TRENDS
IN SAND & GRAVEL PRODUCTION

IMPLICATIONS FOR THE OXFORDSHIRE LAA

February 2015

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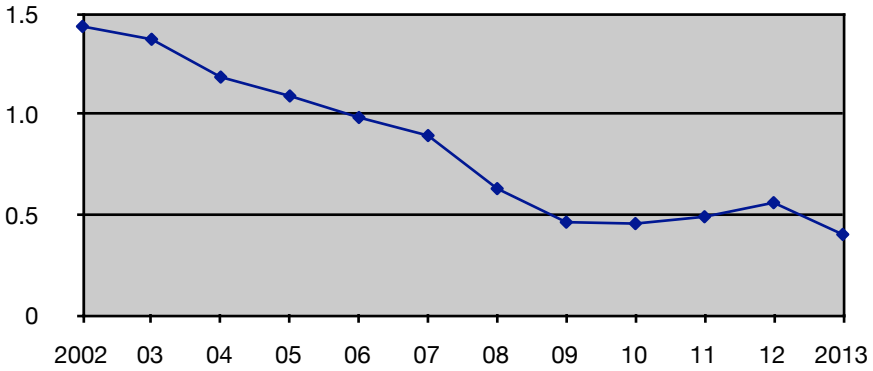
Introduction
OCC employed consultants in 2013 (Atkins) and 2014 (LUC) to forecast Oxfordshire SS&G consumption to 2031.

NPPF guidance states MPA's should consider using the ten year rolling average of production for forecasting the LAA. The past 12 years historic SS&G production in Oxfordshire is shown in **figure 1.**

Fig 1: Historic SS&G production in Oxfordshire mT



Atkins and LUC have suggested Oxfordshire's declining production has been artificially driven by the mothballing of quarries, leading to higher levels of decline than experienced in the UK as a whole. Both consultants assert Oxfordshire is now importing sand and gravel from other counties but provide no factual data to support this assertion.

Both consultants propose the LAA should be increased above the current ten year rolling average sales figure because rising economic activity (from a growing population and demand for new housing), together with revived demand from other counties should see a return to the previously high levels of demand ten years ago.

The current ten year rolling average of Oxfordshire sales is 0.715mT pa. OCC's consultants suggest the LAA should be revised to 1.015mTpa for the forecasting period of OCC's Minerals Plan. This represents an increase of 42% for the forecast plan period of 18 years, and a 250% increase above 2013 sales figures of 0.401mT. On the basis of this revised LAA, OCC suggest Oxfordshire will need to find an additional 9.79mT during the plan period to 2031 (Oxfordshire Minerals and Waste Local Plan: Part 1- Core Strategy January 2015).

The evidence from trends in the UK market for Sand and Gravel production does not support this change to the LAA. S&G sales have been in long term decline, and are not directly linked to economic growth. Nationally there has been a long term decline in land won S&G production, from a peak of 131mT in 1989 to just 54mT in 2013. The economic conditions which drove high levels of production in the earlier part of the decade in Oxfordshire have not been sustained; the increased availability of other sources of aggregate have significantly decreased demand for land-won S&G in Oxfordshire. This report demonstrates the factors underpinning the decline in sales have driven the mothballing of Oxfordshire quarries and the ten year average of Oxfordshire sales is likely to overstate future requirement for the forecast plan period.

The information presented in the remainder of this note is based on historic data (1980-2013) from the Mineral Products Association (MPA) published by the British Marine Aggregate Producers Association, together with information published by OCC in the annual Local Aggregate Assessment commissioned from Atkins (2013) and LUC (2014).

Trends in UK Sand and Gravel Production

UK sand and gravel production has fallen over the past thirty years despite growth in GDP, construction output and population, shown in **figure 2**. The UK market share of S&G from land-won sources, as a proportion of total aggregate demand, has also fallen steeply, shown in **figure 3.** This decline in market share of land won S&G has been driven by the growing use of recyclables and a steady supply of marine-won S&G. Between 1980 and 2013 the market share of land-won S&G declined by 17% points from 38% to 21%.

