction sites, the 3-year rolling average is calculated to be 351,440 tonnes. The 3-year rolling average (2019-2021) was approximately 1% up on the 2018-2020 figure of 289,900 tonnes.

year	Inert C&D waste (tonnes)	20% of inert C&D waste (tonnes)	Total
2012	131,200	26,240	157,440
2013	148,700	29,740	178,440
2014	202,000	40,400	241,400
2015	330,800	66,160	396,960
2016	375,200	75,040	450,240
2017	347,300	69,460	416,760
2018	332,200	66,440	398,640
2019	297,200	59,440	356,640
2020	240,400	48,080	288,480
2021	341,000	68,200	409,200

Table 10: Recycled aggregates production in Norfolk based on inert construction and demolition waste recovery data

Source: Environment Agency Waste Data Interrogator (WDI)

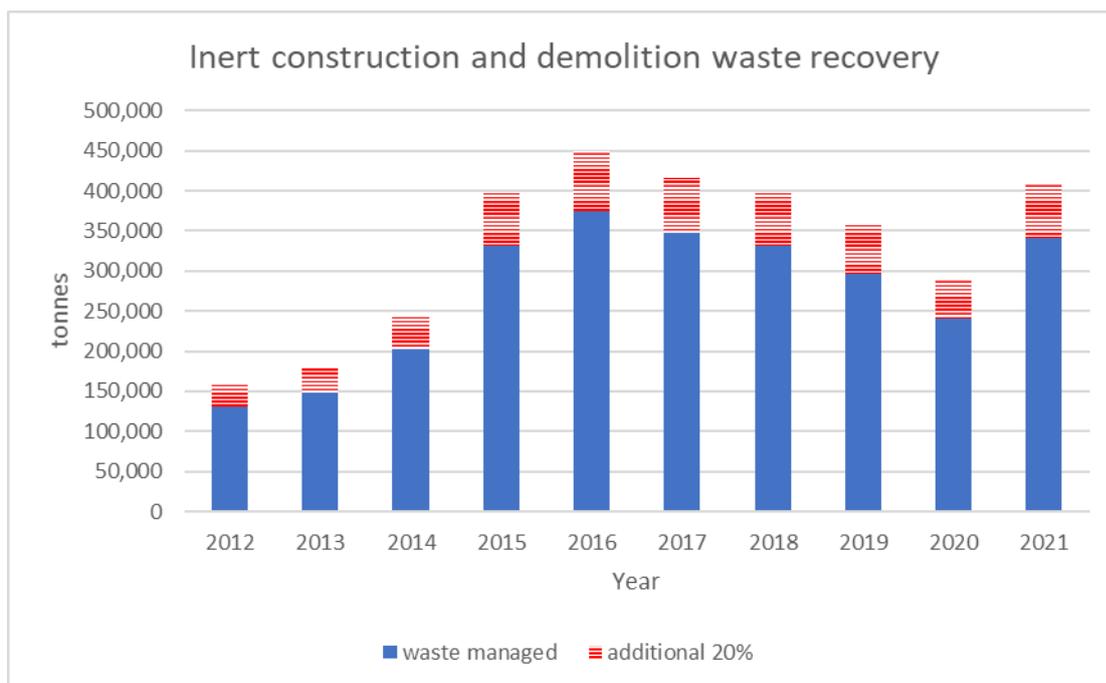


Figure 5: Inert / Construction and Demolition Waste Recovery in Norfolk

Source: Environment Agency Waste Data Interrogator.

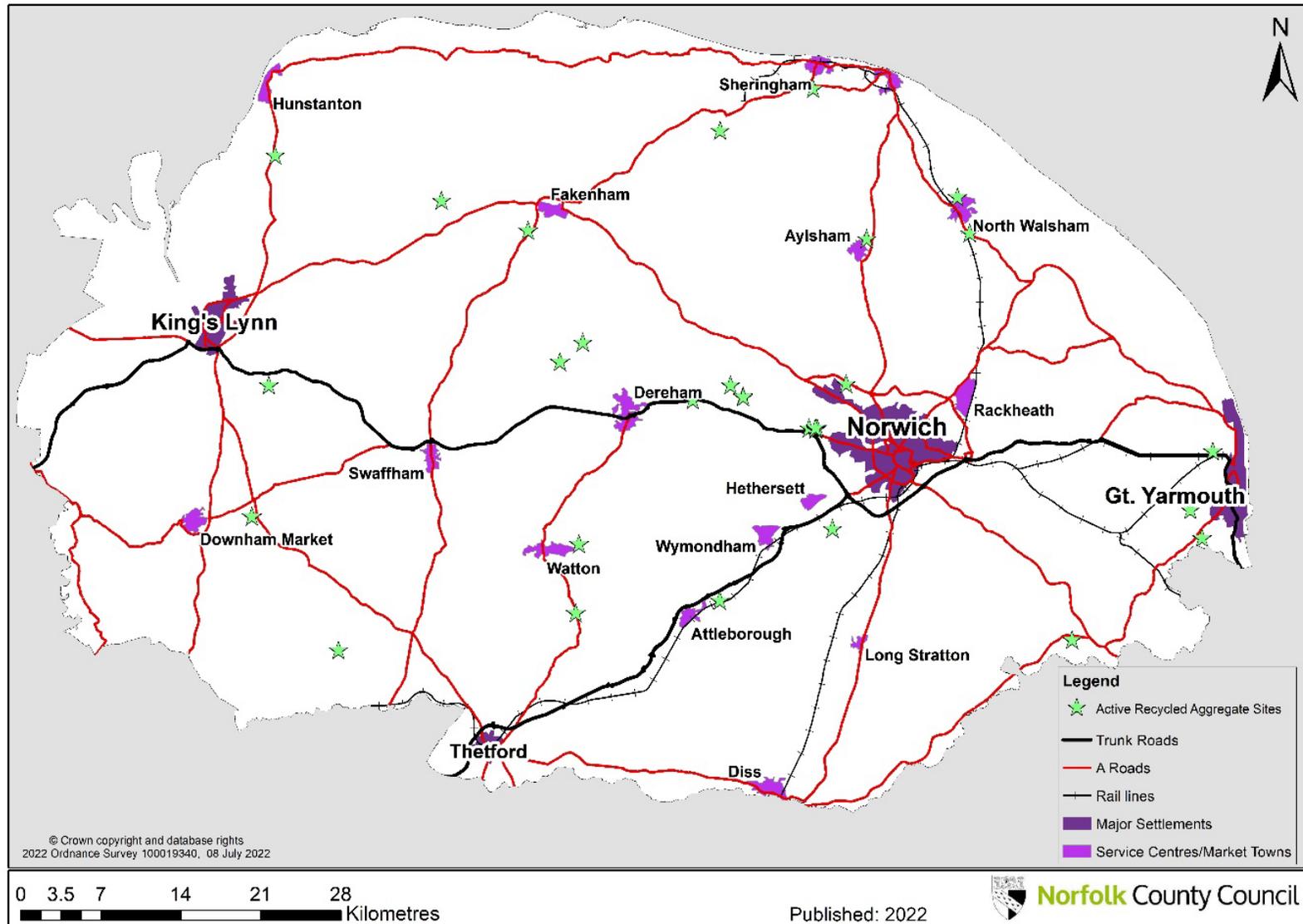
4.2 Secondary and Recycled Aggregate Sources

4.2.1 The table below lists active sites which process inert / construction and demolition waste, some of which will be used as recycled aggregates.

