



The Sixth Local Aggregates Assessment for Gloucestershire

**Updated data covering the period:
01/01/2016 – 31/12/2016**

Nov 2017

Gloucestershire summary of sales and reserves for the period | 01/01/2016 – 31/12/2016

	2016 Sales (in million tonnes)	10-year Sales Average (in million tonnes per annum)	3-year Sales Average (in million tonnes per annum)	Change (compared to 2015)	LAA Rate (in million tonnes)	Reserves (in million tonnes)	Landbank (in remaining years)	Theoretical Capacity (in million tonnes per annum)	Comments
All land-won sand and gravel¹	0.701mt	0.742mtpa	0.573mtpa		0.742mt	4.41mt	5.94yrs	Up to 1.22mtpa (estimated maximum including inactive sites).	Sales have continued to increase. They are just over 0.1mt more than in 2015. Sales are only a little below the 10-year sales average (the LAA rate) but now outstrip the 3-year sales average by over 20%.
Crushed rock	1.652mt	1.452mtpa	1.540mtpa		1.452mt	24.32mt	16.75yrs	Up to 2.33mtpa (estimated maximum).	Sales were the highest experienced since 2007. They were higher than both the 10-year sales average (the LAA rate) and the 3-year sales average.
Recycled / secondary aggregates	0.139mt	- (data will emerge in future LAAs)	- (data will emerge in future LAAs)	- (data will emerge in future LAAs)	0.139mt (however this is only based on 1 year of data)				This is first year of reporting from a revised monitoring regime. Therefore it is not yet possible to determine whether any meaningful trends in the supply of recycled / secondary aggregates can be established.
Trend analysis for Gloucestershire	The supply of all local land-won primary aggregates appears to be in recovery having experienced a period of notably depressed sales particularly from 2009 to 2014. In terms of amount of remaining permitted reserves, these continue to be in decline and now equate to an overall fall of 15% from 2012.								

¹ Whilst marine-won sand and gravel is sold and used within Gloucestershire, none is presently landed at Gloucestershire's only commercial port – Sharpness Docks

Executive Summary

Introduction

This is the sixth Local Aggregates Assessment (LAA) for Gloucestershire containing updated aggregate minerals data for the period 1st January 2016 to 31st December 2016. The report was subject to a targeted consultation from 2nd October to 15th November 2017. Details concerning the consultation are set out within Appendix 1.

Aggregates in the mineral planning authority area

Aggregates produced across Gloucestershire are: -

- Crushed rock sourced from Carboniferous and Jurassic limestone;
- Sand & gravel mostly made up of sharp sand with small amounts of soft sand; and
- Recycled aggregates from construction, demolition and excavation wastes.

Demand indicators

Future demand indicators are discussed in section 2, these are: -

- 10-year and 3-year rolling averages of annual aggregate sales;
- forecast local house building;
- economic ambitions and major sub-national infrastructure projects; and
- National and Sub-National Guidelines on future aggregates provision (2005 - 2020).

Supply figures

Current and future aggregate supplies affecting Gloucestershire are discussed in Section 3, these include: -

- Locally sourced and imported land-won crushed rock;
- Locally sourced and imported land-won sand & gravel;
- Locally sourced recycled aggregates;
- Locally sourced secondary aggregates;
- Imported marine-won aggregates;
- Exports of primary land-won aggregates;

Environmental constraints

Gloucestershire has a strong rural character and is known for its environmental quality, biodiversity and scenic beauty. It contains a number of strategically significant environmental designations of international and national importance,

which also have a strong spatial relationship to the county's key aggregate mineral resource areas. These designations could prove a constraint on the availability of future aggregate supplies. They include: - the Cotswolds, Malvern Hills and Wye Valley Areas of Outstanding Natural Beauty (AONBs), which cover nearly two-thirds of the county area; the Severn Estuary Special Protection Area (SPA); and several Special Areas of Conservation (SAC) such as the River Wye SAC. The management of these matters is dealt with through the planning system and is a key feature of both the adopted and emerging minerals local plan for Gloucestershire.

Balance between supply and demand

The assessment of balance between supply and demand is discussed in Section 4, the main topics covered are: -

- the amount of locally-sourced aggregates available – as monitored through remaining landbanks;
- the influence of productive capacities;
- the influence of inactive and dormant mineral working sites;
- the influence of supply trends – particularly for crushed rock aggregates;
- the impact of aggregates supplies from recycled and secondary, marine-won, and imported primary sources; and
- the impact of growth – future house building.

Cross border mineral planning authority issues

There is a long history of imports and exports of Gloucestershire's aggregate minerals largely with its neighbouring areas, but also further afield. Data in 2009 and 2014 suggests there has been an increase in the tonnage of aggregates imported into the county. However, imports also appear to represent a lower proportion of total aggregate consumption. In terms of exports, less aggregate would seem to be being sent 'out of the county'. When viewed as a proportion of all local sales, exports also look to have fallen away quite significantly. This is in contrast to an overall increase in Gloucestershire's aggregate consumption between the two years.

Overall conclusion

The use of the 10-year rolling annual average of aggregate sales to generate a projection of the future demand for aggregates sourced from Gloucestershire is considered to be the most robust approach available at present. A number of other potential influences on future demand exist and these have been carefully assessed. However, to date no alternative means of gauging demand appears to be sufficiently credible and to represent a significantly different view of the future to recommend that an alternative approach should take precedent in both decision making and plan-making for aggregates.

1 Introduction

- 1.1 Gloucestershire County Council is the Minerals Planning Authority (MPA) for Gloucestershire and under national policy is expected to prepare a Local Aggregate Assessment (LAA) on an annual basis².
- 1.2 An LAA provides data on local aggregates. It includes current levels of supply and an understanding of influences upon demand. Its prime purpose is to assist MPAs in their efforts to facilitate steady and adequate supply of local aggregates, where reasonable and practicable to do so.
- 1.3 Further details as to what an LAA should contain are provided within Planning Practice Guidance (PPG)³. In May 2017 the Planning Officers Society (POS) and the Mineral Products Association (the MPA) produced updated *Practice Guidance on the Production and Use of Local Aggregates Assessments*, which has also influenced the production of this document⁴.
- 1.4 This document is the sixth LAA for Gloucestershire and contains data up to the end of 2016. Information on imports and exports was also sourced from the national aggregate mineral (AM) survey⁵, which usually takes place every four years⁶. Previous LAAs for Gloucestershire are available to view online along with a comprehensive baseline report that supported the first LAA⁷.
- 1.5 This document is broken into four main sections which consider:
 - Future demand for aggregates;
 - Analysis of all supply options;
 - Assessment of the balance between demand and supply; and
 - Conclusions and recommendations for planning purposes

² National Planning Policy Framework (NPPF), paragraph 145, bullet point 1

³ Planning Practice Guidance (PPG) advise on LAAs can be viewed at:-

<http://planningguidance.planningportal.gov.uk/blog/guidance/minerals/planning-for-aggregate-minerals/local-aggregate-assessments/>

⁴ POS and MPA - Practice Guidance on the Production and Use of Local Aggregates Assessments can be viewed at:-

http://www.mineralproducts.org/documents/LAA_GUIDANCE_May2017.pdf

⁵ The most recent AM survey applies data recorded from 01/01/2014 to 31/12/2014.

⁶ Information on the national (four-yearly) aggregate mineral survey (AM) can be found online on the BGS web resource – Minerals UK. The most recent survey was in 2014, which follows a survey that was carried out in 2009. Survey results can be viewed at:-

<https://www.bgs.ac.uk/mineralsuk/statistics/UKStatistics.html>

⁷ The 1st (baseline) Local Aggregates Assessment (LAA) (2003) can be obtained at:-

<http://www.goucestershire.gov.uk/extra/article/115911/Local-Aggregates-Assessment>

2 Future demand for aggregates

- 2.1 National policy advises that to determine future demand for aggregates, mineral planning authorities should project forward the rolling annual average of 10 years sales data⁸. However, consideration may also be given to other relevant local information, which might suggest a different pattern of demand could occur.
- 2.2 Other relevant local information will differ from location to location. It may include the level of planned development incorporating house building in both the local area and elsewhere where it may influence the availability of construction materials. National policy also advises that future demand could be based on the average annual sales over the last three years⁹.

10-year and 3-year rolling average of annual aggregate sales – as a projection of future demand

- 2.3 Table 1 sets out both the 10-year and 3-year rolling average of annual aggregate sales figures for Gloucestershire from 2007 through to 2016. For crushed rock the 10-year rolling average of annual aggregate sales as at the end of 2016 equalled 1.452 million tonnes per annum (mtpa) and for sand & gravel it was 0.742 mtpa.
- 2.4 A comparison between the 10-year and 3-year averages of annual aggregate sales shows there is a difference. Applying the 3-year average would represent an increase of around 6% for crushed rock, but a decrease of around 23% for sand & gravel. In annual supply terms this equates to an increase in demand of 88,000 tonnes per annum for crushed rock, but a fall of just less than 170,000 tonnes per annum for sand & gravel.
- 2.5 Compared to the 2015 LAA rate (which was based on the 10-yr sales average) the projected demand for crushed rock and sand & gravel has fallen slightly. This is as a consequence of the reducing influence of pre-recession (before 2008) sales figures, which were markedly higher than those experienced since the economic recovery – as observed since 2013 / 2014 onwards.