Fig 2: Indexed Growth in GDP, Construction, Population and S&G production 1980-2013

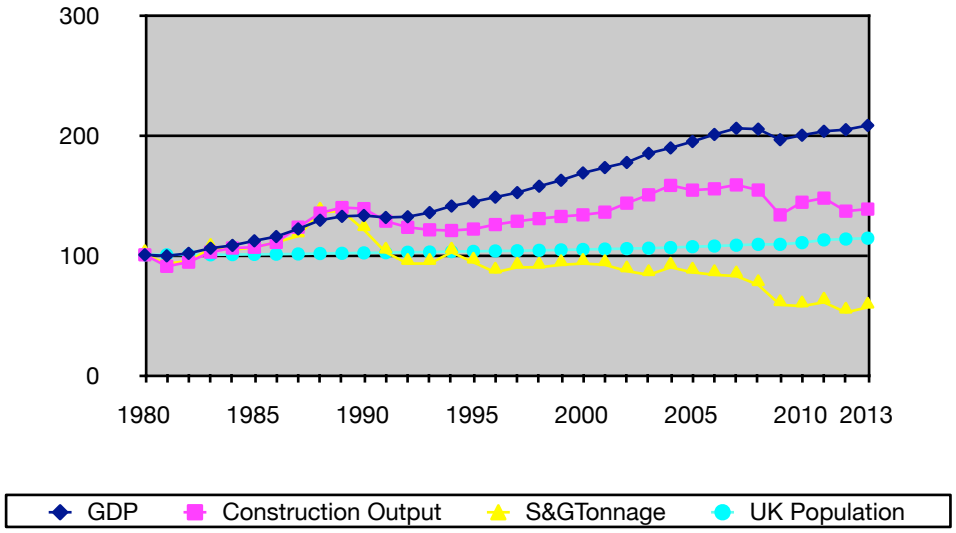
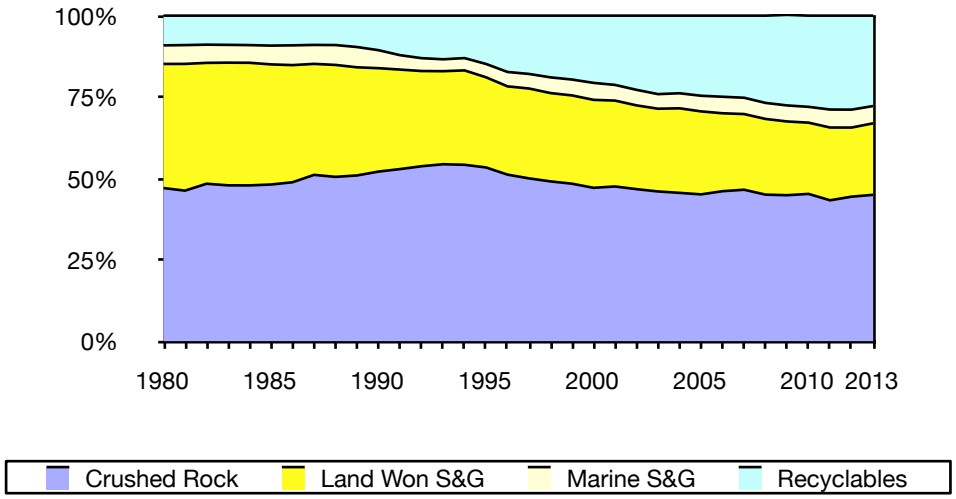


Fig 3: Market Share of Total Aggregates



Overall the declining market share of land won S&G has led to a steeper decline in production tonnage than for other sources of aggregate as shown in **figure 4**. Over the 33 years from 1980 to 2013, UK land won S&G production has declined by 48% from 83.5mT to 43.5 mT, an annual decline equivalent to 1.96%.

