

REASONS FOR THE DECLINE IN SAND AND GRAVEL AGGREGATE RESERVES IN ENGLAND

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ABSTRACT

A recent study by the British Geological Survey (BGS) identified that permitted reserves of primary aggregates have been in decline since the mid 1990s, with the reduction being most acute for sand and gravel in South East England. This paper reports on ALSF funded research which has examined the nature and significance of the decline in more detail. The study also investigated the reasons for the changes in order to inform an appropriate planning response.

The primary mechanism for the decline has been a prolonged deficit between annual sales and the rate of replenishment through new permissions. This paper discusses the various potential reasons for the insufficiency of new applications, focusing primarily on the period 1997 to 2004/5 (for which the most reliable quantitative data are available). It also looks briefly at the period since 2004, during which additional factors relating to the new planning system are believed by many to be exacerbating the problem through their effects in delaying the submission of applications.

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INTRODUCTION

This paper presents some of the key findings from a recent Aggregates Levy funded research report by Capita Symonds Ltd (CSL) on 'Reasons for the Decline in Aggregate Reserves in England' (Thompson *et al.*, 2008). The study focused on permitted reserves (i.e. those which have a valid planning permission to be worked) and covered both sand and gravel, and crushed rock aggregates. This paper concentrates primarily on sand and gravel reserves (where the most acute shortages were developing) and on the changes in those reserves which have taken place over the period 1997 to 2004/5 (this being the period for which the most complete quantitative data are available).

BACKGROUND

The research reported here was commissioned by the Department of Communities and Local Government (CLG) in response to the findings of an earlier study by the British Geological Survey (BGS) on 'Primary Aggregate Reserves in England 1990 to 2004' (Brown and Highley, 2006). That work had revealed a steady decline in permitted sand and gravel reserves over the period 1990 to 2004.

The objectives of the CSL study were:

1. To explore with industry and planning authorities the reasons for the decline in aggregate reserves (including both sand and gravel and crushed rock);
2. To consider any long term implications of this decline on future aggregates supply;

3. To consider the decline in aggregate reserves in the context of the 2007 review of aggregate guidelines, and

4. To make recommendations for a planning response to stabilise or reverse, if deemed necessary, the decline in aggregate reserves.

Objective 1 is the main focus of this paper, within which the brief required the study of quantitative data concerning planning applications for new aggregate reserves. The work included collating the numbers and tonnage of applications for aggregate extraction and their outcomes, with particular emphasis on collating information on withdrawn applications.

DATA ANALYSIS

The nature and limitations of the dataset used in this study are described in detail in the full Capita Symonds report. The following key points are particularly relevant. Reserves data as presented in the Aggregate Minerals (AM) Surveys, and landbank calculations derived from those figures, are thought to be most reliable between 1997 and 2005. Annual sales data are considered to be reliable throughout the whole period of study (1990 to 2005), whereas data on new permissions (as collated in the Capita Symonds study for a subset of 103 out of 159 MPAs) are most complete on the scale of England as a whole for the period 1997 to 2004. Taking these observations into account, this paper focuses on the changes that have taken place between 1997 and 2005.

QUANTITATIVE ANALYSIS

Permitted reserves

For England as a whole, there was a 29% reduction in permitted sand and gravel reserves over the period 1997 - 2005. This is a difference of around 250 million tonnes. The decline was evident in all individual regions to varying degrees. Worst affected were London, where sand and gravel reserves fell by 74%, the North East (55% reduction) and the South East (50% reduction).

Landbanks

Although the reduction in permitted reserves has been substantial, the significance of the decline can only be properly assessed when it is considered in terms of 'landbanks' i.e. the number of years supply represented by the available reserves at a given point in time. Landbanks can be expressed either in relation to recent levels of annual production, or in relation to the annual levels of 'apportionment' (required production) that are set for each Mineral Planning Authority (MPA) by the Regional Aggregate Working Parties. Arguably, an observed decline in reserves may not be significant if the rate of production (or annual apportionment figure) also falls, since the landbank might then remain unchanged. That has not been the case.

The landbank concept is intended to be applied at the MPA level (see below) but, for the purpose of putting the national and regional reserve figures into context, the same principles can be applied to these larger geographical areas to produce what can be referred to as '*notional landbanks*'. At the regional level, apportionment figures are set by central Government and these can be applied to the regional reserve totals to obtain notional landbanks for each region. Unfortunately, regional boundary changes introduced in 1998 mean that the figures calculated for the 2005 and 2001 AM surveys cannot be compared with the previous AM survey in 1997. Nevertheless, comparison from 2001 to 2005 shows that notional sand and gravel landbanks fell by 20% for England as a whole, with reductions in all individual regions (notably 50% in London, 36% in the South East and 34% in the North East). These figures begin to demonstrate the significance of the observed reduction in reserves.