Operating Company	Site Address	Grid reference
Aylsham Plant Hire Ltd	Aylsham Industrial Estate, Aylsham	620100, 327760
EE Green & Son	Townlands, Harfrey's Road, Great Yarmouth	652049, 306153
Folkes Plant & Aggregates Limited	Welcome Pit, Butt Lane, Burgh Castle, Great Yarmouth	648143, 304273
Norfolk Recycling Ltd	Six Acres, Stone Road, Hockering, Dereham	608086, 315134
Green Planet Environmental Recycling	Rosfield, Reepham Road, Horsford, Norwich	618282, 314991
Norman Wenn Ltd	Frans Green Industrial Estate, Sandy Lane, East Tuddenham	609303, 313953
Pips Skips (PL Hyde)	Frans Green Industrial Estate, Sandy Lane, East Tuddenham	609475, 314001
Martyn J Green Ltd	land South Of B1110, North Tuddenham, Dereham	604882, 313735
Longwater Gravel Co Ltd	William Frost Way, Longwater Business Park, Costessey	615815, 310706
N R Asphalt Limited	William Frost Way, Longwater Business Park, Costessey	615616, 311298
Breedon Trading Ltd	Holt Quarry, Ducks Hole Farm, Hunworth Road, Holt	607237, 337002

Operating Company	Site Address	Grid reference
East Coast Waste Ltd	Harfreys Industrial Estate, Great Yarmouth	651855, 305611
Gresham Gravel Limited	East Beckham Quarry, Holt Road, Sheringham	615522, 340754
Breedon Trading Ltd	Costessey Quarry, Longwater Industrial Estate, Costessey	614447, 311095
E E Green & Son Limited	Browston sand pit, Cherry Lane, Browston, Great Yarmouth	649456, 301745
Carl Bird Limited	Boundary Pit, Sandy Hills Lane, North Walsham	629064, 328265
Lodge Farm Recycling Ltd	Lodge Farm, Breckles, Attleborough	594649, 295238
Baldwin Skip Hire	Walnut Tree Farm, Silver Street, Besthorpe, Attleborough	607236, 296353
Drury's Environmental Services Ltd	Lyngate Industrial Estate, North Walsham	628047, 331347
R N Gamble	Blackwater Pit, Helhoughton Road, Hempton, Fakenham	590470, 328427
Mick George Ltd (Frimstone)	Snettisham Quarry, Norton Hill, King's Lynn	568348, 334963
Mick George Ltd (Frimstone)	Carbrooke Quarry, Summer Lane, Carbrooke	594929, 301229
Mick George Ltd (Frimstone)	Crimpleham Quarry, Main Road, Crimpleham	566314, 303624
Longwater Gravel Co Ltd	Coxford Abbey Quarry, Docking Road, Syderstone	582905, 331039
Middleton Aggregates Ltd	East Winch Quarry, East Winch Road, East Winch, King's Lynn	568412, 315288
Middleton Aggregates Ltd	Ketteringham Quarry. Hethersett Road, Ketteringham	617358, 302654
Middleton Aggregates Ltd	East Bilney Quarry, Rawhall Lane, East Bilney	595090, 318640
McLeod Aggregates Ltd	Bitteringham / Longham Quarry, Reed Lane, Longham, Dereham	593264, 317049
The Lyndon Pallett Group Ltd	Kirby Cane Quarry, Yarmouth Road, Kirby Cane, Bungay	638067, 292915
L P Pallett Quarry (Feltwell) Ltd	Feltwell Quarry, Lodge Road, Feltwell, Thetford	573885, 292018
Pattisons (Anglia) Ltd	Ash Tree Farm, Acle New Road, Great Yarmouth	650444, 309264

Table 11: Secondary and Recycled Aggregate Sources in 2021 (source: Environment Agency Waste Data Interrogator)



Map 4: Secondary and recycled aggregate sources in Norfolk in 2021

5. Materials sourced outside the County

5.1 Imports and exports

5.1.1 Quantifying intra county imports and exports has been a longstanding issue. However, the 2019 Aggregate Minerals Survey (AM2019), undertaken jointly between the Ministry for Housing, Communities and Local Government (MHCLG) 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 2019 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. The Aggregate Minerals Survey is released every four years and therefore the 2019 data is the most recent available.

5.2 Crushed Rock

5.2.1 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). A significant proportion of this material is imported by rail into Norwich. Other railheads are located at Snetterton and Brandon although these are significantly smaller in scale and volumes than those in Norwich. There are also landings of crushed rock at the Great Yarmouth Outer Harbour. Just over 1,000,000 tonnes of crushed rock were imported via railheads and wharves into Norfolk in 2021.

5.2.2 The Collation of the Results of the 2019 Aggregate Minerals Survey for England and Wales the (AM2019) indicated that the East of England (8.88 Mt) is one of the main importing regions of crushed rock, whilst the East Midlands (14.3Mt) and South West (8.4Mt) have the largest export figures.

5.2.3 Of the total crushed rock consumed in Norfolk (616,000 tonnes):

- 50-60% came from outside England and Wales
- 20-30% came from quarries within Leicestershire
- 10-20% came from quarries within Derbyshire
- 1-10% came from Norfolk (carstone)
- 1-10% came from Powys, Wales
- Cambridgeshire, Lincolnshire, the Peak District National Park and Yorkshire Dales National Park each supplied less than 1%.

Norfolk did not export any crushed rock in 2019.

Source: 2019 Aggregate Minerals survey for England and Wales (MHCLG & British Geological Survey)

5.3 Sand and Gravel

5.3.1 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.

5.3.2 Imports of sand and gravel

Of the total 1,396,000 tonnes of land-won sand and gravel consumed in Norfolk in 2019:

- 80-90% came from mineral workings within Norfolk
- Suffolk supplied between 10-20%
- Cambridgeshire supplied between 1-10%
- Lincolnshire supplied between 1-10%
- Peterborough and Central Bedfordshire each supplied less than 1%

5.3.3 Exports of sand and gravel

Of the total sales of 1,329,000 tonnes sand and gravel produced in Norfolk in 2019:

- 80-90% of Norfolk's sand and gravel production was used in Norfolk
- 20-30% of Norfolk's production was exported somewhere in the East of England
- 1-10% of Norfolk's sand and gravel production was exported to Suffolk
- Cambridgeshire and Peterborough, Lincolnshire, Hertfordshire, Bedfordshire (Central Bedfordshire, Bedford and Luton) each received less than 1% of Norfolk's sand and gravel production

It is considered that there is a degree of double counting regarding these figures and 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: 2019 Aggregate Minerals survey for England and Wales (MHCLG & British Geological Survey)

5.4 Marine sources

5.4.1 The Aggregate Minerals Survey 2019 contains the most recent estimate of the total marine sand and gravel consumed in Norfolk, which was zero. The average estimate of marine sand and gravel consumed in Norfolk over the last three national Aggregate Minerals Surveys was less than 500 tonnes per year. This represents much less than 1% of total sand and gravel (both land-won and marine) consumed in Norfolk

Source: 2019 British Geological Survey (BGS) Aggregate Minerals Survey for England and Wales.

6. Supply and Demand Assessment

6.1 Supply

6.1.1 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 12 below.

Year	sand & gravel production in Norfolk (tonnes)	carstone production in Norfolk (tonnes)	Recycled aggregates production (tonnes) ¹	Imports of crushed rock to Norfolk (tonnes)	Imports of sand and gravel to Norfolk (tonnes)	Marine dredged aggregate to Norfolk (tonnes)
2012	1,132,000	118,288	131,200	No data	No data	No data
2013	1,114,000	37,193	148,700	No data	No data	No data
2014	1,359,620	60,189	202,000	271,000	193,000	Less than 500
2015	1,414,959	67,320	330,800	No data	No data	No data
2016	1,622,566	106,438	375,200	No data	No data	No data
2017	1,604,973	97,578	347,300	No data	No data	No data
2018	1,511,054	106,278	332,200	No data	No data	No data
2019	1,328,907	39,878	297,200	591,000	272,000	0
2020	1,312,091	55,907	240,400	No data	No data	No data
2021	1,490,500	138,779	341,000	No data	No data	No data
Average 2012-21	1,389,067	82,785	274,600	434,000	188,000	Less than 500

Table 12: Total aggregate sales in Norfolk

Source: Norfolk County Council annual surveys/ Environment Agency Waste Data Interrogator / BGS AM2014 and BGS AM2019 (rounded).