Fig 4, UK S&G Production 1980-2013

	1980 Million Tonnes	2013 Million Tonnes	CAGR* 1980-2012
Total Aggregates	199.0	143.0	-0.99%
Total Sand and Gravel	96.0	54.0	-1.73%
Land Won Sand and Gravel	83.5	43.5	-1.96%
Marine Sand and Gravel	12.5	10.5	-0.53%

*CAGR = Compound annual growth rate

Trends in Oxfordshire SS&G

Figure 5 shows a comparison of SS&G production per head between Oxfordshire and England from 2002 to 2011 from data collected by Atkins in their 2013 LAA report. The data covers two very different periods of economic performance for the UK economy: 7 years of economic "boom" up to 2008, followed by 3 years of "bust" in the recent recession. In the boom period Oxfordshire was a significant exporter of SS&G, on average producing half as much again per head compared to the average for England, and up to double the England output at the start of the period. In recent years Oxfordshire has been producing SS&G in line with England consumption per head.

Fig 5: Comparison of England and Oxfordshire SS&G, tonnes/head of population

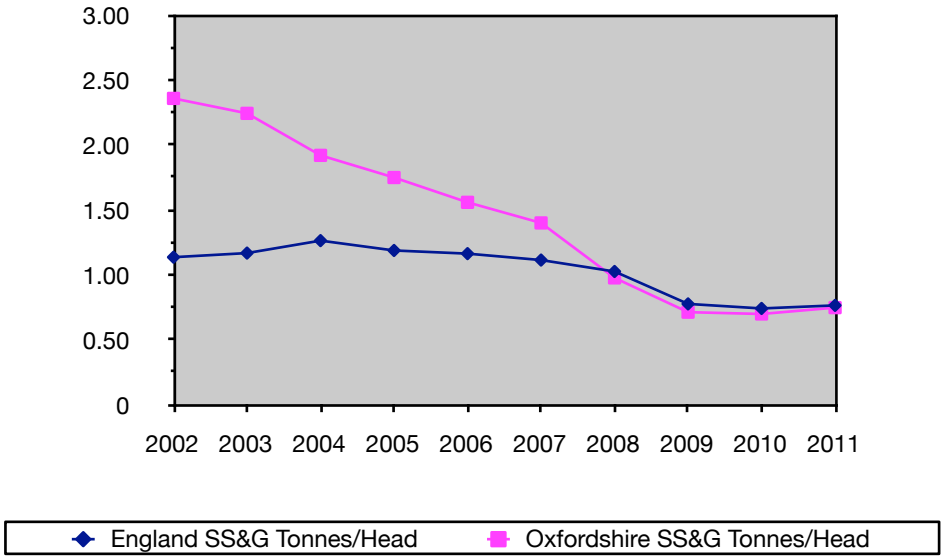


Figure 6 shows the destination of sand and gravel produced in Oxfordshire in 2005 and 2009. The data collected by OCC shows that despite a 50% fall in production output between the two periods, the volume used within Oxfordshire, Berks and Bucks increased by 30%, from 0.3mT to 0.51mT. This is in direct contrast to the national trend, showing Oxfordshire has supported it's own growth from its own resources. However, in 2005 75% of Oxfordshire'd total production was exported to destinations outside the county. In 2009 that picture changed dramatically to just under 20%. As demand fell from other counties between 2005-2009 Oxfordshire production had to be curtailed by the industry. During this four year period three quarries reduced production and subsequently mothballed, as shown in **figure 7**. The mothballing of these quarries did not artificially depress demand but were a direct response to falling demand elsewhere in the UK.

Figure 6: Destinations of Sand and Gravel produced in Oxfordshire 2005 and 2009

Destination	2005 mT	% of total	2009 mT	% of total
Oxfordshire	0.304	**23.6%**	0.4872	**77.6%**
Berks and Bucks			0.0328	**5.2%**
Elsewhere in SE	0.418	32.4%	0.0155	2.4%
Elsewhere	0.550	42.7%	0.0903	14.4%
Unallocated	0.017	1.3%	0	0%
Total	**1.289**	**100%**	**0.627***	**100%**

* May not match sub totals due to varying categories

Figure 7: Quarry decline between 2005 and 2010

Quarry	Production declines	Mothballed
Sutton Courtenay	2004	2005
Casssington and Stanton Harcourt	2007-2008	2009-2010

The fall in demand from other parts of the UK will have been driven by the the growth in marine won sand and gravel and recycled aggregate, as well as the opening of new quarries outside Oxfordshire.