⁸ National Planning Policy Framework (NPPF) paragraph 145, bullet point 1 details the application of 10 years sales data as part of the LAA process;

⁹ National Practice Guidance Notes (NPPG) - Planning for Aggregates Section, paragraph: 064, reference ID: 27-064-20140306 introduces the approach to considering the 3-years sales data within the LAA process.

Table 1: Gloucestershire Crushed Rock (C/R) and Sand and Gravel (S/G) Sales 2007-2016 (in million tonnes per annum - mtpa)¹⁰

	Annual aggregate sales (in million tonnes per annum)											10-Yr Ave	3-Yr Ave [#]
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016			
C/R	2.08	1.61	1.17	1.2	1.3	1.18	1.36	1.51	1.46	1.65	1.452	1.540	
S/G	0.9	0.66	0.93	0.9	0.85	0.78	0.68	0.43	0.59	0.70	0.742	0.573	
Total	2.98	2.27	2.10	2.10	2.15	1.96	2.04	1.94	2.05	2.35			

[#] - The 3-year average is based on annual aggregate sales data 2014 – 2016 (inclusive)

Other relevant information

The impact of growth – forecast local house building

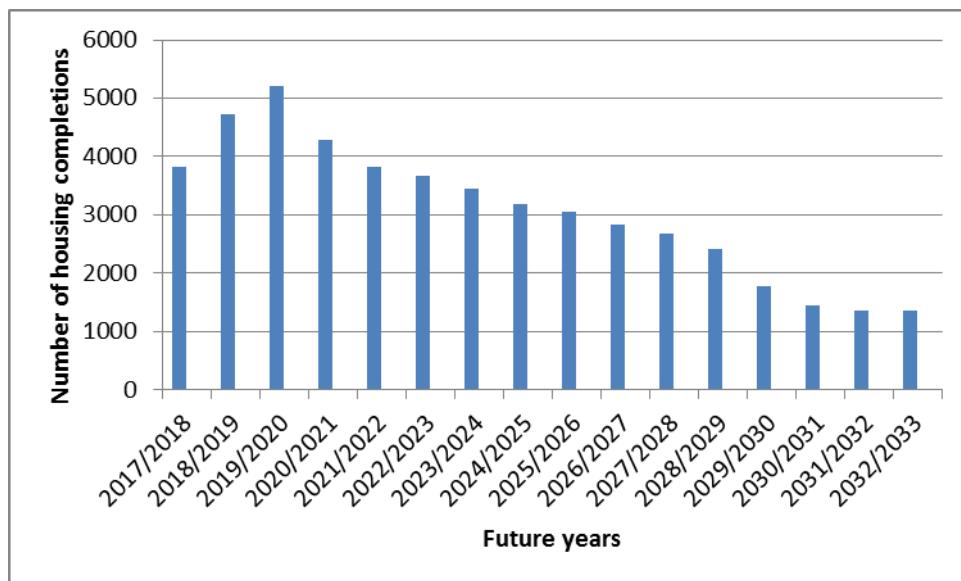
2.6 Forecast house building over the six districts of Gloucestershire is shown in figure 1. It represents an amalgamation of recently prepared local housing trajectories, which themselves are based upon modified projections that seek to support the delivery of the objectively assessed need (OAN) for housing¹¹. Evidence of this nature is hugely influential in the development of local planning strategies in Gloucestershire including the emerging Cotswold Local Plan; Gloucester-Cheltenham-Tewkesbury Joint Core Strategy (GCT-JCS); adopted Stroud Local Plan; and Forest of Dean Core Strategy.

2.7 Section 4 provides a discussion as to how influential forecast future house building might prove to be in respect of the future demand for aggregates. This includes a review of previous levels of house building compared to aggregate sales.

¹⁰ All historic sales data has been cross-referenced with that previously published within South West – Aggregate Working Party (SW-AWP) annual reports

¹¹ Local trajectory data that has been applied to this report is taken from the following publications: - Cotswold Housing Implementation Strategy (2017); GCT-JCS Main Modifications Document: Detailed Housing Trajectory Workbook (2017) and the Stroud Five-Year Land Supply Report (2017). It also includes unpublished data provided by officers from Forest of Dean District Council in September 2017.

Figure 1: Gloucestershire forecast house building from 2017 – 2033 based on local housing trajectories¹²



The impact of growth – economic ambitions and other planned major sub-national infrastructure projects

2.8 Economic growth projects involving significant infrastructure improvements are either underway or being planned in Gloucestershire up to the earlier 2020s. In excess of £100 million of inward investment has already been awarded to the locality via bids submitted by GFirst LEP, to help secure their delivery¹³. Larger-scale infrastructure construction schemes expected to take place over the next few years include: - development of Cheltenham Cyber Business Park¹⁴; traffic management improvements on the A40 at Longford¹⁵; corridor improvements along the A419 to Junction 13 of the M5; and widening of the Gloucester South-West bypass at Llanthony Road.

2.9 Longer-term (post 2021) there is a number of significant / larger-scale infrastructure construction schemes being investigated for the county¹⁶. These include amongst others: - development of an all-movements junction 10 for the M5; various highway improvements to the Strategic Road Network (SRN) along the A417 / A419 ('the missing link'); and several sustainable transport-related

¹² Where district-level trajectories do not go as far as 2032, the missing years have been projected forward applying the 'final year' of data that has been published.

¹³ As highlighted in the GFirst LEP Annual Report (2016/2017) a total of £106.63 million has been secured so far in 'Growth Deal' funding (including the most recent Growth Deal 3) – <http://www.gfirstlep.com/Projects-in-Gloucestershire/Important-Documents/>

¹⁴ Emerging details for the Cheltenham Cyber Park can be found in the published Growth Deal: Round 3 for Gloucestershire | *Building on Success* | Appendix 1: Business Case - http://www.gfirstlep.com/doc_get.aspx?DocID=395

¹⁵ Emerging details for the A40 at Longford project can be found in the published Growth Deal: Round 3 for Gloucestershire | *Building on Success* | Appendix 5: Business Case - http://www.gfirstlep.com/doc_get.aspx?DocID=399

¹⁶ Longer-term, potentially significant / larger-scale infrastructure schemes for the county are currently set out in the Gloucestershire Infrastructure Investment Pipeline (GIIP). Details of which were last reported to the Gloucestershire Economic Growth Joint Committee (GEGJC) at its meeting held in September 2016 –

<http://glosteext.glooucestershire.gov.uk/documents/g8209/Public%20reports%20pack%20Wednesday%2007-Sep-2016%2010.00%20Gloucestershire%20Economic%20Growth%20Joint%20Committee.pdf?T=10>

infrastructure projects to improve links between Cheltenham and Gloucester and facilitate greater connectivity with the SRN¹⁷.

2.10 A number of nationally significant infrastructure projects (NSIPs) are proposed for outside of the county, but within its potential sphere of influence. These projects are at various stages of development from early pre-application consideration through to conditional consent and preparedness for delivery from now and into the early 2020s¹⁸. They include two new nuclear power stations (Hinckley C and Oldbury-on-Severn); three new gas-fired power stations (Avonmouth, Merthyr Tydfil and Swansea); two renewable power-generating tidal lagoons (West Somerset and Swansea Bay); and several extensions to the national rail network (a Great Western Mainline link to Heathrow Airport and the Metro-west 'Portishead' Branch line).

2.11 There is little doubt from the scale and ambition of infrastructure projects over the coming years either across Gloucestershire or potentially within its sphere of influence, that a proportion of locally-sourced aggregate will be required. However, there is no evidence presented to date, which suggests the delivery of these projects warrants an alternative demand scenario for the county. Many of the projects will not necessarily require materially-significant amounts of land-won aggregate and or for those proposed outside of Gloucestershire these may be sufficiently serviced by other adequate aggregate resources from elsewhere (e.g. the Mendip Hills). Nevertheless, the potential impact on demand arising from the delivery of infrastructure projects should be kept under continual review as new potential projects come forward and existing ones evolve. In particular attention will need to be given to the proposed new nuclear power station at Oldbury-on-Severn, which is within 5 miles of the Gloucestershire boundary. The project is likely to be a major undertaking, consuming considerable volumes of construction materials. Its potential impact on local resources has already been highlighted in the emerging South Gloucestershire Policies, Sites and Places Development Plan Document. It includes delivery objectives concerning the use of Tytherington Quarry, which is located nearby to Oldbury-on-Severn, for possible rail access and as an aggregate source and / or for construction material storage¹⁹. From a Gloucestershire perspective, the impact on aggregate demand may be subtle and more indirect, resulting from an expansion of the county's export supply chains into the South Gloucestershire / Bristol area. This could arise from the diversion of more usual local supplies from within South Gloucestershire for the

¹⁷ The longer-term infrastructure projects listed in this report are highlighted in the 'Gloucestershire Growth Agenda' paper (item 7), which was reported to the Gloucestershire Economic Growth Joint Committee (GEGJC) at its meeting held in June 2017- <http://gloext.glocestershire.gov.uk/documents/g8455/Public%20reports%20pack%20Wednesday%2021-Jun-2017%2010.00%20Gloucestershire%20Economic%20Growth%20Joint%20Committee.pdf?T=10>

¹⁸ The Planning Inspectorate (PINS) supported website – *National Infrastructure Planning* offers a periodically updated list of national infrastructure planning applications subject to assessment by the PINS – <https://infrastructure.planninginspectorate.gov.uk/>

¹⁹ The supporting text to draft policy PSP46 | Oldbury New Nuclear Build (NNB) of the Submission version South Gloucestershire Policies, Sites and Places Development Plan Document (June 2016), includes a schedule of delivery objectives to assist the council in its preparation of a Pre-Engagement Position Statement. This exercise will contribution towards any future development consent process brought forward by the applicant for the proposed new power station –

https://consultations.southglos.gov.uk/consult.ti/PSP_Submission/consultationHome

development of the new nuclear power station. However, this potential scenario represents only a theoretical possibility that is not supported by evidence as to its likelihood or scale of impact.