1 – these figures are the quantity of inert construction and demolition waste reported as recovered in the Environment Agency's Waste Data Interrogator and do not include the additional 20% to cover production from mobile plant at construction sites discussed in section 4

Sand and gravel supply

6.1.2 The data in section 2.3 shows that the sand and gravel landbank of permitted reserves equates to 13.0 years at the end of 2021, 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 adopted Minerals Site Specific Allocations DPD to ensure provision of a steady and adequate supply of aggregate for the county up to the end of 2026. The emerging Minerals and Waste Local Plan will, on adoption, ensure a steady and adequate supply of sand and gravel for Norfolk up to the end of 2038. Imports of sand and gravel into Norfolk are significantly less than exports.

Carstone supply

6.1.3 The data in section 3.3 shows that the carstone landbank of permitted reserves equates to 16.7 years at the end of 2021, which is above the 10-year target for permitted reserves required by the NPPF. Norfolk County Council has also allocated sufficient sites in the Minerals 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. The emerging Minerals and Waste Local Plan will, on adoption, ensure a steady and adequate supply of carstone for Norfolk up to the end of 2038.

6.1.4 There are significant imports of crushed rock into Norfolk due to the unsuitability of Norfolk's carstone for more demanding uses.

6.1.5 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 Minerals Site Specific Allocations.

Emerging Minerals and Waste Local Plan

6.1.6 Norfolk County Council commenced the planned review of the Minerals and Waste Local Plan in 2017. The review will extend the Plan period to 2038, and as part of the process consideration will be given to the need for new allocations to provide an adequate and steady supply of minerals up to the end of 2038. A 'call for sites' was undertaken in 2017 and 24 additional sites for potential future sand and gravel extraction were submitted by landowners, mineral operators or agents, plus one further site submitted in response to the Initial Consultation.

6.1.7 The Initial Consultation document of the Minerals and Waste Local Plan was subject to public consultation for six weeks during June-August 2018. In the Initial Consultation document, a total of 25 sites were proposed to be allocated as suitable for future sand and gravel extraction, and one site was proposed to be allocated as suitable for future carstone extraction to meet the forecast need during the plan period.

6.1.8 The six-week Preferred Options consultation on the emerging Minerals and Waste Local Plan took place during September/October 2019. In the Preferred Options document, a total of 20 sites were proposed to be allocated as suitable for future sand and gravel extraction, and one site was proposed to be allocated as suitable for future carstone extraction to meet the forecast need during the plan period.

6.1.10 The representations period on the Pre-Submission Publication version of the Minerals and Waste Local Plan started in September 2022. In the Pre-Submission document, a total of 16 sites were proposed to be allocated as suitable for future sand and gravel extraction, and one site was proposed to be allocated as suitable for future Carstone extraction to meet the forecast need during the plan period to 2038.

6.2 Demand

Population & housing growth

6.2.1 Forecasts produced by Office of National Statistics indicate that the Norfolk's population is likely to grow from 903,680 in 2018 to 1,009,508 in 2038 an increase of 11.7%. 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 Local Plans to at least 2036.

6.2.2 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 2008 and 2026 the area is planning for at least 36,820 new dwellings (there have been 21,794 completions from 2008/09 to 2019/21) and 27,000 new jobs. The quantities to be planned for are contained in the adopted Joint Core Strategy for Broadland, Norwich and South Norfolk 2011 (with amendments adopted in 2014).

6.2.3 Broadland District Council, Norwich City Council and South Norfolk Council are currently producing a new Greater Norwich Local Plan, which was submitted for independent

examination in July 2021. The Greater Norwich Local Plan will cover the period from 2018 to 2038 and the submitted Plan is planning to deliver a minimum of 49,492 new dwellings during the plan period.

6.2.4 Breckland District Council is planning for no less than 15,298 new homes in the period between 2011 and 2036 (3,493 completions have already taken place between April 2011 and March 2018). The quantities to be planned for are contained in the adopted Breckland Council Local Plan 2019.

6.2.5 Great Yarmouth Borough Council originally planned for 7,140 dwellings over the period between 2013 and 2030 through the adopted Great Yarmouth BC Core Strategy 2015. Great Yarmouth Borough Council Local Plan Part 2 was adopted in December 2021. The Local Plan Part 2 has lowered its housing need to 5,303 new homes over the period from 2013 and 2030. The quantities to be planned for are contained in the Local Plan Part 2. There have already been 2,127 dwelling completions between 2013/14 and 2020/21.

6.2.6 The Borough Council of King's Lynn and West Norfolk is planning for 16,533 dwellings and 5,000 jobs in the period between 2001 and 2026 (there have been 10,620 completions between 2001/02 and 2019/20). The quantities to be planning for are contained in the adopted KL&WN BC Core Strategy 2011. The Borough Council is currently producing a new Local Plan and the Pre-Submission representations period took place in August/September 2021. This Pre-Submission Local Plan proposes to deliver 12,057 dwellings over the plan period from 2016-2036 (1,802 dwellings have been completed between April 2016 and March 2020).

6.2.7 North Norfolk District Council is planning for 8,000 dwellings and 4,000 jobs in the period between 2001 and 2021 (there were 7,350 dwelling completions between 2001/02 and 2019/20). The quantities to be planned for are contained in the adopted North Norfolk Core Strategy 2008. North Norfolk District Council is currently producing a new Local Plan and the Pre-Submission representations period took place during January to March 2022. In the Proposed Submission Version Local Plan (Policy HOU1) the Council proposes to deliver a minimum of 9,600 new homes over the plan period from 2016-2036. There have already been 2,422 dwelling completions between 01/04/2016 and 31/03/2021.

6.2.8 The completion rates and new planned housing numbers contained in more recent Local Plans 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.

6.2.9 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

6.2.9 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.

Comparison between dwelling completions and sand and gravel production

6.2.10 The graph below shows past dwelling completion rates across Norfolk compared to sand and gravel sales. It should be noted that dwelling completions are reported for a financial year, whilst aggregate sales are reported for a calendar year. Whilst no other factors have been considered in the graph, such as mineral being exported outside Norfolk or being directed to other uses (such as construction of infrastructure and commercial or industrial development), the graph appears to show some correlation between the dwelling completions and aggregate production during the period from 2007 to 2018. This is likely to be mainly because dwelling completions and aggregate sales are both significantly affected by economic activity in the wider economy, rather than housing development directly driving aggregate sales. Any correlation between historic completions and aggregate sales is not easily translated into forecasts for future aggregate demand, as future housing forecasts have generally not been matched by actual completions. There is also a significant difference in the quantities of bulk aggregate required by different housing types and construction methods, which have changed over time.