A further indication of significance is seen in the levels to which the notional landbanks fell. Government policy (Department for Communities and Local Government, 2006) states that the length of the landbank in an area should be used "*as an indicator of when new permissions for aggregates extraction are likely to be needed. The landbank indicators are at least 7 years for sand and gravel and 10 years for crushed rock*". By 2005, the notional sand and gravel landbanks had fallen below the 7-year indicator level in both London (2.4 years) and South East England (6.2 years), and stood at only 9.2 years for the country as a whole. Even these figures, however, disguise more acute problems within individual MPAs.

The annual Regional Aggregate Working Party (RAWP) reports provide annual landbank calculations for a total of 45 MPAs (or groupings of MPAs where confidentiality requires this). In no less than 17 of these 45 areas, the

reported sand and gravel landbanks fell to or below the minimum guideline of 7 years in 2004 and/or 2005. In alphabetical order, these comprised:

Gloucestershire, Hampshire, Hertfordshire, Lancashire, Leicestershire/Rutland, Lincolnshire, London boroughs (all), Medway, Norfolk, Northamptonshire, North Yorkshire (southward distribution sites), Oxfordshire, Surrey, West Midlands County, West Sussex, Wiltshire, Worcestershire

In five of these MPAs/groups, landbanks fell to 5 years or less in one or both of these years. In 12 other areas, the landbanks either fell to between 7 and 10 years or were portrayed simply as ">7 years" (usually for confidentiality reasons in areas with less than three active producers). In further detail, the study found that landbank figures in other MPAs may sometimes disguise shortages of particular types or qualities of aggregate. Known examples include shortages of concreting sand in Bedfordshire and South Yorkshire, despite large landbanks of soft sand in those areas.

Rates of replenishment

Sand and gravel sales figures over the period 1997 to 2005 show a slow but steady decline, whereas the annual rate of replenishment of reserves by new permissions shows a highly variable pattern, with no discernible long term trend. More significantly, the rate of replenishment throughout this period has been almost invariably below the annual rate of sales, thus explaining to a very large extent the progressive depletion of reserves. Thompson et al., (2008) gives a more detailed analysis of this and the more complex situation for crushed rock reserves.

While this is not new information and similar conclusions were reached by Brown and Highley (2006), it does mean that the subset of information on which this analysis was carried out is compatible with the wider data, and is effectively a 'different view of the same landscape'. This was important to establish before further analysis was carried out.

The additional analysis sought to identify patterns in the number, tonnage and type of applications that were submitted and determined (or withdrawn) over the period 1997 to 2004. This revealed that the numbers of sand and gravel applications approved, refused or withdrawn did not generally change over that period and that the percentage of successful outcomes each year remained fairly steady, averaging approximately 75%. This implies that the system was generally working well over that period and that there was no systematic change in the way applications were being dealt with. However, this observation predates the systematic changes in the planning system itself that were brought about by the Planning and Compulsory Purchase Act (PCPA) (2004).

In the absence of any obvious trend in the outcome of minerals applications, attention was turned to the rate at which applications were being submitted. The number of sand and gravel applications was found to have varied from year to year with no clearly discernible overall trend, except perhaps for a slight downward trend in numbers since 2000. A slightly more obvious downward trend was evident over the same period in the tonnages associated with new applications. Most significantly,

between 1997 and 2004 the total tonnages being applied for each year (typically 30 to 40 million tonnes) were generally well short of the annual sales figures in those years (typically 55 to 62 million tonnes). Irrespective of the outcome of those applications, the imbalance between sales and new permissions must be substantially attributed to the fact that insufficient applications were being submitted.

Whilst this provides a factual explanation for the observed decline in sand and gravel reserves, it says nothing about the underlying reasons involved. In order to gain an insight into those reasons, it was necessary to turn to a more qualitative analysis of the views held by those responsible for submitting minerals applications (i.e. the quarry operators), those responsible for receiving and determining the applications (the Mineral Planning Authorities); and those responsible for operating the managed aggregate supply system at the regional level (the RAWP secretaries).

QUALITATIVE ANALYSIS

Discussions on the reasons for the observed decline in aggregate reserves were held with all of the RAWP secretaries, 23 MPA officers and representative members of both the Quarry Products Association (QPA) and the British Aggregates Association (BAA).

These discussions related to both crushed rock and sand and gravel applications and took place before the quantitative analysis summarised above had been carried out. The views expressed were therefore influenced more by the existing perceptions held by the interviewees than by any new facts. Somewhat inevitably, the views were strongly influenced by the interviewees' most recent experience, and in particular by the radical changes to the planning system introduced by the PCPA 2004. All of this needs to be borne in mind when comparing the qualitative results with the outcome of the quantitative analysis outlined above.

The various reasons put forward in these discussions can be grouped into three types:

1. Those which are wholly independent of the planning applications process (e.g. relating to periodic adjustments of reserve estimates by the operators);
2. Those associated with the outcome of planning applications (relating to the operation of the planning system); and
3. Those associated with the rate of submission of applications (relating to a range of pre-application factors and influences).

The first of these groups was widely held to be of major significance in the case of crushed rock reserves, where the uncertainties in reserve estimation are intrinsically much greater, but far less significant in the case of sand and gravel reserves.