Forecast demand as established through National and Sub National Guidelines on future aggregates provision (2005 – 2020)

2.12 National policy advises that MPAs must take account of published national and sub-national guidelines on future aggregate provision when preparing a minerals local plan²⁰. These guidelines are based on an analysis of anticipated future demand and likely supply options. Their purpose is to establish future aggregate requirements that MPAs can work towards when preparing local plans and consider when deciding on planning applications. The most recent guidelines cover the period between 2005 and 2020 and are based on data analysed during the late 1990s and early 2000s. For Gloucestershire the guidelines generate an annual local apportionment equal to 2.25 mtpa for the supply of crushed rock and 1.0 mtpa for sand and gravel.

2.13 The figures previously set out in table 1 suggest that the historic demand for local aggregates over recent years has been notably lower than envisaged under the national guidelines. As a consequence, very careful consideration will need to be given to the future application of the national guidelines. Key to this will be the realistic prospect that the forecast demand for aggregate seen through the local apportionment will become a reality at least over the remaining ‘active’ 4-years of the guidelines – up to the end of 2020.

2.14 Section 4 considers likely influences upon future aggregate demand. These could be a major factor in determining how significant the assumptions behind the guidelines will prove to be.

²⁰ National Planning Policy Framework (NPPF) paragraph 145, bullet point 3

3 Aggregate supply options

3.1 LAAs should consider all future aggregate supply options and these are discussed in the next few paragraphs.

Supplies of primary land-won aggregate – crushed rock

3.2 The countywide crushed rock landbank as at 01/01/2017 totalled 24.32 million tonnes. The remaining length of this landbank stands at 16.75 years. This is based upon the application of 10-year rolling average annual sales, which amounts to 1.452 million tonnes per annum. Applying the 3-year rolling average annual sales (1.540 mt) decreases the remaining length of the landbank to 15.79 years.

3.3 However, the use of a countywide landbank for crushed rock is of limited value when attempting to determine the availability of future supplies. A countywide landbank does not take into account other influential factors. These include: - the number of and the continuation of inactive sites; restrictions upon the timescales for mineral working at individual sites; and the presence of sales limitations at sites. In addition, a longstanding and well established supply trend exists with crushed rock sourced from Gloucestershire that is linked to the county's two distinct resource areas – the Forest of Dean and Cotswolds. This trend presents as a proportional split in the overall countywide supply equal to 70% from within the Forest of Dean and 30% from within the Cotswolds. The continued significance of this supply trend and how it might impact upon the availability of crushed rock is discussed in detail in Section 4.

Supplies of primary land-won aggregate – sand & gravel

3.4 The countywide sand and gravel landbank as at 01/01/2017 was 4.41mt. The remaining length of this landbank is 5.94 years. This is based upon the 10-year rolling average sales of 0.742mtpa. Applying the 3-year rolling average annual sales (i.e. 0.573mtpa) would increase the remaining length of landbank to 7.70 years.

3.5 Similar to crushed rock, the length of the remaining landbank is of limited value in establishing the future availability of sand & gravel supplies. Other influential factors include productive capacities and envisaged working schedules for individual sites. These matters are discussed within Section 4.

Supplies of recycled aggregates

- 3.6 Data on the supply of recycled aggregates is limited. This is partly down to the supply and demand dynamic of this type of material. Recycled aggregates in Gloucestershire are usually sourced from regeneration and redevelopment projects. They are made up of construction, demolition and excavation wastes that are mostly crushed on-site using mobile plant and then re-used without entering the wider supply chain or being presented onto the open aggregate market.
- 3.7 A revised monitoring regime has revealed that during 2016 0.139 million tonnes of recycled aggregates was either generated or managed within fixed sites located across Gloucestershire. This figure represents just fewer than 6% of the total supply of primary aggregates sourced from within the county during 2016.
- 3.8 It is highly likely that a larger amount of recycled aggregates has in practice been employed by the construction industry. However, as a result of the data monitoring complexity highlighted above, there is currently no evidence to support or quantify this. The origin of recycled aggregates in Gloucestershire, means that the delivery of regeneration and redevelopment and initiatives to improve the implementation of waste minimisation in development projects rather than just an increase in construction activity, will likely be the biggest influence on the availability of future supplies.

Supplies of secondary aggregates

- 3.9 No secondary aggregates facilities are operating in Gloucestershire. However, following the development of a new Energy from Waste (EfW) facility at Javelin Park near Gloucester, a new local source of secondary aggregate might become available in the near future²¹. The EfW development allows for a processing facility for bottom ash, which has the potential to create a construction aggregate – incinerator bottom ash aggregate (IBAA)²². Based on the proposed maximum throughput of 190,000 tpa of waste through the plant, it is estimated approximately 45,000 tpa of bottom ash could be generated. The EfW development is scheduled to be operational from 2019 onwards. If maximum IBAA production was to be realised, it would make a small contribution to the overall aggregate supply sourced from Gloucestershire. Based on 2016 figures, local IBAA would represent just fewer than 2% of the total amount of primary land-won aggregates sourced from within the county.

²¹ Details concerning the EfW facility at Javelin Park can be found on the Gloucestershire County Council public access to planning applications website under the reference: 13/0001/INQUIR – <http://www.goucestershire.gov.uk/planning-and-environment/planning-applications/search-and-track-planning-applications/>

²² A source of information on incinerator bottom ash aggregate (IBAA) and its potential use as a secondary aggregate is available via the Manufacturers of IBA Aggregates Association (MIBAAA) website – <http://mibaaa.org.uk/index.html>

Supplies of marine-won aggregates

3.10 There are no active marine dredging licences or applications for future dredging affecting Gloucestershire. There are also no ports that land marine-won aggregate. However, the 2014 Aggregate Minerals survey for England and Wales²³ shows that a relatively small amount (around 28,000 tonnes) has been imported into the county compared with around 50,000 tonnes in 2009. This may have come from the nearby ports at Avonmouth near Bristol and Newport in South Wales, both of which land considerably large proportions of all marine-won aggregates attributed to the South West region or Wales. The amount imported into Gloucestershire represents around 4% of the South West's consumption of marine-won sand and gravel during 2014. No evidence exists to suggest that the level of imports will change.

Imports and exports of primary land-won aggregates

3.11 The AM surveys of 2009 and 2014 contain the most recent published data on local sources of primary aggregate and imports and exports to and from local producing and consuming areas across England. The reports provide a useful indicator as to the relationship that exists between markets and those areas that supply aggregates. They also enable an indicative local aggregate consumption figure to be established. This is the 'total' amount of aggregate transacted in a particular area made up from local sources and imports from elsewhere.

3.12 Table 3 shows Gloucestershire's primary aggregate consumption in 2009 and 2014 and headline origin data. In 2009 consumption stood at 1.38 million tonnes. In 2014 this figure had markedly increased to 2.45 million tonnes. Locally-sourced aggregates and overall imports appear to have increased from 2009 to 2014. The only exception is with imports of marine-won sand and gravel, which experienced decline. The increase was largest with locally-sourced aggregate. This may be an indicator of a greater reliance upon locally-sourced aggregate and a reduction in the influence of imports.

3.13 Table 4 provides a breakdown of the destination of aggregate sales from Gloucestershire from primary aggregates in 2009 and 2014. It headlines local sales (within Gloucestershire) and exports to elsewhere in the country. In 2009 total aggregate sales stood at 2.10 million tonnes. In 2014 it had fallen to 1.94 million tonnes. Although, local aggregate sales increased numerically and as a proportion of all sales between 2009 and 2014. In contrast aggregate exports from the county decreased both in overall volume and as a proportion of all sales. Sales of aggregate from Gloucestershire in 2014 would appear to have

²³ The 2014 Aggregate Minerals (AM) Survey for England and Wales is available at:
<https://www.gov.uk/government/publications/aggregate-minerals-survey-for-england-and-wales-2014>

been more dependant upon locally-generated demand than was the case than in 2009.