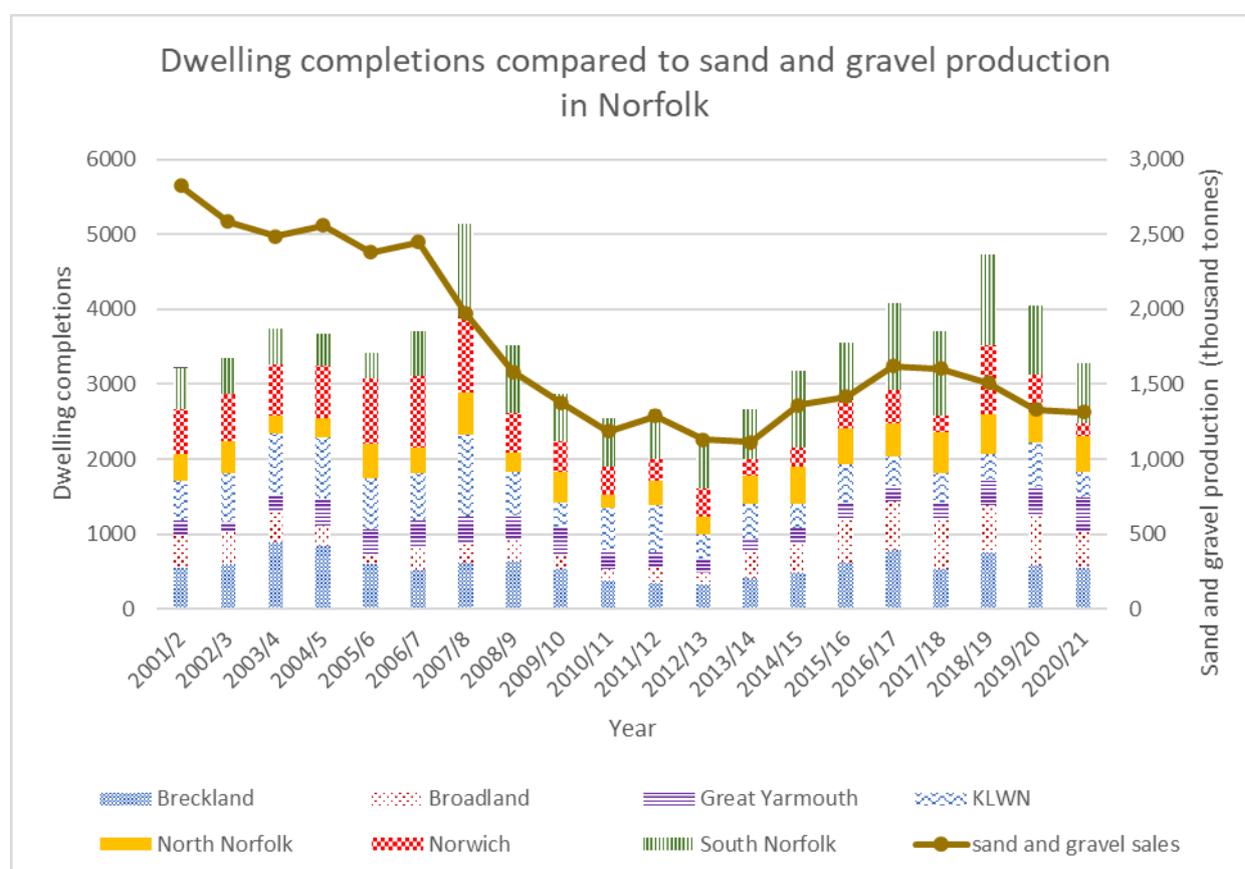


Figure 6: Dwelling completions compared to sand and gravel production in Norfolk

Year	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Dwelling completions	3,416	3,709	5,144	3,520	2,876	2,547	2,672	2,280

Year	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Dwelling completions	2,671	3,174	3,547	4,085	3,706	4,736	4,043	3,274

Table 13: total dwelling completions in Norfolk 2005/6 to 2020/21

Major Construction projects

6.2.11 There were many major construction projects commencing or ongoing in Norfolk in 2021, which are listed below. To provide some focus for the purpose of this Local Aggregate Assessment, the major construction projects listed below only include significant transport/infrastructure projects and residential / mixed residential schemes in excess of 200 units.

Development location	scale	Start date	End date
Three Score Site, Land South of Clover Hill Road, Norwich	Phase 1: 755 dwellings Phase 2: 153 dwellings	Phase 1: August 2014 Phase 2: 2020	Post 2026
Barrack Street Development Site, Norwich	218 dwellings	January 2020	2023/24
St Annes Wharf, King Street, Norwich	437dwellings, 2128 sqm of A1, A2, A3 and D2 uses and car parking	April 2019	2023/24
The Blackdale Building, Bluebell Road, Norwich	Student accommodation to provide the equivalent of 305 dwellings (at 1 dwelling per 3 bedrooms) with 916 beds .	May 2015	2025/26
St Crispins House, Duke Street, Norwich	274 dwellings - conversion of an existing office building to student accommodation (686 student bed spaces and communal accommodation).	November 2020	2023
The Nar Ouse Regeneration Area (NORA), Wisbech Road, King's Lynn	413 dwellings	Under construction	ongoing
Land South of Salhouse Road, Sprowston	up to 380 dwellings	November 2021	2025/26
Royal Norwich Golf Club, Drayton High Road, Hellesdon, Norwich	up to 1,000 homes and a primary school site and 1,900m ² for D1/D2 community use	September 2018	Beyond 2027
Land East of Holt Road, Horsford	304 dwellings	March 2019	2024/25
Land at St Faiths Road, Old Catton, Norwich	328 dwellings	July 2019	2026/27
White House Farm, Land at Blue Boar Lane, Sprowston, Norwich	up to 1233 dwellings including link road and primary school	May 2015	2025/26
Land South of Salhouse Road, Sprowston	minimum 803 dwellings and site for new primary school	March 2022	Beyond 2027
Land to the East of Broadland Way and to the North of the A4, Postwick, Norwich	Business park of up to 42,000sq m of B1 and B2 uses, up to 4,500sqm of A1, A2, A3 and A4 uses, and up to 7,500 sqm of C2, C3	December 2020	unknown
Greater Norwich Food Enterprise Zone, Red Barn Lane, Honingham, Norwich	18.7 hectares in total.	February 2019	unknown

Development location	scale	Start date	End date
Land West of Lodge Farm, Costessey	495 dwellings and a primary school	April 2015	2025/26
Land SW of Newfound Farm, Cringleford	650 dwellings	April 2020	Beyond 2028
Land N of A11 & SW of Round House Way, Cringleford	203 dwellings	April 2020	2024/25
Land East of A11 and N/S of Round House Way, Cringleford, Norwich	650 dwellings	April 2020	2024/25
Land North of Hethersett village Phases A2, B1-B, B2 -	479 dwellings	December 2019	2026/27
North of George Lane, Loddon	200 dwellings	October 2016	2022/23
Land South Of Stoke Road, West Of The Street, and Land North of Shotesham Road, Poringland	458 dwellings and commercial units	August 2015	2027/28
Land NW Of Carpenters Farm, Wymondham	133 dwellings	August 2019	2022/23
Land North of the A11, Wymondham	424 dwellings	April 2017	2022/23
Wymondham Rugby Club And Land West Of Elm Farm, Norwich Common, Wymondham	300 dwellings	April 2021	2024/25
Land between London Road and Sutton Lane, Wymondham	Phase 1 for 89 dwellings (part of a larger site for 375 dwellings plus employment)	January 2020	2022/23
Site 25, Beacon Park, Bradwell, Great Yarmouth	231 dwellings	December 2018	Beyond 2025
Land East of Lowestoft Road, Lowestoft Road, Hopton, Great Yarmouth	200 dwellings	July 2021	Beyond 2025
Great Yarmouth Third River Crossing	N/A	January 2021	2023
Wheatcroft Farm, Land at South Bradwell, Great Yarmouth	850 dwellings (359 units remaining to be built)	October 2014	Beyond 2025
Land at Haverscroft House Farm, London Road, Attleborough	200 dwellings	Under construction	unknown
Land at London Road, Attleborough	375 dwellings & Employment Development	Under construction	Unknown
Land at Greenfields Road, Dereham	279 dwellings	Under construction	unknown
Land North of Red House Norwich Road, Thetford, Croxton & Kilverstone	343 dwellings	Under construction	unknown

Table 14: Major construction projects in Norfolk in 2021 (Source: Local Planning Authorities)

Infrastructure projects

6.2.12 There are a number of key infrastructure projects planned in the County to support the anticipated level of growth. These projects are contained in the Norfolk Strategic Infrastructure Delivery Plan and include:

Road Schemes

- Great Yarmouth Third River Crossing
- Broadland Growth Triangle Link Road
- Attleborough Link Road
- A10 West Winch Housing Access Road
- A140 Long Stratton Bypass
- Fakenham A148 roundabout enhancement
- Norwich Western Link
- A11 Thetford bypass junctions
- A47 Wisbech bypass junctions
- A47 Tilney to East Winch dualling
- A47 Acle Straight dualling
- A47 Thickethorne and Great Yarmouth junction improvements
- A47 dualling Blofield to North Burlingham
- A47 dualling Easton to North Tuddenham

Utilities Schemes

- Thetford energy supply
- Attleborough energy supply
- Snetterton Heath energy supply
- Sprowston Primary and Peachman Way Primary substations
- Earlham sub-station
- Cringleford Primary Substation
- Broadland Growth Triangle Trunk Sewer
- Wymondham water supply connections
- King's Lynn sewerage improvements
- Thetford Water Supply
- Thetford sewerage scheme
- Easton, Hethersett and Cringleford sewerage upgrade

Rail Schemes

- Broadland Business Park Rail Station
- Great Yarmouth Rail Station
- Norwich to London Rail

Schools

- Broadland Growth Triangle Secondary School
- Three primary schools at Thetford
- Two primary schools at Rackheath
- Three primary schools within North Norwich Growth Triangle
- Two primary schools at Attleborough
- Two primary schools at West Winch

- One new primary school in each of the following locations: Wymondham, Cringleford, Hetherset, Bradwell, Fakenham, Long Stratton, Blofield/Brundall, Poringland, Hellesdon.

Regeneration

- East Norwich Regeneration Area
- Great Yarmouth Operations & Maintenance Campus
- Anglia Square, Norwich

6.3 Conclusion

6.3.1 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.

6.3.2 Average annual 10-year sales of 1.389 million tonnes for sand and gravel and 0.083 million tonnes for carstone (as at 31/12/21) have been derived from a sales-based assessment compliant with the NPPF and NPPG. The landbank of permitted reserves has been calculated from the 10-year sales average plus 10% to provide flexibility for future growth.

6.3.3 The emerging Minerals and Waste Local Plan is the most appropriate method of determining any revised target for Core Strategy Policy CS1, having regard 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 2038, 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.

6.3.4 The Initial Consultation document proposed that the 20-year average would provide the best approach as this time period includes data from at least one complete economic cycle, alternatives such as the 10-year rolling average were also included in the consultation document. The data available at the Initial Consultation stage was the 20-year average for the period 1997-2016; this was 1,980,000 tonnes per annum (tpa) for sand and gravel and 126,500 tpa for Carstone.

6.3.5 The Preferred Options consultation on the NM&WLP took place during September and October 2019. It also proposed forecasting the need for minerals using the 20-year average production. The data available at the Preferred Options stage was the 20-year average for the period 1999-2018; this was 1,868,000 tpa for sand and gravel and 121,400 tpa for carstone.

6.3.6 The Pre-Submission version of the Minerals and Waste Local Plan was published in September 2022. More recent minerals data was available and the 10-year average production over the period 2011-2020, plus 10% to provide flexibility for future growth was used to calculate future provision of aggregate mineral extraction. This was 1,506,000tpa for sand and gravel and 83,000tpa for Carstone.

6.3.7 The adopted Minerals Plan is up to date in relation to the supply of aggregate, and the County Council considers that sufficient sand and gravel allocations within the plan to meet the current adopted CS1 target, to 2026, are deliverable.

6.3.8 Norfolk County Council undertook a Single Issue Silica Sand Review of the Minerals Site Specific Allocations Plan. This was examined in March 2017 and found sound and

legally compliant; and was adopted by the Council in December 2017. Silica sand is a nationally important industrial mineral and is not used for aggregate uses in Norfolk.

6.3.9 The figure for aggregate need, in the current plan adopted, was apportioned to MPAs by the East of England Regional Aggregates Working Party (EEAWP) based on national guidelines. The EEAWP has a valuable role in co-ordinating mineral provision. At the time, the EEAWP's previous position was that all MPAs in the East of England should work with the 2009 EEAWP apportionment figure in planning for future provision. However, the EEAWP's position regarding apportionment was reviewed at its 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 EEAWP would plan for future need based on paragraph 145 (now paragraph 213) of the NPPF. Paragraph 213 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.

6.3.10 The 2005-2020 apportionment figures were based on a sound and thorough assessment of national need, and detailed debate at the time. 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 is considering future mineral need as part of the production of a new Minerals and Waste Local Plan, covering the period to 2038 and has analysed past production across a range of time periods to determine the most appropriate level of mineral extraction to plan for.

6.3.11 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 mixed 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 the Department for Communities and Local Government. 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. This enabled the apportionment figures to be set at a lower level than they otherwise would have been. Despite this, aggregate production in Norfolk has not met this apportionment figure for many years. 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.

6.3.12 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

7.1 Introduction to silica sand

7.1.1 Silica Sand is a nationally important industrial mineral, deposits of which are nationally scarce. Silica sand is extracted in West Norfolk and processed at a facility at Leziate, prior to being transported to industrial facilities, principally by train from the dedicated railhead at the processing plant. The high-quality silica sand extracted 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 Great Britain, accounting for 15 per cent of total output and a much larger proportion of glass sand production.

7.1.2 A Single Issue Silica Sand Review of the Minerals Local Plan was undertaken between 2015 and 2017 to address a predicted shortfall in sites for silica sand extraction. The Silica Sand Review was adopted in December 2017, following an Examination in Public carried out by an independent Planning Inspector.

7.1.3 A review of the entire Minerals and Waste Local Plan (NM&WLP) commenced in 2017, with a 'call for sites'. An Initial public consultation stage took place during summer 2018, and a Preferred Options public consultation took place during autumn 2019. The Pre-submission Publication stage took place in autumn 2022. The next stage in the NM&WLP process is the submission of the NM&WLP to the Secretary of State for examination by an independent Planning Inspector.

7.2 Production

7.2.1 The 10-year average production for the Leziate site for 2012-2021 was 807,548 tonnes. This is an increase of 0.94% on the previous 10-year average (2011-2020) which was 800,051 tonnes. The ten-year average is shown on the graph below and the data has been provided by Sibelco UK Ltd. However, it is unlikely that the 10-year average figure for 2014 is correct because it is not consistent with the 10-year average figures for 2013 and 2015.

