



Managing aggregates supply in England

A review of the current system and future options

Open Report OR/08/042



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Keywords

England, aggregates, managed
supply system.

Bibliographical reference

GUNN AG, BATE R, JACKSON
NC, WARD J, MARKER BR,
BROWN TJ AND HIGHLEY DE.
2008. Managing aggregates
supply in England. *British
Geological Survey Open Report*,
OR/08/042. 104pp.

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Published for the Department for Communities and Local Government.

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Acknowledgements

The authors would like to thank the stakeholders interviewed in the course of this research. The authors are also grateful to Andrew Bloodworth for contributing to the stakeholder consultations and for reviewing this report.

This work was funded by the DCLG – BGS Joint Minerals Information Programme.

Whilst due consideration has been given to comments received from all consultees, this report describes the views of the authors alone. References within this publication to any methodology, process, service, manufacturer or company do not constitute its endorsement or recommendation. This publication is intended to inform the land-use planning debate. It is not a statement of planning policy or guidance; nor does it imply Government approval. Whilst every effort has been made to ensure the accuracy of the material in this report, the authors will not be liable for any loss or damages incurred through the use of this report.

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1 Executive Summary

Aggregates are essential for our economic well being and quality of life. Aggregates underpin a key sector of the economy, the construction industry, which requires adequate and steady supplies over the long term. Large quantities are essential to the delivery of the Government's objectives on affordable housing, Sustainable Communities and major, high profile regeneration and construction projects, such as the Thames Gateway, the 2012 Olympics, Crossrail the renewal of power generation capacity and stronger flood and coastal defences. Currently England provides well over 90 per cent of its own primary aggregates needs of about 160 million tonnes per annum. However, land-based resources of aggregates are unevenly distributed. Large amounts are transported between regions to meet demand. Some regions, notably London, the South East and the North West, are reliant on supplies from large reserves in exporting regions, particularly the East Midlands and the South West. However, competing pressures on land make it increasingly difficult for the aggregates industry to find environmentally acceptable sites to work.

For more than 30 years the imbalances in supply and demand have been addressed through a system of national managed aggregates supply. This focuses on supplies of land-won aggregates to ensure that mineral planning policies at regional and local level reflect the need for adequate and steady supply to deficient areas. National and regional *Guidelines* are the first step in determining necessary allocations of land for land-won sand and gravel, and crushed rock extraction. The *Guidelines* are underpinned by aggregates demand forecasts which are regularly reviewed. Regional guidelines are incorporated into Regional Spatial Strategies and are apportioned to Mineral Planning Authority (MPA) level for inclusion in Minerals and Local Development Documents. Landbank policy, reflecting the apportionments, helps to deliver appropriate levels of planning consents.

This study has revealed a general consensus among the aggregates industry, MPAs, the Planning Inspectorate and environmental bodies that the current system of managing aggregates supply has worked well. It has delivered its fundamental objective of continuity of supply. Construction and economic growth have not been constrained by any lack of aggregates. Its chief strengths include its sound technical basis, which is regularly monitored and updated, and its co-operative approach, involving communications between stakeholders, consultation at key stages and publication of key results and decisions. The present system promotes long-term planning, providing a reasonable degree of certainty. This encourages industry to invest and to apply for planning permissions in areas where these are most likely to be granted. This, in turn, assists future planning for infrastructure, biodiversity and life-cycle of land, as well as a longer term approach to safeguarding aggregates resources. Sub-regional apportionment also ensures that individual MPAs do not bear a disproportionate burden of meeting demand.

The study has shown that the total annual indicative cost of operating the current system is £945,000. This is borne by three groups of participants: CLG (£450,000), MPAs (£220,000) and industry (£275,000). Costs are mainly associated with gathering the essential data on sales, movement, consumption and reserves of aggregates required to underpin the system and its associated demand forecasts. These are widely regarded as a small price to pay; equivalent to less than one pence per tonne of aggregates produced and could be seen as an investment rather than a cost.

Comparison of the English system with other European countries with high aggregates production levels - France, Germany and Ireland - has shown that whilst all recognise that demand for aggregates needs to be supplied this is not translated into any national supply policy. There may be several reasons for this. Different geology and resource availability, and supply and demand patterns all have an effect. However, our island status, without neighbours sharing a

common network of roads, railways, rivers and canals, also limits cross-border flows. With the option of international imports largely impractical due to port capacity constraints, a more active process of supply management has proved necessary within England.

This study has evaluated the strengths and weaknesses of the system for managing aggregates supply currently used in England. Four possible alternative supply scenarios were considered against a standard set of criteria. The alternatives are:

- no management of aggregates supply
- regional (but not national) management of aggregates supply
- the national Infrastructure Planning Commission (IPC)
- a new licensing system based on national standards set in legislation.

Evaluation of the no management system suggests that the clarity and consistency that the current system provides would be lost, creating uncertainty for all stakeholders, particularly the industry. Planning decisions would be driven primarily by local interests, probably resulting in more refusals and appeals with an increased number of decisions being made centrally by the Secretary of State. As a result, costs for industry and government would be increased. The ability of the system to respond to changing demand would be greatly diminished and consequently the risk to supply continuity would be increased. This scenario was tested by an economic model which confirmed that there would be significant deleterious industry-wide consequences were the present system to be abandoned.

In a regional management system many of the building blocks of the present arrangements would remain and, in theory, supply could be maintained. However, without a formal mechanism for maintaining inter-regional flows to areas of high demand, a policy of regional self-sufficiency might prevail leading to uncertainties in inter-regional supply in the longer term, particularly for London and the South East.

Both the IPC and licensing options would be attractive from the industry's point of view because decisions would be based largely on technical compliance, creating clarity and speed of process, lowering costs and providing greater certainty of outcome. However, under both options decisions would be made more centrally than at present. There would be less opportunity for local and community inputs. As the impacts of aggregates supply are mainly felt locally the decisions would be unlikely to meet with public approval and confidence, undermining the process. A licensing system would also be outside the planning process and not democratically accountable.

It is concluded that none of the alternative supply scenarios evaluated in this study offers the advantages of the current system. They are less likely to meet the principal objective of continuity of supply or provide satisfactory solutions to addressing regional imbalances in supply and demand for construction aggregates while maintaining local involvement in decision making. The *Guidelines* are effectively a statement of need and are seen as a 'universally accepted' framework for decision-making providing a degree of certainty to all stakeholders.

The reasons for establishing the current system of managing aggregates supply remain valid today. As difficulties of identifying new sites suitable for aggregates extraction increase, so will the need to manage regional variations in supply. However the existing system has some weaknesses. In particular, econometric demand forecasting is considered to be overly complex, too difficult to understand and has been unreliable in the past. It is still perceived by some as essentially 'predict and provide' rather than a 'plan, monitor and manage' approach. It does not take adequate account of other policy objectives and non-economic factors, such as more sustainable future construction and efforts to limit flooding and its impacts. However, there is a widespread view that some form of quantitative assessment of future requirements will continue to be essential for forward planning. The process of sub-regional apportionment is also

contentious because it tends to continue historic supply patterns, which may become more difficult to sustain in the future. There is also some evidence that landbank policy is being applied in an unduly mechanistic and restrictive way by some MPAs, which may put greater pressure on adjacent areas. Furthermore, landbanks do not provide a fully satisfactory indication of the ability of localities to supply aggregates in future. Accordingly a number of potential improvements to the current system have been identified.

The main recommendations of this study are:

1. A system of managing aggregates provision should continue for the benefit of society and the economy.
2. The essential elements of the current system of managing aggregates supply in England should be retained, albeit with some modernisation and improvement.
3. The following measures should be implemented as a basis for improving the current managed aggregates supply system:
 - a) a study to investigate the factors that influence future demand for aggregates to inform national, regional and local policies for aggregates provision
 - b) as an interim measure, a simpler, more transparent approach to demand estimation, based on forward projection of average consumption over a number of years, should be implemented in parallel with the current method of econometric forecasting and the results compared
 - c) informed by the results of a) and b), the most appropriate methodology for demand estimation would be identified
 - d) wider stakeholder participation, for example countryside and environmental organisations and possibly NGOs, in the NCG and, perhaps, RAWPs
 - e) more discussion at the political and public levels in the early stages of developing regional guidelines for, and sub-regional apportionments of, aggregates supply
 - f) a study into the capacity of quarries, particularly rail-linked quarries, to respond to market demands, taking into account landbanks of permitted reserves and the constraints on bringing them to the market
 - g) a national assessment should be prepared on a regular basis of the extent of permitted reserves, the current rate of depletion through sales, the current rate of replenishment through new permissions and the resultant length of landbanks
 - h) monitoring to determine that a consistent and flexible approach is being taken to the application of landbank policies, both for aggregates in general and, where appropriate, for specific qualities of aggregates, when planning applications for extraction are being determined, backed by stronger national planning advice and intervention if this proves not to be the case
 - i) an initiative to improve public awareness of how social and environmental equity of treatment are achieved when aggregates workings are planned and proposed in different regions and MPA areas.

2 Introduction

Aggregates play a key role in creating, maintaining and enhancing our built environment and the infrastructure on which society and our quality of life so depends. Homes, roads, hospitals and schools all depend on aggregates for their very fabrics. Without aggregates we would be able to build very little; they are essential raw materials for the construction industry.

The construction industry is an important sector of the UK economy accounting for 6 per cent of gross domestic product. Its products underpin almost all economic and social activity through the construction and maintenance of:

- | | | |
|---|--|---|
| <ul style="list-style-type: none">• homes• schools• hospitals• retail premises | <ul style="list-style-type: none">• offices• factories• transport links• power stations | <ul style="list-style-type: none">• water treatment plants• waste facilities• flood and coastal defences• leisure facilities |
|---|--|---|

Adequate supplies of aggregates are essential to the delivery of the Government's objectives on affordable housing, Sustainable Communities and major, high profile regeneration and construction projects, such as the Thames Gateway, the 2012 Olympics and Crossrail.

Demographic changes and increasing aspirations will raise the demand for more and better quality homes and associated infrastructure. In a small country like England, with one of the highest population densities in the world, this will increase the already considerable pressures on land. For this reason amongst others future aggregates supply is not assured over the long term, during which time it appears inevitable that the construction industry will continue to require an adequate and steady supply of aggregates in the absence of a major change in bulk mass construction technologies. For the last 30 years aggregates supply in England has been maintained through a system of managed aggregates supply, which ensures that planning policies at regional and local level reflect this need.

This research considers various options to ensure that the needs of society and the economy for aggregates will continue to be met well into the future. In particular it has examined:

- the economic, social and environmental arguments for managing aggregates supply
- whether the current managed aggregates supply system is the most efficient and effective for maintaining a steady and adequate supply
- alternative scenarios for maintaining aggregates supply.

2.1 KEY ISSUES

Construction aggregates are produced in larger quantities than all other minerals in the UK, including oil and gas. They account for about 75 per cent by tonnage of the all minerals extracted from the UK land mass. The construction industry uses large quantities in the manufacture of ready-mixed concrete; mortar; concrete products, such as pipes, paving slabs, tiles, kerb stones and blocks; asphalt; drainage provision and general construction fill. Demand is driven by economic activity and government policy. In general, the stronger the economy the more building will take place. Demand arises principally within large centres of population, notably in London and the South East which together account for around one third of total construction and economic activity in the UK. The value of total construction output in England was £96.8 billion in 2006 and continues to grow in real terms. Whilst modern construction methods use

proportionally less aggregates than previously, even structures built of alternative materials, such as steel and timber, require concrete foundations and extensive use of aggregates for associated infrastructure. A recent study undertaken by BGS examined the need for indigenous aggregates production in England (Brown et al., 2008).

The amount of aggregates required each year by society and the economy is very large, both for new construction and maintenance of the built environment. Typically, 216 million tonnes of aggregates, of all types, are consumed in England each year (Figure 1). The demands of modern construction are high: for example, building a house and its share of associated infrastructure consumes about 400 tonnes of aggregates, while construction of the M6 Toll motorway in the Midlands required 137,500 tonnes per kilometre.

There are two main streams of aggregates supply: ‘primary’ aggregates, quarried from the ground and dredged from the seabed; and ‘recycled and secondary’ aggregates. Recycled aggregates generally arise as a result of reusing materials, such as concrete and brick, from demolished buildings, roads and hard-standings. Secondary aggregates are the by-products of other processes, either minerals-related, such as waste material from slate and china clay extraction, or from electricity generation and manufacturing, such as ash from coal-fired power stations and slags from iron and steelmaking.

England provides well over 90 per cent of its primary aggregates needs. A range of sources contributes to the 170 million tonnes of annual supply. For recycled and secondary aggregates, maximising their use is a key objective of Government policy and supply from these sources has increased significantly in the last decade to around 25 per cent of total supply (56 million tonnes). However, these alternative sources of aggregates are neither sufficient in quantity nor quality to meet all demand, and the limits of suitable available material are being approached.

There are two main types of primary aggregates:

- sand and gravel – natural accumulations of rock fragments and mineral grains mainly deposited by rivers and ice. These occur both on land and on the seabed; and
- crushed rock – obtained from hard, strong rocks by crushing. These include limestone, sandstone and igneous rocks, such as granite.

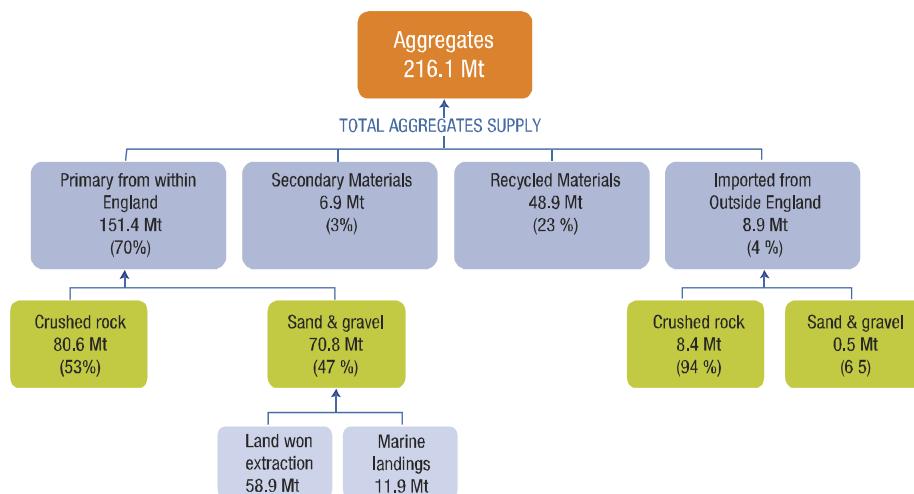


Figure 1 Aggregates supply chain in England, 2005.

Sources: Office for National Statistics, 2006; Capita Symonds, 2006; British Geological Survey, 2007a

These materials have particular technical characteristics and certain types of aggregates are not interchangeable in use. For example, gravel can rarely be used for the production of coated roadstone for surfacing roads.

The distribution of land-based and marine resources of aggregates is fundamentally determined by geology and consequently aggregates, like all minerals, can only be worked where they occur (Figures 2 and 3). This imposes an additional constraint not faced by other forms of development.

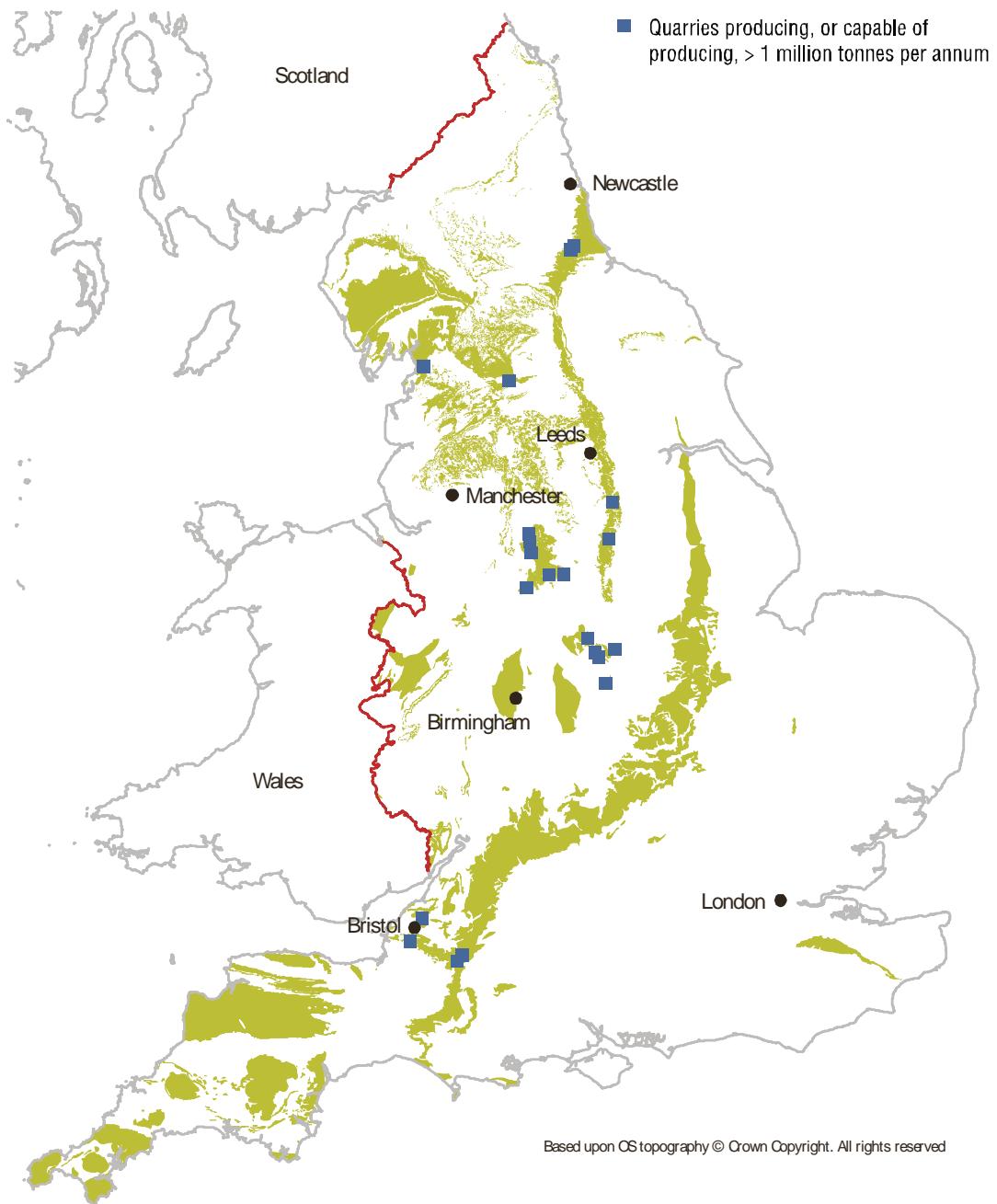


Figure 2 The distribution of crushed rock aggregates resources in England showing the locations of the largest quarries (i.e. those estimated to be producing, or capable of producing, more than one million tonnes per annum).



Figure 3 The distribution of sand and gravel resources in England.

There are large resources of primary aggregates in England but deposits are unevenly distributed. For example, the hard strong rocks from which crushed rock aggregates are produced form the uplands in northern and western England because they are more resistant to erosion. In contrast, southern and eastern England, where demand for aggregates is high, are more low-lying and essentially devoid of hard rock resources. Production in these areas is dominated by land-based sand and gravel, augmented by significant landings of marine-dredged sand and gravel. This regional imbalance in supply and demand requires that large amounts of aggregates are transported from net-producing areas to net-importing areas, for example, from Leicestershire and Somerset to the South East and London, and from Derbyshire and the Peak District to the North West (Figure 4).

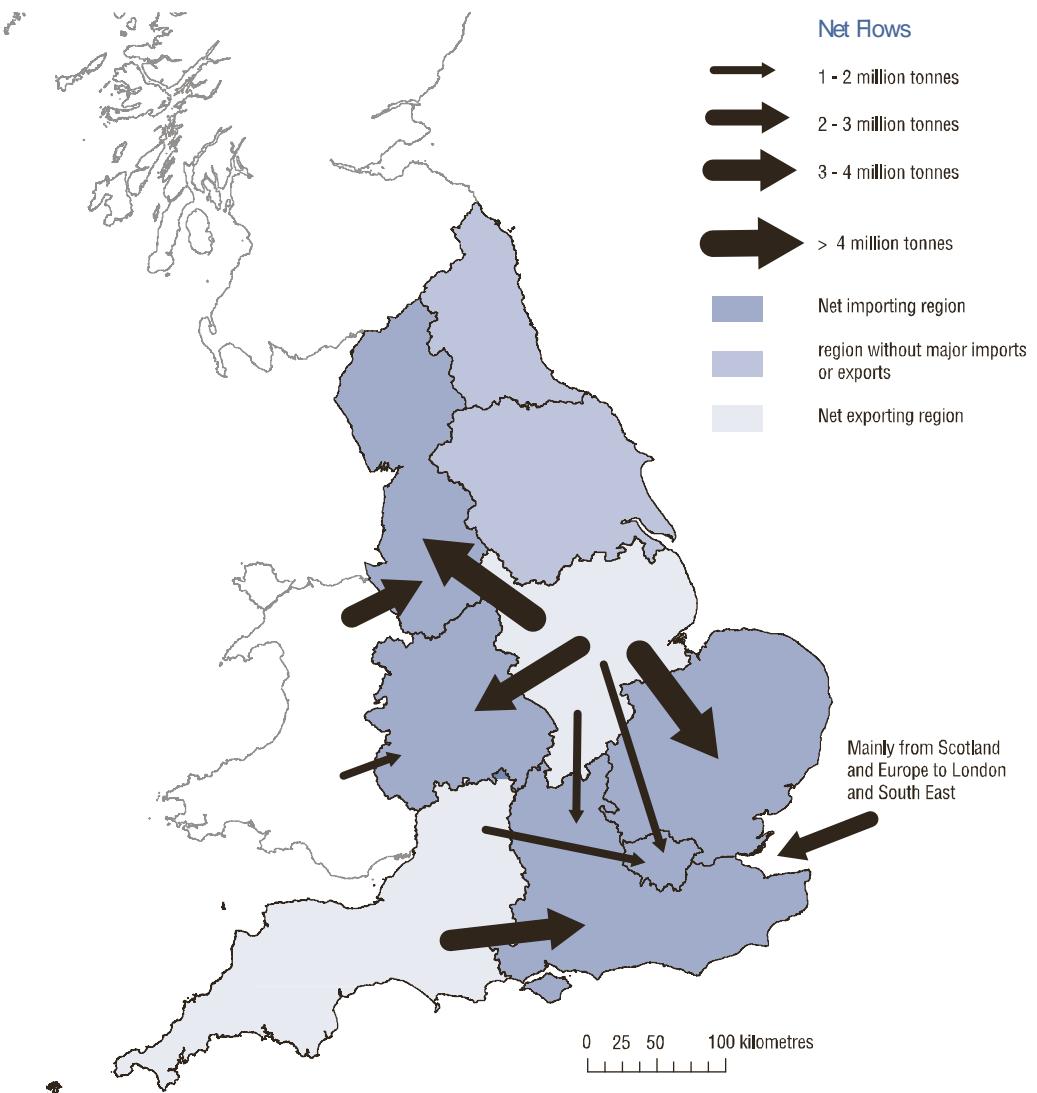


Figure 4 Net inter-regional flows of crushed rock in England in 2005. Imports from Scotland, Wales and Europe are also shown.

Source: British Geological Survey, 2007a

Land-based resources are also being increasingly constrained by environmental designations and other competing uses of land. Consequently it can be difficult for the aggregates industry to find environmentally acceptable sites to work close to market, particularly as the less sensitive sites are exhausted.

Since the late 1970s, when the managed aggregates supply system was first developed, about 5 billion tonnes of land-won sand and gravel, and crushed rock, have been produced in England. Monitoring the size of England's permitted reserves of primary aggregates, and the reasons for changes in them, is therefore crucial to ensuring that adequate and steady supplies are maintained in the long term. Over the last 20-25 years there has been a modest decline in permitted reserves of crushed rock but a more pronounced decline in reserves of sand and gravel (Figure 5). The pattern of reserves for both types of aggregates varies considerably both between and within regions. It can also vary from year to year in individual areas as mineral is worked, new permissions are granted and the reserves at sites are reassessed. Sales of primary aggregates are currently not being fully replenished by newly permitted reserves in most regions, with the position in London and the South East being particularly acute. The reasons for the decline in reserves of primary aggregates and the long-term implications for aggregates supply have been assessed by Thompson et al. (2008).

In relation to current sales, whilst total reserves of crushed rock are notionally equivalent to about 40 years' supply and 10 years' for sand and gravel, the figures mask both regional and local shortages and surpluses. Furthermore, reserves do not give a complete picture of the ability of one area to supply another. There may be some scope for producers with larger reserves to increase output if reserves are used up at other sites. However, this is likely to be constrained for operational, logistical, economic and planning control reasons and may not be sustainable over the longer term. Localities and regions in surplus might be able to assist those in shortage, but any change – even if appropriate – would be gradual and would involve undesirable increases in the distances over which aggregates are transported.

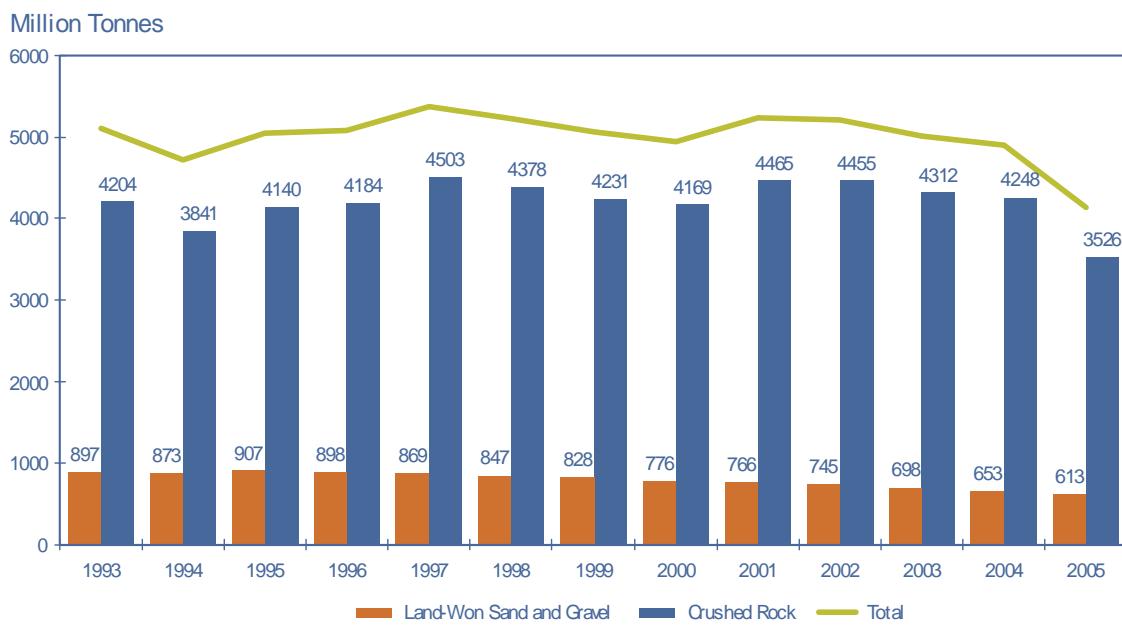


Figure 5 Permitted aggregates reserves in England 1993–2005.

Notes: (i) Annual data are not available before 1993.

(ii) In 2005 dormant sites were excluded; this removes 13 million tonnes of reserves in sand and gravel sites and 364 million tonnes of reserves in crushed rock sites.

Sources: Brown and Highley, 2006; British Geological Survey, 2007a

Key issues

The key issues are:

- providing and maintaining the construction vital to society and the economy will continue to require an adequate and steady, long-term supply of aggregates.
- supply and demand for aggregates is not distributed uniformly throughout England. London and the South East account for 20% of the national consumption of primary aggregates, but supply only about 8% of national sales.
- sources of aggregates are a function of the geology and consequently the required materials can only be produced in certain areas.
- the resulting need for large transfers of aggregates from resource-rich areas to regions with few resources.
- how this imbalance in need is managed.

3 The present system of managed aggregates supply in England

Planning for aggregates extraction is usually controversial. The components of that controversy have for the last 30 years been addressed largely within the framework of the managed aggregates supply system. National aggregates guidelines, issued by the Government, have emerged from this process at intervals and have been supported by various reviews of the issues and of the procedures, through a variety of research studies and public consultations.

3.1 A SUMMARY OF THE SYSTEM

The land use planning system is responsible for enabling the supply of construction aggregates. It sets out a framework of national policy, incorporates appropriate mineral supply policies in regional and local plans and allocates sites for extraction, and wharves and rail depots for deliveries by water and rail. Regional Planning Bodies (RPBs) prepare Regional Spatial Strategies (RSS), and Mineral Planning Authorities (MPAs) prepare Minerals or Local Development Documents (MDDs, LDDs). Together these aim to ensure that sufficient land is made available for mineral working while satisfying a range of Government policies on environmental protection and continuity of supply. However, the geographical imbalances between regions in respect of the most suitable locations for the supply of aggregates and the main centres of demand means that RPBs and MPAs cannot perform their functions in isolation if the national objectives are to be achieved in the most satisfactory way.