Table 3: Gloucestershire primary aggregate consumption (including origin data) for 2009 and 2014

	For 2009			For 2014		
	Locally sourced (as a % of consumption)	Imported (as a % of consumption)	Total Glos. Consumption	Locally sourced (as a % of consumption)	Imported (as a % of consumption)	Total Glos. Consumption
All data in million tonnes						
S/G Land-won	0.17 (49%)	0.18 (51%)	0.35	0.33 (60%)	0.22 (40%)	0.55
S/G Marine-won	-	0.05 (100%)	0.05	-	0.03 (100%)	0.03
Crushed Rock	0.61 (62%)	0.37 (38%)	0.98	1.22 (64%)	0.69 (36%)	1.91
Aggregate Total	0.78 (57%)	0.60 (43%)	1.38	1.55 (62%)	0.94 (38%)	2.49

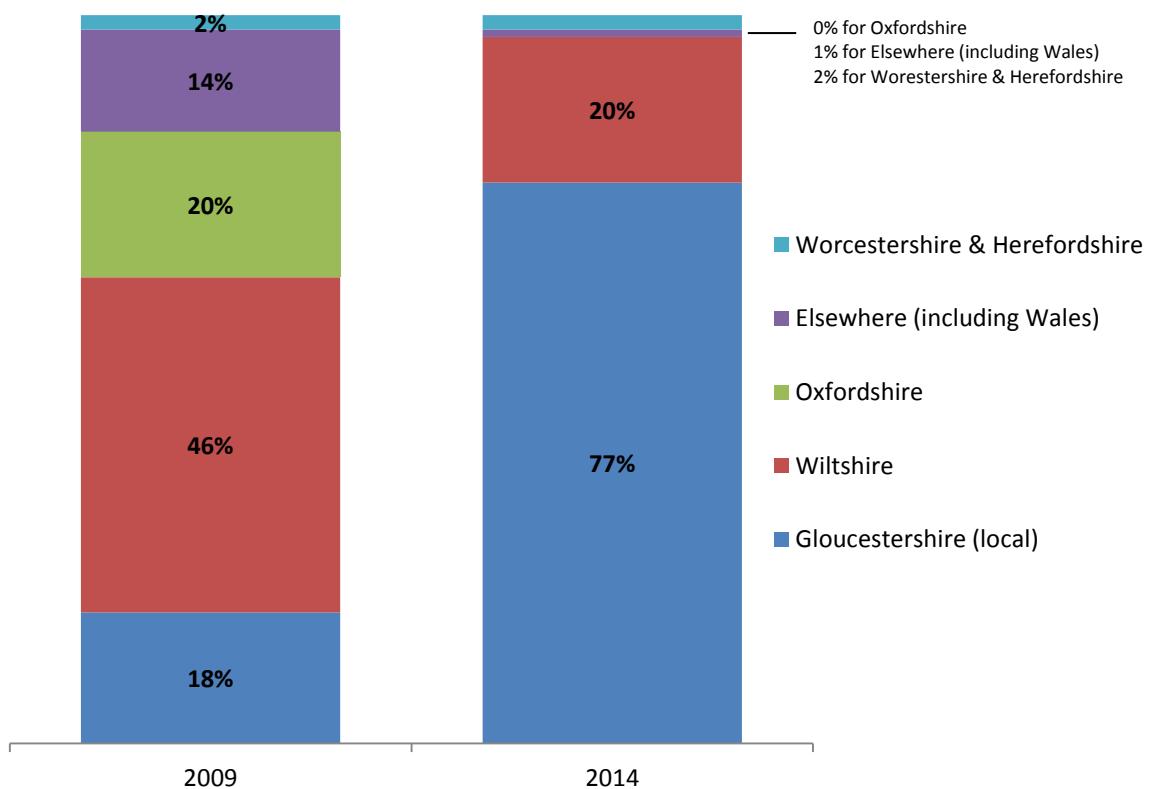
Table 4: Gloucestershire primary aggregate sales (including destination data) for 2009 and 2014

	For 2009			For 2014		
	Local Sales (as a % of total sales)	Exports (as a % of total sales)	Total Sales from Glos.	Local Sales (as a % of total sales)	Exports (as a % of total sales)	Total Sales from Glos.
All data in million tonnes						
S/G Land-won	0.17 (18%)	0.76 (82%)	0.93	0.33 (77%)	0.10 (23%)	0.43
Crushed Rock	0.61 (52%)	0.56 (48%)	1.17	1.22 (81%)	0.29 (19%)	1.51
Aggregate Total	0.78 (37%)	1.32 (63%)	2.10	1.55 (80%)	0.39 (20%)	1.94

3.14 Figure 2 below set out export destinations for primary land-won sand & gravel from Gloucestershire during 2009 and 2014. It shows that in 2009, only 18% of the county's supply remained within Gloucestershire. The rest was exported, mostly to the neighbouring authorities of Wiltshire (46%) and Oxfordshire

(20%). For 2014, the level of exports dropped significantly. The majority of sand & gravel was retained (77%) for use and / or additional processing within the county. The only notable exports in 2014 were to Wiltshire, equal to 20% of total sand & gravel supplies from Gloucestershire. These percentage changes suggest that sand and gravel sourced from Gloucestershire has latterly, mostly contributing towards meeting local demand rather than demand generated from outside of the county. It should also be noted that this has occurred within an overall environment of decreasing sales between the two survey years (from 0.93 million tonnes in 2009 to 0.43 million tonnes in 2014).

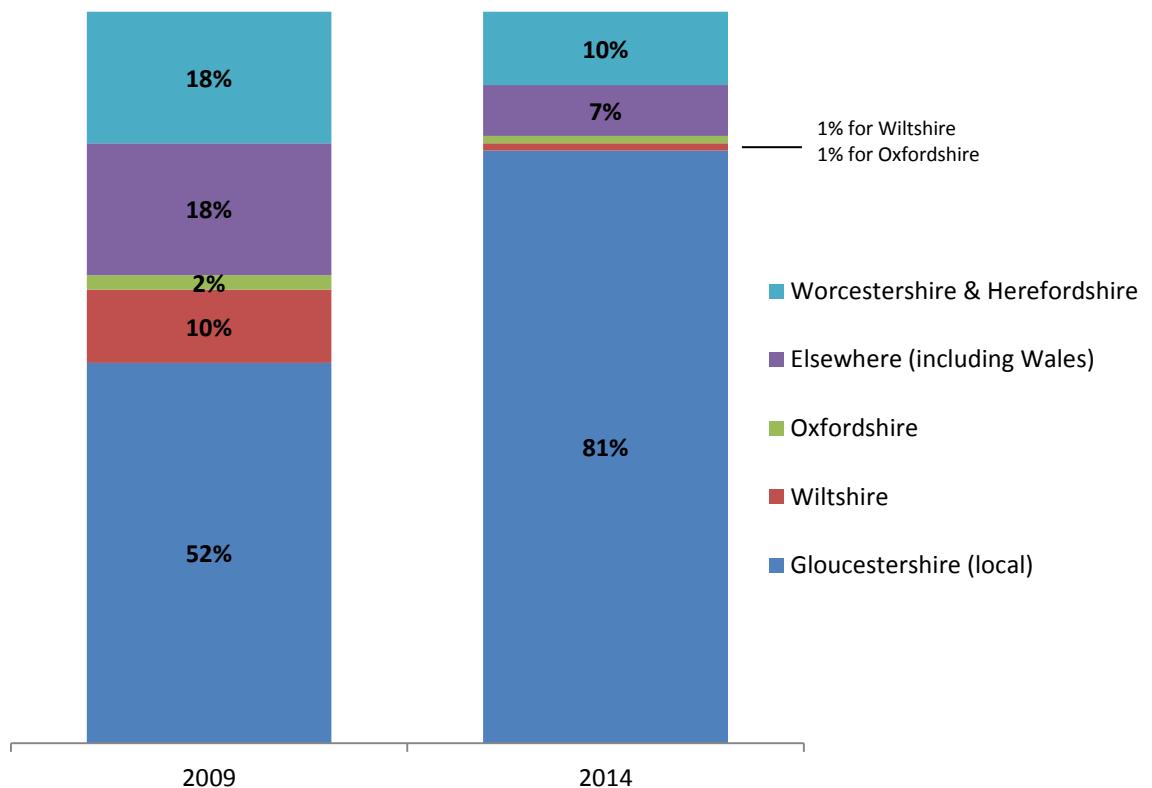
Figure 2: Gloucestershire sand & gravel (export) destinations in 2009 and 2014



3.15 Figure 3 below presents export data for primary land-won crushed rock from Gloucestershire in 2009 and 2014. It shows that in 2009, 52% of the county's crushed rock supply remained within Gloucestershire. The authority areas of Worcestershire and Herefordshire (18%) and Swindon and Wiltshire (10%) accepted noteworthy proportions of exported crushed rock during the year. For 2014 a similar pattern to that observed with sand & gravel has occurred. The percentage of crushed rock retained within Gloucestershire significantly grew to 81% and whilst Wiltshire wasn't identified as a key export destination, Worcestershire and Herefordshire (10%) and elsewhere (7%) accepted the county's crushed rock exports. However, unlike sand & gravel, the amount of

crushed rock sales increased between the two survey years by as much as 0.34 million tonnes.

Figure 3: Gloucestershire crushed rock (export) destinations in 2009 and 2014



3.16 Overall the 2009 and 2014 sales suggest that primary land-won aggregates from Gloucestershire are now mostly contributing towards local demand from within the county rather than demand generated within surrounding mineral planning areas. In numerical terms, the like-for-like exports for sand and gravel and crushed rock from 2009 and 2014 show a decline of 0.66 million tonnes and 0.27 million tonnes respectively. However, whilst for the same two years total sand & gravel sales have also decreased by 0.5 million tonnes, for crushed rock they have actually increased by 0.34 million tonnes.