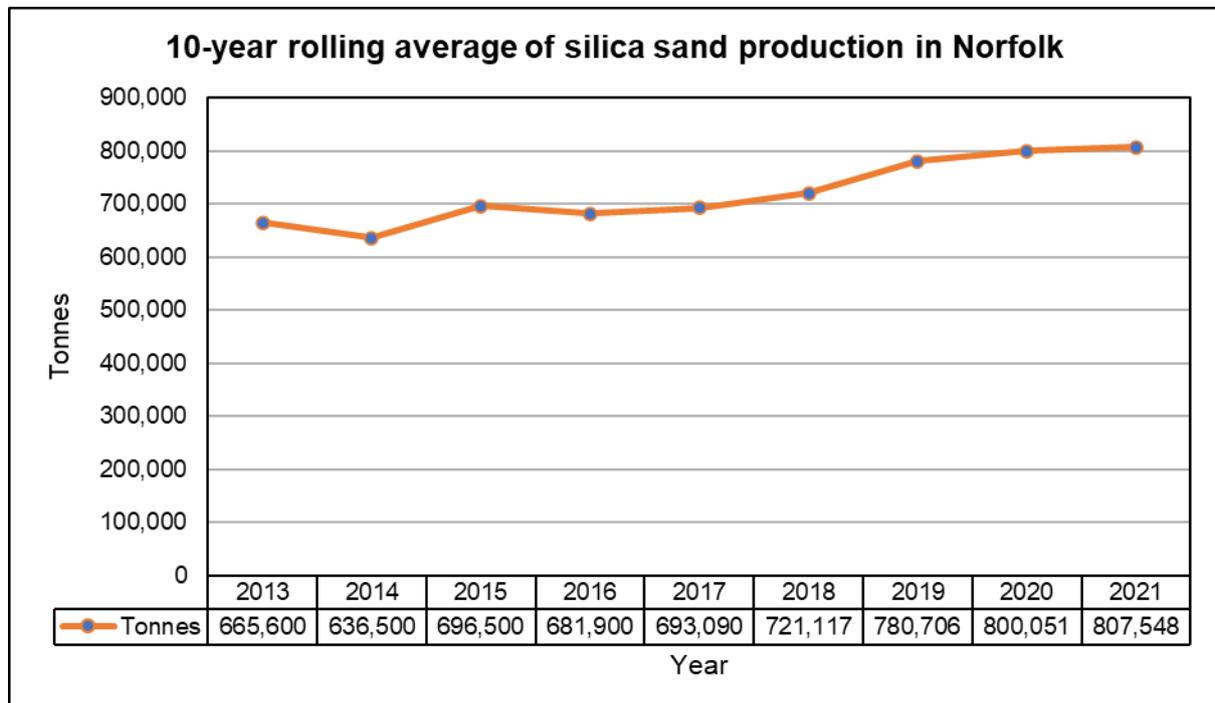


Figure 7: 10 year rolling average of silica sand production in Norfolk

7.2.2 The three-year average of silica sand extraction in Norfolk from 2019-2021 was 787,262 tonnes. This is a 3.4% decrease on the previous three-year average (from 2018-2020) which was 814,625 tonnes. The 3-year average production data is provided to Norfolk County Council by Sibelco UK Ltd.

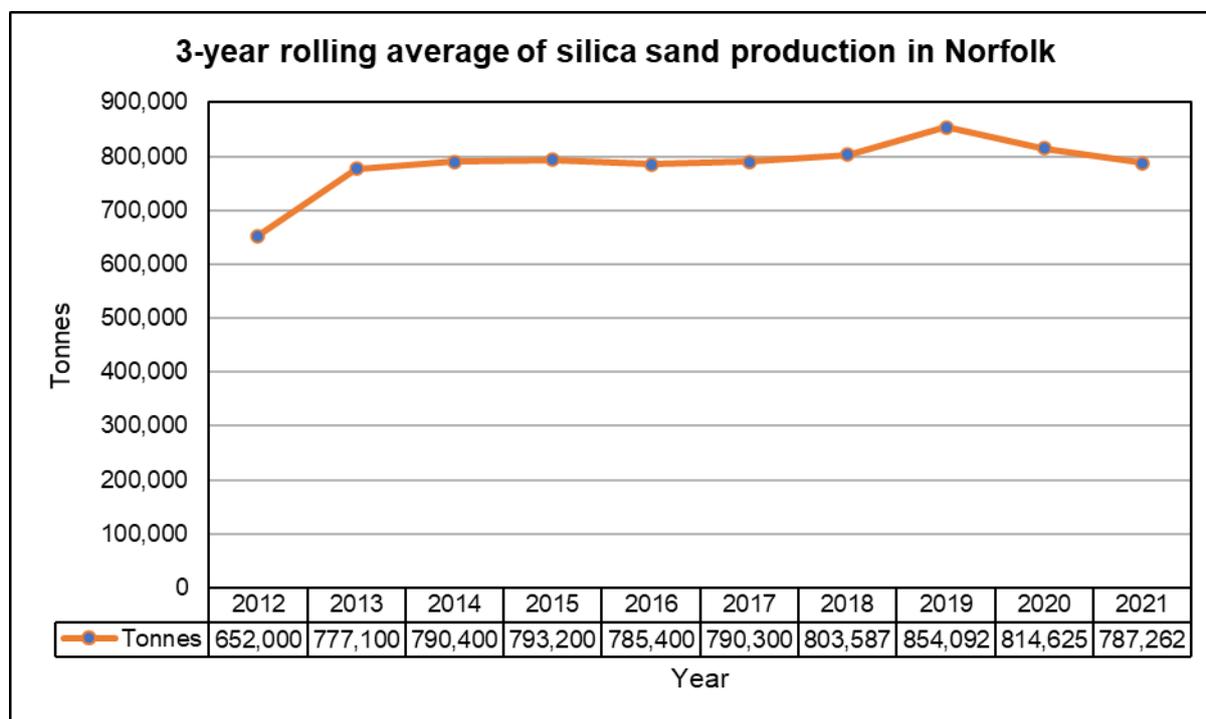


Figure 8: 3 year rolling average of silica sand production in Norfolk

Year	10-year rolling production average (tonnes)	3-year rolling production average (tonnes)
2012	Not available	652,000
2013	665,600	777,100
2014	636,500	790,400
2015	696,500	793,200
2016	681,900	785,400
2017	693,090	790,300
2018	721,117	803,587
2019	780,706	854,092
2020	800,051	814,625
2021	807,548	787,262

Table 15: 10-year average and 3-year average silica sand production in Norfolk

7.3 Silica sand landbank of permitted mineral reserves

7.3.1 The silica sand reserve at 31/12/2021 was estimated at 4.168 million tonnes. This represents a landbank of 5.2 years based on the 10-year average production figure, this is less than the “at least” 10 years for individual silica sand sites required in the NPPF.

7.3.2 In 2020, a planning application was submitted for silica sand extraction on allocated site SIL 01 at Bawsey; this site contains an estimated resource of 1.094 million tonnes and was permitted in August 2021. This tonnage is included within the total silica sand permitted reserve.

7.3.3 In 2018, a planning application was submitted for silica sand extraction on allocated site MIN 40 at East Winch which contains an estimated resource of 3 million tonnes. As of December 2022, the planning application had not been determined and is subject to an appeal against non-determination. If the application for site MIN 40 was granted, the permitted reserve would increase to 7.168 million tonnes which would represent a landbank of 8.9 years. This would still represent 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.