Growth of Marine won Sand and Gravel and Recycled Aggregate

Marine won sand and gravel has grown market share of total UK Sand and Gravel from 13% in 1980 to 20% in 2013, as shown in **figure 8**. More than 80% of Marine S&G is landed in the London & Thames corridor and the South East as shown in **figure 9**. There is considerable potential for further growth of marine S&G as only half of the area licensed is currently being worked.

Fig 8: Marine S&G market share of S&G production

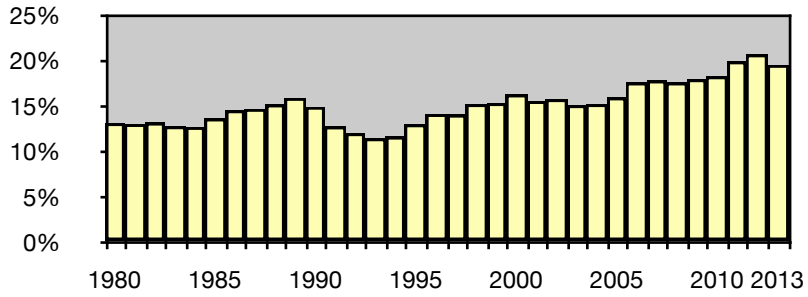
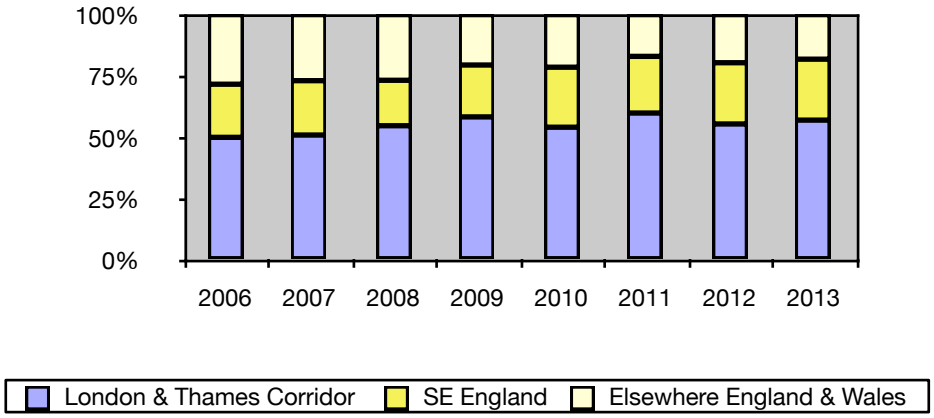


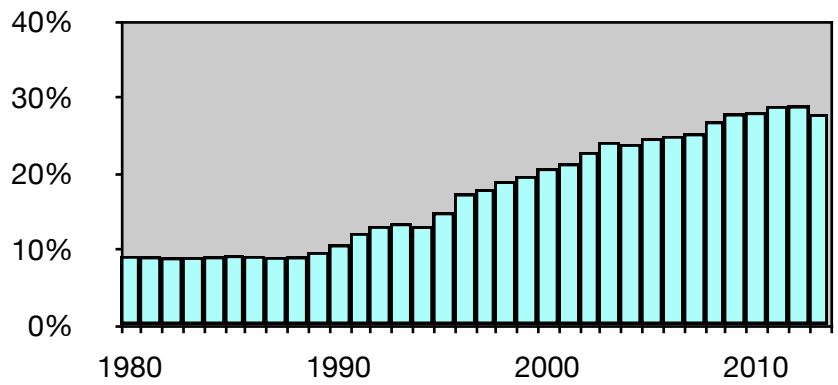
Fig 9: Distribution of Marine S&G by destination, %



The growth of marine S&G will have had a big indirect effect on Oxfordshire production. While some marine S&G may be used in Oxfordshire, it will have had a pronounced effect on Oxfordshire's former export markets of London and the South East.