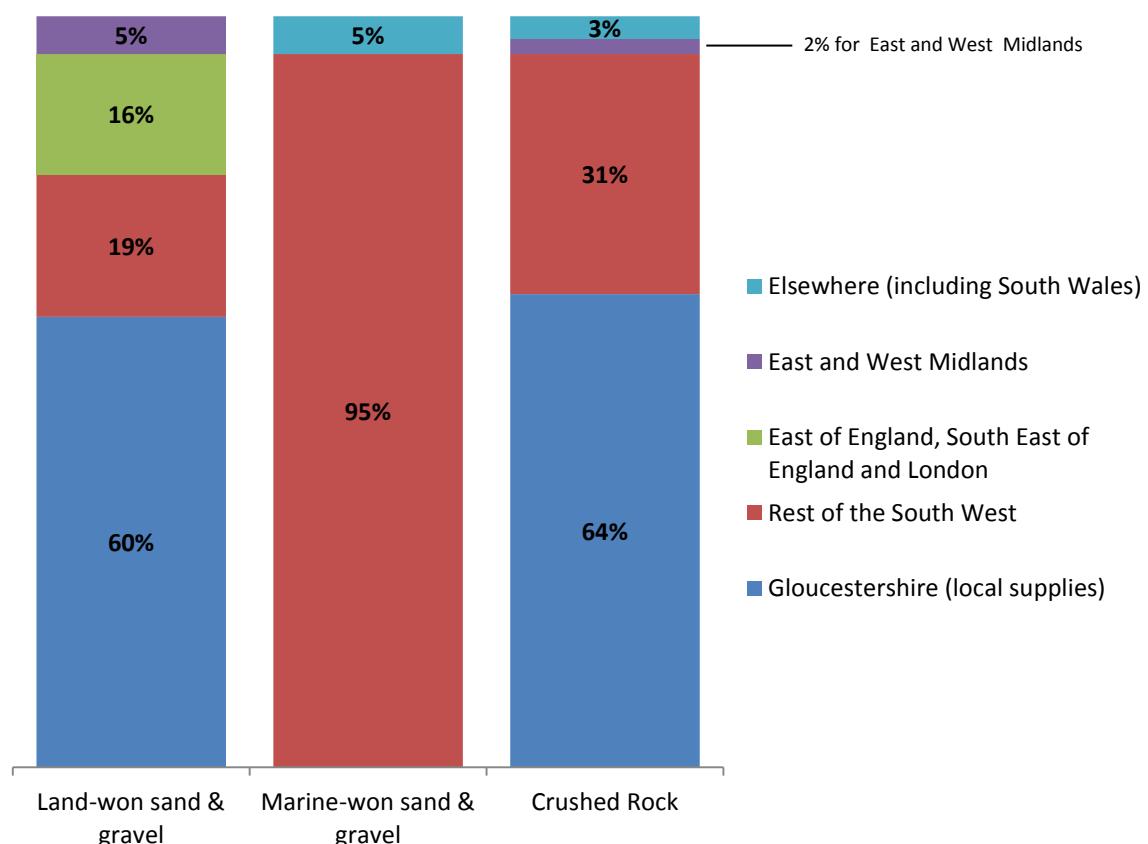
3.17 However, a potential qualifying factor may exist with an element of sand & gravel sales between 2009 and 2014, specifically in respect of the significant reduction in exports. In 2009, Swindon and Wiltshire were notable recipients of sand & gravel (46%) sourced from Gloucestershire. However, it is possible that a proportion of this mineral may have only moved into Wiltshire for processing before re-entering Gloucestershire as a saleable product and making a contribution to local demand. This particular local supply dynamic relates to the cross-boundary nature of sand & gravel resources sourced from within the Upper Thames Valley / Cotswold Water Park resource area.

3.18 Limited information is available regarding imports into Gloucestershire during 2009. However, anecdotally it is understood that crushed rock from the West of England area (mainly from nearby South Gloucestershire), high specification sandstone from South Wales and near border sand & gravel working in Wiltshire represented important sources of imports that contributed to Gloucestershire's aggregate supply.

3.19 Figure 4 presents origin data for primary aggregates in Gloucestershire for 2014. This covers local supplies and imports of land-won sand and gravel; marine-won sand and gravel and crushed rock. Of the imports of land-won sand & gravel into the county (40% of the total local consumption) the majority arrived from the rest of the South West of England. In the case of marine-won sand & gravel, for which 100% was imported, this also was predominately from the South West of England. The pattern of imports has continued with crushed rock, whereby nearly all imported supply has arrived from producing areas located within the South West of England.

3.20 It is clear from the data on imports that aggregates arriving from the rest of the South West of England remain hugely influential, albeit the overall amount of imports appear to have declined since 2009.

Figure 4: Gloucestershire primary aggregate (imports) origins for 2014



3.21 The summary results from 2014 AM survey for England and Wales are publicly available²⁴. However, some of the outputs concerning Gloucestershire have been re-assessed locally. This has created a number of differing outputs between the 2014 AM survey and Gloucestershire LAA.

3.22 For clarification purposes, the outputs contained within this LAA represent the most accurate data on the supply of primary aggregates including imports and exports.

Additional permissions granted since 01/01/2017

3.23 The data set out in this LAA is for the year ending on 31/12/ 2016. Collated reserves are based only on extant permissions granted before 01/01/2017. The next (seventh version) Gloucestershire LAA will be the place where data up to the end of 2017 will be published. Nevertheless, during the preparation of this report, new permissions have been granted, which will impact upon local aggregate supply. In the case of crushed rock there has been no additional reserves granted. For sand and gravel around 3 million tonnes at Manor Farm, Kempsford was permitted by the County Council in May 2017.

Planning proposals for aggregate working still to be determined

3.24 At the time of preparing this version of the Gloucestershire LAA, a number of undetermined planning proposals for aggregate working were being considered by the MPA. In total, these proposals contain theoretical yields amounting to approximately 14 million tonnes of crushed rock and less than 0.1mt sand & gravel. One proposal also includes an increase in the permitted annual sales limit. There is also an outstanding appeal against the refusal of permission to allow the working of just under 0.1mt of sand & gravel 0.1mt²⁵.

3.25 There is no guarantee that resources contained undetermined planning proposals will eventually become part of the county's supply either partially or in full. Where permissions are forthcoming, it is also impossible to know when aggregate working might commence. Operational restrictions (e.g. time constraints or sales limits) could apply. Table 5 provides details of the undetermined planning proposals for aggregate working currently being considered within Gloucestershire.

²⁴ Information on the national (four-yearly) aggregate mineral survey (AM) can be found online on the BGS web resource – Minerals UK and can be viewed at: - <https://www.bgs.ac.uk/mineralsuk/statistics/UKStatistics.html>

²⁵ Details concerning the refusal of planning permission for sand & gravel working (at Page's Lane, Tewkesbury) can be found on the Gloucestershire County Council public access to planning applications website under the reference: 17/0002/REFUSE – <http://www.goucestershire.gov.uk/planning-and-environment/planning-applications/search-and-track-planning-applications/>

Table 5: Undetermined planning proposals for the working of aggregates as at September 2017

Proposal Site	Aggregate type	Current estimated aggregate yield
Stowe Hill / Clearwell Complex ²⁶	Crushed Rock	14 + million tonnes ²⁷
Kempsford Quarry ²⁸	Sand & Gravel	Less than 0.1 million tonnes
Whetstone Bridge ²⁹	Sand & Gravel	An additional 0.2 million tonnes

Potential future aggregate supply contained within undeveloped preferred areas contained within the adopted Gloucestershire Minerals Local Plan (MLP)

3.26 The adopted Gloucestershire MLP contains a number of preferred areas for aggregate extraction. These were included as a means of facilitating future aggregate provision to meet expected demand at the time the MLP was prepared. The preferred areas consider future provision for both crushed rock and sand & gravel. Presently the MLP includes a number of undeveloped preferred areas that have yet to be subject to successful planning proposals. It is estimated that these preferred areas contain yields totalling around 25+ million tonnes of crushed rock and around 6 million tonnes of sand & gravel.

3.27 Similar to undetermined planning proposals for aggregate working, it is impossible at this time to establish how much of the undeveloped preferred areas will ultimately contribute towards Gloucestershire's future aggregate supply. However, some degree of planning certainty remains with these preferred areas as they still form part of the development plan for the county. Furthermore, the MPA is currently working on a replacement Minerals Local Plan for Gloucestershire, which has considered the potential of retaining some of the undeveloped preferred areas as candidate plan allocations. In addition, some undeveloped preferred areas are also subject to planning proposals, which have yet to be determined. These were discussed under paragraphs 3.24 and 3.25. Details of undeveloped preferred areas contained within the adopted MLP are provided within table 6.