3.1.1 Fundamentals of the managed aggregates supply system

The purpose of the managed aggregates supply system in England is to help the planning system address effectively the imbalances in aggregates supply and demand at the national level. It is simultaneously a set of objectives, a process, and a policy set out in two key Government documents. The numerical aggregates supply figures are currently stated in the *National and regional guidelines for aggregates provision in England 2001-2016* (2003). These are often simply called the *Guidelines*. The current *Guidelines* indicate how provision for the supply of aggregates should be met in accordance with anticipated need to 2016. Revised *Guidelines* to 2020 are currently being consulted on (Table 1).

The Government's objectives and planning policies for all minerals are set out in the second key document: Minerals Policy Statement 1: *Planning and Minerals*, (2006) (MPS1). For aggregates these are supplemented with three further objectives specified in Annex 1: *Aggregates*:

- to encourage the use, where practicable, of alternative aggregates in preference to primary aggregates;
- to encourage the supply of marine-dredged sand and gravel to the extent that environmentally acceptable sources can be identified and exploited, within the principles of sustainable development; and
- to make provision for the remainder of supply to be met from land-won sand and gravel and crushed rock.

The managed aggregates supply system assists with the delivery of these objectives. A key objective for mineral planning in MPS1 and a central force shaping the purpose of the managed aggregates supply system, is “*to secure adequate and steady supplies of minerals needed by society and the economy within the limits set by the environment, assessed through sustainability appraisal, without irreversible damage*”.

Regions	Guidelines for Land-won Production				Assumptions					
	Million tonnes									
Regions	Land-won Sand & Gravel		Land-won Crushed Rock		Marine sand & Gravel		Alternative Materials		Net Imports to England	
	Current Guidelines	(Consultation Figures)	Current Guidelines	(Consultation Figures)	Current Assumptions	(Consultation Figures)	Current Assumptions	(Consultation Figures)	Current Assumptions	(Consultation Figures)
South East	212	(195)	35	(25)	120	(121)	118	(130)	85	(31)
London	19	(18)	0	(0)	53	(72)	82	(95)	6	(12)
East of England	256	(236)	8	(8)	32	(14)	110	(117)	8	(7)
East Midlands	165	(174)	523	(500)	0	(0)	95	(110)	0	(0)
West Midlands	162	(165)	93	(82)	0	(0)	88	(100)	16	(23)
South West	106	(85)	453	(412)	9	(12)	121	(142)	4	(5)
North West	55	(52)	167	(154)	4	(15)	101	(117)	50	(55)
Yorkshire & the Humber	73	(78)	220	(212)	3	(5)	128	(133)	0	(3)
North East	20	(24)	119	(99)	9	(20)	76	(50)	0	(0)
England	1068	(1028)	1618	(1492)	230	(259)	919	(993)	169	(136)

Table 1 The current guidelines for aggregates provision in England 2001–2016, with proposed revised guidelines for 2005–2020 in brackets.

Sources: Office of the Deputy Prime Minister, 2003; Department for Communities and Local Government, 2008

The national and regional *Guidelines* document is the main vehicle for achieving continuity of supply while resolving the imbalances of supply and demand. It principally focuses on land-won supplies of primary aggregates and only assumptions are made about alternative supplies (Table 1). The preparation of the *Guidelines*, and the institutional arrangements for this, comprise the main part of the managed aggregates supply process. The arrangements are centred on the work of specially-established Regional Aggregates Working Parties (RAWPs), with one RAWP for each English region and one each in North Wales and South Wales. These are forums comprising officer representatives of MPAs, central government and the aggregates industry, supplemented by special interests as necessary (e.g. on the environment and rail transport). All RAWPs have the same terms of reference (Appendix 1).

At the national level, the Department for Communities and Local Government (CLG) makes the key contribution to the managed aggregates supply system. It is responsible for the preparation and maintenance of policy guidance and for monitoring the performance of the system. The Department also commissions research to inform the system. It also maintains an economic model to project investment in construction activity and a projection of demand for primary aggregates in each region based mainly on projected investment.

At the national level, the work of the RAWPs is guided by a National Co-ordinating Group (NCG), which is chaired by a senior official in the CLG. The membership includes the Chairmen of all the RAWPs, officials from the Scottish Government and the Welsh Assembly Government, the convenor of meetings of the RAWP Secretaries, the aggregates industry trade associations, and other organisations such as Defra, DBERR and Natural England. The Terms of Reference of NCG are at (Appendix 1).

A Technical Sub-Group (TSG) of the NCG is convened as necessary to provide detailed technical advice on specific issues. TSG is chaired by CLG and draws on representatives of the Chairs and Secretaries of the RAWPs, from the trade associations, Natural England, the Welsh Assembly Government, the Scottish Government, the British Geological Survey and other Government Departments as appropriate.

Each RAWP is responsible for collecting and analysing the necessary data on current patterns of aggregates supply, demand, movements and reserves. Combined with advice on likely primary aggregates demand, the RAWPs aim to reach a consensus on the interpretation of the information, which contributes to NCG's deliberations on appropriate levels of supply in each region. NCG advises the Government on policy commitments which should be made in each region for the supply of primary land-won aggregates.

Since devolution in 1998 the involvement of the two Welsh RAWPs and the Welsh Assembly Government has become looser than hitherto. While there is continuing Welsh participation in data collection and assessment, the supply *Guidelines* since 2003 are only set for England. Aggregates supply from Wales to England is now determined by the pattern of past permissions and not by new decisions within Wales with the intention to supply English markets. Future supply to England will increasingly become incidental to permissions granted in response to meeting only Welsh needs.

There are no equivalents of RAWPs in Scotland, but in support of aggregates planning policy in Scotland a Scottish Aggregates Survey was undertaken for 2005 (Scottish Government, 2007). Aggregates planning in Scotland is described in more detail in Chapter 4.

The Government's finalised *Guidelines* allocate supply commitments to each English region for a period of 16 years. Each RAWP also makes recommendations on the apportionment of the regional total between each MPA. This largely technical process is followed by an administrative democratic process to take account of the regional *Guidelines* in the preparation of formal planning documents. RPBs test the regional guidelines when preparing RSS's apportionments to each MPA which are then expected to be incorporated into Local Development Frameworks at the earliest opportunity. The development plan scrutiny process is the opportunity for identifying allocations and testing democratically their practicability and acceptability to each MPA, using the RAWP advice. Once the regional guidelines and the sub-regional apportionments are decided, they are expected to be used by all parties to inform the preparation and consideration of aggregates planning applications, and in taking decisions on those applications. Government policy on aggregates requires MPAs to grant sufficient permissions to maintain appropriate 'landbanks' of permitted reserves, so that continuity of supply is achieved.

An aggregates landbank is the tonnage of already permitted reserves in operational and non-operational sites (but not dormant sites) within a specified local area at a given point in time. It is usually expressed in terms of number of years' supply at an average rate of output. It differs from the use of the term 'landbank' in respect of other sectors (e.g. retail and housing) where it refers to land in ownership that may or may not yet have planning permission held against future development requirements. The aggregates landbank, in contrast, is intended to allow reasonably for the length of time it takes to apply for and obtain permission and then to bring a site into production. It also provides a buffer against sudden increases in demand.

Implementation of the managed aggregates supply system

Implementation of the managed aggregates supply system has been centred on the following procedures:

- facilitating agreement between local government and the minerals industry on future aggregates provision
- accommodating contributions from relevant and special interests
- securing agreement between the parties at technical level prior to testing the suggested policies in a democratic environment
- treating the region as the key scale at which the system functions, with the regions coming together through national mechanisms to address cross-regional and supra-regional issues
- administration of the system by experienced officers in central and local government.

3.1.2 The origins of the managed aggregates supply system: the aggregates planning system 1946-1982¹

The case for Government intervention through planning powers to ensure a continuing supply of construction materials has been recognised since the dawn of the modern planning system. This was progressively developed, particularly through the 1970s, into a nationally-agreed management system that finally emerged in 1982. This has been in operation with modest refinements over the succeeding 25 years.

In the immediate post-war period, the rapidly growing demand for building materials for reconstruction highlighted the need to plan for the supply of aggregates. In 1946 the Waters Committee (chaired by Sir Arnold Waters) was appointed to make recommendations on future policy for the control, under the Town and Country Planning Act, of the extraction of sand and gravel. Over nine years, the Committee quantified supply and demand across England and Wales by ‘service areas’ and in 18 reports identified detailed areas for working. Circular 22/52 was issued to all planning authorities in England and Wales advising them about the incorporation of the reports’ findings into development plans.

During the 1950s, following the report of the Waters Committee, the former Planning Ministries established ‘conferences’ throughout England and Wales to assess supply and demand, although these tended to dissolve on completion of their respective reviews. Then, in 1969, Sand and Gravel Working Parties were established in the south-east of England to report on supply and demand until 1980 (i.e. 10-year forecasts). These Working Parties provided a sub-regional input into a Regional Aggregates Group when this was established in the South East in the early 1970s.

Concern about the land use implications of unexpectedly strong growth in demand for aggregates prompted the then Ministry of Housing and Local Government to establish an Inter-departmental Steering Group of Government officials in 1970. The committee reported in 1971 and amongst other things, concluded that:

- the Ministry (by then the Department of the Environment, DoE) should aim to produce estimates of the demand for aggregates for the next 25 years, on the basis of accepted trends in construction output over the period. The forecasts had been confined to annual estimates of the expected increase in the production of sand and gravel, based on past

¹ This section draws heavily on Annex 2 of *Review of the overall approach to planning for the supply of aggregates*, Ecotec, 1998 (DETR).

production. However, it was suggested that the estimates should draw upon forecasts of demand for different types of construction work, which may involve extensive econometric studies of the construction industry;

- local authority working parties should be set up to examine the likely demand for and supply of sand and gravel, and crushed rock in order to produce a first delineation of deposits which could be accepted as workable from the planning point of view and known as such by the industry: this led to the setting up of Regional Aggregates Working Parties (RAWPs) during the period 1974-1977, along the lines of the South East Regional Aggregates Group;
- studies should be carried out with the aim of replacing high grade aggregates by artificial and low grade aggregates.

The Inter-departmental Report and the increasing controversy about mineral extraction led to the appointment in 1972 of the Committee on Minerals Planning Control (the Stevens Committee) and the Advisory Committee on Aggregates under the chairmanship of Sir Ralph Verney (the Verney Committee). The main conclusion of the Verney Report (*Aggregates - The Way Ahead*), published in 1976, was that “*...the object of a policy for aggregates must be to achieve an adequate and steady supply of materials to meet the needs of the construction industry at minimum money and social cost. Creation of environmental nuisance by aggregates production cannot be totally avoided; but every reasonable effort must be made to minimise the environmental costs*”. It endorsed the new system of Regional Aggregates Working Parties (RAWPs). The Committee recommended that greater attention be paid by local planning authorities to the RAWPs’ conclusions and that all RAWPs should take a consistent approach to aggregates issues by being given the same terms of reference and by answering the same specific questions within the same format (not least to assist with monitoring).

The Verney Committee also identified supply problems in the South East and concluded that by the early 1990s almost all of the gravel-bearing land in the South East which was not agriculturally valuable or environmentally precious would have been worked out. The Report proposed that there were six longer term policy initiatives which needed to be pursued (of which the first particularly fell within the remit of the RAWPs):

- extension of rail facilities for transporting aggregates
- investigation of the possibility of restoring high-quality agricultural land to its original state of productivity after extraction
- reduction of the constraints on marine dredging for gravel
- extension of the use of lightweight aggregates and waste materials in the construction industry
- examination of the potential opportunities for mining aggregates underground
- creation of superquarries, probably in granite deposits, for the production of aggregates to be transported by sea.

The Government agreed with Verney’s recommendations, although it indicated that some initiatives should be regarded as fairly long-term objectives. The Government promoted national integration of the work of the RAWPs by the creation of the National Co-ordinating Group (NCG) in 1979. The RAWPs and NCG undertook the first national exercise to prepare guidelines for aggregates provision for the whole of England and Wales. This was published as Circular 21/82 *Planning Guidelines for Aggregates Provision in England and Wales* (DoE, 1982). The period up to publication of the Circular in 1982 is characterised as a market-led ‘free for all’ by many observers. In other words, aggregates planning took place without any national guidance on demand and supply. The *Guidelines* in 1982 were the first to take a national view and provide an opportunity to address the geographical imbalances between supply and demand, in line with

the Verney recommendations. A review of the Verney recommendations, to determine if they have been met, or are still appropriate today, has been undertaken in a separate study (National Stone Centre, 2008).

3.1.3 A quarter century of aggregates guidelines

Successive Governments have intended that the aggregates supply system should be actively managed, through monitoring of supply, demand, reserves and other issues, and by the updating of guidelines. Circular 50/78 commented: “*Our Departments will from time to time collate and analyse the findings of the working parties and so produce a national picture from which national policy guidelines may be developed and published*”.

In 1988, planning policy began to be re-formulated as a series of *Planning Policy Guidance* notes (PPGs) and *Minerals Planning Guidance* notes (MPGs). Circulars remained only to explain legislation, rather than to promote Government policy. The first review of Circular 21/82 therefore resulted in the *Guidelines* being incorporated into Note 6 in the MPG series, first in 1989 and again in 1994. *Minerals Planning Guidance Note 6* (DoE, 1994) included a commitment to review the overall approach to aggregates planning.

The working of the system was comprehensively reviewed in 1996-98 and largely endorsed as satisfactory, and better than available alternatives (Ecotec, 1998). In the early 1990s a full rationalisation of Planning and Minerals policy notes was begun. As part of this process in 2003 the *Guidelines* were detached from MPG6, which was itself under revision. A further revision of the *Guidelines* was finalised in 2003, which updated the numerical guidance but contained no new policy. These *Guidelines* were issued as a free-standing document, in effect distinguishing aggregates policy in MPG 6 from guidance on implementation, and capable of more flexible review and revision at regular intervals. The MPG series has now been partly replaced by *Minerals Policy Statements* (MPSs). Policy supporting the managed aggregates supply system was incorporated into MPS1 in 2006, with the intention that future *Guidelines* will continue to be issued separately.

Government policies on managed aggregates supply

Circular 50/78, August 1978. *Report of the Advisory Committee on Aggregates*

Circular 21/82, 1982. *Planning Guidelines for Aggregates Provision in England and Wales*

Mineral Planning Guidance 6, 1989. *Guidelines for Aggregates Provision in England and Wales*

Mineral Planning Guidance 6, April 1994. *Guidelines for Aggregates Provision in England*

Mineral Planning Guidance 6, June 2003. *National and Regional Guidelines for Aggregates Provision in England, 2001-2016*

Minerals Policy Statement 1, November 2006. *Planning and Minerals* (including Annex 1: *Aggregates*)

The managed aggregates supply system is also described in *Planning and Minerals: Practice Guide* (paragraphs 60-81) accompanying MPS1.

3.1.4 Data-gathering

An essential prerequisite for monitoring and managing aggregates supply in England is reliable and up-to-date information on sales (Figure 6), movement, consumption and permitted reserves of primary aggregates. Similar information is required on the arisings and use of alternatives to primary aggregates, such as selected mineral wastes; construction, demolition and extraction wastes; and selected industrial by-products. These requirements are underpinned by four key surveys commissioned by CLG. The data are used to monitor and, as necessary, revise the *Guidelines*.

The *Annual Minerals Raised Inquiry (AMRI)* is a statutory survey carried out by the Office for National Statistics (ONS). It collects and publishes information on the volume and value of extractors' sales of non-energy minerals, including primary aggregates by type and broad end use. The survey has produced a consistent time series of data since 1973 on which aggregates demand forecasts for England are, in part, based.

Aggregate Minerals (AM) Surveys, undertaken every fourth year since 1973, provide detailed information on regional and national sales, flows, transportation, consumption and permitted reserves of primary aggregates in England and Wales. The surveys are central to the managed aggregates supply system and the preparation, monitoring and review of the *Guidelines*. The aggregates industry is very supportive of this detailed work and has been crucial in facilitating its conduct. AM surveys collate data collected by MPAs from aggregates producers at every quarry and marine wharf with a valid planning permission. The data are then collated at regional level by the appropriate RAWP and at national level by a contractor.

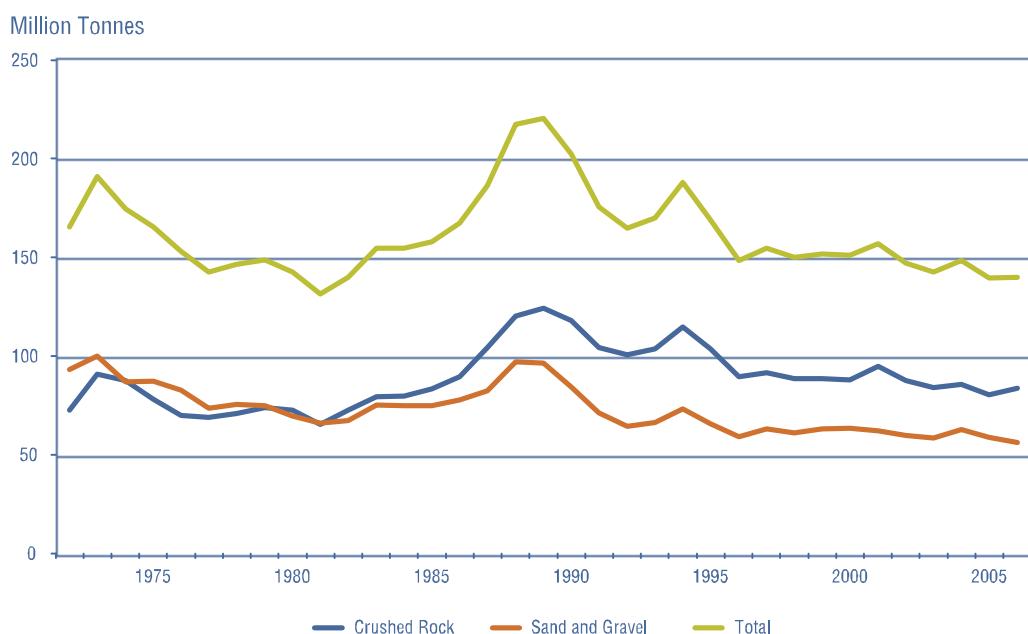


Figure 6 Sales of land-won primary aggregates in England, 1972 – 2006.

Source: Office for National Statistics, 2006

AM surveys collect data not only on annual sales of the main types of primary aggregates together with their broad end-uses, but also uniquely on:

- sales of primary aggregates by destination allowing a calculation of consumption at regional level and, more recently, sub-regional level
- sales by transport method
- sales by environmental designation type

- reserves remaining with planning permission on a specified date, including reserves by environmental designation type.

Surveys of alternative aggregates providing comprehensive data on the arisings (potential supply) and use of alternative aggregates has only become available in recent years. The most recent survey in 2005 was carried out by contractors for CLG and published as *Survey of the Arisings and Use of Alternatives to Primary Aggregates in England, 2005* (Capita Symonds, 2006). This study had two elements:

- (i) A survey of construction, demolition and excavation waste, which is the most important source of alternative aggregates, comprising materials, such as concrete, bricks, tiles, soil and rock. Comparable surveys were carried out for England in 2001, 2003 and 2005.
- (ii) A survey of ‘other materials’ used as alternatives to primary aggregates. These mainly consist of mineral wastes, such as china clay waste, slate waste and colliery spoil, and industrial by-products, such as power station ashes, iron and steel slags, spent railway track ballast, spent foundry sand and waste glass. An estimate is also included of recycled asphalt planings.

Annual Monitoring Reports are published by each RAWP. These are based on information provided annually by MPAs on planning applications, planning permissions and refusals for mineral working. This indicates the rate of replenishment of reserves and the scope for continued production. The RAWPs annually collect, collate and publish in these *Annual Monitoring Reports* data provided by mineral companies on aggregates supply, uses and permitted reserves of primary aggregates. This information is collated at regional level by the RAWP from data collected by MPAs.

3.1.5 National demand forecasts

The Verney Committee agreed with the 1970 Inter-departmental Steering Group that demand forecasts for aggregates should be used to underpin a supply strategy and “*be the basis of decision making by both central and local government*”. The Committee developed a detailed approach to the role of demand forecasting, which still informs the managed aggregates supply system process.

Reliably estimating future demand for aggregates has been a challenging task. Despite considerable effort to apply the Verney principles, most demand forecasts turned out to be inaccurate, particularly in the period to 2000. As a result, the forecasting methodology has been kept under continual review, though this has become a matter of progressive refinement rather than fundamental revision. Aggregates demand forecasts remain the central component of the managed aggregates supply system. The methodology used for generating the forecasts has remained the same in principle and structure since it was developed and tested in the period 1990–92. However, the method has been adjusted in detail over the years, particularly to inform the June 2003 and draft 2008 national *Guidelines*.

The forecasting model relates aggregates consumption to construction activity (Figure 7). Construction activity is divided into two broad categories based on intensity of aggregates use (i.e. tonnes of aggregates used per £thousand invested in construction) which are forecast separately. The ‘more intensive’ category covers all infrastructure and public work, and new housing, while the ‘less intensive’ category covers all industrial and commercial work and the repair, maintenance and improvement of housing and private construction. Intensity of aggregates use has followed a generally downward course since 1994 (Figure 8), which is reflected in the forecast by a trend variable.

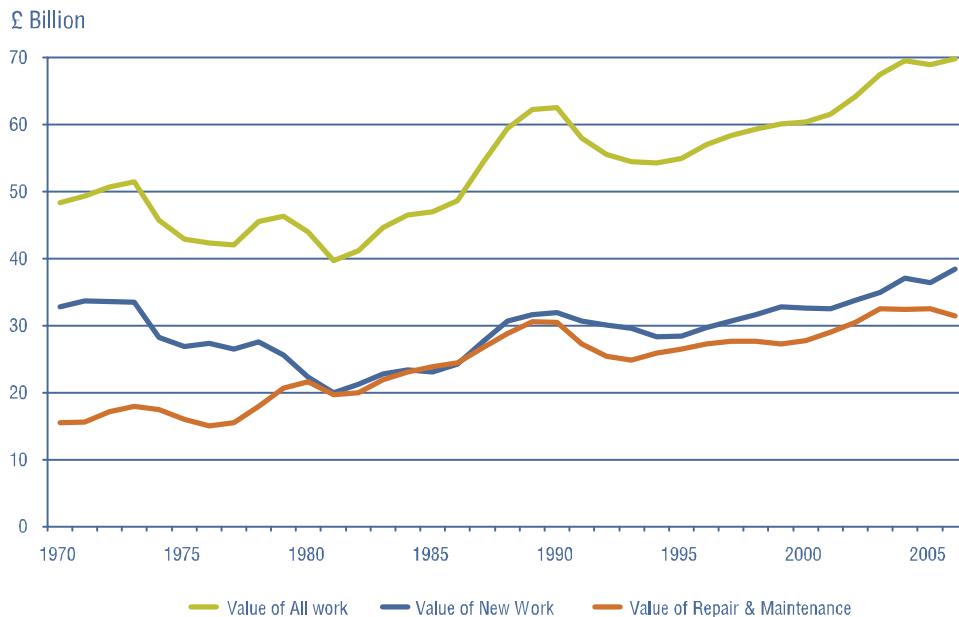


Figure 7 Value of construction output in Great Britain, 1970 – 2006 (in constant 2000 prices).

Source: British Geological Survey, 2007b

The demand forecast also distinguishes demands for primary aggregates and alternatives. Secondary and recycled materials now constitute 25 per cent of supply and their intended contribution is taken into account within the model as a priority before calculating the need for excavating primary aggregates. A ‘supply side’ assumption is used to do this. The Government has a target that by 2016 the quantity of secondary and recycled aggregates shall be 65 million tonnes per annum. These alternatives are estimated to have provided 53 million tonnes in 2001 and nearly 58 million tonnes in 2005. Use of these alternative aggregates is assumed to rise to the target 2016 level and then remain constant. Assumptions are also made about marine-dredged aggregates and imported aggregates, with land-won aggregates then calculated as a residual. Regional forecasts of demand for aggregates are also prepared, allowing for regional variations in anticipated construction output: these are constrained to ensure that they sum to the national total.

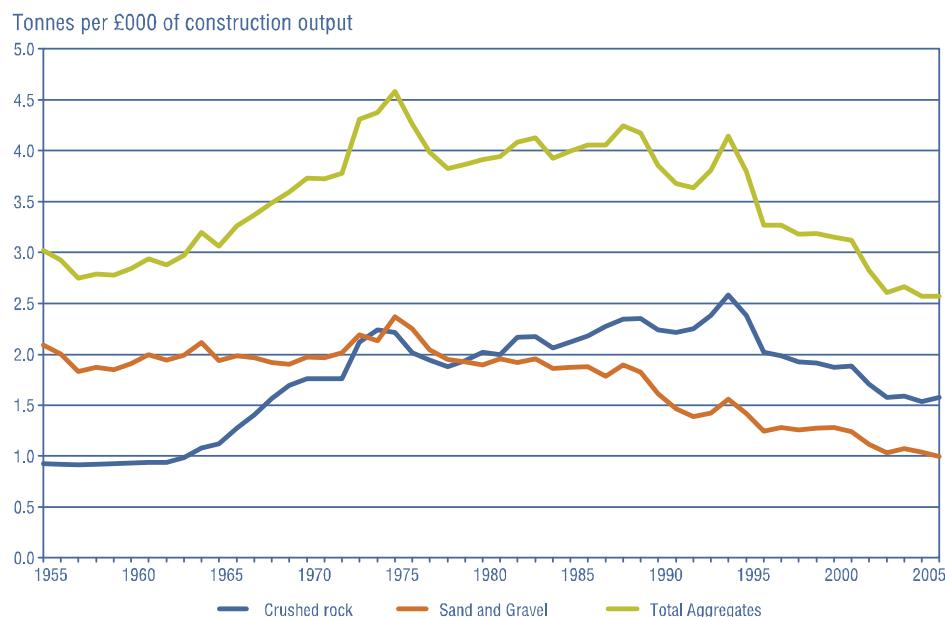


Figure 8 Intensity of use of primary aggregates per unit (£1000) of construction output in constant values, 1955 – 2006.

Source: British Geological Survey, 2007b

3.1.6 Regional breakdown of supply requirements

The national and regional *Guidelines* set out anticipated production figures for land-won aggregates to be supplied by each region and to be incorporated in RSS. In addition assumptions are made about contributions to supply in each region from marine sand and gravel, the production of alternative materials and net imports to England. The Government sets the division between the main sources of aggregates to meet overall national requirements as a matter of policy. Alternative sources are fixed first, then imports to England, and finally a division is made between marine and land-won sources.

The demand forecasts do not divide the land-won fraction of anticipated supply between crushed rock and sand and gravel. However, this distinction is made in the national and regional *Guidelines* and is a matter of policy. The proportions typically reflect the balance between the two land-won sources identified in the most recent AM survey.

Draft *Guidelines* are issued for general consultation. The production figures for land-won aggregates in each region assume as a starting point for discussion that the ratio of production to consumption within a region will remain unchanged from that identified by the most recent AM survey. The draft *Guidelines* therefore do not take into account any change in the ability of regions to contribute to supply in future compared with recent experience. This and other issues which might influence actual levels of future supply are evaluated before the final *Guidelines* are issued.

Consumption of primary aggregates and aggregates flows for two selected regions are shown in Figures 9 and 10.

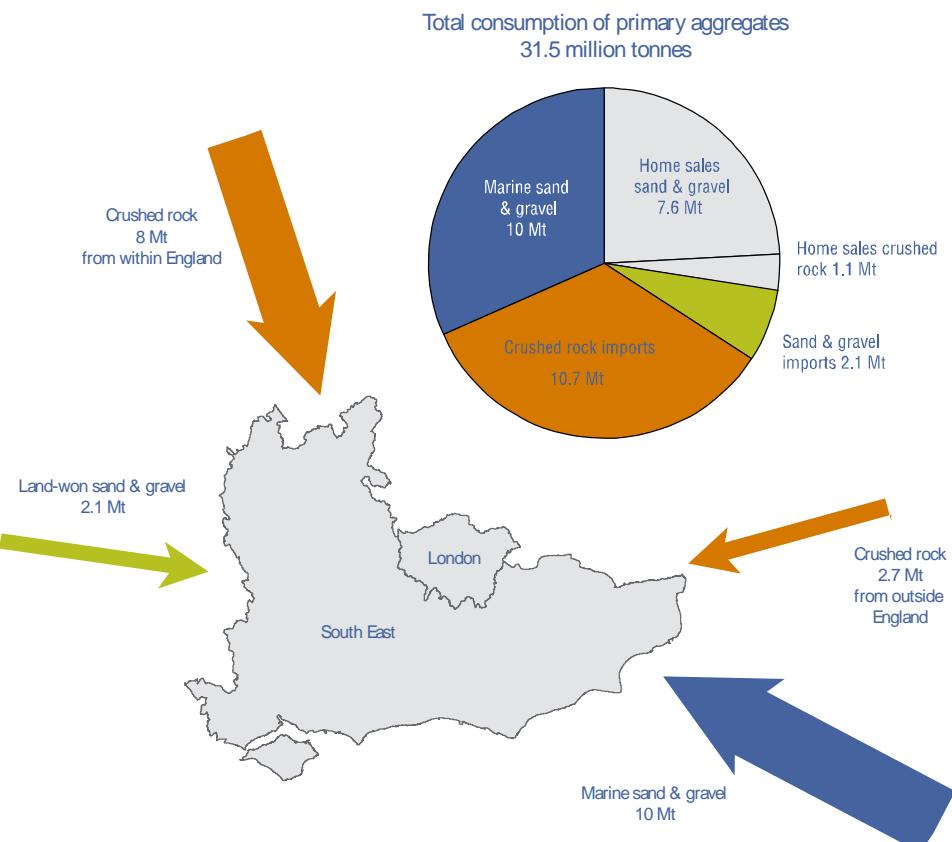


Figure 9 Consumption of primary aggregates and aggregates flows into London and the South East, 2005.