Similarly the volume of recycled aggregate has grown enormously over the last thirty years, as shown in **figure 10**. In 1980 recyclables accounted for just 9% (20mT) of the total market for aggregates, rising to 29% (55mT) by 2013, despite decreasing aggregate demand. The growth of recyclables has had a direct effect on demand for land won S&G, and will have contributed to the decline in Oxfordshire production.

Fig 9: Recycled Aggregates market share of Primary Aggregates %



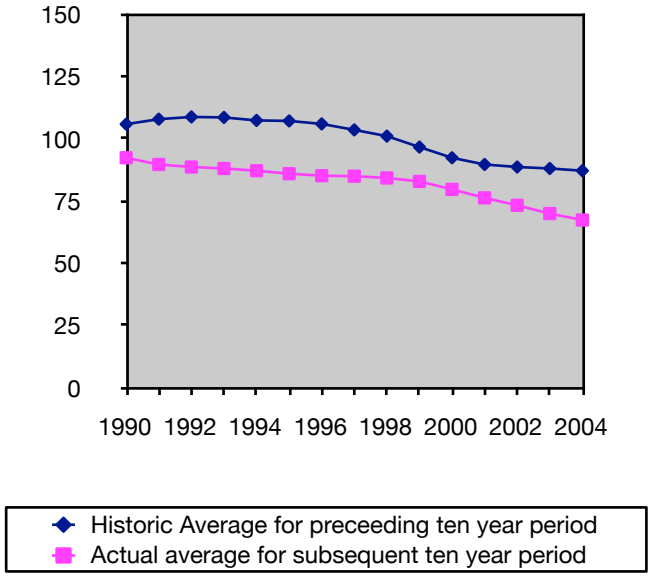
The decision to mothball quarries in Oxfordshire is more likely to be in response to the growing competition from marine gravel in London and the SE, recycled aggregate, and the long term decline in overall aggregate demand. A return to the massive production of the early part of the last decade by the Oxfordshire quarries is no longer necessary to fulfill demand from other areas of the UK.

Forecasting Historic Production from the 10 year rolling average

The thirty-three years of industry data on historic UK sand and gravel production from BMAPA can be used to compare historic ten year average production data with actual production data for the following ten year period. **Figure 11** compares these two sets of data and shows the ten year historic average for forecasting actual output in UK land won S&G production would have over-forecast actual demand. For example in 1990 the historic ten year average of S&G production from 1980-1989 was 105.7mT. The average production for the subsequent ten years 1990-1999 was however only 92.2mT. So in 1990 the ten year historic average would have over-forecast the subsequent ten years production by 13%. Similarly in 2000, the historic average 1991-2000 was 92.2mT whereas the subsequent 10 years actual production 2001-2010 was 79.5mT, a reduction of 14%.

The difference between subsequent ten year production and historic ten year production shows a consistent over-forecast, with an average over-forecast over the period of 18%. Therefore there is no justification to increase the current historic ten year average figure for use in the LAA forecast as the historic figure is likely to overstate future demand.

Fig 11: 10 year UK Average Historic demand vs UK Average Actual Demand, mT pa



Oxfordshire SS&G Landbank

The forecast LAA is important as it determines the rate at which the identified supply of S&G in Oxfordshire is expected to be consumed and hence whether there is a shortfall in potential supply over the plan period.

The OCC Minerals and Waste Local Plan (Jan 2015) suggests Oxfordshire needs to find a further 9.79mT in addition to the current permitted reserves of SS&G to meet the county's needs until 2031, as shown in **figure 12**. This estimate is derived by using a higher annual provision of 1.015mTpa than the ten year average, and excludes 5mT of resource granted planning permission at Gill Mill in 2014.