²⁶ Details concerning the proposal for crushed rock working at Stowe Hill / Clearwell Quarries complex can be found on the Gloucestershire County Council public access to planning applications website under the reference: 15/0108/FDMAJM – <http://www.goucestershire.gov.uk/planning-and-environment/planning-applications/search-and-track-planning-applications/>

²⁷ The proposal at the Stowe Hill / Clearwell complex also includes an increase in permitted sales from 0.6mtpa to 0.8mtpa

²⁸ Details concerning the proposal for sand & gravel working at Kempsford Quarry (formerly known as Stubbs Farm) can be found on the Gloucestershire County Council public access to planning applications website under the reference: 15/0071/CWMAJM – <http://www.goucestershire.gov.uk/planning-and-environment/planning-applications/search-and-track-planning-applications/>

²⁹ Details concerning the proposal for sand & gravel working at Whetstone Bridge can be found on the Gloucestershire County Council public access to planning applications website under the reference: 16/0083/CWMAJM – <http://www.goucestershire.gov.uk/planning-and-environment/planning-applications/search-and-track-planning-applications/>

Table 6: Undeveloped preferred areas contained within the adopted Gloucestershire Minerals Local Plan (MLP)

Undeveloped MLP preferred area	Aggregate type	Current estimated aggregate yield (as of September 2017)
Stowe Hill / Clearwell [#]	Crushed Rock – limestone	Around 2 million tonnes
Drybrook*	Crushed Rock – limestone	Around 4 million tonnes
Stowfield	Crushed Rock – limestone	Negligible
Daglingworth*	Crushed Rock – limestone	Around 9 million tonnes
Huntsmans*	Crushed Rock – limestone	10+ million tonnes
Dryleaze Farm	Sand & Gravel	Negligible
Cerney Wick	Sand & Gravel	0.5 million tonnes
Horcott / Lady Lamb Farm*	Sand & Gravel	2.5+ million tonnes
Kempsford / Whelford*	Sand & Gravel	Around 3 million tonnes

[#] Part of this undeveloped MLP preferred areas is already subject to a planning proposal that is still to be determined as of September 2017 – see table 5

* Part / or all of these undeveloped MLP preferred areas are currently being considered in the emerging MLP as potential candidate site allocations.

4 Assessment of balance between supply and demand

4.1 This section of the report investigates potential factors that may influence future demand and supply patterns for Gloucestershire's primary land-won aggregates. Its purpose is to assist the MPA in determining how best to make provision through plan making to keep pace with future demand. The discussion provided in the following paragraphs expands upon the initial description of the data presented earlier in this report.

Remaining aggregate landbanks – an indicator of future local supply

4.2 Gloucestershire's aggregate landbanks as of the end of 2016 indicate that additional provision will probably be required over the coming years for both crushed rock and sand & gravel, to help meet future demand requirements. This fact is reinforced when maintaining minimum landbank levels is also taken into account³⁰.

4.3 In the case of crushed rock, countywide reserves are theoretically sufficient to meet projected annual demand until the end of 2031. Additional reserves would need to be available from 2032 onwards. To accommodate a minimum rolling 10-year crushed rock landbank the timeframe reduces to 2021. For sand & gravel, countywide reserves are anticipated to expire much sooner – by the end of 2020 (or 2025 if recent permissions are taken into account). Where maintaining a 7-year minimum sand & gravel landbank is concerned, new reserves would be required even earlier (from the end of 2018 if recent permissions are taken into consideration).

4.4 However, as discussed earlier in this report, the application of basic aggregate landbanks (incorporating minimum levels) may be of limited use as a reliable and accurate indicator of when new supplies will be needed in order to meet future forecast demand. A more meaningful and realistic supply assessment should incorporate other influential factors. These are discussed in a Gloucestershire context in the following paragraphs: -

Influence of productive capacities

4.5 Productive capacity is concerned with how much aggregate that can be worked and sold from a site over a period of time and is usually controlled over an annual period – an annual sales limit. Capacities can also be affected by time restrictions on mineral working. These place a ceiling upon the delivery of supply from a site and are particularly significant where a sales limit is also in existence on condition of a planning permission. Time restrictions are normally

³⁰ National Planning Policy Framework (NPPF), paragraph 145, bullet point 6 advises as to the maintenance of minimum landbanks of at least 7 years for sand and gravel and at least 10 years for crushed rock

applied by a condition on a planning permission through the use of hours of working and through an end date for working to cease.

- 4.6 Productive capacities can create a circumstance where remaining reserves at a site or suite of sites cannot be realised in full and therefore make the maximum contribution towards meeting forecast demand.
- 4.7 In Gloucestershire, where all aggregate working sites are time restricted and most have a sales limit, there are a proportion of remaining aggregate reserves that will undoubtedly require further planning permissions before they are able to contribute to future projected demand. This is down to a number of sites not always working up to their sales limits and being subject to a time limit which prevent sites from reaching exhaustion. The last recession has also had an impact on the availability of reserves by curtailing sales. This circumstance has created a bigger difference to emerge between 'actual' sales and the imposition of sales limits at many aggregate sites across the county.
- 4.8 Figures 5 and 6 attempt to show how productive capacities may influence Gloucestershire's remaining aggregate supply. Modelled scenarios have been applied in both figures, which assume that all sites will work up to their sales limit and through to their permitted end dates. They also assume no new permissions will be granted to contribute to the supply. The maintenance of supplies equal to the 10-year average sales as at 2016 (i.e. the projected annual demand level) has also been illustrated within each figure.

Figure 5: Modelled scenario of crushed rock productive capacity compared with the present 10-year average sales (i.e. forecast annual demand)

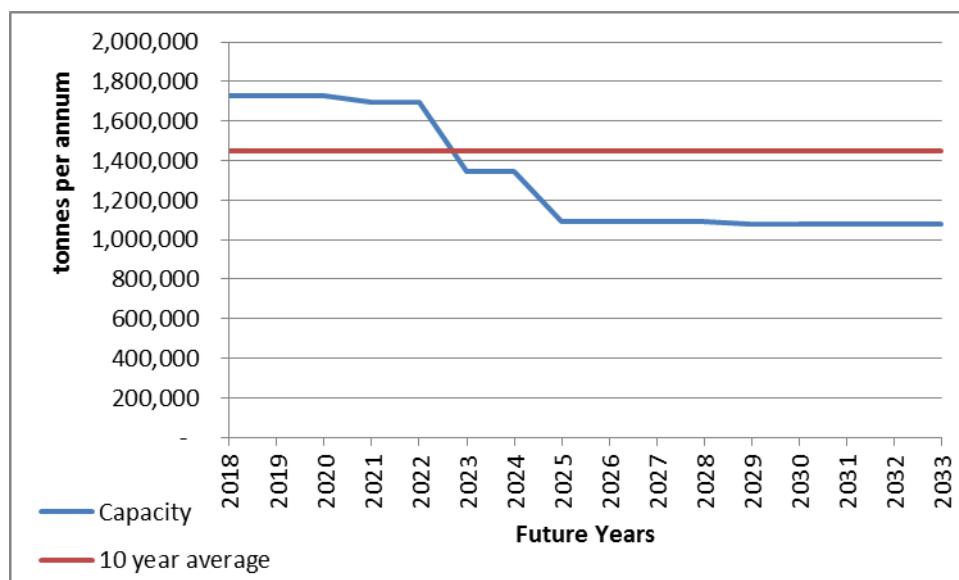
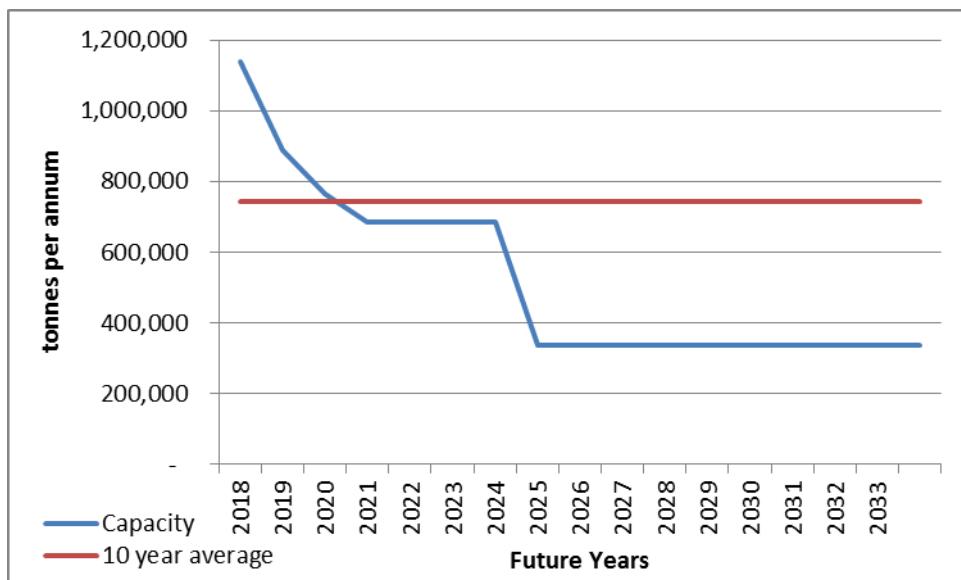


Figure 6: Modelled scenario of sand & gravel productive capacity compared with the present 10-year average sales (i.e. forecast annual demand) (also taking into account permissions granted since 01/2017)



4.9 The two modelled scenarios clearly indicate that productive capacity – by virtue of sales and time limits, will influence supply to the extent it will impact on the ability to make a contribute to forecast projected demand. This influence will be of increasing significance over the coming years. In the case of crushed rock, the productive capacity of existing working sites might only be sufficient to meet projected demand up until around 2023. However, for sand & gravel it could be notably shorter, until around 2020.

Influence of inactive mineral working sites

4.10 As of the end of 2016, there were four inactive crushed rock aggregate working sites. Of these, three show no indication of re-opening in the foreseeable future. One site has however recently received permission for a time extension³¹. There was one sand & gravel working sites classified as inactive in 2016. There are indications that this may be worked in the near future.