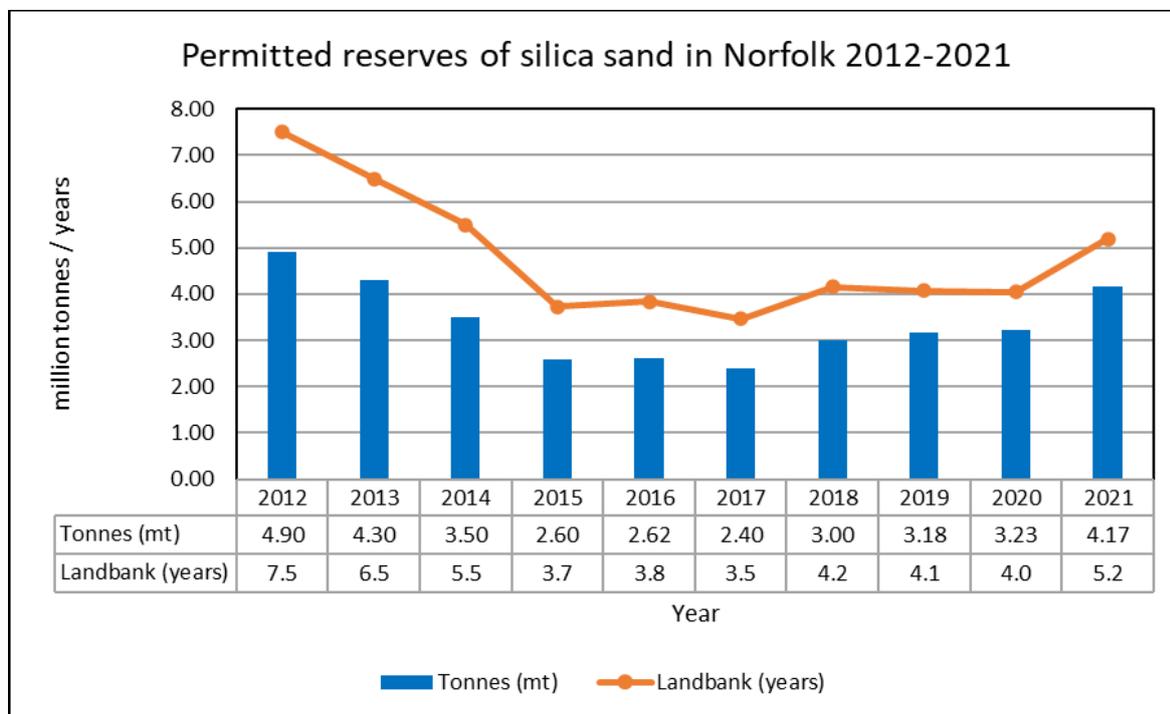


Figure 9: Permitted reserves of silica sand in Norfolk 2012- 2021

Year	Permitted reserve (million tonnes)	Landbank (years)
2021	4.17	5.2
2020	3.23	4.0
2019	3.18	4.1
2018	3.00	4.2
2017	2.40	3.5
2016	2.62	3.8
2015	2.60	3.7
2014	3.50	5.5
2013	4.30	6.5
2012	4.90	7.5

Table 16. Silica sand permitted reserves in Norfolk

7.4 Production of silica sand in Great Britain

7.4.1 The graph (Figure 10) and table 17 below provide a national picture of silica sand production and end use over the most recent 20 years for which data is available. The total includes all end use sectors. Since 2016 the Office for National Statistics have not carried out the Annual Minerals Raised Inquiry which means that data on the end uses of silica sand is no longer collected and is not available for the years from 2015 onwards.

7.4.2 Where it is listed in Table 17 that figures are not available before 2015, this is because the information is considered confidential by the BGS, due to a small number of extraction companies involved in that market. Since 2016 the Office for National Statistics have not carried out the Annual Minerals Raised Inquiry which means that data on the end uses of silica sand is no longer collected and is not available for the years from 2015 onwards.

7.4.3 As stated earlier, the three-year average of silica sand extraction in Norfolk in 2018-2020 was 814,625 tonnes. This is approximately 15% of all silica sand production in Great Britain in the same period.

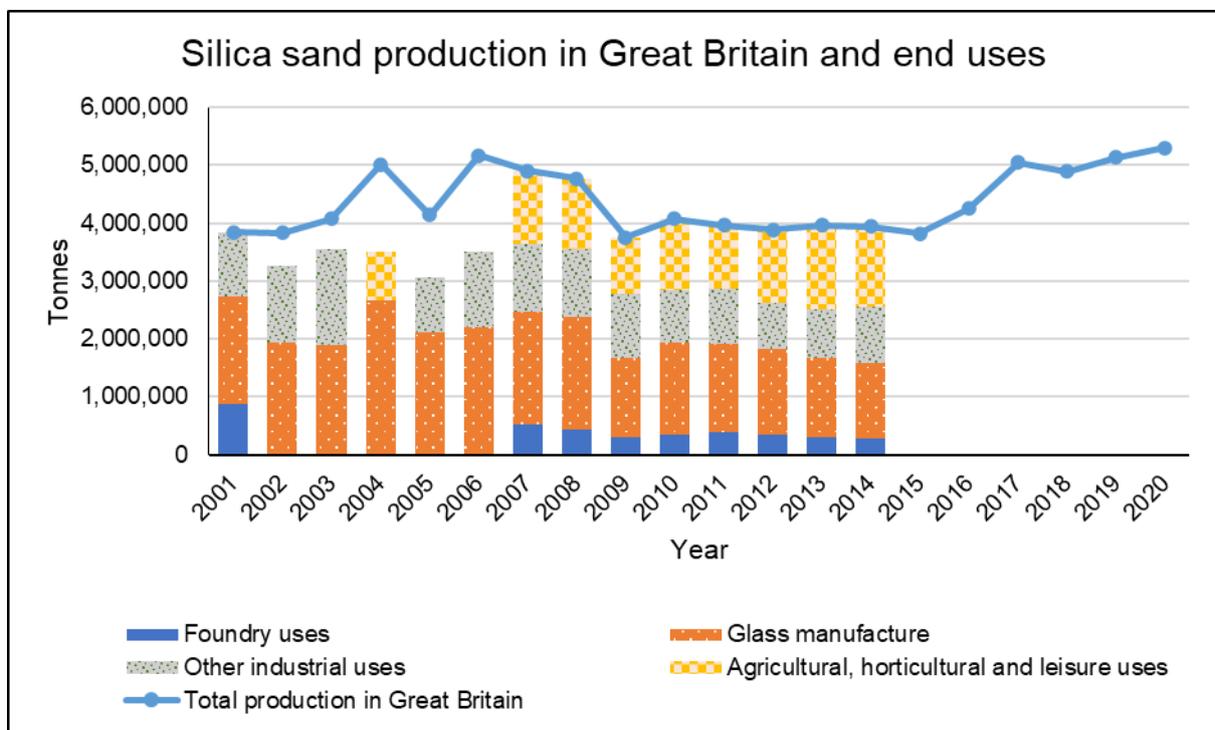


Figure 10: Silica sand production and end uses in Great Britain (Source: BGS Minerals Yearbooks)

Year	Foundry uses (tonnes)	Glass manufacture (tonnes)	Other industrial uses (tonnes)	Agricultural, horticultural and leisure uses (tonnes)	Total production in Great Britain (tonnes)
2020	not available	not available	not available	not available	5,301,000
2019	not available	not available	not available	not available	5,136,000
2018	not available	not available	not available	not available	4,890,940
2017	not available	not available	not available	not available	5,051,461
2016	not available	not available	not available	not available	4,251,219
2015	not available	not available	not available	not available	3,822,107
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	not available	2,206,000	1,306,000	not available	5,174,000
2005	not available	2,120,000	954,000	not available	4,146,000
2004	not available	2,663,000	not available	838,000	5,011,000
2003	not available	1,896,000	1,645,000	not available	4,073,000
2002	not available	1,940,000	1,331,000	not available	3,833,000
2001	880,000	1,853,000	1,115,000	not available	3,848,000

Table 17. Great Britain production of silica sand by end use (Source: BGS UK Minerals Yearbooks)

7.5 Imports and exports of silica sand

7.5.1 The British Geological Survey records the imports and exports of mineral from the United Kingdom. This data is presented in the Minerals Yearbook. Table 18 and Figure 11 below show the imports and exports since 2001.

Year	2020	2019	2018	2017	2016	2015	2014
Imports (tonnes)	111,684	203,569	139,980	154,051	111,060	140,865	139,874
Exports (tonnes)	189,890	270,849	83,315	91,001	63,227	61,234	93,849

Year	2013	2012	2011	2010	2009	2008	2007
Imports (tonnes)	100,057	137,761	310,715	148,619	79,629	48,112	61,454
Exports (tonnes)	87,289	88,376	64,924	100,773	115,746	156,451	222,581

Year	2006	2005	2004	2003	2002	2001
Imports (tonnes)	190,813	127,992	79,829	78,944	104,232	46,500
Exports (tonnes)	388,440	174,236	166,899	51,095	39,816	54,419

Table 18: Imports and exports of UK silica sand (source: BGS Minerals Yearbook)