Source: British Geological Survey, 2007a

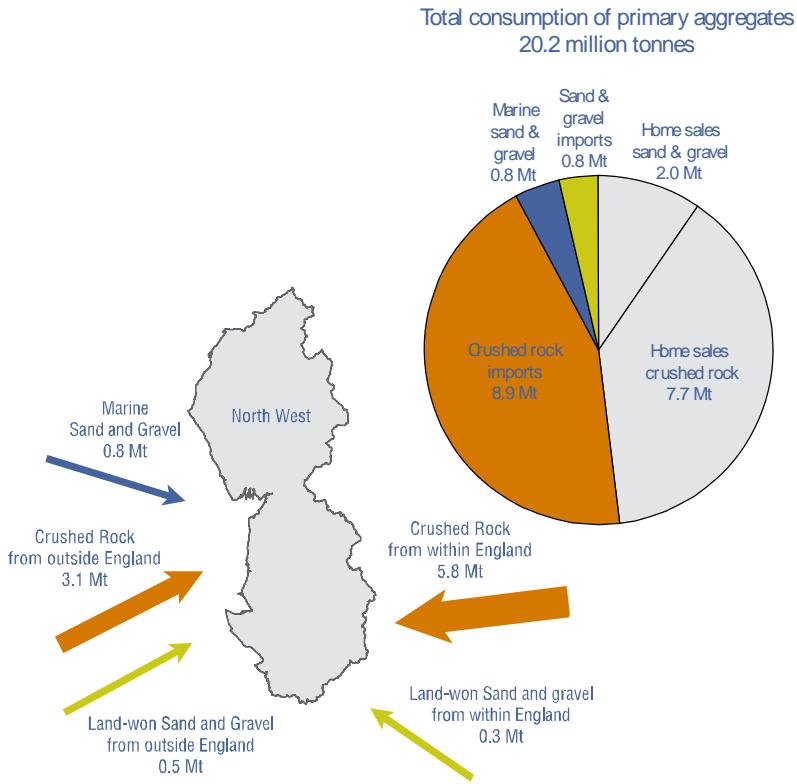


Figure 10 Consumption of primary aggregates and aggregates flows into the North West, 2005.

Source: British Geological Survey, 2007a

3.1.7 Sub-regional apportionment of the *Guidelines*

Regional estimates are of use in preparing RSSs, but they must be broken down further if they are to be used in MPAs' development documents. The 2003 *Guidelines* advise RPBs on the process of sub-regional apportionment of the regional production requirements. Proportions of recent regional production may be a starting point. However, RPBs are encouraged to assess the likely environmental impacts of any additional extraction in relation to the ability of aggregates-producing areas concerned to absorb such impacts, especially impacts on protected areas and the populations affected. The RPB should consult its constituent MPAs and RAWP to determine whether the regional guideline can be met at acceptable environmental cost, and report the results to the Government.

3.1.8 Continuity of supply

Local and regional planning policies identify the contribution to supply which each MPA is expected to make and to include in its MDD/LDD. The final procedural step is then to achieve the objective of continuity of supply as noted above. All MPAs are encouraged by Government policy to ensure that the minerals industry is granted sufficient planning permissions for aggregates extraction to enable the market to be supplied at the required rate.

Policy on landbanks is an integral part of the managed aggregates supply system. MPS1: Annex 1 requires MPAs to use landbanks as an indicator of when new permissions for aggregates extraction are likely to be needed. The landbank indicators are at least seven years for sand and gravel at the intended rate of supply and at least ten years for crushed rock. A longer period may be appropriate to take account of the need to supply a range of aggregates types and qualities, the location of permitted reserves relative to markets, and the productive capacity of permitted sites. These periods are intended to allow for the length of time it takes to apply for and obtain permission for aggregates extraction and then to bring a site into production. The arrangement depends on mineral companies submitting sufficient applications and on these being acceptable

in terms of location and impact on amenities. To facilitate this, MPAs are required to identify in their plans potentially suitable land on which applications are likely to be permissible. There will be a more pressing case for landbanks larger than the minimum if there is a need to supply a range of types of aggregates within an MPA or if substantial reserves are held in a small number of permissions where they may largely be unavailable for some years. In either case, maintaining continuity of supply within an MPA could indicate a need to grant more permissions.

3.2 INDICATIVE COSTS ASSOCIATED WITH OPERATING THE CURRENT SYSTEM OF MANAGED AGGREGATES SUPPLY

The costs associated with operating the current system of managed aggregates supply in England are borne by three main groups of participants:

- Communities and Local Government (CLG)
- Mineral Planning Authorities (MPAs)
- Industry

Each group of participants was invited to provide indicative annual operating costs and costs relating to the comprehensive four-yearly Aggregate Minerals Survey (AM). The results received are summarised below.

CLG

The costs borne by CLG relate mainly to the preparation and maintenance of policy guidance and monitoring the performance of the system, the commissioning of research (essentially in the form of surveys) to inform the system, the direct cost of the RAWPS and the operation of the NCG and the TSG.

The annual cost to CLG is estimated to be £450,000.

MPAs

The MPAs, of which there are 159 in England, incur costs largely related to attendance at NCG, TSG and RAWP meetings in the relevant nine English regions, undertaking annual monitoring, and completing and collating the four-yearly annual Aggregate Minerals Survey (AM) returns.

The annual total cost to MPAs is estimated to be £220,000.

Industry

The costs borne by industry also largely relate to attendance at NCG, TSG and RAWP meetings in the relevant nine English regions. The main difference to the MPAs is the time taken by companies collecting and collating the data for the Annual Minerals Raised Inquiry (AMRI) and the four-yearly AM surveys.

The annual total cost to industry is estimated to be £275,000.

3.2.1 Total costs borne by the three main groups of participants

The total indicative annualised costs associated with operating the current system based on the three main participant groups is £945,000. A breakdown of these costs is shown in Appendix 2.

- | | |
|----------------|-----------------|
| • CLG | £450,000 |
| • MPAs | £220,000 |
| • Industry | £275,000 |
| • Total | £945,000 |

3.2.2 Discussion

The costs of managing the current managed aggregates supply system need to be placed in context. The *Guidelines* help to facilitate the operation of the managed aggregates supply system and also incorporate assumptions which heavily influence the contribution to total supply in England of marine and alternative aggregates. Operation of the current system of managed aggregates supply facilitated the production of about 140 million tonnes of primary land-won aggregates in England in 2005 to help meet the demand arising from the construction industry and other sectors of the economy.

In the absence of quantified data it is at least arguable that individual companies and authorities would incur greater costs in proving, respectively, the need for the material to support planning applications, and in assessing and deciding those applications. In the consultation exercise undertaken in this study this view was supported unanimously by mineral companies. Contested cases going to appeal or to the High Court will cost considerably more (Appendix 2).

Based on the AM2005 land-won production figure of 140 million tonnes and the estimated total annual cost of operating the managed aggregates supply system borne by the three key participant groups, the indicative cost of operating the current system expressed as a notional rate per tonne is shown in Table 2. The indicative total cost of the current system is approximately 0.7 pence per tonne in England.

Item	CLG	MPAs	Industry	Total
Tonnes per annum produced in 2005	140,000,000	140,000,000	140,000,000	140,000,000
Indicative annual cost in pounds	450,000	220,000	275,000	945,000
Indicative annual cost pence per tonne	0.3	0.2	0.2	0.7

Table 2 Indicative costs of the managed aggregates supply system to the main participants.

3.3 CONSTRAINTS ON THE ACCESS TO AGGREGATES FOR EXTRACTION

3.3.1 Introduction

Although there are extensive aggregates resources in England, albeit somewhat unevenly distributed, the industry reports increasing difficulty in finding environmentally acceptable sites to work. These difficulties are becoming more acute as less constrained locations are used up leaving only more constrained sites. With a population of about 51 million in 2006 and an average population density of 390 persons per km², England is one of the most densely populated countries in the world. Not all areas are equally densely populated, however, with the North West having the greatest population density outside London. The large population makes substantial demands for construction aggregates and other minerals, as well as for water, food, wood products and energy. Virtually all the construction materials and water, and some of the other natural resources, are supplied indigenously from land not in urban development.

Aggregates extraction and transport has almost always some potentially harmful environmental impacts. These impacts need to be minimised and mitigated through modern planning conditions and sound site management practices. Effective planning for the supply of aggregates depends, therefore, on identifying locations where extraction will have least effect on the landscape,

environment and the quality of life of individuals, undertaking operations with minimum environmental impacts, and ensuring high-quality restoration to appropriate subsequent uses.

3.3.2 Competition for access to rural land

The location of an aggregates deposit, together with its size and quality, is fundamentally determined by geology. If there are no workable resources there can clearly be no production. However, a wide range of factors, in addition to resource availability and quality, determine whether a potential site can be viably worked and whether a potentially workable aggregates resource can be converted to an aggregates reserve with planning permission (Figure 11). Firstly a resource will only be developed if it has ready access to a market or if adequate transport infrastructure can be put in place to provide viable access to a market. Secondly the agreement of the land and mineral rights owners must be obtained. Many landowners may not wish to see their land developed for minerals and it may be the development option of last resort if the land is well located for other uses. (In some circumstances compulsory purchase rights may be obtained through the Mines (Working Facilities and Support) Act (1966) but this is rarely used). Most importantly, however, England has some outstanding landscapes, wildlife, cultural and historical assets (Appendix 3), which are also highly valued for their recreational opportunities. This is particularly the case for hard rock, where the geology that produces good quality aggregates can also create high quality landscape. A hierarchy of designations is used to protect these areas from the adverse effects of development. There is a substantial area of designated land in England, as shown in Table 3.

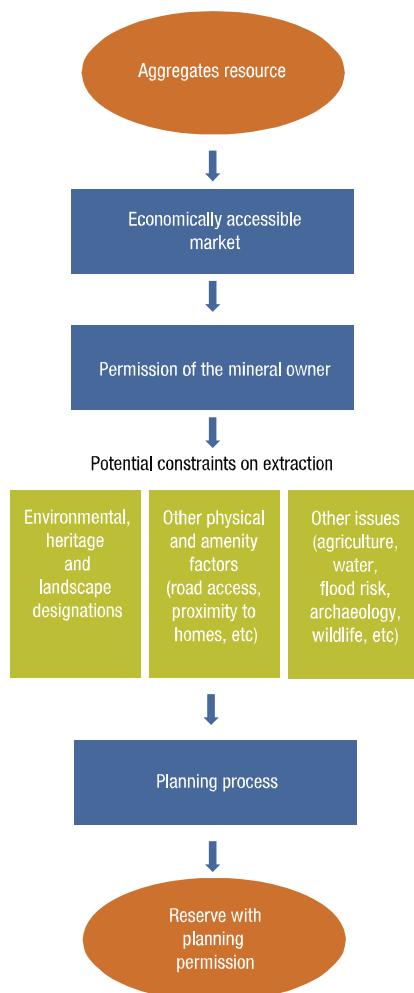


Figure 11 Key factors in the conversion of an aggregates resource into a reserve with planning permission.

	Number of sites	Area (km ²)	% of total land
National Park	9	10,523	8
Area of Outstanding Natural Beauty (AONB)	36	20,345	16
Special Protection Area (SPA) / Special Area of Conservation (SAC)	240	8,131	6
Site of Special Scientific Interest (SSSIs)	4,101	10,146	8
Urban Area		11,000	8.3
All surface mineral working with planning permission*		1136	0.87
(Sand and gravel)		270	0.21
(Crushed rock)		183	0.14

Note: The areas are not mutually exclusive and all SPAs and SACs are SSSIs.

* Data for 2000.

Table 3 Selected national and international environmental designations in England compared with other uses.

Source: Mankelow et al., 2008

International obligations for habitat and wildlife protection impose the strongest constraint, followed by nationally important constraints and then constraints of a more local nature. Whilst mineral working is not totally precluded from designated areas, the policies which apply to national designations, such as National Parks and AONBs, are restrictive and for international designations (SACs, SPAs and RAMSAR Convention Wetland Sites) they are extremely so. In addition, a wide range of other practical and operational issues is taken into account, such as agricultural land quality, groundwater and bird strike factors, all of which may place limiting constraints on extraction. As new EU Directives and UK legislation and regulation emerge, the numbers and types of constraint, and the stringency with which they are applied, are increasing. The cumulative impact of these is reducing access to potentially workable resources and impacting on future supply options.

Other factors that are considered by the planning system and other regulatory regimes in determining if aggregates working should be permitted are listed below:

- Adequacy of the local road system and the traffic impact on local settlements
- Safe access onto the highway
- Dust emissions from each part of the site
- Air pollutant emissions from fixed and mobile plant (smoke, fumes, particulates, odour)
- Impact of blasting (vibration, air over-pressure and fly-rock)
- Impact on flood risk at the site and areas that may be affected by run off from it
- Impact on land drainage
- Risk to groundwater flows and water supplies
- Risk to groundwater quality and water supplies
- Risk of watercourse pollution
- Impact of working and restoration on agricultural land quality
- Impact on the viability of farm units
- Archaeological issues
- The potential danger to aircraft from birds being attracted to the site

- Noise emissions and their impacts
- Impact on public rights of way and other recreational activities
- Visual screening (e.g. by landforms or tree planting)
- Other impacts on local amenities, including illumination, landscape features and operating hours
- Cumulative impacts in combination with other mineral workings
- Impacts on other uses of the site, including pipelines and overhead wires
- Impacts on adjacent land (as well as all the above), including maintaining support
- Geotechnical considerations, including Health and Safety aspects of site operation.

An important feature of policy and practice in England (and the rest of the UK) is that constraints on competing activities – to uphold the priority of the specific interest in question – are not absolute: there is scope to argue for the over-riding interest of something else. Furthermore, policy in England constrains development in the countryside outside designated areas as well as inside: only the degree of regulation and the priorities vary. PPS 7 *Sustainable development in rural areas* states that “*New building development in the open countryside away from existing settlements, or outside areas allocated for development in development plans, should be strictly controlled; the Government’s overall aim is to protect the countryside for the sake of its intrinsic character and beauty, the diversity of its landscapes, heritage and wildlife, the wealth of its natural resources and so it may be enjoyed by all.*” This means that the process of establishing priorities between competing uses of land is undertaken in each and every area and for each and every type of development or land use, informed by policy. This arrangement is different from, and generally more sophisticated than, practice in many other countries, where wider constraints on development apply more weakly, resulting in development often being allowed up to the boundary of the designated land.

3.3.3 Planning for aggregates extraction within a framework of policy

The modern town and country planning system in England was established in 1947, and is one of the longest-applied and best-developed land use regulation systems in the world. Its method of operation is to try so far as practicable to accommodate as many interests as possible within the scope of each decision, rather than give comprehensive advantage to one or two interests at the expense of others. This requires awareness on the part of all involved in the planning system of the legitimate concerns expressed by others and a flexibility of approach which searches for mutually acceptable solutions. The planning system therefore acts as a broker between competing interests, searching for the best possible combination of economic, social, environmental and resource conservation outcomes.

The managed aggregates supply system aims to ensure continuity of aggregates supply, while recognising that there are numerous constraints on extraction. Sometimes the constraints on working can be overcome, such as by redesigning operations or by other practical adjustments. On other occasions, the need for aggregates outweighs the merits of the other interests in a site, and extraction is permitted. On some occasions, though, the priorities are reversed and aggregates working is not permitted. In view of the capital at risk mineral companies only submit planning applications for sites which they consider to have a reasonable chance of obtaining permission. Thus there are significant areas with workable mineral resources which are not worked at all. The combined effect of the constraints is that aggregates extraction takes place in locations where the planning system accepts that this is the priority activity, and does not take place over large areas where it would be preferred by mineral companies in the absence of constraints.

This, of course, is the purpose of the planning system: to direct aggregates extraction (and each other type of development) away from areas where it would cause harm and towards areas where it offers the greatest benefits. The constraints in certain areas are matched by specific support for

extraction in others, i.e. through allocation in MDDs/LDDs. This policy support can be crucial in establishing the priority to be given to aggregates working, noting that people likely to be affected by operations might otherwise be able to persuade MPAs not to allow extraction to take place at all. Constraints on working should therefore not be seen in isolation but be understood in a context of the Government's determination to ensure a continuing supply of aggregates through the operation of the planning system. The planning system also has an important role to play in safeguarding aggregates resources from unnecessary sterilisation by surface development.

An important feature of the planning system in England is its democratic nature. Initial decisions on which land to allocate (or not allocate) for aggregates extraction, and which planning applications to approve or refuse, are taken by locally elected Councillors. The bedrock of the system is based on the belief that local representatives are best placed to take these decisions, within a framework of policy, and that public toleration – even appreciation – of planning outcomes will only be possible if people feel that their views have been properly heard and taken into account in those decisions. It is inevitable that different people attach different weight to any particular issue or interest, and that the balance of advantage in land allocations and development control decisions has an unpredictable element.

The planning system includes a range of checks and balances to discourage decisions clearly contrary to policy and to review questionable decisions. In addition to local rights to lobby councillors, attend planning Committees and Council meetings, and in some cases to address them before decisions, there is a right of appeal to the Secretary of State by frustrated applicants, and an opportunity for the Secretary of State to 'call-in' individual cases (usually approvals) for his/her own decision. The discretionary element at each stage (whether to allocate a site in a plan or approve a planning application, whether to call-in an application, or whether to appeal a refusal) leaves considerable scope for flexibility in outcomes. While all parties continue to emphasise the importance of policy as a basis for decisions, the apparent certainty of formal constraints on aggregates operations need not always be definitive of outcomes. Cases still have to be decided in the light of all material considerations.

A recent study by BGS described the impacts of policy and regulations on the working of aggregates in designated areas and examined alternative supply options (Mankelow et al., 2008).

3.4 STRENGTHS AND WEAKNESSES OF THE CURRENT MANAGED AGGREGATES SUPPLY SYSTEM

The strengths and weaknesses of the current managed aggregates supply system are summarised in Table 4. The strengths and weaknesses are relative to there being no managed aggregates supply system at all, though some can also be taken as relative to other possible managed supply systems. No attempt is made to weight the importance of each statement. Table 4 is based on the authors' views and also those expressed in interviews with a range of stakeholders (industry, MPAs and NGOs). A summary of stakeholder views is given in Appendix 4.

Table 4 Summary of the strengths and weaknesses of the current managed aggregates supply system.

	Strengths	Weaknesses
1. Origin and overall effectiveness of the system	The present system was to a large extent proposed by the Verney Committee in 1976 and implemented by the Government at the time in response. It has therefore been a direct outcome of a considered and independent review of the issues at that time, and has survived changes to both Governments and other aspects of the planning system. It has worked well to deliver continuity of supply for 30 years.	The long term planning built into the managed aggregates supply system is based on demand forecasts for aggregates. This has been challenged as being a 'predict and provide' approach, as estimation of demand is based on an assessment of past trends and future construction expenditure and the expectation that this demand will be met.
2. The evidence-based nature of the system	The system has a strong technical base that leads to detailed proposals for the distribution of supply obligations, first between regions and subsequently between MPAs in each region and is integrated into the spatial planning process. The system is based on evidence and rational review with elected members taking account of the proposals in their decision making. The system is therefore a good illustration of how a technical system can work well on a locally politically awkward issue, where arguments about 'national need' are unlikely to be otherwise given due emphasis.	Political contributions are introduced at a fairly late stage in the process and are, in effect, limited to commenting on details. Political judgements rarely depart much from the technical advice. This can give the impression that the arrangements are contrived by like-minded technical experts to continue, broadly, the current supply pattern as the easiest arrangement to agree. There is limited scope for democratic procedures to introduce alternative scenarios and assumptions in any meaningful way. The opportunities for comment are much too late in the process.
3. Meeting national policy for a steady and adequate supply of aggregates	Since the managed aggregates supply system was introduced in the 1970s, supply continuity has been maintained and construction and economic growth have not been constrained by a lack of aggregates.	Supply shortfalls do exist in some areas (as measured by allocated land being insufficient to achieve provision set out in the <i>Guidelines</i> and/or permitted reserves falling below landbank requirements).
4. Enforcement of the regional guidelines and sub-regional apportionments	In general, the regional guidelines and sub-regional apportionments have been observed by Regional Planning Bodies and MPAs. The system of apportionment ensures that the environmental and amenity 'burden' of aggregates extraction is shared among MPAs.	There are no sanctions available to enforce the <i>Guidelines</i> and sub-regional apportionments although, in practice, these carry considerable weight and have been largely implemented to date.
5. Strategic planning of land use and of investment	The present system promotes long-term planning, providing a degree of certainty for all stakeholders. Industry investment and planning applications are made in areas more likely, rather than less likely, to obtain permission. This confidence also fosters the development of strategies for providing improved transport infrastructure and for consideration of biodiversity, life-cycle of land and safeguarding resources. Planning applications responding to short-term supply shortages at the last moment are less likely to achieve this.	Larger companies more than smaller companies may have benefited from long term planning.
6. Transparency of the current system	The present system is reasonably transparent, in that: <ul style="list-style-type: none"> – the stages of preparation of the <i>Guidelines</i> are set out in advance; – there are consultations at the stages when major judgements are made; 	The present system is deficient in transparency in that: <ul style="list-style-type: none"> – there is no evidence that the same environmental criteria are applied equally throughout all regions to assess the acceptability of mineral working: the apportionment process between and within regions may result in some residents being affected by damage to their amenities which would

	<ul style="list-style-type: none"> – the decisions reached at each stage are announced and the background explanations for them published; – communication between stakeholders is built into the system; – final decisions on key issues cannot be taken until there has been political agreement (such as sub-regional apportionments agreed in draft RSS) and incorporation into DPDs. 	<p>not be tolerated elsewhere;</p> <ul style="list-style-type: none"> – difficulties which some areas have in sustaining historic aggregates outputs can only be addressed by obliging other areas to supply a higher proportion of output in future; – the issuing of <i>Guidelines</i> cannot be synchronised with the widely varying timescales for preparing or revising the local DPDs that will implement them; – there is little public engagement in the process of apportionment of supply requirements between authorities.
7. Assessment of, and response to, need	Basing proposals for aggregates supply on a quantitative assessment of need offers the prospect of a robust supply pattern. Surplus or shortage should only reflect errors in predicting need, rather than shortcomings in the planning process.	The aggregates demand forecasts, which are central to the operation of the managed aggregates supply system, can be unreliable.
8. Complexity of the system	The system is necessarily long and complex because it is firmly evidence based. Time is needed to carry out surveys and collate the results properly and to analyse and apply these. As identified in this report, what complexity there is does not appear to have resulted in significant costs being incurred.	The lengthy and complex system takes up too much time of non-professional participants, including national NGOs. The technical complexity of the process, and the difficulty of changing anything significant through it, discourages participation by parties other than those directly involved.
9. Monitoring arrangements	The present system is monitored annually for the achievement of its objectives. The results are reported annually by CLG. The availability of this information facilitates review of the <i>Guidelines</i> when necessary.	While monitoring arrangements have improved over the years, there are questions as to whether the right objectives are being set and monitored.
10. The centralised interventionist nature of the managed aggregates supply system	The system prescribes the distribution of supply between regions and is therefore interventionist. However, this ensures that mineral companies are not required to separately ‘demonstrate need’ with each application, and it creates an obligation on MPAs to identify sufficient land for aggregates working.	The system, by providing a firm lead, may constrain mineral companies from seeking out new opportunities and novel solutions, particularly on smaller sites and in respect of alternative sources and materials.
11. Lack of discrimination between sources of primary aggregates	The managed aggregates supply system does not discriminate between supplies to the market of crushed rock and of sand and gravel. This creates a level playing field between these competing sources.	The managed aggregates supply system does not discriminate between supplies to the market of crushed rock and of sand and gravel, so there is no means by which the relative merits of working the different minerals can be weighed against each other. As geology dictates that different minerals are available in different places, decisions about the locations of supply directly affect the selection of mineral.
12. Influence on competition	Competition between suppliers has, in general, been maintained.	The current system may tend to favour large aggregates producers thus inhibiting investment by smaller companies. However, this may be a result of the overall costs of mineral operations rather than, specifically, the managed aggregates supply system.

4 Aggregates supply mechanisms outside England

The geology of Europe varies widely from country to country with each having differing quantities, qualities and distribution of materials suitable for use as aggregates. In the larger European countries with lower population densities and extensive potentially available mineral resources these are, in general, likely to be less constrained by social and environmental factors than in smaller nations with high population densities.

Aggregates can only be worked where they occur naturally and their location in relation to key markets will also vary widely. Aggregates normally serve local markets, typically within 15 to 50 km of the source. As local sources are depleted materials can be transported greater distances. Whilst the majority of aggregates normally travel by road increasing quantities in some countries are transported by rail, inland waterways and sea. Some countries with coastlines are also able to dredge and import sand and gravel from the seabed. The Netherlands, for example, relies very heavily on marine dredging and imports from neighbouring countries.

In order to unlock the latent aggregates potential of any country some form of permitting system is necessary to authorise aggregates to be extracted, processed and delivered to market. Such systems will need to take account of European legislation together with national and, very often, regional and local legislation. Extraction of aggregates can give rise to local opposition and normally some process of engaging with local communities is required prior to the grant of a permit for extraction.

The combination of all the above factors means that whilst many countries may have similar elements in the process of converting a resource into a permitted reserve no two countries have identical systems enabling access to aggregates. The widely varying historical legacies that exist within Member States can also add complexity to the overall process of permitting aggregates extraction.

There is limited published information readily available which indicates precisely how other European countries manage the supply of aggregates. In 2003 the EC Enterprise Directorate General commissioned a study of *Mineral Planning Policies and Supply Practices in Europe* by The Department of Mining and Tunnelling, University of Leoben (published in November 2004) which compared practices in 25 member states. The report states that:

“The survey of Member States undertaken for this study has shown that only a few of the Member States have clearly defined and published mineral policies.”

and

“the analysis of all the various procedures adopted in the different Member States shows that in all instances the authorisation process is such that it is unavoidable for local and/or regional authorities to become involved in the final decision making step. The main difference between Member States is the role of the national level in the process.”

In 1995 the then Department of the Environment (DoE) published ‘*Mineral Planning Policy and Supply Practices in Europe*’ which evaluated mineral planning practices in 17 different countries and compared them with the situation in England and Wales. Some of the key findings were as follows:

“several countries have policies to ensure continuity of supply of minerals, although the system of landbanks in the UK, where there is a requirement for mineral planning authorities to provide a stock of planning permissions to enable the industry to meet a predicted future level of demand, is unique.”

and

“the formal role of industry associations in the Regional Aggregate Working Parties (RAWPs) is not repeated elsewhere in Europe.”

Based on these two studies it appears that the management of aggregates supply in Europe does not conform to any particular core model. Where systems do exist they are not similar to that operated in England when it comes to the key elements of forecasting demand, monitoring and review, regional and sub-regional apportionment and the maintenance of landbanks.

In spite of limited comparable information three European countries were selected for a broad assessment of how aggregates supply is managed. Using data collected by UEPG (the European trade association for aggregates) and published in the QPA *Sustainable Development Report 2007* four of the top seven aggregates-producing countries are located in northern Europe with annual production in 2005 shown in Figure 12. Per capita production of aggregates in England is almost the lowest in the EU (Figure 13).

Million tonnes

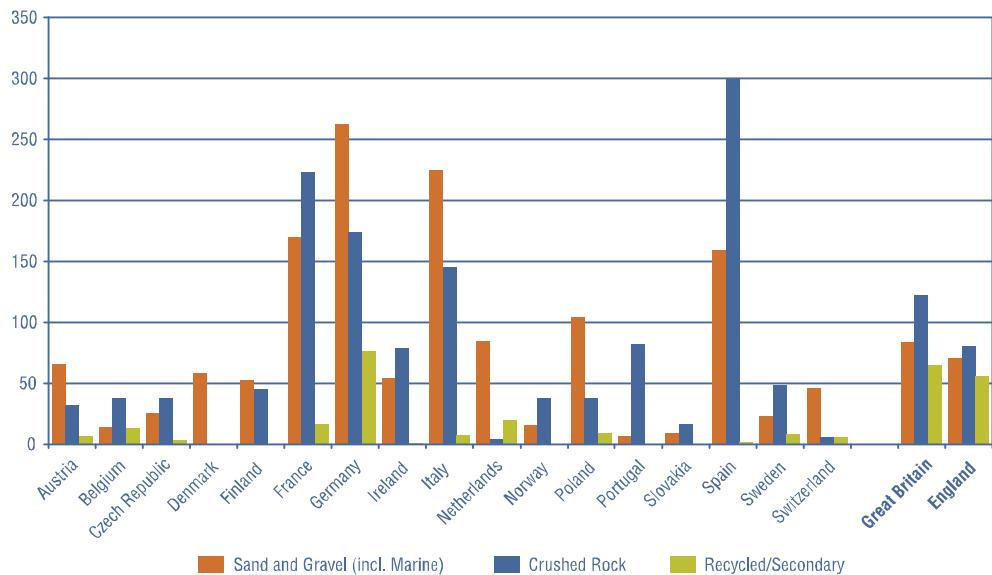


Figure 12 European production of aggregates of all types in 2005.