4.11 The presence of inactive mineral working sites potentially skews the accuracy of the landbank indicator in identifying when additional aggregate supplies will need to be made available. In essence, by not securing any annual supply from inactive sites, they contribute to the creation of artificially high landbanks of remaining reserves. Where productive capacity restrictions are also in place, inactive sites could prove to be even more significant as the ability of active sites to ‘theoretically’ compensate would be significantly curtailed.

³¹ Details concerning the approval of an extension of time for crushed rock working (at Drybrook Quarry) can be found on the Gloucestershire County Council public access to planning applications website under the reference:? – <http://www.gloucestershire.gov.uk/planning-and-environment/planning-applications/search-and-track-planning-applications/>

Influence of dormant mineral sites

- 4.12 Three crushed rock aggregate working sites were categorised as dormant within Gloucestershire up to the end of 2016. There were no dormant sand & gravel sites recorded during the year.
- 4.13 All dormant sites are excluded from the calculation of aggregate landbanks in accordance with national practice and as such do not have a direct impact upon supply³². However, the receipt of planning permissions to allow aggregate working at dormant sites could prove to be influential and would make a contribution to the relevant landbank. Nevertheless, no evidence has been presented by landowners and / or operators to suggest that local dormant sites will be subject to new planning proposals in the foreseeable future. Indeed significant site-related issues would need to be overcome at several sites before consideration may be given to any future aggregate working.

Influence of Gloucestershire's crushed rock supply trend – the Forest of Dean and Cotswold resource areas

- 4.14 As explained within paragraph 3.3, there is a longstanding supply trend for Gloucestershire's crushed rock related to the county's two distinct resource areas – the Forest of Dean and Cotswolds. The supply trend presents as a proportional split equal to 70% from the Forest of Dean and 30% from the Cotswolds. It reflects a difference in the local markets being served and the type of aggregate materials being supplied. Whilst there have been periods of time where this trend has deviated, this is normally only within a range of + / - 5%. Furthermore, from a review of data collected over recent years, there is no evidence to suggest that a material change has occurred.
- 4.15 The continuation of the supply trend may prove to be a major influence on the ability of Gloucestershire's crushed rock aggregate supply. It will undoubtedly result in an uneven depletion of remaining aggregate reserves that specifically affects the Forest of Dean resource area much more than the Cotswolds. Its impact would be to undermine the reliability of the countywide landbank indicator by dispelling one of its key assumptions – that remaining permitted reserves decrease uniformly across the county as aggregates are being worked.
- 4.16 In assessing aggregate supply in the past, the MPA has introduced separate landbank indicators for the Forest of Dean and Cotswold resource areas. This has been a useful tool in helping to determine how much aggregate provision should be facilitated through the adopted Gloucestershire MLP. In previous years it has been possible to publish annual monitoring data relating to

³² National Practice Guidance Notes (NPPG) – Planning for Aggregates Section, paragraph: 083 Reference ID: 27-083-20140306

separate crushed rock landbanks. However, due to the decline in the number of working sites and distribution of independent operators, this cannot be done due to reasons of commercial confidentiality.

- 4.17 Nevertheless, to illustrate the potential impact of the supply trend continuing unchanged into the future, separate crushed rock landbanks have been calculated applying the 2016 data and a 70/30 split between the Forest of Dean and Cotswolds LAA requirement. These indicate a notable difference would exist in the anticipated length of remaining reserves in comparison to the countywide landbank indicator (see paragraph 4.3). The difference is equal to around 1 year less of reserves being available from within the Forest of Dean resource area than would be the case if the countywide landbank was applied. But for the Cotswold resource area it represents a potential extension of the time reserves would be available by as much as 3 more years.
- 4.18 In addition, the continuation of the crushed rock supply trend may also heighten or lower the significance that inactive sites may have on future supply. For example, if inactive sites were concentrated within a resource area that demonstrates a higher trend of supply, the timeframe under which available reserves contribute to supply may become shortened. However, for a resource area that has a lower trend of supply, there may be no or very little influence upon availability of remaining reserves to meet demand.

Influence of additional permissions granted since 01/01/2017

- 4.19 Paragraph 3.23 establishes the amount of additional aggregate reserves created since the beginning of 2017. No new crushed rock reserves have been added to the landbank. However, for sand & gravel an additional 3.2 mt can reasonably be added to the sand and gravel landbank following the granting of permission for working at Manor Farm, Kempsford in May 2017. This is a materially significant addition. It means that the landbank no longer experiences a theoretical shortfall as understood through national policy, which requires a 7-year landbank to be in place for sand and gravel aggregates. However, this is likely to only represent a relatively short-term circumstance and additional reserves will most probably be required within the next few years.
- 4.20 The potential impact of additional aggregate reserves since the beginning of 2017 is also likely to be diminished further as a consequence of operational restrictions being in place. These impose limits upon the amount of aggregate sales that can be attributable to these additional reserves, usually over an annual period.

Impact of recycled aggregate on supply

4.21 Despite the limited time-series data on local recycled aggregates, it is not likely to have a significant influence on overall aggregate supplies from Gloucestershire (see paragraph 3.7). There is no evidence to suggest that the volumes currently recorded will change in the foreseeable future. However, the wider impact of recycled aggregates should not be understated. Albeit particularly as its applications are far more widespread than simply as an alternative open market supply to other aggregate sources (i.e. primary land-won, marine-won or secondary aggregates). Recycled aggregates can occur through on-site processing of construction and demolition wastes that are then re-used on-site. It is difficult to quantify the amount of recycled aggregate that has been applied in this manner throughout Gloucestershire over recent years, although it is likely to have acted as some form of suppressor upon local demand. Nevertheless, without any firm evidence that the pattern of new development will offer greater opportunity to exploit recycled aggregate (e.g. an increased focus on re-development and regeneration), its future influence is likely to be limited. Furthermore, it is worth noting that recycled aggregates continue to have notable limitations in terms of specification of use compared to other aggregate sources.

Impact of secondary aggregates on supply

4.22 In the near future, some secondary aggregates may contribute towards Gloucestershire's aggregate supply. However, the anticipated volumes generated are expected to be limited and very small in comparison to the overall annual supply and the availability of remaining aggregate reserves (see paragraph 3.9). As a result locally-produced secondary aggregates are unlikely to be influential in the evolution of future aggregate supply from Gloucestershire.

Impact of marine-won aggregates on supply

4.23 The figure for marine imports presented earlier within paragraph 3.10 shows that ports within Gloucestershire do not land any marine-won aggregates and there are presently no plans to do so in the future. It also indicates that the county has not been a major importer in the recent past and that the small amount that has arrived has only made a very limited contribution to the annual supply. The amount imported dropped in 2014 compared to 2009. In the absence of any evidence to the contrary, it is anticipated that marine-won aggregate will not make a significant contribution to future aggregate supplies from Gloucestershire.

Impact of imports and exports of primary land-won aggregates on supply

4.24 Tables 3 and 4 show there has been a significant increase in overall aggregate consumption within Gloucestershire between the two survey years 2009 and 2014. The change is equal to 1.11 million tonnes. This may be a sign of economic recovery following a number of years of recession. However, at the same time the county's export market does not appear to have recovered to pre-recession levels and has majorly fallen as a proportion of sales (from 63% of total aggregate sales in 2009 to just 20% in 2014).

4.25 More specifically the market for sand & gravel has seen a considerable fall in exports by a much as 0.66 million tonnes. This has significantly contributed to the overall fall in sand & gravel sales from Gloucestershire over the two survey years. It has also overshadowed a small rise in local sales (by 0.16 million tonnes) and imports (by 40,000 tonnes).

4.26 For crushed rock local sales have improved notably by half million tonnes. However, exports have fall by 0.27 million tonnes, which also represents a proportional decline from 48% in 2009 to just 19% in 2014. Numerically, imports have also increased during the same period by 0.32 million tonnes, although this actually represents a small proportional decrease when viewed against overall consumption from 38% to 36%.

4.27 This difference in both the proportion and amount of aggregate exports from the county observed in 2009 and 2014 could be an indicator of a decreasing influence of 'out-of county' supplies and a potential increasing 'localisation' of supplies. This may be heightened by a comparatively small fall in the proportion of imports, albeit that the actual tonnage of imports has increased between the two survey years.