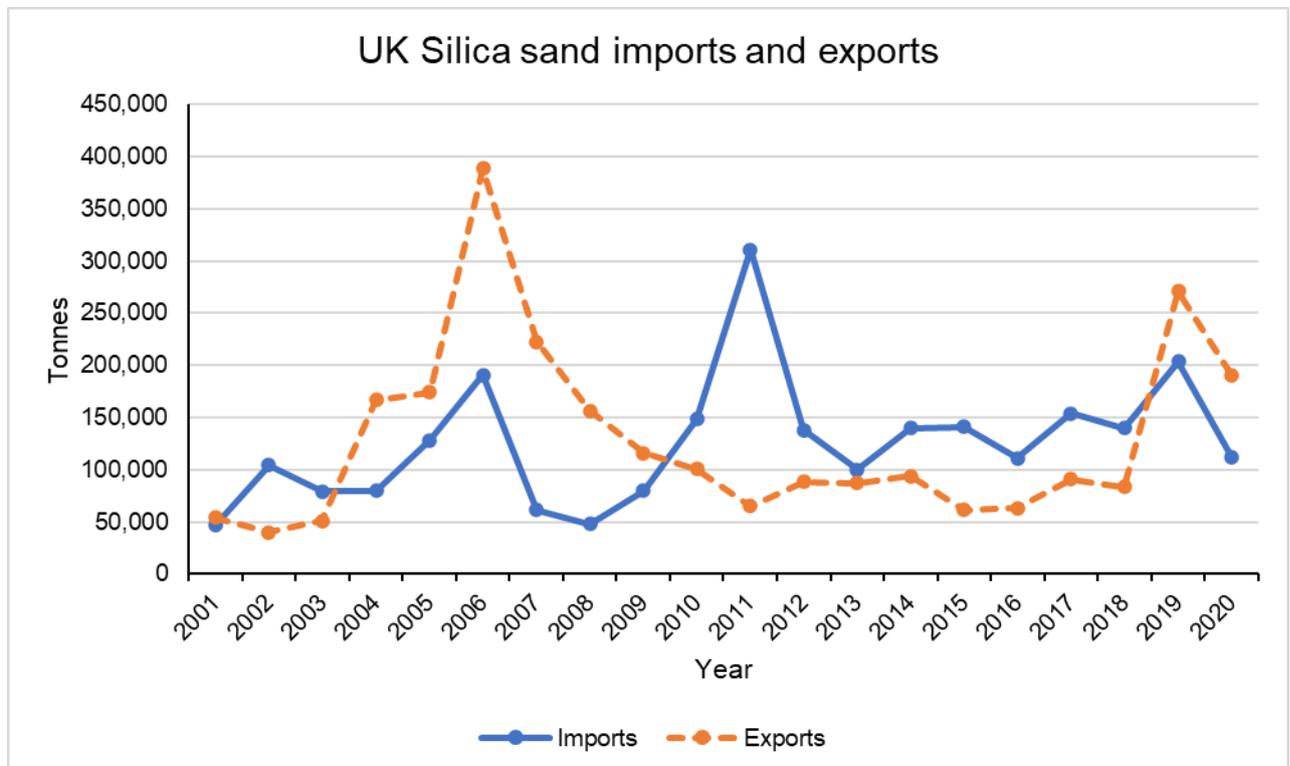


Figure 11: Imports and exports of UK silica sand (source: BGS Minerals Yearbook)

8. Other minerals worked in Norfolk

8.1 Other minerals besides sand and gravel, silica sand and carstone, 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 Local Plan, 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.

Parish	Operator	Address	mineral
Middleton	Middleton Aggregates Ltd	Setch Road, Middleton, King's Lynn	clay
Caistor St Edmund	Needham Chalks (HAM) Ltd	Norwich Road, Caistor St Edmund, Norwich	chalk
Hillington	West Norfolk Lime Ltd	Hillington Chalk Quarry, Grimston Road, Hillington, King's Lynn	chalk
Castle Acre	Needham Chalks (HAM) Ltd	Castle Acre Quarry, Dunham Road, Castle Acre, Swaffham	chalk

Table 19: Other minerals worked in Norfolk in 2021

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 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). These minerals are used in industries based on their physical and/or chemical properties. 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 are 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 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. MASS guidance also set out how landbanks should be calculated and used in the determination of planning applications for minerals. The policy and guidance were 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 the most recent version was published in July 2021. 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 Levelling Up, Housing and Communities (DLUHC) and updated as needed. [View the guidance on the GOV.UK website](#)

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.

Specific Sites (for mineral extraction): 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 notified and protected under the Wildlife and Countryside Act 1981 on account of their flora, fauna, geological or physiographical features.

Special Area of Conservation (SAC): Areas defined by regulation 3 of the Conservation of Habitats and Species Regulations 2017 which have been given special protection as important conservation sites.

Special Protection Area (SPA): Areas classified under regulation 15 of the Conservation of Habitats and Species Regulations 2017 which have been identified as being of international importance for the breeding, feeding, wintering or the migration of rare and vulnerable species of birds.

Appendix 1: Mineral extraction planning applications 2021

The following tables detail the planning applications for mineral extraction which were current during 2021 together with the estimated tonnage of mineral at each site where relevant.

Table 20: Minerals planning applications determined during 2021

Application number / Site name	Grid reference	Operator/ applicant	Date submitted	Decision and date	mineral and tonnage	Permission end date
FUL/2020/0045 Horstead Quarry	625354, 320180	Longwater Gravel Company Ltd	29.09.2020	approved 13.05.2021	0.65mt S&G	15 years from commencement
FUL/2020/0046 Horstead Quarry	625354, 320181	Longwater Gravel Company Ltd	28.09.2020	approved 13.05.2021	Not applicable Extension of time	15 years from commencement of 0045
FUL/2020/0063 Horstead Quarry	624978, 320307	Longwater Gravel Company Ltd	13.10.2020	approved 13.05.2021	Not applicable Extension of time	As above
FUL/2019/0043 Mayton Wood Quarry	624267, 321044	Frimstone	02.01.2020	approved 18.06.2021	1.45mt S&G	31.12.2035
FUL/2020/0085 Stanninghall Quarry	625655, 318065	Tarmac Limited	23.11.2020	approved 05.08.2021	3.75mt S&G	31.12.2038

S&G = sand and gravel

Table 21: Minerals planning applications undetermined at 31.12.2021

Application number / Site name	Grid reference	Operator/ applicant	Date submitted	mineral and tonnage	Notes
FUL/2020/0107 Pentney Quarry	569204, 312531	Middleton Aggregates Ltd	08.01.2021	0.24mt S&G	Permission granted on 31.05.2022
FUL/2021/0007 Oak Field, Watlington Road, Tottenham	563522, 311539	Mick George Ltd	11.06.2021	0.75mt S&G	None
C/5/2018/5004 Attlebridge Quarry	614621, 316718	Breedon Southern Limited (BSL)	01.08.2018	0.545mt S&G	Application withdrawn on 22.03.2022
FUL/2019/0040 Welcome Pit, Burgh Castle	648561, 304338	Folkes Plant & Aggregate Ltd	06.09.2019	0.2mt S&G	Permission granted on 15.09.2022

Application number / Site name	Grid reference	Operator/ applicant	Date submitted	mineral and tonnage	Notes
FUL/2021/0010 Welcome Pit, Burgh Castle	648219, 304286	Folkes Plant & Aggregate Ltd	31.08.2021	Extension of time 0.0015mt Sand	Permission granted 05.09.2022
FUL/2020/0109 Pentney Quarry, King's Lynn	568372, 313115	Middleton Aggregates Ltd	26.01.2021	Extension of time S&G	Permission granted 31.05.2022
FUL/2020/0108 Pentney Quarry, King's Lynn	569437, 312609	Middleton Aggregates Ltd	08.01.2021	Extension of time S&G	Permission granted 31.05.2022
FUL/2020/0080 Spixworth Quarry	623615, 315966	Tarmac Trading Ltd	26.10.2020	Extension of time S&G	None
FUL/2020/0079 Spixworth Quarry	623618, 315965	Tarmac Trading Ltd	26.10.2020	Extension of time S&G	None
FUL/2021/0014 Park Farm, Wormegay, Kings Lynn	567883, 312811	Middleton Aggregates Ltd	20.04.2021	0.25mt S&G	Application withdrawn on 24.05.2022