Sources: UEPG, 2005; Office for National Statistics, 2006; Capita Symonds, 2006

Tonnes per capita



Figure 13 Per capita production of aggregates (all types) in Europe in 2005.

Sources: UEPG, 2005; Office for National Statistics, 2006; Capita Symonds, 2006

Consequently Germany, France and Ireland were selected for consideration, due to their proximity and scale of production. Comment is also made about Scotland in view of the recently

approved Scottish Planning Policy 4: *Planning for Minerals* (SPP4) published in September 2006, coupled with the publication of the Scottish Aggregates Survey for 2005 in November 2007, the first since 1993.

4.1 GERMANY

No specific managed aggregates supply system exists in Germany. There are no national planning policies and national government does not formally monitor specific levels of mineral supply or demand.

Extraction of minerals is governed by the national Federal Mining Act and permits are normally either granted by one of the 16 states (Lander), each of which has local mining authorities or inspectorates, and 12 of which also have a regional mining authority or inspectorate or a local or regional planning authority. Planning issues and systems differ from state to state for historical reasons.

If applications are unlikely to entail substantial effects on the environment they are subject to an Operations Plan approval procedure authorised by the local mining inspectorate. Applications are considered against certain criteria set out in Mining Ordinances. If these statutory criteria are met the Operations Plan must be approved by the local mining authority/inspectorate. The criteria are:

- Industrial safety and worker protection
- Personal safety and public traffic
- Avoidance of damage to public property
- The proper rehabilitation of the site

Applications for larger operations above certain stated thresholds follow the Plan Adoption procedure and are authorised by the regional mining authority/inspectorate, e.g. the thresholds include a total area occupied greater than 10 hectares, daily production greater than 3000 tonnes or a need for large scale reduction in the groundwater which may have substantial effects on the environment.

Decisions are made on the basis of both mining and environmental legislation and applications normally incorporate an environmental impact assessment.

Minerals not covered by the Federal Mining Act receive an excavation permit from either the local or regional planning authority under land excavation laws supplemented by environmental and planning legislation that mean that a number of permits may need to be acquired.

4.2 FRANCE

National government does not prepare a national minerals plan and there are no policies or mechanisms to monitor or regulate specific levels of supply. However, the 95 Departments must prepare plans, *Schémas Départementaux des Carrières* (SDCs), for quarried minerals and in particular sand and gravel.

SDCs must include a large amount of technically relevant information such as known resources, environmental and restoration objectives, transport issues and also an analysis of the Department's likely demand for minerals and an evaluation of future local needs.

Communes must also prepare local land use plans, *Plan d'Occupation des Sols* (POSS), which are legally binding on publication, and should include mineral extraction zones. These are updated or replaced every 10 years.

Planning applications are deposited with the local prefecture and the application is administered by the Directions Régionales de l'Industrie, de la Recherche et de l'Environnement (DRIRE, the

Regional Directorates for industry, research and the environment part of the regional services of the Ministry of Industry).

The DRIRE is also responsible for preparing the SDCs which aim to make reasonable and sparing use of mineral resources whilst reducing environmental impacts. Geological data is also overlaid by environmental and other constraints to identify potential areas for extraction and other areas that would be less suitable.

All planning applications are subject to a local public hearing. After the hearing a statement of findings is prepared by the DRIRE which is then sent to the *Commission Départementale des Carrières* (CDC) who carry out further consultation before making a recommendation to the prefet as to whether permission should be granted.

The CDC is made up of representatives from the regulators, industry, users of quarried materials and environmental organisations.

The prefet, who represents the Government in each Department, considers the recommendation of the CDC and then makes the final decision. Both operators and third parties have the right of appeal to the administrative court and in turn the Council of State.

4.3 IRELAND

The Department for the Environment, Heritage and Local Government (DEHLG) is responsible for developing planning policy and legislation. The physical planning system in Ireland is operated on the ground by 29 County Councils, 5 County Borough Corporations and 49 Town Councils.

The main instrument for regulation and control of development in Ireland is the local Development Plan which all planning authorities must produce and is reviewed every six years.

In 2004 DEHLG issued national guidelines for planning authorities, *Quarries and Ancillary Activities*. The guidelines are intended to:

- offer guidance to planning authorities on planning for the quarrying industry through the development plan and determining applications for planning permission for quarrying and ancillary activities (Part A)
- be a practical guide to the implementation of section 261 of the Planning and Development Act 2000 (Part B).

The importance of aggregates as a natural resource is recognised, as is the potential for the operation of quarries to give rise to land use and environmental issues which need to be mitigated through the planning system.

The guidelines recognise the demand for over 100 million tonnes of aggregates per annum of which around 70 per cent is crushed rock and 30 per cent sand and gravel extracted from about 400 pits and quarries.

The only other quantitative reference relates to *Strategic Planning Guidelines for the Greater Dublin Area* (1999) which identifies that there could be a need for between 65 and 80 million tonnes of aggregates in the period up to 2011 to meet housing demand alone.

The guidelines primarily focus on the environmental issues to be taken into account by applicants, the planning process itself and the preparation of the Environmental Impact Statement.

Although the overall level of recent demand is recognised, there is no guidance relating to the preparation of an estimate, or monitoring of, future aggregates demand nor is there any requirement to supply demand in a particular way. Areas of potentially workable aggregate-bearing land are not specifically required to be identified in development plans.

4.4 SCOTLAND

Production levels in Scotland have remained fairly constant since 1990 at around 30-35 million tonnes a year. In 2005 crushed rock accounted for 74 per cent of primary aggregates output and 5.3 million tonnes of crushed rock was exported. Reserves of crushed rock are generally more than sufficient to meet demand in Scotland but in some regions sand and gravel reserves are lower than minimum landbank requirements (10 years).

The National Planning Framework (NPF) sets out the strategy for Scotland's long term spatial development. Scottish Planning Policies (SPPs) provide statements of Scottish Government policy on nationally important land use and other planning matters, supported where appropriate by a locational framework. The NPF has the same status as SPPs and provides a national context for development plans and planning decisions and the ongoing programmes of Scottish Government, public agencies and local government. Scottish Planning Policy 4: *Planning for Minerals* (SPP4) is the planning policy document which sets out Scottish Government policies for all minerals including construction aggregates.

SPP4 makes the following broad statements relating to mineral planning policy:

- *"Minerals are vital to the Scottish economy, providing essential primary raw materials for industry"*
- *"Construction aggregates, supplemented by recycled and secondary aggregates are the foundations of the built environment"*
- *"The executive (as was when SPP4 was published) supports a positive approach to minerals planning"*
- *"The SPP recommends a systematic approach to planning for minerals that includes survey, monitoring, safeguarding, site selection, operation and site restoration"*
- *"There is a continuing need for an adequate and steady supply of minerals for a variety of purposes."*

There are also some important statements specifically relating to aggregates:

- *"SPP4 continues the landbank approach to planning for the supply of construction aggregates. This approach is intended to ensure that a stock of reserves with planning permission is maintained to ensure adequate supplies of minerals over a minimum 10 year period based on current production levels."*
- *"SPP4 confirms that the local authorities in the four city regions should work together to provide a landbank of permitted reserves equivalent to a minimum of 10 years extraction at all times for the appropriate part of the city region market area. Elsewhere individual local authorities have a responsibility to decide on an appropriate 10 year landbank."*

Whilst no demand forecasts for Scotland have been prepared, note has been taken of the 2003 GB forecasts undertaken by CLG for the period 2001-2016.

The Scottish approach accepts that aggregates are essential and should be supplied adequately and steadily. Minimum landbanks of 10 years should be maintained and areas suitable for extraction should be identified in local development plans which should be reviewed every five years. Although only two aggregates surveys have been undertaken in the last 18 years a third is likely to be brought forward to 2008.

In summary the Scottish approach to managing aggregates supply recognises the need for demand to be supplied. It is based on monitoring supply and production levels and ensuring that sufficient permitted reserves are available for at least 10 years based on current levels of activity. It appears that more regular monitoring will become an accepted feature of managing Scottish

supply. Since production levels in recent years have been fairly constant, there appears to be no immediate likelihood that demand forecasting will feature in the system. Although there is no formal process of apportionment there is recognition that the four city regions give rise to greatest demand.

Scotland differs from England in terms of the much smaller scale of its aggregates consumption and the much larger size of its aggregates resources, especially those of crushed rock. Consequently the requirements of a managed aggregates supply system are clearly different from those in England. However, the more frequent commissioning of aggregates surveys may be a response to the recognition that the regular availability of accurate information, critical to ensuring adequate and steady supply of aggregates, is more likely to be achieved by providing transparent clarity for all key stakeholders.

4.5 CONCLUSIONS

Distinctive features of the managed aggregates supply system in England

- the link between the needs of the economy and the need for aggregates is recognised
- the need for aggregates demand to be supplied adequately and steadily is recognised
- a national forecast of demand which is apportioned regionally and sub-regionally
- a forecast of demand which is monitored annually and reviewed every four years and adjusted, if appropriate, based upon data collected on a consistent at the regional level
- a mix of sources of supply is considered nationally and regionally, including the contribution that recycled and secondary aggregates and marine dredging can make to supply before primary land-won aggregates are considered
- maintenance of adequate landbanks ensures that planning decisions are made which enables demand to be met
- a sub-regional apportionment which underpins the development of minerals development plan documents
- minerals development plan documents are consulted upon, involve local communities, are democratically determined and examined in public
- development frameworks identify areas of potentially workable aggregates on a scale sufficient to achieve regional apportionment
- a process that ensures that many of the issues of concern to local communities can be identified and taken into account through the apportionments.

Comparing the English system with the three other European countries with high aggregates production levels reveals that their systems for managing aggregates supply are significantly different. None relates a national forecast of demand to provision at the regional or sub-regional level in the way that is operated in England. However, Scotland aims to make provision to meet demand at current rates. National systems for regular monitoring and review do not appear to operate in the countries considered. Equally it is clear that none of the countries examined operates completely without some form of mineral planning process.

Scotland has a different starting point for managing aggregates supply due to its geography, scale, and spatial and resource distribution issues. This enables it to rely upon knowledge of historic levels of production and the maintenance of landbanks, particularly in key areas of demand, to ensure continuity of supply.

In the European Union, the question of how to improve long-term sustainable access to raw materials from domestic sources is becoming increasingly important. A European strategy on non-energy raw materials is currently being developed by the European Commission. There appears to be a growing interest from other Member States in the EU in the English system of managed aggregates supply.

European countries all seem to recognise that one way or the other demand for aggregates needs to be supplied even if this is not expressed formally by way of clear national statements of public policy. Each country has differing geology and consequently differing resource availability, quality and spatial distribution features and supply patterns, as well as differing administrative systems.

Focal points for demand, normally the more highly and densely populated areas, will also vary in relation to the distribution of aggregates. Historic and developing permitting systems also vary but ultimately some form of approval for extraction is required which takes account of a blend of factors normally incorporating environmental and operational criteria.

Given that it appears that in most countries demand is actually or ultimately supplied without such a rigorous system of management as exists in England, is the approach currently adopted in England really necessary?

All the differing approaches adopted in Europe will have evolved over time for different reasons and the system in England is no exception. The more relevant question is probably therefore ‘why has England evolved the way it has and why is it different to other countries?’

The first obvious difference is our island status. Unlike so many mainland European countries the lack of adjacent neighbours sharing common roads, rivers, canals and rail networks immediately limits the ability for potential shortfalls in indigenous supply to be made up by imports from neighbouring countries. This effectively happens within England between Regions. The key difference being that in England we consciously set out to plan, monitor and manage this process whereas in mainland Europe there is no obvious overarching vehicle or need to manage cross-border flows.

In the absence of readily available national cross-border flows (with the limited exception of Wales and marine-hauled material from Scotland and Europe), England has no option but to create a system which makes best use of its indigenous resources taking into account their uneven regional distribution. Reliance on the assumption that the market will provide needs to recognise that the permitting process is often split between different mineral planning authorities in different regions with one responsible for permitting reserves which are essential to another in a different region. This constraint is manageable where a system of national guidelines exists and where there is a shared understanding of common information. This is much more difficult to replicate on an international basis where free market flows are encouraged.

Our current system also reflects a democratic statutory planning system attuned to a densely populated island with considerable environmental assets, where there is an informed, environmentally aware and articulate population sensitive to the impacts of development. The Verney report in 1976 acknowledged that if continuity of supply was a public policy imperative then it would need to be managed nationally, regionally and not just locally. The environmental consequences and implications for sustainable development also need to be taken into account.

It could be that parts of Europe, due to planning constraints on remaining resources, will begin to arrive at similar conclusions about the need for managed supply. However, dealing with cross-border flows will not be as easy to manage as inter-regional management has been for England

as it will be difficult for general European regulation to intervene bilaterally between Member States.

The European Commission has undertaken an ‘Analysis of the competitiveness of the non-energy extractive industry in the EU’ (SEC 2007 771, 4 June 2007). It states:

‘for aggregate producers the main issues appear to be to have a consistent and level playing field in terms of EU and national policies and regulations and to be able to gain access to new resources to replace those that have been exhausted.’

The Commission has recently (March 2008) completed a consultation of stakeholders to develop an EC Communication to address the issue of improving access to raw materials including aggregates. It is clear therefore that the issue of managing aggregates supply within and between Member States is rising up the public policy agenda in the EU.

5 Comparison of alternative scenarios for managed aggregates supply in England

In order to test the merits of the current managed aggregates supply system a methodology was adopted that involved defining a series of alternative scenarios for administering aggregates supply. These alternatives, together with the current system, were then evaluated against a standard set of criteria. The four alternative scenarios are:

- no management of aggregates supply
- regional (but not national) management of aggregates supply
- adaptation of the national Infrastructure Planning Commission (IPC)
- a licensing system based on national standards set in legislation.

In each case it has been assumed that there would be no change to existing requirements to comply with European legislation (such as the Directives on Birds, Habitats, EIA and SEA) the European Convention on Human Rights, the RAMSAR Convention and national scientific, countryside, heritage and environmental protection designations.

5.1 DEFINITIONS OF ALTERNATIVE MANAGED AGGREGATES SUPPLY SYSTEMS

5.1.1 No management of aggregates supply

In this scenario the entire administrative arrangements for the managed aggregates supply system would be abandoned, nationally and regionally. Nothing would be put in their place. Most, if not all, of MPS1: Annex 1 would be withdrawn. The national guidelines would be withdrawn and structures such as NCG, the RAWPs and TSG disbanded. The research and data gathering needed to inform the process would also be abandoned, notably the four-yearly Aggregates Minerals surveys, demand forecasts, reports investigating the options for supply (including substitute materials and alternative locations), and annual Government monitoring reports on the *Guidelines*. There would no longer be obligations to prepare documents such as reviews of supply options and annual RAWPs reports. Paragraphs of RSSs relevant to regional aggregates planning, and policies in Minerals and Local Development Documents, would be deleted to the extent that these are predicated on the *Guidelines* or on the outcome of work by the RAWPs. The absence of any policy on need, strategically or locally, would put aggregates in a similar position to other developments for which there is no national forecast of need, such as holiday villages.

The contributions to supply and demand from different sources of aggregates (land-won, marine, recycled) would not be prescribed for regional assemblies and MPAs. There would be no advice on the extent to which demand in each region or locality should be met by aggregates sourced from within the area or brought in from other areas. These and other supply issues would be left in principle for the market to decide. Planning permission would continue to be required for all aggregates development, so each scheme would be required to demonstrate a need and to show that environmental effects could be contained to acceptable levels. Other planning policies, such as environmental controls over operations, for example as set out in Minerals Policy Statement 2 (ODPM, 2005), would be unchanged; however, there is some uncertainty in their application due to the absence of any policy on need against which to weigh constraints on supply.

This option further assumes that no independent arrangements would be made by any of the parties to formalise parts of the supply pattern, such as bilateral agreements between specific exporting and importing regions, or numerical policy commitments to aggregates supplies in any RSS or MDF.

5.1.2 Regional management of aggregates supply

In this scenario there would be no national guidelines. Future demand within the region would be assessed through the RSS, having regard to other regions. Regional supply to meet forecast regional demand would be managed at the regional level. The scenario would aim to encourage greater regional autonomy in the development of aggregates supply policy and there would no longer need to be a common format to aggregates planning in each region. RAWPs would continue to exist where the Regional Assemblies wanted them as advisory bodies. Regional Assemblies would prepare their own aggregates demand forecasts, possibly with different providers of this service in each region and using different methodologies. Supply strategies would be required, at the Regional Assemblies' discretion rather than prescribed through regional apportionment. To the extent that inter-regional flows would be planned to continue or change, this would be a matter for negotiation between the Regional Assemblies affected. In this scenario the role of central government in the managed aggregates supply system would be largely removed, in particular with the withdrawal of the national *Guidelines*, and with NCG and TSG being disbanded. Government policy would cease on national demand forecasting, as would *Guidelines* on establishing inter-regional flows, and on the national mix of materials from different source types (land-won, marine, secondary and recycled). Those topics would remain to be addressed by Regional Assemblies as they thought appropriate. Central government would retain residual interests only in:

- Government Office oversight of each RSS to ensure satisfactory continuation of regional management (i.e. the same as its role in respect of other RSS policies)
- continued monitoring of supply and demand patterns through regional Aggregates Monitoring surveys (in order to allow regions to collaborate on estimation of regional demands)
- the continued funding of RAWPs' secretariats, at a reduced level sufficient to achieve this monitoring.

The central implication of this option is that there is no specifically national interest in the pattern of aggregates supply and demand, so aggregates management could be devolved to the regional level, with a concerted effort by central government to minimise its engagement in policy and practice. At the same time, the case for regional demand forecasting, and for appropriate regional and local supply responses to this, is accepted. The procedures for aggregates planning would remain much the same, at regional and local levels, but without the central direction to shape the results. This option would place the responsibility for supply management on the Regional Assemblies and the regions' MPAs and would leave them to decide how to do this and how to interact with other regions.

5.1.3 The national Infrastructure Planning Commission

In this scenario the role of the national Infrastructure Planning Commission (IPC), which was introduced by the new Planning Bill (2007), would be greatly extended to decide planning applications for future aggregates working. This would bring aggregates cases within the same regime for major infrastructure projects proposed in the Planning White Paper *Planning for a Sustainable Future*. The Government would amend the Planning Bill as required and would need to issue a national policy statement on aggregates supply, with such degree of regional

differentiation and local applicability as it believed to be practicable. The assumption made for this scenario is that almost all proposals for extracting aggregates would be determined by the proposed IPC, using the procedures proposed by the Government (or as may be varied by Parliament). On the basis of applications made between 2002–2005 about 75 cases per year would be subject to Commission decisions. Challenge to these decisions would be only to the High Court on legal grounds (not merits). All other aggregates-related development proposals would continue to be determined by MPAs. The four-yearly Aggregates Minerals surveys would continue.

This scenario would take all significant decisions on aggregates working out of the hands of MPAs and Regional Assemblies, and would give them to a body with members appointed by the Government. In practice, significant numbers of mineral planners would be required to transfer employment from MPAs to the staff of the IPC. Aggregates planning would become a very centralised procedure, with the IPC implementing government policy within procedures selected from the existing planning system.

The operation of this scenario and its outcomes would depend substantially on the form taken by the national policy statement on aggregates. The statement would need to establish in general terms the national and regional case for development and to integrate social, economic and environmental issues (including a Strategic Environmental Assessment). The policy set out in a national policy statement would be intended to be as locationally specific as possible, and might in particular:

- (a) set out the amount, type or size of aggregates workings which would be appropriate for a specified area
- (b) set out criteria to be applied in deciding whether a location would be suitable (or potentially suitable) for aggregates working
- (c) set out the relative weight to be given to specified criteria
- (d) identify locations as suitable (or potentially suitable) or unsuitable for aggregates working
- (e) set out circumstances in which it would be appropriate for a specified type of action to be taken to mitigate the impact of aggregates working.

Procedurally, the preparation of a consultation draft would be expected to draw upon expert knowledge, with public consultation then required on the draft (and with fuller local consultations if particular local communities would be affected). Members of Parliament would be given an opportunity to scrutinise the draft policy statement.

The IPC would be empowered to issue guidance to applicants and to specify minimum standards to be met by applications for development. This includes pre-application consultations carried out by the prospective developer. The procedure to be followed for deciding an application would be determined by the IPC after holding a public meeting to hear representations on this matter. There would always be written representations, but if the IPC considered it necessary there would also be provision for open-floor hearings. These hearings would generally take the form of statements by interested parties with questions by the IPC. Exceptionally, there would be provision for cross-examination by other interested parties. Contributions by interested parties might be time-limited. These hearings would be more like local authority committee meetings with added questions to interested parties than they would be akin to traditional public inquiries.

The presumption is that the IPC would determine an application in accordance with the relevant national policy statement, though there would be provision to refuse it if the IPC considered that the adverse impacts of the proposed development would outweigh its benefits (or in other closely

defined circumstances). The degree of flexibility over choice of working site therefore would depend on the way in which the national policy statement were worded. Given that there are multiple sites available and numerous businesses in competition to provide aggregates, the national policy statement on aggregates would unlikely to be definitive of the sites considered suitable for working. However, it is likely that it would be based on national and regional demand forecasts and to contain regional and sub-regional apportionments. It might identify some major sites. However, the majority of applications could be expected to be decided by reference to criteria in the national policy statement. The IPC might ignore representations it considered relate to the merits of the national policy statement on aggregates. It would have six months to reach a decision on each application.

5.1.4 National legislation and licensing

In this scenario, regulation of mineral working would be viewed as a largely technical process. A special regulatory system would be established by law with its own regulatory body, in parallel with the planning system, to specify in considerable detail the types of aggregates-related development which would be automatically acceptable. This would operate in a comparable manner to an expanded system of Permitted Development Rights (PDRs) within the planning system, leaving no room for judgement on the merits of proposals. However, to ensure compliance, a body would be charged with ensuring that the legal requirements were met, though this would be a technical task rather than a matter of public debate. Some aspects of the PDRs could be expressed in enabling terms (e.g. permitting plant subject to its siting and design, as is the case with various other structures such as farm buildings). The PDRs could be established so that different rules applied in different places or circumstances, for example:

- buffer distances between mineral workings and residential or other sensitive structures could vary from area to area to encourage or discourage supply (which is already the de facto position)
- tighter controls could be set in designated areas (as PDRs already do), and provision could be made for PDRs not to apply if circumstances change (through Article 4 Directions as at present)
- the conditions under which PDRs could be exercised could be structured to encourage or discourage development in certain kinds of situation (e.g. with or without access to the major road network).

Compliance with these matters would be determined by the regulatory body. This arrangement would not set supply objectives as it would have no means of influencing their achievement, being reliant on development proposals coming forward. This would leave the choice of material type and source to the market. Appeals could be made only to the High Court on the usual grounds of the unlawful misapplication of the PDRs to a case, or other aspects of the exercise of the body's powers.

As with the 'No Guidelines' scenario, the entire system of RAWPs, NCG, TSG, aggregates demand forecasting and monitoring would all be abandoned. They would not be necessary for this scenario, as supply patterns would be a consequence of the approach rather than an input to it. Without effective control over the quantity, location or type of aggregates promoted by the industry, the scenario would rely on the private sector to respond to market signals of demand to secure sufficient permissions for continuity of supply.

The current planning system for aggregates has evolved through use into a sophisticated and flexible system for accommodating as many different interests as possible while generally allowing sufficient development to proceed. Replacing that with a more defined and mechanistic approach of the type proposed in this scenario would not only create a precedent for handling the

regulation of land use through a system running in parallel with the planning system but would also inevitably change outcomes. For example, one development which might have been accommodated under the current system might fall foul of one or more criteria, while another development which might have been unacceptable in its context now nevertheless meets the new criteria and is allowed. The gains and losses could only be predicted if the detailed criteria were worked up. Nonetheless, with criteria based on impacts, the intention is to codify the acceptability of aggregates operations and thereby ensure the protection of at least minimum amenities. Whether demand is met is open-ended: the system might provide ‘too little’ mineral, ‘too much’, or the ‘right’ amount. In the medium term, the national criteria could be relaxed or tightened in response to this.

5.2 DESCRIPTION OF EVALUATION CRITERIA

In order to establish the relative merits of the alternative supply scenarios it is necessary to identify the key criteria that will require evaluation. Nine of these have been identified and have been grouped into four categories: supply, environmental and industry issues, and costs to participants (Table 6).

Category	Key evaluation criteria
Supply issues	Continuity and security of supply
	Adequate planning consents
	Diversity of supply
Environmental issues	Minimisation of environmental impacts
	Resource efficiency
	Carbon footprint
Costs to participants	Financial costs to society/taxpayer/Government
Industry issues	Competition
	Industry investment

Table 5 Key evaluation criteria for comparison of alternative managed aggregates supply scenarios.

A brief description of the key considerations that each criterion must take into account as part of the evaluation of alternative scenarios for managing primary aggregates provision is given below.

5.2.1 Supply issues

Continuity and security of supply

The maintenance of an adequate and steady supply of aggregates to meet forecast demand is of fundamental importance. Any system which fails to provide either adequate quantities of aggregates or results in an unsteady and intermittent supply would be undesirable and ineffective and could have damaging consequential impacts upon the construction industry and the economy.

Adequate planning consents

The maintenance of landbanks for sand and gravel, crushed rock, or, where there is a distinct market, for specific types or quality of aggregates, is at present regarded as being of fundamental

importance in helping ensure that sufficient permitted reserves are available to be worked in the right place at the right time. The existence of adequate landbanks does not of itself ensure continuity of supply since commercial decisions activating the release of permitted reserves through production ultimately determine supply

Diversity of supply

The supply of primary aggregates is influenced by a number of factors including end use requirements, and the location, quality and expected operational life of the source material. For example, the specification of aggregates to be used for the manufacture of ready-mixed concrete will differ from that used in asphalt or mortar.

The uneven distribution of sand and gravel and the geographical concentration of crushed rock resources in the South West, East Midlands and northern England means that ensuring that all regions have access to sustainable supplies of the right quality of aggregates from a variety of different sources is a necessary feature of any method of managed aggregates provision that aims to meet the continuing requirements of the construction industry.

5.2.2 Environmental issues

Minimisation of environmental impact

There is an overriding need for all scenarios to minimise the environmental impact of extraction, processing and distribution of aggregates and to ensure operation in accordance with planning and other consents. Weighing up the differential impacts of the various scenarios is an important issue to be taken into account. A scenario which appears advantageous on certain criteria may give rise to unacceptable environmental consequences.

Resource efficiency

Consideration of the overall resource inputs required to generate aggregates outputs under differing scenarios for aggregates provision may enable a broad view of resource efficiency to be developed. Minimising the generation of production and other wastes is critical to maximising production efficiency.

Carbon footprint

Given current international and national concerns relating to the need to reduce carbon emissions consideration needs to be given to proximity of supply and its potential impact upon embodied carbon dioxide emissions per delivered tonne of product.

5.2.3 Costs to key participants

Financial costs to society/taxpayer/Government

The total financial costs likely to be incurred by the key participants who engage with the aggregates provision process needs to be evaluated for each scenario, i.e. Government, MPAs and industry.

5.2.4 Industry issues

Competition

Any scenario must operate in a way which does not distort markets in an uncompetitive way or give unfair advantage to any operator.

Industry investment

For aggregates to be supplied under any scenario the industry must have sufficient certainty and confidence in the system to want to invest significant capital often for the medium, long and very long term, i.e. 10-25 years or more.

5.3 COMPARISON OF ALTERNATIVE SCENARIOS WITH THE CURRENT SYSTEM

The four alternative managed aggregates supply scenarios defined in section 5.1 have each been compared with the current system according to nine key evaluation criteria described in section 5.2.

5.3.1 Consequences

In undertaking a comparative evaluation of this nature it is also important to consider the consequences of changing from the current system to each alternative scenario. The issues of consequence taken into account are:

- Additional legislation required/legislative consequences
- Transparency and accountability of decision making
- Scope for public involvement
- Public acceptability
- Flexibility to respond to demand
- Speed, efficiency and achievability
- Need for new plan guidance/framework from government
- Devolution of decision making.

5.3.2 Other factors

Other factors have also been taken into account to clarify more detailed points of system operation and to aid overall evaluation:

- will demand forecasting for aggregates be necessary?
- will data collection and collation nationally, regionally and locally be necessary?
- will there be regional apportionment?
- will there be sub-regional apportionment?
- will inter-regional flows be manageable?
- will clear inputs to RSSs and MDDs/LDDs be possible?
- will landbank calculations be needed?
- will the decisions made balance need against other planning considerations?
- is there local democratic accountability?
- are there sufficient resources and skills to manage the process?

5.3.3 Comparison methodologies

In order to compare the alternative scenarios with the current system a matrix was created setting out all the evaluation criteria, consequences and other factors considered for each alternative scenario. For the evaluation criteria and consequences (Tables 6 and 7) the comparison was undertaken by assigning one of three assessments to each:

- Advantage (green) – the alternative could operate better than the current system
- Parity (yellow) – the alternative could operate similarly to the current system

- Disadvantage (red) – the alternative could operate less satisfactorily than the current system

No weightings have been applied nor any scoring undertaken. Conclusions have been made on a qualitative basis.

5.3.4 Comparison results

The results of the comparison exercise using the evaluation criteria and consequences are set out in Table 6 and 7.