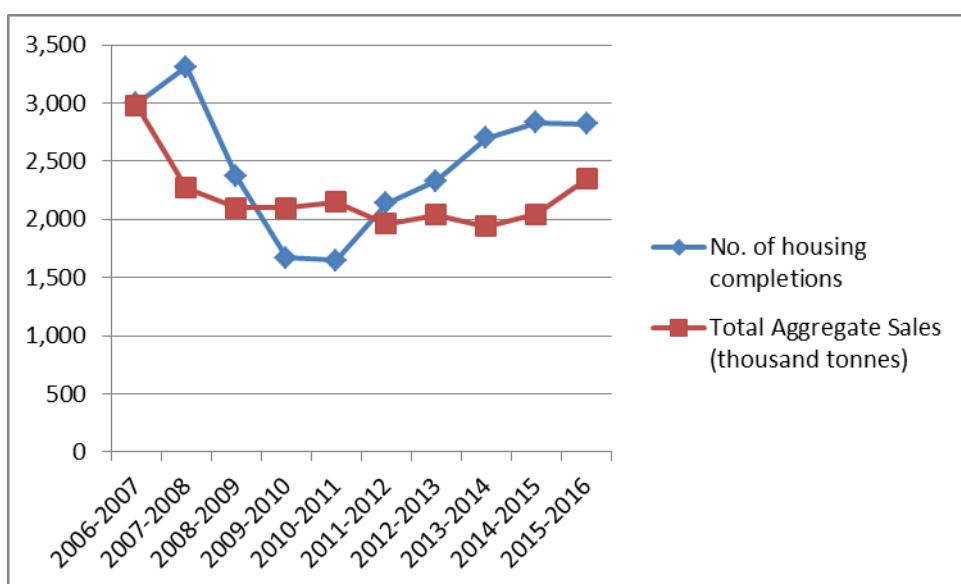
4.28 Overall Gloucestershire's aggregate supplies between 2009 and 2014 would appear to have shifted away from local sales combined with notable exports (most significantly with sand & gravel) and some imports to a considerable level of local sales with much less exports and also a less significant proportional decline in imports, albeit this has actually experiencing a tonnage increase between the two survey years.

Impact of growth on demand – future house building

4.29 Figure 11 sets out historic data on housing completions and aggregate sales for the previous 10 years within Gloucestershire. It shows a potential relationship may exist between local house building and the supply of primary land-won aggregates from Gloucestershire. Over the 10-year period there has been a general decline in the level of local house building that is reasonably well tracked by a fall in total aggregate sales. However, a number of deviations in

this trend are also present. These deviations could be explained by the presence of other influential factors, which go beyond a simple assumption that the level of local supply is dictated by local demand in housing construction. These factors may include: - changing patterns in demand for aggregates from outside of the county (e.g. exports); changing patterns of supply resulting in more or fewer imports; changing demand for aggregate from other types of development; changes in house building techniques (e.g. low carbon / sustainable code homes – where the amount of aggregate needed has decreased); and a drive towards the use of alternative aggregate sources (e.g. secondary and recycled aggregates).

Figure 11: Gloucestershire housing completions and primary land-won aggregate sales between 2006-07 and 2015-16³³



4.30 Nevertheless, whilst accepting likely weaknesses in the relationship between local house building and aggregate sales, it would still not be unreasonable to conclude that aggregate consumption in Gloucestershire is likely to experience some degree of rise over the coming years should forecast housing growth across the county occur (see figure 1). As illustrated in figure 1, it is anticipated there is strong possibility there will be a considerable uplift in local housing completions compared to the previous 10 years. For the period up to 2021, forecast local house building is expected to never drop below a 50% increase on the level experienced in 2014-15. However, whilst some degree of housing growth can reasonably be anticipated caution is expressed as to whether 'actual' housing delivery will match that which has been forecast. This is due to a number of factors including the capacity of the local construction industry to achieve the resulting housing completion rates in such a short time frame.

³³ To accommodate the differing recording periods applied to housing completions and aggregate sales – aggregate sales have been set against the 2nd half-year of housing completions. This is because the chances of a lag-time are very high between the supply of aggregates and their subsequent use in construction. This approach is deemed a pragmatic way forward where by the completions from the 2nd half-year are partially attributed to aggregate supplies generated during the previous annual period.

4.31 It remains unclear as to how significant an impact future local housing growth will have upon local aggregate sales. Aggregate import trends would suggest that Gloucestershire may become increasingly reliant on supplies from outside of the county plus more minerals produced within the county are remaining within the county. However, it is impossible to predict whether such imports would also be able in the future to accommodate all, or part of any forecast additional demand linked to increases in local house building. Furthermore, it is unknown as to whether the trend towards ever decreasing amounts of aggregate being used in house building will continue to act as a suppressor upon future aggregate demand. Nonetheless, there is some degree of certainty, that the availability of and subsequent contribution to the supply of alternatives to primary land-won aggregate is unlikely to have a major impact and therefore have an influence upon the relationship between future local house building and aggregate sales (see paragraphs 3.6 to 3.10).

5 LAA conclusion and recommendations for planning purposes

Demand

- 5.1 As at the end of 2016, the basic projected demand for primary land-won aggregates from Gloucestershire over the coming years stood at 1.452 million tonnes per annum for crushed rock and 0.742 million tonnes per annum for sand & gravel. This projection employs 10-year rolling average sales for each aggregate type between 2007 and 2016 inclusive.
- 5.2 An alternative projection using 3-year rolling average annual sales between 2014 and 2016 has also been analysed. It presents a mixed picture with lower projected demand than observed with the 10-year rolling average annual sales for sand and gravel and a slightly higher projected demand for crushed rock.
- 5.3 Other information that could show a different pattern of demand may need to be taken into account has also been investigated. This includes levels of planned development. Whilst significant increases in local house building are anticipated to occur over the coming years, it remains unclear at this stage how significant this might be on local aggregate demand and to what extent it could require a deviation in the current projection, which applies the 10-year rolling average sales. Nevertheless, it is not unreasonable to predict that levels of planned development would contradict the application of an alternative lower projection, such as using 3-year rolling average annual sales for sand and gravel.
- 5.4 There are multiple factors that may be influencing the demand for aggregate, which suggest a weakening of the basic assumption that levels of new development – such as local house building dictate aggregate sales.
- 5.5 In conclusion, there is insufficient evidence at the time to justify deviating from a rolling annual average of 10 years sales data for the purpose of projecting future aggregate demand for Gloucestershire.

Supply

- 5.6 The countywide landbank for crushed rock as at 01/01/2017 stands at 24.32mt. It is an indicator that crushed rock aggregate reserves may be available to meet projected demand for just under 17 years. In the case of sand & gravel the landbank as at 01/01/2017 was 4.41mt. The remaining length of this landbank is close to 6 years. However, permissions granted during 2017 bring the landbank closer to 10 years.

- 5.7 Nevertheless, in ensuring minimum landbank levels are sufficiently maintained, the availability of crushed rock reserves becomes a medium-term provision issue (e.g. between 5-10 years) and for sand & gravel it develops into a very short-term concern (e.g. less than 4 years).
- 5.8 Furthermore, the application of countywide landbanks for Gloucestershire is not necessarily the most reliable means of determining the availability of future aggregate reserves particularly in the case of crushed rock. The use of local landbanks in this instance may prove a more realistic method. As at the end of 2016, the use of local landbanks for the county's two crushed rock resource areas (i.e. Forest of Dean and the Cotswolds) revealed a deviation in the anticipated time attributable to the availability of remaining local reserves when compared to the countywide calculation. For the Forest of Dean resource area the use of a local landbank advises that remaining reserves may be depleted around 1 year sooner than if the countywide landbank was applied, but in the Cotswolds, the availability of reserves will be extended by about 3 years.
- 5.9 In addition, the county's remaining permitted reserves are also subject to site-specific restrictions that could affect both annual supply and the overall availability of reserves over time. The likely impact of these restrictions is to constrain any possible flexibility in the availability of reserves and thus reduce the prospect they will be sufficient to keep pace with projected demand for many more years into the future.
- 5.10 It also remains uncertain at this stage as to the anticipated future impact upon the local supply of aggregates from imports and exports. The 2014 data suggests that primary-land won aggregates sourced from Gloucestershire are now making more of a contribution towards meeting local demand and this may be at the expense of demand from outside of the county. This in numerical terms at least, has declined considerably between 2009 and 2014.

Appendix 1 | Consultation draft version of the 6th LAA

A draft version of the 6th LAA was subject to targeted consultation from 2nd October to 15th November 2017. The organisations invited to make representations were as follows: -

- Aggregate Industries UK Limited;
- Allstone Sand & Gravel Trading Company;
- Breedon Aggregates;
- British Aggregates Association;
- British Geological Survey;
- Complete Utilities;
- Cotswold Stone Quarries;
- Crown Estates;
- David Jarvis Associates Ltd;
- Derbyshire County Council;
- Elliott & Sons Ltd;
- Environment Agency;
- Forest of Dean Stone Firms Ltd;
- GFirst LEP;
- H T Waste Recycling;
- Hampshire County Council;
- Hanson UK;
- Herefordshire Council;
- Hills Quarry Products;
- Johnston Quarry Group;
- Keyway (Glos) Ltd;
- Land & Mineral Management;
- Leicestershire County Council;
- Lincolnshire County Council;
- Manufacturers of Incinerator Bottom Ash Aggregates Association
- Marine Management Organisation;
- Mineral Products Association;
- Monmouthshire County Council;
- Moreton Cullimore;
- Mr D K Symes;
- North Somerset Council;
- Nottinghamshire County Council;
- Oxfordshire County Council;
- Smiths (Gloucester) Ltd;
- Solihull Borough Council;
- South East of England Aggregates Working Party;
- South Gloucestershire Council;

- South Wales Aggregates Working Party;
- South West Aggregates Working Party;
- Staffordshire County Council;
- Stone Supplies (Cotswold) Ltd;
- Swindon Borough Council;
- Tarmac Trading Ltd;
- Urbaser-Balfour Beaty;
- Valley Trading Ltd;
- Warwickshire County Council;
- West Midlands Aggregates Working Party;
- Wiltshire Council;
- Worcestershire County Council.

Comments were received from four consulted organisations: -

- South West Aggregates Working Party; and
- Warwickshire County Council.