Figure 12: Forecast Requirement for Oxfordshire SS&G, 2014-2031

Estimated Requirement to 2031		**OCC Core Strategy Table 4.17**	**Revised using 10 year average LAA**
A	Annual provision (from LAA)	1.015 mT	0.715 mT
B	Requirement 2014-2031 (A x 18 yrs)	18.270 mT	12.87 mT
C	Permitted reserves 2013	6.619 mT	6.619 mT
D	Permissions granted 2014	1.86 mT Caversham only incl	6.86 mT Caversham & Gill Mill
E	Total permitted reserves (C+D)	8.479 mT	13.479 mT
F	Remaining requirement (B-E) over plan	9.791 mT	-0.609 mT (surplus)

The picture changes dramatically if the historic ten year average of production is used and all currently granted planning permissions are included; in this case Oxfordshire would have a small surplus at the end of the plan period. A further 1.35mT of reserves have been identified at two existing sites, subject to planning consents being granted, and the Oxford Western Bypass has provisionally identified a potential 1mT, suggesting the surplus will be larger than shown (see Appendix A).

In 2013 Oxfordshire produced 0.401mT. The ten year average production from 2004-2013 was 0.715mTpa - an increase in provision above current production of 74%. OCC is suggesting the annual provision should be increased further to 1.015mT - an increase of a further 42% above the ten year average, and 250% above current production. It is highly unlikely the land won sand and gravel industry in the UK will see that sort of average market growth, over the 18 year period of the plan based on the historic trend in UK sales for the last thirty years.

Furthermore, the figure of 1.015mTpa proposed by OCC has not been derived from a factual evidence base. It is a "guesstimate", harking back to an era a decade ago when Oxfordshire was supplying the needs of other counties all over SE England at the expense of preserving Oxfordshire's landscape.

Summary

There is no evidence to support an increase in the annual provision for SS&G proposed by OCC over and above the historic ten year average in sales production. Sand and Gravel sales have been in long term decline and are not directly linked to economic growth. There is no justification for uplifting the average ten year sales for Oxfordshire as the economic conditions which drove high levels of production in the earlier part of the decade have not been sustained; the increased availability of other sources of aggregate have significantly decreased demand for land won S&G from Oxfordshire.

The 2014 LAA contradicts the historic trend in demand for land won S&G during the last thirty years. By increasing Oxfordshire sales estimates above the ten year average the consultants have adjusted to lift production closer to the level during the years of the Oxfordshire boom ten years ago, without acknowledging the reasons why during the boom Oxfordshire quarries were over-producing and why that market has disappeared. As demand increases, so mothballed quarries will come back into production, but these cyclical swings in demand will be smoothed out in the ten year average so that a longer term trend can be reasonably assessed. Historically UK S&G output has shown that the ten year average has over-forecast subsequent demand by 18%.

In the absence of any better tool for forecasting Sand and Gravel production we believe OCC should adopt the guidance issued by the NPPF to use the historic ten year average sales for all forecasts. The ten year average methodology removes any degree of “guestimation” and smooths boom and bust cycles in the construction cycle to provide a useful basis for forecasting. The LAA should be updated annually so that long term trends in demand within the industry can be monitored and forecasts adjusted accordingly.

At 2014 production levels of 0.41mT and a known landbank of granted permissions exceeding 13.5mT Oxfordshire has plenty of time to reassess the changes in future demand without being concerned about running out of resources in the near future.

BaCHPoRT

Appendix A
Oxfordshire Landbank at 2013

	Reserve mT			Current Activity	Notes
Quarry	**Current**	**Identified**	**Total**		
Gill Mill	2.350	5.000	7.350	Active	Extension granted 2014
Stanton Harcourt	1.550		1.550	Mothballed	Permission commenced before mothballing
Caversham	0	1.860	1.860	Inactive	Permission granted 2013, not yet active
Sutton Courtenay	0.730		0.730	Active	Reopened 2013
Wicklesham	0.850		0.850	Active	
Casssington	0.380	-	0.380	Mothballed	
Finmere	0.490	-	0.490	Active	
Thame	0.020	-	0.020	Mothballed	
Radley	0	1.000	1.000	Inactive with dormant reserve	Reserve subject to ROMP procedure
Sutton Wick	0.055	0.350	0.405	Active	Permission applied for
Total	**6.425mT**	**8.210mT**	**14.635mT***		

***** The **Oxford Western Bypass** is provisionally estimated to generate a further 1mT