EVALUATION CRITERIA	CURRENT	NO GUIDELINES	REGIONAL	IPC	LICENSING
Within planning system	YES	YES	YES	YES	NO
Criteria					
Continuity and security of supply					
Adequate number of planning permissions					
Minimisation of environmental impacts					
Resource efficiency					
Carbon footprint					
Diversity of supply					
Financial costs to society/taxpayer/Government					
Competition issues					
Industry investment					

Table 6 Comparison of the various aggregates supply scenarios against the key evaluation criteria.

Explanation: Green indicates where the alternative could operate better than the current system; yellow where the alternative could operate similarly to the present system; and red where the alternative could operate less satisfactorily than the current system.

CONSEQUENCES	CURRENT	NO GUIDELINES	REGIONAL	IPC	LICENSING
Additional legislation and legislative consequences					
Transparency and accountability of decision making					
Scope for public involvement					
Public acceptability					
Flexibility to respond to demand					
Speed, efficiency and achievability					
Need for new plan guidance/framework					
Devolution of decision making					

Table 7 Comparison of the key consequences of changing from the current system to an alternative aggregates supply scenario. (colour coding as in Table 6).

Other factors (Table 8) have been evaluated using a simple menu of choices as follows:

- Yes
- Possible
- Difficult
- No
- Not applicable

OTHER FACTORS	CURRENT	NO GUIDELINES	REGIONAL	IPC	LICENSING
Demand forecasting necessary?	y	n	y	y	n
Data collection and collation nationally?	y	n	n	y	n
Data collection and collation regionally?	y	n	y	y	n
Data collection and collation locally?	y	p	y	y	n
Regional apportionment?	y	n	n	n	n
Sub-regional apportionment?	y	n	p	n	n
Inter-regional flows manageable?	y	n	d	p	n
Clear inputs into RSS/DPDs?	y	n	y	n	NA
Landbank calculations needed?	y	n	y	p	NA
Decisions made that balance need against other planning considerations?	y	n	y	y	n
Local democratic accountability?	y	y	y	n	n
Resources and skills available to manage the process?	y	n	y	p	p

Table 8 Other factors taken into account in the comparison of the current and alternative aggregates supply scenarios evaluated in this study.

Explanation: Yes, y; Possible, p; Difficult, d; No, n; Not applicable, NA.

A summary of the results of this comparison is given in the following sections. Appendix 5 provides additional explanatory notes.

No management of aggregates supply

The abolition of the demand forecasts, *Guidelines*, and regional and sub-regional apportionment would remove the foundations and framework of the existing managed aggregates supply system. It would create a planning context where the key features would be a lack of clarity in how applications could and should be determined from MPA to MPA and from region to region. Planning decisions would be more likely to be driven by local interests and parochiality resulting in more planning refusals because no consistent national or regional requirement or reasons to justify approving applications would exist. There would also be no requirement to maintain a landbank of any sort. More refusals would result in more contested planning decisions being made by the Secretary of State on appeal, incurring additional costs for all parties.

In areas of greatest demand it is expected that local communities would resist the development of new quarries, wharves and rail depots. As a result aggregates would tend to be transported over longer distances, particularly by road. The increased costs associated with higher refusal rates, additional appeals and generally greater distance of travel of mineral would tend to push costs up across the industry, leading to a reduction in supply in the short-medium term and to higher prices for the consumer. Overall the lack of clarity and consistency which a managed system can provide would be lost, creating uncertainty for all stakeholders, not only for the industry, where investment decisions would be more difficult to make, but also for other parties such as NGOs and MPAs, having to develop a full response on the local merits of each case.

The consequences of such an approach would result in a general weakening of local accountability, as decisions would be more likely to be taken centrally on appeal. The ability of the system to respond to changing demand in an efficient and timely way would be reduced, creating difficulty in delivery of planning approvals which could jeopardise supply. There would be no obvious reason or mechanism for currently exporting MPAs and regions to consider supplying beyond their boundaries to those MPAs and regions dependent on regional imports thereby weakening the existing model of inter-regional flows. The Government would lose an agreed dataset against which to consider industry representations about falling permitted reserves failing to secure adequate and steady supply, or NGO representations about excessive reserves. In due course shortages in certain areas, probably starting with sand and gravel, would emerge.

Key consequences of no management of aggregates supply

- a higher proportion of cases is decided by the Secretary of State on appeal, with implications for the cost, timing and locational sources of aggregates
- supply and demand policy emerges from appeal decisions rather than from plans
- aggregates working gravitates towards localities more favourably disposed to it
- aggregates tend to be transported greater distances, particularly by road
- the locations of working are less predictable, each site being proposed and assessed on its merits rather than in line with a plan or policy
- planning procedural costs rise due to higher refusal rates and the cost of additional appeals
- local shortages of aggregates could emerge
- the price of aggregates rises
- the loss of comprehensive data leaves Government with no agreed basis to assess the adequacy of forward supply against emerging demand.

Regional management of aggregates supply

As many of the building blocks of the existing national managed aggregates supply system would be retained at a regional level the main issue emerging from this scenario is that of managing inter-regional flows. The regions would effectively be self-managing in the absence of a national approach which recognises the uneven distribution of aggregates in relation to regions of high demand and removes any imperative for inter-regional supply arrangements to be agreed. Whilst this in itself would not necessarily preclude regions from agreeing *ad hoc* bilateral arrangements this would be a ‘bottom-up’ approach as opposed to ‘top-down’, and would rely upon mutual goodwill. Such an approach may not find favour in local communities who may argue increasingly for regional and even local self sufficiency at the expense of national demand being supplied. Those regions most strongly opposed to aggregates might also require in their RSSs a greater contribution from sources other than local land won. In the absence of a national policy framework and an agreed national dataset on demand and supply the Secretary of State would have little basis for disagreeing.

Aggregates would tend to be transported over greater distances, particularly by road, as a result of local supply arrangements becoming weaker in areas resistant to aggregates working. This, in combination with the need for expensive solutions to meet demands where local supply difficulties arise, would lead to higher aggregates prices. Potential competition issues could emerge if regional parochialism were to take root as companies with large reserves in exporting regions leverage their position. It is likely that the inter-regional uncertainties would give rise to greater costs and consequently potentially affect industry investment.

Key consequences of regional management of aggregates supply

- a reasoned response through the development plan system to forecast regional and local demand, but with less certainty than a national supply approach
- there is greater reliance on imports and alternative sources of aggregates
- contributions from each source of supply become less certain, potentially discouraging investment in expensive options such as marine dredgers and rail depots
- negotiations between importing and exporting regions are more complex and costly, and supply becomes less reliable
- aggregates working gravitates towards localities more favourably disposed to it
- aggregates tend to be transported greater distances, particularly by road
- local shortages of aggregates could emerge
- the price of aggregates rises
- the loss of comprehensive data leaves Government with no agreed basis to assess the adequacy of forward supply against emerging demand.

The national Infrastructure Planning Commission (IPC)

Adapting the new IPC approach for deciding planning applications for working previously unconsented resources would be based on compliance with various legal requirements and national policy objectives. This would create clarity and speed of process, with decisions generally made in less than six months. This would lead to lower procedural costs for all interested parties and for the public purse, and to greater certainty overall from an applicant's point of view. Set against this there would be less ability to consider local factors, particularly environmental and community inputs, moving decisions away from those interests most affected to a remote central organisation. The likelihood would be for decisions to be made which make less sense in terms of local cumulative impacts, spatial factors, resource efficiency and environmental impact. In addition, the scarce expertise of the MPAs would be split between the existing authorities and the IPC, weakening MPAs in terms of both staff and resources.

As the impacts of operations are mainly felt at the local level it is likely that centrally made decisions, which are not as sensitive to local issues and community views, would be less acceptable. The consequences of this for mineral planning are difficult to predict, but could involve aggrieved parties in more litigation, more political activity, and possibly in direct action.

The policy basis for decisions would in effect combine the existing RSS and local MDF policies within what amounts to an expanded statement of national policy. A statutory national policy statement on aggregates would attract far more public attention than do the existing guidelines. However, the opportunity would not exist for the public to make such an effective contribution as is currently available during MDF preparation. National policy, including supply requirements at the local and regional level, would be easier to deliver as there would be a presumption in favour of its application and there would be no more detailed policy development at the local level.

Key consequences of an Infrastructure Planning Commission approach

- a new national policy statement on aggregates is required
- there is a presumption in favour of the application of the national policy
- the grounds for local opposition to aggregates working are significantly reduced, particularly if/where the national policy statement names sites for working
- the scope for dispute over the merits of individual cases is constrained, for all parties
- most cases can be expected to be decided following a hearing of some form
- there is no provision for appeal to higher authority on the merits of cases
- public satisfaction with the procedures will be substantially reduced
- decisions are made more quickly and procedural costs reduced.
- MPAs would lose staff and resources, but would continue to handle most casework

National legislation and licensing

A system which depends upon legislation compliance and licensing would become an entirely compliance-based system. The same comments concerning lack of local and community inputs under the IPC approach would apply and any sensitivity to local spatial issues such as cumulative impacts that might be possible under IPC would be lost under licensing. As the legislative basis for decisions would in effect combine the amenity protection policies of existing RSSs and MDFs, the emerging Permitted Development Rights (PDRs) would attract far more public attention than do the existing *Guidelines*. However, the opportunity would not exist for the public to make such an effective contribution as is currently available during RSS or MDF preparation. Local acceptability of centrally made decisions relying wholly on meeting compliance criteria would be unlikely to find support locally. This might lead to more litigation, more political activity, and possibly more direct action. With aggregates developments regulated through a separate legislative system, the relationship would be lost between planning for aggregates and planning for construction and indeed planning for all development. The integrity of the planning system would inevitably be damaged and the fractured relationship between different parts of land use regulation could be expected to lead to less effective overall development management.

From an applicant's perspective the prospect of absolute clarity of what is needed to secure planning approval would be attractive and the essentially technical approach would create certainty and act positively to drive applications to be made. Aggregates companies should be able to draw up proposals which meet the PDR criteria, leaving little further scope for dispute over the merits of individual cases. As there would be no plan-making, and final decisions on applications would usually be reached very quickly, procedural costs would be reduced for all interested parties and for the public purse.

Substantially less institutional activity would be devoted to aggregates planning at all levels, in terms of policy-making, development control, public engagement, monitoring and research. Consequently the public sector would largely lose influence over supply. The aggregates industry would be wholly responsible for the pattern of supply, based on the sites where companies can meet the environmental constraints on working. This could lead either to a more market-led or to a more constraint-led pattern of supply depending on the choice of PDRs in legislation.

Key consequences of a national legislation and licensing system

- a new national policy statement on aggregates is required
- the scope for dispute over the merits of individual cases is constrained, for all parties
- the grounds for local opposition to aggregates working, after the issuing of the national policy statement, are reduced enormously, though there is reliable parity of treatment between all sites
- the grounds for appeal are limited, and confined to the Courts on matters of law
- public satisfaction with the procedures will be substantially reduced
- the public sector largely loses control of the issue
- the pattern of supply and demand derives not from policy but from the summation of individual developments satisfying the PDRs
- decisions are made more quickly and procedural costs reduced.

5.3.5 Conclusions of comparative analysis

Evaluation of the four alternative scenarios has been undertaken and conclusions drawn. The evaluation is comparative and does not assume that the current system is perfect, nor that it is the only means of managing aggregates supply. The comparisons made are relative but collectively they do identify those key characteristics that any system should possess to be regarded as fit for purpose. Those characteristics are:

- clarity and consistency of process and timely implementation
- the ability to consider, evaluate and balance national, regional and local issues and factors
- the ability to consider and respond to inter-regional factors
- the ability for industry and local communities to participate and feel engaged in the decision making process
- decisions made close to the community affected to encourage local accountability
- acceptability of decision making to local communities, other interested stakeholders and industry alike
- the ability to construct and maintain sustainable supply patterns.

Applying this package of key characteristics to each of the four alternatives fails to identify any alternative scenario which can satisfy all of them.

Comparing the current system of managed aggregates supply against the same criteria indicates that it is most able to demonstrate all of the characteristics to a reasonable if not large degree and certainly more comprehensively than any of the alternatives. This does not mean that it is necessarily fully fit for purpose but that it might be if certain improvements were identified and implemented.

5.3.6 Economic modelling

The preceding analysis has highlighted that the shortcomings of the alternative managed aggregates supply scenarios compared with the present arrangements. An economic model was developed to further explore and, where possible, to quantify the implications of the changes associated with the first option discussed, no management of aggregates supply. This model was established to examine how key aspects of the planning regime affect a) the decisions of operators to seek permission to operate a site; and b) the outcome of any decision to seek planning permission and hence how the planning regime might be expected to influence key industry outcomes. The modelling focused on the impact of the no management of aggregates supply scenario as it was considered that it was possible to credibly quantify how key outcomes of the planning process (e.g. the probability of a application being successful and the costs of an application) might differ in this scenario compared to the current managed system in a way that was less easy for the other scenarios. However, the results do allow for inference to be drawn on what the impact of the other scenarios might also be.

The model takes account of a large number of factors that will influence whether or not the economic benefits to a company from seeking planning permission outweigh the costs. Among the most important of these are:

- the likelihood of planning permission being approved
- the costs of seeking a planning permission (both direct i.e. the financial costs of making an application, commissioning of the requisite surveys, etc, and indirect i.e. the staff time

taken up by the application, and costs before, during and after the formal planning application process)

- the investment and operating costs that would be incurred were a site to be worked.

In practice, these variables vary significantly between different (potential) sites around the country. To account for this variation, rather than set exact values for each variable, they were treated as ‘random variables’. Consequently an average value and a plausible range for each variable were established. These average values and ranges were determined following extensive discussion with industry representatives and were identified separately for sand and gravel, and crushed rock.

Taking a random selection from each of these variables provides all of the information necessary to establish whether it would be profitable for a firm to attempt to obtain a planning permission for that site. This is assessed by considering whether the expected revenues would exceed the expected costs by a sufficient margin to account for the risk involved in the project i.e. whether the Net Present Value (NPV) of seeking a planning permission is positive. If it is not NPV positive, then it is assumed that a planning application is not sought. If it is positive, then it is assumed that the operator takes forward an application. The model then determines whether or not the application is successful based on the (pre-determined) probability of success factor. If it is successful then it is assumed that extraction begins. If it is not successful, the model then considers whether or not taking forward an appeal (going to a public inquiry) against the original decision would be NPV positive in that instance. The same process is followed as for the original application, although the model has the flexibility to set a different probability of success in the inquiry. The process followed by the model for one random selection is shown in Figure 14.

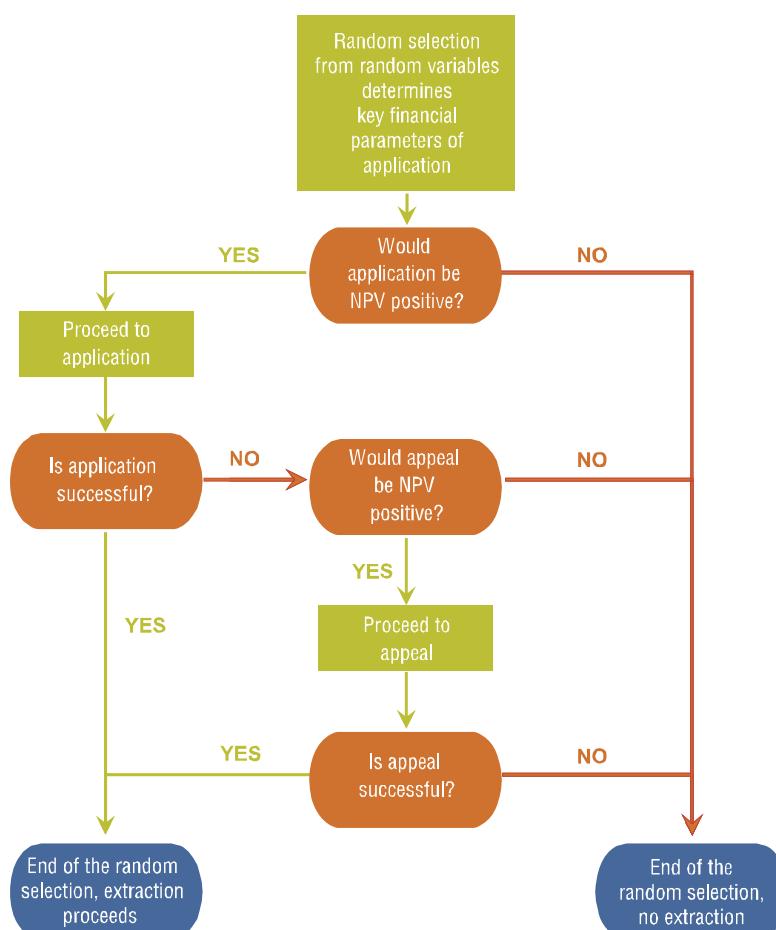


Figure 14 Flow chart of the industry planning model.

The process is repeated until there have been sufficient applications that have been predicted as profitable and for which permission have been granted (either directly or on appeal) such that key market outcomes are consistent with those seen in the UK industry.² The model was run 100 times and the average outcomes over those 100 runs calculated. This established the base case.

An identical exercise was then undertaken with some of the assumptions on the key variables altered. In particular, discussions with industry representatives revealed that they all considered that a situation in which there was no managed system would lead, *inter alia*, to there being a lower probability that planning permissions would be successful and to the direct costs of seeking an application increasing as a result, for instance, of more professional expertise being required. These are also the views of the authors of this report. To reflect this, three alternative scenarios were considered:

1. a scenario in which the probability of gaining planning permission/percentage of applications that were successful fell from 90 per cent to 50 per cent. The 90 per cent value reflects the approximate current approval in the aggregates sector with the managed system; the 50 per cent value is reflective of approval rates for housing applications³, where there is no comparable managed system.
2. A scenario in which the average direct costs of a planning application rose from £125,000 to £200,000, an increase of 60 per cent.
3. A combined scenario where both of the above changes are made.

For each of these scenarios the model allows comparison of the following features:

- the average number of successful applications (including those successful following a public inquiry);
- the tonnage associated with these successful applications;
- the costs incurred by the industry in seeking planning permission; and
- average annual production levels.

It is important to stress that this analysis is a modelling exercise undertaken to give an understanding of the likely order of magnitude of these effects. As such it necessarily requires a number of simplifying assumptions to be made. These are set out in more detail in Appendix 6 but among the most important are:

- the model accounts for the inherent differences between different sites and different applications by assuming that all of the key factors influencing whether or not to make an application/proceed to inquiry, as well as the results of the application and inquiry, are randomly distributed. The approach does not take account of the possibility that judgement, skill or aptitude i.e. the possibility of making ‘better’ or ‘worse’ applications, could affect industry outcomes.
- the model assumes that the price at which crushed rock and sand and gravel sell would remain the same, regardless of any changes to the planning regime. In reality, it would be expected that, in the longer term, the restriction in output resulting from planning

² Specifically, the calibration is designed to ensure that the number of approvals and tonnage associated with those approvals are broadly consistent with the data that Capita Symonds has collected on these variables in the project ‘Exploring the Reasons for the Decline in Aggregate Reserves in England’.

³ CLG Planning Development Statistics

permissions becoming more difficult to acquire would result in an increase in price. In turn, this increase in price would encourage an increase in supply, partly offsetting the expected quantity impacts reported here.

The results of the modelling are shown in Tables 9 and 10.

	Annual production levels	Number of successful applications	Tonnage associated with successful applications	Costs incurred in seeking planning permissions
Reduction in probability of success for 90% to 50%	-12.4%	-8.0%	-7.7%	28.9%
Increase in average direct application costs from £125,000 to £200,000	-0.7%	-1.4%	-0.6%	34.1%
Both reduction in probability of success and increase in costs	-10.7%	-8.1%	-6.6%	58.8%

Table 9 Key results from the sand and gravel planning model.

	Annual production levels	Number of successful applications	Tonnage associated with successful applications	Costs incurred in seeking planning permissions
Reduction in probability of success for 90% to 50%	-7.3%	-3.3%	-2.1%	32.8%
Increase in average direct application costs from £125,000 to £200,000	3.7%	0.6%	2.4%	35.6%
Both reduction in probability of success and increase in costs	-9.9%	-7.1%	-5.0%	65.4%

Table 10 Key results from the crushed rock planning model.

The key result from the modelling exercise is that it suggests that there would likely be significant, deleterious industry-wide consequences were the managed system to be abandoned and replaced with a planning system where there was less chance of a successful planning application and where application costs were greater. In particular, the model suggests that production levels would be expected to fall by about 10 per cent, for both crushed rock and sand and gravel, were the managed system to be abandoned. This result is driven by two factors: first, for those applications brought forward, it is expected that a greater proportion of applications would be rejected were there no managed planning system; and, second, given the lower probability of approval, operators would be less willing to incur the costs associated with bringing applications forward in the first place.

Consistent with this result, the modelling suggests that the number of successful applications per annum would be expected to fall by about 7 per cent for crushed rock and about 8 per cent for sand and gravel. The associated reduction in tonnage granted would be approximately 5 per cent

and 7 per cent respectively. These results suggest that it would be the relatively smaller sites which would be disproportionately affected by a less supportive planning environment.

The model also shows that the costs incurred by the industry in seeking planning permissions would be expected to significantly increase in this planning environment. The model suggests that this additional industry cost would be about 65 per cent greater for crushed rock applications and about 59 per cent for sand and gravel applications. Two factors contribute to this result: first, it is a prior assumption that without the managed system, the costs incurred by operators in undertaking planning applications would increase; and, second, because it is also assumed that more applications are turned down, there would be more appeals and consequently greater costs would be incurred.

Other significant results of the modelling are:

- Comparing the impact of reducing the probability of success in applications with the impact of increasing the cost of planning applications, the modelling suggests that it is the former which has a much greater impact on extraction levels/number of successful applications and tonnage associated with successful sites.⁴ This is consistent with the views expressed by industry. However, the results suggest that the impact of reducing the probability of success (and hence causing more applications to go to appeal) and the impact of increasing the direct costs of applications each has a broadly similar impact on the costs incurred by operators.
- The modelling suggests that the impact of changing to a system of no management – measured in terms of quantity extracted, number of successful applications and tonnage associated with successful applications – is likely to be more damaging to sand and gravel extraction than crushed rock extraction. This would be consistent with there being a greater deterrence impact on sand and gravel applications than crushed rock applications if planning permission became more difficult to acquire. This may be the result of the greater profitability of crushed rock operations generated through the greater size allowing fuller exploitation of economies of scale.

Conclusions of the economic modelling

Industry operators universally expect that the abandonment of the managed system and introduction of the no management option would reduce the likelihood of success of a planning application and would increase the costs that would need to be incurred for an application to be successful. The aim of the modelling exercise has been to attempt to assess the ramifications of these changes for each individual application on the industry as a whole. The results suggest that:

- the number of successful applications would fall, perhaps by about seven to eight per cent
- the associated tonnage approved from successful applications might also be expected to fall by about five to six per cent
- industry production levels may fall by about ten per cent
- the costs incurred by industry in making a planning application could rise by close to 60 per cent.

In short, the modelling suggests that abandonment of the current managed aggregates supply system in favour of one with no management would lead to significant, deleterious, industry-wide consequences. Further, although not explicitly analysed, the dynamics of the model suggest

⁴ Indeed, the crushed rock model results suggest that these variables actually marginally increase when the direct costs of applications increase. This is likely to reflect the inherent randomness within the Monte Carlo simulation approach, rather than a policy result with substantive policy implications.

that any scenario which, in particular, reduced the likelihood of operators gaining planning permission would have broadly similar consequences, although with the precise magnitude determined by how much less likely it would be for an application to be successful. Therefore, these results are also relevant for the regional management scenario which, as discussed above, would also be expected to result in a smaller proportion of applications being successful.

6 Discussion

6.1 INTRODUCTION

The construction industry is an important sector of the English economy. It uses large quantities of construction aggregates, obtained from a variety of sources on land and on the seabed. Adequate supplies are essential to many of the Government's objectives including affordable housing, and high profile regeneration and construction projects. The benefit to the nation of having indigenous supplies of primary aggregates which can be produced and distributed relatively cheaply cannot be overstated. These supplies are vital to developments such as the 2012 Olympics, Crossrail, Thames Gateway and the growth areas. They are also critical to coastal and flood defences to protect property and national infrastructure, to the renewal of power generation capacity and to the replacement and maintenance of roads, sewers and water pipelines. The construction industry will continue to require an adequate and steady supply of aggregates over the long term. Supply issues are, therefore, important, ongoing and fundamental to national infrastructure, development policies and aspirations, and, consequently, to the planning process.

Rapid growth in demand for aggregates, particularly in the post-war period, stimulated a number of Government initiatives, most notably the work of the Advisory Committee on Aggregates (the Verney Committee). From its report *Aggregates – The Way Ahead*, published in 1976, the current managed aggregates supply system finally emerged in 1982. The major features of that system are:

- the link between the needs of the economy and the need for aggregates is recognised
- the need for aggregates demand to be supplied adequately and steadily is recognised
- a national forecast of demand is made and apportioned regionally and sub-regionally
- the forecast of demand is monitored annually and reviewed every four years and adjusted, if appropriate, based upon data collected on a consistent basis at the regional level
- the mix of sources of supply is considered nationally and regionally, including the contributions that recycled and secondary aggregates and marine dredging can make to supply before primary land-won aggregates are considered
- maintenance of adequate landbanks ensures that planning decisions are made which enables demand to be met
- a sub-regional apportionment is made which underpins the development of minerals development plan documents
- minerals development plan documents are consulted upon, involve local communities, are democratically determined and examined in public
- development frameworks that identify areas of potentially workable aggregates on a scale sufficient to achieve the regional apportionment
- a process that ensures that many of the issues of concern to local communities can be identified and taken into account through the apportionments.

The managed aggregates supply system is given effect through the planning system. Planning is a democratic process that should give all stakeholders a meaningful opportunity to comment on proposed development that can have a major impact on their surroundings and quality of life. Planning also serves a social function in helping residents to come to terms with the prospect of change. The merit of a system which broadly achieves public acceptance of decisions which are often locally perceived as undesirable is often overlooked, but is a vital service to the development industry. One issue on which most parties agree is on the importance of reaching good, reliable and consistent decisions. These, underpinned by sound, up-to-date information, promote confidence in the decision-making system.

This research has reviewed the effectiveness, efficiency and costs of the existing system alongside possible alternative options for meeting the needs of society and the economy for aggregates well into the future.

6.2 ALTERNATIVE APPROACHES TO SECURING SUPPLY

Chapter 5 examined the advantages and disadvantages of four alternatives to the current managed aggregates supply system involving less or none of the existing practices, or different practices:

- no guidelines
- regional guidelines only (without national guidelines)
- adaptation of the Infrastructure Planning Commission
- licensing system (outside the planning system).

Chapter 4 showed that outside England the question of how to improve long-term sustainable access to raw materials from domestic sources is becoming increasingly important. The approaches used in Germany, France, Ireland and Scotland were reviewed to assess how this matter is being addressed in those countries. A European Strategy on non-energy raw materials is currently being developed by the European Commission.

6.2.1 Practices elsewhere

The selected countries all seem to recognise in practice that demand for aggregates needs to be supplied even if this is not expressed formally by way of clear statements of public policy. However, each country has differing spatial distributions of aggregates resources and focal points for demand vary in relation to the points of supply. Permitting systems also vary for reasons of history and national governance structures although some form of approval for extraction is legally required that takes account of factors including environmental and operational criteria. Many of these requirements apply across the EU under a range of binding Directives. Nevertheless, it appears that in most countries demand is supplied without such a rigorous system of management as exists in England. A relevant question is, therefore, ‘why has the system in England evolved as it has and why is it different to other countries?’

An obvious difference is our island status. This limits the ability for potential shortfalls in indigenous supply to be made up by imports from neighbouring States at reasonable cost. A recent study by BGS (Brown et al., 2008) found that importing the entirety, or a substantial proportion, of England’s aggregates requirement is not physically possible at current port capacity. Consequently, in the absence of ready cross-border movement, other than from Wales and Scotland, England has had to adopt an internal supply management system which makes best use of its indigenous resources taking into account their uneven geographical distribution in relation to demand. Reliance on the assumption that ‘the market will provide’ carries a higher risk as the permitting process is often split over supply chains from the aggregates donor county

to the receptor county. The current system also recognises risks to continuity of supply which can occur on a densely populated island where there is an informed and articulate population and NGOs who are able to engage in a democratically based planning system. The Verney report in 1976 acknowledged that if continuity of supply was a public policy imperative then it would need to be managed nationally and regionally, and not just locally. The environmental consequences and implications for sustainable development, which have grown substantially in significance since Verney reported, also need to be taken into account.

6.2.2 Assessment of alternative options

The option for no guidelines at all (nationally or regionally) performs poorly compared with the current managed aggregates supply system. No net advantages were identified against the nine key evaluation criteria. The no guidelines option performed less well than the current system against two thirds of those criteria. A central reason for establishing the current system, to ensure continuity of supply, would be lost under this option. Only in respect of environmental issues was this option not seriously disadvantageous. If the main consequences are considered too, these also show little merit in the no guidelines option. This has only one advantage compared with the current system, against eight key consequences reviewed, and this is minor, i.e. it would save the cost and effort of preparing and maintaining guidelines and related policy (though this study has demonstrated that these costs are very small).

The option for regional guidelines only (without national guidelines) also performs poorly with four out of nine evaluation criteria being disadvantageous and parity on the other five. Again there is only one advantage when the consequences are considered. This is also relatively minor, i.e. it offers greater devolution of decision-making. However, this is a double-edged consequence that would be likely to increase overall supply difficulties, cause greater movement of mineral by road, and raise prices.