For sand and gravel, although the quantitative analysis ultimately showed that the determination process was far less significant than the rate of applications being submitted, this was not generally reflected in the qualitative views obtained. These revealed a much stronger degree of concern about the capacity of the planning system to process minerals applications and

about the resulting delays in new permissions being issued. These concerns were shared by operators and planning practitioners and reflected a combination of issues relating to the PCPA 2004 (notably the substantially greater 'front loading' of the new system which tends to delay and may even deter some applications). In some areas the concerns also reflected the progressive reduction, in recent years, in the availability of experienced minerals planning officers. Widespread concerns were also voiced (especially, but not only by operators), about the 'over zealous' interpretation of national landbank policy by some MPAs, where the 'indicator' level of seven years was being regarded as a maximum or target figure, rather than a minimum guideline.

Potential reasons given by interviewees for the insufficiency of new applications included:

- Industry attitudes and approach: MPAs suggested that industry may not be coming forward with applications or proposals at the development plan stage because of changes in investment priorities, short term thinking, sitting on allocated sites (or for reasons unknown). Quarry operators did not think that these were significant factors;
- Insufficient staff resources within industry: MPAs suggested that industry resources have reduced due to company downsizing etc and, since 2004, have been insufficient to handle the complexity of the new planning system. Quarry operators disagreed, noting that, where downsizing has occurred, the work has been outsourced to consultants instead;
- Geological, environmental and land ownership constraints : both MPAs and industry suggested that, in some areas, one or more of these factors are reducing the options available for new planning applications, and reducing the likelihood of successful outcomes;
- Over-stringent use of landbank policies: as well as affecting the outcome of sand and gravel applications in certain areas, most operators considered that such practices are likely to deter new applications in those areas. Many MPAs agreed that this is probably true in some areas.
- Alternatives to primary aggregates: MPAs generally felt that these have reduced demand for primary aggregates (as intended) and thereby increased the length of landbanks, leading to less frequent applications for new reserves. Industry agreed but did not consider this to be a major influence.
- Costs of dealing with environmental issues and preparing planning applications: MPAs considered that the increasing costs to operators could be an increasingly important factor in reducing the frequency of new applications. Industry noted that, whilst this may be true for smaller operators, it was not yet a major deterrent for larger operators. New reserves are essential to the future of all operators and, for larger firms, the costs involved are small in comparison to turnover.
- Delays and uncertainties in the planning system: This largely relates to the effects of the new, more complex and front-loaded planning system which,

since 2004, is seen by both MPAs and operators to have led to some applications being postponed, pending the publication of core policies and site allocations in emerging Minerals Development Frameworks (MDFs). At the time of reporting (March 2008), only one MDF in the whole of England had been successfully adopted (in Hampshire).

- Performance of staff and resources within MPAs: Both MPAs and industry agreed that the growing shortage of experienced officers, and increased emphasis on waste, mean that minerals applications are not being actively encouraged. The problem was seen by almost all consultees as being exacerbated by the complexities of the new planning system.

To varying degrees and in varying proportions in different MPA areas, all of the above factors seem likely to have contributed to a progressive reduction in the frequency of new applications for sand and gravel reserves. Combining this with the findings of the quantitative analysis, it would seem that most (but not all) of these factors are likely to have been collectively responsible for the observed decline in reserves between 1997 and 2005.

Some of the reasons, particularly those relating to, or exacerbated by the effects of the new planning system, have only become relevant since the Planning and Compulsory Purchase Act 2004. This suggests that the decline in reserves might well become steeper before it has a chance to be arrested or reversed.

Since the completion of this study, global economic conditions have taken a very steep downward turn, dramatically reducing the level of construction in the UK (and elsewhere), and thereby greatly diminishing the demand for aggregates. In the short term, this will effectively lengthen the landbanks represented by existing reserves and may thereby provide a breathing space in which to tackle the underlying problems. Unless those problems are addressed, however, any future increase in aggregates supply that is necessary to underpin future economic growth through a recovery of the UK construction industry may be severely compromised.

CONCLUSIONS

These results lend support to the earlier work of the British Geological Survey (Brown and Highley, 2006) and confirm a clear downward trend in sand and gravel aggregate reserves in England, over the period 1997 to 2005. The significance of this decline has been highlighted by the fact that sand and gravel landbanks fell below the Government's minimum guidelines in more than a third of the areas for which figures are reported.

Quantitative evidence over the period from 1997 to 2004/05 has shown that this has primarily been due to an insufficiency of new applications, the tonnage of which has consistently fallen below the annual rate of consumption for almost all of this period. Qualitative evidence has suggested that this is due to a combination of many different factors but also that, in more recent

years, the problem is likely to have been exacerbated by the inadvertent effects of the new planning system brought in by the Planning and Compulsory Purchase Act 2004.

The most recent economic downturn may appear to have diluted immediate concerns by reducing demand. In reality, however, this can be seen, at best, as creating a breathing space in which to resolve the more fundamental underlying problems.

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