The no guidelines and regional guidelines only options predominantly exhibit disadvantages compared with the current system. Their advantages, noted above, are so minor that it is considered that there is little need to evaluate them further.

The other two possible options for managing aggregates supply, adaptation of the new Infrastructure Planning Commission (IPC) and a new licensing system, both have some apparent advantages. Against the nine evaluation criteria, they perform better than the current system in terms of financial costs to the participants, and better or no worse on the supply and industry issues. However, they tend to perform worse on environmental issues.

When assessed against the eight main consequences reviewed, the IPC and licensing options show merits in terms of flexibility to respond to demand and in terms of their likely speed, efficiency and achievability. A licensing system would also have an advantage of transparency and accountability, but this would not bring procedural benefits for the public, or environmental benefits. However, on virtually all other counts, the consequences would be disadvantageous. Both are centralised systems for taking decisions which would have particularly damaging effects on the scope for public involvement and, therefore, public acceptability. In this respect they would perform worse than the current system or a system with just regional guidelines, and are likely to be worse than having no guidelines at all. Setting up either of these new centralised systems would also require legislation and expanded central bureaucracies and would have other unavoidable adverse consequences compared with the other options or the current system.

Further, a licensing system would be outside the planning process and therefore not democratically accountable and would be detached from a range of planning objectives. There is much more uncertainty about the impact of the IPC option against these other considerations because this would depend on how the IPC operated in this area. Handling most aggregates planning applications through the IPC would divert that body from its main purpose of concentrating on the largest infrastructure projects of truly national significance.

Therefore, overall:

- all four alternative options have more disadvantages than advantages compared with the current system of managed aggregates supply
- on some evaluation criteria (three out of nine) and some consequences (three out of eight) none of the alternative options is better than the current system
- the alternative option which has the fewest apparent disadvantages, the regional management system, also has the fewest advantages and, so, is less satisfactory than the current system
- the options with the apparent greater benefits also have the greater disadvantages
- there is no alternative option that appears capable of performing better than the current system when all evaluation criteria and consequences are taken into account.

6.3 THE MANAGED AGGREGATES SUPPLY SYSTEM AND POSSIBLE IMPROVEMENTS

The existing managed aggregates supply system appears to be more effective in meeting the need for an adequate and steady supply of aggregates than the other options that have been examined. However, as identified in section 3.4, there are weaknesses in the current system and consequently there may be scope for improvement.

This section examines:

- meeting demand for aggregates
- assembly of the evidence base
- estimating future demand
- national coordination and Regional Aggregates Working Parties
- regional guidelines and sub-regional apportionment
- landbanks
- costs
- investment by industry
- public engagement
- speed and efficiency of the system.

6.3.1 Meeting demand for aggregates

The main purpose of managing aggregates supply is to maintain an adequate and steady supply in the short, medium and long term. Providing certainty that the demand created by society and the economy will be met sustainably and that industry will have a sound basis for investment is a major strength of the current system. Quarries necessarily take years to plan, bring into production, work out and restore, requiring long term planning based on sound evidence. The current system has delivered continuity of supply for over 30 years by assisting the planning system to address the imbalances in supply and demand for aggregates brought about by the uneven geographical distribution of land-based aggregates resources (sand and gravel, and crushed rock) and has the potential to continue to do so. The national and regional *Guidelines*, underpinned by a sound evidence base, are the main vehicle for resolving these imbalances and ensuring continuity of supply. Any changes to the current system should retain this objective as its overarching priority.

6.3.2 Assembly of the evidence base

An essential element of any managed system is the gathering of reliable, regular and up-to-date data on the sales, movement, consumption and permitted reserves of primary aggregates, and on alternative sources such as recycled and secondary aggregates. In addition to contributing to the monitoring and review of the *Guidelines*, this information assists the development and monitoring of planning policies at national, regional and local level and provides basic information on which the industry can make investment decisions. It is used to inform all stakeholders of the current state of aggregates supply and allows an important indicator of sustainable development – the ratio of alternative to primary aggregates – to be assessed. Results provide contextual information with respect to planning applications for the extraction of aggregates. It is difficult to see how policy could be developed and monitored, whatever the chosen approach to planning for supply, without this sound evidence base. Even if no management system existed, data would still be required to avoid sterile debate over need and available reserves in considering planning applications and appeals. The overall cost of gathering and monitoring this valuable information is modest (less than £1 million per annum; equivalent to less than 1 pence per tonne produced). Indeed many stakeholders would argue that this data should be considered an investment rather than a cost, given the significance of aggregates, through construction, to the whole economy

6.3.3 Estimating future demand

Econometric demand forecasts, based on projected construction activity, are central to the managed aggregates supply system. Despite the unreliability of certain forecasts in the past, there is a widespread view that some form of quantitative assessment of future requirements is essential. However, the current approach to estimation has been criticised, mainly by MPAs and NGOs, as being:

- too complex, technical, obscure and difficult to understand; and
- a ‘predict and provide’, rather than a ‘plan, monitor and manage’, approach because forecasts are founded on past trends and economic variables, without taking adequate account of policy objectives and non-economic factors such as the possibility of more sustainable future construction. The need to move away from a ‘predict and provide’ approach was accepted in the Rural White Paper, 2000 pg 109⁵

Econometric demand forecasts inevitably have to address a range of technical issues and make numerous assumptions, each of which introduces its own opportunity for error in predicting the future. Small variations in outcomes against key assumptions can have a significant impact (such as in the intensity of aggregates use per unit of financial investment in construction, and the extent to which aggregates are tied to projections for the wider economy and the construction sector within it). The response to this kind of uncertainty has been to undertake annual forecasts in order to check whether, or not, predictions are diverging from expectations. As there are clear, and inevitable, technical limitations in any forecasting process, caution should be exercised in respect of forecasts and judgement exercised in the use of the results. It would therefore be prudent to make the system more flexible to respond to actual demand.

A simpler method of forecasting future demand, currently used in Scotland, is to calculate an average consumption of aggregates over a five year period and project this figure forward for a period of about 15 years, compatible with the planning horizon required in spatial strategies and

⁵ “We will issue new planning policy guidance on aggregates supply in 2001, with the aim of getting away from the present mechanistic ‘predict and provide’ approach by making more realistic estimates of future requirements, and providing a greater opportunity for these estimates to be tested at a local and regional level. We also want to find better ways of ensuring that environmental issues are built into the decision making” (DETR, 2000)

local plans. This estimate of demand can then be revised following the publication of successive four-yearly Aggregates Minerals Surveys, when new figures for consumption become available.

Although the perpetuation of current demand does not address the causes of demand for aggregates, nor give any indication of forces for change, whether economic, practical or policy-led, a comparison of figures shows that this method would have been no less accurate than the econometric method over the last 30 years. In a few instances it appears to be a significant improvement, but this is mainly due to a couple of particularly inaccurate forecasts, which were released in the early 1990s, and which failed to predict the sharp decline in consumption that actually occurred.

Given that broadly indicative levels of demand are adequate for planning, and provided estimates of demand are properly reviewed and updated, this simple approach has some attractions in the short-term at least. However, if this approach was adopted, it would be important for stakeholders to be comfortable that there were no predictable and well understood future events that would be likely to significantly affect the demand for aggregates e.g. a substantial increase or decrease in road construction. As an interim measure it might be introduced to run alongside the present methodology so that the relative merits of the two approaches could be compared.

In the longer term, it might be possible to introduce an improved forecasting method by taking a wider range of factors into account. However, in order to do this there is a need to better understand influences on future aggregates demand, including:

- the implications of the sustainable construction agenda
- the implications of development in different locations, according to ground quality, flood risk, new infrastructure requirements, the scope for public transport to supplant private transport, etc
- the impact of the timing of major construction projects on overall aggregates demand
- the capacity of the construction industry as a whole to supply and the diversion or addition of labour and materials for the completion of major projects
- the demand for aggregates of different types (sand and gravel, and crushed rock) and qualities
- testing of the extent to which each of these factors influences overall demand.

These influences on demand are, in part, matters of judgement. They indicate the importance of moving from a forecasting method which produces fixed and apparently definitive figures to one which recognises that construction requirements involve choices and policies. The judgements involved must stem from a wide-ranging assessment of the implications for aggregates requirements across the whole sustainable construction agenda. This has been beyond the capacity of the present study. Nonetheless, there are major issues to address in relation to aggregates requirements, such as the effects of:

- building and maintaining flood defences or a selective programme of managed retreat
- development outside flood risk areas or providing sustainable drainage systems
- the principles of thermal mass in buildings or lightweighting
- constructing new transport infrastructure or managing the demand for existing infrastructure.

Taking aggregates demand forecasting in this direction will make aggregates planning a more robust process, clear about the direction of policy and sensitive to progress towards meeting policy objectives. Aggregates planning would be tied more efficiently to meeting real demand,

with a closer connection in the public mind between the uses of aggregates and the sources of them.

6.3.4 National co-ordination and Regional Aggregates Working Parties

The Regional Aggregates Working Parties (RAWPs) have an important role in monitoring aggregates supply and discussing the implications on an informed basis. They also help to build understanding of the problems and issues of concern to stakeholders and thus help in the development of appropriate national, regional and local policies. The National Co-ordinating Group (NCG), together with its technical Sub-Group (TSG), provides a forum for the co-ordination of monitoring activities without which there would be a danger that regions would adopt different, incompatible, approaches. It also provides the forum for discussion of emerging inter-regional problems and identification of possible solutions to these. Given the imbalance between supply and demand among regions both the RAWPs and NCG continue to perform important functions.

6.3.5 Regional guidelines and sub-regional apportionments

Use of the updated demand forecast to prepare regional aggregates guidelines is, at present, the first step towards determination of the necessary allocations of land for land-won sand and gravel and crushed rock in MDDs/LDDs. In a plan-led system, these indicate where planning consents for aggregates extraction are likely to prove acceptable and, therefore, provide a reasonable degree of certainty to the industry and support investment decisions by the industry. This approach also allows for longer term planning for infrastructure, biodiversity, life-cycle of land and safeguarding resources. It also helps to ensure that individual MPAs do not bear a disproportionate burden of meeting demand, either at regional or national level. The essential element for planning is to prepare indicative figures for the likely requirements for land-won aggregates over periods compatible with the requirements of RSS and MDDs/LDDs. These do not have to be precise.

MPAs generally agreed with the view of the operators that a particular benefit of the *Guidelines* is that they provide a national framework for decisions. Locally accountable politicians would find it difficult to give sufficient emphasis to arguments about national need without such guidance. NGOs were more circumspect regarding the current system but acknowledged that it has a number of strengths. Chief among these was the certainty provided by the *Guidelines* to all stakeholders. This was seen as resulting from the *Guidelines* providing a valuable and ‘universally accepted’ framework for decision making. The system also provided a reasonable degree of accountability. Although the NGOs considered that there were a number of weaknesses to the current system, one of them concluded that it may be ‘the best worst system’.

Sub-regional apportionment of the *Guidelines* is, inevitably, contentious since it bears on how much provision for supply should be made by specific MPAs. Current supply patterns essentially reflect the distribution of historic planning permissions. However, this in turn reflects the availability of, and access to, economic resources. Minerals do not have the locational flexibility available to most other forms of development. The managed aggregates supply system has been able to handle the differences of view which have arisen over the regional guidelines and sub-regional allocations but this is likely to become a more demanding process as permitted reserves in areas of past and current working are exhausted and remaining resources become more constrained. This will place greater pressure on other MPAs, perhaps in different regions, to supply at higher levels. Apportionments are, therefore, likely to become more contentious as time passes and a robust approach will become even more important in dealing with emerging problems.

The process between and within regions may result in some residents feeling that they are being affected by damage that would not be tolerated elsewhere. It will become increasingly important,

therefore, to reassure stakeholders that there is a level playing field in respect of the attention paid to potential environmental and social impacts. Sustainability appraisal of plans and EIA of projects, if properly undertaken and applied, should help but there is a need for central over-sight of the quality of these processes if stakeholders are to agree positive solutions amongst themselves rather than use an independent arbitration process to achieve the least unacceptable outcomes. It would be wise to counter criticisms by ensuring that there is an opportunity for political engagement in the development of regional guidelines and allocations in mineral DPDs in the early stages of the process, rather than at the end.

6.3.6 Landbanks

Policy on landbanks is an integral part of the present managed aggregates supply system. MPS1: Annex 1 states that landbanks should be at least seven years for sand and gravel and at least ten years for crushed rock. A longer period may be appropriate in certain circumstances, such as for specific qualities of aggregates. Landbanks for crushed rock are currently very substantially higher than the ten-year minimum in all regions (more than 20 years). For sand and gravel in 2005 landbanks were less than the seven-year minimum in two regions (South East and London) and were at or below 8 years in the South West and East Midlands (Thompson et al., 2008). However, landbanks are a local issue and in 2005 were below the seven-year minimum in 14 MPAs in six separate regions.

Industry representatives interviewed for this study have indicated that landbank policy has been applied in an unduly mechanistic and restrictive way by some MPAs (Appendix 4). In general MPAs have maintained landbanks at or above the guidance levels, but in a few cases these have been held for sand and gravel very close to the seven-year figures. Thus the seven-year landbank for sand and gravel has sometimes been treated as a precise maximum, rather than an approximate minimum, as MPS1 requires.

Certain types of aggregates are not interchangeable in use. Applications for specific types of aggregates are said sometimes to have been refused (Appendix 4), even when there is a clear need for these materials because the overall landbank for all types of sand and gravel and crushed rock was greater than seven/ten years. This, however, is a problem of implementation rather than of policy. Some MPAs have pointed out that certain landbanks have fallen below seven years because of a failure by operators to bring forward appropriate applications. However, that may be because operators do not wish to incur the high costs of an application when it is perceived that it will have little chance of being approved.

Landbanks are based on the *Guidelines* and sub-regional apportionments and all of these are material considerations that should be taken into account in plans and in planning decisions by planning committees and planning inspectors. Beyond proper consideration of planning documents in public examinations and during the determination of applications, there are no sanctions to enforce these measures, but ignoring these matters could lead to challenges in the courts. There is a need for all MPAs and the Planning Inspectorate, unless there are sound arguments for not doing so, to pay proper regard to:

- (i) the words “at least” in the policy
- (ii) the practical ability of quarries in an area to maintain continuity of supply at the rate intended by policy
- (iii) the need to secure adequate permitted reserves of aggregates of various qualities, rather than just aggregates in general.

It is also suggested that a regular assessment should be prepared on a regional basis of the extent of permitted reserves, the current rate of depletion through sales, the current rate of replenishment through new permissions and the resultant length of landbanks. This would

provide a better understanding of the impact of these factors on regional and national supply and would enable trends in the size of landbanks to be identified and monitored.

Examination of constraints on the output of individual operating sites, sometimes referred to as the capacity to supply, would also give a clearer picture than is normally available at present to MPAs of the potential for increases in demand to be satisfied. Constraints on the ability to convert landbanks into actual ongoing output can be in the form of such matters as processing plant capacity, other operational matters (e.g. conveyor and railway capacity), weight restrictions on roads, planning conditions, environmental regulation and company production policy. However, security of supply will always depend on mineral companies submitting sufficient, timely, high-quality planning applications in appropriate places, and on MPAs and statutory consultees operating in an informed, objective and efficient manner.

6.3.7 Costs

The cost of operating the current system is low, and the benefit of any possible reduction in those costs would therefore be marginal. There would be merit in attempting to drive down costs further only if the managed aggregates supply system was viewed as offering few advantages. Section 3.4 and Appendix 4 show that respondents to interviews for this study found considerable benefits in the current system, and that, overall, the cost aspect was not a significant concern to them.

6.3.8 Investment by industry

Economic modelling in section 5.3.6 suggests that the aggregates industry's level of investment is particularly sensitive to the likelihood of obtaining planning permission (more than to the cost of the application process). The industry needs a reasonable degree of certainty from national, regional and local policies. Where obtaining permission becomes more risky, the industry can be expected to curtail promoting some schemes that are perceived as being more marginal (either in economic or planning terms). Predictability is therefore highly desirable and appears to be delivered by the existing system to the extent that about 90 per cent of applications, by tonnage, have been approved over the last decade.

While there seems to be no overall national problem with the size of permitted reserves at present, for several years sales of sand and gravel and crushed rock in some areas and regions have not been replenished by newly permitted reserves. If continued, this is likely to lead to local supply shortages. Any deterioration in success rates is undesirable not only for the promoters but also for those who have been affected by applications meriting refusal. Transparency of process and reliability of outcome is provided most effectively where key issues are addressed in advance of individual planning applications as should be the case in an effective plan-led system. Allocations in plans depend on reasonable, informed assessment of the necessary levels of provision.

6.3.9 Public engagement

Proper public engagement is a fundamental feature of the planning system at both spatial planning and planning application stages. This needs to be carried out openly and transparently and to be supported by a sound evidence base. There is widespread support for a firmly evidence-based approach to aggregates planning, where outcomes can be justified and traced back through an audit-trail in the decision-making process. However, a central problem has been the marrying of this with political inputs, so that all the parties affected by aggregates working have sufficient engagement to feel confident in the eventual decisions. Too technical a process risks the public feeling excluded from decisions, while too political a process risks arbitrary outcomes which undermine the justification for the whole process. The strengths and weakness analysis (section 3.4) indicated that the technical aspects of the current system had perhaps gone

as far as they could: the greater challenge that needs to be addressed is better political and public engagement in the managed aggregates supply process.

It is a challenge to sustain public engagement through an inevitably lengthy and often technical process. People will only get properly involved if they can see some benefit that justifies the effort. Provision of opportunities for political engagement earlier in the process, when people's views can most make a difference, would promote greater involvement. Achieving this would need to be handled sensitively so that:

- the technical foundations for aggregates management are not lost
- there is clarity about the issues which can and cannot be tackled politically (so that expectations are not unduly raised)
- where views are invited they are demonstrably taken into account (so that the process is genuine rather than 'going through the motions')
- the system is not unduly delayed by protracted debate.

There would need to be recognition that:

- some issues are more matters of judgement than technical
- the system should be used more visibly to promote equity of treatment between supply areas and to communicate this more widely (e.g. a more consistent approach to sustainability appraisal between regions and MPAs)
- concerns such as the case for less aggregates-intensive construction that are often raised through the political process should, so far as aggregates are concerned, be debated within the guidelines process
- the public and their representatives should be engaged at an earlier stage in the managed aggregates supply system, so that regional allocations, not just sub-regional apportionments, are open to local debate before the MDF/LDF processes commence
- greater effort is required to demonstrate the basis for draft regional guidelines and sub-regional apportionment, together with greater public engagement in these stages of the managed aggregates supply process. This would be accompanied by less opportunity to revisit the same issues again in plan-making
- broadening of interest groups directly involved within the managed supply system by representation on the National Co-ordinating Group might be beneficial
- greater engagement would not be used to frustrate the need to deliver the *Guidelines* in a timely way.

6.3.10 Speed and efficiency of the system

Greater speed and efficiency in the planning system are major Government aims, but only insofar as these can be achieved without adverse effects on the other benefits which the planning system confers. However, an irreducible minimum period of time is required to thoroughly address the complex and often controversial issues that are inherent in proposals for mineral working. The *Guidelines* support that process but frequent revisions can raise problems because it takes time to incorporate aggregates guidelines, based on such estimates, into RSS and MDDs/LDDs. Consequently there is a risk that these might become out of date before they are incorporated into regional and local policy, though the more flexible new plan-making and review arrangements for RSSs and minerals planning documents were designed to help overcome this. It is nevertheless important to have sufficient stability of the *Guidelines* over a number of years to allow proper incorporation into the planning processes.

7 Conclusions and recommendations

This research has examined:

- the economic, social and environmental arguments for managing aggregates supply
- whether the current managed aggregates supply system is the most efficient and effective for maintaining a steady and adequate supply
- alternative scenarios for maintaining aggregates supply.

The key findings concern:

- the need for a managed aggregates supply approach
- the fitness for purpose of the existing approach when compared with alternative options
- potential improvements to managed aggregates supply.

7.1 THE NEED FOR A MANAGED AGGREGATES SUPPLY APPROACH

Society and the economy create the demand for construction in the form of houses, roads, hospitals and other essential infrastructure. The present state and foreseeable development of building technology suggests that the construction industry can only meet this demand if it continues to receive an adequate and steady supply of aggregates.

Resources suitable for aggregates production are not evenly distributed due to the geology of the country and the fact that they can only be extracted where they occur. The key demand areas, such as London and the South East, do not coincide with the key supply areas, which are principally the South West and East Midlands regions. There are also regional supply deficits in the North West, West Midlands and East of England. This has implications for regional and local planning, which are currently addressed through a system of managing aggregates provision. Whilst taking due account of alternative sources of aggregates, this approach ensures that this mismatch in supply and demand locations can be resolved in the most sustainable way.

Given that mineral planning can be contentious at all levels there is a clear need for an approach that demonstrably and transparently addresses the issues to resolve potential problems equitably and in good time. Reasonable certainty of outcome is necessary to secure the required investment by the industry. Consequently the reasons for establishing the current system of managing aggregates provision remain valid today. Indeed, as the difficulties of finding new sites suitable for aggregates extraction increase, so too does the necessity for managing regional variations in supply options.

Recommendation 1: It is recommended that a managed aggregates supply system should continue for the benefit of society and the economy.

7.2 ALTERNATIVE OPTIONS FOR MANAGING AGGREGATES SUPPLY

The consenting processes for aggregates in other European countries address similar issues to those in England but none has such a closely managed system. This is probably due to those countries having less strongly competing pressures on the use of land and greater opportunity for imports of aggregates across international boundaries if necessary. By contrast England cannot easily import aggregates due to the extra costs involved, the limitations on port capacity and the difficulties of onward distribution through already congested transport networks. It is therefore

necessary to continue to source and manage the great majority of our own supply of aggregates within England.

Four alternatives to the current managed aggregates supply were examined in this research:

- no guidelines (i.e. without any managed system)
- regional guidelines only (i.e. without national guidelines)
- Infrastructure Planning Commission
- licensing system (outside the planning system).

It was found that some of the alternative options have attractive elements but all have significant disadvantages compared with the current managed supply system. In particular:

- all four alternatives have more disadvantages than advantages compared with the current system of managed aggregates supply
- on some evaluation criteria (3 out of 9) and some consequences (3 out of 8) none of the alternative options is better than the current system
- the alternative option which has the fewest apparent disadvantages, regional guidelines, also has the fewest advantages and, so, is less satisfactory than the current system
- the options with the apparent greater benefits in some aspects also have the greater disadvantages in others
- reliance on the assumption that ‘the market will provide’ carries a high risk as the permitting process is often split over supply chains from the aggregates donor county to the receptor county.

Thus, no alternative option of those considered is likely to perform better than the current managed supply system. The current system has delivered continuity of supply for over 30 years and has the potential to continue to do so. However, this research has identified some weaknesses in the current system which could be mitigated or removed.

Recommendation 2: It is recommended that the essential elements of the current system of managing aggregates supply in England are retained, albeit with some modernisation and improvements.

7.3 POTENTIAL IMPROVEMENTS TO THE CURRENT SYSTEM OF MANAGED AGGREGATES SUPPLY

The current managed aggregates supply system is generally fit for purpose in securing steady and adequate supply of aggregates at acceptable environmental costs. Many aspects of the existing system are working well and should be retained:

- a) The ‘top-down’ approach of the managed aggregates supply system, which is designed to tackle regional imbalances in demand and supply, benefits from the present co-ordinated national approach
- b) The technical, evidence-based approach founded on regular monitoring of aggregates supply and demand issues with information collected and considered at national, regional and local levels
- c) The RAWPs, which have an important role in monitoring supply and discussing the implications on an informed basis. This helps to build an understanding of the problems and issues of concern to the stakeholders.

- d) The NCG, which has an important role in co-ordinating activities across the regions and without which there would be a danger that regions would adopt different and incompatible approaches.
- e) The use of soundly-based national aggregates guidelines to underpin regional policy, and sub-regional apportionment to guide the preparation of aggregates planning policies and site allocations in minerals Development Plan Documents.

However, there are steps that could be taken to improve the efficiency and effectiveness of the current system, and its acceptability to stakeholders:

- a) It would be prudent to take a wider view on likely future demand for aggregates, taking account of sustainable construction and issues such as flood risk and infrastructure needs for development in different areas. This may help to reduce reliance on econometric and technical projections of demand and would better inform sustainability appraisal of national, regional and local policies. However, these issues are not yet well understood and further study is required on drivers of demand before the best method of implementation can be identified.
- b) Since econometric estimation of demand is seen by some as obscure and unreliable, the complexity, cost and time taken to prepare aggregates demand forecasts by the current method may not be justified. For instance, taking the average of a number of years total consumption of aggregates and projecting it forward as appropriate to the time horizon considered in RSS might be a simpler and cheaper alternative. As an interim measure it might be introduced to run alongside the present methodology so that the relative merits of the two approaches could be compared. Care should also be taken to ensure that key drivers of future demand for aggregates are not ignored.
- c) There would be merit in the groups represented on NCG and, perhaps, the RAWPs being extended to include representatives of a wider range of stakeholders so that these valuable bodies are not seen as remote and technocratic. This would give greater public credibility to the whole process.
- d) Regional guidelines and sub-regional apportionments would benefit from greater discussion by the RAWPs and at the public and political levels at an earlier stage, well before these are built into draft RSS and draft MDDs/LDDs. Care should be taken to demonstrate that stakeholders' views have been properly taken into account.
- e) Consideration should be given to better understanding of aggregates resources, permitted reserves and the practical capacity of quarries within each MPA area to respond to market demand in practice. A study of these long-term issues should be undertaken.
- f) Since the landbank is important for timely delivery of supply, this policy element needs to be applied consistently and flexibly, as stated in MPS1, by those determining planning applications for aggregates extraction. This consistency and flexibility would have the benefit of encouraging industry to invest in new sites and extensions to existing sites thus improving replenishment rates. A national assessment of reserves and landbanks for sand and gravel and crushed rock should be prepared on a regular basis by NCG to provide greater transparency and consistency to the status of landbanks and their impact on the regional and national supply picture. This would enable trends to be monitored more openly.
- g) Since equity of treatment in respect of the impacts of quarrying is a matter of public concern it would be prudent to increase public awareness of how this is achieved in social and environmental terms.

Recommendation 3: It is recommended that the following measures are implemented as a basis for improving the current managed aggregates supply system:

- a) a study to investigate the factors that influence future demand for aggregates to inform national, regional and local policies for aggregates provision
- b) as an interim measure, a simpler, more transparent approach to demand estimation, based on forward projection of average consumption over a number of years, should be implemented in parallel with the current method of econometric forecasting and the results compared
- c) informed by the results of a) and b), the most appropriate methodology for demand estimation would be identified
- d) wider stakeholder participation, for example countryside and environmental organisations and possibly NGOs, in the NCG and, perhaps, RAWPs
- e) more discussion at the political and public levels in the early stages of developing regional guidelines for, and sub-regional apportionments of, aggregates supply
- f) a study into the capacity of quarries, particularly rail-linked quarries, to respond to market demands, taking into account landbanks of permitted reserves and the constraints on bringing them to the market
- g) a national assessment prepared on a regular basis of the extent of permitted reserves, the current rate of depletion through sales, the current rate of replenishment through new permissions and the resultant length of landbanks
- h) monitoring to determine that a consistent and flexible approach is being taken to the application of landbank policies, both for aggregates in general and, where appropriate, for specific qualities of aggregates, when planning applications for extraction are being determined, backed by stronger national planning advice and intervention if this proves not to be the case
- i) an initiative to improve public awareness of how social and environmental equity of treatment are achieved when aggregates workings are planned and proposed in different regions and MPA areas.

It is recommended that Government should consider these issues, possibly through discussion with the NCG and RAWPs, as a first step towards implementing a programme of incremental improvement to the managed aggregates supply system.

Appendix 1

TERMS OF REFERENCE OF NATIONAL CO-ORDINATING GROUP (NCG) AND THE ROLE OF REGIONAL AGGREGATES WORKING PARTIES (RAWPS)

Purpose

The role of the NCG is to:

- ensure the national co-ordination of the Regional Aggregates Working Parties (RAWPs) and of the work undertaken by them;
- to give the RAWPs guidance as necessary on technical and policy issues that might affect their work;
- to co-ordinate RAWP technical activities;
- to provide technical advice to the Department for Communities and Local Government (CLG) (formerly Office of the Deputy Prime Minister (ODPM)) on draft papers and guidance connected with the work of the RAWPs and on inter-regional technical issues; and
- to convene meetings of a technical subgroup drawn from its membership to advise on detailed issues.

Membership

NCG is chaired by the CLG, and comprises the Chairs of the RAWPs, representatives of industry including the Quarry Products Association, British Aggregates Association and National Federation of Demolition Contractors, Natural England, the Welsh Assembly, the Scottish Executive and other appropriate Government departments.

TECHNICAL SUB-GROUP

A Technical Sub-Group of the NCG is convened as necessary and provides detailed technical advice to the Department and the NCG on specific issues. The sub-group is chaired by the CLG and draws representatives from the Chairs and Secretaries of the RAWPs, from the aggregates industry, Natural England, the Welsh Assembly, the Scottish Executive, the British Geological Survey, and other Government departments as appropriate.

REGIONAL AGGREGATES WORKING PARTIES (RAWPS)

Introduction

The RAWPs were established in the mid-1970s to identify and consider likely regional problems in the supply of aggregate minerals. They provide a means of getting the agreement of both industry and mineral planning authorities to the basic facts of regional supply, particularly about reserves and landbanks. In recent years increased attention has been focused on the demand and supply of alternatives to primary aggregates reflecting the emphasis of government policy on encouraging the use of these sources.

There are nine RAWPs in England, covering South East England, London, East of England, South West, East Midlands, West Midlands, North West, North East and Yorkshire and the

Humber. There are also two RAWPs in North and South Wales respectively but these are responsible to the Welsh Assembly Government. Each RAWP is chaired by a County Planning Officer or the equivalent, and draws members from the mineral planning authorities, the aggregates industry (by representation from the Quarry Products Association and the British Aggregates Association), Government Offices for the Regions, Regional Assemblies and the Department for Communities and Local Government (CLG), along with other interested Government Departments, such as Defra, and statutory consultees, such as Natural England.

They are intended to provide technical, but not policy, advice to the CLG and to the Government Offices and Regional Assemblies that can be used in the preparation of national policy, Regional Spatial Strategies, and minerals development frameworks.

Objectives

The objectives of the Regional Aggregates Working Parties (RAWPs) include:

- the assessment of the reserves of sand, gravel and hard rock which are available in the region and which are suitable for use as aggregates;
- the assessment of the demand for aggregates likely to arise within the region;
- to indicate whether there is likely to be a regional surplus of aggregates production or a shortfall in supply without further planning permissions being granted for mineral working;
- to consider the potential contribution which synthetic and waste materials could make to meeting the demand for aggregates;
- to consider, where applicable, the contribution which the region could make to meeting demand arising in other parts of the country, taking into account environmental and agricultural considerations; and
- to monitor the supply and demand for aggregates.

Activities

The RAWPs undertake annual surveys of production and reserves of aggregates. Every fourth year they collect additional information on transport and distribution of aggregates. This allows levels of consumption by region to be calculated. After making allowances for supplies of marine-dredged aggregates, recycled materials and other alternatives, and imports from other areas, the results of these surveys are compared with estimates of permitted reserves of aggregates to establish whether there is a surplus or shortfall without further planning permissions being granted for mineral working.

The work of the RAWPs is guided by a National Co-ordinating Group (NCG) which is chaired by a senior official in the CLG.

The Regional Aggregates Working Party Secretariat operates under contracts between the Secretary of State for Communities and Local Government (formerly the First Secretary of State for the Office of the Deputy Prime Minister) and the Mineral Planning Authorities or a Regional Planning Body. They prepare papers for, and minutes of, RAWP meetings, collate survey data at the regional level, and prepare annual monitoring reports, and data.

These reports provide the only regular comprehensive statistics on minerals planning, and often the most detailed data on production and the end use of minerals. In addition to statistics on production, the reports also provide regional information on: recycling activities; progress on minerals development plans; current and future research projects; and how landbank requirements are being dealt with in each region. A number of reports also contain broad analyses of the patterns of construction demand within their respective regions.

Appendix 2

COSTS ASSOCIATED WITH THE MANAGED AGGREGATES SUPPLY SYSTEM

		Cost to Whom?	Task	Annualised Cost £
England	DCLG		Monitoring and revision of policy and <i>Guidelines</i>	50 000
<i>That part which relates to England only</i>	DCLG		Commissioned research to inform policy (including 4-yearly AM, annual AMRI and biennial CD&EW surveys)	160 000
Regions	DCLG		Direct costs of RAWPs	240 000
			Sub-total	450 000
Regions	MPA		Attending RAWP meetings and associated work	55 000
Regions	MPA		Annual Monitoring (including extra work involved with 4-yearly AM surveys)	165 000
			Sub-total	220 000
Regions	Industry		Attending RAWP meetings and associated work	25 000
<i>That part which relates to England only</i>	Industry		Completing forms for AMRI surveys and Annual Monitoring for MPAs	250 000
			Sub-total	275 000
			Grand total	945 000

Costs associated with planning appeals

		Cost to Whom?	Task	Annualised Cost £
Local	Industry		Planning Appeals	50,000-250,000 each
Local	MPA		Planning Appeals	12,000-15,000 each
			Total	62,000-265,000

Notes:

DCLG = Department for Communities & Local Government

RAWP = Regional Aggregates Working Party

MPA = Mineral Planning Authority

AM = Four yearly Aggregate Minerals survey

AMRI = Annual Minerals Raised Inquiry

CD&EW = Construction, Demolition & Excavation Waste

Appendix 3

LANDSCAPE, WILDLIFE AND CULTURAL CONSTRAINTS

England has some outstanding landscapes, wildlife and cultural assets, which are highly valued for their own sake and for their recreational opportunities. A hierarchy of designations is used to protect these areas from the adverse effects of development; however, not all of these designations represent a constraint on mineral working. This appendix describes how these various designations are established, their number or size in relation to England and the degree to which they restrict mineral extraction.

Landscape (attractiveness and distinctiveness)

International. There are no international powers having a direct impact on landscape protection in the UK, although the International Union for the Conservation of Nature has classified National Park systems around the world in relation to the degree of man's impact on them and the level of intervention permissible within them. On a scale of I to VI, with Category I representing pristine wildernesses uninfluenced by man and where access is carefully restricted to virtually all activity other than unsupported individuals on foot, the National Parks of England are listed under Category IV.

European. The Council of Europe has established a European Landscape Convention, ratified by the UK, which provides for the identification, protection, management and planning of landscapes throughout each ratifying state (including urban areas as well as rural). This facilitates and promotes the recognition of the distinctiveness of landscapes and their integration into a range of other policy areas, supported by training and awareness-raising. No legal obligations are imposed beyond those which ratifying states choose for themselves.

National. The National Parks and Access to the Countryside Act 1949, as amended by successor legislation including the Countryside and Rights of Way Act 2000, established the national interest in the beauty of landscape through the designation of National Parks and Areas of Outstanding Natural Beauty (AONBs). The two statutory purposes of the National Parks' designation are:

- (a) To conserve and enhance the natural beauty, wildlife and cultural heritage of their areas; and
- (b) To promote opportunities for the public understanding and enjoyment of the special qualities of their areas.

If there is a conflict between the two, conservation takes precedence. In carrying out these two main responsibilities, the National Park Authority (one is established to manage each Park) has a duty to seek to foster the social and economic well-being of local communities. There are currently eight National Parks in England (Dartmoor, Exmoor, New Forest, Peak District, Yorkshire Dales, North York Moors, Lake District and Northumberland) while the Norfolk and Suffolk Broads is designated under its own special legislation conferring status comparable to National Parks. Procedures for designating a National Park in the South Downs are well-advanced. Three further National Parks have been designated in Wales (Brecon Beacons, Pembrokeshire Coast and Snowdonia.) The designated National Parks in England, including the Broads, cover 8 per cent of England's land area.

The principal difference between National Parks and AONBs is that AONBs do not have the second recreational objective. There are currently 40 AONBs in England and Wales (35 in England, 4 in Wales and the Wye Valley straddling the two). The designation process began with Gower in 1956, with the most recent addition to the family being the Tamar Valley in 1995. AONBs occupy about 15 per cent of England.

Policy on development in National Parks, the Broads and AONBs is highly restrictive. The Countryside and Rights of Way Act 2000 afforded AONBs the same level of protection from competing development as had historically been applied to National Parks and the Broads. All now have “the highest status of protection in relation to landscape and scenic beauty. The conservation of the natural beauty of the landscape and countryside should therefore be given great weight in planning policies and development control decisions in these areas” (PPS 7 paragraph 21). In addition, in these areas “The conservation of wildlife and the cultural heritage are important considerations in all these areas. They are a specific purpose for National Parks, where they should also be given great weight in planning policies and development control decisions” (PPS 7 paragraph 21).

PPS 7 paragraph 22 explains that “Major developments [which includes most mineral workings] should not take place in these designated areas, except in exceptional circumstances..... Because of the serious impact that major developments may have on these areas of natural beauty, and taking account of the recreational opportunities that they provide, applications for all such developments should be subject to the most rigorous examination. Major development proposals should be demonstrated to be in the public interest before being allowed to proceed. Consideration of such applications should therefore include an assessment of:

- (i) the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy;
- (ii) the cost of, and scope for, developing elsewhere outside the designated area, or meeting the need for it in some other way; and
- (iii) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.”

Sub-national. PPS 7 paragraph 14 establishes a policy role in sub-national planning for landscape: Regional Spatial Strategies [RSSs] “should recognise the environmental, economic and social value of the countryside that is of national, regional or, where appropriate, sub-regional significance. Policies in RSS and LDDs [Local Development Documents] should seek to maintain and enhance these values, so enabling the countryside to remain an important natural resource, contribute to national and regional prosperity and be enjoyed by all.”

In support of this, local planning authorities may designate landscapes on a map within their Local Development Frameworks wherein policies for landscape protection may apply as are appropriate. The degree of constraint on development here is expected to be less than applies to nationally designated landscapes. These local landscapes have historically been designated primarily by County Councils, across distinctive areas which often include land within a number of local planning authority areas. The Government has indicated in PPS 7 that there should be less need for these local landscape designations under the planning system introduced by the Planning and Compulsory Purchase Act 2004:

- “24. The Government recognises and accepts that there are areas of landscape outside nationally designated areas that are particularly highly valued locally. The Government believes that carefully drafted, criteria-based policies in LDDs, utilising tools such as landscape character assessment, should provide sufficient protection for these areas, without the need for rigid local designations that may unduly restrict acceptable, sustainable development and the economic activity that underpins the vitality of rural areas.

25. Local landscape designations should only be maintained or, exceptionally, extended where it can be clearly shown that criteria-based planning policies cannot provide the necessary protection. LDDs should state what it is that requires extra protection, and why. When reviewing their local area-wide development plans and LDDs, planning authorities should rigorously consider the justification for retaining existing local landscape designations. They should ensure that such designations are based on a formal and robust assessment of the qualities of the landscape concerned.”

Information is not held centrally on the areas covered by local landscape designations. Each should be consulted individually on this and for the degree of impact it could be expected to have on the scope for mineral working.

Wildlife

International. The three principal international agreements on wildlife are the Ramsar Convention, the Bonn Convention and the United Nations Biodiversity Convention. The 1971 *Ramsar Convention on Wetlands of International Importance especially as Wildfowl Habitat* requires signatory states to promote the wise use of wetlands and specifically to promote the conservation of internationally important wetland sites included in a list. These sites are called ‘Ramsar sites’. Currently 162 sites have been designated in the UK covering 8,050 sq km (just over 3 per cent of the UK). The *Bonn Convention on the Conservation of Migratory Species of Wild Animals* came into effect in 1983. It requires the protection of endangered migratory species named on a list, and encourages separate international agreements covering particular species. An agreement on the *Conservation of Bats in Europe* came into force in January 1994. The United Kingdom signed the *Biodiversity Convention* at the UN Conference on Environment and Development held in Brazil in 1992. The Convention includes provisions on habitat conservation and impact assessment. It requires that the components of diversity should be used sustainably; that is, in a way and at a rate that does not lead to their long-term decline, and which maintains their potential to meet the needs of present and future generations. It has spawned considerable activity in monitoring the status of scarce and threatened species in the UK and led to greater efforts to promote their recovery and well-being.

European. Within the European Union, the Birds Directive and the Habitats Directive are of major significance in setting out legislation across the European Union to protect and support species and habitats and other requirements of wildlife (such as linear features and ‘stepping stones’ to assist their movement).

The 1979 *EC Council Directive on the Conservation of Wild Birds* (‘the Birds Directive’, 79/409/EEC) applies to birds, their eggs, nests and habitats. ‘Special Protection Areas’ (SPAs) are established under the Directive, within which priority bird species will be protected. In the UK there are currently 252 SPAs covering 15,596 sq km, or 6 per cent of the UK. Within England alone there are 78 SPAs (including three cross-border sites) covering 6,487 sq km, or 5 per cent of the country. The Directive:

- provides for the protection, management and control of all species of naturally occurring wild birds in the European territory of Member States;
- requires Member States to take measures to preserve a sufficient diversity of habitats for all species of wild birds naturally occurring within their territories to maintain populations at ecologically and scientifically sound levels; and
- requires Member States to take special measures to conserve the habitat of certain particularly rare species and of migratory species.

The 1992 *EC Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora* (‘the Habitats Directive’, 92/43/EEC) requires Member States to take substantial measures to maintain or restore natural habitats and wild species listed in the Directive at a ‘favourable

conservation status', protecting both sites and species. Habitats and species listed in the Directive must be protected through a network of 'Special Areas of Conservation' (SACs). This Directive has been brought into effect in Britain mainly through *The Conservation (Natural Habitats, &c.) Regulations 1994* ('the Habitats Regulations'). There are currently 611 SACs in the UK covering an area of 25,040 sq km, representing just over 10 per cent of the UK. Within England (including cross-border sites) there are 236 SACs covering 9,272 sq km, representing 7 per cent of the country (8,091 sq km representing 6 per cent of England if cross-border sites are excluded).

SACs and SPAs together form a Europe-wide series of protected sites known as 'Natura 2000'. Unlike most other forms of protection provided in association with the designation of areas on maps, Natural 2000 sites are afforded a very high degree of priority over competing uses in these areas. The legislation requires that, ultimately, if there is a conflict of interest between the integrity of Natura 2000 sites and other land uses, then the decision will be found in favour of wildlife, save in rigorously defined and vital circumstances. Where a 'priority' habitat or species is at risk, the alternative activity can only be allowed to proceed if there are "imperative reasons of overriding public interest" at stake. The SPA and SAC legislation also differs from most other legislation of this kind in being retrospective in certain respects. In particular, where an SPA or SAC is subsequently designated on land already permitted for mineral working, then the permission must be reviewed if activity on the area remaining to be worked could have a significant effect on the integrity of the Natura 2000 site. A review has much the same impact as if a fresh permission was being requested, and can in some circumstances necessitate the existing permission being modified or revoked (with compensation being paid to the beneficiary of the permission by the local planning authority).

National. By far the most important national designation to assist wildlife interests is the *Site of Special Scientific Interest* (SSSI). First introduced in 1949, these are now notified under the Wildlife and Countryside Act 1981. The objective of the SSSI series is to form a national network of areas representing in total those parts of Great Britain in which the features of nature, and especially those of greatest value to wildlife conservation, are most highly concentrated or of highest value. The Countryside and Rights of Way Act increased protection of SSISIs, notably by: enabling Natural England to refuse consent for damaging activities; providing new powers to combat neglect; increasing penalties for deliberate damage and a new court power to order restoration; improving powers to act against cases of third party damage; and placing a duty on public bodies to further the conservation and enhancement of SSISIs. There are over 4,000 SSISIs designated in England, covering 7 per cent of the country's land area.

Some SSISIs may be of extra importance for one or more of the following reasons:

- all Ramsar sites, Special Protection Areas and Special Areas of Conservation are SSISIs;
- some SSISIs have been designated as *National Nature Reserves* (NNRs): these are owned or leased by Natural England (or bodies approved by them) and used primarily for nature conservation;
- some SSISIs have been highlighted as a result of comprehensive biological and geological/geomorphological surveys, and are known as *Nature Conservation Review* (NCR) and *Geological Conservation Review* (GCR) sites respectively.

The Government aims to protect the integrity of each SSSI by ensuring that activities outside the designated area will not have significant adverse effects on the SSSI itself. Natural England defines 'consultation areas' around each SSSI, within which development proposals (of kinds which Natural England may specify) are sent to Natural England for comment. The general expectation is that consultation areas should provide a buffer zone of up to 500 metres, but may extend to a legal maximum of 2 kilometres, such as for wetlands where development such as mineral working at some distance could affect water levels inside the SSSI. There is scope to consider the wildlife impact of development proposals at even greater distance from an SSSI because (a) Natural England can advise local authorities if it wishes to be consulted on these

more distant schemes, and (b) local authorities must consult Natural England if a development proposal is ‘likely to affect’ an SSSI, even if the application falls outside an SSSI or any consultation area.

The Government’s policy on development which could affect SSISs is set out in PPS 9 paragraph 8: “Where a proposed development on land within or outside a SSSI is likely to have an adverse effect on an SSSI (either individually or in combination with other developments), planning permission should not normally be granted. Where an adverse effect on the site’s notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of SSISs. Local authorities should use conditions and/or planning obligations to mitigate the harmful aspects of the development and where possible, to ensure the conservation and enhancement of the site’s biodiversity or geological interest.”

Species of wild animals, birds and plants named in the Wildlife and Countryside Act 1981 have varying degrees of protection, in addition to those species of European importance covered by the Birds and Habitats Directives. It is an offence deliberately to kill, injure, take or disturb listed animal species; to destroy their resting places or breeding sites; or to pick, collect, cut, uproot or otherwise destroy listed plant species. Furthermore, a selection of species is protected by their own specific legislation, such as badgers.

Sub-national. There is just one designation of locally important wildlife site for which provision is made in law. This is the *Local Nature Reserve* (LNR), which may be established by local authorities (under the National Parks and Access to the Countryside Act 1949) following consultation with Natural England. These provide opportunities for studying and enjoying wildlife, or for protecting it. They are normally designated on local authority owned land, though there is scope for the authority to lease the land or reach a legal agreement with the landowner (and a back-up power of compulsory purchase). The authority has considerable powers to ensure the wildlife value of the site is sustained, though byelaws must be confirmed by the Secretary of State.

In addition, local authorities may recognise other sites as being locally important for wildlife. These are sites which can be protected as a matter of policy, and their interests reflected in planning and other decisions. They are typically called ‘Sites of Nature Conservation Interest’ or a variant on this. Defra has issued *Local Sites: Guidance on their identification, selection and management* (2006).

There are other designations which can benefit wildlife but which fulfil other purposes as well. In particular, *Tree Preservation Orders* (TPOs) can be served by local planning authorities (under planning legislation) to stop the wilful damage or cutting of trees having important local amenity value, including value as a wildlife habitat. Individual trees or groups of trees can be protected this way, and speedily too if there is an imminent threat to them.

For the wider environment, Government policy on planning for wildlife is set out in PPS 9 *Biodiversity and Geological Conservation*. The Government’s objectives here and the key principles behind its national planning policies make clear that protecting and enhancing wildlife interests apply everywhere and that these interests are to be integrated with other policies.

Cultural assets

International. The principal international cultural agreement is the 1972 World Heritage Convention, established by UNESCO (United Nations Educational, Scientific and Cultural Organisation). The Convention aims to protect cultural or natural sites which have ‘outstanding universal value’ that need to be preserved for future generations as part of a common heritage. States which are parties to the Convention contribute the necessary financial and intellectual resources to protect the ‘World Heritage Sites’ designated under the Convention.

Designated Sites include not only iconic buildings and monuments singly or in groups, but towns and landscapes, reflecting the cultural importance of the natural as well as the built environment. There are 27 World Heritage Sites in the UK and dependent territories, of which 17 are in England. The larger landscape sites, with some potential to constrain aggregates extraction, are limited to the Dorset & East Devon Coast, Hadrian's Wall, and the Cornwall & West Devon mining landscape.

UNESCO recommends that a Management Plan should guide decisions affecting each World Heritage Site. Governments must report to UNESCO every six years on the state of conservation of their World Heritage Sites, though the expectation is of progress by co-operation rather than coercion: there are no additional internationally-imposed statutory controls. Government policy in PPG 15 *Planning and the Historic Environment* encourages local planning authorities to protect World Heritage Sites and consider their importance as a 'key material consideration' when making planning decisions. Policies will typically identify the designated Site and a buffer zone around it within which development likely to impact on the Site is controlled.

European. There is no significant European policy or legislation on cultural resources which might act as a constraint on aggregates extraction.

National. There is considerable legislation bearing on the appropriate protection and management of cultural resources. Much of this is differentiated in specific laws focused on particular types of resource. The main designations with a potential to act as a constraint on aggregates working are: listed buildings and ancient monuments. In addition there are non-statutory designations of historic parks & gardens and historic battlefields.

Listed buildings are buildings and structures "of special architectural or historic interest" placed on statutory lists compiled by the Secretary of State for Culture Media and Sport under the Planning (Listed Buildings and Conservation Areas) Act 1990. The listing process is administered by the DCMS agency English Heritage. There are currently about 370,000 listed buildings in England. Of these 92 per cent are listed Grade II, with the remaining Grade II* being particularly important buildings of more than special interest, and Grade I being those of outstanding interest.

Listing immediately protects buildings in law, and any changes must first receive listed building consent. As maintaining listed buildings in use is usually a priority objective, the consent procedure is largely to ensure that any alterations respect the character of the building. Demolition of listed buildings is rare, and certainly the case for preservation is fully explored when, for instance, area redevelopment proposals are under consideration. Decisions on listed building applications are mostly taken by the local planning authority, though they may not grant consent for any works to a Grade I or II* listed building, or for substantial demolition of a Grade II building, without consulting the Secretary of State.

One of the matters to be taken into account when considering listed building applications is the desirability of preserving the setting of a listed building, which is often an essential part of its character. This affects more than the immediate curtilage of a property, in that "the character of historic buildings may suffer and they can be robbed of much of their interest, and of the contribution they make to townscape or the countryside, if they become isolated from their surroundings, e.g. by new traffic routes, car parks or other development" (PPG 15 paragraph 2.16). While aggregates extraction close to listed buildings may be allowed where restoration sympathetic to the building is practicable, in other cases this may not be feasible and working is refused. For example, in Hertfordshire, permissions have been granted for aggregates working close to All Saints Pastoral Centre, London Colney, but refused on appeal at Marden Hill House, near Hertford.

Ancient Monuments of national archaeological importance are recorded on a schedule compiled under the Ancient Monuments and Archaeological Areas Act 1979, though the power has existed since 1882. Scheduled Monument Consent is required for any work to a designated monument.

Scheduling is applied only if this is the best means of protection (noting that scheduling takes precedence over listed building control if a site is both scheduled and listed, and that planning controls may be sufficient to protect the archaeological interest in sites). English Heritage indicates that the schedule now contains about 18,300 entries, applying to about 31,400 sites in England (out of about one million known archaeological sites or spot finds) [DCMS states 19,700 entries]. Some sites can cover extensive areas of countryside, such as ancient field systems, and have greater potential for constraint on aggregates working than point-sites.

A monument which has been scheduled is protected against disturbance or unlicensed metal detecting. This extends to an undisturbed exclusion zone immediately surrounding them. Furthermore, scheduling extends protection to adjoining land in order to protect a monument's setting. The Secretary of State for Culture Media and Sport must be informed of any work which might affect a monument above or below ground. Decisions on applications, with advice from English Heritage, aim to minimise or avoid damage to scheduled sites.

The Register of Parks and Gardens contains a record of nearly 1,450 sites built up since the 1980s. They are identified by English Heritage for their 'special historic interest' as a matter of policy rather than law. Local planning authorities are expected by PPG 15 paragraph 2.24 to protect registered parks and gardens in their development plans and in determining planning applications. Registered sites are material planning considerations when evaluating proposals for aggregates working or other development. Like Listed Buildings, these too are graded I, II* and II.

The Register of Historic Battlefields, compiled by English Heritage, lists 43 important English battlefields. Its purpose is to offer them protection and to promote a better understanding of their significance. A map of the battlefield is shown on each Register entry, based on available information. Although non-statutory, PPG 15 provides that "The effects of any development on the limited number of registered sites will form a material consideration to be taken into account in determining planning applications" (paragraph 2.25). To date, road development rather than aggregates working has been the principal challenge to historic battlefields.

Sub-national. The cultural heritage extends far more comprehensively through England than can be reflected in buildings, monuments and sites of national importance. The principal designation in statute which applies at the local level is the Conservation Area, (though in practice some of these are so outstanding as to be of national importance). In addition, there is scope for historic buildings and archaeology of local or regional importance to be identified by local planning authorities in association with policies for their protection and improvement.

Conservation Areas are designated under the Planning (Listed Buildings and Conservation Areas) Act 1990 as "areas of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance". The aim is therefore to protect important streets, villages, townscapes and other distinct areas from inappropriate change where their historic character is bound up with the ensemble rather than individual buildings or monuments, and notably to constrain the demolition of unlisted buildings which are valuable in their settings.

While for the most part a designation of urban areas, conservation areas can potentially have some constraint on aggregates working in two ways. First, conservation areas can be designated in countryside, though this is unusual (e.g. to sustain the patchwork of field boundaries and stone barns in part of the Yorkshire Dales). Second, the wider impacts of development on Conservation Areas should be taken into account. PPG 15 paragraph 4.14 provides that "The desirability of preserving or enhancing the area should also, in the Secretary of State's view, be a material consideration in the planning authority's handling of development proposals which are outside the conservation area but would affect its setting, or views into or out of the area".

Areas of Archaeological Importance may be identified as a matter of policy by local planning authorities in their development plans. Although usually urban areas, there is no reason why rural areas should not be identified in this way. (The Ancient Monuments and Archaeological

Areas Act 1979 makes provision in law for Areas of Archaeological Importance, though these are distinct, nationally important areas designated by the Secretary of State: although five have been designated in the centres of historic cities, the Secretary of State indicated in 1990 that no more would be added.).

Locally important archaeological remains may be protected by local planning authorities from being affected by development. PPG 16, Archaeology and Planning, indicates that “in appropriate circumstances, other unscheduled archaeological remains of more local importance, may also be identified in development plans as particularly worthy of preservation” (paragraph B16). Actual or potential archaeological remains of less than national importance are often one of the major issues for evaluation when allocating land for aggregates working and deciding planning applications. This can apply even if there is no formal designation of land for its potential archaeological interest. Local planning authorities can be expected to adopt planning policies which provide by condition or legal agreement for the investigation of archaeological remains in advance of planning permission being granted and, where approved, for the effective recording of any remains before operations commence.

Local lists of historic buildings of local heritage importance may be identified by local planning authorities. These may include ‘vernacular’ buildings (i.e. locally distinctive in using locally available materials and typically built to a design used locally over many decades or even centuries). There is no statutory provision for these lists, though they may be identified as a matter of local planning policy. As with nationally listed buildings, their setting is likely to be of significance.

Appendix 4

SUMMARY OF STAKEHOLDER INTERVIEWS

4.1 Introduction

One of the key elements of research for the project was a series of structured interviews held with operators and other stakeholders to assess their views on the current managed aggregates supply system.

In terms of operators, interviews were held with representatives from seven aggregates operators. Collectively these operators are responsible for more than 50 per cent of current English production. A range of different sized companies was covered. Views were also obtained from both the Quarry Products Association and the British Aggregates Association. One interview was with a non-aggregates mineral producer.

In terms of other stakeholders, interviews were held with representatives from two key Non Governmental Organisations (NGOs): the Council for National Parks and the Campaign for the Protection of Rural England (CPRE). Interviews were also held with representatives from two County Councils with responsibility for mineral planning.

This appendix summarises the key themes arising from this consultation exercise. This is intended purely as a factual exercise; no opinion of the different views articulated by stakeholders is presented. The main text of the report identifies where and why some of these views were considered and why some were not taken into account.

4.2 Strengths of the current system

There was a unanimous view from operators that the current managed system was, overall, fit for purpose. Indeed, opinion on this issue was quite strong with statements from operators including it being ‘far and away the best system’. Another operator summarised their view as being “If it ain’t broke, don’t fix it”. It was also considered that it had been a “known and proven system for over thirty years”.

Some operators noted that the *Guidelines* played a dual role. Not only, in their opinion, were they useful at the time that a planning application was brought forward but they also made it more likely that sites for aggregates working would be included in the relevant Mineral Development Framework. Indeed, this was stressed as the key benefit of the system by one of the trade body representatives.

In terms of why the system was so effective, the views of all operators were neatly encapsulated by the observation that the *Guidelines* provided a ‘statement of need’, especially in those cases where the end use for the aggregates was likely to be outside of the local area. As such, as the same operator went on to describe it, the *Guidelines* largely eliminate one area of potential dispute and set the context in which disputes can be managed. In this regard, an observation made by one of the operators was that there were intellectual similarities between the role played by the Managed Aggregates Supply *Guidelines* and the ‘National Policy Statement’ envisaged as part of the proposals within the current Planning Bill (2007). In both cases, the operator argued, there is an ‘adjustment’ to the standard planning procedures for industries recognised as crucial to the country’s infrastructure.

Two further benefits of the system were noted by different operators:

- one operator considered that one of the benefits of the system was that it provided for a good level of communication between stakeholders
- one relatively small operator noted that there was an *internal* as well as *external* benefit from the *Guidelines* which provided a structure for management when thinking about future aggregates applications and significantly reduced the likelihood of last minute ‘panic applications’

Other stakeholders also highlighted a number of strengths of the current system.

Representatives from county councils largely concurred with the view of operators regarding the strengths of the system. The chief benefit that these representatives noted was that the *Guidelines* provide a national framework that ensures that the issue of meeting national need was not ‘hijacked’ by local politicians who, as accountable only to a local electorate, would be unlikely to give sufficient (appropriate) emphasis to arguments of national need. It was also pointed out that the same argument also held even if the aggregates to be extracted were needed primarily for regional need: the system ensured that the environmental and amenity ‘burden’ was shared across all MPAs. The certainty provided by the system was also valued by these stakeholders as it allowed for planning for infrastructure, biodiversity and life-cycle of land; all, necessarily, long term issues.

NGOs were more circumspect regarding the current system but nonetheless acknowledged that it had a number of strengths. Chief among these was again the certainty provided by the *Guidelines* (to all stakeholders). This was seen as resulting from the *Guidelines* providing a valuable — indeed, as it was explained by one representative, a ‘universally accepted’ — framework for decision-making. One NGO considered that ultimately, more often than not the approach led to the least worst site being chosen. The same NGO also considered that the system provided for a reasonable degree of accountability, through the opportunity to provide input into the Technical Sub-Group, although this sentiment was not universally felt.

Although the NGOs considered that there were a number of weaknesses to the current system, as identified below, one of them concluded that it may be ‘the best worst system’.

4.3 Implications of removing the *Guidelines*

Operators were asked what they considered would be the implications for their operations were the *Guidelines* to be removed. Consistent with the view that the current *Guidelines* were broadly fit for purpose, all operators and both trade bodies believed that, were the *Guidelines* to be removed, the following would increase:

- the likelihood of having an application refused
- the likelihood of going to appeal
- the length of time taken for a decision to be reached
- the costs of dealing with the planning process

In the absence of the existing *Guidelines*, a number of operators considered that, at a national level, after a lag of about ten years, there could be real problems with security of supply. At a local level, another operator considered that an ‘anarchic’ system would develop with different counties adopting different policies and a consequent ‘patchwork quilt’ of aggregates working. This operator went on to consider that, ultimately, the level of dissatisfaction that this would create among stakeholders would require CLG to step-in to (re)-regulate the system. Consequently, they argued, any savings in regulatory costs acquired by removal of the *Guidelines* would be temporary.

Another operator noted that the problems associated with removing the national framework was that, since it had been introduced, there had been significant changes in the fiscal framework for local government. As a result of these changes, business rates are no longer hypothecated to the

local area but instead collected centrally. Consequently, this operator argued, there would be even less likelihood of applications being granted than existed prior to the introduction of the *Guidelines*, when local councils could weigh up local public opposition against increased local tax revenues.

As well as considering the implications for the national and regional pattern of supply of aggregates, a number of interviewees discussed the implications of failure to have a particular planning application granted. As discussed above, this was considered much more likely in a situation in which there were no *Guidelines*. There was a divergence in the views between the larger and medium sized companies and the smaller operators:

- the medium and large sized operators considered that, generally, in the short term, they would attempt to source material from other quarries, recognising that the likely increase in haulage costs could make them less competitive and hence profit and market share could be lost. In the event that the application that was refused was an extension to an existing site, then the implications would be that very tight control of that site would be instigated in order to ensure that reserves remained available to meet demand for as long as possible. In the longer term, they would explore other available extraction opportunities. However, a number of companies argued that the increase in foreign ownership within the industry in the recent past meant that a systematic, long-term decline in consents, and hence profitability, could force a reappraisal of UK aggregates operations
- the smaller operators considered that the failure to acquire any ‘major’ planning permissions would lead them to cease operating within two to five years.

4.4 Areas for improvement

Despite the judgement by operators that the managed system was, overall, fit for purpose, and certainly that the *Guidelines* should not be removed, there were a number of areas where it was considered there was ‘room for improvement’. County council representatives and NGOs also considered that there were a number of ways in which the *Guidelines* could be improved.

These are listed below, by theme. This allows areas where there is a degree of consistency across all stakeholders regarding current weaknesses or possible improvements as opposed to those areas where opinions on the nature of the weakness/scope for reform differed.

There has been an attempt to focus on the perceived weaknesses relating specifically to the managed system. More general concerns regarding the planning system have not been included.

4.4.1 LANDBANK POLICY

One of the most frequently cited concerns by operators regarding the current framework, expressed by at least three of the operators, was that the seven year landbank policy was not applied sensibly (by at least some counties). It was claimed that many counties treated the seven year landbank as a ‘maximum’ rather than, as was intended, a ‘minimum’. Consistent with this, interviewees reported cases in which counties had refused applications because the landbank was just very slightly above seven years, despite the fact that it was due to fall below seven years imminently.

Very closely related to this, operators expressed concern that there was no sanction or compulsion associated with the *Guidelines* and that applications were refused despite the fact that landbanks were on occasion significantly below the seven year ‘threshold’. One operator suggested that there was actually an incentive on counties to fail to meet their allocation, as future sub-regional apportionments would be based on previous production levels, creating a ‘ratchet effect’. It was considered that counties in the South East were particularly ‘guilty’ of this practice. Closely linked to this, one operator was concerned that there was a degree of ambiguity

within the counties as to the extent to which *Guidelines* represented ‘policy’ as opposed to ‘guidance’.

It was suggested by some operators that the appropriate policy response to this problem was to raise the threshold number of years for which a landbank had to be provided.

However, other stakeholders had different concerns with landbank policy. Both NGOs focussed on the problem, as they saw it, of there being too many examples of excessive landbanks, caused by an excess of dormant sites. One NGO pointed to the approach used in Wales (through the Welsh Assembly Government Aggregates Technical Advice Note) which actively encouraged planning authorities to review dormant permissions. The landbank review carried out by Gwynedd was cited as an example of good practice in this area.

County council representatives also considered those cases where landbanks were below the seven year threshold as largely being the result of a failure of operators to bring forward appropriate applications. It was argued that this failure led to the credibility of the system being undermined.

4.4.2 ECONOMETRIC MODELLING/DEMAND FORECASTING

An issue raised by both the NGOs and county council representative was the approach taken to the derivation of the national demand forecasts on which the *Guidelines* are based. It was considered by the NGO as being too much of a ‘black box’ such that no-one really understood how the forecasts were derived.

Closely linked to this was the view that there was not enough opportunity for ‘non-economic’ factors to influence the forecasts with, in particular, insufficient thought given to how the sustainable construction agenda might influence the forecasts. This view was shared by one of the county council representatives who perceived that while sub-regional apportionments were determined by a triumvirate of economic, social and environmental factors (although see below); the national forecasts from which they were derived were determined exclusively by economic factors.

Finally these stakeholders saw that the problems of demand forecasting and ‘predict and provide’ had been further exacerbated – and the credibility of the system partially undermined – by that fact that the forecasts had been ‘poor’.

This issue was not raised by any operators.

4.4.3 REGIONAL AND SUB-REGIONAL APPORTIONMENT

One operator considered that the existing approach to regional and sub-regional apportionments were too closely linked to current production levels. This, it was claimed, led to the perpetuation of existing patterns of supply, with no real thought given to whether this represented an optimal approach to supply.

The concern was supported by one of the NGOs. They supported the undertaking of environmental capacity studies in key areas in order for more informed choices to be made.

However, partially contradicting the above point, one interviewee was concerned that too much wasted time, effort and resource was devoted to deriving the regional apportionments and that there was too much ‘gaming’ associated with the apportionment process. There was also concern expressed by one of the trade associations that moving from a system of basing regional and sub-regional apportionments on current production levels would require the development of an unnecessarily complicated methodology and which would only serve to make the regional and sub-regional apportionment process more controversial.

4.4.4 PUBLIC ACCOUNTABILITY

One operator was concerned that public engagement with the process at the critical point – when the apportionments were being determined – was too limited, leading to a problem with public perception at the time planning applications were being decided, with the appearance that granting a permission was a *fait accompli*.

This was an issue that was also considered a weakness by one of the NGOs and also by one country council representatives. The concern was expressed that as the operation of the *Guidelines* was a highly technical process it was very difficult for the public, including politicians, to understand. It was considered that the technical information provided by the RAWPs needs to be more timely, consistent and easier to understand. However, as noted above, others considered that there was reasonable accountability within the RAWP system.

One interviewee also considered that this problem was exacerbated by the tendency of operators to classify information as confidential.

4.4.5 FAILURE TO TAKE ACCOUNT OF DIFFERENTIATION OF AGGREGATES

Three responses considered that the *Guidelines* and landbank policy failed to recognise the lack of substitutability between different types of aggregates. This has led (or could lead) to situations in which applications for specific types of aggregate (or industrial minerals falling within the *Guidelines*) were rejected as the landbank was in excess of seven years, despite production levels of that particular type of aggregate being low and need/market demand being high. The result, it was claimed, was that the specific type of aggregate had to be transported long distances with an associated environmental cost e.g. the importing of specialist sands from Cheshire to the South West despite there being resources locally available. This was a particular concern among smaller operators who did not have such a diverse source of supplies. It should be noted that there are statements within MPS1 which are designed to address this problem.

This was not brought up by the NGOs or by County Council representatives.

4.4.6 SYNCHRONICITY BETWEEN *GUIDELINES* AND LOCAL DEVELOPMENT FRAMEWORKS

Two operators and one of the industry trade bodies also considered that there was a problem generated by a lack of synchronisation between the establishment of local development frameworks and the *Guidelines*. The lack of synchronicity, it was claimed, led to situations where no sooner had the frameworks been developed than they needed to be amended to take account of revisions to the *Guidelines*.

The desirability of greater coordination between the *Guidelines* process and other aspects of the planning framework was also considered desirable by one of the NGOs.

4.4.7 RECYCLED AND SECONDARY AGGREGATES

One operator considered that the data on recycled and secondary aggregates, from which the land-won figure for regional and sub-regional apportionment is derived, needs to be improved.

This was a view shared by one of the mineral planning officers who noted that, providing metrics could be established, there were no reasons why the system could not also be used to apportion recycled and secondary aggregates production to MPAs within a region. It was proposed that, this could be the first stage of the apportionment process, with the apportionment of primary aggregates only undertaken when this had been agreed. However, it was recognised that more research would be needed to establish effective metrics and mechanisms.

4.5 Views of non-aggregates mineral operator

As well as discussions with aggregates operators, we also discussed the managed aggregates supply system with one non-aggregates operator. This was to get an ‘external’ industry perspective on the *Guidelines* and to see whether the benefits that aggregates operators perceived as derived from the managed supply system were also seen as benefits by companies elsewhere in the minerals sector. The company chosen, WBB Minerals, has interests in a number of minerals including silica sand, china clay, ball clay and dolomite.

The key conclusion from this interview was that there was no desire to see a direct application of the aggregates *Guidelines* to the minerals which they worked. However, this was due to the specific circumstances in these sectors:

- due to there being a small number of producers in these sectors, the data collection exercise that is necessary for the *Guidelines* to operate would be difficult to undertake without confidentiality issues arising
- deposits of non-aggregates minerals are frequently much less diffuse than for aggregates. This would make direct application of the *Guidelines* approach difficult as either a county has a deposit or it does not
- it was considered that there was much greater heterogeneity within each mineral type than there was in the case of aggregates i.e. different deposits of silica sand have potentially very different properties. This, it was considered, would make the generic landbank approach used in the aggregates industry difficult to implement for these minerals.

However, while there was no desire for a direct application of the aggregates *Guidelines* for working of these other minerals, the principle of some form of intervention in the planning process in order to assist with security of supply was considered very important. In this regard, the difference between the planning regimes for silica sand compared with china clay and ball clay was highlighted. In the case of the former, there is a policy acknowledging the need for a ten-year, site-specific landbank, along with further reference to the mineral in MPG15; *Provision of silica sand in England*. By contrast, for china and ball clay, no such intervention exists. Consequently, while they feel reasonably confident when it comes to seeking planning permissions for the former, they would feel much less confident regarding the latter. While there is no immediate problem with regard to supply of the latter at present – as historically a large consent had been granted – the company could envisage problems at some point in the future.

Appendix 5

COMPARISON MATRIX WITH EXPLANATORY NOTES

LEGEND:		Advantage i.e. could operate better than current	Parity i.e. could operate similarly overall	Disadvantage i.e. could operate less satisfactorily than current	
	CURRENT	NO GUIDELINES	REGIONAL	INFRASTRUCTURE PLANNING PERMISSION	LICENSING
Within planning system	YES	YES	YES	YES	NO
Evaluation Criteria					
Continuity and security of supply		Lack of clarity about how planning decisions are made; local resistance to development; more refusals leading to continuity of supply issues.	Inter-regional aggregates flows uncertain. Regions with large aggregates resources are secure but national supply is less secure, particularly for importing regions.	A national policy statement on aggregates to ensure supply would presume in favour of an application. Continuity of supply would be assured.	Onus on industry to put forward applications; could end up with no applications made and no permissions granted. Heavily dependent on the approach and attitude of the Authority. Difficult to assess.
Adequate number of planning permissions		More uncertainty about outcomes; higher proportion of applications go to appeal; planning procedural costs increase with implications for operators; therefore less willingness to submit applications.	No change from the current situation within the regions.	There would be no limit on the number of applications and no regard given to previous applications already granted.	As long as criteria are met permissions are granted; parity assumed.
Minimisation of environmental impacts		Overall balance with some negative effects and some positive.	Still bound by EU directives and good environmental practice. Environmental Appraisal required.	The IPC is a centralised body that would not be cognisant of local environmental factors. The sophistication of the current system would be lost.	A lack of spatial awareness could mean that no account is taken of the cumulative environmental impacts of quarrying in an area. Local environmental factors not taken into account.
Resource efficiency		Resource efficiency - doing more with less - is largely a commercial, best practice decision; most operators would wish to minimise waste.	Resource efficiency - doing more with less - is largely a commercial, best practice decision; most operators would wish to minimise waste.	Parity; most operators would wish to minimise waste.	A compliance-based system may not take into account what would be the best use of the resource.
Carbon footprint		Aggregates extraction gravitates to more sparsely populated areas, with consequently aggregates being transported greater distances, particularly by road and resulting in a higher carbon footprint.	Overall parity with both positive and negative effects.	No significant differences are anticipated.	The licensing approach would not be sensitive enough to the spatial issues.
Diversity of supply		The uncertainty created by the absence of guidelines discourages investment in more risky sources of supply / transport (e.g. marine and rail).	Overall parity; contributions from each source becomes less certain but may put greater reliance on imports and alternatives sources.	MPS1 (without the managed aggregates supply element) remains. Grounds for local opposition to aggregates working reduced and, due to lower entry costs, diversity of supply could be enhanced. However, there are uncertainties so parity assumed.	Provided an applicant meets the required criteria then permission is obtained. Since decisions are likely to be easier than with the current system diversity of supply is assumed to improve.
Financial costs to society/taxpayer/Government		Planning procedural costs rise due to a higher rate of refusals and the costs of appeals.	Price of aggregates rises with associated cost increases.	Decisions are made more quickly and procedural costs reduced.	Decisions are made more quickly and procedural costs reduced.

Competition issues		Higher costs of making an application act as a barrier to entry, reducing competition. However, entry is already difficult where landbank is significantly above threshold. Overall balance.	Supply is less reliable, which strengthens the competitive advantage of companies in exporting regions as long as they can continue to obtain planning permissions.	Competition is improved as less costly to apply for permissions, thus reducing the barriers to entry, in particular for smaller companies.	Opportunities for local opposition to working reduced, leading to parity of treatment between sites and enhancing competition.
Industry investment		Lack of clarity and greater uncertainty would make investment decisions more difficult for industry to make.	Regional approach requires an application to be judged on a regional basis (without regard to national need). Inter-regional uncertainties would adversely affect industry investment.	Lower costs to industry but may lead to an excessive number of permissions; but more competition with risks to investment. Parity as there are both positive and negative effects.	Lower costs to industry but may lead to an excessive number of permissions; but more competition with risks to investment. However, decisions are made with greater certainty.

Consequences					
Additional legislation and legislative consequences		None required.	None required.	New national policy statement on aggregates required.	New national policy statement on aggregates required.
Transparency and accountability of decision making		Decision maker has no rules or guidelines to work to; lack of clarity of how decisions are finally made.	Effectively the current system but dealt with at a regional level.	Decisions made by unelected body. No accountability and non-transparent.	Defined rules that are clear to everyone.
Scope for public involvement		Still have LDF's and therefore, opportunity for public participation. Still have appeals and public inquiries.	Still have LDF's and therefore, opportunity for public participation. Still have appeals and public inquiries.	No scope for public participation.	No scope for public participation.
Public acceptability		There would still be LDF's and public inquiries; public still have a voice even if some uncertainties.	There would still be LDF's and public inquiries; public still have a voice even if some uncertainties.	Public satisfaction with procedures substantially reduced.	Public satisfaction with procedures substantially reduced.
Flexibility to respond to demand		Lack of data on supply/demand makes demonstration of need more difficult. Size of permitted reserves likely to be much lower, thus possible difficulties in meeting unanticipated high demand.	Inter-regional flows are less reliable causing uncertainty about ability to respond to demand.	Speed of process would make it more responsive to demand.	Speed of process would make it more responsive to demand.
Speed, efficiency and achievability		More adversarial; planning by appeal; slower.	No real difference to current system.	Decisions made more quickly and procedural costs reduced. No public involvement or right of appeal.	Decisions made by meeting certain criteria. No public involvement or right of appeal.
Need for new plan guidance/framework		No guidelines exist or provided.	Much of the guidance is retained but at regional level.	Need for new national policy.	Need for new national policy.
Devolution of decision making		Initial decisions made locally, but more decisions by Secretary of State on appeal.	Decisions made at a regional level.	Decisions made by central body.	Decisions made by central body.

Appendix 6

ECONOMIC MODELLING

This appendix provides greater detail of the technical assumptions behind the industry planning model developed by cebr.

6.1 Underlying structure of the model

As explained in the main body of the text, the model is based upon a large number of random variables i.e. it is a Monte Carlo simulation exercise. A ‘draw’ is made from each of these which collectively determine the key financial parameters of that particular planning application. The model then considers whether it would be NPV positive to seek a particular planning application. If it is NPV negative then that particular draw ends. If it is NPV positive, the application proceeds and there is a given probability that it will be successful. If successful, extraction begins, with a total tonnage associated with that application and tonnage per annum determined through the simulation. If the application is unsuccessful then the model determines whether or not it would be NPV positive for the operator to seek an appeal. If it would be NPV negative then the draw ends with no extraction. If, however, it is NPV positive, then the inquiry proceeds, again with there being a given probability that the application will be successful following the inquiry.

The base case assumptions on mean and range for each of the random variables which collectively determine the financial parameters of a given application are shown in Tables A1 and A2: one for sand and gravel and the other for crushed rock. The values were determined following extensive discussions with operators.

	Variable	Unit	Distribution	Mean	Standard deviation, where distribution is normal
Planning application assumptions	Pre-planning costs	Total costs (£)	Normal	-£20,000	5000
	Years of pre-planning	Years	Uniform	2.5	N/a
	Direct costs of planning application	Total costs (£)	Normal	-£125,000	25,000
	Years of application	Years	Uniform	2.5	N/a
	Indirect costs of planning application	Total costs (£)	Normal	-£20,000	12000
	Post-application costs	Total costs (£) (Assumed to be incurred in one year only)	Normal	-£30,000	15,000
	Probability of planning application success	N/A	N/a	90%	N/a
	Planning appeal inquiry costs	Total costs (£) (Assumed to be incurred in one year only)	Normal	-£150,000	25,000
	Probability of success on appeal		N/a	80%	N/a
Deposit assumptions	Size of deposit	Tonnes	Normal	1,250,000	750,000
	Number of years	Number of years over which extraction would occur	Uniform	6.5	N/a
	Operating costs	£ per tonne	Normal	-6	1.25
	Restoration costs	£ per tonne	Normal	-0.325	0.05

Table A1 Base case parameter assumptions for sand and gravel model.

	Variable	Unit	Distribution	Mean	Standard deviation, where distribution is normal
Planning application assumptions	Pre-planning costs	Total costs (£)	Normal	-£20,000	5000
	Years of pre-planning	Years	Uniform	2.5	N/a
	Direct costs of planning application	Total costs (£)	Normal	-£125,000	25,000
	Years of application	Years	Uniform	2.5	N/a
	Indirect costs of planning application	Total costs (£)	Normal	-£20,000	12000
	Post-application costs	Total costs (£) (Assumed to be incurred in one year only)	Normal	-£30,000	15,000
	Probability of planning application success	N/A	N/a	90%	N/a
	Planning appeal inquiry costs	Total costs (£) (Assumed to be incurred in one year only)	Normal	-£150,000	25,000
	Probability of success on appeal		N/a	80%	N/a
Deposit assumptions	Size of deposit	Tonnes	Normal	7,500,000	13,500,000
	Number of years	Number of years over which extraction would occur	Uniform	9	N/a
	Operating costs	£ per tonne	Normal	-4	1.25
	Restoration costs	£ per tonne	Normal	-0.325	0.05

Table A2 Base case parameter assumptions for crushed rock model.

The variables taken into account in the modelling and the units in which they are expressed should be self-explanatory. In terms of the distributional assumptions, depending on the variable being considered, one of two approaches was taken:

- The distribution was assumed to be normal. This implies that the most likely value that this variable could take would be the mean value, with the probability of it taking a different value declining the further that alternative value is from the mean. As a rule of thumb, the range given by the mean \pm two standard deviations would cover the value taken by that variable on 95 per cent of occasions. For instance, on 95 per cent of occasions, pre-planning costs would take a value of between -£10,000 and -£30,000.
- Alternatively, a uniform distribution assumption was used. Under a uniform distribution, the variable is equally likely to take any value within the range. Here ‘mean’ refers to the mid-point of the range which starts at zero i.e. the years taken on pre-planning work could take a value of anywhere between 0 and 5 years, with each outcome equally likely.

A number of other assumptions were made as part of each run of the modelling exercise.

First, each of the individual variables was assumed to be independently distributed. This means that the value taken by one variable had no influence on the value taken by another. This is in part an assumption to ease computation: it might be expected, for instance, that when the total pre-planning costs were relatively high — perhaps indicating a particularly complicated application — the total post planning costs might also be relatively high. However, the interviews held with operators also indicated that many planning cost variables were relatively fixed and not particularly affected by factors such as the size or complexity of the application.

Second, the model was set up in discrete units of one year, starting from year one in the model where there was assumed to be no aggregates activity whatsoever.

Third, to reflect the fact that operators are price takers in the market, there was assumed to be no variation in the market price for a tonne of aggregates. Instead, the price for a tonne of sand and gravel and crushed rock were both set at £8/tonne.

Finally, the NPV calculations are undertaken using a cost of capital/discount rate of ten per cent.

These set of assumptions explain how one ‘draw’ of the model is undertaken and the assessment made as to whether it leads to extraction. The final aspect of the modelling for any one particular draw is that it would be unrealistic to assume that for each and every potential application commences in the same year. Instead, the start of the application process begins at different times for different applications. To attempt to capture this, the number of years between the nominal ‘start’ i.e. year one of the model (when there is no extraction) and the start of the process for any one individual potential application is also randomised. The model assumes that the time between the year one of the model and the start of the application process can be between nought and ten years with each year being an equally likely start date.

6.2 Parameterising the model

The exercise is repeated a sufficient number of times such that the number of successful applications per annum and the tonnage associated with those successful applications are consistent with known data on applications in England.

To undertake this calibration exercise, the most up-to-date and comprehensive information on aggregates planning applications in England — a survey of mineral planning authorities (MPA) undertaken by Thompson et al. (2008) as part of the sister project on ‘declining reserves’ — is used. This provides information on both the number of successful applications and the tonnage associated with those successful applications.

There are two caveats regarding this dataset which need to be stressed:

- Not every MPA responded to the survey sent out by Capita Symonds (Thompson et al., 2008): out of 159 MPAs, no responses were received from 56 MPAs (35 per cent). However, of these 56 no-responses, it is believed that 49 did not respond because there were no aggregates planning applications made over the period in question. This leaves just 8 MPAs (5 per cent) who are believed to have had applications over the period but who did not respond to the survey.
- For those MPAs that did respond to the survey, data was not available on the tonnage associated with some of the (successful and unsuccessful) applications made. Approximately 34 per cent of the submissions for which some information was available had some aspect missing which meant that it was not possible to identify a precise tonnage approved (or otherwise) in a specific year.⁶

The implication of this is that the model has been calibrated on data which, although extensive, is not fully comprehensive of aggregates activity in England.

Figures A1 and A2 compare the actual data obtained by Capita Symonds over the period 1994 to 2004 with the average per annum model predictions for both sand and gravel and crushed rock. The blue lines refer to information on actual tonnages approved while the green lines refer to information on the number of applications. The solid lines relate to actual information while the broken lines relate to the model predictions.



Figure A1 Comparison between actual outcomes and model predictions for sand and gravel.

Source: cebr and Thompson et al., 2008

⁶ Moreover those applications for which it is unclear whether or not the application would have resulted in an increase in permitted reserves are also excluded e.g. permissions that may have consolidated existing permissions.

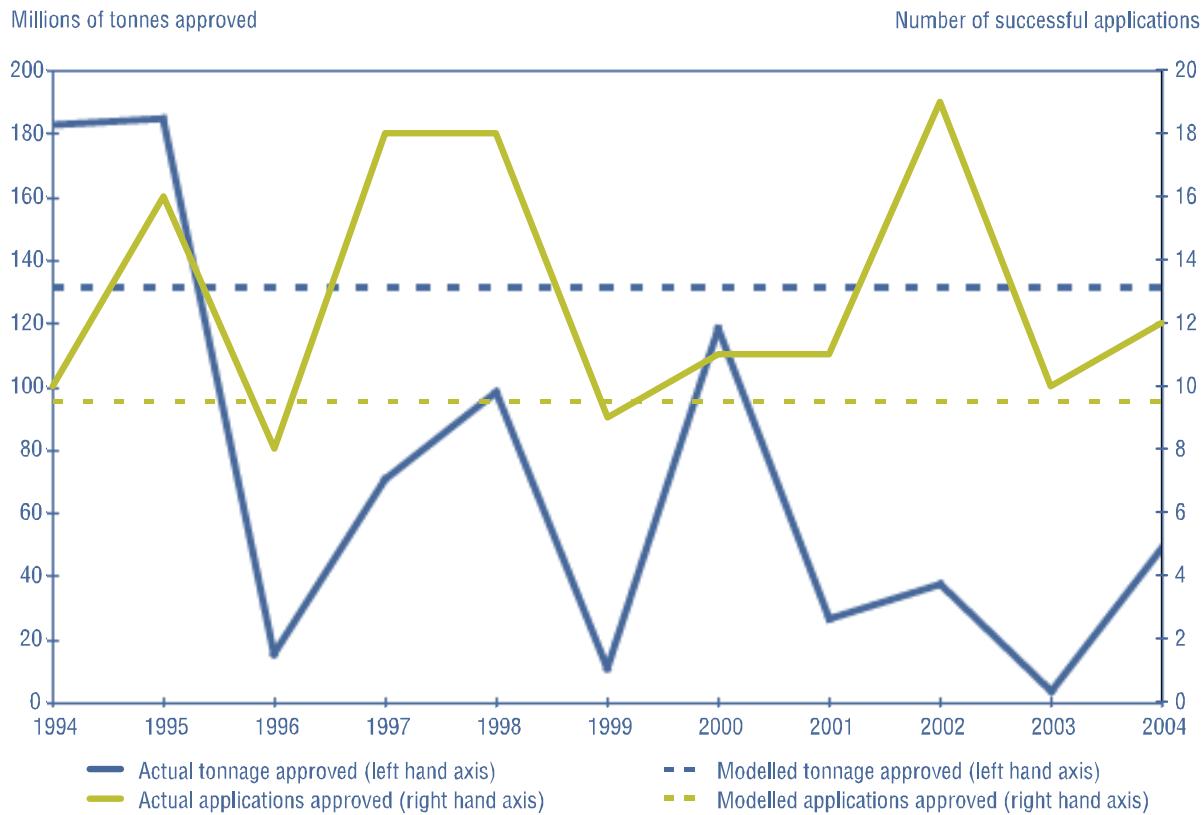


Figure A2 Comparison between actual outcomes and model predictions for crushed rock.

Source: cebr and Thompson et al., 2008

It can be seen that the model is reasonably accurate at predicting actual industry outcomes.

For sand and gravel the tonnages associated with successful applications over the period 1994 to 2004 has fluctuated around the average yearly amount predicted by the model (46.4 million tonnes). The number of successful applications predicted in the model is slightly lower than the numbers seen in the Capita Symonds data: the average number of successful sand and gravel applications in the model is 33.2 compared with an average over the period of 42.7. The fact that the model reasonably accurately reflects the data collected by Capita Symonds data on tonnages associated with successful applications but slightly underestimates the number of successful applications is consistent with the Capita Symonds data only containing tonnage information on a subset of successful applications.

In terms of crushed rock, industry actuals are subject to considerably more year on year variation: over the ten year period the tonnages associated with successful application within the dataset ranges from 3.8 million tonnes to 184.9 million tonnes. This makes calibration more difficult. The model predicts the tonnage associated with successful applications as 130.7 million tonnes. This is lower than the tonnages associated with successful applications in two years of the Capita Symonds dataset but higher than in the remaining eight years. The average number of successful applications per annum predicted by the model is 9.5 compared to an average of 12.9 in the Capita Symonds dataset.

6.3 Results reporting

As explained in the main body of the text, the model is used to explore how various changes in the outcome from the planning regime might influence overall industry outcomes.

This is achieved by replicating the process described but with some of the key assumptions set out in table A1 and A2 altered. The motivation for altering these assumptions is discussed in the main body of the text.

In running the model under these alternative scenarios, none of the other assumptions are altered. This includes the final price at which it is assumed aggregates will sell at and the number of draws that are undertaken. In terms of the first assumption, this implies that the modelling results should be thought of as likely short-run effects; in the longer term a restriction in the tonnage extracted would be expected to increase prices and partly (but not fully) offset the reduction in extraction reported. The second assumption implies that there are a finite number of sites that can be considered for operation in any one year and that a change in the nature of the planning process will not alter the number of sites that operators will consider when thinking about bringing forward applications (although the number of applications that are actually brought forward would be expected to change).

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